American Society of Ophthalmic Plastic and Reconstructive Surgery

Silverado

2025 Spring Scientific Symposium



May 15-18, 2025 | Silverado, Napa, California

SYLLABUS

GENERAL INFORMATION

Continuing Medical Education

ASOPRS is accredited by the Accreditation Council for Continuing Medical Education (ACCME) to sponsor the Continuing Medical Education (CME) for physicians. The American Society of Ophthalmic Plastic and Reconstructive Surgery designates this live activity for a maximum of ***9.75 AMA PRA Category 1 Credits™***. Physicians should claim only the credit commensurate with the extent of their participation in the activity. Self-assessment CME credit may be claimed if the physician completes the self-assessment questionnaire at the end of the online meeting evaluation.

Continuing Medical Education Mission Statement

The purpose of the American Society of Ophthalmic Plastic and Reconstructive Surgery's Continuing Medical Education (CME) program is to present oculofacial plastic surgeons with the highest quality learning opportunities in the areas of aesthetics, eyelid, lacrimal, and orbital diseases that promote positive change in physician performance or competence, thus enabling such physicians to maintain or improve the knowledge, skills, and professional performance needed to provide the best possible care for their patients. Ongoing assessment of the impact of the CME program is important in determining modifications to existing activities and the development of new activities. Specific expected results include increased knowledge across the ASOPRS community, a desire among practicing ophthalmologists to pursue lifelong learning, the refinement of already employed techniques or skills, and the application of new techniques or skills for the improvement of practice and patient care.

Evaluations/CME Certificates

A link to an evaluation will be provided to attendees after the meeting via email. You will have an opportunity to download a CME certificate once you have completed the evaluation. Your feedback is carefully considered when planning future meetings. Thank you in advance for helping ASOPRS improve our Spring Scientific Symposium.

Abstract Disclaimer

Abstract information is published as submitted.

FINANCIAL DISCLOSURES

As an accredited CME provider, ASOPRS is responsible for demonstrating that our CME educational programs are planned and presented independent of commercial influence.

In accordance with the guidelines of the Accreditation Council for Continuing Medical Education (ACCME), ASOPRS requires disclosure of financial relationships with ineligible companies for the past 24 months from Abstract Reviewers, Faculty, Moderators, Scientific Symposia and Accreditation Committee Members, abstract authors, and all other individuals in control of content. **Ineligible companies** are defined as *companies whose primary business is producing, marketing, selling, re-selling, or distributing healthcare products used by or on patients.* All financial relationships with ineligible companies are requested, regardless of the amount or the individual's perception of relevancy.

The ASOPRS Accreditation Committee has conducted a mitigation of relevant financial relationships process with anyone determined to have a relevant financial relationship. This process may have included reviewing presentations for indicators of integrity and absence of bias, and details from faculty regarding how they will ensure they will be unbiased. Moderators have been assigned to sessions unrelated to any financial relationship they have. Committee (Awards, Thesis, YASOPRS, etc.) members with relevant financial relationships were removed from making any decisions or having any influence over the programmatic content which relates to their financial disclosure. Scientific Symposia Directors with research relationships* have had their programmatic decisions reviewed by a group of peer reviewers.

*Beginning in 2023, appointed Scientific Symposia Directors may not have financial relationships with ineligible companies for the duration of their 3-year term and 12 months prior to service with the following exception: Scientific Symposia Directors may be involved in FDA-regulated research before and during their term.

Members of the Accreditation Committee may not have financial relationships with ineligible companies during their term and for 12 months prior.

During the CME educational program, it is the responsibility of moderators to identify for the audience if the financial information presented differs from what was previously disclosed/mitigated and any bias. Attendees may also submit bias/conflict of interest concerns during Q&A or the meeting evaluation.

Financial relationships with ineligible companies deemed relevant are published in this Syllabus. If a financial relationship was deemed relevant, the mitigation process has been conducted. Some relevant financial relationships may not have been able to be mitigated and therefore, that content/faculty was not considered for inclusion in the program.

FINANCIAL DISCLOSURES

ASOPRS is committed to transparency. The Accreditation Committee has determined that relationships found not relevant will also be published in this Syllabus. These relationships did not require mitigation.

If any faculty or other participant is determined to have been biased, or to not observe policy during or after the meeting, the Accreditation Committee will investigate and follow up with their determination in writing, which may include barring the individual from participating in future meetings.

Individuals with financial relationships in the last 24 months found **relevant** to their role(s) in the meeting are listed below.

Name	Role	Company	Relationship Type	Ended?
Jacqueline Carrasco	Presenter, Abstract Reviewer	Amgen	Speakers Bureau	No
Steven Couch	Co-Author	1-Viridian Therapeutics 2-Sling Therapeutics 3-Amgen	1-Researcher 2-Researcher 3-Researcher	1-No 2-No 3-No
Christopher Dermarkarian	Presenter, Abstract Reviewer	Bryn Mawr Communications	Consultant/Advisor	Yes
Kevin Emerick	Co-Author	Regeneron Pharmaceuticals	Consultant/Advisor	No
John P. Fezza	Moderator, Presenter	1-Allergan 2-Evolus	1-Consultant/Advisor, Speakers Bureau 2-Consultant/Advisor, Speakers Bureau	1-No 2-No

FINANCIAL DISCLOSURES

Name	Role	Company	Relationship Type	Ended?
Suzanne Freitag	Co-Author	1-Thieme and Springer 2-WL Gore 3-Poriferous 4-Medtronic 5-Amgen 6-Kriya 7-Sling 8-Viridian 9-Immunovant 10-Lassen 11-Ethyreal 12-Janssen 13-Argenx 14-Merida	1-Royalties or patent beneficiary 2-14-Consultant/Advisor	1-No 2-Yes 3-14-No
Hans Heymann	Abstract Reviewer	Abbvie	Stocks	1-Yes
Howard Kaufman	Co-Author	1-Ankyra 2-Castle Biosciences 3-Midatech Pharma 4-Marengo Therapeutics 5-Virogin	1-Employee 2-Consultant/Advisor 3-Consultant/Advisor 4-Consultant/Advisor 5-Consultant/Advisor	1-No 2-No 3-No 4-No 5-No
Femida Kherani	Presenter, Co-Author, Panelist	1-Amgen 2-Sun Pharma 3-Abbvie 4-Allergan 5-Tarsus Pharmaceuticals	1-Consultant/Advisor 2-Consultant/Advisor 3-Consultant/Advisor 4-Consultant/Advisor 5-Consultant/Advisor	1-No 2-No 3-No 4-No 5-No
Don Kikkawa	Co-Author	1-Amgen 2-Immunovant 3-Genentech 4-Acelyrin 5-Lassen Therapeutics 6-Elsevier	1-5-Consultant/Advisor 6-Royalties or patent beneficiary	1-6-No

FINANCIAL DISCLOSURES

Name	Role	Company	Relationship Type	Ended?
Bobby Korn	Co-Author	1-Elsevier 2-Amgen 3-Viridian 4-Immunovant 5-Acelyrin 6-Argenx	1-Royalties or patent beneficiary 2-Consultant/Advisor 3-Consultant/Advisor 4-Consultant/Advisor 5-Consultant/Advisor 6-Consultant/Advisor	1-No 2-No 3-No 4-No 5-No 6-No
Nahyoung Grace Lee	Co-Author	1-Amgen Therapeutics 2-Argenx	1-Consultant/Advisor 2-Consultant/Advisor	1-No 2-No
Wendy Lee	Co-Author	1-Allergan 2-Galderma 3-Revance 4-Amgen 5-Viridian	1-Consultant/Advisor 2-Consultant/Advisor 3-Consultant/Advisor 4-Consultant/Advisor 5-Consultant/Advisor	1-No 2-No 3-No 4-No 5-No
Andrew Lee	Co-Author	Amgen, Alexian, Viridian, Catalyst, Ethyreal, Stoke, Astra Zeneca, Bristol Myers, Squib	Consultant/Advisor	No
Catherine Liu	Co-Author	1-Wolters Kluwers Health 2-Lassen Therapeutics	1-Royalties or patent beneficiary 2-Researcher	1-No 2-No
Amina Malik	Presenter	Amgen	Consultant/Advisor	No
David Miller	Co-Author	1-Merck 2-EMD Serono 3-Regeneron 4-Sanofi Genzyme 5-Pfizer, Castle Biosciences, Checkpoint Therapeutics, Incyte, Bristol-Myers Squib. 6-Checkpoint Therapeutics and Avstera Therapeutics. 7-Regeneron, Kartos Therapeutics, Xilio Therapeutics, NeoImmune Tech, Inc, Project Data Sphere, ECOG-ACRIN and the American Skin Association	1-5-Consultant/Advisor 6-Stock options 7-Consultant/Advisor	1-7-No

FINANCIAL DISCLOSURES

Name	Role	Company	Relationship Type	Ended?
Cameron Nabavi	Presenter, Co-Author, Abstract Reviewer	Tourmaline Bio	Researcher	No
Sathyadeepak Ramesh	Abstract Reviewer	1-Amgen 2-Viridian Therapeutics 3-Poriferous	1-Speakers Bureau 2-Researcher 3-Royalties or patent beneficiary	1-No 2-No 3-No
Ana Carolina Victoria	Presenter, Moderator	1-Candela Medical 2-Amgen 3-Allergan 4-Tarsus	1-Consultant/Advisor 2-Speakers Bureau 3-Consultant/Advisor 4-Consultant/Advisor	1-No 2-No 3-No 4-No
Julie Woodward	Co-Author	1-Allergan 2-Galderma 3-Merz Aesthetics 4-SkinCeuticals 5-Prollenium Medical Aesthetics	1-Consultant/Advisor 2-Consultant/Advisor 3-Consultant/Advisor 4-Consultant/Advisor 5-Consultant/Advisor	1-No 2-No 3-No 4-No
Michael K. Yoon	Scientific Symposia Committee, Co-Author	1-Amgen 2-Viridian 3-Sling	1-Researcher 2-Researcher 3-Researcher	1-No 2-No 3-Yes

Individuals with financial relationships in the last 24 months found **not relevant** to their role(s) in the meeting are listed below.

Name	Role	Company	Relationship Type	Ended?
Keith Carter	Co-Author, Moderator	Genentech	Consultant/Advisor	No
Hakan Demirci	Moderator	1-Castle Buoscy 2-Imunocore	1-Consultant/Advisor 2-Consultant/Advisor	
Andrew R. Harrison	Moderator, Presenter	1-Amgen 2-Viridian Therapeutics 3-Argenx	1-Speakers Bureau 2-Researcher 3-Consultant/Advisor	1-No 2-No 3-Yes

FINANCIAL DISCLOSURES

Name	Role	Company	Relationship Type	Ended?
John Holds	Moderator, Co-Author, Presenter	Horizon Therapeutics	Consultant/Advisor	Yes
Sasha Hubschman	Presenter	Horizon Surgical Systems	Stocks	No
Zachary Keenum	Presenter	1-Osheru 2-Greenman 3-Roche Genentech 4-True North	1-Consultant/Advisor 2-Ownership interests 3-Researcher 4-Ownership Interests	1-No 2-No 3-No 4-No
Andrea Kossler	Co-Author	1-Amgen 2-Immunovant 3-Argenx 4-Genentech 5-Sling Therapeutics	1-Consultant/Advisor 2-Consultant/Advisor 3-Consultant/Advisor 4-Consultant/Advisor 5-Independent Contractor	1-No 2-No 3-No 4-No 5-No
Gary Lelli	Co-Author	1-Amgen 2-Genentech	1-Consultant/Advisor 2-Consultant/Advisor	1-No 2-No
Louise Mawn	Moderator	1-Amgen 2-Genentech	1-Consultant/Advisor 2-Consultant/Advisor	1-No 2-No
Tanuj Nakra	Co-Author	AVYA Skincare LLC	Ownership interests	No
Navdeep Nijhawan	Co-Author	Viridian Therapeutics, Inc.	Researcher	No
Rupin Parikh	Presenter, Co-Author	1-Apellis Pharmaceuticals 2-Vertex Pharmaceuticals	1-Stocks 2-Stocks	1-No 2-No
Chau Pham	Co-Author	1-Edwards LifeSciences 2-Regeneron	1-Stocks 2-Stocks	1-No 2-No
Paul Phelps	Presenter	Amgen	Consultant/Advisor	No
Daniel Rootman	Co-Author	Amgen	Consultant/Advisor	No
Dianne Schlachter	Moderator	Amgen	Speakers Bureau	No
Stuart Seiff	Presenter	1-Tourmaline Bio 2-Roche 3-Matrix Surgical	1-Consultant/Advisor 2-Consultant/Advisor 3-Consultant/Advisor	1-No 2-No 3-No
Pete Setabutr	Co-Author	Lodestone Inc.	Ownership interests	No

FINANCIAL DISCLOSURES

Name	Role	Company	Relationship Type	Ended?
Erin Shriver	Presenter, Co-Author	1-Amgen 2-Genentech 3-Immunovant	1-Consultant/Advisor 2-Consultant/Advisor 3-Researcher	1-No 2-Yes 3-No
Ann Tran	Co-Author	Genentech	Consultant/Advisor	No
Lilly Wagner	Presenter	Genentech	Consultant/Advisor	Yes
Bryan Winn	Presenter, Moderator	1-Roche-Genetech 1-YOLO Therapeutics	1-Independent Medical Reviewer of Adverse Events for Clinical Trial for Thyroid Eye Disease 2-Consultant/Advisor	1-No 2-No
Sandy Zhang-Nunes	Presenter, Co-Author, Panelist	1-Amgen 2-Tarsus Pharmaceuticals 3-Viridian	1-Consultant/Advisor 2-Consultant/Advisor 3-Researcher	1-No 2-No 3-No

All other individuals in control of content have declared that they had no financial relationships with ineligible companies in the last 24 months.

7:31-7:34 am

Trypan Dye for Differentiating Lacrimal Gland Ductules from Conjunctiva Fistulas Secondary to Glaucoma Device Leakage

Jonathan Lu, Hamidah Mahmud, Yeabsira Mesfin, Yvonne Ou
Ophthalmology, UCSF, San Francisco, California, United States

Introduction: Because of their superotemporal location in the vicinity of the lacrimal gland, when glaucoma drainage devices develop leaks from exposure, the conjunctival fistula/opening can in certain cases look and behave like a lacrimal gland duct opening. Oculoplastic surgeons typically identify lacrimal gland duct openings with a combination of location, external morphology, and fluorescein application to the conjunctiva to identify fluid flow. However, in these high-stake cases of possible tube leakage, the usual techniques cannot differentiate if the opening and fluorescein flow observed is lacrimal output or “pseudo-Seidel sign”, versus a fistulous tract in the conjunctiva secreting aqueous fluid.

We describe a novel technique that can differentiate a lacrimal gland duct from a conjunctival fistula related to glaucoma drainage devices.

Methods: This is a case report of an 87-year-old female with right sided glaucoma drainage device with concerning areas of exposure versus lacrimal gland duct. In the operating room under sedation, a paracentesis incision was made in the cornea. Trypan blue was the injected into the anterior chamber of the eye, and gentle pressure was applied to the eye. The blue dye was then visually tracked along the glaucoma device tube in the direction of the device plate.

Results: Intraoperatively brisk flow of Trypan blue dye was observed in the area of interest, confirming direct connection to the intraocular space. The patient subsequently underwent glaucoma tube removal due to the size of the visualized defect being too large and high flow to close with acceptable success.

(continued)

(continued)

Conclusions: Intraocular injection of trypan blue dye was effective in visualizing aqueous flow dynamics to identify a conjunctival fistula associated with glaucoma drainage device, differentiating conjunctival opening from lacrimal gland opening. This novel technique was used safely in a case where topical fluorescein testing is not otherwise able to sufficiently differentiate the two diagnoses.

Figure 1: Suspicious area of conjunctival opening in vicinity of glaucoma drainage device. The conjunctival band is a prior pedicled rotational flap to cover previous exposure.

Figure 2: Another conjunctival opening, suggestive of gland duct vs defect

Figure 3: Fluorescein under cobalt blue light, demonstrating subtle flow over time at the conjunctival opening

Figure 4: Trypan blue in anterior chamber traveling along glaucoma tube (thin blue line between anterior chamber posteriorly) and extravasating at area of suspicion for exposure vs duct

Figure 1

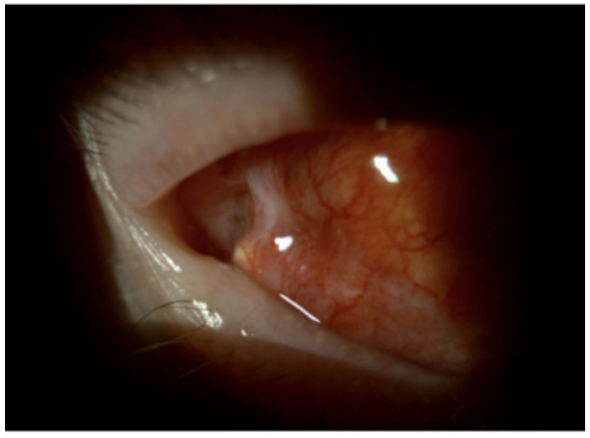


Figure 2

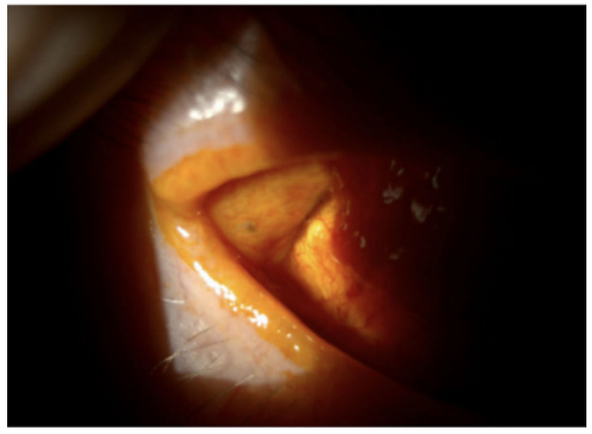


Figure 3

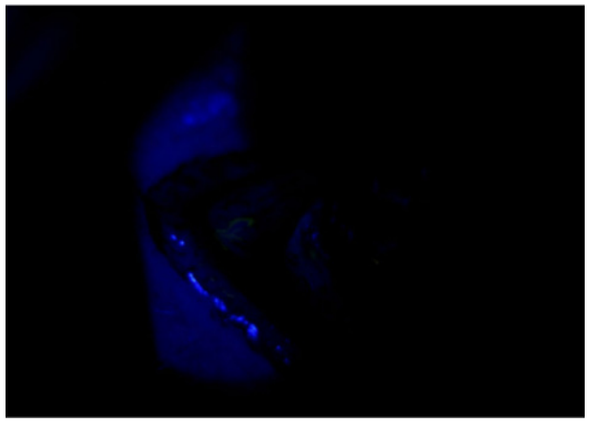
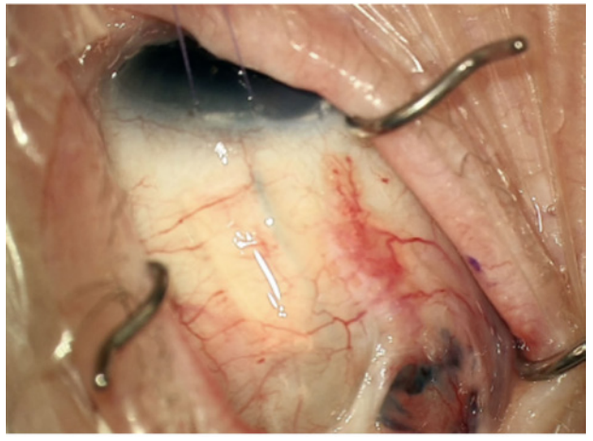


Figure 4



References:

1. Garcia JM, Wu PB, Haddadin RI, Kang JM. Accessory lacrimal gland secretion mimicking seidel positivity following complex cataract surgery: Case report. Am J Ophthalmol Case Rep. 2024;34:102048. doi:10.1016/j.ajoc.2024.102048
2. Grover DS, Fellman RL. Confirming and Establishing Patency of Glaucoma Drainage Devices Using Trypan Blue: Journal of Glaucoma. 2013;22(3):e1-e2. doi:10.1097/IJG.0b013e318240857c
3. Khoo YJ, Abdullah AAH, Yu D, Morgan WH. Use of trypan blue as an aqueous tracer dye to investigate hypotony where cyclodialysis cleft is suspected. Clinical Exper Ophthalmology. 2019;47(7):904-908. doi:10.1111/ceo.13558
4. Kim EC, Doh SH, Chung SY, et al. Direct visualization of aqueous tear secretion from lacrimal gland. Acta Ophthalmologica. 2017;95(4). doi:10.1111/aos.13335
5. Yung ES, Moster MR, Sanvicente C, et al. Trypan Blue for the Assessment of Filtering Bleb Function During Cataract Surgery. Journal of Glaucoma. 2018;27(3):246-250. doi:10.1097/IJG.0000000000000865

7:34-7:37 am

Effects of Glucagon-Like Peptide-1 Agonist on Facial Landmarks and Perceived Age

Teresa Chen[1], Joy Li[1], Dylan Hellbusch[2], Jeremiah Tao[1]
[1]Division of Orbital and Ophthalmic Plastic Surgery, Gavin Herbert Eye Institute, University of California, Irvine, Irvine, California, United States, [2]University of California, Los Angeles, Los Angeles, California, United States

Introduction: Interest in glucagon-like peptide 1 (GLP-1) agonists for cosmetic weight loss has skyrocketed in recent years.[1] GLP-1 agonists suppress appetite via delayed gastric emptying and are FDA-approved for type-2 diabetes mellitus and weight loss.[2] Unintended consequences of rapid weight loss include volume loss, prominent wrinkles and sagging skin.[3] The specific effects of GLP-1 agonists on facial anatomy are incompletely described in the literature. This study aims to assess the effects of GLP-1 agonist on facial landmarks and perceived age.

Methods: This was a retrospective case control study with age-, sex-, ethnicity- and diagnosis-matching of patients in one tertiary eye institute from 2022-2024. Inclusion criteria were patient age over 18 with frontal full-face photographs. Exclusion criteria were prior oculofacial aesthetic or reconstructive procedures, trauma, paresis, or thyroid eye disease. Using ImageJ (Bethesda, Maryland U.S.A.), the following facial landmarks were measured: total face height, upper-facial height (midpoint of hairline to glabella), mid-facial height (glabella to central junction of nasal septum and upper lip), palpebral fissure width, palpebral fissure height, upper eyelid height, nasal width, nasal height, palpebral fissure slant, lower facial height (central junction of nasal septum and upper lip to inferior midpoint of chin), philtrum height, philtrum width, upper lid height, upper vermillion height, lower vermillion height, lower lip height, mouth width, upper vermillion angle, and lower vermillion angle (Figure 1 – example of measurements). Artificial intelligence (AI) facial age estimation was also performed.

Results: A total of 36 patients were identified, 18 on GLP-1 agonist and 18 controls. The average age was 68 ± 11 years old for both groups (range 52-92 for GLP-1 agonist and 53-92 for control group). There were 8 males and 10 females in each group, with the following ethnicities: Caucasian (9), Asian (3) and Hispanic (6). Half had diagnosis of bilateral upper lid ptosis and half had bilateral upper eyelid dermatochalasis. Body mass index (BMI) was 29.6 ± 7.6 (range 16.8-39.7) for the GLP-1 agonist group and 28.2 ± 7.1 (range 21.0-53.4) for the control group (p=0.57). Results of facial landmark measurements are shown in Table 1, with statistically significant differences (p<=0.05) in philtrum width, upper vermillion height, lower lip height, and mouth width. AI age estimation for the GLP-1 agonist group was 7 years younger than actual age ± 8 (range -5 to +26) and the control group was 8 years younger than actual age ± 8 (range -5 to +25) (p=0.86).

(continued)

(continued)

Conclusions: GLP-1 agonist patients had statistically significant longer philtrum width, upper vermillion height, lower lip height, and mouth width, compared to controls, which are metrics that have been previously associated with older age.[4,5] There was no statistically significant difference in AI facial age estimation between the two groups.

Figure 1

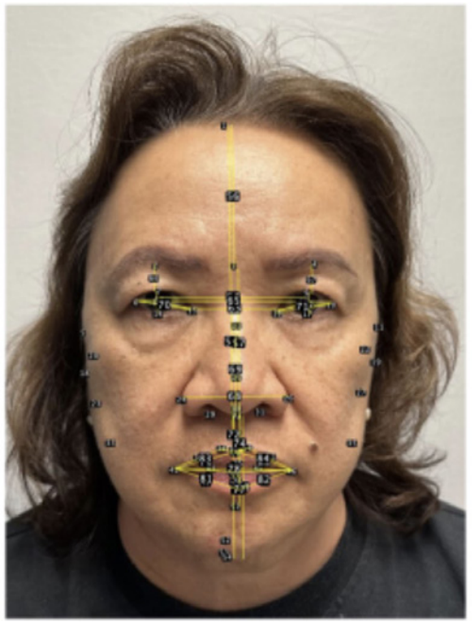


Figure 1: Example of measurements done on ImageJ, using corneal diameter as reference (11.64mm in women and 11.77mm in men)

Figure 2

Facial dimension	GLP-1 agonist	Control	p value
Total face height (mm)	191.2 ± 18.6	187.9 ± 13.2	0.28
Upper facial height (mm)	55.7 ± 9.5	54.9 ± 8.7	0.40
Mid facial height (mm)	68.3 ± 6.7	65.6 ± 6.7	0.12
Palpebral fissure width (mm)	25.8 ± 2.9	24.6 ± 2.2	0.10
Palpebral fissure height (mm)	9.2 ± 3.2	8.4 ± 3.1	0.22
Upper eyelid height (mm)	16.9 ± 3.9	15.7 ± 5.1	0.23
Nasal width (mm)	43.2 ± 6.9	39.9 ± 5.5	0.38
Nasal height (mm)	54.5 ± 6.1	51.6 ± 5.8	0.07
Palpebral fissure slant (°)	11.7 ± 4.5	10.3 ± 2.4	0.13
Lower facial height (mm)	67.2 ± 9.7	67.7 ± 7.2	0.43
Philtrum height (mm)	17.6 ± 3.4	19.4 ± 3.6	0.07
Philtrum width (mm)	16.0 ± 4.2	13.0 ± 3.6	**0.02**
Upper lip height (mm)	22.6 ± 3.3	24.0 ± 3.9	0.12
Upper vermillion height (mm)	5.0 ± 2.0	4.0 ± 1.6	**0.04**
Lower vermillion height (mm)	8.2 ± 2.4	8.0 ± 2.1	0.39
Lower lip height (mm)	16.7 ± 2.7	15.0 ± 3.2	**0.05**
Mouth width (mm)	52.8 ± 6.1	50.0 ± 5.2	**0.03**
Upper vermillion angle (°)	10.7 ± 4.3	10.0 ± 4.1	0.29
Lower vermillion angle (°)	17.2 ± 4.4	18.4 ± 5.9	0.25

Table 1: Facial landmarks in GLP-1 agonist and control groups

References:

1. Han SH, Safeek R, Ockerman K, et al. Public Interest in the Off-Label Use of Glucagon-like Peptide 1 Agonists (Ozempic) for Cosmetic Weight Loss: A Google Trends Analysis. *Aesthet Surg J*. 2023;44(1):60-67. doi:10.1093/asj/sjad211
2. Suran M. As Ozempic's Popularity Soars, Here's What to Know About Semaglutide and Weight Loss. *JAMA*. 2023;329(19):1627-1629. doi:10.1001/jama.2023.2438
3. Couto RA, Waltzman JT, Tadisina KK, et al. Objective Assessment of Facial Rejuvenation After Massive Weight Loss. *Aesthetic Plast Surg*. 2015;39(6):847-855. doi:10.1007/s00266-015-0540-6
4. Kwon SH, Choi JW, Kim HJ, et al. Three-Dimensional Photogrammetric Study on Age-Related Facial Characteristics in Korean Females. *Ann Dermatol*. 2021;33(1):52-60. doi:10.5021/ad.2021.33.1.52
5. Doll C, Nahles G, Voss JO, et al. Age-Related Changes of the Orolabial Region in Caucasian Women: An Anthropometric Analysis. *J Oral Maxillofac Surg*. 2016;74(12):2497-2503. doi:10.1016/j.joms.2016.08.007

7:37-7:40 am

A Challenging Case of Bilateral Upper Lid Symblepharon following MMCR as a Manifestation of Occult Sjogren's Disease

Christopher Dermarkarian, James Robbins, Irene Lee, Kourtney Houser, Amol Sura, Julie Woodward
Duke University, Durham, North Carolina, United States

Introduction: The pathophysiology of post-operative symblepharon following Müller's muscle conjunctival resection (MMCR) is poorly understood. Currently, only two cases series of symblepharon after MMCR are published in the literature comprising only seven total patients with hypothesized risk factors including long-term use of antiglaucoma medications and prior posterior approach eyelid surgeries[1,2]. Here we present a case of bilateral upper eyelid symblepharon following an uncomplicated bilateral MMCR as a manifestation of occult Sjogren's disease.

Methods: Case report and review of literature.

Results: A 61-year-old Hispanic female with relevant ocular history of dry eye syndrome, tattooed eyeliner, and bilateral upper eyelid ptosis underwent an uncomplicated bilateral MMCR. Her post-operative course at three months was notable for severe ocular surface dryness and painful binocular diplopia. Examination of the superior fornices revealed diffuse bilateral upper lid symblepharon. Laboratory testing identified high positive anti-SSA antibodies and an antinuclear antibody titer of 1:160, suggestive of Sjögren's-like connective tissue disease.

This patient's management involved bilateral lysis of adhesions and reconstruction of the upper eyelid fornices using amniotic membrane and buccal mucous membrane grafts. Histopathology of the adhesions revealed chronic inflammation without evidence of ocular cicatricial pemphigoid, granulomatous disease, infection, or neoplastic processes. The patient was started on PO methotrexate to prevent progression of cicatrization. At her most recent visit, the patient had significant improvement in symptoms with minimal recurrence of symblepharon of the right upper fornix and no recurrence of symblepharon of the left upper fornix.

Conclusions: This unique case highlights the importance of recognizing and addressing potential risk factors for postoperative cicatrization in patients undergoing posterior-approach ptosis repair. Early identification of pro-inflammatory conditions, potential use of perioperative immunosuppression, and tailored surgical approaches may help mitigate the risk of this severe complication.

(continued)

(continued)

Figure 1

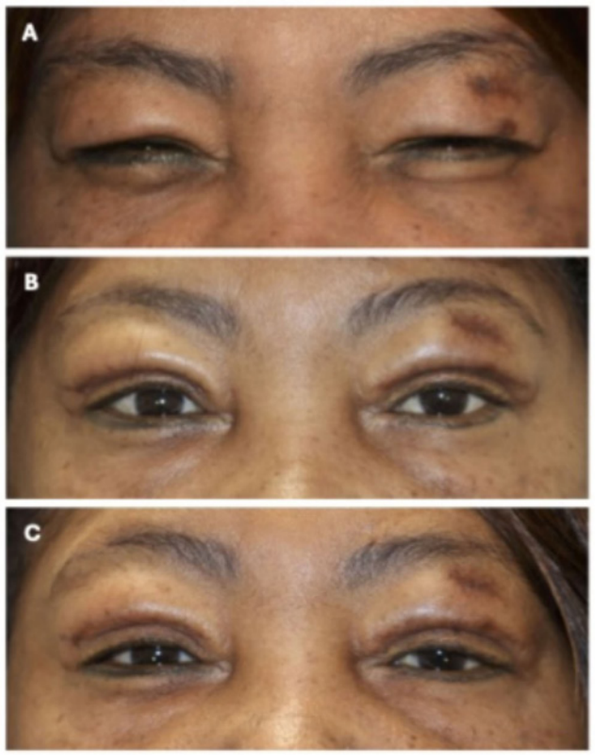
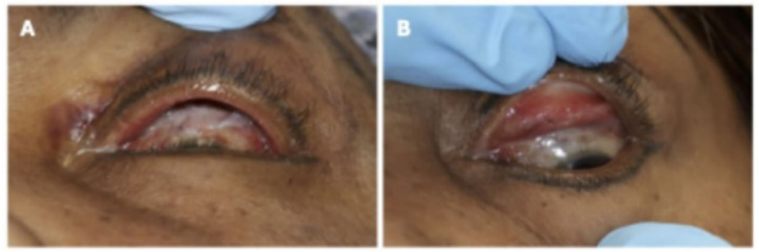


Figure 2



References:

1. Lee WW, Portaliou D, Sayed MS, Kankariya S. Diplopia and Symblepharon Following Mueller's Muscle Conjunctival Resection in Patients on Long-Term Multiple Antiglaucoma Medications. Ophthalmic Plast Reconstr Surg. 2017 May/Jun;33(3S Suppl 1):S79-S82.
2. Shoji MK, Al-Sharif E, Liu CY, Korn BS, Kikkawa DO. Shortened Fornix Syndrome After Posterior-Approach Ptosis Repair. Ophthalmic Plast Reconstr Surg. 2024 Dec 20.

7:40-7:43 am

Tunneled Fricke Flap for Upper Eyelid Reconstruction

Stephen Winkler[1,2], Will Conroy[3]
[1]Chicagoland Oculoplastic Consultants, Des Plaines, Illinois, United States, [2]Oculoplastics, Intent Medical Group, Arlington Heights, Illinois, United States, [3]University of Illinois College of Medicine Rockford, Rockford, Illinois, United States

Introduction: The Fricke flap, first described by Joachim Fricke in 1829, is a temporally based mono pedicle flap that can be utilized in upper and lower eyelid reconstruction.[1,2] The flap requires extension to the lateral canthus and can be executed as either an integrated design with the surrounding skin or as a bridge configuration that necessitates secondary surgery.

Tunneled flaps have been widely reported in the reconstruction of various periocular defects, with most applications focusing on medial canthal reconstruction.[3,4] We present a unique case of a patient with upper eyelid retraction and lagophthalmos secondary to middle lamellar scarring. The defect was successfully corrected with a tunneled Fricke flap, demonstrating its utility for complex eyelid reconstruction. To our knowledge this is the first surgical description of this flap.

Methods: An 86-year-old female with a history of MALT lymphoma of the lacrimal gland, treated with radiation therapy, underwent two previous surgeries for lagophthalmos and retraction of her right eye. Her initial procedure, a full thickness blepharotomy with ectropion repair, resulted in a residual lagophthalmos of 5 mm. She subsequently underwent a second surgery involving eyelid spacer placement, fat translocation, and permanent tarsorrhaphy which initially achieved full eyelid closure.

However, she was noted to have avascular scar tissue secondary to radiation resulting in middle lamellar scarring and decreased mobility of the upper eyelid with adhesion to the orbital rim and remnants of the lacrimal gland. The patient had normal fornix depth and dermatochalasis of the upper eyelid. By six months postoperatively, the scar tissue recurred, and she developed 3 mm of lagophthalmos with gentle closure. Despite topical therapy, including erythromycin and preservative free tears, the patient's corneal degeneration progressed.

Due to the avascular scar tissue, a vascularized island pedicle flap was planned to restore volume and create a buffer over the orbital rim. This variation of a Fricke flap was tunneled just anterior to the periosteum at the lateral brow head and placed into the defect of the upper eyelid. The skin island of the tunneled pedicle flap was utilized to aid in further lowering the lid.

(continued)

(continued)

Results: At postoperative month four, the patient achieved full closure of the eyelid without the need for forced closure. Furthermore, there was complete resolution of corneal haze, injection, and photophobia. The eye appeared white and quiet, and the patient had decreased her need for topical lubrication. Examination revealed a ptosis with an MRD1 of 0.5 mm. The skin portion of the pedicled flap demonstrated excellent integration into the upper eyelid, contributing to a stable and functional outcome.

Conclusions: Middle lamellar scarring is a recognized complication in lower eyelid surgery and a result of scarring of the septum.[5] Upper eyelid retraction is most commonly associated with thyroid eye disease but can also result from postsurgical and post traumatic damage, potentially leading to lamellar scarring.[6] Few papers exist on upper eyelid retraction as a result of middle lamellar scarring. We theorize this is due to the robust blood supply of the levator muscle, the length and path of travel of the muscle and the assistance of gravity. This report highlights a novel technique for repairing upper eyelid retraction caused by middle lamellar scarring, which may also prove valuable in addressing anterior lamellar scarring and reconstructive challenges in similar cases.

Figure 1



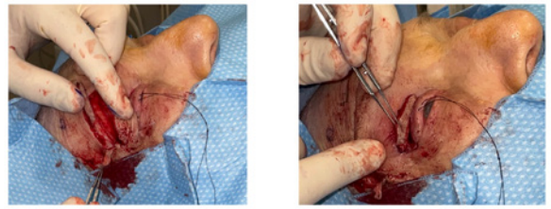
Initial presentation following first surgery from outside surgeon

Figure 2



Postop week 1 vs Postop month 6 from secondary surgery including eyelid spacer graft and fat translocation

Figure 3



Intraoperative photos demonstrating development of Fricke flap with skin island pedicle and position of flap once tunneled into upper eyelid

Figure 4



Post op month 4 with complete closure from tunneled Fricke flap

(continued)

(continued)

References:

1. Fricke JCG. Die Bildung neuer Augenlieder (Blepharoplastik) nach Zerstörungen und dadurch hervorgebrachten Auswärtswendungen derselben. Hamburg: Pethes und Bessler; 1829.
2. Yan Y, Fu R, Ji Q, et al. Surgical Strategies for Eyelid Defect Reconstruction: A Review on Principles and Techniques. *Ophthalmol Ther*. 2022;11(4):1383-1408. doi:10.1007/s40123-022-00533-8
3. Brundridge WL, Sismanis DN, Altman AH, DeBacker CM, Holck DEE. Single-staged Tunneled Forehead Flap for Medial Canthal and Eyelid Reconstruction. *Plast Reconstr Surg Glob Open*. 2022;10(4):e4223. Published 2022 Apr 22. doi:10.1097/GOX.0000000000004223
4. Grassetti L, Bottoni M, Torresetti M, Di Benedetto G. Merkel cell carcinoma of the upper eyelid: when reconstruction becomes a challenge. *Arch Plast Surg*. 2015;42(2):257-259. doi:10.5999/aps.2015.42.2.257
5. Patipa M. The evaluation and management of lower eyelid retraction following cosmetic surgery. *Plast Reconstr Surg*. 2000;106(2):438-459. doi:10.1097/00006534-200008000-00033
6. Mancini R. Managing eyelid malpositions with hyaluronic acid gel injections. *Int Ophthalmol Clin*. 2013;53(3):11-20. doi:10.1097/IIO.0b013e31828b7d45

7:43-7:46 am

Projecting the Future Need of Oculoplastic Surgeons by 2031

Kathryn Winkler[1,2], Durdana Shah[3]
[1]Chicagoland Oculoplastics Consultants, PLLC, Des Plaines, Illinois, United States, [2]Ophthalmology, Rush University Medical Center, Chicago, Illinois, United States, [3]School of Medicine, Rush University Medical Center, Chicago, Illinois, United States

Introduction: The demand for oculoplastic surgeons (OPS) in the United States is expected to grow due to the increasing Medicare population aged 65 and older. Currently, there are 55 ASOPRS-approved oculofacial fellowships in the US, which graduate roughly 15-20 fellows annually. As of April 2024, there are approximately 1,238 oculoplastic surgeons (OPS) in the US[1]. The purpose of this study is to project the future need of OPS by 2031 and assess whether the current fellowship system will be sufficient to meet the increasing surgical demand of the aging population.

Methods: Population data for individuals aged 65 and older was gathered from the U.S. Census Bureau's Age and Sex Composition in the United States (Table 1), covering the years 2011 to 2021.

To determine the number of Medicare-allowed procedures, the CMS Part B National Summary Data File was analyzed for the same period. Additionally, the Medicare Physician & Other Practitioners - by Provider and Service dataset was used to calculate the average number of procedures performed by each OPS annually, covering the years 2013 to 2022.

Furthermore, the procedure rate per capita was calculated by dividing the number of allowed procedures by the Medicare population age 65+. Next, future population growth from 2022 to 2031 was forecasted using the Compound Annual Growth Rate (CAGR). Then, future procedure demand was estimated by multiplying the procedures per capita by the future population estimates. Finally, the required number of OPS was calculated by dividing the future procedure demand by the average number of procedures performed by each OPS annually.

Results: Even though the number of cases seems to be higher in 2011 than in 2021, there has been a steady rise in the 65+ population. Applying a fixed 3.6% annual growth rate, the 65+ population is projected to surpass 79 million by 2031. Consequently, our model projects that total oculoplastic procedure demand will rise by approximately 38% from 2022 to 2031 with an estimated 1,351 OPS needed by 2031. This requirement slightly exceeds the current pool of 1,238 OPS (as of 2024). Although 15–20 new fellows enter the workforce each year, these additions may be offset by retiring surgeons if retirement rates accelerate.

(continued)

(continued)

Conclusions: The data suggests that, under conservative assumptions of procedure growth and surgeon throughput, the existing workforce may be sufficient to meet future demand. However, this conclusion hinges on stable retirement rates and consistent practice patterns. If a large cohort of experienced OPS retires, demand could surpass supply. Ongoing monitoring of fellowship graduation rates, retirement trends, and evolving procedure volumes is essential for ensuring adequate access to oculoplastic care over the next decade.

References:

1. Paramo R, Zong AM, Barmettler A. Socioeconomic Disparities Associated with Access to Oculofacial Plastic Surgeons: A Cross-Sectional Analysis of US County Demographics. *Ophthalmology*. 2024;131(4):492-498. doi:10.1016/j.ophtha.2023.10.020

7:46-7:49 am

A Unique Case of Pediatric Orbital Nodular Fasciitis with a Confirmed USP6 Fusion Mutation Mimicking a Dermoid Cyst

Natalie (Homer) Hoesly[1], Pooya Roozdar[2], Jonathan Lin[3], Rachel Frauches[4]
[1]Department of Ophthalmology, Oregon Health & Science University, Portland, Oregon, United States, [2]Department of Otolaryngology, Stanford University, Palo Alto, California, United States, [3]Departments of Pathology and Ophthalmology, Stanford University, Palo Alto, California, United States, [4]Department of Pathology, Stanford University, Palo Alto, California, United States

Introduction: Nodular fasciitis is a benign pseudoneoplastic condition characterized by proliferation of connective tissue within the superficial fascia. It is often misdiagnosed as a sarcoma due to its rapid growth and histological features such as high cellularity, mitotic index and infiltrative borders. Orbital manifestations are infrequent. Herein we present a unique case of orbital nodular fasciitis in a pediatric patient and highlight the importance of molecular testing in correctly identifying this pathology.

Methods: Case report.

Results: A 7-year-old patient presented with a 4-month history of a painless, enlarging left superolateral orbital mass located along the zygomaticofrontal suture line (Figure 1). Ultrasound confirmed presence of a 7.5 mm cystic mass. The location and ultrasound characteristics were suggestive of a dermoid cyst. The lesion was resected via an upper eyelid crease orbitotomy and submitted for histopathologic evaluation.

Microscopic sections demonstrated a well-circumscribed small proliferation of spindle cells associated with focal inflammation and extravasated erythrocytes (Figure 2A-B). The spindle cells appear cytologically bland without malignant features. Additional immunohistochemistry staining was conducted. SMA (Figure 2C), CD34, CD31, BETACATENIN and ERG stains highlighted vascular endothelial cells. S100 was scattered positive. CD68, CD163 and VIMENTIN (Figure 2D) were strongly positive on spindle cells. These results favored a benign spindle cell neoplasm, with differential diagnosis including fibrous histiocytoma, nodular fasciitis and myofibroma. A next generation sequencing test was performed to further classify lesion and refine diagnosis. UBC::USP6 fusion was identified, confirming the diagnosis of nodular fasciitis.

The patient recovered well from surgery and at 11-month follow-up remains without recurrence.

(continued)

(continued)

Conclusions: Nodular fasciitis most commonly presents as a rapidly growing, firm, and often mobile and painful subcutaneous tumor affecting the upper limbs (39–54% of cases), trunk (15–20% of cases), lower limbs (16–18% of cases), and head or neck area (20% of cases), with < 1% of all reported cases occurring in the orbit.[1-3] Imaging studies such as ultrasonography, CT, or MRI can help characterize features of nodular fasciitis.[4-5] Definitive diagnosis requires histopathologic evaluation.

Histologically, nodular fasciitis may be mistaken for low-grade sarcomas due to its cellularity and mitotic figures, but the absence of atypia, necrosis, and the low Ki-67 index support a benign diagnosis.[6] In the current case, the location and cystic nature resembeled a dermoid cyst. Molecular testing is essential to evaluate for a recurrent diagnostic translocation present in nodular fasciitis, fusing the coding region of USP6 to the promoter region of MYH9, and resulting in increased USP6 expression. In the context of nodular fasciitis, the majority of cases exhibit increased USP6 expression driven by fusions that put the gene under the control of the MYH9 promoter.[7] In the case herein the UBC::USP6 fusion identification supported the diagnosis of nodular fasciitis. Notably, this case represents the first pediatric orbital nodular fasciitis with UBC::USP6 fusion profile. This detection is very helpful in distinguishing this lesion type from its malignant counterparts.

Management of nodular fasciitis is via complete surgical excision.[1,2,8-10] Recurrences are rare, with a recurrence rate of 1-2%.[8]

This case demonstrates the value of molecular diagnostics in differentiating benign reactive processes from more aggressive neoplasms, particularly in pediatric orbital lesions, where misdiagnosis could lead to overtreatment.

Figure 1

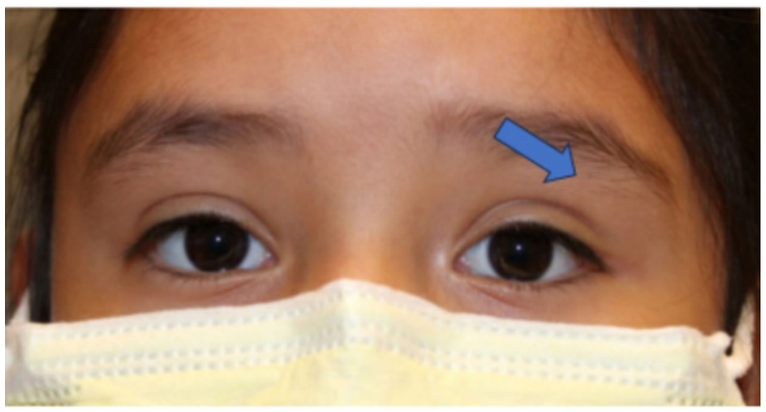
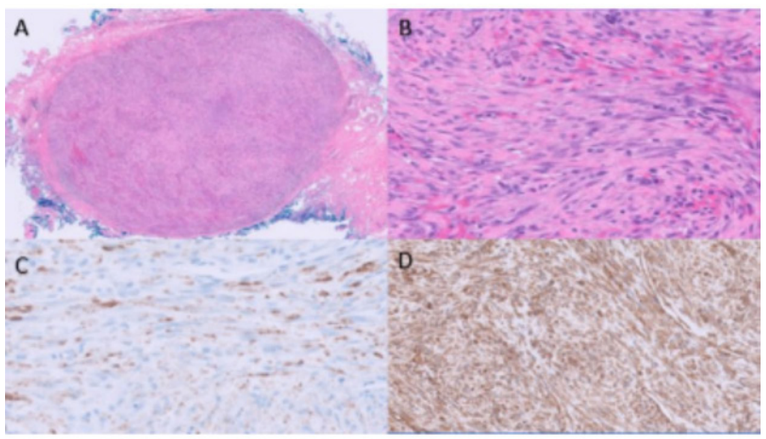


Figure 2



(continued)

(continued)

References:

1. McBurney C, Zhang S, Morris S. Nodular fasciitis of the orbit: rapid growth phase post iatrogenic incisional trauma. J Surg Case Rep. 2024;2024(2):rjae023. Published 2024 Feb 3. doi:10.1093/jscr/rjae023
2. Hseu A, Watters K, Perez-Atayde A, Silvera VM, Rahbar R. Pediatric nodular fasciitis in the head and neck: evaluation and management. JAMA Otolaryngol Head Neck Surg. 2015;141(1):54-59. doi:10.1001/jamaoto.2014.2797
3. Spinelli N, Khorassani N. Nodular fasciitis: an uncommon disease with common medical management challenges at a remote Naval Hospital. Mil Med. 2013;178(9):e1051-e1054. doi:10.7205/MILMED-D-13-00176
4. Kim ST, Kim HJ, Park SW, Baek CH, Byun HS, Kim YM. Nodular fasciitis in the head and neck: CT and MR imaging findings [published correction appears in AJNR Am J Neuroradiol. 2006 Feb;27(2):249. Baek, Jung Hwan [corrected to Baek, Chung Hwan]]. AJNR Am J Neuroradiol. 2005;26(10):2617-2623.
5. Leung LY, Shu SJ, Chan AC, Chan MK, Chan CH. Nodular fasciitis: MRI appearance and literature review. Skeletal Radiol. 2002;31(1):9-13. doi:10.1007/s002560100411
6. Erber R, Agaimy A. Misses and near misses in diagnosing nodular fasciitis and morphologically related reactive myofibroblastic proliferations: experience of a referral center with emphasis on frequency of USP6 gene rearrangements. Virchows Arch. 2018;473(3):351-360. doi:10.1007/s00428-018-2350-0
7. Patel NR, Chrisinger JSA, Demicco EG, et al. USP6 activation in nodular fasciitis by promoter-swapping gene fusions. Mod Pathol. 2017;30(11):1577-1588. doi:10.1038/modpathol.2017.78
8. Paliogiannis P, Cossu A, Palmieri G, et al. Breast Nodular Fasciitis: A Comprehensive Review. Breast Care (Basel). 2016;11(4):270-274. doi:10.1159/000448185
9. Yver CM, Husson MA, Friedman O. Pathology Clinic: Nodular Fasciitis Involving the External Ear. Ear Nose Throat J. 2023;102(5):NP203-NP205. doi:10.1177/01455613211001958
10. Katahashi T, Shimada F, Omura K, Makino S, Matsuzaki O. A case of nodular fasciitis arising in the auricle. Auris Nasus Larynx. 1995;22(1):59-64. doi:10.1016/s0385-8146(12)80184-2

7:49-7:52 am

The Use of the Fasanella-Servat Technique for Revisional Ptosis Repair

Maja Magazin[1], Ann Tran[2], Andrea Tooley[3]
[1]Department of Ophthalmology, Hamilton Eye Institute, Memphis, Tennessee, United States, [2]Department of Ophthalmology, Illinois Eye and Ear Infirmary, Chicago, Illinois, United States, [3]Department of Ophthalmology, Mayo Clinic, Rochester, Minnesota, United States

Introduction: The reported reoperation rate following ptosis repair ranges between 9 and 22%.[1-2] However, there are limited descriptions in the literature regarding secondary revision techniques for residual ptosis. The purpose of this study is to evaluate the efficacy of utilizing the Fasanella-Servat (FS) technique for reoperation of residual ptosis following primary repair with external levator advancement (ELA) and muller-muscle conjunctival resection (MMCR).[3]

Methods: A multi-centered retrospective chart review was conducted to review all patients undergoing reoperation for residual ptosis with the FS technique between August 2020 and December 2023 by two surgeons (AAT and AQT) due to unsatisfactory lid elevation or lid height asymmetry following primary ptosis repair. Data collected included age, sex, pre- and post-operative MRD1, pre-operative levator excursion, primary repair, time to revisional surgery, and peri-operative complications. A successful revisional outcome was defined as MRD1 between 3 and 4 mm and an inter-lid MRD1 difference $\leq$0.5mm.

Results: A total of 44 patients (49 eyelids) were included in this study. Five patients underwent bilateral revisions. The majority of patients were female (57%), and the mean age was 65 years (range: 18-86 years). The mean pre-operative MRD1 was 1.51 mm and 1.11 mm, in the right and left eye respectively. The average levator excursion was 14.35 mm, and 14.37 mm in the right and left eye respectively. A primary repair was performed with ELA in 82% of patients, and with MMCR in 18%. The mean post-operative MRD1 after primary repair was 2.53 mm, and 2.40 mm, in the right and left eye, respectively, with an inter-lid asymmetry of 1.25 mm. Five patients (11%) experienced prolonged edema, all following primary ELA. The mean time to revisional FS surgery was 197 days. The mean post-revision MRD1 was 3.30 mm, and 3.20 mm in the right and left eye, respectively, with an inter-lid asymmetry of 0.27 mm. The mean improvement in MRD1 after revision with FS was 1.41 mm, and 1.30 mm, in the right eye and left eye, respectively. A successful outcome based on MRD-1, as defined above, was achieved in 82% of revised eyelids. Postoperative symmetry within 0.5 mm was achieved in 39 patients (89%), and in all patients within 1 mm (100%). Two patients required post-operative adjustments. There were no contour abnormalities.

(continued)

(continued)

Conclusions: Unsatisfactory lid height following primary ptosis repair may require revisional surgery, especially in the setting of prolonged post-operative edema. The FS technique provides excellent outcomes with lid height and symmetry, as well as the option of post-operative adjustment.[2] The FS procedure may be a good option for residual ptosis repair in patients with ≤ 2 mm of asymmetry with good eyelid excursion.

References:

1. Mangan MS, Cakir A, Ercalik NY, et al. Efficacy of the Müller Muscle-Conjunctival Resection for the Correction of Unilateral Ptosis following External Levator Operations in Patients with Bilateral Involutional Ptosis. Plast Reconstr Surg. Published online 2021:195E-199E.
2. Ozturk Karabulut G, Fazil K, Karaagac Gunaydin Z, Serefoglu Cabuk K, Onmez FE, Taskapili M. Müller muscle conjunctiva resection for revision of residual ptosis after external levator advancement surgery. Ophthal Plast Reconstr Surg. 2020;36(5):458-462.
3. Tran AQ, Demaria LN, Nair AA, Tooley AA, Godfrey KJ, Lisman RD. Adjustable ptosis correction via posterior levator advancement with minimal superior tarsectomy. Ophthal Plast Reconstr Surg. 2021;37(1):86-90.

8:04-8:10 am

Infraorbital Fat Grafting: Four Years of Refining My Technique

Paul Phelps[1,2,3]

[1]Chicago Oculofacial Plastic Surgery, Chicago, Illinois, United States, [2]Cook County Health, Chicago, Illinois, United States, [3]Northwestern Medicine, Chicago, Illinois, United States

Introduction: There is a clear shift in the aesthetic industry away from synthetic fillers—particularly in the infraorbital region—as patients increasingly demand more long-lasting and predictable outcomes. Autologous fat grafting has emerged as an appealing alternative to hyaluronic acid and PMMA fillers, offering a relatively low-risk procedure that can often be performed in an office setting and combined with lower blepharoplasty techniques to augment results. Despite these advantages, fat grafting remains underutilized by many oculofacial plastic surgeons. In this presentation, I will discuss fundamental techniques for harvesting, processing, and delivering autologous fat, as well as the critical preoperative, intraoperative, and postoperative factors that ultimately determine success.

Methods: A retrospective review of all cases of autologous fat grafting over the past four years was undertaken. Various techniques and results were evaluated for efficacy based on patient satisfaction and reults on before and after photos. Fat grafting focused on the infraorbital region and lower eyelid contour enhancement. Patients were evaluated preoperatively to assess volume deficits and candidacy for adjunct lower blepharoplasty. Following informed consent, fat was harvested from either the abdomen or lateral thighs using a low-pressure, tumescent-assisted technique to minimize trauma. The aspirate was then processed through various methods including centrifugation, gravity decanting, and closed system filtration. Under local anesthesia with optional sedation, small aliquots of purified fat were injected via blunt microcannulas in multiple tissue planes, ensuring even distribution. A meticulous layering technique was employed to refine contours and minimize complications. Postoperative care included instructions for cold compresses, head elevation, and activity restrictions to optimize graft survival. Clinical follow-up occurred at regular intervals to monitor graft retention, assess aesthetic outcomes, and address any adverse events.

(continued)

(continued)

Results: Forty cases of periorbital fat grafting were identified and evaluated. Patients ranged in age from 32 to 68 years, with a mean follow-up duration of eight months. Based on standardized before-and-after photographs and patient-reported satisfaction, 86% demonstrated marked improvement in infraorbital fullness and lower eyelid contour. In many instances, adjunct lower blepharoplasty further enhanced aesthetic outcomes. Mild postoperative bruising and edema were the most common observations, typically resolving within two weeks. No major complications were encountered, and only three patients (7.5%) required minor touch-up injections for optimal contour refinement. Overall, patient satisfaction remained high, reflecting consistent graft retention and natural-appearing results.

Conclusions: This four-year retrospective analysis of 40 periorbital fat grafting cases underscores the effectiveness and safety of autologous fat as a reliable option for infraorbital enhancement and lower eyelid contour refinement. Patient satisfaction was high, with an 86% noted improvement and minimal complications observed. The layering technique, careful patient selection, and adjunct lower blepharoplasty appear to be key factors driving consistent outcomes and natural-appearing results. Overall, the findings support incorporating autologous fat grafting into oculofacial rejuvenation protocols, offering both durable aesthetic improvements and a favorable side-effect profile for patients seeking periorbital enhancement.

References:

1. Massry, Guy G., and Babak Azizzadeh. "Periorbital fat grafting." *Facial Plastic Surgery* 29.01 (2013): 046-057.
2. Marten, Timothy, and Dino Elyassnia. "Periorbital fat grafting: a new paradigm for rejuvenation of the eyelids." *Facial Plastic Surgery Clinics* 29.2 (2021): 243-273.
3. Yang, Fan, et al. "Efficacy, safety and complications of autologous fat grafting to the eyelids and periorbital area: A systematic review and meta-analysis." *PloS one* 16.4 (2021): e0248505.
4. Trepsat, Frank. "Periorbital rejuvenation combining fat grafting and blepharoplasties." *Aesthetic plastic surgery* 27 (2003): 243-253.
5. Glasgold, Robert A., Samuel M. Lam, and Mark J. Glasgold. "Periorbital fat grafting." *Master techniques in blepharoplasty and periorbital rejuvenation* (2011): 259-272.

8:13-8:19 am

Redefining the Direct Brow Lift: The Key Role of Raising the ROOF

Narmien Murdock[1,2], Cat Burkat[3], Kenneth Morgenstern[1]
[1]Department of Ophthalmic Plastic and Reconstructive Surgery, Morgenstern Center for Orbital and Facial Plastic Surgery, Wayne, Pennsylvania, United States, [2]Department of Ophthalmic Plastic and Reconstructive Surgery, Wills Eye Hospital, Philadelphia, Pennsylvania, United States, [3]Oculoplastics, Orbital, & Cosmetic Facial Surgery, Dept of Ophthalmology & Visual Sciences, University of Wisconsin - Madison, Madison, Wisconsin, United States

Introduction: Aging of the eyebrows affects patients both aesthetically and functionally, with the majority presenting with complaints of eyelid heaviness. Although numerous functional and cosmetic brow-lifting techniques exist, the role of the ptotic subbrow fat – specifically the retro-orbicularis oculi fat (ROOF)— has been relatively overlooked despite its critical contribution to brow-lifting outcomes. Two key mechanisms drive this process: gravitational descent and volume loss.[1,2] Descent of the ROOF, located between the orbicularis oculi muscle and the periosteum, plays a prominent role in temporal hooding and fullness.[3] The direct eyebrow lift is a well-established technique first described in the 1930s and is often performed for functional eyebrow lifting. Traditionally, it involves excision and closure of an elliptical segment of tissue above the eyebrow.[4,5] To our knowledge, relatively few modifications exist, none of which isolate and elevate the ROOF. Lee et al. reported suspension of the orbicularis oculi muscle to the frontalis.[6] Neves et al. recently described a technique involving "flipping" and suturing the anterior ROOF to the periosteum through a blepharoplasty incision.[3]

We present a modification to the direct eyebrow lift that incorporates dissection, mobilization, and repositioning of the ROOF superiorly. By leveraging the ROOF as a dynamic support structure and restoring its position, this technique restores eyebrow volume and youthful fullness while addressing a key contributor of ptosis-related hooding. The ROOF is sutured to the frontalis muscle instead of the periosteum to preserve natural eyebrow mobility with forehead expression.

Methods: Case series of seven male patients who underwent bilateral direct eyebrow lift with the described modification for age-related eyebrow ptosis. All patients described eyelid drooping, heaviness, and impaired peripheral vision. No concomitant surgical procedures (ie. blepharoplasty, ptosis repair) were performed.

(continued)

(continued)

The ROOF-lift procedure begins with a supraciliary eyebrow incision, during which an ellipse of tissue anterior to the frontalis is excised (Figure 1A). Dissection is then performed inferiorly, along the anterior surface of the ROOF, following the length of the incision. A separate horizontal incision is made superiorly along the frontalis muscle, taking care to avoid injury to the frontal branch of the facial nerve (Figure 1B). The upper third of the ROOF is then grasped and sutured into an elevated position to the superior edge of the frontalis incision with several sutures (Figure 1B-C). Brow contour and height are customized by adjusting the suture placement along the frontalis muscle or ROOF.

Preoperative and postoperative brow-reflex distance (BRD) was measured as a vertical line extending from the corneal light reflex to the inferior border of the brow using the ImageJ application on standardized patient photographs (Figure 2). Other measurements included: position of the brow peak above the orbital rim (in millimeters), brow fat fullness, temporal field shadowing, frontalis strength/paresis, and post-operative pain. There were no cases of frontalis paresis or palsy.

Results: Among seven patients, the mean preoperative BRD was 5.17mm and the mean postoperative BRD was 11.76mm. Brow contour was appropriate without peaking or poor curvature. All patients reported significant improvement in eyelid heaviness, satisfaction with the results, and none required revision. Complications were limited to transient edema and mild bruising, with no cases of asymmetry, frontalis paresis, or neural compromise.

Conclusions: This previously undescribed technique offers a simple modification in direct brow lifting that incorporates the anatomical and functional implications of the ROOF in eyebrow descent, as well as minimizes the flattening of the youthful brow volume as could be seen with dividing or flipping the brow fat. Ongoing studies aim to quantify patient satisfaction and evaluate long-term durability when compared to plication techniques.

(continued)

(continued)

Figure 1

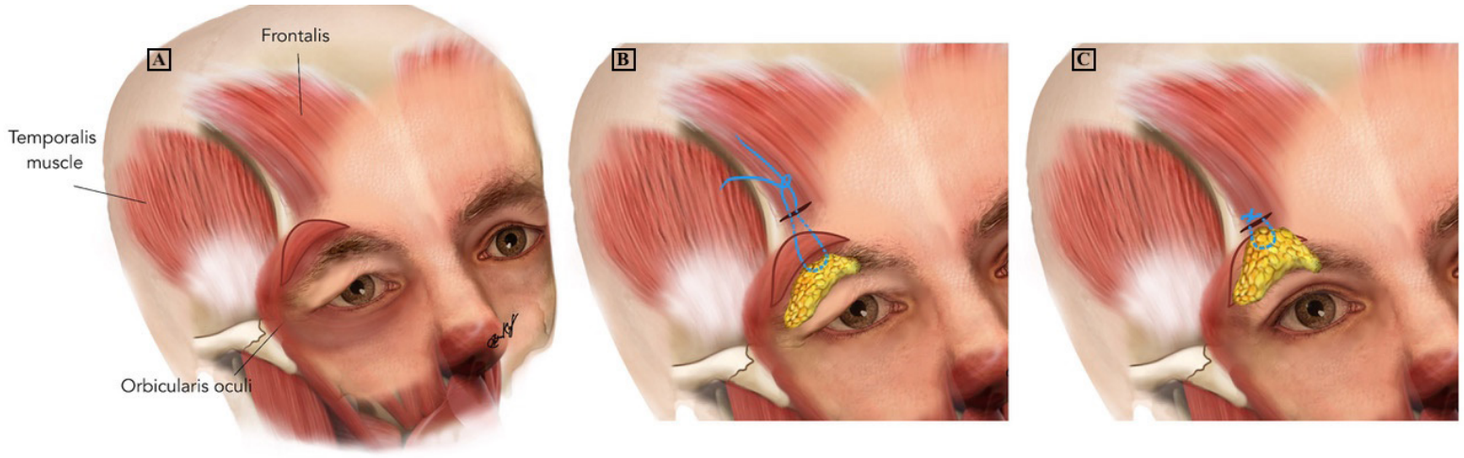


Figure 2



References:

1. Alex JC. Aesthetic considerations in the elevation of the eyebrow. Facial Plast Surg 2004;20(03):193–198
2. Mancini R. Nonsurgical considerations for addressing periocular aesthetics: a conceptual dimensional approach. JAMA Facial Plast Surg 2014;16(06):451–456
3. Neves JC, Duarte A. Eyebrow Lift: Open-Book ROOF Transposition and Orbicularis-Frontalis Sliding Maneuver. Facial Plast Surg. 2024 Apr 23.
4. Hunt HL. Plastic surgery of the head, face and neck. Philadelphia: Lea and Febinger, 1926.
5. Passot R. Chirurgie esthetique pure: techniques et results. Paris: Gaston Doin et Cie, 1930.
6. Lee JW, Cho BC, Lee KY. Direct brow lift combined with suspension of the orbicularis oculi muscle. Arch Plast Surg. 2013 Sep;40(5):603-9.

8:22-8:28 am

The Pretrichial Subcutaneous Temporal (PRESTO) Browlift

David Samimi[1,2], Alomi Parikh[1,2]
[1]Eyesthetica, Los Angeles, California, United States, [2]USC Roski Eye Institute, Los Angeles, California, United States

Introduction: Browlifts often play an essential role in upper-facial rejuvenation.[1] In a majority of patients, the temporal brow benefits most from elevation, as this improves brow shape and appearance of loose lateral upper eyelid skin. The approach, efficacy, durability, degree of invasiveness, and risk profile vary between temporal lift procedures.[2] A retro-hairline, subgaleal, deeper plane often requires endoscopic instrumentation performed in an operating room setting while smaller dissection, pretrichial, subcutaneous approaches are more easily performed with less instrumentation in office.[2-4]

We report results of our surgical technique, the pretrichial subcutaneous temporal (PRESTO) browlift. This technique can be performed relatively quickly in the office without special equipment and provides vertical lift to the tail of the brow.

Methods: A retrospective chart review of all patients who underwent the PRESTO browlift was performed. Patients were considered good surgical candidates if they had a hairstyle amenable to the pretrichial wound camouflage, no pre-operative relative medial brow ptosis or extreme lateral arch, and no extreme hair thinning or short forehead.

Surgical technique: An ellipse is marked along the lateral hairline (average length 30x15 mm). Local anesthetic is injected inferiorly in the subcutaneous plane with a 25g 1.5 inch needle. Skin is incised with a #15 blade and a skin only flap is excised, preserving subdermal fat. Sharp dissection begins a plane inferiorly between subcutaneous fat and frontalis. A double-prong hook provides superior traction on the composite skin-fat flap while blunt dissection is performed with slightly open facelift scissors towards the temporal brow. This facilitates separation of frontalis, vascular and nerve structures from undersurface of fat under direct visualization. The release is completed inferiorly only to a point of minimal tension on wound closure which is done with 2 deep 5-0 vicryl sutures and skin staples. The forehead is wrapped overnight with a light coban pressure bandage. Staples are removed on day 4-6.

Results: The PRESTO browlift was performed on 144 patients from 2021-2024 (143 female; median age 62; range 32-84). It was performed in the office (100 patients) or surgery center (44) with an average operative time of 20 minutes. The browlift was standalone in 6 patients or with other upper eyelid procedures in 138 (upper blepharoplasty:81; ptosis repair:50; fat grafting:23; TCA peel:13). Eleven patients reported mild numbness or paresthesias;resolved within 3 months. Wound modulation to soften thickening at the medial and lateral extent of the wounds with 1:1 kenalog 10 and 5-fluorouracil was performed in 18 cases (15:one injection; 3:series of injections) Complications included: skin necrosis (4 patients; resolved within 6 weeks); scar or bumps at the incision (11); asymmetry (4); pigmentary

(continued)

(continued)

changes(4); feeling the lift would ideally have been higher (2); suture infection (1). Complications were acceptable to all;overall patient and surgeon satisfaction with functional and aesthetic results was high in the entire cohort.

Conclusions: The PRESTO browlift is a relatively quick, low complication surgery that can be performed in the office with excellent patient satisfaction. A prospective study is underway to assess patient-reported outcomes.

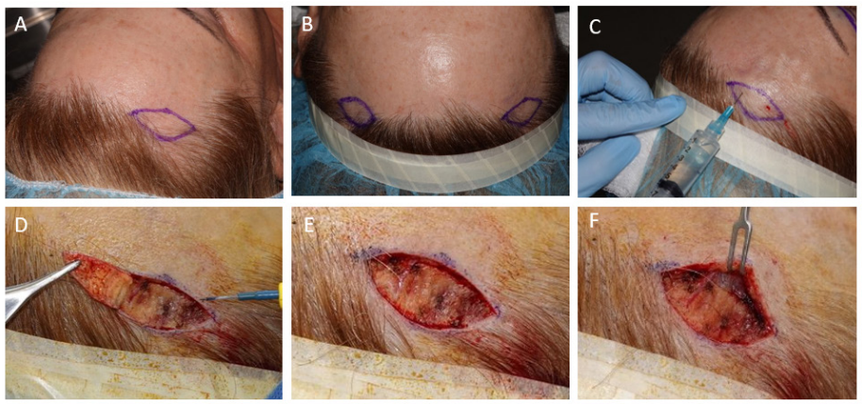


Figure 1: Surgical technique. (A) an ellipse of tissue measuring on average 30x15 cm is marked along the lateral hairline. (B) Tape and a hairnet are used to keep hair out of the surgical field. (C). Injection of local anesthetic inferiorly in a fanning fashion. (D) Skin flap only is excised. (E) Subdermal fat is preserved. (F) Dissection is started sharply in a plane inferiorly between subcutaneous fat and frontalis.

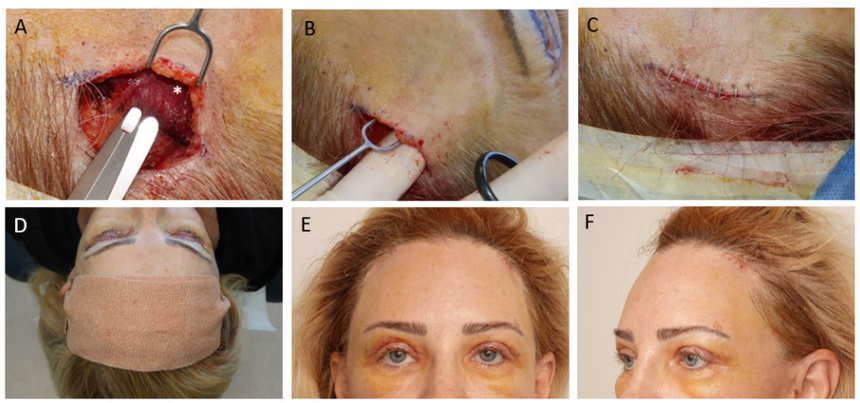


Figure 2: Surgical technique, continued. (A) Blunt dissection is performed with slightly open facelift scissors towards the temporal brow. Asterisk shows the plane of dissection with frontalis, nerve, and vascular structures peeled from the undersurface of fat. (B) The release is completed inferiorly to a point of minimal tension on wound closure. (C) The wound is closed with 2 deep 5-0 vicryl sutures and skin



Figure 3. Example photos of post-operative result. (A) Pre-operative photo; (B) post-op month 2 (concurrent upper blepharoplasty was performed); (C) pre-operative photo; (D) post-op month 2.5 (concurrent upper blepharoplasty was performed); (E) pre-operative photo; (F) post-op month 5 (concurrent upper and lower blepharoplasty and TCA peel to lower eyelids were performed).

(continued)

(continued)

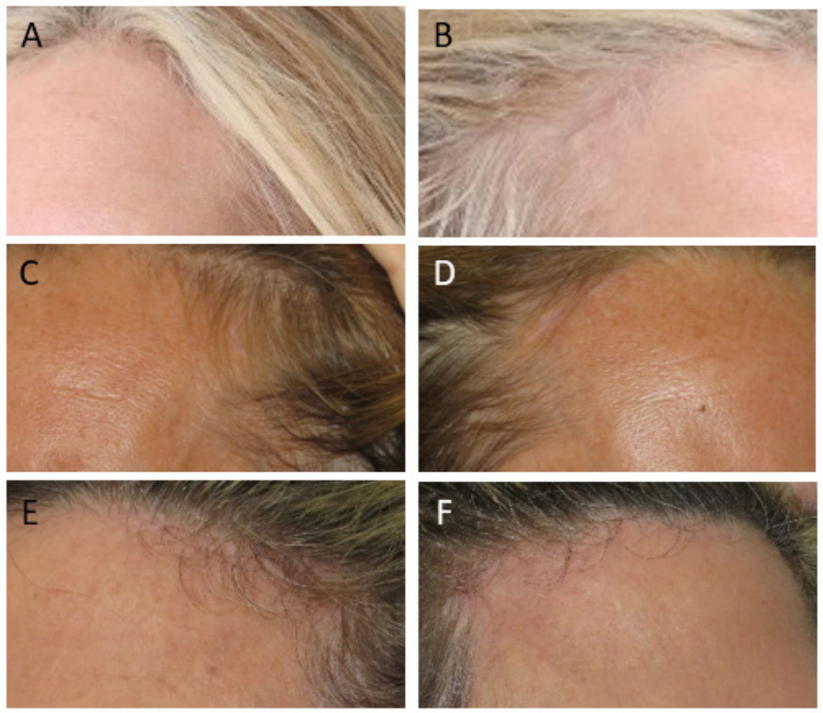


Figure 4. Example photos of temporal incision healing at (A, B) post-op month 2; (C, D) post-op month 2.5; (E, F) post-op month 5.

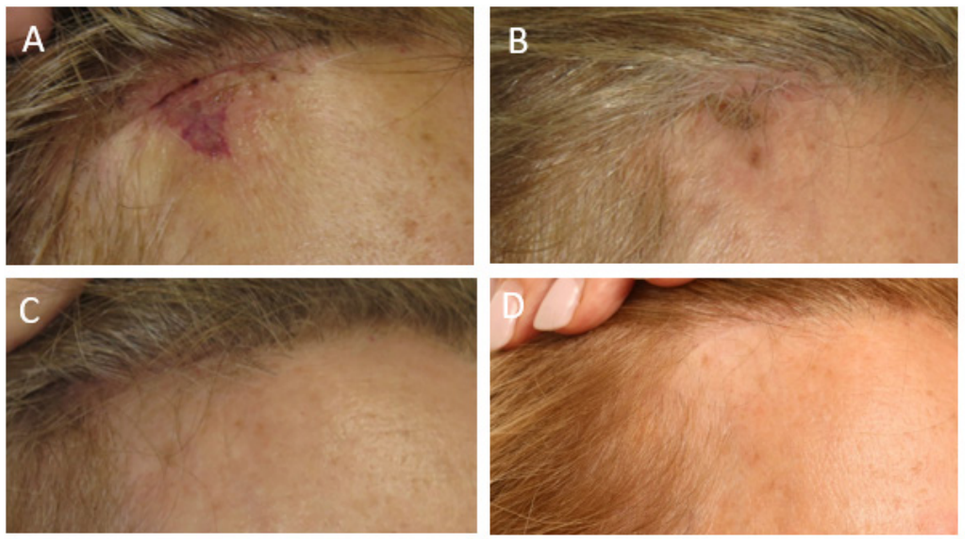


Figure 5. Example of skin necrosis at the inferior border of the temporal wound. (A) Triangular area of necrosis at post-operative week 1. (B) Improvement in necrosis at post-operative week 6 after using antibiotic ointment. (C) Post-op month 5, well healed. (C) Post-op year 1.

References:

1. Karimi N, Kashkouli MB, Sianati H, Khademi B. Techniques of Eyebrow Lifting: A Narrative Review. J Ophthalmic Vis Res. 2020 Apr 6;15(2):218-235. Doi: 10.18502/jovr.v15i2.6740. PMID: 32308957; PMCID: PMC7151508.
2. Fattahi T. Open Brow Lift Surgery for Facial Rejuvenation. Atlas Oral Maxillofac Surg Clin North Am. 2016 Sep;24(2):161-4. doi: 10.1016/j.cxom.2016.05.003. Epub 2016 Jun 16. PMID: 27499475.
3. Shirani G, Jalilian R, Shafiei E, Mohammadi F, Shamshiri A, Lotfi H. Evaluating the results of eyebrow lift by combining methods of subcutaneous flap and thread support in patients with droopy eyebrows. Skin Res Technol. 2023 Feb;29(2):e13284. doi: 10.1111/srt.13284. PMID: 36823510.
4. Martin M, Shah CT, Attawala P, Neaman K, Meldrum M, Hassan AS. Objective Brow Height Measurements Following Pretrichial Brow Lift and Upper Lid Blepharoplasty. J Cutan Aesthet Surg. 2016 Apr-Jun;9(2):93-6. Doi: 10.4103/0974-2077.184041. PMID: 27398009; PMCID: PMC4924421.

8:31-8:37 am

Electrocautery for Treatment of Prominent Superficial Eyelid and Facial Veins

Makayla McCoskey[1], Kendall Goodyear[1], Meghan McBride[1], Richard Allen[2], Tanuj Nakra[1,2]
[1]TOC Eye and Face, Austin, Texas, United States, [2]Department of Ophthalmology, Dell Medical School, University of Texas at Austin, Austin, Texas, United States

Introduction: Prominent veins in the periorbital skin can be aesthetically bothersome for patients, but unfortunately are generally difficult to treat. These vessels are often too large for treatment with traditional vascular-targeting lasers, injection of sclerosing agents comes with a high risk profile, and surgical excision or ligation would result in an incisional scar. Here, we demonstrate a safe, effective, and easily implemented procedure for transcutaneous, intravascular electrocautery treatment of prominent eyelid veins.

Methods: Surgical technique discussion.

Results: The prominent vein is identified and marked. A 24-guage angiocath is prepared for the procedure by removing 1-2 millimeters of the plastic catheter sheath just adjacent to the needle hub, exposing the underlying needle. This leaves only the hub-region and the needle tip with exposed metal, while the remainder of the needle remains covered by the catheter for insulation during the procedure. The angiocath is then used to cannulate the prominent superficial vein. The monopolar electrocautery tip on a low setting of 2-4 W is then applied to the exposed needle hub of the angiocath. Electrical energy traverses to the tip of the needle, ablating the cannulated vein. The insulation of the catheter protects the skin and other surrounding tissue from electrical/thermal injury (Figure 1). The cautery settings can be titrated to achieve the desired ablative effect, and multiple areas may be treated as needed.

In Figure 2, the left image demonstrates the prominent superficial eyelid vein to be treated; the right image shows the post-treatment effect, with complete resolution of the visible vein.

Conclusions: Transcutaneous, intravascular electrocautery using an angiocath is a safe, effective, readily available and easily implemented approach for treating unwanted prominent superficial eyelid and facial veins.

(continued)

(continued)

Figure 1



Figure 1: Intravenous cannulation with angiocath for electrocautery treatment.

Figure 2



Figure 2: Before and after electrocautery treatment to prominent superficial lower eyelid vein.

8:58-8:59 am

The Effect of "Single-Blinded" versus "Double-Blinded" Reviews on Publication Outcomes at the Journal Orbit: A Review of Data from 2022 to 2024

Christopher Dermarkarian[1], Sandra Stinnett[1], Richard Allen[2]
[1]Department of Ophthalmology, Duke University, Durham, North Carolina, United States, [2]Department of Ophthalmology, Baylor College of Medicine, Houston, Texas, United States

Introduction: Peer-review of journal articles is considered a vital step towards evaluating scientific research. Prior studies have demonstrated that certain biases, particularly towards author characteristics such as language, nationality, gender, and prestige, can affect the reliability of the peer-review process. We review data from *Orbit* to determine how transitioning from a single-blinded to a double-blinded peer review affected the manuscript review process and overall publication outcomes.

Methods: All demographic data, publication type (case report, letter to the editor, research article, review article, surgical technique), and publication outcomes of manuscripts submitted to *Orbit* were reviewed. Any manuscript that was rejected by the editor prior to peer review was excluded. Data from April 2022 to March 14th, 2023 (time period of single-blinded reviews) was compared to data from March 15th, 2023 to June 2024 (time period of double-blinded reviews). Statistical analysis was performed using SAS/STAT software (Version 9.4). Statistical significance was set at a p-value less than or equal to 0.05.

Results: Data from 469 manuscripts reviewed. 207 manuscripts were sent for peer review from 2022-23. 262 manuscripts were sent for peer review from 2023-24. In 2022-23, 107 (51.7%) manuscripts sent for peer review were accepted compared to 105 (40.1%) manuscripts in 2023-24 (P=0.015). When examining submission type, 10 (83.3%) review articles in 2022-23 were accepted as compared to 7 (36.8%) review articles in 2023-24 (P=0.024).

2023-24 manuscripts originating from the United States were less likely to be accepted when compared to 2022-23 manuscripts (P=0.014). When examining submission type, 2023-24 research articles originating from the United States were less likely to be accepted when compared to 2022-23 research articles (P=0.021).

(continued)

(continued)

2022-23 manuscripts originating from the United States were more likely to be accepted when compared to 2022-23 manuscripts originating from foreign countries (P=0.030). When examining submission type, 2022-23 research articles originating from the United States were more likely to be accepted when compared to their foreign counterparts (P=0.009). These findings were not seen in 2023-24.

Conclusions: Manuscripts submitted to *Orbit* after transitioning from single-blinded to double-blinded review were less likely to be accepted for publication. Interestingly, less time was needed to review journal articles after adopting a double-blinded review process. This contradicts previous articles demonstrating the increased work associated with double-blinded reviews. There was a bias towards accepting publications that originated from the United States in 2022-2023. This finding was not seen after transitioning to a double-blinded review process, suggesting that a double-blinded review may help to limit the extent of biases in the peer-review process.

Figure 1

Revised 16 Dec 2024

Decisions

Type of Submission	2022-2023			2023-2024			P-value*
	N	Accept	Reject	N	Accept	Reject	
All types	207	107 (51.7)	100 (48.3)	262	105 (40.1)	157 (59.9)	**0.015**
Case Report	95	48 (50.5)	47 (49.5)	127	57 (44.9)	70 (55.1)	0,418
Letter to the Editor	0	0	0	2	2 (100)	0	---
Research Article	87	42 (48.3)	45 (51.7)	101	36 (35.6)	65 (64.4)	0.102
Review Article	12	10 (83.3)	2 (16.7)	19	7 (36.8)	12 (63.2)	**0.024**
Surgical Technique	13	7 (53.8)	6 (46.1)	13	3 (23.1)	10 (76.9)	0.226

P-value based on Fisher's exact test.

Revisions

Submission Type	Number of Revisions	2022-2023	2023-2024	P-value*
All	0	106 (51.2)	157 (59.9)	0.079
	1	79 (38.2)	84 (32.1)	
	2	21 (10.1)	19 (7.2)	
	3	1 (0.5)	2 (0.8)	
Case Report	0	49 (51.6)	72 (56.7)	0.169
	1	39 (41.0)	52 (40.9)	
	2	6 (6.3)	3 (2.4)	
	3	1 (1.0)	0	
Letter to the Editor	0	0	2 (100.0)	---
Research Article	0	48 (55.2)	62 (61.4)	0.699
	1	26 (29.9)	24 (23.8)	
	2	13 (14.9)	13 (12.9)	
	3	0	2 (2.0)	
Review Article	0	3 (25.0)	12 (63.2)	0.085
	1	7 (58.3)	5 (26.3)	
	2	2 16.67	2 (10.5)	
Surgical Technique	0	6 (46.1)	9 (69.2)	0.492
	1	7 (53.8)	3 (23.1)	
	2	0	1 (7.7)	

P-value based on Cochran-Armitage test of difference in trend of proportions.

Figure 2

Revised 16 Dec 2024

Days

Submission Type	Statistic	2022-2023	2023-2024	P-value*
All	N	207	262	
	Mean (SD)	66.9 (50.4)	57.9 (43.7)	0.064
	Min, Median, Max	8, 49, 280	8, 45.5, 295	
Case Report	N	95	127	
	Mean (SD)	57.67 (40.54)	54.26 (34.44)	0.769
	Min, Median, Max	8.0, 45.0, 198.0	8.0, 48.0, 163.0	
Letter to the Editor	N	2		
	Mean (SD)	8.50 (0.71)		---
	Min, Median, Max	8.0, 8.5, 9.0		
Research Article	N	87	101	
	Mean (SD)	76.48 (59.61)	61.39 (51.30)	**0.051**
	Min, Median, Max	8.0, 55.0, 280.0	8.0, 42.0, 295.0	
Review Article	N	12	19	
	Mean (SD)	71.42 (44.9)	70.32 (55.27)	0.570
	Min, Median, Max	23.0, 51.0, 148.0	20.0, 47.0, 233.0	
Surgical Technique	N	13	13	
	Mean (SD)	65.31 (46.10)	55.69 (39.92)	0.778
	Min, Median, Max	10.0, 45.0, 149.0	10.0, 42.0, 133.0	

P-value based on Wilcoxon rank sum test.

Figure 3

Revised 16 Dec 2024

Submissions by Country

Type of Submission	2022-2023			P-value* for Difference Between Countries	2023-2024			P-value* for Difference Between Countries	P-value*for Difference Between Time Periods By Country
	Country	Accept	Reject		Country	Accept	Reject		
All types	US	53 (64.6)	29 (35.4)	**0.003**	US	41 (45.0)	50 (55.0)	0.178	**0.014**
	Other	54 (43.2)	71 (56.8)		Other	57 (35.8)	102 (64.2)		0.222
	Missing	0	0		Missing	7	5		
Case Report	US	23 (57.5)	17 (42.5)	0.301	US	24 (54.6)	20 (45.4)	0.092	0.828
	Other	25 (45.4)	30 (54.5)		Other	30 (38.5)	48 (61.5)		0.476
	Missing	0	0		Missing	0	0		
Letter to the Editor	US	0	0	---	US	0	0	---	---
	Other	0	0		Other	2 (100.0)	0		---
	Missing	0	0		Missing	0	0		
Research Article	US	23 (65.7)	12 (34.3)	**0.009**	US	14 (37.8)	23 (62.2)	0.512	**0.021**
	Other	19 (36.5)	33 (63.5)		Other	18 (31.0)	40 (69.0)		0.552
	Missing	0	0		Missing	0	0		
Review Article	US	6 (100.0)	0	0.454	US	3 (50.0)	3 (50.0)	0.627	0.182
	Other	4 (66.7)	2 (33.3)		Other	4 (33.3)	8 (66.7)		0.321
	Missing	0	0		Missing	0	0		
Surgical Technique	US	1 (100.0)	0	1.000	US	0	4 (100.0)	0.496	0.200
	Other	6 (50.0)	6 (50.0)		Other	3 (33.3)	6 (66.7)		0.660
	Missing	0	0		Missing	0	0		

P-value based on Fisher's exact test

References:

1. O'Connor EE, Cousar M, Lentini JA, Castillo M, Halm K, Zeffiro TA. Efficacy of Double-Blind Peer Review in an Imaging Subspecialty Journal. AJNR Am J Neuroradiol. 2017 Feb;38(2):230-235. doi: 10.3174/ajnr.A5017. Epub 2016 Nov 17. PMID: 27856433; PMCID: PMC7963809.
2. Parmanne, P., Laajava, J., Järvinen, N. *et al.* Peer reviewers' willingness to review, their recommendations and quality of reviews after the Finnish Medical Journal switched from single-blind to double-blind peer review. *Res Integr Peer Rev* 8, 14 (2023). https://doi.org/10.1186/s41073-023-00140-6

8:59-9:00 am

The LEDGH Score: Grading the Anatomic Success of Orbital Blowout Fracture Repair

Cameron Yang[1], Emily (Haochen) Xu[2], David Reed[2], Raymond Cho[3]
[1]Department of Ophthalmology - Eye Plastic, Orbital and Facial Cosmetic Surgery, University of Michigan Kellogg Eye Center, Ann Arbor, Michigan, United States, [2]Department of Ophthalmology and Visual Sciences, The Ohio State University Wexner Medical Center, Columbus, Ohio, United States, [3]Department of Ophthalmology and Visual Sciences - Oculofacial and Orbital Surgery, The Ohio State University Wexner Medical Center, Columbus, Ohio, United States

Introduction: Orbital blowout fractures are common injuries suffered during facial trauma; however, repair of such fractures varies widely in terms of methodology and outcomes. Currently, there is no standardized method for determining the anatomic success of orbital blowout fracture repair. The authors describe an objective grading schema for evaluating the anatomic success of orbital blowout fracture repair and aim to determine the relationship between postoperative anatomy and clinical outcomes.

Methods: A retrospective chart review was conducted of patients who had undergone orbital blowout fracture repair between 2015 and 2021. Only patients who had obtained a post-operative computed tomography (CT) scan and undergone a postoperative ophthalmic examination were included in the study. This study included fractures repaired by oculoplastic surgeons, otolaryngology/head and neck (ENT) surgeons, oral maxillofacial (OMFS) surgeons, and plastic surgeons. Each patient received a score from 0-10 based on CT findings (Figures 1 and 2). Grading criteria included assessment of implant positioning, the presence of orbital tissue herniation into adjacent paranasal sinuses, and the presence of impingement on orbital structures. Graders were blinded to postoperative results when performing CT grading. CT scans were evaluated by an ASOPRS-trained oculoplastic surgeon and a senior ophthalmology resident.

Results: 68 patients were included in the final analysis (46 men and 22 women). The mean age of patients was 38.9 ± 14.6 years. The mean overall score was 8.1 ± 2.1 with 53% having a score of 9 or 10. The two graders had an interrater agreement of 88.2% ($p < 0.05$). Fracture repair score was found to have a statistically significant inverse association with diplopia within 30 degrees of primary gaze ($p < 0.05$), enophthalmos ($p < 0.05$), hypoglobus ($p < 0.05$) as well as need for reoperation ($p < 0.05$). Additionally, higher LEDGH values were associated with a longer time between injury and surgical intervention ($p < 0.05$).

Conclusions: The authors present an objective system for grading orbital blowout fracture repair which correlates with post-operative diplopia, globe dystopia and need for additional surgery. Use of this scoring system in conjunction with postoperative CT may assist surgeons in predicting the need for surgical revision, particularly in challenging cases.

(continued)

(continued)

Figure 1

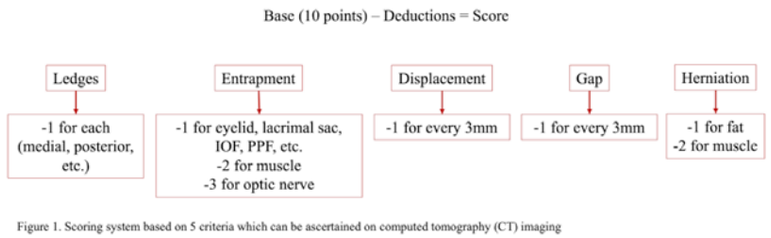


Figure 1. Scoring system based on 5 criteria which can be ascertained on computed tomography (CT) imaging

Figure 2

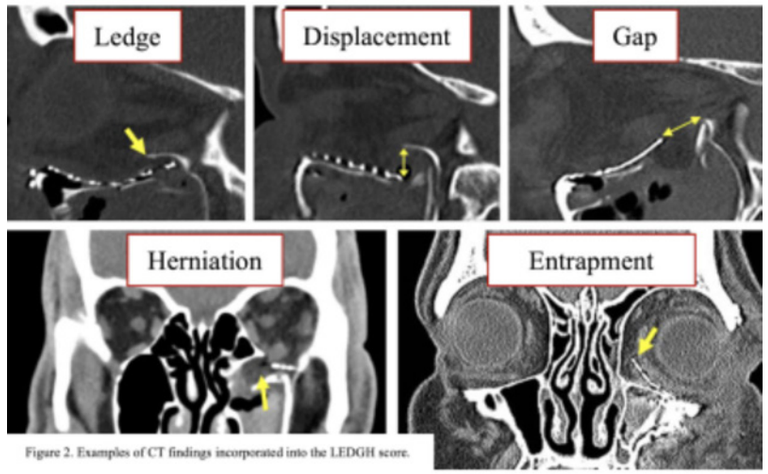


Figure 2. Examples of CT findings incorporated into the LEDGH score.

References:

1. Homer N, Huggins A, Durairaj VD. Contemporary management of orbital blowout fractures. *Curr Opin Otolaryngol Head Neck Surg*. 2019;27(4):310-316. doi:10.1097/MOO.0000000000000550
2. Yang E, Chan SC, Al-Omari Y, et al. A Functional Radiological and Soft Tissue Classification to Predict Outcomes in Orbital Fracture Surgery in a Multidisciplinary "Real-World" Setting. *Front Surg*. 2021;8:693607. Published 2021 Jul 27. doi:10.3389/fsurg.2021.693607
3. Timkovic J, Stransky J, Janurova K, Handlos P, Stembirek J. Role of orthoptics and scoring system for orbital floor blowout fracture: surgical or conservative treatment. *Int J Ophthalmol*. 2021;14(12):1928-1934. Published 2021 Dec 18. doi:10.18240/ijo.2021.12.18
4. Harris GJ. Avoiding complications in the repair of orbital floor fractures. *JAMA Facial Plast Surg*. 2014;16(4):290-295. doi:10.1001/jamafacial.2014.56

9:00–9:01 am

Gallium-68 DOTATATE PET/CT as a Non-Invasive Diagnostic Tool for Primary Optic Nerve Sheath Meningioma: A Case Report and Literature Review

Narmien Murdock[1,2], Henry Bair[1], Karine Shebaclo[1], Abin Bandyopadhyay[3], Kenneth Morgenstern[2], Alison Watson[1]
[1]Department of Ophthalmic Plastic and Reconstructive Surgery, Wills Eye Hospital, Philadelphia, Pennsylvania, United States, [2]Department of Ophthalmic Plastic and Reconstructive Surgery, Morgenstern Center for Orbital and Facial Plastic Surgery, Wayne, Pennsylvania, United States, [3]Department of Radiology, Thomas Jefferson University Hospital, Philadelphia, Pennsylvania, United States

Introduction: Orbital lesions are commonly evaluated with computed tomography (CT) and magnetic resonance imaging (MRI), which are valuable tools in clinical practice but can lack diagnostic precision in complex or rare lesions.[1] Orbital biopsy remains the gold standard for definitive diagnosis but carries significant risks, particularly in lesions involving the optic pathway.[2] Gallium-68 DOTATATE PET/CT has emerged as a promising non-invasive adjunct for diagnosing meningiomas and other lesions with somatostatin receptor overexpression.[3-6] Herein we report a case of an intraconal orbital mass that was challenging to characterize with CT and MRI alone. A DOTATATE PET/CT proved valuable in diagnosing the lesion as a primary optic nerve sheath meningioma (ONSM) and eliminated the need for biopsy, which was deemed to carry unnecessary risk.

Methods: We present a case report and literature review. The literature review was conducted through PubMed using combinations of keywords including “DOTATATE” and “optic nerve sheath meningioma” to identify peer-reviewed reports of DOTATATE PET/CT utilized for ONSM diagnosis. Non-English articles and cases of non-ONSM lesions were excluded.

Results: A 17-year-old male with no known medical history presented with a two-year history of left upper eyelid ptosis which he related to a remote blunt trauma. The patient denied vision changes, pain, and diplopia. Visual acuity was 20/25 and 20/20 in the right and left eyes, respectively. Intraocular pressures, pupillary exam, color vision, extraocular movement were unremarkable. Examination revealed left lower eyelid soft, edema without tenderness to palpation. Margin to reflex distance (MRD)-1 was 2.5 mm on the right and 1 mm on the left (Fig 1). Exophthalmometry demonstrated 1.5 mm of relative proptosis of the left eye compared to the right. Anterior segment exam was unremarkable bilaterally. Posterior segment exam was notable for left optic disc elevation without pallor or hemorrhage. MRI showed a 2.7 x 2.2 x 1.8 cm left intraconal mass encasing the left optic nerve (Fig 2), with soft tissue enhancement extension into the optic canal and cavernous sinus. The absence of typical imaging features, such as nerve sheath enhancement or a “tram-track” sign, precluded a definitive diagnosis. Following discussion with a multidisciplinary tumor board, a DOTATATE PET/CT scan was obtained and demonstrated somatostatin receptor avidity in the lesion, consistent with ONSM (Fig 3). Histopathological confirmation was not pursued due to potential surgical morbidity and definitive nature of imaging. The patient is currently receiving fractionated stereotactic

(continued)

(continued)

radiotherapy for a total dose of 54 Gy in 30 daily fractions. Literature review identified only four cases of ONSM diagnosed with the aid of DOTATATE PET/CT.[5-8]

Conclusions: Gallium-68 DOTATATE PET/CT was valuable for the non-invasive diagnosis of ONSM in our patient. This case and review underscore its growing role in orbital tumor evaluation, particularly in cases where biopsy carries risk of morbidity. We hope to bring further attention to this useful imaging modality within our field.

Figure 1



Figure 2

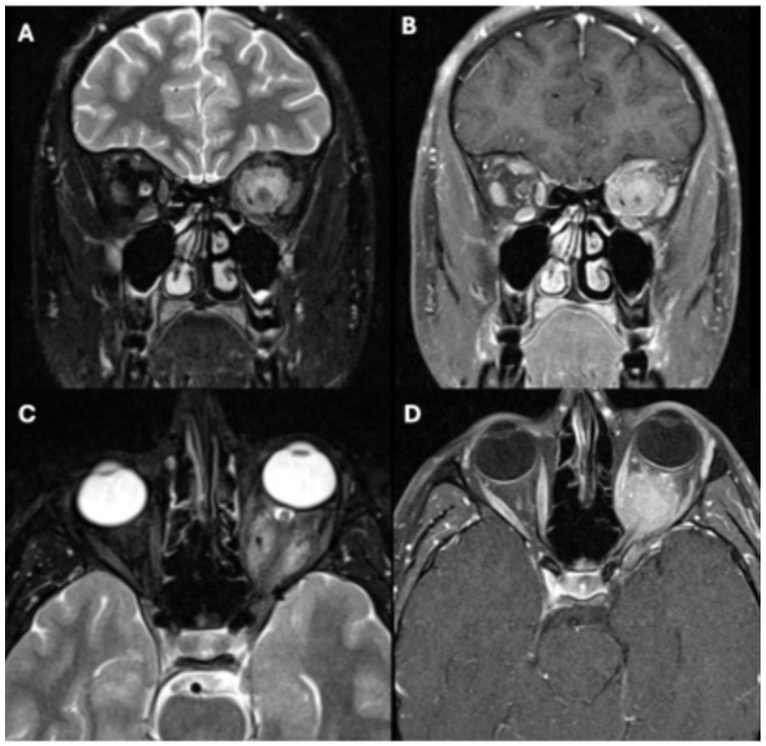
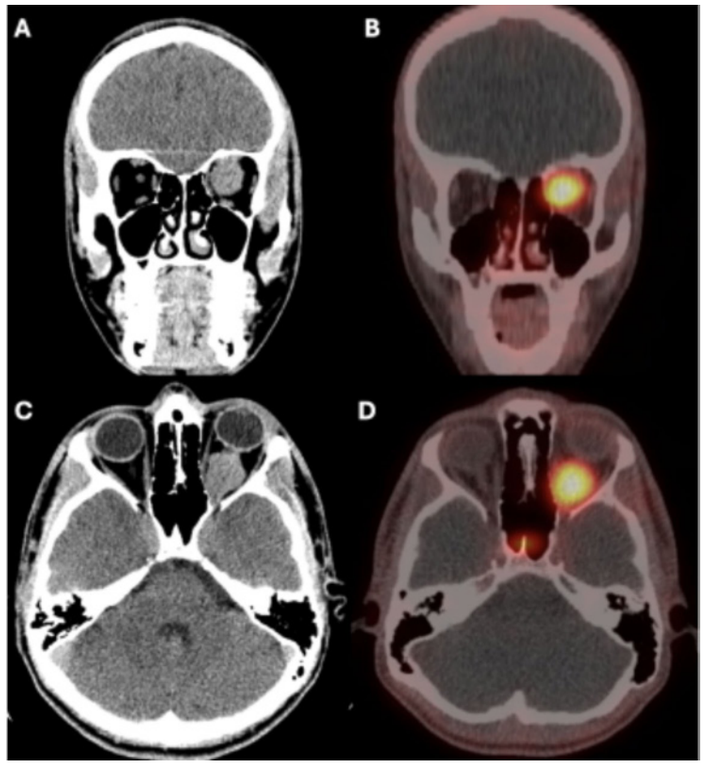


Figure 3



(continued)

(continued)

References:

1. Goh PS, Gi MT, Charlton A, Tan C, Gangadhara Sundar JK, Amrith S. Review of orbital imaging. Eur J Radiol. 2008 Jun;66(3):387-95.
2. Ting DS, Perez-Lopez M, Chew NJ, Clarke L, Dickinson AJ, Neoh C. A 10-year review of orbital biopsy: the Newcastle Eye Centre Study. Eye (Lond). 2015 Sep;29(9):1162-6.
3. Grzbiela H, Tarnawski R, D'Amico A, Stąpór-Fudzińska M. The Use of 68Ga-DOTA-(Tyr3)-Octreotate PET/CT for Improved Target Definition in Radiotherapy Treatment Planning of Meningiomas - A Case Report. Curr Radiopharm. 2015;8(1):45-8.
4. Chandra P, Purandare N, Shah S, Agrawal A, Rangarajan V. Somatostatin Receptor SPECT/CT using 99mTc Labeled HYNIC-TOC Aids in Diagnosis of Primary Optic Nerve Sheath Meningioma. Indian J Nucl Med. 2017 Jan-Mar;32(1):63-65.
5. Al Feghali KA, Yeboa DN, Chasen B, Gule MK, Johnson JM, Chung C. The Use of 68Ga-DOTATATE PET/CT in the Non-invasive Diagnosis of Optic Nerve Sheath Meningioma: A Case Report. Front Oncol. 2018 Oct 16;8:454.
6. Yarmohammadi A, Savino PJ, Koo SJ, Lee RR. Case report 68Ga-DOTATATE of optic nerve sheath meningioma. Am J Ophthalmol Case Rep. 2021 Mar 5;22:101048.
7. Dolar Bilge A, Yazici B, Güngör AF, Yazici Z. An Atypical Paediatric Optic Nerve Sheath Meningioma. Neuroophthalmology. 2020 Jun 24;44(6):403-406.
8. Vay SU, Werner JM, Kabbasch C, Schmidt M, Drzezga A, Fink GR, Galldiks N, Warnke C. Uncovering an Optic Nerve Sheath Meningioma Using 68Ga-DOTATATE PET/CT. Clin Nucl Med. 2021 Sep 1;46(9):e464-e465.
9. Bonavolontà G, Strianese D, Grassi P, et al. An analysis of 2,480 space-occupying lesions of the orbit from 1976 to 2011. Ophthalmic Plastic & Reconstructive Surgery. 2013;29(2):79–86. doi:10.1097/IOP.0b013e31827a7622.
10. Shields JA, Shields CL, Scartozzi R. Survey of 1264 patients with orbital tumors and simulating lesions: The 2002 Montgomery Lecture, part 1. Ophthalmology. 2004;111(5):997–1008. doi:10.1016/j.ophtha.2003.01.002.
11. Deshmukh S, Das D, Bhattacharjee H, Kuri GC, Magdalene D, Gupta K, Multani PK, Paulbuddhe V, Dhar S. Profile of brain tumors having ocular manifestations in a Tertiary Eye Care Institute: A retrospective study. TNOA J Ophthalmic Sci Res 2018;56:71-5.

9:02-9:07 am

Outcomes and Complications of Frontalis Flap versus Frontalis Sling Surgery in Congenital Ptosis: A Systematic Review and Meta-Analysis

Georges Nassrallah[1], Muhannad Alnahdi[1], Abdulrahman Alfarhan[2], Wissam Nassrallah[3], Michele Zaman[4], Rudaynah Haddad[2], Kenneth Chang[1], Navdeep Nijhawan[5], Edsel Ing[6], Dan DeAngelis[1]

[1]University of Toronto, Toronto, Canada, [2]Riyadh, Saudi Arabia, [3]Université de Montréal, Montreal, Canada, [4]Queen's University, Kingston, Canada, [5]Ophthalmology, University of Toronto, Toronto, Canada, [6]University of Alberta, Edmonton, Canada

Introduction: Congenital ptosis repair by frontalis suspension has evolved through the years. Fascial suspension technique was initially introduced, followed by synthetic suspensory alternatives were utilized[1]. More recently, frontalis flap advancement techniques were suggested with potential advantages[2,3]. We aim to compare the effectiveness and complication rates of flap muscle advancement, silicone suspension, and fascial suspension techniques in moderate to severe congenital ptosis.

Methods: This was a systematic review and meta-analysis. An electronic search was conducted as per the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines to include studies to compare flap muscle advancement vs silicone suspension vs fascial suspension. Primary outcomes included post-operative margin reflex distance 1 (MRD1), the mean difference between pre-operative and post-operative MRD1, under-correction, over-correction, and recurrence rates. Secondary outcomes included other complications associated with each technique. Each technique was considered as a single-arm group for analysis purposes.

(continued)

(continued)

Results: This review included 40 articles enrolling 1,824 patients (2,304 eyelids). Flap muscle advancement demonstrated significantly greater MRD1 improvement compared to silicone and fascial suspensions (p = 0.0339). No significant difference was observed between the silicone and fascial groups (p = 0.9644). Mean MRD1 correction was highest in the flap group (4.2 ± 1.2 mm) compared to silicone (3.1 ± 1.5 mm) and fascial groups (2.9 ± 1.1 mm). The under-correction rates were 0.06 (95% CI 0.02-0.10) for the flap group, 0.01 (95% CI 0.00-0.04) for the silicone group, and 0.01 (95% CI 0.01-0.03) for the fascial group. The pooled overcorrection rate was minimal across all groups, while the recurrence rates were 0.00 (95% CI 0.00-0.00), 0.07 (95% CI 0.02-0.15), and 0.02 (95% CI 0.00-0.05) for flap, silicone, and fascial groups, respectively. Eyelid-related complications were highest in the silicone group (0.06; 95% CI 0.02-0.11), while cornea-related complications were most frequent in the fascial group (0.05; 95% CI 0.00-0.14). The flap group reported fewer corneal-related complications (0.01; 95% CI 0.00-0.03), although postoperative lagophthalmos was documented more in this group.

Conclusions: Frontalis flap muscle advancement demonstrates greater MRD1 improvement compared to silicone and fascial suspensions, with minimal recurrence rates. Due to the observational nature and limited long term outcomes of some of the included studies, randomized controlled trials are needed to validate these findings.

References:

1. Bernardini FP, Cetinkaya A, Zambelli A. Treatment of unilateral congenital ptosis. Curr Opin Ophthalmol. 2013 Sep;24(5):484–7.
2. Ortega-Evangelio L, Araújo-Miranda R, Raga-Cervera J, Romo López Á, Díaz-Céspedes RA, Peris-Martínez C. Evolution of the «frontal flap advancement» in congenital ptosis. Archivos de la Sociedad Española de Oftalmología (English Edition). 2022 Oct;97(10):572–82.
3. Cruz AAV, Akaishi APMS. Frontalis-Orbicularis Muscle Advancement for Correction of Upper Eyelid Ptosis: A Systematic Literature Review. Vol. 34, Ophthalmic Plastic and Reconstructive Surgery. Lippincott Williams and Wilkins; 2018. p. 510–5.

9:07-9:12 am

Comparison of Frontalis Flap and Frontalis Flap with External Levator Advancement for Poor Levator Function Ptosis

Marissa K. Shoji[1], Akshara Legala[2], Nahia Dib El Jalbout[1], Rolika Bansal[1], Catherine Liu[1], Don Kikkawa[1], Bobby Korn[1]
[1]Oculofacial Plastic and Orbital Surgery, Shiley Eye Institute, San Diego, California, United States, [2]UC San Diego School of Medicine, San Diego, California, United States

Introduction: Frontalis flap advancement, either alone or combined with levator resection, may be an effective technique for addressing poor levator function (LF) ptosis. This approach avoids risks associated with fascia lata harvesting and synthetic material implantation. Few studies directly compare outcomes of frontalis flap alone vs. frontalis flap with external levator advancement (ELA). This study evaluates these techniques in patients with poor LF ptosis.

Methods: This IRB-approved retrospective study analyzed patients 0–100 years-old who underwent frontalis flap advancement for poor LF ptosis from January 2000 to 2025 at a single institution. Patients were categorized into two groups: frontalis flap alone and frontalis flap with ELA, performed in a layered fashion. Surgical technique was consistent across groups. Demographics, clinical data, treatment, and outcomes—including marginal reflex distance 1 (MRD1) and lagophthalmos—were evaluated. Statistical testing was conducted using SPSS.

Results: The study included 103 eyelids (86 patients; average age 12.0±17.8 years, 67.0% male, Table 1). Seventeen patients underwent bilateral surgery, and 69 underwent unilateral surgery. Previous ptosis surgeries were noted in 40.8% of eyelids, with a mean of 1.8±1.3 prior surgeries. Baseline MRD1 was 0.6±1.3 mm. At a mean follow-up of 9.0±12.2 months, postoperative MRD1 significantly improved to 3.1±1.2 mm (mean increase of 2.5±1.5 mm, $p<0.001$). Postoperative lagophthalmos was 0.5±0.7 mm, similar to baseline ($p=0.53$). Satisfactory functional and cosmetic outcomes were achieved in 88.3% of cases, while 14 patients required secondary eyelid surgery.

Frontalis flap was performed in 76 eyelids, and frontalis flap with ELA was performed in 27 eyelids. Patients undergoing frontalis flap alone were older ($p=0.002$) and more likely to have prior ptosis surgeries ($p=0.03$). Baseline MRD1, lagophthalmos, and LF were comparable between groups. Both groups showed significant postoperative improvement in MRD1 ($p<0.001$ for each). The frontalis+ELA group demonstrated greater postoperative MRD1 (3.6±0.9 mm vs. 2.9±1.3 mm, $p=0.01$) and a larger MRD1 increase (3.0±1.2 mm vs. 2.3±1.6 mm, $p=0.02$). Postoperative lagophthalmos was not significantly different ($p=0.13$). Only one patient in the frontalis+ELA group required secondary surgery ($p=0.08$).

(continued)

(continued)

Comparison by indication and by group was performed (Table 2). All patients with non-congenital poor LF ptosis underwent frontalis flap alone with significant improvement in postoperative MRD1 compared to baseline (-0.4±1.6 mm vs. 1.9±1.8 mm, p=0.006). In congenital ptosis eyelids, the frontalis+ELA group had significantly greater change in MRD1 than the frontalis flap alone group (3.0±1.2 mm vs. 2.0±0.6 mm, p=0.04).

Separately, 5 eyelids of 5 patients underwent revision frontalis flaps after prior frontalis flap surgery, showing improvement in postoperative MRD1 (2.2±1.6 mm vs. 0.4±2.1 mm, p=0.055). No patients underwent additional eyelid surgeries.

Conclusions: Our study highlights four key takeaways: 1) frontalis flap surgery either alone or in combination with ELA improves eyelid position in poor LF ptosis; 2) this technique may be an option for poor LF ptosis of different etiologies, although may be more effective in congenital ptosis; 3) frontalis flap with ELA yields significantly greater MRD1 improvement than frontalis flap alone; 4) repeated frontalis flap operations remain effective.

Table 1. Comparison of Outcomes for Frontalis Flap vs. Frontalis Flap with External Levator Advancement

	Overall (n=103)	Frontalis Flap (n=76)	Frontalis Flap + ELA (n=27)	p-value
Age (years)	12.0 ± 17.8	15.2 ± 19.8	2.8 ± 2.1	**p=0.002**
Gender (M)	n=69 (67.0%)	n=49 (64.5%)	n=20 (74.1%)	p=0.59
Previous eyelid surgery (yes)	n=42 (40.8%)	n=37 (48.7%)	n=5 (18.5%)	**p=0.03**
Number of previous ptosis surgeries	1.8 ± 1.3	1.8 ± 1.4	1.2 ± 0.5	p=0.32
Baseline MRD1 (mm)	0.6 ± 1.3	0.6 ± 1.4	0.6 ± 1.3	p=0.95
Baseline lagophthalmos (mm)	0.5 ± 0.8	0.5 ± 0.7	0.4 ± 0.6	p=0.41
Baseline levator function (mm)	4.4 ± 2.1	4.5 ± 2.4	4.4 ± 2.1	p=0.60
Postoperative MRD1 (mm)	3.1 ± 1.2	2.9 ± 1.3	3.6 ± 0.9	**p=0.01**
Change in MRD1 from baseline (mm)	2.5 ± 1.5	2.3 ± 1.6	3.0 ± 1.2	**p=0.02**
Postoperative lagophthalmos (mm)	0.5 ± 0.7	0.5 ± 0.7	0.7 ± 0.8	p=0.13
Need for additional surgery (yes)	n=14 (13.6%)	n=13 (17.1%)	n=1 (3.7%)	p=0.08

Table 2. Comparison of Techniques and Outcomes by Etiology of Poor Levator Function Ptosis

	Congenital ptosis				Non-congenital poor LF ptosis	
	Overall (n=95)	Frontalis flap (n=68)	Frontalis flap + ELA (n=27)	Frontalis vs Frontalis + ELA for Congenital Ptosis p-value	Frontalis flap (n=8)	Congenital ptosis vs non-congenital poor LF ptosis p-value
Age (years)	8.3 ± 12.9	10.6 ± 14.7	2.8 ± 2.1	**p=0.007**	54.3 ± 13.4	**p <0.001**
Gender (M)	n=65 (67.7%)	n=45 (66.2%)	n=20 (74.1%)	p=0.66	n=4 (50%)	p=0.29
Previous eyelid surgery (yes)	n=37 (38.9%)	n=32 (47.1%)	n=5 (18.5%)	**p <0.001**	n=5 (62.5%)	p=0.19
Number of previous ptosis surgeries	1.8 ± 1.4	1.9 ± 1.4	1.2 ± 0.5	p=0.28	1.0 ± 0	p=0.004
Baseline MRD1 (mm)	0.7 ± 1.3	0.8 ± 1.3	0.6 ± 1.3	p=0.62	-0.4 ± 1.6	p=0.08
Baseline lagophthalmos (mm)	0.5 ± 0.8	0.6 ± 0.9	0.4 ± 0.6	p=0.35	0.3 ± 0.3	p=0.10
Baseline levator function (mm)	4.5 ± 2.0	4.6 ± 2.4	4.4 ± 2.1	p=0.48	3.7 ± 3.1	p=0.55
Postoperative MRD1 (mm)	3.2 ± 1.1	3.1 ± 1.2	3.6 ± 0.9	**p=0.03**	1.9 ± 1.8	p=0.08
Change in MRD1 from baseline (mm)	2.3 ± 1.6	2.0 ± 1.6	3.0 ± 1.2	**p=0.04**	2.3 ± 1.7	p=0.76
Postoperative lagophthalmos (mm)	0.6 ± 0.7	0.5 ± 0.6	0.7 ± 0.8	p=0.15	0.4 ± 0.7	p=0.52
Need for additional surgery (yes)	n=12 (12.6%)	n=11 (16.2%)	n=1 (3.7%)	p=0.10	n=2 (25%)	p =0.32

Table 3: Characteristic and Outcomes of Revision Frontalis Flaps

	Frontalis Flap (n=6)
Age (years)	18.6 ± 21.1
Gender (M)	n=3 (50%)
Previous eyelid surgery (yes)	n=6 (100%)
Number of previous ptosis surgeries	2.1 ± 1.2
Baseline MRD1 (mm)	0.4 ± 2.1
Baseline lagophthalmos (mm)	1 ± 1.1
Baseline levator function (mm)	4 ± 0
Postoperative MRD1 (mm)	2.2 ± 1.6
Change in MRD1 from baseline (mm)	1.8 ± 1.7
Postoperative lagophthalmos (mm)	0.3 ± 0.4
Need for additional surgery (yes)	n = 0 (0%)

References:

1. Diab et al. *Eye* 2022.

9:14-9:19 am

Lower Eyelid Retraction Repair with Auricular Cartilage Autograft versus Costal Cartilage Allograft

John Nguyen[1,2], Pelin Celiker[3], Taylor Potter[4], Diane Wang[1]
[1]Ophthalmology and Visual Sciences, West Virginia University, Morgantown, West Virginia, United States, [2]Otolaryngology and Head and Neck Surgery, West Virginia University, Morgantown, West Virginia, United States, [3]Ophthalmology & Vision Science, University of California Davis, Sacramento, United States, [4]Meharry Medical College, Nashville, Tennessee, United States

Introduction: Surgical management of lower eyelid retraction often involves recessing the lower lid retractors and placement of a spacer graft. While various spacers have been described, the use of fresh, frozen costal cartilage allograft has not been described in lower eyelid retraction repair. The purpose of this study is to compare the outcomes of lower eyelid retraction repair using auricular cartilage (AC) autografts and fresh, frozen costal cartilage (CC) allografts

Methods: This IRB-approved retrospective study examined patients who underwent lower eyelid retraction repair using either AC or CC in one or both eyelids. Non-terminally sterilized, fresh frozen cartilage was used for posterior lamellar reconstruction in all eyelids who received CC. A horizontal tightening procedure was performed as needed. Pre- and post-op MRD2 were recorded. Exclusion criteria were age <15, concurrent permanent tarsorrhaphy and history of lower eyelid surgery affecting lid position within 3 months. Demographics, outcomes and complications were evaluated.

Results: 17 eyelids in 10 patients underwent repair using AC; 9 eyelids in 5 patients had CC. Mean age was 55.54 ± 19.77 years in AC and 62.36 ± 17.35 years in CC (p=0.38). 60% of patients were female and 40% were male in both groups. Indications included thyroid eye disease (TED), oculopharyngeal muscular dystrophy, and congenital, cicatricial and involutional ectropion. One patient in each group had concurrent orbital decompression for TED. Mean change in MRD2 was 1.44 ± 0.73 mm in AC and 1.72 ± 0.51 mm in CC (p=0.27). Postoperatively, one eyelid in the AC group had entropion with lash-cornea touch and subsequent surgical repair 8 months later. One eyelid in the CC group had a minor wound dehiscence 2 weeks postoperatively that was repaired without complication.

Conclusions: CC is an effective, readily available, and biocompatible option as a spacer graft in lower lid retraction repair compared to AC that can produce comparable results. Its usage is well-tolerated by patients, avoids donor-site morbidity, and may be a promising addition to the currently available techniques for lower lid retraction repair.

(continued)

(continued)

References:

1. Tao JP, Aakalu VK, Wladis EJ, et al. Bioengineered Acellular Dermal Matrix Spacer Grafts for Lower Eyelid Retraction Repair: A Report by the American Academy of Ophthalmology. Ophthalmology. 2020;127(5):689-695.
2. Wan R, Weissman JP, Williams T, et al. Prospective Clinical Trial Evaluating the Outcomes Associated with the Use of Fresh Frozen Allograft Cartilage in Rhinoplasty. *Plast Reconstr Surg Glob Open*. 2023;11(10):e5315. Published 2023 Oct 4.
3. Oestreicher JH, Pang NK, Liao W. Treatment of lower eyelid retraction by retractor release and posterior lamellar grafting: an analysis of 659 eyelids in 400 patients. *Ophthalmic Plast Reconstr Surg*. 2008;24(3):207-212.
4. Park E, Lewis K, Alghoul MS. Comparison of Efficacy and Complications Among Various Spacer Grafts in the Treatment of Lower Eyelid Retraction: A Systematic Review. *Aesthet Surg J*. 2017;37(7):743-754.
5. Pushker N, Modaboyina S, Meel R, Agrawal S. Auricular skin-cartilage sandwich graft technique for full-thickness eyelid reconstruction. Indian J Ophthalmol. 2022 Apr;70(4):1404-1407. doi: 10.4103/ijo.IJO_1797_21. PMID: 35326066; PMCID: PMC9240525.
6. Dolar Bilge A. Lower eyelid retraction repair using autologous auricular scapha cartilage. Int Ophthalmol. 2024 Jul 4;44(1):313. doi: 10.1007/s10792-024-03165-y. PMID: 38965129.
7. Nakao K, Sakai S, Kazuo K. Esthetic Posterior Reconstruction of Lower Eyelid Using Stripe-Shaped Antihelix Cartilage With Perichondrium. J Craniofac Surg. 2024 May 7. doi: 10.1097/SCS.0000000000010192. Epub ahead of print. PMID: 38710036.

9:21-9:27 am

Engineered Secondary Intention Healing for Lateral Canthal Web Improvement

Alomi Parikh[1,2], David Samimi[1,2]
[1]Eyesthetica, Los Angeles, California, United States, [2]USC Roski Eye Institute, Los Angeles, California, United States

Introduction: Post-operative lateral canthal webbing can decrease patient satisfaction with otherwise successful functional or cosmetic procedures such as blepharoplasty, mohs or trauma reconstruction. The primary etiology of this complication is a vertical anterior lamellar shortage posing a challenge in finding a relatively quick, predictable and low morbidity surgical solution[1]. A canthoplasty or web excision will cause recurrent webbing due to persistent skin shortage. Various extended flap techniques have been previously described including a z-plasty, periosteal flap, transposition flap, and advancement flap with z-plasties[1-4]. Secondary intention healing in partial or small full thickness eyelid defects has been shown to allow healing with excellent cosmetic and functional results[5].

We describe a quick, in office, low risk intervention that undermines the surrounding lateral canthal dermal web tissue. The defect is left to fill in by secondary intention addressing the vertical tissue deficiency, yielding an improvement in the webbing while minimizing recovery time and avoiding major revisional surgery in the operating room.

Methods: Case series of three patients who underwent lateral webbing revision by one surgeon. Charts were reviewed and demographics, initial procedure, time frame of revision, aesthetic and functional result, time period of follow up, and complications were identified.

Surgical technique: skin is incised with a 15 blade horizontally, centered through the web. Westcott scissors are used to widely undermine in a subdermal plane up to 1cm in all directions. Multiple 6-0 plain gut sutures are used to fixate the edges in a recessed fashion leaving an orbicularis bed for epithelial ingrowth. Hemostasis is achieved with high temperature cautery.

Results: Three patients underwent the lateral webbing revision procedure from 2022-2024. Two patients were male and ages ranged from 56-85 years. One patient developed webbing 8 months after a large semicircular flap reconstruction after Mohs for a lateral canthal basal cell, followed by an ectropion repair with midface lift. Two patients developed webbing after blepharoplasty - one 11 months after lower blepharoplasty with pinch, canthopexy, and TCA peel; the other 5 months after upper and lower blepharoplasty with pinch, canthopexy, and fat grafting. Patients were followed post operatively for a range of 13 to 21 months. All three patients noted satisfaction with the final result.

(continued)

(continued)

Conclusions: Lateral canthal webbing is a complication of eyelid surgery without a widely accepted simple technique for revision. The presented technique offers a relatively quick, in office low risk procedure to improve canthal webbing by engineered secondary intention healing.

Figure 1

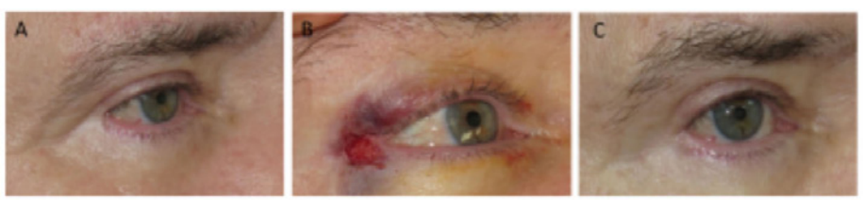


Figure 1. (A) Pre-operative photo showing lateral canthal webbing. (B) Photo taken immediately at surgery completion, showing area left to heal by secondary intention. (C) Webbing resolved at post-op month 14.

Figure 2

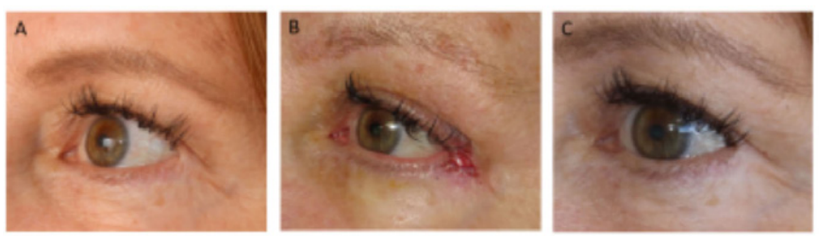


Figure 2. (A) Pre-operative photo showing lateral canthal webbing. (B) Photo taken immediately at surgery completion, showing area left to heal by secondary intention. (C) Webbing resolved at post-op month 21.

Figure 3

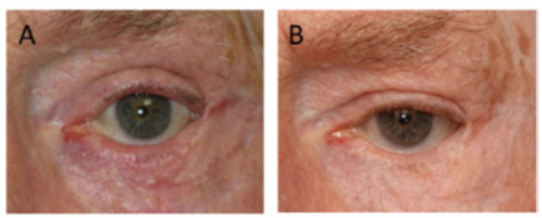


Figure 3. (A) Pre-operative photo showing lateral canthal webbing. (B) Webbing improved at post-op month 13.

References:

1. Massry GG. Cicatricial canthal webs. Ophthalmic Plast Reconstr Surg. 2011 Nov-Dec;27(6):426-30. doi: 10.1097/IOP.0b013e318222f4a1. PMID: 21862949.
2. Fowler J, Moore CC. How I do it: lateral canthal web revision-single Z-plasty technique. J Otolaryngol Head Neck Surg. 2022 Sep 16;51(1):34. doi: 10.1186/s40463-022-00585-7. PMID: 36114564; PMCID: PMC9482234.
3. The lateral canthus web and its surgical management. Nemet, Arie Y. Journal of Plastic, Reconstructive & Aesthetic Surgery, Volume 67, Issue 7, 906 - 909
4. Surgical Repair of Lateral Canthal Web. Lee, H.B. Harold et al. American Journal of Ophthalmology, Volume 142, Issue 2, 339 – 340
5. Deutsch BD, Becker FF. Secondary healing of Mohs defects of the forehead, temple, and lower eyelid. Arch Otolaryngol Head Neck Surg. 1997 May;123(5):529-34. doi: 10.1001/archotol.1997.01900050085011. PMID: 9158402.

10:12-10:18 am

Outcomes of Thyroid Eye Disease in Patients with Moderate-to-Severe Extraocular Muscle Involvement with and without Orbital Radiotherapy and Orbital Decompression: A 10-year Institutional Experience

Jacqueline Carrasco[1], Siwei Zhou[2], Michael Rabinowitz[1], Nina Boal[1], Robert Penne[3], Matthew Zhang[4], Mary Stefanyszyn[3]
[1]Oculoplastic and Orbital Surgery, Wills Eye Hospital, Philadelphia, Pennsylvania, United States, [2]Kaiser Permanente, Riverside, California, United States, [3]Oculoplastic and Orbital Surgery, Wills Eye Hospital, Philadelphia, Pennsylvania, United States, [4]Ophthalmology, Oculofacial Plastic and Orbital Surgery, University of Washington School of Medicine, Seattle, Washington, United States

Introduction: One of the most debilitating aspects of TED is diplopia. Orbital decompression surgery can cause new motility deficits or worsening of pre-existing strabismus. Strabismus surgery to treat diplopia is typically performed during the quiescent phase, after decompression and prior to eyelid surgery. We report the outcomes of TED patients with moderate-to-severe EOM involvement requiring strabismus surgery. We include in our review how factors including orbital radiation (XRT), and orbital decompression affect recurrence of TED and long-term success of strabismus surgery.

Methods: We performed a retrospective case review of medical records from our oculoplastics private practice affiliated with a tertiary ophthalmic care center from January 2011 to October 2021. A total of 114 unique patients with TED who underwent strabismus surgery were identified. Primary outcomes include the incidence of reactivation of TED and success of strabismus surgery. Secondary outcomes include the effect of XRT and orbital decompression (anterior or posterior) on the primary outcomes.

Results: Reactivation of TED occurred in 12 of 97 patients (12.4%). There was a statistically significant association between no XRT patients and the reactivation of TED (p-value<0.001). None of the radiated patients had reactivation (0/53), while 12/32 (27.3%) non-radiated patients had reactivation. Successful strabismus surgery was also statistically significantly associated with no disease reactivation (p-value = 0.026). Subdivision of the groups based on type of decompression and treatment with orbital radiation yielded statistically larger changes in horizontal deviation in no XRT patients (p-value =0.001) and in those with posterior decompression (p-value =0.002).

(continued)

(continued)

Conclusions: Based on our study and observations in our clinical experience in the treatment of TED, the authors propose that XRT should be highly considered in patients with moderate to severe EOM involvement. XRT decreased reactivation of disease and improved the predictability of the treatment course and surgical outcomes. Although strabismus surgery is not predictable in thyroid eye disease patients, most patients can achieve a successful result with adjustable muscle surgery.

Table 1: Patient and Treatment Characteristics

Variable	n (%)
Age in years [mean (range; SE)]	62.29 (32, 89; 1.25)
Sex	
Female	67 (69.1%)
Male	30 (30.9%)
Smoking status	
Never smoker	50 (51.5%)
Former smoker	32 (33.0%)
Current smoker	15 (15.5%)
Optic nerve compression	
None	85 (87.6%)
Right eye	1 (1.0%)
Left eye	5 (5.2%)
Both eyes	6 (6.2%)
Treating Provider	
Attending 1	28 (28.9%)
Attending 2	36 (37.1%)
Attending 3	32 (33.0%)
Attending 4	1 (1.0%)
Orbital Radiation (XRT)	
No XRT	44 (45.4%)
Treated with XRT	53 (54.6%)
Orbital decompression	
No decompression	35 (36.1%)
Decompression	62 (63.9%)
Anterior decompression	35 (36.1%)
Posterior decompression	26 (26.8%)
Unknown	1 (1.0%)
Total follow-up period in days [mean (range; SE)]	1315.22 (97, 3728; 96.65)

SE = standard error
XRT = orbital radiation

Table 2: Strabismus Surgery Characteristics

115 total strabismus surgeries performed on 97 patients	n (%)
Number of strabismus surgeries per patient [mean (range; SE)]	1.21 (1, 3; 0.05)
Pre-strabismus surgery horizontal deviation	97 (100%)
None	33 (34.0%)
Mild/Moderate (0-29 PD)	45 (46.4%)
Severe (30+PD)	19 (19.6%)
Pre-strabismus surgery vertical deviation	97 (100%)
None	25 (25.8%)
Mild/Moderate (0-24 PD)	42 (43.3%)
Severe (25+ PD)	30 (30.9%)
Type of muscle surgery	
1 horizontal muscle	20 (17.4%)
1 vertical muscle	53 (46.1%)
2 horizontal muscles	15(13.0%)
2 vertical muscles	2 (1.7%)
Both horizontal and vertical muscles	25 (21.7%)
Adjustable muscle surgery	
Adjustable muscle surgery	111 (96.5%)
Not adjustable muscle surgery	4 (3.5%)
Follow-up after muscle surgery in days [mean (range; SE)]	833.86 (10, 3576; 90.25)

SE = standard error
PD = prism diopters

Table 3: Reactivation of thyroid eye disease

Characteristic	No reactivation (n=85)	Reactivation (n=12)	P-value
Age in years [mean (range; SE)]*	61.91 (32, 89; 1.35)	65.0 (41, 80; 3.41)	0.419
Smoking status [(n%)]**			0.700
Nonsmoker (n=50)	45 (90.0%)	5 (10.0%)	
Former smoker (n=32)	27 (84.3%)	5(15.6%)	
Current smoker (n=15)	13 (86.7%)	2 (13.3%)	
Optic nerve compression [(n%)]**			0.245
None (n=85)	76 (89.4%)	9 (10.6%)	
Right eye (n=1)	1 (100%)	0 (0%)	
Left eye (n=5)	4 (80.0%)	1 (20.0%)	
Bilateral (n=6)	4 (66.7%)	2 (33.3%)	
Sex [(n%)]**			0.749
Male (n=30)	27 (90.0%)	3 (10.0%)	
Female (n=67)	58 (86.6%)	9 (13.4%)	
Treating physician [(n%)]**			0.602
Attending 1 (n=28)	26 (92.9%)	2 (7.1%)	
Attending 2 (n=36)	30 (83.3%)	6 (16.7%)	
Attending 3 (n=32)	28 (87.5%)	4 (12.5%)	
Attending 4 (n=1)	1 (100%)	0 (0%)	
Orbital radiation***			<0.001[1]
No (n=44)	32 (72.7%)	12 (27.3%)	
Yes (n=53)	53 (100%)	0 (0%)	
Decompression**			0.528
No (n=35)	32 (91.4%)	3 (8.6%)	
Yes (n=62)	53 (85.5%)	9 (14.5%)	
Posterior Decompression**			0.063
No (n=35)	33 (94.3%)	2 (5.7%)	
Yes (n=26)	20 (76.9%)	6 (23.1%)	

SE = standard error
* T-test for continuous variable
**Fisher's Exact Test for categorical variables
*** Pearson's Chi-squared test with Yates' continuity correction
[1] Statistically significant

(continued)

(continued)

Table 5: Success of Muscle Surgery

Characteristic	Successful muscle surgery (n=75)	Unsuccessful muscle surgery (n=22)	P-value
Age in years [mean (range; SE)] *	61.77 (32, 89; 1.47)	59.17 (42, 82; 2.35)	0.451
Smoking status [(n%)] **			0.603
Nonsmoker (n=50)	39 (78.0%)	11 (22.0%)	
Former smoker (n=32)	23 (71.9%)	9 (28.1%)	
Current smoker (n=15)	13 (86.7%)	2 (13.3%)	
Optic nerve compression [(n%)] **			0.878
None (n=85)	66 (77.6%)	19 (22.4%)	
Right eye (n=1)	1 (100%)	0 (0%)	
Left eye (n=5)	4 (80.0%)	1 (20.0%)	
Bilateral (n=6)	4 (66.7%)	2 (33.3%)	
Sex [(n%)] ***			0.094
Male (n=30)	20 (66.7%)	10 (33.3%)	
Female (n=62)	55 (82.1%)	12 (17.9%)	
Treating physician [(n%)] **			0.010 '
Attending 1 (n=28)	27 (96.4%)	1 (3.6%)	
Attending 2 (n=36)	24 (66.7%)	12 (33.3%)	
Attending 3 (n=32)	23 (71.9%)	9 (28.1%)	
Attending 4 (n=1)	1 (100%)	0 (0%)	
Deviation type****			0.862
Horizontal (n=27)	21 (77.8%)	6 (22.2%)	
Vertical (n=41)	33 (80.5%)	8 (19.5%)	
Both (n=28)	21 (75%)	7 (25%)	
Pre-muscle surgery horizontal deviation**			0.593
None (n=33)	26 (78.8%)	7 (21.2%)	
Mild/Moderate (<30 PD) (n=45)	36 (80%)	9 (20%)	
Severe (30+ PD) (n=19)	13 (68.4%)	6 (31.6%)	
Pre-muscle surgery vertical deviation****			0.625
None (n=25)	19 (76%)	6 (24%)	
Mild/Moderate (<30 PD) (n=42)	31 (73.8%)	11 (26.2%)	
Severe (30+ PD) (n=30)	25 (83.3%)	5 (16.7%)	
# muscle surgeries [mean (range; SE)] *****	1.26 (1,3; 0.55)	1.05 (1,2; 0.22)	0.092
Orbital radiation****			0.086
No (n=44)	30 (68.2%)	14 (31.8%)	
Yes (n=53)	45 (84.9%)	8 (15.1%)	
Decompression***			0.675
No (n=61)	48 (78.7%)	13 (21.3%)	
Yes (n=36)	27 (75.0%)	9 (25.0%)	
Posterior Decompression****			0.216
No (n=35)	30 (85.7%)	5 (14.3%)	
Yes (n=26)	18 (69.2%)	8 (30.8%)	
Disease Reactivation**			0.026'
No (n=85)	69 (81.2%)	16 (18.8%)	
Yes (n=12)	6 (50%)	6 (50%)	

SE = standard error
PD = prism diopters

Table 7: Changes in prism diopter deviation between anterior and posterior decompressions in the orbital radiation and no orbital radiation groups

Total eyes with decompressions (n = 48)	Changes in horizontal deviation [mean (range; SE)]	Changes in vertical deviation [mean (range; SE)]
Anterior decompression, no XRT (n=3)	-4 (-8, 0; 2.31)	10.33 (0, 20; 5.78)
Anterior decompression, XRT (n = 24)	4.17 (-21, 25; 2.27)	-0.71 (-42, 13; 2.22)
Posterior decompression, no XRT (n=18)	23.94 (0, 70; 4.14)	16.33 (0, 35; 10.17)
Posterior decompression, XRT (n=3)	2.22 (-15, 25; 2.26)	-1 (-3, 0; 1)
P-value (XRT)	0.001'	0.167
P-value (posterior decompression)	0.002'	0.353

SE = standard error
XRT = orbital radiation
Two Way ANOVA
' Statistically significant

References:

1. Douglas RS, Dailey R, Subramanian PS, et al. Proptosis and Diplopia Response With Teprotumumab and Placebo vs the Recommended Treatment Regimen With IntravenousMethylprednisolone in Moderate to Severe Thyroid Eye Disease: A Meta-analysis and Matching-Adjusted Indirect Comparison. JAMA Ophthalmol 2022;140(4):328-335. DOI:10.1001/jamaophthalmol.2021.6284.
2. Eckstein A, et al. Surgical Treatment of Diplopia in Graves Orbitopathy Patients. Ophthalmic Plast Reconstr Surg 2018;34(4S Suppl 1):S75-S84. DOI: 10.1097/IOP.0000000000001148.
3. Rootman DB, et al. Postoperative Changes in Strabismus, Ductions, Exophthalmometry, and Eyelid Retraction After Orbital Decompression for Thyroid Orbitopathy. Ophthalmic Plast Reconstr Surg 2017;33(4):289-293. DOI: 10.1097/IOP.0000000000000758.
4. Zloto O, et al. Association of orbital decompression and the characteristics of subsequent strabismus surgery in thyroid eye disease. Can J Ophthalmol 2017;52(3):264-268. DOI: 10.1016/j.jcjo.2016.11.006.
5. Harrad R. Management of strabismus in thyroid eye disease. Eye (Lond) 2015;29(2):234-7. DOI: 10.1038/eye.2014.282.

10:18-10:23 am

A Sticky Situation: Mucocele Formation as a Late Complication following Orbital Decompression Surgery

Rupin Parikh[1], Scott Graham[2], Erin Shriver[1], Keith Carter[1]
[1]Ophthalmology, University of Iowa, Iowa City, Iowa, United States, [2]Otolaryngology, University of Iowa, Iowa City, Iowa, United States

Introduction: Mucoceles most commonly occur following maxillofacial trauma or prior sinus surgery that leads to migration of sinus mucosa and obstruction of sinus drainage pathways. The frontal sinus is most frequently affected. Most reported cases involving the orbit occur due to pathology in an adjacent sinus or following previous orbital fracture and repair. Patients typically present with slowly worsening proptosis, diplopia, orbital pain, and sinusitis/sinus congestion. Frontal mucoceles can spread intracranially and cause meningitis or a brain abscess. Orbital decompression for thyroid eye disease is a rare etiology for mucoceles, as only two cases have previously been reported (one from a coronal approach and one from an endoscopic approach. No cases of mucoceles after orbital decompression through an orbital approach have been reported thus far.

Methods: A retrospective case series of patients with mucoceles following orbital decompression was performed using the electronic medical record at a single institution.

Results: Three patients presented with mucoceles following orbital decompression for thyroid eye disease. External photos and orbital imaging of the three patients are shown in Figures 1-3. Patients were all female with a mean age of 55.7 years. Average time to presentation following orbital decompression was 16.0 years. All decompressions were involving two walls (two cases were medial wall and floor, while the third was medial and lateral wall). The medial walls were approached transcaruncularly, the lateral wall through a lateral canthotomy and cantholysis, and floor decompressions were performed using a transconjunctival/swinging eyelid approach. One patient presented with a fronto-ethmoidal mucocele, while the other two mucoceles were purely ethmoidal. All patients underwent transnasal endoscopic marsupialization and drainage of their mucoceles with the otolaryngology service. One patient required revision endoscopic marsupialization for a recurrent mucocele six years later.

Conclusions: Formation of mucoceles following orbital decompression is a rare complication. To our knowledge, this is the first case series to report three patients with mucoceles presenting after orbital decompressions that were approached through the orbit. The chance of post-decompression mucocele formation can be minimized by performing a full ethmoidectomy with complete removal of ethmoid mucosa. Mucoceles should be considered in the differential for a previous orbital decompression patient that presents with new proptosis, diplopia, headaches, pain, sinusitis or sinus congestion regardless of the surgical approach taken.

(continued)

(continued)

Figure 1

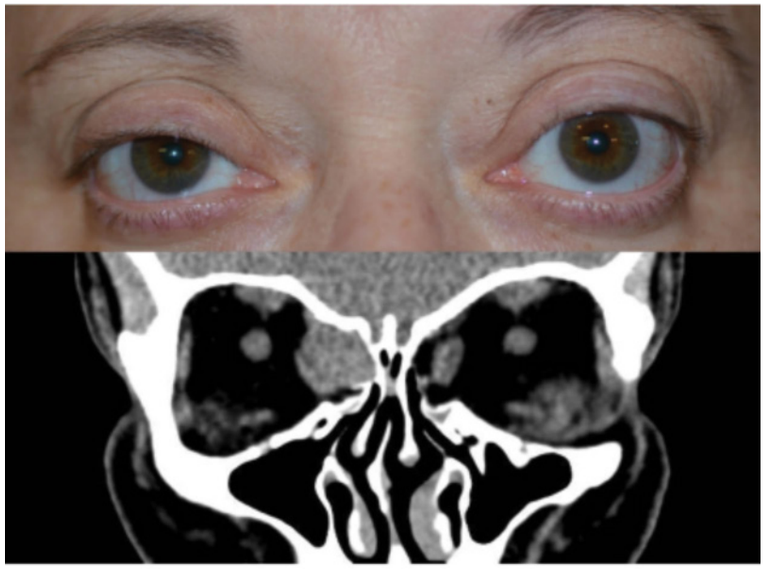


Figure 2

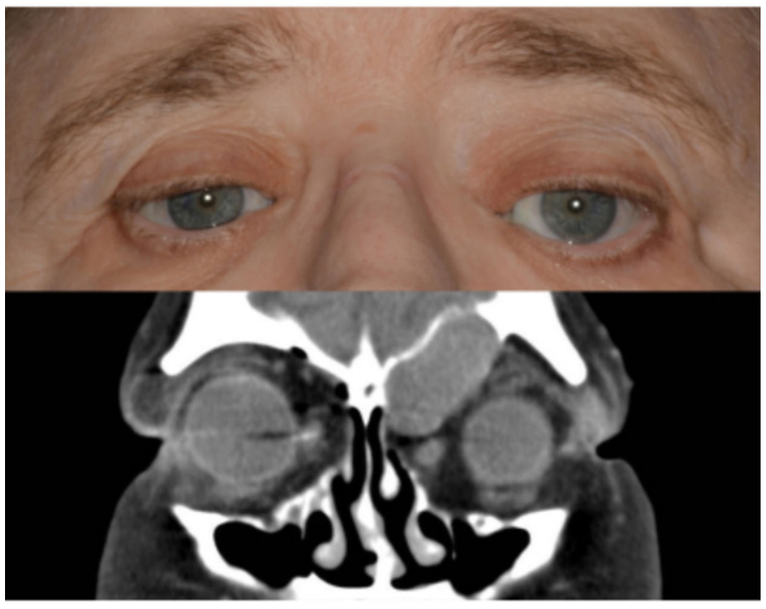
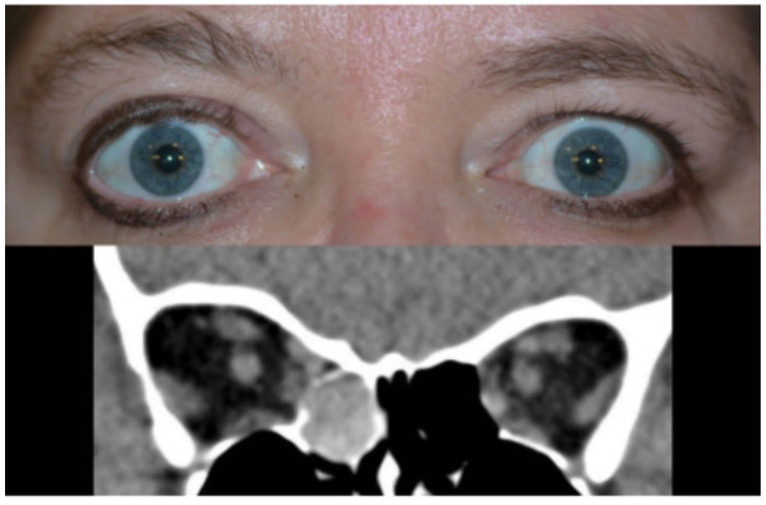


Figure 3



References:

1. Kinde B, Ahmad M, Vagefi MR. Concurrent mucocele and silent sinus syndrome after orbital fracture repair. Ophthalmology, 2023;130:344.
2. Mensink HW, Paridaens D. Front-ethmoidal mucocele after coronal orbital decompression. Orbit, 2006;25:129-131.
3. Nachabe AM, Messa GE, Broaski JC. Incidence of orbital mucocele following orbital floor fracture repair. PRS Global Open, 2024; 1-3.
4. Sellari-Franceschini S, Dallan I, Bajraktari A, Fiacchini G, Nardi M, Rocchi R, Marcocci C, Marino M, Casani AP. Surgical complications in orbital decompression for Graves' orbitopathy. Acta Otorhinolaryngol Ital, 2016;36:265-274.
5. Kasperbauer JL, Hinkley L. Endoscopic orbital decompression for Graves' ophthalmopathy. Am J Rhinol, 2005;19:603-606.
6. Dev S, Agarwal M. Frontoethmoidal mucocele causing proptosis and visual loss. Natl J Maxillofac Surg, 2020;11:121-3.

10:23-10:29 am

Long-Term Outcomes after Retreatment with Teprotumumab

Carolina A. Chiou[1,2], Amee D. Azad[1], Tatiana R. Rosenblatt[1], Lisa Y. Lin[1], David X. Zhao[1], Sri Meghana Konda[1], Darren A. Chen[1], Sierra K. Ha[1], Michael K. Yoon[1], Natalie Wolkow[1], Nahyoung Grace Lee[1], Suzanne Freitag[1]
[1]Department of Ophthalmology, Massachusetts Eye and Ear, Harvard Medical School, Boston, Massachusetts, United States, [2]Department of Ophthalmology, Ophthalmic Plastic Surgery Service, Brown Health Medical Group, Warren Alpert Medical School of Brown University, Providence, Rhode Island, United States

Introduction: Teprotumumab, the first FDA-approved drug for thyroid eye disease (TED), revolutionized its management in 2020. Clinical trials showed significant improvements in proptosis and diplopia for active and chronic TED.[1,2] Optic X-Study reported a 30% flare rate at 72 weeks, with retreatment proving safe and reducing proptosis but limited to follow-up 24 weeks.[3] Other studies observed regression at extended follow-up.[4] A multicenter study of 119 patients reported a 25% retreatment rate,[5] but long-term outcomes of a second course remain unexplored.

Methods: Retrospective analysis of patients who completed two courses of teprotumumab with ≥ 6-month follow-up at a single institution (1/1/20–12/31/24).

Results: Fifteen patients met inclusion criteria. One patient was an active smoker. Mean follow-up time post-teprotumumab 2 was 12.4 months (7.5-23.4, SD 4.9). Mean follow-up time post-teprotumumab 2 was 12.4 months (7.5-23.4, SD 4.9).

Proptosis significantly decreased by an average of 3.0mm (range: -7 to +2, SD: 2.4, $p = 8.3 \times 10^{-7}$) between pre-teprotumumab 2 and immediately post-teprotumumab 2. Excluding two patients who underwent bilateral orbital decompressions post-teprotumumab 2, proptosis improved an average of 1.4mm (-6 to +6, SD 2.9) from pre-teprotumumab 1 to last follow-up post-teprotumumab 2, though not statistically significant (p= 0.6389). At last follow-up compared to immediately post-teprotumumab 2, 18 eyes (69.2%) from 10 patients (76.9%) showed a regression of ≥ 2mm in proptosis, averaging 3.1mm (2 to 4.5, SD 1.1).

At last follow-up, 13 (93.3%) had improved CAS scores compared to pre-teprotumumab, with an average decrease of 4.3 (-6.0 to -1.0, SD 1.4). Five (40%) had a ≥2-point worsening in CAS (average 3.2; 2–6, SD 1.6) from immediately post-teprotumumab 2, but only 2 had CAS ≥4.

(continued)

(continued)

Diplopia in primary gaze was present in 4 patients pre-teprotumumab 1 and 5 patients at last follow-up post-teprotumumab 2. Immediately post-teprotumumab 2, 7 patients had primary gaze diplopia, 2 required increased prisms, and 5 underwent strabismus surgery. Of these, 1 had residual primary gaze diplopia post-surgery and another recurrence of primary gaze diplopia 6 months post-surgery. One patient developed primary gaze diplopia after orbital decompression post-teprotumumab 2.

Pre-teprotumumab 1, 4 patients (26.7%) had DON. Two experienced recurrence, and 4 new DON cases developed post-teprotumumab 1. Of these 6, 3 had recurrent DON post-teprotumumab 2, two patients self-resolved during close observation and one necessitated IV solumedrol for bilateral DON.

Conclusions: This is the first long term follow-up study of patients who completed two full treatments of teprotumumab. There was no statistically significant difference in proptosis measurements before teprotumumab 1 compared to after teprotumumab 2 at long term-follow-up. Despite 5 patients undergoing strabismus surgery after the second treatment, more patients experienced primary gaze diplopia at long-term follow up than compared to before teprotumumab 1. Among the 4 patients who presented with DON prior to their first treatment, only 1 case resolved, while the remaining three experienced recurrent DON after both teprotumumab 1 and 2. These findings suggest that although patients may have an initial positive response, those with significant regression following the first treatment are likely to experience similar regression following the second treatment. Retreatment may improve external signs of inflammation but may not lead to sustained improvements in proptosis or offer a benefit for managing primary gaze diplopia. Future studies are needed to demonstrate whether prolonged teprotumumab or tapering of therapy may improve outcomes for these recalcitrant patients.

References:

1. Douglas, R. S., Kahaly, G. J., Patel, A., Sile, S., Thompson, E. H. Z., et al (2020). Teprotumumab for the Treatment of Active Thyroid Eye Disease. *New England Journal of Medicine*, *382*(4), 341–352.
2. Smith, T. J., Kahaly, G. J., Ezra, D. G., Fleming, J. C., Dailey, R. A., et al (2017). Teprotumumab for Thyroid-Associated Ophthalmopathy. *New England Journal of Medicine*, *376*(18), 1748–1761.
3. Douglas, R. S., Kahaly, G. J., Ugradar, S., Elflein, H., Ponto, K. A., et al (2022). Teprotumumab Efficacy, Safety, and Durability in Longer-Duration Thyroid Eye Disease and Re-treatment: OPTIC-X Study. *Ophthalmology*, *129*(4), 438–449.
4. Rosenblatt, T. R., Chiou, C. A., Yoon, M. K., Wolkow, N., Lee, N. G., et al (2024). Proptosis Regression After Teprotumumab Treatment for Thyroid Eye Disease. *Ophthalmic Plastic and Reconstructive Surgery*, *40*(2), 187–191.
5. Ugradar, S., Parunakian, E., Malkhasyan, E., Chiou, C. A., Walsh, H. L., et al (2025). The Rate of Re-treatment in Patients Treated with Teprotumumab. *Ophthalmology*, *132*(1), 92–97.

10:29-10:35 am

Extended Long-Term Follow-Up of Proptosis Regression After Teprotumumab Treatment for Thyroid Eye Disease

Tatiana R. Rosenblatt[1], Carolina A. Chiou[2,3], Michael K. Yoon[2], Nahyoung Grace Lee[2], Natalie Wolkow[2], Suzanne K. Freitag[2]
[1]Ophthalmic Plastic Surgery Service, Department of Ophthalmology, Massachusetts Eye and Ear, Harvard Medical School, Boston, Massachusetts, United States, [2]Ophthalmic Plastic Surgery Service, Department of Ophthalmology, Massachusetts Eye and Ear, Boston, Massachusetts, United States, [3]Department of Surgery, Ophthalmic Plastic Surgery Service, Brown Health Medical Group, Providence, Rhode Island, United States

Introduction: Although teprotumumab has been shown to reduce proptosis short-term, its durability has remained uncertain. A previous study found high rates of proptosis regression at later follow-up, though having been published relatively early in the teprotumumab era, it was limited by gaps in follow-up frequency and duration.[1] Now, five years after teprotumumab's initial FDA-approval, this study extends on the previously reported cohort to better understand teprotumumab's long-term effects on proptosis and regression evolution overtime.

Methods: Extended retrospective analysis of all patients who completed eight infusions of teprotumumab at one institution from 1/1/20-12/31/22.[1] Primary outcomes were proptosis regression at most recent follow-up compared to immediately post-treatment and pre-treatment.

Results: Of 129 treated patients, 113 (87.6%) had proptosis data after immediate post-treatment follow-up (Table 1). Mean follow-up was 20.4 months (3.6–39.0, SD 9.4) from last infusion. Compared to immediately post-treatment, 150 (66.4%) eyes of 83 (73.5%) patients had regression, averaging 2.8 mm (0.5–10.0, SD 1.8) (Figure 1). Ninety-five (42.0%) eyes of 55 (48.7%) patients regressed by ≥2 mm, averaging 3.8 mm (2.0–10.0, SD 1.6). Mean time from last infusion to first documentation of regression was 10.1 months (2.7–39.0, SD 6.8); 80 (67.2%) eyes of 49 patients continued to worsen after initial regression. Self-reported Asian race decreased odds of regression by 28.1% (CI 6.8–44.6, p=0.013) and regression amount by 1.5 mm (CI 0.1–2.9, p=0.044), while male sex increased regression by 1.1 mm (CI 0.1–2.0, p=0.025). Seventy-one (31.4%) eyes of 43 (38.1%) patients regressed to become worse than pre-treatment by 1.8 mm (0.5–5.0, SD 1.2); 31 (13.7%) eyes of 20 patients regressed by ≥2 mm (mean 2.9 mm, 2.0–5.0, SD 0.9) (Figure 2). Male patients had 25.9% (CI 3.0–52.2, p=0.022) increased odds of regressing beyond pre-treatment proptosis and 1.8 mm (CI 0.7–2.9, p=0.001) increased regression amount. Compared to pre-treatment, 137 (60.6%) eyes of 77 patients had net improvement averaging 2.7 mm (0.5–10.0, SD 1.8), and 18 (8.0%) eyes of 17 patients were unchanged. CAS significantly increased at most recent follow-up (mean 2.0, 0–8, SD 2.4) compared to immediately post-treatment (0.9, 0–5, SD 1.2, p=0.004), with CAS ≥4 in 22 (19.5%) patients. TED flare occurred in 61 (54.0%) patients, defined as CAS increase ≥2 (n=6, 5.3%),
(continued)

(continued)
regression ≥2 mm (n=37, 32.7%), or both (n=18, 15.9%). Post-teprotumumab, 4 (3.5%) patients underwent decompression, 1 (0.9%) had orbital radiation, and 1 (0.9%) required lateral tarsorrhaphy for globe subluxation. Twenty-six (23.0%) patients initiated teprotumumab re-treatment, on average 17.4 months (5.5–35.7, SD 8.4) after initial course completion.

Conclusions: This extended-duration analysis demonstrated proptosis regression after teprotumumab in over two-thirds of patients at long-term follow-up, with one-third worsening beyond pre-treatment proptosis, independent of pre-treatment TED duration. Two-thirds continued to worsen after initial regression, with over half of patients developing a TED flare – higher rates than previously reported at shorter-term follow-up. Though most patients maintained net proptosis improvement, these results suggest that teprotumumab's effects may not be long-lasting. As time progresses, a significant proportion of patients may require additional interventions to address proptosis and recurrent TED symptoms.

Table 1. Study Cohort Demographics

Demographic Categories	N (%)
Sex	
Female	83 (73.5)
Male	30 (26.5)
Race/Ethnicity	
White, non-Hispanic	87 (77.0)
White, Hispanic	3 (2.6)
Black	9 (8.0)
Asian	14 (12.4)
Smoking Status	
Never smoker	71 (62.8)
Former smoker	31 (27.4)
Active smoker	10 (8.8)
Thyroid Disease	
Graves only	105 (92.9)
Hashimoto's only	2 (1.8)
Both	4 (3.5)
Neither or unknown	2 (1.8)
Optic Neuropathy	20 (17.7)
Prior Decompression	10 (8.8)

Figure 1

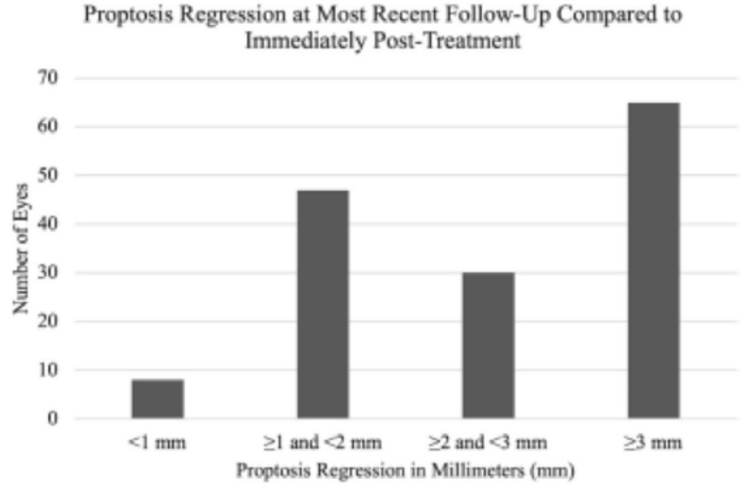
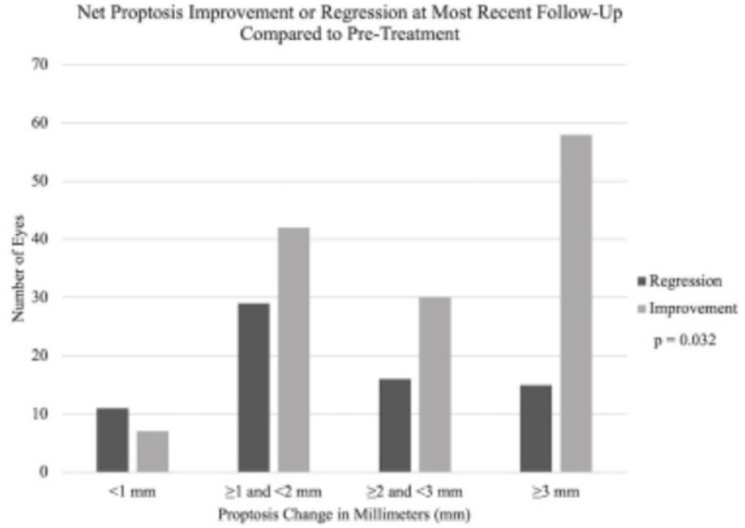


Figure 2



References:

1. Rosenblatt TR, Chiou CA, Yoon MK, Wolkow N, Lee NG, Freitag SK. Proptosis regression after teprotumumab treatment for thyroid eye disease. *Ophthal Plast Reconstr Surg*. Epub 2023.

10:35-10:41 am

Globe Position following Transorbital Neuroendoscopic Surgery in Patients with Sphenoid Wing Meningiomas

Shanlee Stevens[1], Quillan Austria[1], Allison Coombs[2], Theodore Schwartz[1], Gary Lelli[1], Kyle Godfrey[1]
[1]Weill Cornell Medicine, New York, New York, United States, [2]Northwell Health, New York, New York, United States

Introduction: The lateral transorbital approach is a minimally invasive, endoscope-assisted approach for accessing skull base pathology in the middle cranial fossa. One such pathology is hyperostotic sphenoid wing meningiomas (SWM). The osseous component in SWM can induce significant proptosis. There have not been studies comparing the evolution of postoperative globe position over time in patients with SWM versus other tumor types, however this is important to understand as debulking is often the primary surgical goal in SWM versus non-SWM tumors that are intracranial and without significant preoperative proptosis.

Methods: A retrospective consecutive case review was performed. Included subjects underwent combined multidisciplinary transorbital approaches with oculoplastic and neurological surgery at a single center between 2016-2024. Patients were stratified into a SWM group and a non SWM group based on final pathology reports. Globe positions were assessed by analyzing orbital or brain magnetic resonance imaging (MRI). MRI were evaluated at preoperative, first postoperative, three to six months postoperative, and most recent scans. Globe position measurements were taken on T2 fat saturated axial scans, when available, at the level of the lens. The anterior distance between the interzygomatic line and anterior globe was determined (Figure 1). Pre and post operative measurements were compared.

Results: 39 subjects met inclusion criteria. 11 subjects had final pathology of SWM. Demographics are summarized in Table 1. Preoperative globe position in the SWM group was 20.8±3.1mm. Globe position at first post operative, 3-6 month, and most recent scans were 21.9±3.3mm, 20.0±3.7mm and 18.7±2.8mm respectively. Preoperative globe position in the non-SWM group was 19.7±2.9. Globe position at first post operative, 3-6 month, and most recent scans were 20.4±2.7mm, 17.9±2.2 mm and17.9±2.6mm respectively (Figure 2).

Preoperative relative exophthalmos in the SWM group was 2.01±2.4mm. Relative proptosis at first post operative, 3-6 month, and most recent scans were 3.16±2.2mm, 1.39±2.1mm, and 0.25±2.2mm respectively. Preoperative relative exophthalmos in the non-SWM group was 1.10±2.9mm. Relative proptosis at first post operative scan, 3-6 month scan, and most recent scans were 2.11±2.7mm, 2.61±2.2mm, and 1.17±2.6mm respectively.

Conclusions: Overall, there was greater preoperative proptosis in the SWM group compared to the non-SWM group. There was also a greater decrease in relative exophthalmos and greater improvement in globe symmetry over time in the SWM group compared with

(continued)

(continued)

the non-SWM group. Both groups demonstrated an initial increase in proptosis at the time of first postoperative scan which could be due to post-surgical inflammation that resolves over time. Additionally, given that all but four subjects underwent orbital reconstruction with autologous fat graft implantation, the authors hypothesize that the decrease in proptosis relative to the nonoperative eye and improved symmetry in the months following surgery results from fat graft absorption. Understanding the evolution of globe position over time and the influence of postoperative fat graft atrophy in patients undergoing TONES for SWM is important, as it can aid in planning of globe reconstruction to achieve favorable aesthetic outcomes. Further studies with increased patient numbers and analysis of fat graft volume over time are necessary to support these findings.

Figure 1

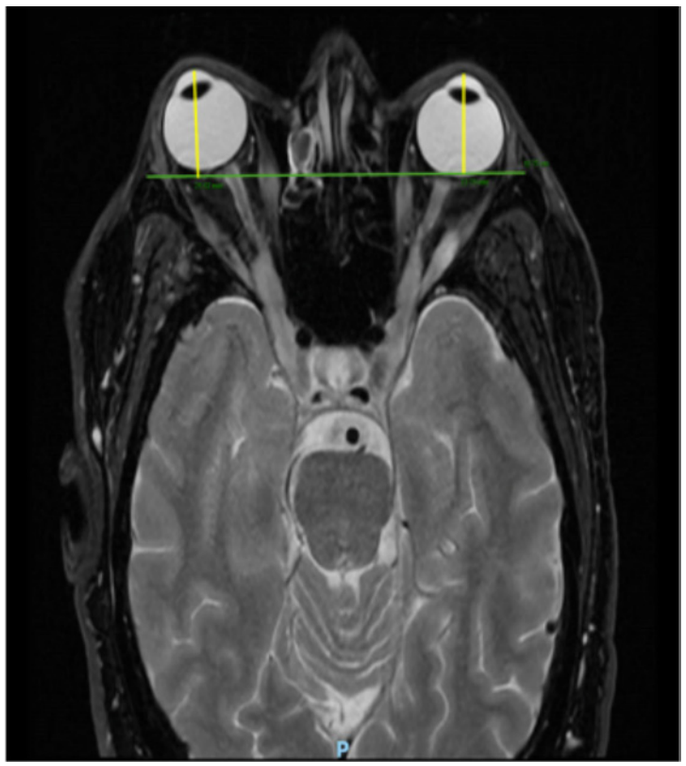


Figure 2

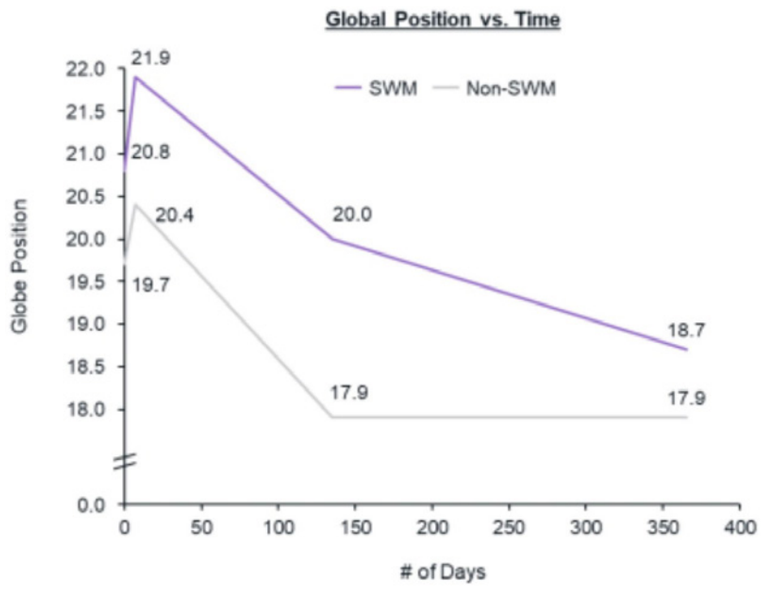


Figure 3

Table. 1 Patient Demographics

	Non SWM	SWM
n	28	11
Mean age (years)	50.0 ± 20.9	61.3 ± 14.5
Female (%)	57.1	72.7
Caucasian (%)	92.8	81.8
Postoperative follow up (weeks)	32.9 ± 45.9	69.2 ± 73.1
Fat Graft	2	2
Surgery (%)	Subtotal Resection: 53.5 Gross Total Resection: 28.5 Biopsy: 17.8	Subtotal Resection: 45.4 Gross Total Resection: 54.5 Biopsy: 0
Pathologic Diagnosis (%)	Schwannoma: 10.3 Fibrous tumor: 10.3 Metastasis: 7.7 Encephalocele: 5.1 Prolactinoma: 5.1 Dermoid Tumor: 5.1 Astrocytoma: 5.1 Orbital Inflammation: 5.1 Low Grade Glioma: 5.1 Craniopharyngioma: 2.6	Meningioma: 28.2
Tumor location (%)	Orbit: 15.4 Cavernous Sinus: 12.8 Meckel's Cave: 10.3 Temporal Lobe: 10.3 Middle Fossa: 7.7 Anterior Fossa: 5.1 Petrous Apex: 2.6 Sella: 2.6 Temporalis Fossa: 2.6	Sphenoid Wing

References:

1. Mathios D, Bobeff EJ, Longo D, et al. The lateral transorbital approach to the medial sphenoid wing, anterior clinoid, middle fossa, cavernous sinus, and Meckel's cave: target-based classification, approach-related complications, and intermediate-term ocular outcomes. J Neurosurg. 2023;140(3):677-687. Published 2023 Sep 1.
2. Wnuk E, Maj E, Jabłońska-Pawlak A, Jeczeń M, Rowińska-Berman K, Rowiński O. Validation of exophthalmos magnetic resonance imaging measurements in patients with Graves' orbitopathy, compared to ophthalmometry results. Pol J Radiol. 2022;87:e539-e544.

10:59-11 am

Studio Quality Oculofacial Photography with Exam Room Convenience Lighting Set Up

Alomi Parikh[1,2], Damion Poirier[3], David Samimi[1,2]

[1]Eyesthetica, Los Angeles, California, United States, [2]USC Roski Eye Institute, Los Angeles, California, United States, [3]Professional Sales, Samy's Camera, Los Angeles, California, United States

Introduction: The previously published gold-standard lighting system for office-based oculofacial plastic photography has a high initial cost and large footprint, requiring at least a 6x8 foot room and multiple light sources with at least 16 inches between the subject and the background (Figure 1).[1-3] We describe a low-cost and low-footprint solution for obtaining quality in-office photos in any room with a compact camera.

Methods: We designed a lighting system that addresses many office-based photography challenges. Our goals were to adequately represent facial skin and contour details while minimizing shadowing with oblique and side full-face photography. We also aimed to optimize clinic efficiency by offering photography in each exam room utilizing a low square footage of office space and obtaining quality photos with a camera small enough to be carried in the surgeon's white coat pocket. Studio lighting consultants were employed to assist with system design. A trial of single-lens reflex cameras with ring lights was attempted but this system did not eliminate full face photography shadowing. Ultimately a Godox SK300IV strobe flash lighting system with a point-and-shoot camera was chosen. For rooms with high baseline ambient lighting, a remote flash slave sensor was added to increase the sensitivity to the camera flash (Wein L8 Micro Slave).

Results: A point-and-shoot camera with flash is used for photography. The ceiling mounted strobe lighting unit sensor detects the camera flash and provides diffuse lighting of the exam room by projecting light away from the patient, causing it to reflect from the walls around the room and back onto the face from multiple angles. A compact transmitter can be alternatively placed on the camera to trigger the flash independent of the strobe sensor. Standardized photo backgrounds are facilitated with a 3-4 foot horizontal same color segment of wall in each room. The patient stands 3 inches in front of the wall. Small adhesive foot-shaped floor stickers can be placed to facilitate efficient patient positioning (Figure 2A-B). The strobe light method can be adjusted to provide diffuse lighting in an

(continued)

(continued)

office with or without ambient light (Figure 2A,C,D). The strobe system measures 16.5x11x7.4 inches and the cost of each unit is $139.[4] It can be mounted to a typical drop ceiling t-bar support using an inexpensive drop ceiling scissor clamp with an appropriate safety cable (Figure 2C). The strobe light is supplied in black but can be re-painted white if desired for room aesthetics (Figure 2C-D). The following approach is used to optimize settings for any individual space: shutter speed 1/60th to 1/125th of a second, aperture (f-stop) F8.0-F11, ISO 100-400, and finally adjust the power of the strobe to desired photo exposure. The system minimizes shadowing and more accurately depicts color and contour when compared to traditional flash photography with the same camera (Figure 3).

Conclusions: This ceiling-mounted strobe lighting system provides a mobile, low-cost solution to obtain quality photographs within an existing office footprint, in the exam room, with good skin/contour details and without shadowing.

Figure 1

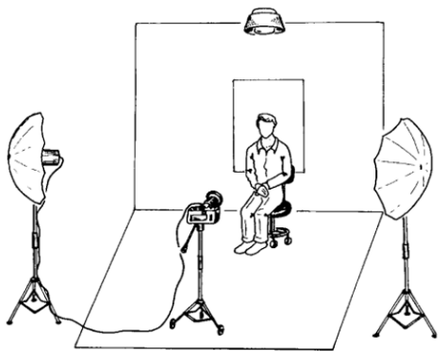


Figure 1. Diagrammatic photographic setup. The patient is seated in front of the photographic background on a chair with a back that rotates to facilitate patient positioning. The camera may be mounted on a mobile tripod, or it may be hand-held by the surgeon. The camera is connected to synchronized lights; a "kicker" light overhead and behind the patient is optional.

Figure 1. Ideal in-office lighting system requiring a dedicated studio room with large footprint and high-cost equipment (Figure from: Becker et al 1999).

Figure 2



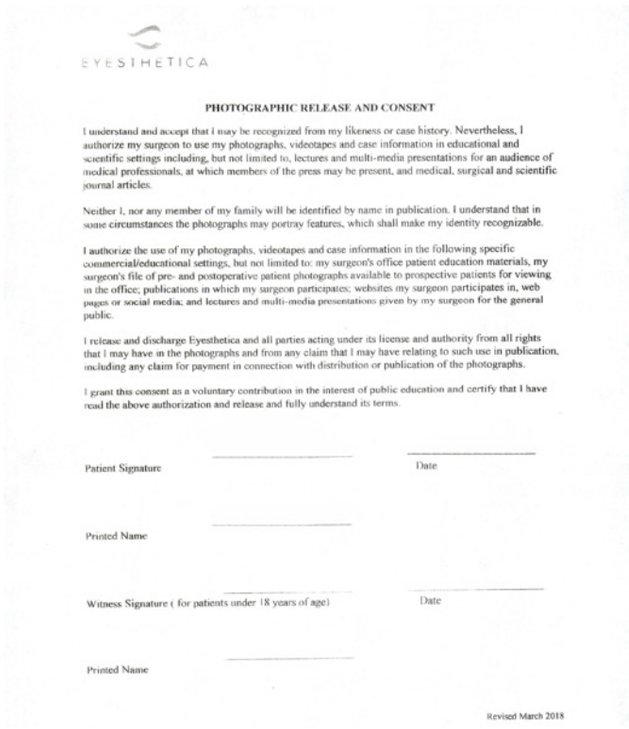
Figure 2. Flash strobe lighting setup within the patient exam room. (A). Demonstration of the surgeon taking photos in the patient examination room. (B). Foot marks placed 3 inches in front of a solid color wall allow for efficient patient positioning. (C). The remote flash slave sensor used for rooms with high ambient lighting (D). The flash strobe unit mounted with drop ceiling scissor clamp and security cable. Unit painted white to blend in with the ceiling tiles. (E). Demonstration of the location of the wall-mounted flash strobe unit within the patient examination room; it does not reduce the available footprint for patient care.

Figure 3



Figure 3. (A). Side face view with flash strobe unit; (B). Side face view with single camera flash with arrow highlighting shadowing; (C). Front face view with flash strobe unit; (D). Front face view with single camera flash with arrow highlighting shadowing. All photos are taken in the same location and with the same camera. The flash strobe unit decreases wash-out and shadowing in both front and side face views.

Figure 4



EYESTHETICA

PHOTOGRAPHIC RELEASE AND CONSENT

I understand and accept that I may be recognized from my likeness or case history. Nevertheless, I authorize my surgeon to use my photographs, videotapes and case information in educational and scientific settings including, but not limited to, lectures and multi-media presentations for an audience of medical professionals, at which members of the press may be present, and medical, surgical and scientific journal articles.

Neither I, nor any member of my family will be identified by name in publication. I understand that in some circumstances the photographs may portray features, which shall make my identity recognizable.

I authorize the use of my photographs, videotapes and case information in the following specific commercial/educational settings, but not limited to: my surgeon's office patient education materials, my surgeon's file of pre- and postoperative patient photographs available to prospective patients for viewing in the office; publications in which my surgeon participates; websites my surgeon participates in, web pages or social media; and lectures and multi-media presentations given by my surgeon for the general public.

I release and discharge Eyesthetica and all parties acting under its license and authority from all rights that I may have in the photographs and from any claim that I may have relating to such use in publication, including any claim for payment in connection with distribution or publication of the photographs.

I grant this consent as a voluntary contribution in the interest of public education and certify that I have read the above authorization and release and fully understand its terms.

Patient Signature _____ Date _____

Printed Name _____

Witness Signature (for patients under 18 years of age) _____ Date _____

Printed Name _____

Revised March 2018

References:

1. Becker DG, Tardy ME Jr. Standardized photography in facial plastic surgery: pearls and pitfalls. Facial Plast Surg. 1999;15(2):93-9. doi: 10.1055/s-2008-1064305. PMID: 11816129.
2. Swamy RS, Most SP. Pre- and postoperative portrait photography: standardized photos for various procedures. Facial Plast Surg Clin North Am. 2010 May;18(2):245-52, Table of Contents. doi: 10.1016/j.fsc.2010.01.004. PMID: 20511074.
3. Neff LL, Humphrey CD, Kriet JD. Setting up a medical portrait studio. Facial Plast Surg Clin North Am. 2010 May;18(2):231-6, Table of Contents. doi: 10.1016/j.fsc.2010.01.002. PMID: 20511072.
4. Godox website: Studio Flashes. https://godox.com/product-d/SKII.html

11-11:01 am

The Top 100 Most Cited Oculofacial Plastic Surgery Articles

Daniel Azzam[1], Leo Meller[2], Angel Sambo[2], Nathan Lau[2], Marissa Shoji[2], Eman Al Sharif[2], Bobby Korn[2], Catherine Liu[2]
[1]Department of Ophthalmology, New England Eye Center, Tufts Medical Center, Boston, Massachusetts, United States, [2]Division of Ophthalmic Plastic and Reconstructive Surgery, Shiley Eye Institute, University of California, San Diego, San Diego, California, United States

Introduction: The evolution of the discipline of oculofacial plastic surgery (OPS) is closely tied to the scientific advancements in the field. Studying the most impactful works in the OPS literature may help determine what scientific progress has been made and the opportunities that remain.

Bibliometric analysis has been used to identify important patterns in various ophthalmologic disciplines[1-3], including journal impact, contributions globally, and key subspecialty research topics and themes. In this study, we aim to identify and analyze the top 100 most cited OPS articles to date.

Methods: In this review, the Web of Science database – the leading citation index worldwide – was queried in April 2024 for the top 100 most cited OPS articles to date via a comprehensive list of 69 subspecialty search terms according to the ASOPRS Oculofacial Plastic Surgery Education Center. The primary outcomes were to define the top 100 most cited papers in OPS with the corresponding variables: title, authors, total citations, publication year, journal name, country of origin, topic within OPS, article type, and scope of study.

Results: The top ten most cited OPS articles are listed in Figure 1. The top 100 articles were published between 1933-2021, generating 16,534 total citations, with 1991-2000 being the most prolific period (Figure 2). The number of years since publication was significantly associated with mean citations per year ($p<0.001$), with the overall mean citations per year being 9.2 ± 16.0. Articles were largely from the United States (74). Diverse topics were represented including Orbit (53), Lacrimal (22), Eyelid (22), and Cosmetic (3), with the most frequent subtopic being thyroid eye disease (TED) (Figure 3). Scope included surgical advancement (60), medical understanding (37), and anatomic insight (12) (Figure 4). Types of research study included retrospective cohort or case series (75), clinical trial (8), prospective cohort (7), and translational basic science (2). Most frequent journals included *Ophthalmology* (34), *JAMA Ophthalmology* (19), *Ophthalmic Plastic and Reconstructive Surgery* (17), and *American Journal of Ophthalmology* (11) (Figure 5).

Conclusions: This bibliometric study highlights landmark papers in the OPS literature, thus providing a critical historical perspective in this field. Furthermore, it may serve as a reference tool for OPS medical education and shed light on understudied areas to direct further research efforts.

(continued)

(continued)

The present analysis suggests that historical OPS pieces remain highly cited, standing the test of time. Notable historical trends included a strong focus on orbit research, within the scope of advancing surgical techniques, from investigators originating in the United States. Dedicated OPS journals stand among other high-impact general ophthalmology and general medicine journals in disseminating OPS literature to a broad readership.

Figure 1

Top 10 Most Cited Oculofacial Plastic Surgery Articles

Rank	Title	Author List	Year	Citations	Journal Name
1	Survey Of 1264 Patients With Orbital Tumors And Simulating Lesions - The 2002 Montgomery Lecture, Part 1	Shields JA, Shields CL, Scartozzi R.	2004	640	*Ophthalmology*
2	Teprotumumab For Thyroid-Associated Ophthalmopathy	Smith TJ, Kahaly GJ, Ezra DG, et al.	2017	394	*New England Journal of Medicine*
3	Botulinum-A Toxin Injection As A Treatment For Blepharospasm	Scott AB, Kennedy RA, Stubbs HA.	1985	349	*JAMA Ophthalmology*
4	Tarsal Strip Procedure	Anderson RL, Gordy DD.	1979	329	*JAMA Ophthalmology*
5	Teprotumumab For The Treatment Of Active Thyroid Eye Disease	Douglas RS, Kahaly GJ, Patel A, et al.	2020	320	*New England Journal of Medicine*
6	External Dacryocystorhinostomy - Surgical Success, Patient Satisfaction, And Economic Cost	Tarbet KJ, Custer PL.	1995	296	*Ophthalmology*
7	Clinical Features Of Graves' Ophthalmopathy In An Incidence Cohort	Bartley GB, Fatourechi V, Kadrmas EF, et al.	1996	278	*American Journal of Ophthalmology*
8	Primary Acquired Nasolacrimal Duct Obstruction - A Clinicopathological Report And Biopsy Technique	Linberg JV, McCormick SA.	1986	258	*Ophthalmology*
9	Sebaceous Carcinoma Of The Eyelids - Personal Experience With 60 Cases	Shields JA, Demirci H, Marr BP, Eagle RC Jr, Shields CL.	2004	252	*Ophthalmology*
10	Idiopathic Orbital Inflammation - Distribution, Clinical Features, And Treatment Outcome	Yuen SJ, Rubin PA.	2003	245	*JAMA Ophthalmology*

Figure 2

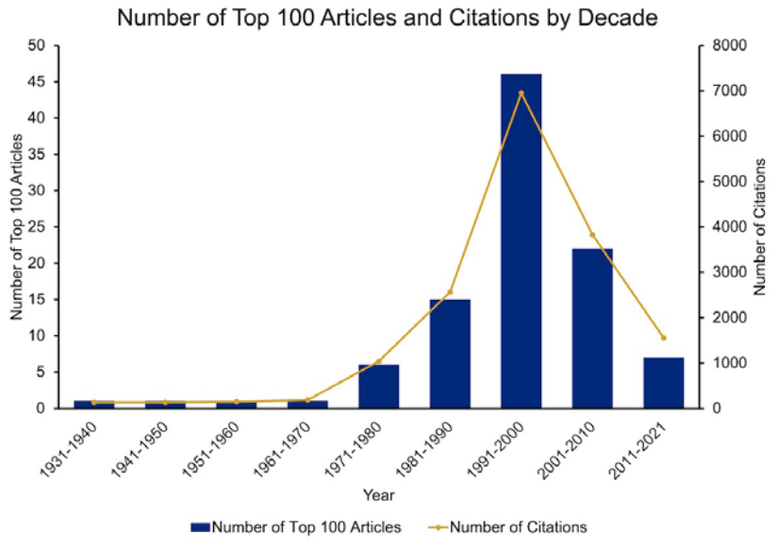
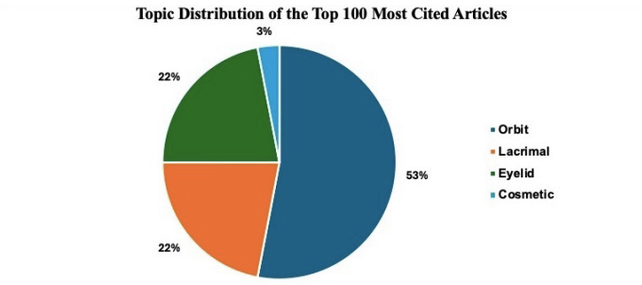


Figure 3



Orbit (n=53)	Lacrimal (n=22)*	Eyelid (n=22)	Cosmetic (n=3)
Thyroid Eye Disease (n=14)	Endoscopic DCR (n=11)	Ptosis (n=8)	Filler (n=1)
Enucleation/Evisceration/Anophthalmic Socket (n=9)	External DCR (n=8)	Blepharospasm/Hemifacial Spasm (n=4)	Lower Eyelid Blepharoplasty (n=1)
Orbital Fracture (n=8)	Congenital NLDO (n=3)	Anatomy (n=2)	Aging (n=1)
Infection [n=6 (mucor=2)]	CDCR (n=1)	Reconstruction (n=2)	
Orbital Tumor (n=5)	Anatomy (n=1)	Eyelid Tumor (n=2)	
Orbital Inflammation [n=3 (IgG4=1)]	Miscellaneous (n=2)	Entropion/Ectropion/Lateral Canthus (n=1)	
Pseudotumor Cerebri (n=2)		Dermatochalasis (n=1)	
Miscellaneous (n=6)		Floppy Eyelid (n=1)	
		Trachoma (n=1)	

DCR: Dacryocystorhinostomy; **NLDO:** Nasolacrimal Duct Obstruction; **CDCR:** Conjunctivodacryocystorhinostomy; *Each article may belong to multiple categories.

(continued)

(continued)

Figure 4

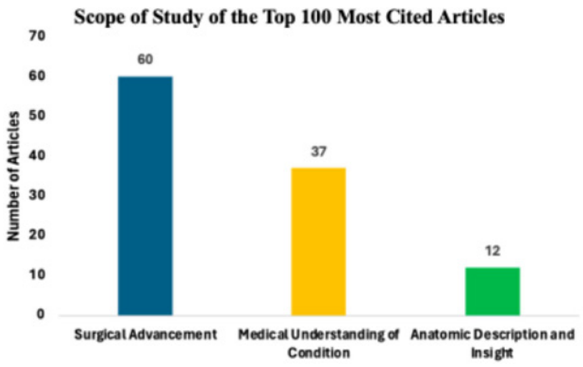


Figure 5

Journals that Published the Top 100 Most Cited Articles in Oculofacial Plastic Surgery

Journal	No. of Articles	Impact Factor*
Ophthalmology	34	13.1
JAMA Ophthalmology	19	7.8
Ophthalmic Plastic and Reconstructive Surgery	17	1.2
American Journal of Ophthalmology	11	4.1
British Journal of Ophthalmology	6	1.9
Ophthalmic Surgery, Lasers, and Imaging Retina	3	0.9
New England Journal of Medicine	2	96.2
Eye (London)	2	2.8
Indian Journal of Ophthalmology	2	2.1
Lancet	1	98.4
Graefe's Archive for Clinical and Experimental Ophthalmology	1	2.4
European Journal of Clinical Investigation	1	4.4
Australian and New Zealand Journal of Ophthalmology	1	N/A

***Impact factor in year 2023**

References:

1. Zhao ZG, Guo XG, Xu CT, Pan BR, Xu LX. Bibliometric analysis on retinoblastoma literatures in PubMed during 1929 to 2010. *Int J Ophthalmol*. 2011;4(2):115-120. doi:10.3980/j.issn.2222-3959.2011.02.01
2. Frings A, Kromer R, Ueberschaar J, Druchkiv V, Schargus M. [The 100 Most Often Articles on Glaucoma Research: a Bibliometric Analysis]. *Klin Monbl Augenheilkd*. 2019;236(7):858-870. doi:10.1055/s-0043-118177
3. Mongeon P, Paul-Hus A. The journal coverage of Web of Science and Scopus: a comparative analysis. *Scientometrics*. 2016;106(1):213-228. doi:10.1007/s11192-015-1765-5

11:01–11:02 am

Treatment Patterns and Outcomes of Dysthyroid Optic Neuropathy with Teprotumumab

Amee D. Azad[1], Carolina Chiou[2], Lisa Y. Lin[3], Sri Meghana Konda[3], Darren Chen[3], Tatiana Rosenblatt[4], David Zhao[4], Sierra Ha[4], Michael K. Yoon[4], Natalie Wolkow[4], Nahyoung G. Lee[4], Suzanne Freitag[1]
[1]Ophthalmic Plastic Surgery Service, Massachusetts Eye and Ear, Boston, Massachusetts, United States, [2]Ophthalmic Plastic Surgery Service, Brown University Warren Alpert Medical School, Providence, Rhode Island, United States, [3]Ophthalmic Plastic Surgery Service, Massachusetts Eye and Ear, Boston, Massachusetts, United States, [4]Ophthalmic Plastic Surgery Service, Mass Eye and Ear, Boston, Massachusetts, United States

Introduction: Dysthyroid optic neuropathy (DON) is a vision-threatening manifestation of thyroid eye disease (TED). The pathogenesis involves compression of the optic nerve due to extraocular muscle and orbital fat expansion and affects 3-7% of patients with TED.[1–3] Prior studies have demonstrated that age, sex, and smoking status are risk factors for developing DON and treatment options were previously limited to corticosteroids, radiation, or surgical decompression.[4,5] Recent case reports show encouraging results for the use of teprotumumab in the treatment of DON, but with limited follow-up.[6–8] The goal of this study is to characterize long-term follow-up and treatment patterns of TED-DON with teprotumumab.

Methods: A retrospective study was performed on patients with TED with DON for whom teprotumumab was prescribed a single institution from January 1, 2018 to January 1, 2025. DON was defined as decreased vision, TED-related visual field defects,[9] dyschromatopsia, or a relative afferent pupillary defect (RAPD). Patients who did not complete a first course of all 8 infusions or with less than 6 months of follow-up following their last infusion were excluded.

Results: Twenty-seven patients met inclusion criteria. The median age was 64.7 (SD 11.4), 21 (77.8%) were female, 4 (14.8%) had a history of radioactive iodine treatment, and 17 (63.0%) were never smokers. Three (11.1%) patients underwent an orbital decompression and 17 (63.0%) received systemic corticosteroids. The median time from DON diagnosis to first teprotumumab infusion was 2 months (IQR 1.5-8.8). Five (18.5%) patients who had no prior history of DON developed DON 7-29 months after treatment without a preceding surgery; three of whom underwent retreatment. Six (22.2%) patients with an initial DON diagnosis had a DON recurrence at a median time of 21 months (IQR 18-25), 3 of whom recurred after their first course of teprotumumab at a median time of 10 months (IQR 9.5-12). All 3 of these patients underwent retreatment with teprotumumab, but only 1 patient's optic neuropathy improved and remained stable for 8 months after the second course. Three patients recurred after the second course of teprotumumab 4.5-21 months after completion. Median follow-up time was 38 months (IQR 31-51). Follow-up time after completion of the first course was 28 months (IQR 17-33) and

(continued)

(continued)

after completion of a second course was 11 months (IQR 8-20). By the final visit, the median CAS was 0 (0-2), 4 patients (14.8%) had a best corrected visual acuity < 20/40 in the affected eye, 1 (3.7%) patient had residual dyschromatopsia, and no patients had a RAPD.

Conclusions: This study adds longitudinal follow-up for TED patients with DON treated with teprotumumab. A minority of patients required surgical intervention, and a majority were temporized with systemic corticosteroids while awaiting teprotumumab initiation that most frequently occurred within a few months of diagnosis. A quarter of patients' DON recurred, which is slightly higher than rates previously reported in the literature, frequently requiring retreatment and ending in repeat flares.[10,11] Future studies are needed to characterize these treatment patterns of DON at scale.

References:

1. Lazarus JH. Epidemiology of Graves' orbitopathy (GO) and relationship with thyroid disease. *Best Pract Res Clin Endocrinol Metab*. 2012;26(3):273-279. doi:10.1016/j.beem.2011.10.005
2. Blandford AD, Zhang D, Chundury RV, Perry JD. Dysthyroid optic neuropathy: update on pathogenesis, diagnosis, and management. *Expert Rev Ophthalmol*. 2017;12(2):111-121. doi:10.1080/17469899.2017.1276444
3. Neigel JM, Rootman J, Belkin RI, et al. Dysthyroid optic neuropathy. The crowded orbital apex syndrome. *Ophthalmology*. 1988;95(11):1515-1521. doi:10.1016/s0161-6420(88)32978-7
4. Lee JH, Lee SY, Yoon JS. Risk factors associated with the severity of thyroid-associated orbitopathy in Korean patients. *Korean J Ophthalmol KJO*. 2010;24(5):267-273. doi:10.3341/kjo.2010.24.5.267
5. Wiersinga WM. Management of Graves' ophthalmopathy. *Nat Clin Pract Endocrinol Metab*. 2007;3(5):396-404. doi:10.1038/ncpendmet0497
6. Sears CM, Azad AD, Dosiou C, Kossler AL. Teprotumumab for Dysthyroid Optic Neuropathy: Early Response to Therapy. *Ophthal Plast Reconstr Surg*. 2021;37(3S):S157-S160. doi:10.1097/IOP.0000000000001831
7. Chiou CA, Reshef ER, Freitag SK. Teprotumumab for the treatment of mild compressive optic neuropathy in thyroid eye disease: A report of two cases. *Am J Ophthalmol Case Rep*. 2021;22:101075. doi:10.1016/j.ajoc.2021.101075
8. Slentz DH, Smith TJ, Kim DS, Joseph SS. Teprotumumab for Optic Neuropathy in Thyroid Eye Disease. *JAMA Ophthalmol*. 2021;139(2):244-247. doi:10.1001/jamaophthalmol.2020.5296
9. Freitag SK, Tanking T. A Nomenclature to Describe the Sequence of Visual Field Defects in Progressive Thyroid Eye Disease-Compressive Optic Neuropathy (An American Ophthalmological Society Thesis). *Am J Ophthalmol*. 2020;213:293-305. doi:10.1016/j.ajo.2019.12.005
10. Dolman PJ. Dysthyroid optic neuropathy: evaluation and management. *J Endocrinol Invest*. 2021;44(3):421-429. doi:10.1007/s40618-020-01361-y
11. Poonam NS, Alam MdS, Oberoi P, Mukherjee B. Dysthyroid optic neuropathy: Demographics, risk factors, investigations, and management outcomes. *Indian J Ophthalmol*. 2022;70(12):4419-4426. doi:10.4103/ijo.IJO_719_22

11:03-11:08 am

Pediatric Sutureless Conjunctiva-Sparing versus Traditional Mullerectomy: A Comparative Study

Liane Dallalzadeh[1], Phillip Tenzel[1], Ronald Mancini[1], Kamel Itani[1]
[1]*Division of Oculoplastic and Orbital Surgery, Department of Ophthalmology, University of Texas Southwestern Medical Center, Dallas, Texas, United States*

Introduction: To describe outcomes of sutureless conjunctiva-sparing Mullerectomy (CSM) and compare these to traditional Muller muscle conjunctival resection (MMCR) in pediatric patients.

Methods: This is an IRB-approved retrospective study of pediatric patients who underwent either sutureless CSM or MMCR at a single institution from 2021-2024. Inclusion criteria included age less than 18 years, unilateral or bilateral ptosis, levator function of the operative eyelid greater than or equal to 10mm. Exclusion criteria included prior ptosis repair. Sutureless CSM was performed as previously described.[1] MMCR utilized a preplaced 6-0 nylon suture followed by resection of conjunctiva/Muller muscle with an externalized knot and required removal at post-operative week 1.

Demographic and clinical variables included age at operation, etiology of ptosis, pre-operative levator function (LF), and margin reflex distance 1 (MRD1). Primary outcome measures included change in post-operative MRD1 and symmetry. Secondary outcome measures included operative time, post-operative complications, and reoperation within 1 year.

Results: Thirty-six operative eyelids (16 sutureless CSM, 20 MMCR) met inclusion criteria. Both sutureless CSM and MMCR cohorts exhibited similar age at surgery, preoperative MRD1, levator function, and were predominantly comprised of congenital ptosis cases (Table 1). Mean postoperative follow-up was 190 days in the sutureless CSM cohort (cases performed in 2023-2024), and 350 days in the MMCR cohort (cases performed 2021-2024). Sutureless CSM achieved similar improvement in MRD1 of the operative eyelid and symmetry with a minority of patients in both cohorts requiring re-operation within 1 year (Table 2, Figure 1). Notably, operative time per eyelid was significantly reduced when employing sutureless CSM.

(continued)

(continued)

Conclusions: Previous studies have established the efficacy and utility of the MMCR in cases of congenital ptosis with good levator function and phenylephrine response.[2-4] Sutureless CSM is an attractive alternative to MMCR in pediatric patients because it spares the anatomically normal conjunctiva and eliminates any potential suture-related complications. Here we demonstrate sutureless CSM exhibits similar efficacy with reduced operative time compared to MMCR.

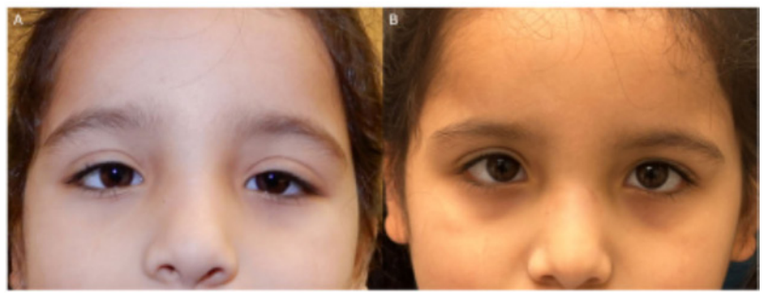
Table 1: Preoperative demographic and clinical characteristics

	Sutureless CSM	MMCR	p-value
Age (years)	9.6	10.4	0.68
Congenital ptosis (%)	79	76	0.99
MRD1 (mm)	1.2	0.8	0.055
Levator function (mm)	15.4	15.9	0.47

Table 2: Postoperative outcomes

	Sutureless CSM	MMCR	p-value
ΔMRD1 (mm)	1.0	1.2	0.47
Symmetry (mm)	0.9	0.8	0.91
Operative time (min)	7.3	13.5	**<0.001**
Reoperation (%)	18	12	0.96

Figure 1



References:

1. Mancini R, Forouzan P, Keenum ZG, Tenzel PA, Petroll WM. Sutureless Conjunctiva-Sparing Posterior Ptosis Repair Surgery: A Novel Technique. Am J Ophthalmol. 2023 Jul;251:77-89. doi: 10.1016/j.ajo.2023.03.001. Epub 2023 Mar 8. PMID: 36898493.
2. Putterman AM, Fett DR. Müller's muscle in the treatment of upper eyelid ptosis: a ten-year study. Ophthalmic Surg 1986;17:354–60.
3. Mazow ML, Shulkin ZA. Mueller's Muscle-Conjunctival Resection in the Treatment of Congenital Ptosis. Ophthal Plast Reconstr Surg 2011;27:311–312.
4. Akella SS, Srivatsan S, Kravets S, Setabutr P. Predictability of the Phenylephrine Test in Congenital Ptosis: Ten Years of Experience. Ophthalmic Plast Reconstr Surg. 2023 Sep-Oct 01;39(5):465-469.

11:08-11:13 am

Orbital Eosinophilic Angiocentric Fibrosis in the Pediatric Patient Population

Antonios Dimopoulos[1,2], Jill Foster[1,3], Craig Czyz[4], Jessica Crawford[5,2], Kenneth Cahill[1,2], Cameron Nabavi[6,2]
[1]Department of Ophthalmology and Visual Sciences, The Ohio State University, Columbus, Ohio, United States, [2]Department of Ophthalmology, Nationwide Childrens Hospital, Columbus, Ohio, United States, [3]Department of Ophthalmology, Nationwide Childrens Hospital, Columbus, Ohio, United States, [4]Division of Ophthalmology, Section Oculofacial Plastic and Reconstructive Surgery, Ohio University/OhioHealth Doctor's Hospital, Columbus, Ohio, United States, [5]Department of Ophthalmology and Visual Sciences, The Ohio State University, Columbus, Ohio, United States, [6]Department of Ophthalmology and Visual Sciences, The Ohio State University, Columbus, United States

Introduction: IgG4-related orbital disease (IgG4-ROD) is an idiopathic, multi-organ disease where fibroinflammatory lesions rich in IgG4+ plasma cells are present[1]. There are reported cases among children, with 44% of pediatric patients with IgG4-ROD demonstrating ophthalmic involvement with cases ranging from 5-15 years old[2].

Eosinophilic angiocentric fibrosis (EAF) has been described as an indolent, rare, tumefactive disease that typically involves the respiratory mucosa of the sinonasal tract. Orbital involvement usually occurs as an extension of inflammation from the adjacent sinuses, however primary orbital disease has been reported to occur. In a case series and review of the literature by Lin et al, the average age of presentation among 31 patients with EAF that involved the orbit was 49.8 years (range from 25-78 years). Of these 31 cases, 17 were female and 13 had primary orbital involvement[3]. Histopathologic findings of EAF include perivascular inflammation with infiltrates of plasma cells, lymphocytes, and eosinophils, as well as fibrosis that is typically storiform in pattern and angiocentric in focus (3). Prior articles have described EAF as a form of IgG4-ROD[4].

Per our literature search, we present the first reported case of EAF in the pediatric population

Methods: A casereport of a pediatric patient presenting with ptosis found to have orbital EAF is described.

(continued)

(continued)

Results: A 12-year-old female presented with progressively worsening and fluctuating painless right upper eyelid ptosis. Examination demonstrated right upper eyelid ptosis and fullness, exophthalmos, and hypoglobus (Figure 1A). MRI revealed right superior orbital soft tissue thickening (Figure 2 blue arrow) with adjacent bony involvement and periosteal elevation (Figure 2 yellow arrow). Laboratory results were significant for elevated ACE, but normal serum IgG4, ANCA, and rheumatoid factor. A lid crease approach anterior orbitotomy was performed where a biopsy of a white flat fibrotic lesion was performed. Histopathology demonstrated a mixed inflammatory infiltrate containing lymphocytes, plasma cells, and eosinophils with an angiocentric distribution (Figure 3). Stains for IgG4+ plasma cells demonstrated 45 cells per high power field (Figure 3). These collective findings overall strongly indicated the EAF variant of IgG4-ROD.

The patient was referred to rheumatology who ordered laboratory studies that were most significant for positive ANA, normal serum IgG subclasses, and negative ANCA, and a PET CT that was negative for any abnormal uptake. Rheumatology treated her with prolonged prednisone taper. No systemic manifestations developed to this date. She experienced full recovery of her right blepharoptosis, proptosis, and hypoglobus (Figure 1B).

Conclusions: Although IgG4-ROD has been seen in the pediatric population, we believe this is the first reported presentation of EAF in a pediatric patient. Physicians should be aware of the possibility for EAF to present with these clinical findings. Rheumatologic consultation can help rule out systemic involvement, while surgery as well as oral prednisone or immunomodulators such as rituximab may have a role in resolution of the disease process.

(continued)

(continued)

Figure 1

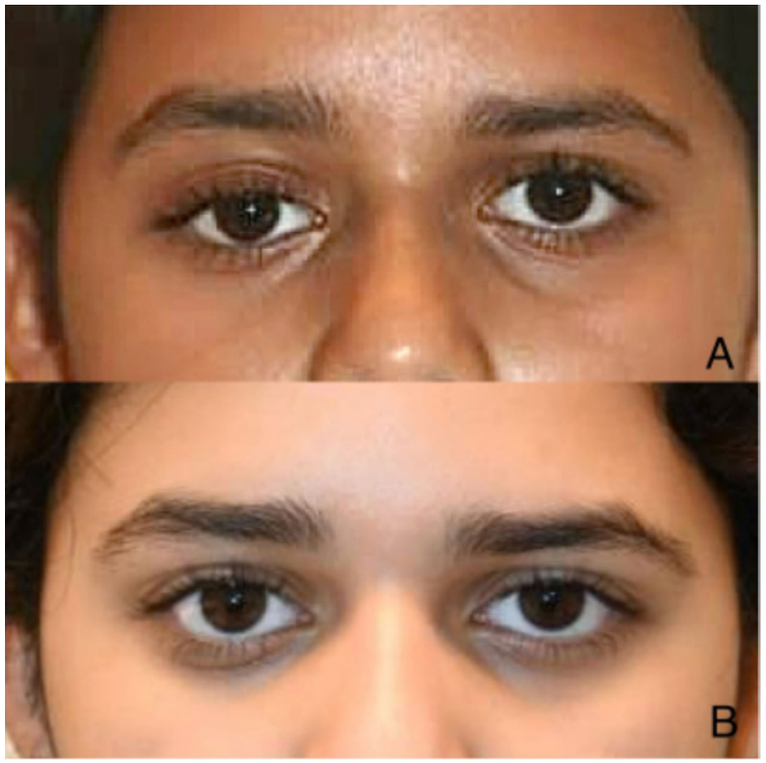


Figure 2

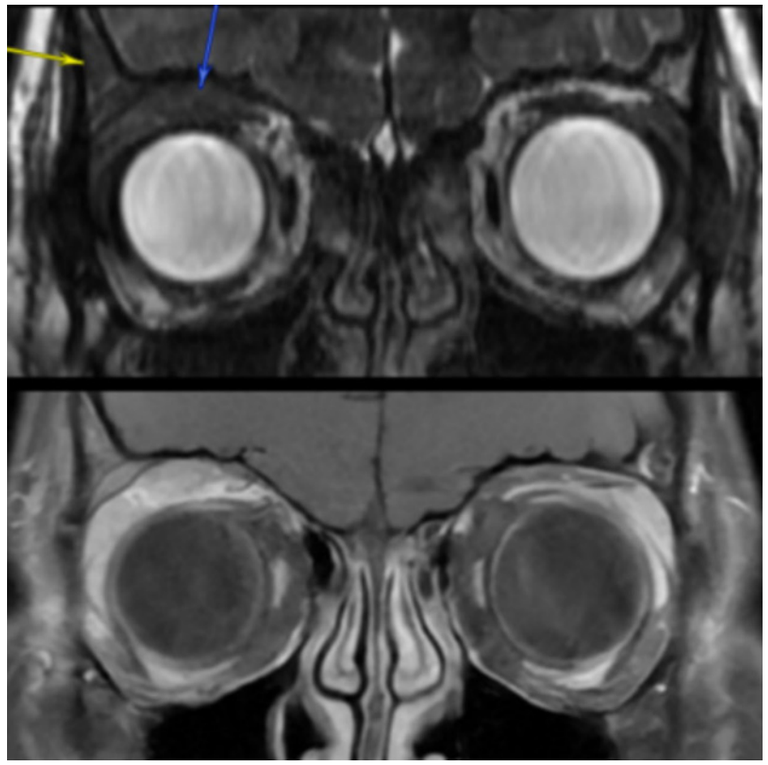
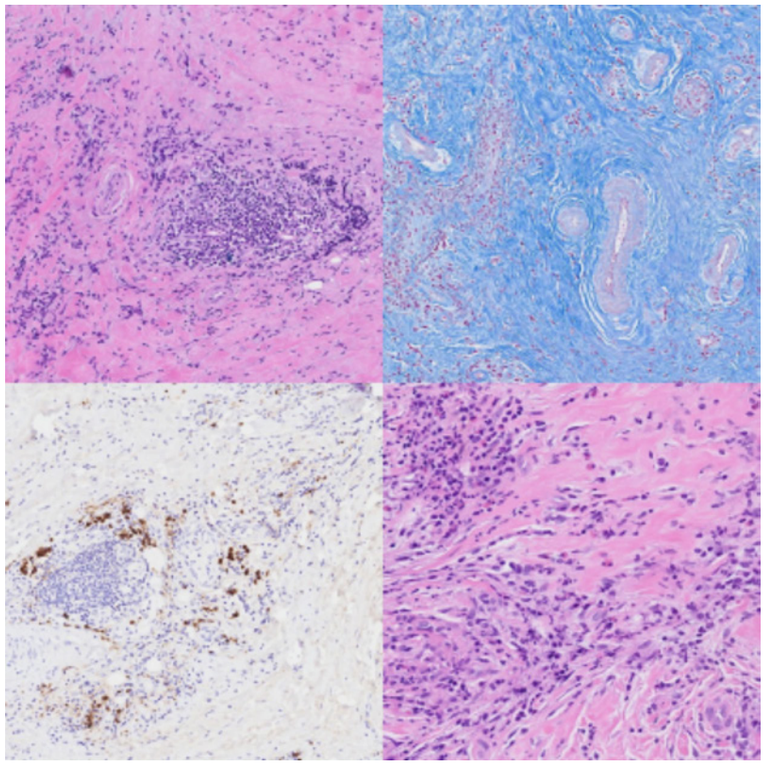


Figure 3



References:

1. Lee CS, Harocopos GJ, Kraus CL, Lee AY, Van Stavern GP, Couch SM, Rao PK. IgG4-associated orbital and ocular inflammation. J Ophthalmic Inflamm Infect. 2015 May 29;5:15.
2. Smerla RG, Rontogianni D, Fragoulis GE. Ocular manifestations of IgG4-related disease in children. More common than anticipated? Review of the literature and case report. Clin Rheumatol. 2018;37(6):1721-1727.
3. Lin LY, Stone JH, Liou VD, Stagner AM, Lee NG. Eosinophilic Angiocentric Fibrosis of the Orbit: A Clinicopathologic Review of 6 Novel Cases With Review of the Literature. Am J Ophthalmol. 2023 Dec;256:9-19.
4. Deshpande V, Khosroshahi A, Nielsen GP, Hamilos DL, Stone JH. Eosinophilic angiocentric fibrosis is a form of IgG4-related systemic disease. Am J Surg Pathol. 2011 May;35(5):701-6.

11:13-11:18 am

Dacryocystorhinostomy Outcomes for Congenital Nasolacrimal Duct Obstruction Associated with Craniofacial Abnormalities

Lilly Wagner, Grayson Ashby, Caroline Yu
Ophthalmology, Mayo Clinic, Rochester, Minnesota, United States

Introduction: The success rate of lacrimal probing for congenital nasolacrimal duct obstruction (CNLDO) has been found to be lower in children with concurrent craniofacial abnormalities.[1] Persistent symptoms are addressed with Dacryocystorhinostomy (DCR). There is little data on the effectiveness of DCR for patients in this group, due to small case numbers of prior studies.[2] This retrospective observational study includes 70 cases and compares the clinical characteristics and outcomes of DCR for CNLDO in children with and without concurrent craniofacial abnormalities.

Methods: Multi-center study of all patients

Results: DCR for treatment of CNLDO was completed on 70 eyes among 58 patients (12 bilateral cases). Craniofacial abnormalities were present in 27 of the 70 surgeries. Mean age at the time of surgery was 7.4 years and 61.5% were female. The patients in the craniofacial group were younger at time of surgery (5.7 years±4.4 vs. 8.4 years±4.8, $p=0.015$) and were significantly more likely to have concurrent canalicular pathology (70% vs. 24.5%, $p<0.01$). Surgery was done in multidisciplinary collaboration between otorhinolaryngology and ophthalmology in 48.1% of craniofacial associated CNLDO compared to 6% of simple CNLDO ($p<0.01$). There was no significant difference in use of intraoperative navigation, surgical approach (endoscopic versus external) or additional procedures conducted under anesthesia. In the simple CNLDO group, 11.6% had no improvement of symptoms after surgery compared to 18.5% in the craniofacial cohort ($p=0.42$).

Conclusions: CNLDO in patients with associated craniofacial abnormalities is more likely to present with coexisting canalicular pathology, and require multidisciplinary care compared to patients with simple CNLDO. Failure rate may be higher with craniofacial abnormalities, but larger case numbers are needed to confirm this trend. Further studies could examine whether specific DCR approaches (endoscopic versus external) produce better outcomes in CNLDO associated with craniofacial abnormalities.

References:

1. Landau Prat D, Tadros S, Revere KE, Katowitz JA, Katowitz WR. Management of congenital nasolacrimal duct obstruction in down syndrome. Eye (Lond). 2023;37:739-743
2. Jones DT, Fajardo NF, Petersen RA, VanderVeen DK. Pediatric endoscopic dacryocystorhinostomy failures: who and why? Laryngoscope. 2007;117:323-7.

11:18–11:23 am

Endoscopic Dacryocystorhinostomy in A Patient with Hemi Arrhinia

Edith Reshef[1], Zachary Kelly[2,3], Eelam Adil[4]
[1]Department of Ophthalmology, Boston Children's Hospital, Boston, Massachusetts, United States, [2]Department of Otolaryngology, Boston Children's Hospital, Boston, Massachusetts, United States, [3]Department of Otolaryngology, Medical University of South Carolina, Charleston, South Carolina, United States, [4]Department of Otolaryngology, Boston Children's Hospital, Boston, Massachusetts, United States

Introduction: Congenital arrhinia and hemi arrhinia are rare fetal malformations presenting with varying degrees of external and internal nasal hypoplasia.[1,2] There are significant associated anatomical consequences to the lacrimal system, and treatment of epiphora in these cases is challenging with few reports in the literature of external dacryocystorhinostomy (DCR) or combined endoscopic/external DCR. We present a case of epiphora due to an incompletely formed nasolacrimal duct in a patient with hemi arrhinia, successfully treated with endoscopic DCR. To the best of our knowledge, this is the first reported case successfully treated solely with an endoscopic approach.

Methods: Case report.

Results: A 12-year-old girl with history of left hemi arrhinia presented for evaluation of left-sided epiphora and mucoid discharge present since birth. She underwent prior facial reconstructive surgeries but denied prior nasolacrimal surgery. External examination revealed absence of a left nostril, depression of the left nasal dorsum, and an elevated tear lake/positive dye disappearance test with mucoid discharge emerging from both puncta upon lacrimal sac palpation (Figure 1). Visual acuities were 20/20 OD and 20/40 OS with normal intraocular pressures, pupillary responses, anterior segment and dilated fundus exams. Maxillofacial CT demonstrated absent left turbinates, upper and lower lateral cartilages, anomalous nasal bones and septum, and a left lacrimal fossa with a small, blind-ending nasolacrimal duct. Right-sided external and internal nasal structures were present with a paradoxically curved middle turbinate with aberrant attachments to the ethmoid roof and lateral nasal wall (Figure 2). The patient underwent left endoscopic dacryocystorhinostomy (DCR) and lacrimal stent via a right transnasal approach and stereotactic navigation (Figure 3). The stents were removed three months post-operatively, and tearing remained resolved six months post-operatively.

Conclusions: The surgical management of nasolacrimal anomalies associated with arrhinia and hemi arrhinia is not standardized and is limited to case reports, due to the rare and varied nature of this disease spectrum. There are several reports in the literature describing hemi arrhinia treated with external DCR,[3] combined endoscopic/external DCR,[4] conjunctivodacryocystorhinostomy with

(continued)

(continued)

conjunctivocystorhinostomy tube,[5] and dacryocystectomy.[6] This is the first report in the literature describing epiphora in a patient with hemi arrhinia-associated absent nasolacrimal duct successfully treated with completely endoscopic DCR. Although a rare condition, epiphora in the setting of hemi arrhinia may be successfully treated with a variety of surgical approaches depending on the severity of disease and anatomical findings. In some cases, it can be treated in a completely endoscopic fashion with a combined multidisciplinary approach and stereotactic navigation to avoid skull base complications from abnormal anatomy.

Figure 1



Figure 1: Pre-operative external photo demonstrating clinical findings of left hemi arrhinia with an elevated tear lake (top) and absent left nasal ala and nostril (bottom).

Figure 2

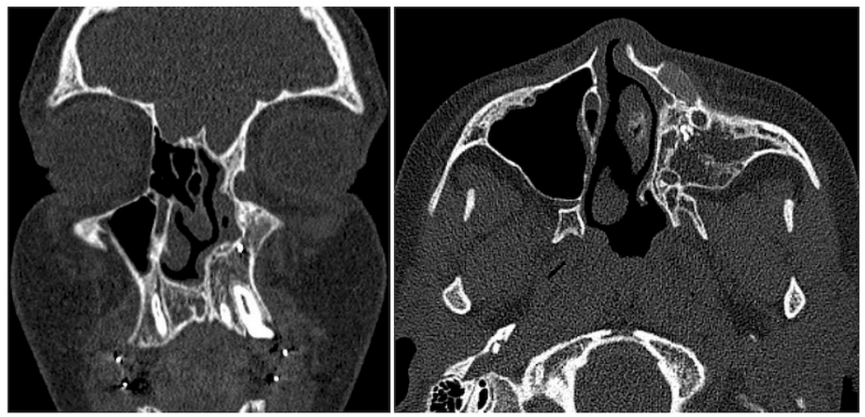


Figure 2: Pre-operative non-contrast maxillofacial CT, coronal (left) and axial (right) demonstrating hemi arrhinia findings of absent left turbinates, nasal bones and septum, a paradoxically curved right middle turbinate extending to the ethmoid roof, a hypoplastic left maxillary sinus with absent ethmoid air cells, and a dilated left lacrimal sac.

Figure 3

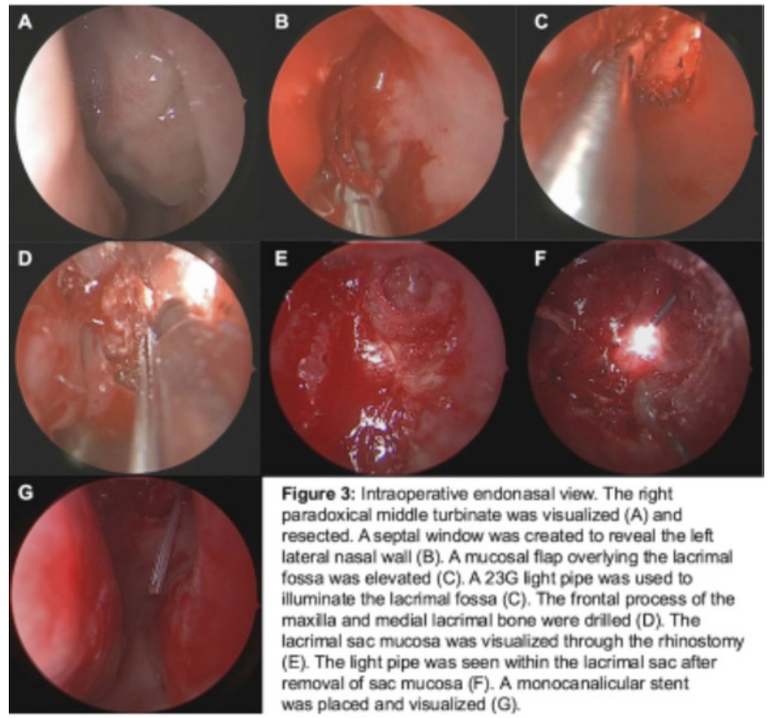


Figure 3: Intraoperative endonasal view. The right paradoxical middle turbinate was visualized (A) and resected. A septal window was created to reveal the left lateral nasal wall (B). A mucosal flap overlying the lacrimal fossa was elevated (C). A 23G light pipe was used to illuminate the lacrimal fossa (C). The frontal process of the maxilla and medial lacrimal bone were drilled (D). The lacrimal sac mucosa was visualized through the rhinostomy (E). The light pipe was seen within the lacrimal sac after removal of sac mucosa (F). A monocanalicular stent was placed and visualized (G).

References:

1. Mathur NN, Dubey NK, Kumar S, et al. Arrhinia. *International Journal of Pediatric Otorhinolaryngology* 2005;69:97-99.
2. Akkuzu G, Akkuzu B, Aydin E, et al. Congenital partial arhinia: a case report. *Journal of Medical Case Reports* 2007;20:97
3. Sherafat H, Mehta JS, Rose GE. Dacryocystorhinostomy in patients lacking an ipsilateral nasal cavity. *The British Journal of Ophthalmology* 2007;91:307-309.
4. Ali MJ, Singh S, Naik MN. Image-guided lacrimal drainage surgery in congenital arhinia-microphthalmia syndrome. *Orbit* 2017;36:137-143.
5. Tsur H, Winkler E, Orenstein A, et al. Nasal reconstruction combined with dacryocystorhinostomy in a patient with absence of half of the nose. *Ophthalmic Surgery Lasers and Imaging Retina* 1997;28:680–682.
6. Lin LY, Chiou CA, Lee NG. Bilateral Dacryocystoceles in Congenital Arhinia. *Ophthalmic Plastic Reconstructive Surgery* 2024;40:215-217.

11:23-11:28 am

Conjunctivocystorhinostomy Tube with Biofilm-resistant Nano Imprinted Polymer Surface

Teresa Chen[1], Albert Yee[2], Jeremiah Tao[1]
[1]Division of Orbital and Ophthalmic Plastic Surgery, Gavin Herbert Eye Institute, University of California, Irvine, Irvine, California, United States, [2]Chemical and Biomolecular Engineering, Samueli School of Engineering, University of California, Irvine, Irvine, California, United States

Introduction: Biofilm on conjunctivocystorhinstomy (cDCR) tubes is a known problem and can cause discharge, infections, and tube malfunction. Tube cleaning or replacement is often indicated.[1–4] Naturally occurring nanopillars observed on certain insect wings have gained attention in the field of medicine due to their antimicrobial and bactericidal properties, with promising results for dental and orthopedic implants.[5–12] Nano imprinted polymer surfaces have been shown to be effective against both gram positive and gram negative bacteria, and even multi-drug resistant fungus, which may be useful in the case of mixed flora seen on cDCR tubes.[13,14]

Methods: The authors test a novel cDCR tube made of films with imprinted nanopillars. The authors used Nanoimprint Lithography to place nanopillars on the surface of thin films of polymers including chitosan, poly(methyl methacrylate) (PMMA), bisphenol-A polycarbonate (PC), poly(ethylene terephthalate) (PET) and poly(ethylene terephthalate-co-glycol) (PETG). The film is then rolled and inserted into a polymeric tube, then exposed to oxygen and nitrogen plasma, rendering it hydrophilic to facilitate capillary action and passage of tears. Capillary action was tested by placing the translucent tube in a container filled with water and observing the water level inside the tube rising above the water level in the container. Bacterial cultures were taken from the PMMA films, with and without the nano imprints.

Results: Capillary action and passage of fluids through the lumen was equivalent to a standard pyrex cDCR tube. There was an increase in the fraction of adherent dead bacteria when compared to controls without nano imprints.

Conclusions: This cDCR prototype with nano imprinted polymer surface was able to facilitate capillary action and decrease bacterial load. This cDCR may present a next generation device that may obviate infectious disease limitations of prevailing devices.

(continued)

(continued)

References:

1. Steele EA. Conjunctivodacryocystorhinostomy with Jones tube: a history and update. *Curr Opin Ophthalmol*. 2016;27(5):439-442. doi:10.1097/ICU.0000000000000287
2. Sung Chul K, Hyeong Gi J, Sang Un L. Successful treatment of methicillin-resistant Staphylococcus aureus infection associated with Jones tube using vancomycin eye drops and rifampicin. *Can J Ophthalmol*. 2016;51(6):487-491. doi:10.1016/j.jcjo.2016.02.023
3. Ahn ES, Hauck MJ, Kirk Harris J, Robertson CE, Dailey RA. Bacterial Biofilms in Jones Tubes. *Ophthalmic Plast Reconstr Surg*. 2017;33(4):279-284. doi:10.1097/IOP.0000000000000762
4. Parsa K, Schaudinn C, Gorur A, et al. Demonstration of bacterial biofilms in culture-negative silicone stent and jones tube. *Ophthalmic Plast Reconstr Surg*. 2010;26(6):426-430. doi:10.1097/IOP.0b013e3181cff61f
5. Dickson MN, Liang EI, Rodriguez LA, Vollereaux N, Yee AF. Nanopatterned polymer surfaces with bactericidal properties. *Biointerphases*. 2015;10(2):021010. doi:10.1116/1.4922157
6. Hayes MJ, Levine TP, Wilson RH. Identification of Nanopillars on the Cuticle of the Aquatic Larvae of the Drone Fly (Diptera: Syrphidae). *J Insect Sci*. 2016;16(1):36. doi:10.1093/jisesa/iew019
7. Linklater DP, Juodkazis S, Ivanova EP. Nanofabrication of mechano-bactericidal surfaces. *Nanoscale*. 2017;9(43):16564-16585. doi:10.1039/c7nr05881k
8. Maher S, Linklater D, Rastin H, et al. Advancing of 3D-Printed Titanium Implants with Combined Antibacterial Protection Using Ultrasharp Nanostructured Surface and Gallium-Releasing Agents. *ACS Biomater Sci Eng*. 2022;8(1):314-327. doi:10.1021/acsbiomaterials.1c01030
9. Matsumoto S, Tatsuoka H, Yoshii M, et al. Anti-Biofilm Performance of Resin Nanopillars Inspired from Cicada Wing Surface for Staphylococcus spp. *Biomimetics (Basel)*. 2024;9(12):739. doi:10.3390/biomimetics9120739
10. Morco SR, Williams DL, Jensen BD, Bowden AE. Structural biofilm resistance of carbon-infiltrated carbon nanotube coatings. *J Orthop Res*. 2022;40(8):1953-1960. doi:10.1002/jor.25206
11. Rosenzweig R, Perinbam K, Ly VK, Ahrar S, Siryaporn A, Yee AF. Nanopillared Surfaces Disrupt Pseudomonas aeruginosa Mechanoresponsive Upstream Motility. *ACS Appl Mater Interfaces*. 2019;11(11):10532-10539. doi:10.1021/acsami.8b22262
12. Rosenzweig R, Marshall M, Parivar A, Ly VK, Pearlman E, Yee AF. Biomimetic Nanopillared Surfaces Inhibit Drug Resistant Filamentous Fungal Growth. *ACS Appl Bio Mater*. 2019;2(8):3159-3163. doi:10.1021/acsabm.9b00290
13. Bo Hyun Park HKK, Bo Hyun Park HKK. Comparative outcomes of the pathogen in cultured Jones tubes used in lacrimal bypass surgery according to follow up periods. *qwer*. 2023;16(10):1623-1629. doi:10.18240/ijo.2023.10.10
14. Can I, Aribal E, Yarangümeli A, Ataoğlu H, Kural G. Changes in the conjunctival flora after conjunctivodacryocystorhinostomy (CDCR): a preliminary report. *Eur J Ophthalmol*. 1998;8(3):142-147. doi:10.1177/112067219800800304

11:38-11:43 am

ThyEye: Introduction of a Novel Augmented Reality Based Mobile App for Thyroid Eye Disease

Amina Malik[1], Roshan Dongre[2], Keyvon Rashidi[2], Faizaan Khan[2], Andrew Lee[1]
[1]Department of Ophthalmology, Houston Methodist Hospital, Houston, Texas, United States, [2]Texas A&M School of Engineering Medicine, Houston, Texas, United States

Introduction: Thyroid Eye Disease (TED) is an autoimmune condition with a heterogenous clinical presentation including proptosis, eyelid retraction, diplopia, redness, swelling, and pain.[1] Diagnosis is made by clinical examination, with serology and imaging as diagnostic aids. The most commonly used tool to measure exophthalmos is the exophthalmometer, which requires specialized equipment and user expertise.[2-3] Furthermore, inter-user variability in measurements has been reported.[2-3] Although studies suggest that smartphone technology can measure proptosis accurately, no fully developed mobile application specifically designed for TED is currently available.[4-6] ThyEye, a novel mobile application leveraging augmented reality (AR) technology, was developed to provide accurate, objective measurements of TED-related parameters, including proptosis and margin reflex distance (MRD). Additionally, the app incorporates the Clinical Activity Score (CAS) to track disease progression. This study describes the preliminary experience on the usability, features, and future directions of ThyEye.

Methods: ThyEye was developed using the Swift programming language and Apple's augemented reality application application programming interface to generate three-dimensional facial landmarks through the iPhone's front-facing camera. Proptosis was calculated as the distance between the lateral orbital rim and the corneal apex, while MRD1 was measured as the vertical distance between the pupillary light reflex and the upper lid margin. The app was tested on 40 eyes of 20 healthy volunteers in an experimental study. Proptosis measurements were recorded using exophthalmometer and ThyEye for reach patient. Lid position was measured clinically by the same physician and with ThyEye. Average measurements were compared between the app and clinical examination.

Results: A total of 20 healthy participants (6 White, 5 Hispanic, 5 black, 3 South Asian, and 1 East Asian) were evaluated. Mean exophthalmometry readings were 18.55 ± 1.88 mm for the right eye (OD) and 18.00 ± 2.05 mm for the left eye (OS), while mean app-based readings were 19.75 ± 0.72 mm OS and 19.70 ± 0.73 mm OD. When comparing app measurements to exophthalmometer, average

(continued)

(continued)

error was 1.5 mm OD mm and 1.75 mm OS, with 16 patients within 1 mm of clinical measurement. For MRD1, the app readings measured 3.21 ± 1.01 mm OD and 3.18 ± 1.16 mm OS, while the examination method measured 3.03 ± 0.77 mm OD and 2.98 ± 0.92 mm OS. When comparing these measurements, average error was 0.19 mm OD and 0.20 mm OS, with 19 patients within 1 mm of clinical measurement.

Conclusions: ThyEye demonstrates the feasibility of AR technology to objectively measure key TED parameters, including proptosis and MRD1, with 80% of patients measuring within 1 mm of clinically measured proptosis and 95% of patients measuring within 1 mm of clinically measured MRD1. Next steps in development of ThyEye include further refinement of the scaling algorithm for more precise exophthalmometer and MRD1 measurements, and clinical trials evaluating ThyEye usability in TED patients, with the goal of improving TED diagnosis and management across healthcare settings.

Figure 1

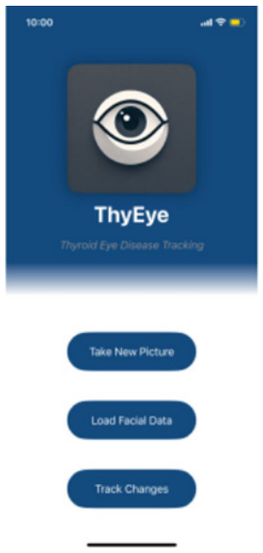


Figure 2

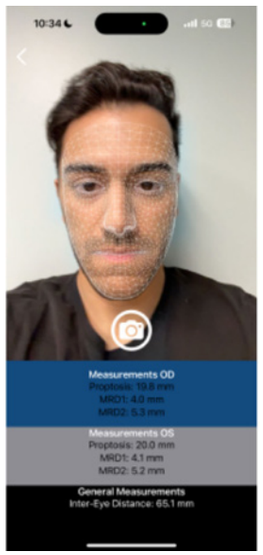


Figure 3

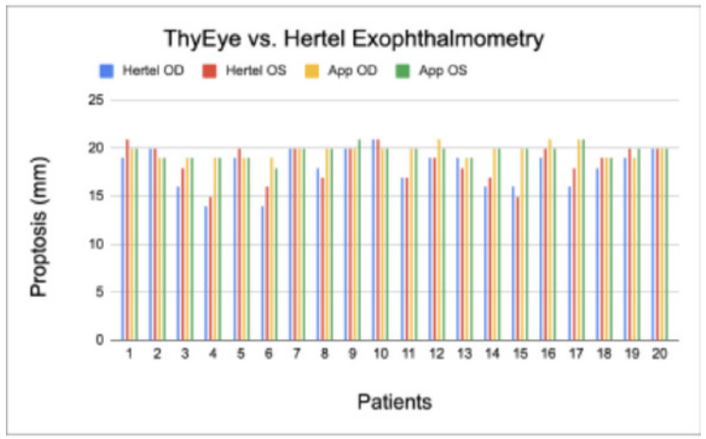
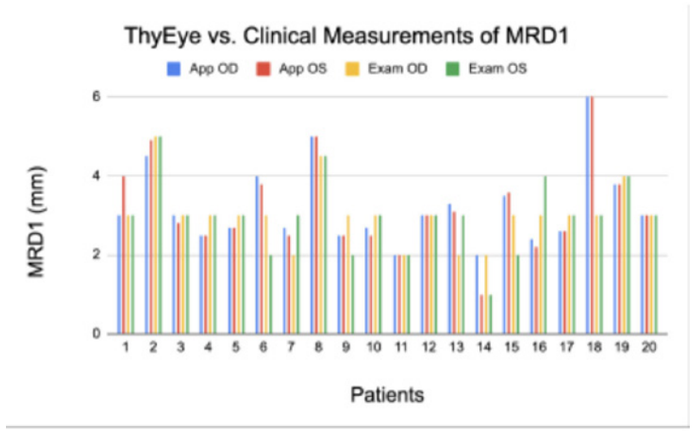


Figure 4



References:

1. Burch HB, Perros P, Bednarczuk T, et al. Management of thyroid eye disease: a Consensus Statement by the American Thyroid Association and the European Thyroid Association. Eur Thyroid J. 2022;11(6):e220189. doi:10.1530/ETJ-22-0189
2. Kashkouli MB, Beigi B, Noorani MM, Nojoomi M. Hertel exophthalmometry: reliability and interobserver variation. Orbit. 2003;22(4):239-245. doi:10.1076/orbi.22.4.239.17245
3. Muller-Lisse UG, Garip-Kuebler A, Murer S, et al. Hertel-exophthalmometry-like multi-detector-row-CT-exophthalmometry: inter-disciplinary inter-observer reproducibility of measurements. Br J Radiol. 2023;96(1148):20211408. doi:10.1259/bjr.20211408
4. Popov T, Fierz FC, Bockisch CJ, Weber KP. Using Smartphone Exophthalmometry to Measure Eyeball Protrusion. JAMA Ophthalmol. 2023;141(10):974. doi:10.1001/jamaophthalmol.2023.4044
5. Aruljyothi L, Janakiraman A, Malligarjun B, Babu BM. Smartphone applications in ophthalmology: A quantitative analysis. Indian J Ophthalmol. 2021;69(3):548-553. doi:10.4103/ijo.IJO_1480_20
6. Magazin M, Tran AQ, Tooley AA. Utilizing a mobile platform to obtain quantitative measurements of exophthalmos. Orbit. 2022;41(5):591-597. doi:10.1080/01676830.2021.1980894

11:43-11:48 am

Deep-Learning Based Orbital Volumetric Analysis of Teprotumumab Response in Thyroid Eye Disease

Lisa Y. Lin[1], Sierra K. Ha[1], Adham M. Alkhadrawi[2], Synho Do[2], Nahyoung Grace Lee[1]
[1]Ophthalmic Plastic Surgery Service, Department of Ophthalmology, Massachusetts Eye and Ear, Boston, Massachusetts, United States, [2]Department of Radiology, Lab of Medical Imaging and Computation, Massachusetts General Hospital, Boston, Massachusetts, United States

Introduction: Thyroid eye disease (TED) is an autoimmune condition that involves complex interactions between autoantibodies, the insulin-like growth factor-1 receptor (IGF-1R) pathway, and downstream inflammatory mediators, resulting in the proliferation of orbital fibroblasts. Teprotumumab, a monoclonal antibody targeting IGF-1R, has emerged as a promising treatment by modulating these pathways. While quantification of orbital structures has historically relied on labor-intensive manual measurements with inherent variability,[1-3] this group previously published a deep-learning-based automated segmentation model to accurately assess orbital muscle and fat volumes on orbital computed tomography (CT) in patients with TED.[4] Building on these innovations, this study leverages the deep-learning model to investigate changes in orbital muscle and fat volumes in patients with TED before and after teprotumumab treatment and evaluate correlations with clinical outcomes.

Methods: This retrospective study included TED patients treated with teprotumumab who had pre- and post-treatment CT imaging of the orbits over a five-year period at a single institution. Orbital muscle and fat volumes were measured using a previously published deep-learning automated segmentation model.[4] Primary outcomes included changes in orbital muscle and fat volumes, assessed using paired t-tests. Mixed-effects multivariable regression, adjusting for age, sex, and smoking status, was performed to investigate the relationship between volumetric changes and clinical parameters, including proptosis, diplopia, and clinical activity score (CAS), accounting for the inclusion of two orbits per patient.

Results: Forty-four orbits from 22 patients (13 female, 9 male) were included. Volume of each of the four rectus muscles and total orbital muscle volume significantly decreased after treatment (all $p < 0.01$), whereas fat volume showed no significant change. Decreased muscle volume was observed in 39 orbits (88.6%) from 20 patients following treatment with teprotumumab, with an average reduction of 23.0%. Conversely, 5 orbits from 3 patients demonstrated increased muscle volume post-treatment. Decreased muscle volume was significantly associated with reductions in proptosis ($p < 0.01$). Changes in both muscle and fat volumes were not significantly associated with diplopia and CAS.

(continued)

(continued)

Conclusions: This deep learning-based study found an average reduction of muscle volume of 23% after teprotumumab, consistent with other studies using manual segmentation methods (Ugradar et al reported 21-22% muscle volume reduction), but notably this study did not find a significant change in fat volume.[2]

Additionally, this study demonstrated a correlation between change in orbital muscle volume with a reduction in proptosis, while a prior study using manual analysis of cross-sectional area of muscle volumes did not.[1] Future studies with larger cohorts and longer follow-up periods could further elucidate the durability of these effects. Overall, this deep-learning model provides an accurate and efficient analysis of orbital imaging in patients with TED, generating orbital volumes in approximately 30 seconds per scan. This imaging tool highlights the potential of automated volumetric analysis in tracking treatment responses and optimizing clinical management of TED. These findings reinforce the value of incorporating advanced imaging and computational techniques in personalized treatment strategies for TED.

Figure 1

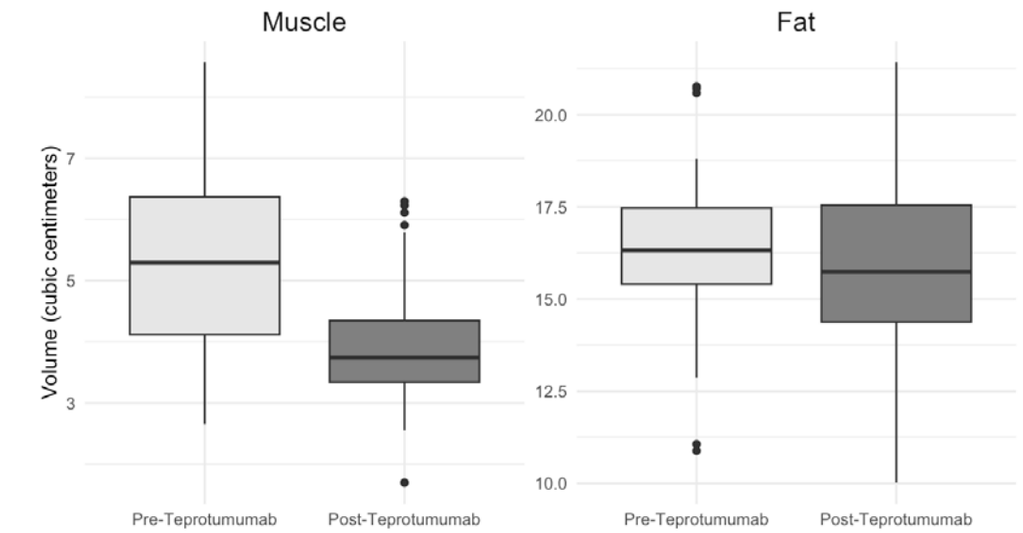
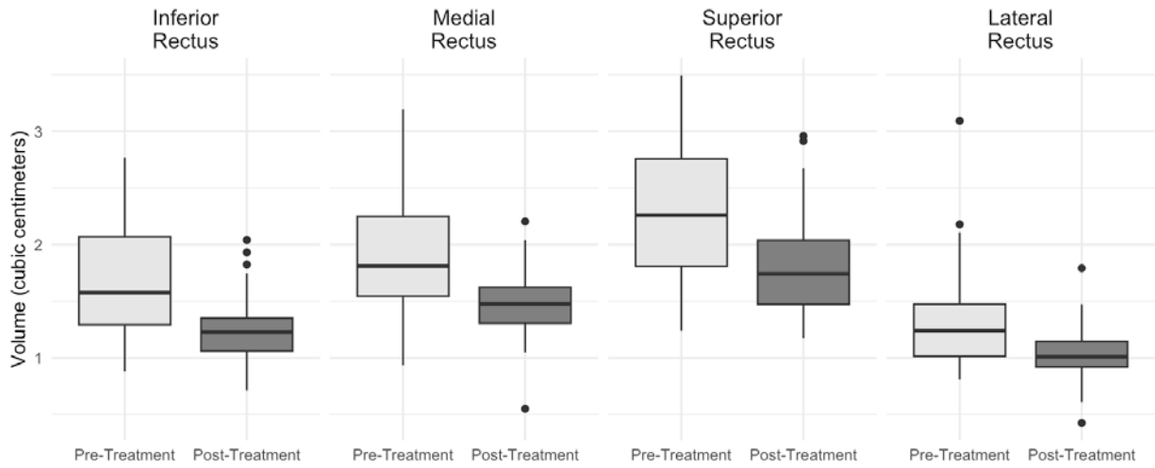


Figure 2



References:

1. Reshef ER, Marsiglia M, Bouhadjer K, et al. Reduction in Extraocular Muscle Cross-sectional Area and Correlation With Extraocular Motility and Diplopia Following Teprotumumab for Thyroid Eye Disease. Ophthalmic Plastic & Reconstructive Surgery. 2023;39(5):433-439.
2. Ugradar S, Parunakian E, Zimmerman E, et al. Clinical and Radiologic Predictors of Response to Teprotumumab: A 3D Volumetric Analysis of 35 Patients. Ophthalmic Plast Reconstr Surg. Published online December 23, 2024.
3. Jain AP, Gellada N, Ugradar S, Kumar A, Kahaly G, Douglas R. Teprotumumab reduces extraocular muscle and orbital fat volume in thyroid eye disease. Br J Ophthalmol. 2022;106(2):165-171.
4. Alkhadrawi AM, Lin LY, Langarica SA, et al. Deep-Learning Based Automated Segmentation and Quantitative Volumetric Analysis of Orbital Muscle and Fat for Diagnosis of Thyroid Eye Disease. Invest Ophthalmol Vis Sci. 2024;65(5):6.

11:48-11:53 am

Thyroid Eye Disease and AI: A Comparative Study of ChatGPT-3.5, ChatGPT-4o, and Gemini in Patient Information Delivery

Cat Burkat MD FACS[1], Daniel Bahir[2], Morris Hartstein MD FACS[3], Ofira Zloto MD[4], Jimmy Uddin[5], Shirin Hamed Azzam MD[2]
[1]Oculoplastics, Orbital, & Cosmetic Facial Surgery; Dept of Ophthalmology & Visual Sciences, University of Wisconsin, Madison, Madison, Wisconsin, United States, [2]Ophthalmology Department, Tzafon Medical Center, Azrieli Faculty of Medicine, Bar Ilan University, Israel, [3]Department of Ophthalmology, Shamir Medical Center, Tzrifin, Israel, [4]Department of Ophthalmology, Goldshleger Eye Institute, Sheba Medical Center, Tel Hashomer, Israel, [5]Adnexal Department, Moorfields Eye Hospital, London, United Kingdom

Introduction: Thyroid Eye Disease (TED) is an autoimmune disorder commonly linked to Graves' disease, affecting orbital tissues and potentially leading to vision impairment.[1] Patients with TED often seek accessible information to manage their condition, including treatments like immunosuppressive therapies and surgeries.

In recent years, artificial intelligence (AI) has shown potential in healthcare, especially for patient education. AI-powered models such as OpenAI's GPT along with Google's Gemini, have demonstrated their ability to provide medical information.[2] However, their effectiveness in delivering accurate, reliable, patient-centered information on complex conditions like TED has yet to be fully assessed.

This study aimed to compare the effectiveness of three AI language models—GPT-3.5, GPT-4o, and Gemini, in delivering patient-centered information about TED. We evaluated their performance based on the accuracy and comprehensiveness of their responses to common patient inquiries regarding TED. The study did not assess the repeatability of AI responses, focusing on single-session evaluations per model.

Methods: Five experienced oculoplastic surgeons assessed the responses generated by the AI models to 12 key questions frequently asked by TED patients. These questions addressed TED pathophysiology, risk factors, clinical presentation, diagnostic testing, and treatment options. Each response was rated for correctness and reliability on a 7-point Likert scale, where 1 indicated incorrect or unreliable information and 7 indicated highly accurate and reliable information. Correctness referred to factual accuracy, while reliability assessed trustworthiness for patient use. The evaluations were anonymized, and the final scores were averaged across the surgeons to facilitate model comparisons.

(continued)

(continued)

Results: GPT-3.5 emerged as the top performer, achieving an average correctness score of 5.75 and a reliability score of 5.68, excelling in delivering detailed information on complex topics, such as TED treatment and surgical interventions. GPT-4o followed with correctness and reliability scores of 5.32 and 5.25, respectively, generally providing accurate information but lacking depth in more nuanced areas. Gemini trailed with scores of 5.10 for correctness and 4.70 for reliability, often delivering adequate responses for simpler inquiries but insufficient detail for complex topics, such as second-line immunosuppressive treatments or surgical options. (Figure 1, Table 1)

Conclusions: GPT-3.5 was the most effective model for delivering reliable and comprehensive patient information, particularly for complex treatment and surgical topics. GPT-4o provided reliable general information but lacked the necessary depth for specialized topics, while Gemini was suitable for addressing basic patient inquiries but insufficient for detailed medical information. This study highlights the role of AI in patient education, suggesting that models like GPT-3.5 can be valuable tools for clinicians in enhancing patient understanding of TED.

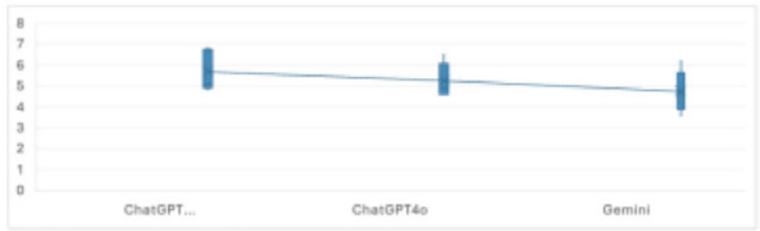
Table 1

Question #	Category	Gemini_SD	Gemini_Mean	ChatGPT4o_SD	ChatGPT4o_Mean	ChatGPT3.5_SD	ChatGPT3.5_Mean	P-value
1	Reliability	1.3	5.2	0.55	5.4	0.84	5.8	0.646
2	Reliability	2.07	4.6	0.71	6	1	6	0.305
3	Reliability	0.84	5.2	0.55	5.6	0.84	5.8	0.819
4	Reliability	1.48	4.8	1.14	5.4	1	6	0.061
5	Reliability	1.64	5.8	1.41	6	0.89	6.6	0.156
6	Reliability	1.3	5.2	1.67	5.6	1.79	5.8	0.368
7	Reliability	2.3	3.6	2.77	3.8	3.03	4.2	0.497
8	Reliability	1.14	4.6	0.55	5.4	0.71	6	0.037
9	Reliability	0.71	4	0.89	5.6	1.48	5.2	0.015
10	Reliability	1.41	5	1.22	5	0.84	6.2	0.071
11	Reliability	1.48	5.2	1.3	5.2	1	6	0.282
12	Reliability	0.55	3.6	0.71	4	2.3	4.6	0.174
1	Correctness	0.89	5.6	0.45	5.8	0.84	6.2	0.497
2	Correctness	1.64	4.8	0.71	6	0.84	5.8	0.247
3	Correctness	0.71	6	0.55	5.6	0.84	5.8	0.368
4	Correctness	1.22	5	0.55	5.4	0.84	6.2	0.047
5	Correctness	1.1	6.2	0.89	6.4	0.45	6.8	0.156
6	Correctness	1.14	5.4	1.79	5.8	1.73	6	0.368
7	Correctness	1.82	3.6	2.51	3.6	2.59	3.8	0.717
8	Correctness	1.3	4.8	0.89	5.6	0.84	6.2	0.03
9	Correctness	0.84	4.2	0.84	5.2	1.58	5	0.058
10	Correctness	0.89	5.6	0.89	4.6	0.84	6.2	0.015
11	Correctness	1.14	5.6	1.14	5.4	0.71	6	0.273
12	Correctness	1.67	4.4	1.14	4.4	2.12	5	0.368

Title: Correctness Scores of AI Models (GPT-3.5, GPT-4o, and Gemini) in Answering Key Patient Questions on Thyroid Eye Disease (TED); Mean Correctness Scores and Standard Deviations Across 12 Key TED-Related Questions

This table displays the correctness scores (mean and standard deviation) of the AI models GPT-3.5, GPT-4o, and Gemini, in response to 12 questions frequently asked by TED patients. The questions pertain to TED's pathophysiology, risk factors, clinical presentation, diagnostic testing, and treatments. Each score indicates how accurately the models conveyed correct and clinically sound information.

Figure 1



Title: Box plot of mean Reliability by AI models

(continued)

(continued)

References:

1. Bartley GB, Fatourechi V, Kadrmas EF, et al. Clinical features of Graves' ophthalmopathy in an incidence cohort. *Am J Ophthalmol*. 1996;121(3):284-290. doi:10.1016/S0002-9394(14)70276-4
2. Bahir D, Zur O, Attal L, et al. Gemini AI vs. ChatGPT: A comprehensive examination alongside ophthalmology residents in medical knowledge. *Graefe's Arch Clin Exp Ophthalmol*. September 2024:1-10. doi:10.1007/S00417-024-06625-4/METRICS
3. This has been submitted to OPRS but not yet published.

7:31-7:34 am

Staged Orbital Decompression in Thyroid Eye Disease: A Novel, Staged Protocol for Preventing Optic Neuropathy

Karine Shebaclo[1], Kelsey Limage[2], Charlotte Marous[1], Srihari Daggumati[2], Christopher Valentini[2], Mindy Rabinowitz[2], Alison Watson[3]
[1]Oculoplastic and Orbital Surgery, Wills Eye Hospital at Thomas Jefferson University Hospital, Philadelphia, Pennsylvania, United States, [2]Otolaryngology-Head and Neck Surgery, Thomas Jefferson University Hospital, Philadelphia, Pennsylvania, United States, [3]Oculoplastic and Orbital Surgery, Wills Eye Hospital, Philadelphia, Pennsylvania, United States

Introduction: Orbital decompression surgery is a well-established treatment for reducing proptosis and relieving compressive optic neuropathy (CON) in thyroid eye disease (TED) patients, particularly when medical therapies fail.[1] Combined, or balanced, decompression techniques, involving medial, lateral, or orbital floor expansion, have demonstrated efficacy in minimizing orbital congestion and reducing postoperative complications.[4] Traditionally, orbital decompression is avoided during the active phase of TED due to heightened inflammation and risk of progression to CON.[2,5] However, in situations of CON urgent surgical decompression may be needed. Isolated medial wall decompression during the active phase may prevent or mitigate CON progression.[3,6] Specifically, minimally invasive posterior expansion of the medial wall can enlarge the orbital apex, reducing hydrostatic pressure and optic nerve compression.[2] Evidence suggests that early intervention in active TED with CON can yield significant visual recovery and prevent further nerve damage.[1,6,7] Herein, we propose a staged algorithm for orbital decompression in severe, active TED patients with evidence of CON and acute visual decline, incorporating endoscopic transnasal medial wall decompression during the active phase to minimize surgically induced orbital inflammation, followed by medical stabilization and subsequent delayed lateral and floor decompression, if needed.

Methods: This study is a retrospective chart review of patients with active TED and CON, who have undergone transnasal endoscopic medial orbital wall decompression during active disease. Patients were recruited from the Wills Eye oculoplastics and Thomas Jefferson University otolaryngology clinics. Data was retrospectively extracted from the electronic medical records of patients with TED who have undergone our staged orbital decompression protocol between 2019-2024.

(continued)

(continued)

Results: Four patients with active TED and CON (mean age: 64 years; range: 47–80) underwent transnasal endoscopic medial wall decompression under the care of a multidisciplinary orbital and skull base team. Mean follow-up was 68.75 days. The gender distribution was equal (2 males, 2 females), and all patients were current or former smokers. All patients had failed or progressed despite medical management. Preoperatively, three patients exhibited vision loss (n=2 severe, VA <20/200; n=1 mild, VA <20/60 per WHO standards), and one had peripheral field defects. (Fig 1) Postoperatively, peripheral field loss and afferent pupillary defects (present in 2 patients) fully resolved. Intraocular pressure was non-elevated pre- and postoperatively across the cohort. (Fig 2) Moderate to severe proptosis was observed in three patients preoperatively, with mild but clinically notable improvement following surgery. (Fig 3)

Conclusions: Preliminary findings demonstrate the feasibility and efficacy of a staged treatment algorithm, incorporating transnasal endoscopic medial wall decompression during the active phase of TED with CON. Short-term data highlights improvements in visual acuity, resolution of pupillary defects, peripheral field defects, and partial reduction of proptosis. This staged surgical intervention offers neuroprotection during the active phase of disease without exacerbating orbital inflammation. By reserving lateral and floor decompression for the quiescent phase, it allows precise surgical adjustment of globe position after the natural disease course and medical therapy are complete. Further studies with larger cohorts and long-term follow-up are necessary to assess the protocol's impact on disease progression, relapse rates, complications, and patient-reported outcomes.

Figure 1

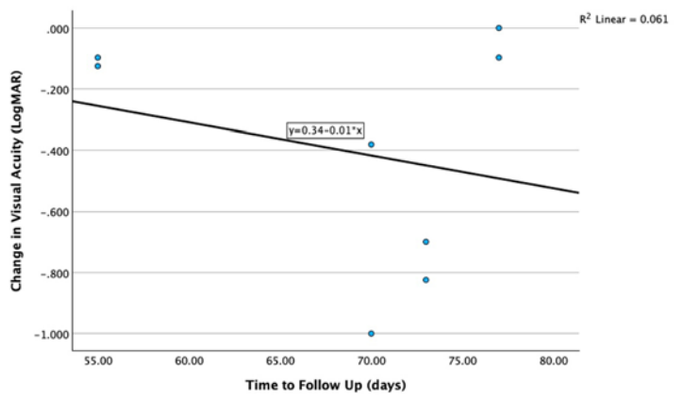


Figure 1. *Relationship between the change in visual acuity and time to follow-up post orbital decompression. Visual acuity was measured using Snellen charts and converted to logMAR for statistical analysis. This linear regression model shows a negative association between time to follow-up and the change in visual acuity with a moderate goodness-of-fit ($R^2 = 0.614$).*

Figure 2

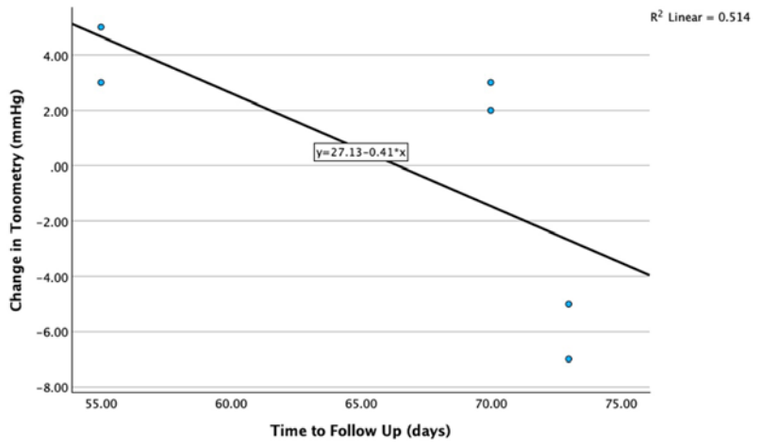


Figure 2. *Relationship between the change in tonometry and time to follow-up post orbital decompression. This model shows a negative relationship between the change in tonometry and time to follow-up with a moderate goodness-of-fit ($R = 0.514$).*

Figure 3

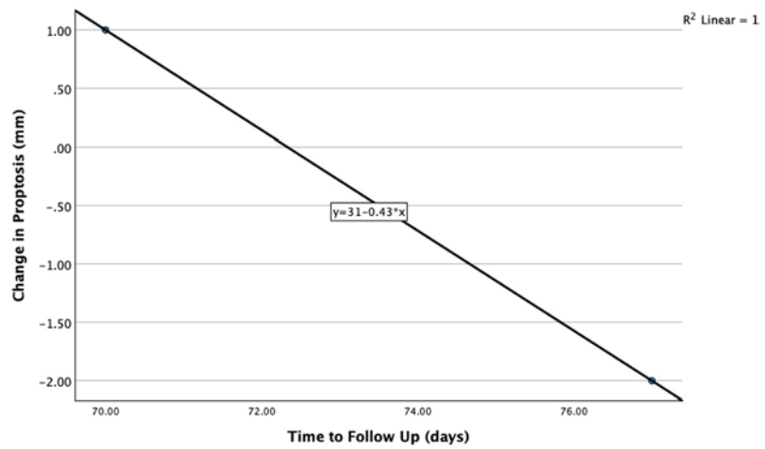


Figure 3. *Relationship between the change in proptosis and time to follow-up post orbital decompression. Proptosis was measured using a Hertel exophthalmometer. This model shows a negative relationship between the change in exophthalmometry and time to follow-up with a high goodness-of-fit ($R = 1$), based on four data points.*

(continued)

(continued)

References:

1. Currò, N., Guastella, C., Pirola, G., Calonghi, B., Bottari de Castello, A., Fazio, M. C., di Benedetto, S., Minorini, V., Daga, M., Contarino, A., Muller, I., Arosio, M., Viola, F., Pignataro, L., & Salvi, M. (2023). Clinical and Visual Outcomes of Dysthyroid Optic Neuropathy After Surgical Orbital Decompression. Thyroid: official journal of the American Thyroid Association, 33(6), 743–751.
2. Verity, D. H., & Rose, G. E. (2013). Acute thyroid eye disease (TED): principles of medical and surgical management. Eye (London, England), 27(3), 308–319.
3. Shah, J., Ting, J., & Sindwani, R. (2021). Endoscopic Orbital Decompression: Technical Pearls and Pitfalls of an Evolving Technique. American journal of rhinology & allergy, 35(4), 548–550.
4. Tian, P., Zeng, P., Zhang, H., Liang, J., Li, E., Ma, Y., Zou, H., Wang, M., & Xiang, L. (2024). Balanced medial-lateral wall vs selective 3-wall orbital decompression for sight-threatening Graves's orbitopathy: a clinical retrospective cohort study from 2016 to 2022. European archives of oto-rhino-laryngology: official journal of the European Federation of Oto-Rhino-Laryngological Societies (EUFOS): affiliated with the German Society for Oto-Rhino-Laryngology - Head and Neck Surgery, 281(9), 4807–4815.
5. Hsia, Y., Hsiao, C. C., Wei, Y. H., Lai, I. W., Lin, C. W., & Liao, S. L. (2022). The Changes in Optic Nerve after Orbital Decompression Surgery for Thyroid Eye Disease and Case Reports of Ischemic Optic Neuropathy. BioMed research international, 2022, 4808194.
6. Lv, X., Gao, Y., Ma, Y., Li, C., Ren, Y., Zhang, Z., Bao, Y., Su, S., & Lu, R. (2024). Comparison of surgical effect in active and inactive Dysthyroid Optic Neuropathy after Endoscopic Transnasal Medial Orbital Decompression. Graefe's archive for clinical and experimental ophthalmology = Albrecht von Graefes Archiv fur klinische und experimentelle Ophthalmologie, 262(1), 281–293.
7. Wang, M., Jiang, X., Geng, J., Hui, S., & Li, D. (2023). Outcomes of Patients With Dysthyroid Optic Neuropathy Treated With Intravenous Corticosteroids and/or Orbital Decompression Surgery: A Systematic Review and Meta-analysis. The Journal of clinical endocrinology and metabolism, 108(10), 2717–2727.

7:34-7:37 am

The Backbone of the Medial Canthus: A Novel Approach to Medial Canthal Reconstruction using Scapula Tip Free Flap following Craniofacial Tumor Excision

Leo M. Hall[1,2], Henry Bair[1,2], Joseph M. Curry[3,4], Charlotte L. Marous[1,2]
[1]Oculoplastic and Orbital Surgery, Wills Eye Hospital, Philadelphia, Pennsylvania, United States, [2]Sidney Kimmel Medical College of Thomas Jefferson University, Philadelphia, Pennsylvania, United States, [3]Department of Otolaryngology-Head and Neck Surgery, Thomas Jefferson University, Philadelphia, Pennsylvania, United States, [4]Sidney Kimmel Cancer Center, Thomas Jefferson University, Philadelphia, Pennsylvania, United States

Introduction: Sino-orbital reconstruction after tumor resection requires restoration of soft tissue defects in addition to underlying bony infrastructure for rigid support. While alloplastic implants provide a framework, postoperative radiation risks exposing and infecting foreign materials. The scapular tip free flap (STFF) is well-documented for maxillary and orbital reconstruction but not for medial canthus reconstruction specifically.[1-4] We report here the use of STFF for medial orbit and canthal reconstruction.

Methods: Case series.

Results: A 72-year-old female presented with a longstanding ulcerative basal cell carcinoma of the face causing significant left eye proptosis (Figure 1A). Visual acuity was 20/30 OD and hand motion OS. Computed tomography (CT) scan confirmed a large erosive mass in the glabella and sinonasal cavity, involving both orbits but sparing the intracranial space (Figures 2A, 2B). After interdisciplinary tumor board review, the patient refused the recommended bilateral exenteration. A left craniofacial resection with left maxillectomy and orbital exenteration, partial rhinectomy, skull base drilling with frontal and ethmoidal resection, and right orbitotomy with resection of deep orbital tissue, medial orbital wall, and medial canthus were performed (Figure 1B). A STFF was mobilized for reconstruction. The scapular tip was situated vertically between the midline frontal bone and anterior maxillary spine to provide midface support and reconstruct the medial orbital wall for right medial canthal re-suspension (Figure 2C). A right eyelid semi-circular flap was fashioned, allowing horizontal advancement of the residual medial eyelid tarsus, which was secured to scapula tip periosteum. Pathology confirmed basal cell carcinoma with clear margins. At postoperative month (POM) two, the right medial canthus and eyelids were stable with right eye vision of 20/50 (Figure 1C). PET scan at POM4 showed no recurrence.

A 69-year-old female presented with a progressively enlarging left medial canthus mass and constant tearing (Figure 3A). Visual acuity was 20/25 OD and 20/20 OS. CT scan revealed a large lacrimal sac mass invading the nasolacrimal duct, nasal bone, and infraorbital area, with globe dystopia (Figure 4). Biopsy confirmed invasive carcinoma. She underwent en-bloc resection of the left frontal sinus

(continued)

(continued)

anterior wall, anterior ethmoid, medial orbital wall, lacrimal sac and duct, and maxillary sinus. A STFF (Figure 3B) reconstructed the defect and medial canthal suspension was achieved by securing residual tarsus to vertically positioned scapula tip periosteum (Figure 5). Final pathology confirmed mucoepidermoid carcinoma of the lacrimal sac with clear margins. Postoperative radiation (200cGy) was completed. At POM4, her vision was 20/40 bilaterally with excellent eyelid position and tension (Figure 3C).

Conclusions: STFF is advantageous for midface reconstruction due its long pedicle, low donor site morbidity, and chimeric flap harvesting optionality. The osseous element can be deployed horizontally or vertically during maxillary and orbital reconstruction, providing versatility.[2,3,5] Vertical flap orientation has historically been used for zygomaticomaxillary reconstruction and "low maxillectomy" (Brown Class I or II). However, cases of vertical orientation in Brown Type III and higher — including our patients — may address mid-facial depression and preserve mid-facial aesthetics.[3] Our cases are the first reported use of STFF in vertical orientation for medial canthal re-suspension. This approach offers surgeons versatility in bony orbital reconstruction, medial canthal positioning, and orbital subunit aesthetics.

Figure 1

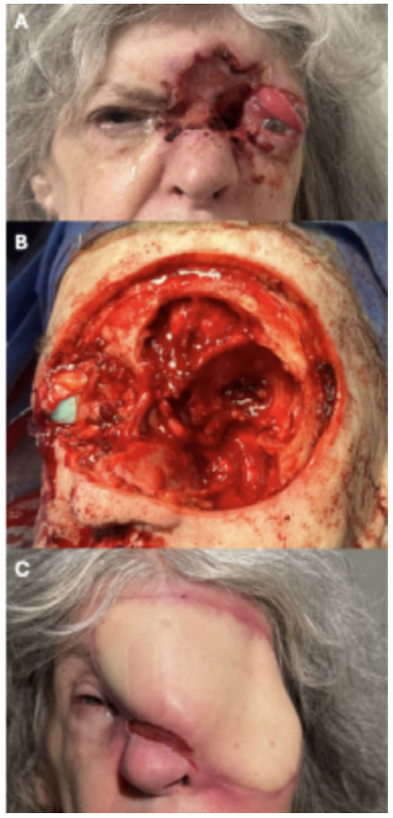


Figure 2

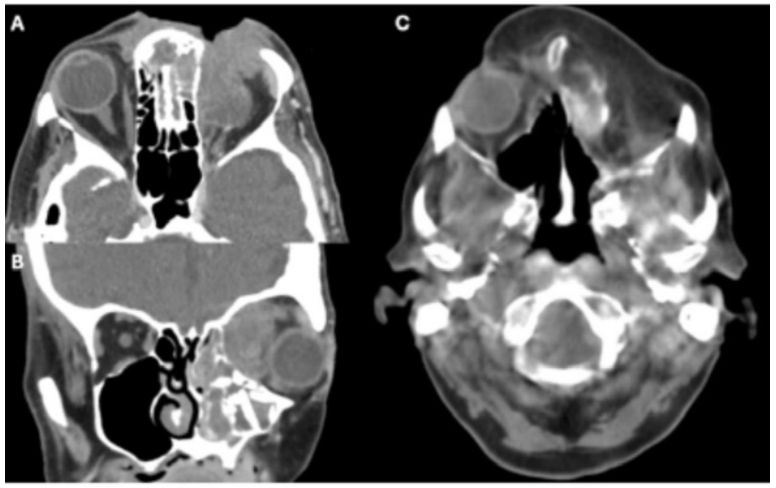
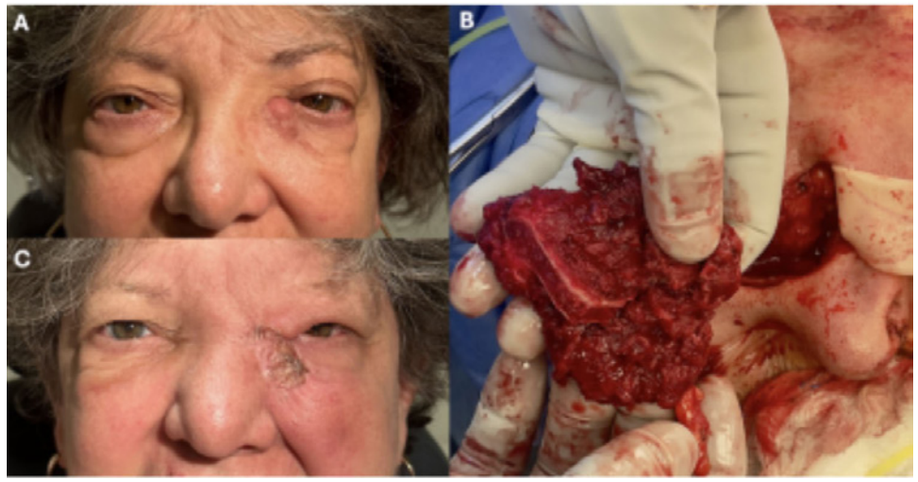


Figure 3



(continued)

(continued)

Figure 4



Figure 5



References:

1. Eskander A, Kang SY, Teknos TN, Old MO. Advances in midface reconstruction: beyond the reconstructive ladder. *Curr Opin Otolaryngol Head Neck Surg*. Oct 2017;25(5):422-430. doi:10.1097/moo.0000000000000396
2. Cardín AA, Pereira A, Mendes A, Duarte J, Pereira A. Maxillary reconstruction with horizontally oriented scapular tip free flap: outcomes in orbital support and palate closure. *Journal of Plastic, Reconstructive & Aesthetic Surgery*. 2024;95:221-230. doi:10.1016/j.bjps.2024.05.042
3. Choi N, Cho JK, Jang JY, Cho JK, Cho YS, Baek CH. Scapular Tip Free Flap for Head and Neck Reconstruction. *Clin Exp Otorhinolaryngol*. Dec 2015;8(4):422-9. doi:10.3342/ceo.2015.8.4.422
4. Chanowski EJ, Casper KA, Eisbruch A, et al. Restoration of the orbital aesthetic subunit with the thoracodorsal artery system of flaps in patients undergoing radiation therapy. *J Neurol Surg B Skull Base*. Oct 2013;74(5):279-85. doi:10.1055/s-0033-1347366
5. Catherine TH, Emily JM, Jayne RS, et al. Osteotomized folded scapular tip free flap for complex midfacial reconstruction. *Plastic and Aesthetic Research*. 2021;8:33. doi:10.20517/2347-9264.2021.44

7:37-7:40 am

Spontaneous Degeneration and Management of Life- and Vision-Threatening Orbito-Cranial-Oropharyngeal Teratoma

Kenneth Chang[1,2], Paolo Campisi[3], Joao Amaral[4], Dan DeAngelis[1,2]
[1]Department of Ophthalmology and Vision Sciences, The Hospital for Sick Children, Toronto, Ontario, Canada, [2]Department of Ophthalmology and Vision Sciences, University of Toronto, Toronto, Ontario, Canada, [3]Department of Otolaryngology, The Hospital for Sick Children, Toronto, Ontario, Canada, [4]Department of Radiology, The Hospital for Sick Children, Toronto, Ontario, Canada

Introduction: Teratomas are tumors derived from all three germ cell layers. They are rarely found in the orbit, representing 0.8% of cases. These lesions are typically isolated, and seldomly involve surrounding structures, including the oropharynx and skull base, which can greatly complicate management. There are sparse reports of such cases and their treatment in the literature. We present the case of a complex life- and vision-threatening trans-spatial complex orbito-cranial-oropharyngeal teratoma that underwent spontaneous degeneration, and subsequent management.

Methods: A child was born at 35 weeks via c-section and ex utero intrapartum treatment (EXIT) procedure due to a prenatally-diagnosed rapidly expansile oropharyngeal mass extending to the skull base, cavernous sinus, and left orbit (Figure 1). Neuroimaging had identified a complex trans-spatial mass with both solid and cystic components involving the oral cavity, nasopharynx, submandibular area, and orbit with erosion into the anterior and middle cranial fossa (Figure 2). The patient was transferred to the NICU, where the intraoral component was urgently surgically debulked to re-establish the airway. Pathology identified the lesion as a mature teratoma. Despite persistent intracranial involvement, several respiratory arrests, and significant proptosis with optic nerve compression (Figure 3), the parents declined palliative care, and instead pursued surgical intervention.

Results: Repeat imaging found that the predominantly solid teratoma had spontaneously degenerated into predominantly cystic areas with numerous confluent components (Figure 4). Due to continued progressive improvement in developmental milestones, a decision was made for multi-disciplinary intervention. Image-guided fluoroscopy and drainage was performed by interventional radiology, in conjunction with oculoplastics and ENT. While contrast extravasation or intracranial communication was not observed, the decision was made to defer sclerotherapy due to concern for occult communication with CSF. In total, 23cc of straw-colored fluid was drained, which reduced the relative proptosis from 12mm to 3mm immediately postop (Figure 5). Fluid analysis proved to be negative for beta-2-transferrin, indicating no communication with the intracranial space. The patient remained stable without airway compromise and was discharged home.

(continued)

(continued)

Conclusions: We present a rare case of a congenital teratoma with oropharyngeal, maxillary, orbital and skull base involvement. Such tumors are extremely rare, require complex multidisciplinary management, and carry significant morbidity and potential mortality. In our case, the tumor was partially debulked through a transoral approach in order to preserve the airway. The bulk of the tumor spontaneously degenerated, resulting in a multilobulated cystic lesion that was subsequently managed with a multidisciplinary procedure.

Figure 1



Figure 1:
Newborn with visible teratoma extending from the oral cavity, immediately following birth via EXIT procedure for airway compromise.

Figure 2

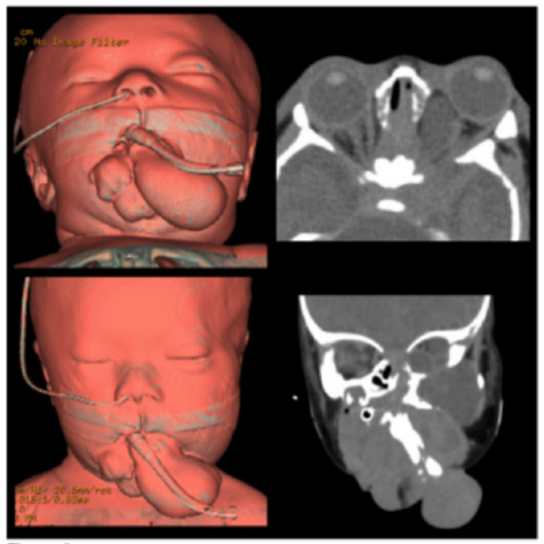


Figure 2:
3D skin surface rendered reconstructions (left) and day 1 newborn CT (right) demonstrating a large, complex, poorly marginated, lobulated solid-cystic mass lesion centered within the oral cavity and nasopharynx, with extension into the left orbit, left maxillary sinus, and intracranial fossa

Figure 3

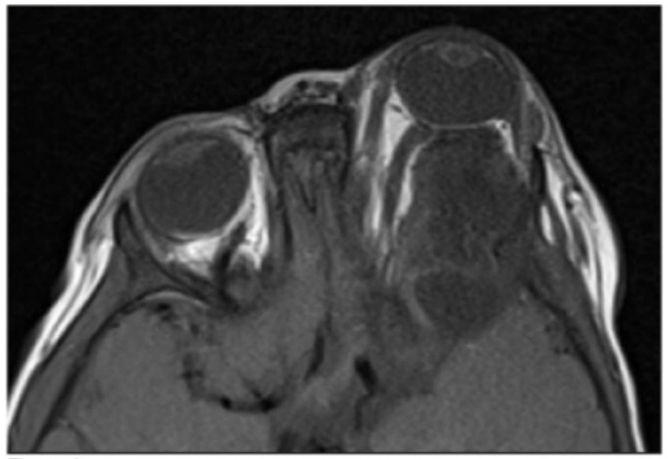


Figure 3:
MRI demonstrating a large multilobulated heterogeneously cystic and solid trans-spatial teratoma

(continued)

(continued)

Figure 4

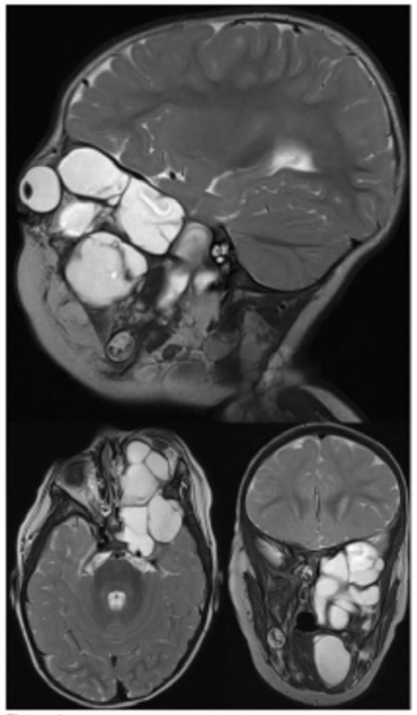


Figure 4:
MRI obtained before drainage demonstrating the teratoma is now predominantly cystic with multiple thin septations

Figure 5



Figure 5:
Pre (top) and post-op (bottom) bird's eye photos following cyst drainage demonstrating dramatic improvement of proptosis

References:

1. Pellerano F, Guillermo E, Garrido G, Berges P. Congenital Orbital Teratoma. *Ocul Oncol Pathol*. 2016 Sep 7;3(1):11–16.
2. Moreddu E, Pereira J, Vaz R, Lena G, Triglia J, Nicollas R. Combined endonasal and neurosurgical resection of a congenital teratoma with pharyngeal, intracranial and orbital extension: Case report, surgical technique and review of the literature. *Int J Pediatr Otorhinolaryngol*. 2015 Dec;79(12):1991-4.
3. Gnanaraj L, Skibell BC, Coret-Simon J, Halliday W, Forrest C, DeAngelis DD. Massive congenital orbital teratoma. *Ophthalmic Plast Reconstr Surg*. 2005 Nov;21(6):445-7.
4. Morris DS, Fayers T, Dolman PJ. Orbital teratoma: case report and management review. J AAPOS. 2009 Dec;13(6):605-7.

7:40-7:43 am

Medial Canthal Reconstruction for Paralytic Ectropion

Katherine Lucarelli, Jordan Cornwell, Daniel Rootman, Robert Goldberg
Division of Orbital and Ophthalmic Plastic Surgery, University of California, Los Angeles, Los Angeles, California, United States

Introduction: Medial ectropion repair can be challenging due to the complex anatomy of the medial canthal tendon (MCT) apparatus. Medial canthoplasty through a transcaruncular approach can help to restore the anatomical relationship of the posterior limb of the medial canthal tendon via fixation to the posterior lacrimal crest.[1-3] This technique can be employed in isolation for involutional ectropion or combined with other surgical procedures in complex cases of facial paralysis or trauma.

Methods: The authors present a case series of patients treated with transcaruncular medial orbitotomy for canthal reconstruction in lower eyelid ectropion. The surgical technique involves a skin incision inferior to the eyelash margin and slightly lateral to the punctum anteriorly, and a conjunctival incision to expose the medial canthal tendon. A transcaruncular orbitotomy exposes Horner's muscle and the posterior lacrimal crest. A suture is passed entering the skin through the medial tarsus to exit the conjunctival incision, re-enter the conjunctiva to traverse the medial canthal tendon, and is then anchored through the superior posterior lacrimal crest in a whip stitch formation. The suture direction is then reversed through the same pathway and tied externally at the skin incision. The overlying skin is closed. The procedure will be demonstrated diagrammatically and in video format.

Results: Ten patients were included from 2016-2024. Six were male. The mean age was 71 (median 73). Six patients were treated for ectropion secondary to facial paralysis with medial canthoplasty in various combinations with horizontal tightening (lateral tarsal strip or tarsal wedge excision), midface lifting, and/or eyelid weight insertion. Four patients had developed post-traumatic ectropion after facial trauma repair or cancer resection and were also treated with eyelid retraction repair or skin graft.

Conclusions: Lower eyelid ectropion may range from simple involutional ectropion to complex paralytic or post-traumatic etiology that requires a multifactorial surgical approach for repair. Transcaruncular medial canthoplasty can be used to address the challenging problem of medial laxity and restore the anatomic configuration of the posterior limb of the medial canthal tendon. In cases of paralytic ectropion, medial canthoplasty in combination with horizontal tightening may create a structural support "sling" for the lower eyelid that cannot be achieved by lateral reconstruction alone.

(continued)

(continued)

References:

1. Fante RG, Elner VM. Transcaruncular approach to medial canthal tendon plication for lower eyelid laxity. *Ophthalmic Plast Reconstr Surg*. 2001;17(1):16-27. doi:10.1097/00002341-200101000-00004
2. Sira M, Norris JH, Nduka C, Malhotra R. Transcaruncular medial canthal tendon plication with lower eyelid suture sling in facial nerve palsy. *Orbit*. 2014;33(3):159-163. doi:10.3109/01676830.2013.879905
3. Elner VM, Demirci H, Morton AD, Elner SG, Hassan AS. Transcaruncular medial canthal ligament plication for repair of lower eyelid malposition. *Arch Ophthalmol*. 2007;125(3):374-379. doi:10.1001/archopht.125.3.374

7:43-7:46 am

Rare Case of Ocular Cicatricial Disease from Brunsting-Perry Pemphigoid

Ryan Larochelle[1], Traci Pawlitschek[2], Justin Endo[2], Cat Burkat[3]
[1]Department of Ophthalmology and Visual Sciences, University of Wisconsin, Madison, Wisconsin, United States, [2]Department of Dermatology, University of Wisconsin, Madison, Wisconsin, United States, [3]Department of Ophthalmology, University of Wisconsin, Madison, Wisconsin, United States

Introduction: Brunsting-Perry pemphigoid (BPP) is a rare autoimmune condition characterized by vesiculobullous lesions on the head, neck, and upper trunk that leave atrophic scarring and milia.[1] It presents most commonly in elderly Caucasian males.[1] Its nosologic classification remains controversial due to its overlap with various autoimmune bullous conditions.[1] BPP shares many similarities with the pemphigoid disease family, including subepidermal blisters with varying infiltrate of eosinophils, neutrophils, and lymphocytes.[1,2] It may also be considered a subtype of epidermolysis bullosa acquisita (EBA).[1] Histologic similarities between these various conditions necessitate immunofluorescence studies.

While ocular involvement in mucous membrane pemphigoid is well described, it has not been reported in BPP. A systematic review of 36 articles summarizing all 63 reported patients with BPP found that just 22% had mucosal lesions, all of which featured mild oral involvement; none of the patients had ocular or genital involvement.1 Herein we report the first description of severe ocular cicatricial disease in a patient with BPP.

Methods: Case report.

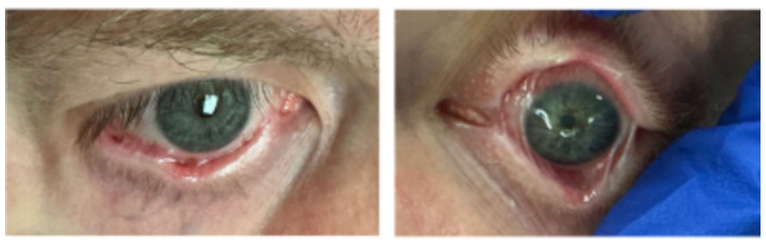
Results: A 51-year-old male presented with two years of bilateral eye irritation, foreign body sensation, photophobia, tearing, and blurry vision. Recent medical history included multiple blistering desquamating lesions on the face, head, and legs without oral mucosal involvement. Skin biopsy immunofluorescence studies demonstrated linear IgG and IgA basement membrane staining in a u-serrated pattern, diagnostic for BPP-type EBA.[3] Eye exam demonstrated severe bilateral upper and lower symblepharon with forniceal shortening, ankyloblepharon of the medial and lateral eyelids, margin entropion / trichiasis, and restrictive limited ocular motility (Figure 1). Prior topical steroids from another provider had not improved his symptoms. The patient began rituximab infusions and received three rounds of 5-fluorouracil injections to the lower lids, with improvement but residual left-sided irritation. He then underwent left release of symblepharon and ankyloblepharon, forniceal reconstruction with amniotic membrane, and lid-splitting excision of lash follicles and has significantly improved.

(continued)

(continued)

Conclusions: BPP shares features of other autoimmune bullous conditions and requires immunofluorescent antibody studies for differentiation, including anti-BP180/230 in the absence of anti-collagen VII.[1] It is most often treated with some combination of systemic steroids, topical steroids, and antihistamines. Steroid-sparing agents, most commonly tetracyclines, dapsone, and methotrexate, have been used.[1] One quarter of reported patients experienced flares during follow-up.[1] Ophthalmologists treating cicatricial conjunctival disorders should be aware of the various autoimmune conditions adjacent to mucous membrane pemphigoid that may be distinguished via histopathologic studies.

Figure 1



References:

1. Aromolo IF, Maronese CA, Moltrasio C., Genovese G, Marzano AV. (2022). Brunsting-Perry pemphigoid: a systematic review. InternationalJournal of Dermatology, 61(11), 1353-1358.
2. Kim JH, Kim SC. (2013). Epidermolysis bullosa acquisita. Journal of the European Academy of Dermatology and Venereology, 27(10), 1204-1213.
3. Holtsche MM, Nina VAN, Künstner A, Busch H, Zillikens D, Schmidt E. (2021). Diagnostic value and practicability of serration pattern analysis by direct immunofluorescence microscopy in pemphigoid diseases. Acta Dermato-Venereologica, 101(3).

7:46-7:49 am

Aripiprazole-Induced Bilateral Blepharoptosis

Carolina A. Chiou, Nina Ahmad, Paris M. Hanson
Department of Ophthalmology, Ophthalmic Plastic Surgery Service, Brown Health Medical Group, Warren Alpert Medical School of Brown University, Providence, Rhode Island, United States

Introduction: While aponeurotic ptosis is the most common cause of blepharoptosis, less common etiologies such as neuromuscular, myogenic, traumatic, or pharmacologic causes must also be considered. Among these, drug-induced blepharoptosis is rare but significant, warranting thorough evaluation. Antipsychotic medications are an uncommon yet documented cause of blepharoptosis. Despite their known neurologic and neuromuscular side effects, the association between antipsychotics and ptosis remains underrecognized. We describe a case of acute-onset bilateral blepharoptosis after initiating aripiprazole, with full resolution of symptoms upon discontinuation. This report represents the first documented case in the oculoplastics literature.

Methods: Case Report

Results: A 22-year-old female with bipolar II disorder was referred for surgical evaluation of bilateral blepharoptosis. Three weeks prior, she began experiencing progressive eyelid heaviness that interfered with daily tasks. She denied a history of congenital ptosis, diurnal variation, binocular diplopia, neurotoxin injections, contact lens use, trauma, or other neurologic symptoms. Examination revealed normal pupils with no anisocoria, unremarkable ocular vitals, and negative findings for lid lag, Cogan's lid twitch, or fatigability. Marginal reflex distance 1 (MRD1) measured 0.5 mm in the right upper eyelid (RUL) and -1 mm in the left upper eyelid (LUL), with normal levator function (14 mm bilaterally) and full extraocular movements (Fig 1A). Visual field testing showed superior altitudinal defects, significantly improved with eyelid taping. Older photographs confirmed a change in eyelid position.

Medication review revealed the initiation of aripiprazole approximately one week prior to the onset of blepharoptosis. The temporal association and acute presentation raised suspicion for medication-induced blepharoptosis. Due to its role in the ptosis and inadequate control of her bipolar II disorder, aripiprazole was discontinued under psychiatric guidance, and lithium therapy was initiated. At her 2-month follow-up, her blepharoptosis improved significantly, with an MRD1 of 4 mm in the RUL and 3 mm in the LUL (Fig 1B).

Conclusions: Aripiprazole, an atypical antipsychotic with a unique receptor profile, acts as a partial agonist at dopamine D2 and serotonin 5-HT1A receptors and as an antagonist at serotonin 5-HT2A receptors. This pharmacological activity is associated with a lower incidence of extrapyramidal side effects compared to traditional antipsychotics.
(continued)

(continued)

Despite its favorable side effect profile, aripiprazole has been implicated in rare oculomotor disturbances,[1] including blepharoptosis and oculogyric crisis.[2] To date, there is only one prior case in the literature reporting aripiprazole-induced blepharoptosis.[2] The exact mechanism remains unclear but is hypothesized to involve disrupted neuromuscular transmission via its partial dopamine receptor agonist activity.[3]

To our knowledge, this is the first documented case in the oculoplastics literature and the second reported case overall of aripiprazole-induced blepharoptosis. This report is further distinguished by the inclusion of clinical photographs showing the condition and its resolution after discontinuation.

This case underscores the importance of considering medication side effects in the differential diagnosis of blepharoptosis. Oculoplastic surgeons and other eye care providers should maintain a high index of suspicion for drug-induced blepharoptosis, particularly in patients with an acute onset and recent medication changes. Early recognition and tailored management, including collaboration with prescribing physicians to explore treatment options, can facilitate symptom resolution and help avoid unnecessary surgical interventions.

Figure 1



References:

1. Ettinger AB, Argoff CE. Use of antipsychotics in patients with neurologic and psychiatric disorders: Benefits and risks.*CNS Drugs.* 2007;21(6):477-497.
2. Demir V, Şenol Y, Akgün H. Aripiprazole-induced reversible ptosis and oromandibular dystonia. *European Psychiatry.* 2014;29(S1):1-5.
3. Duggal HS. Aripiprazole-associated movement disorders: A review of case reports and clinical studies. *Psychopharmacol Bull.* 2015;45(4):45-54.

7:49-7:52 am

Invasive Fungal Sinusitis: A Revised Approach to Diagnosis and Management

Alexis Kassotis[1], Kashviya Suri[2], Shanlee Stevens[3,4], Celestine Gregerson[3,4], Michael Kazim[3], Allison Coombs[5]
[1]Ophthalmology, Columbia University Medical Center, New York, New York, United States, [2]Donald and Barbara Zucker School of Medicine at Hofstra/Northwell, Uniondale, New York, United States, [3]Oculofacial Plastic, Reconstructive & Orbital Surgery, Columbia University Medical Center, New York, New York, United States, [4]Oculofacial Plastic, Reconstructive & Orbital Surgery, Weill Cornell Medical Center, New York, New York, United States, [5]Oculofacial Plastic, Reconstructive & Orbital Surgery, Northwell Health Eye Institute, New York, New York, United States

Introduction: Invasive fungal sinusitis (IFS) is a rare but increasingly recognized disease with propensity for rapid orbital and central nervous system involvement.[1-3] Current guidelines for the diagnosis and management of rhino-orbital IFS rely heavily on assessments of immune status and non-specific clinical signs. The diagnostic workup—including the timing, acquisition, and interpretation of imaging, endoscopy, and surgical intervention—remains poorly defined, further complicating the development of effective management strategies.

The morbidity and mortality rates associated with IFS approach 80%, underscoring the critical need for a reliable approach to care.[1,2] At present, the authors present a revised diagnostic and management protocol for rhino-orbital IFS that highlights (Figure 1):

The use of high-sensitivity radiographic features as a cornerstone of early detection.[4]

Reduced dependence on nasal endoscopy findings due to their relatively low sensitivity.

Early initiation of therapy with Transcutaneous Retrobulbar Amphotericin B (TRAMB).[5,6]

Herein, this three-pronged approach resulted in dramatically reduced mortality rates (e.g., reduction from 50-79% to 12%). Ultimately, this approach emphasizes the importance of unifying interdisciplinary efforts to significantly improve outcomes.

Methods: A retrospective chart review was conducted to identify cases of acute-onset IFS across 4 academic centers from July 2020 to June 2024. This study was approved by the Institutional Review Board and was performed in accordance with the Declaration of Helsinki.

Results: Seventeen patients with a clinical diagnosis of IFS were included. Bedside nasal endoscopy was performed for 15 subjects (88%). Serum markers for fungal infection were positive in 2 subjects. At least one key radiographic feature previously associated with IFS was present in all subjects.[4] Specifically, 93% of subjects had periantral soft tissue invasion and 87% had T2 hypointense sinonasal secretions.

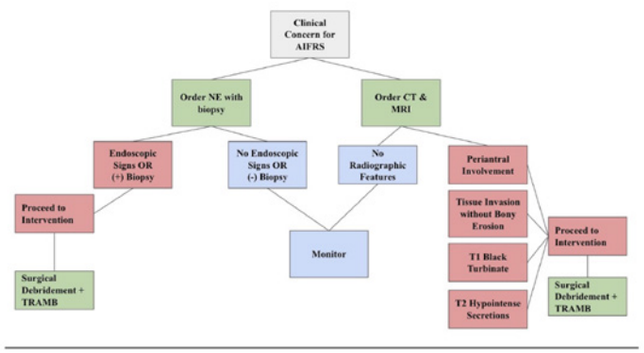
(continued)

(continued)

Concern for IFS was reported on bedside nasal endoscopy in only 3 subjects (20%). Biopsy of sinonasal tissue was acquired in 5 (33%) subjects, with 80% positive for invasive fungal elements. The most common surgical interventions were FESS with debridement and biopsy (100%, n=17) followed by orbitotomy with debridement and biopsy (65%, n=11). TRAMB was administered to 12 subjects (71%) with an average of 6 doses administered. Two subjects died within 1 month of presentation, both from septic shock (12%). Two subjects died more than 1 month after resolution of their acute infection: one from intracranial hemorrhage and one from complications of leukemia.

Conclusions: In the present cohort, the authors report a 12% mortality rate in acute IFS with orbital involvement, which is significantly lower than the previously published mortality rates. Specifically, we believe improved outcomes are based on the following principles: (1) Key radiographic features in acute onset IFS are highly prevalent and crucial to early diagnosis, (2) Nasal endoscopy, particularly without biopsy, may generate false negative results and delay intervention, and (3) TRAMB should be employed once orbital disease is identified.

Figure 1: Proposed Protocol for Suspected Invasive Fungal Rhino-orbital Sinusitis



NE: Nasal Endoscopy, CT: Computed Tomography, MRI: Magnetic Resonance Imaging, TRAMB: Transcutaneous Retrobulbar Amphotericin

References:

1. Turner, J. H., Soudry, E., Nayak, J. V., & Hwang, P. H. (2013). Survival outcomes in acute invasive fungal sinusitis: a systematic review and quantitative synthesis of published evidence. *The Laryngoscope*, *123*(5), 1112–1118.
2. Trief, D., Gray, S. T., Jakobiec, F. A., Durand, M. L., Fay, A., Freitag, S. K., Lee, N. G., Lefebvre, D. R., Holbrook, E., Bleier, B., Sadow, P., Rashid, A., Chhabra, N., & Yoon, M. K. (2016). Invasive fungal disease of the sinus and orbit: a comparison between mucormycosis and Aspergillus. *The British journal of ophthalmology*, *100*(2), 184–188.
3. Silveira, M.L.C., Anselmo-Lima, W.T., Faria, F.M. *et al.* Impact of early detection of acute invasive fungal rhinosinusitis in immunocompromised patients. *BMC Infect Dis* 19, 310 (2019).
4. Kassotis A, Coombs A, Matari N, Lignelli A, Kazim M. The Algorithmic Role of Critical Radiographic Features in the Treatment of Angioinvasive Fungal Sinusitis. Ophthalmic Plast Reconstr Surg. 2024 Sep 6. PMID: 39240228.
5. Abdulbaki, H., Callander, J. K., Fastenberg, J. H., Russell, M. S., Vagefi, M. R., Kersten, R. C., & Loftus, P. A. (2024). Transcutaneous Retrobulbar Amphotericin B Injection for Invasive Fungal Sinusitis with Orbital Involvement: A Systematic Review. *American Journal of Rhinology & Allergy*, 19458924241254422. Advance online publication.
6. Ashraf, D. C., Idowu, O. O., Hirabayashi, K. E., Kalin-Hajdu, E., Grob, S. R., Winn, B. J., Vagefi, M. R., & Kersten, R. C. (2022). Outcomes of a Modified Treatment Ladder Algorithm Using Retrobulbar Amphotericin B for Invasive Fungal Rhino-Orbital Sinusitis. *American Journal of Ophthalmology*, *237*, 299–309.

8:02-8:08 am

Acellular Fish Skin Xenograft: Applications and Outcomes in an Oculofacial Plastic Practice

Rupin Parikh, Chau Pham
Department of Ophthalmology and Visual Sciences, University of Iowa, Iowa City, Iowa, United States

Introduction: Full thickness skin grafting (FTSG) is an established technique in reconstruction of periocular anterior lamellar defects.[1] When FTSG is not possible or contraindicated, acellular dermal allo- or xenografts have been found to be safe and effective.[2-3] Acellular fish skin xenografts (FSG) have garnered initial US Food and Drug Administration approval in the burn and wound space since 2013 with recent approvals for use in surgical plastic and reconstructive surgery (2021). Use of this novel product is not well-described in the oculofacial plastic literature.[4-5] We describe the range of surgical indications and outcomes with the use of FSG at our institution.

Methods: An IRB-approved and HIPAA compliant retrospective chart review of patients managed at the University of Iowa by a single surgeon between 1/1/2022 – 12/31/24 was performed. Cases where FSG was used were included. Demographic information, medical history, indication for FSG, surgical technique, follow up, complications, and outcomes were recorded. A summary of the cases can be found in Table 1.

Results: Seven patients were identified with 8 total cases analyzed. 71% (5 of 7) were male. Average age was 70.3 years (range 57-80). Average follow-up was 3.6 months (range 0.25 to 8 months).

Three types of FSG product were used: 1) Standard (one case), 2) 2:1 meshed (5 of 8 cases), and 3) Micro (2 of 8 cases). Indication for FSG use was repair of periocular anterior lamellar defect in 62.5% (5 of 8) cases (Figure 1), FSG was used to fill potential space during medial canthal reconstruction in 25% (2 of 8) cases (Figure 2), and FSG was used for medial orbital wall reconstruction in 1 case.

In cases of anterior lamellar defect reconstruction using Surgiclose 2:1 meshed, average original defect size was 891 mm2 (range 25 mm2 – 2400 mm2) and average size of FSG used was 432 mm2 (range 25 mm2 -1200 mm2).

Surgiclose Micro was used to fill potential space under flaps in 2 cases of post-Mohs medial canthal defects where there was sacrifice of periosteum and reformation of the medial canthal concavity was especially challenging.

(continued)

(continued)

Only one application of FSG was required in all cases. One occurrence of mild upper eyelid retraction without corneal keratopathy was noted. No other complications were noted. All patients with at least 2 months of follow up reported satisfaction with cosmesis.

Conclusions: We find that acellular fish skin grafts are effective to use for a variety of surgical indications with use as a graft for reconstruction of anterior lamellar defects being the most common indication. Cosmetically and functionally favorable outcomes were achieved with one application and only one minor complication, even in patients with a heavy smoking history and sub-optimal wound bed.

The generalizability of findings in this report is limited by the small number of patients. Early results are promising however, and we look forward to further investigations into optimal indications and locations for use, as well as head-to-head comparisons with other dermal substitutes.

	Case	Age	Sex	Smoking status	Additional PMHx	Diagnosis	Defect size	Defect depth	Defect location	Indication for Kerecis	Kerecis product used	Kerecis size	Complications	Additional surgery	Follow up
Reconstruction of anterior lamellar defect	1	77	M	former 25-pack-year	CAD s/p CABGx4, HFrEF, COPD, SCC of lung	BCC	30 mm x 25 mm	Skin and soft tissue	RUL	Large defects, minimal suitable skin for grafting, poor health	Supraclavicular FTSG + Kerecis Surgiclose mesh	20 mm x 10 mm	mild RUL retraction, no lagophthalmos	non-urgent RUL retraction repair planned	3 months
						BCC	31 mm x 35 mm	To bone, 75% periosteum intact	LUL + medial canthus		Bilobed glabellar flap + Kerecis Surgiclose mesh	27 mm x 20 mm	None	None	
	2	66	M	current 50-pack-year	essential HTN	BCC	60 mm x 40 mm	To periosteum	Left brow + LUL	Asymptomatic hypertensive urgency on day of repair (220s/110s mmHg)	Supraclavicular FTSG + Kerecis Surgiclose mesh	40 mm x 30 mm	None	None	8 months
	3	80	M	Never	NICM, essential HTN, OSA, pA-fib	BCC	15 mm x 13 mm	Skin and soft tissue	Left medial canthus	Poor candidate for GA, patient anxiety necessitating short surgical time	Kerecis Surgiclose mesh	15 mm x 13 mm	None	None	2 month
	4	79	F	Former (quit 47 years ago)	HLD, osteoarthritis	Lower eyelid retraction	5 mm x 5 mm	Skin and soft tissue	Left lower eyelid	Tight skin, minimal available donor skin for harvest or flap	Kerecis Surgiclose mesh	5 mm x 5 mm	None	None	2.5 months
Fill potential space	5	65	M	current 50-pack-year	essential HTN	BCC	50 mm x 34 mm	To bone, no remaining periosteum	Left medial canthus	Large defect to bone, no periosteum, positive deep margins with planned adjuvant radiation	Paramedian forehead flap + Kerecis micro	N/A	None	Flap inset/debulking planned	8 months, s/p 60 Gy radiation
	6	57	F	Current vape	CHF, CAD, OSA	BCC	30 mm x 40 mm	To bone in medial canthus	RUL + RLL + medial canthus	Glabellar rotational flap, medial canthal recon with bone anchors, Tenzel	Kerecis micro	N/A	None	None	2 months
Orbit plate	7	68	M	Current 40-pack-year	Depression, essential HTN, old MI, OSA	Orbital wall implant infection	20 mm x 36 mm	N/A	Left medial orbital wall	Large residual medial wall defect after removal of infected Medpor Titian implant	Kerecis Surgiclose	25 mm x 40 mm	None	None	1 week

(continued)

(continued)

Figure 1

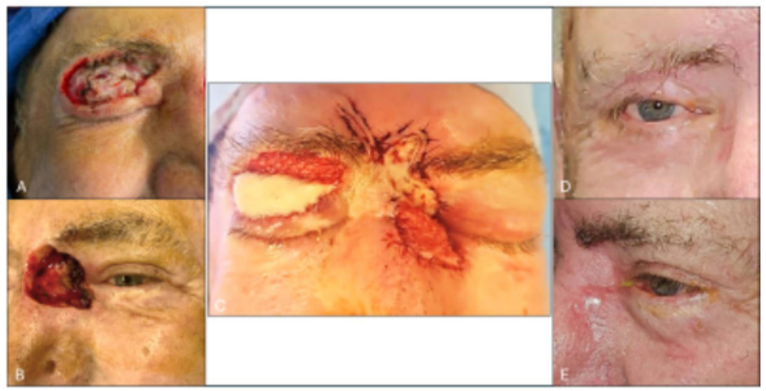
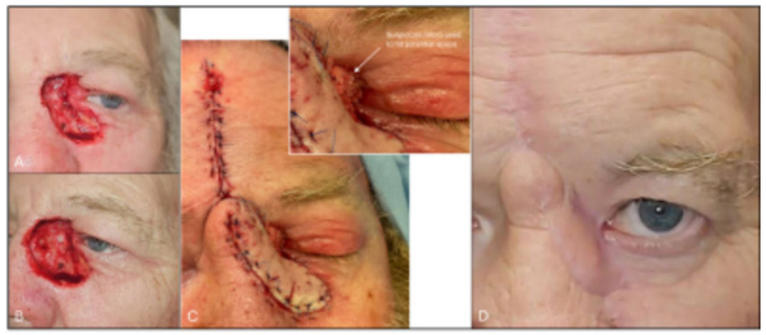


Figure 2



References:

1. Rathore, Deepa S. M.B.B.S., M.S., M.R.C.Ophth; Chickadasarahilli, Swaroop M.B.B.S., M.R.C.Ophth.; Crossman, Richard Ph.D.; Mehta, Purnima M.B.B.S., M.S., M.R.C.Ophth., F.R.C.Ed.; Ahluwalia, Harpreet Singh M.B.B.S., M.S., M.R.C.Ophth., F.R.C.S., F.R.C.Ophth.. Full Thickness Skin Grafts in Periocular Reconstructions: Long-Term Outcomes. Ophthalmic Plastic and Reconstructive Surgery 30(6):p 517-520, November/December 2014. | DOI: 10.1097/IOP.0000000000000237
2. Shorr N, Perry JD, Goldberg RA, et al. The safety and applications of acellular human dermal allograft in ophthalmic plastic and reconstructive surgery: a preliminary report. Ophthal Plast Reconstr Surg 2000;16:223–30.
3. Chen, T. A., Ayala-Haedo, J. A., Blessing, N. W., Topping, K., Alabiad, C. R., & Erickson, B. P. (2017). Bioengineered dermal substitutes for the management of traumatic periocular tissue loss. Orbit, 37(2), 115–120. https://doi.org/10.1080/01676830.2017.1367014
4. Wang, Diane M.D.*; Maliakkal, Janice M.D.†; Sadat, Omar M.D.*; Codrea, Vlad M.D., Ph.D.‡; Nguyen, John M.D.*,§. Acellular Fish Skin Grafts for Treatment of Periocular Skin Defects. Ophthalmic Plastic and Reconstructive Surgery 40(6):p 681-684, November/December 2024. | DOI: 10.1097/IOP.0000000000002699
5. Steinberger EE, Vogt AZ, Tan JF. Skin and Bone: Intact Fish Skin to Reconstruct Traumatic Orbital Floor and Wall Defects. Ophthalmic Plast Reconstr Surg. 2024 May-Jun 01;40(3):e78-e80. doi: 10.1097/IOP.0000000000002594. Epub 2024 Jan 17. PMID: 38231618.

8:08-8:15 am

The Use of Acellular Donated Human Dermal Matrix as a Spacer Graft for the Correction of Lower Eyelid Retraction

Stephanie Thermozier[1,2], Evan Black[3,2,4], Robert Beaulieu[1,2,4], Dianne Schlachter[1,5,4]
[1]Consultants in Ophthalmic and Facial Plastic Surgery, Southfield, Michigan, United States, [2]Department of Ophthalmology, Kresge Eye Institute, Wayne State University, Detroit, Michigan, United States, [3]Consultants in Ophthalmic and Facial Plastic Surgery,, Southfield, Michigan, United States, [4]Beaumont Eye Institute, Royal Oak, Michigan, United States, [5]Kresge Eye Institute, Wayne State University, Detroit, Michigan, United States

Introduction: Lower eyelid retraction is a condition in which the lower eyelid is displaced inferiorly, leading to an increase in the margin reflex distance 2 (MRD2) and inferior scleral show. Retraction causes are multifactorial but often occur due to the contraction of either the anterior, middle, or posterior lamella, or a combination of these issues. Patients with lower eyelid retraction often present with ocular irritation, eye dryness, and exposure keratopathy. In patients with contraction of the posterior lamella, one method of surgical correction involves lengthening the posterior lamella with a spacer graft. There have been studies describing the use of a variety of human and xenogenic (bovine or porcine) acellular tissue matrices as spacer grafts. However, to the authors' knowledge, there have been no published reports evaluating the use of acellular hydrated dermis (FHD-AD) in the correction of lower eyelid retraction. This paucity of data has posed a challenge for surgeons hoping to utilize this product in their surgical approach. We describe the efficacy of this product as an internal spacer graft in the surgical correction of lower eyelid retraction.

Methods: This is a single-center retrospective chart review of patients who underwent lower eyelid retraction repair from 2023–2024. Patients were included in the study if they underwent retraction repair with the use of an internal spacer graft. Both unilateral and bilateral reconstructions were included. The surgical results from multiple surgeons using the same technique at the center were included. Clinical outcomes such as improvement in MRD2 and improvement in aesthetic appearance were measured. A paired T-test was performed to determine if the change in MRD2 was statistically significant. This study was approved by the Wayne State Institutional Review Board and is HIPAA compliant.

Results: total of 36 eyelids of 26 patients were included. The etiologies of retraction were as follows: thirteen patients with involutional changes, seven patients with retraction following cosmetic surgery, two patients with paralytic changes, and one patient with retraction following trauma. The average age of patients was 73.8 years old (range 55–86). The average duration of follow-up was 112 days (range 8-383 days). All eyes showed improvement in MRD2 retraction following repair. The mean pre-operative MRD2 was 8±1.6mm (range 6-12mm); mean post-operative MRD2 was 5.5±0.85mm (range 4.5-7mm). The mean change in MRD2 was 2.6±1.4mm, $p<0.0001$.
(continued)

(continued)

Two patients developed pyogenic granulomas, one of which required surgical excision. Two patients had residual ectropion requiring surgical correction. One patient underwent a subsequent, planned full-thickness skin graft. No patients had postoperative bleeding, hematoma, infection, inflammation, or scarring.

Conclusions: FHD-AD is effective as an internal spacer graft for the surgical correction of lower eyelid retraction. Limitations of the study include its small sample size and duration of follow-up. Additional studies are needed to compare the outcomes of patients compared with other acellular tissue matrices.

Figure 1

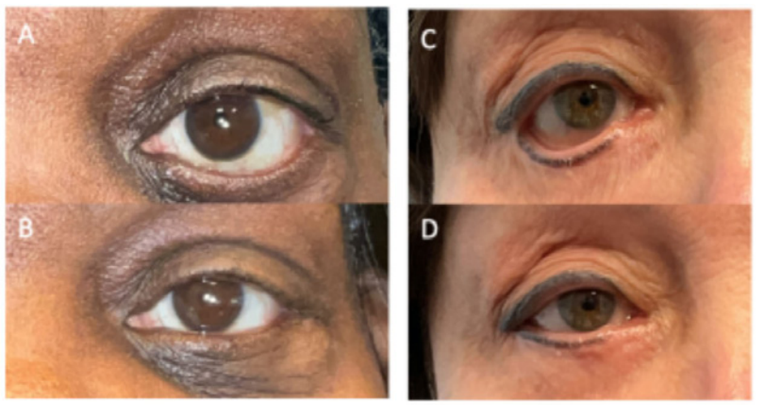


Figure 1: Pre-operative photos (above) and post operative photos (below). **Left:** A patient with left involutional lower eyelid retraction (A) Prior to operative and (B) 37 days after retraction repair. **Right:** A patient right retraction following lower eyelid blepharoplasty (C) Prior to operation and (D) 144 days after right lower eyelid surgical correction

References:

1. Barmettler A, Heo M. A Prospective, Randomized Comparison of Lower Eyelid Retraction Repair with Autologous Auricular Cartilage, Bovine Acellular Dermal Matrix (Surgimend), and Porcine Acellular Dermal Matrix (Enduragen) Spacer Grafts. Ophthalmic Plast Reconstr Surg.
2. Park E, Lewis K, Alghoul MS. Comparison of Efficacy and Complications Among Various Spacer Grafts in the Treatment of Lower Eyelid Retraction: A Systematic Review. Aesthet Surg J. 2017;37(7):743-754. doi:10.1093/asj/sjx003
3. Scruggs JT, McGwin G Jr, Morgenstern KE. Use of Noncadaveric Human Acellular Dermal Tissue (BellaDerm) in Lower Eyelid Retraction Repair. Ophthalmic Plast Reconstr Surg

8:15-8:22 am

Comparison of Periocular and Non-Periocular Merkel Cell Carcinoma

Marissa K. Shoji[1], Margaret Havunjian[2], Suzan Sargsyan[3], Rolika Bansal[1], Nahia Dib El Jalbout[1], Catherine Liu[1], Bobby Korn[1], Don Kikkawa[1]
[1]Oculofacial Plastic and Orbital Surgery, Shiley Eye Institute, San Diego, California, United States, [2]Ophthalmology, Shiley Eye Institute, San Diego, California, United States, [3]UC San Diego School of Medicine, San Diego, California, United States

Introduction: Merkel cell carcinoma (MCC) is an aggressive neuroendocrine cutaneous malignancy with high rates of recurrence, metastasis, and mortality compared to other skin cancers. While head and neck or extremity involvement is common, periocular involvement occurs less frequently. Studies comparing periocular and systemic MCC are rare. This retrospective study assesses characteristics, treatment, and outcomes of periocular MCC compared to non-ocular locations.

Methods: This IRB-approved retrospective study evaluated patients 18-100 years-old with biopsy-proven MCC from January 2000 – January 2025 at a single institution. Tumor locations were classified into upper extremity, lower extremity, trunk, lymph nodes without known primary lesion, periocular, and non-periocular head and neck. Clinical and histopathologic data, treatment, and outcomes overall and among each location were analyzed. Statistical testing was conducted with SPSS.

Results: 140 patients were included (mean age 71.4 years, 74.3% male, 79.3% white, Table 1). MCC diagnosis increased over time (Figure 1). Primary tumor locations included non-periocular head and neck (34.3%, n=48), upper extremity (25%, n=35), lower extremity (15%, n=21), trunk (12.9%, n=18), lymph node without known primary (8.6%, n=12), and periocular (4.2%, n=6). Most lesions were non-tender (66.4%) and had rapid growth (41.4%). Commonly described lesion colors included red (23.5%, n=33), pink (16.4%, n=23), and purple (10%, n=14). AJCC tumor stage at presentation were Stage 1 (37.1%, n=52), 2 (14.3%, n=20), 3 (32.9%, n=46), and 4 (12.6%, n=18, NS: 4). Patients underwent surgical excision (n=105) primarily with wide margins, radiation (n=81), chemotherapy (n=23), and checkpoint inhibitor therapy (n=37). MCC recurred in 38 patients at a mean 26.6 +/- 44.5 months after presentation. Most (75.1%) were alive at last follow-up (mean 35.4 +/- 43.9 months; Figure 2). Two-year and 5-year survival were 61.3% and 43.4% respectively. Mortality was significantly associated with baseline immunocompromise ($p=0.002$), tumor size ($p<0.001$), recurrence ($p=0.01$), tumor stage at presentation ($p=0.014$), chemotherapy treatment ($p<0.001$), and earlier year of diagnosis ($p=0.003$) but not tumor location ($p=0.51$).

Statistical comparison by location was performed. There were no significant differences in demographics or clinical/histopathologic characteristics. Tumor stage varied, with more frequent higher stage lesions in the trunk and lymph nodes without known primary and more frequent lower stage lesions in the head and neck and periocular locations ($p=0.02$). Treatment varied by location. All patients with periocular involvement underwent surgical excision, most (83.3%) with adjuvant radiation. In contrast, trunk and lymph node lesions

(continued)

(continued)

were less frequently excised (p <0.001) but more frequently received chemotherapy (p=0.055). Time to recurrence was longer in the periocular group (p=0.02) but limited by small sample size. All patients with periocular MCC with follow-up were alive at last follow-up, but rates of tumor recurrence and mortality did not significantly differ among all locations (p=0.68, p=0.62) and between periocular and non-periocular malignancies (p=0.61, p=0.19, respectively).

Conclusions: Periocular MCC displays similar features as MCC located systemically but may be treated differently. Baseline immunocompromise, initial tumor stage, size, and recurrence are significantly associated with mortality while tumor location is not. This may support extrapolation of management of systemic MCC to periocular MCC.

Table 1. Characteristics of Merkel Cell Carcinoma Overall and by Location

	Overall (n=140)	Upper Extremity (n=35)	Lower Extremity (n=21)	Trunk (n=18)	Lymph Node (n=12)	Head and Neck (n=48)	Periocular (n=6)	p-value
Demographics								
Age (years)	71.4 +/- 11.6	70.2 +/- 12.3	70.0+/- 12.1	68.6+/- 13.4	69.3 +/- 10.0	73.5 +/- 10.5	77.8 +/- 9.7	p=0.34
Gender (Male)	n=104 (74.3%)	n=28 (80%)	n=13 (61.9%)	n=14 (77.8%)	n=9 (75.0%)	n=36 (75.0%)	n=4 (66.7%)	p=0.76
Race								
White	n=101 (79.3%)	n=30 (85.7%)	n=17 (81.0%)	n=13 (72.2%)	n=7 (58.3%)	n=39 (81.3%)	n=5 (83.3%)	p=0.44
Immunocompromise (yes)	n=25 (17.9%)	n=7 (20.0%)	n=3 (14.3%)	n=4 (33.3%)	n=4 (33.3%)	n=7 (14.6%)	n=0 (0%)	p=0.53
Clinical Characteristics								
Laterality (Right)	n=59 (32.1%)	n=13 (37.1%)	n=11 (52.4%)	n=7 (38.9%)	n=6 (50%)	n=18 (37.5%/)	n=4 (66.7%)	p=0.61
Tumor size (widest dimension, cm)	3.1 +/- 3.3	2.3 +/- 1.9	4.8 +/- 5.4	5.6 +/- 3.5	3.1 +/- 1.9	2.6 +/- 2.7	1.5 +/- 1.0	p=0.14
Tumor stage								**p=0.02**
1	n=52 (37.1%)	n=18 (51.4%)	n=7 (33.3$)	n=5 (27.8%)	n=0 (0%)	n=19 (39.6%)	n=3 (50%)	
2A	n=14 (10%)	n=4 (11.4%)	n=2 (9.5%)	n=2 (11.1%)	n=0 (0%)	n=5 (10.4%)	n=1 (16.7%)	
2B	n=6 (4.3%)	n=2 (5.7%)	n=1 (4.8%)	n=2 (11.1%)	n=0 (0%)	n=1 (2.1%)	n=0 (0%)	
3A	n=29 (20.7%)	n=3 (8.6%)	n=5 (23.8%)	n=4 (22.2%)	n=8 (66.7%)	n=9 (18.8%)	n=0 (0%)	
3B	n=17 (12.1%)	n=4 (11.4%)	n=3 (14.3%)	n=1 (5.6%)	n=3 (25.0%)	n=6 (12.5%)	n=0 (0%)	
4	n=18 (12.9%)	n=4 (11.4%)	n=2 (9.5%)	n=3 (16.7%)	n=1 (8.3%)	n=6 (12.5%)	n=2 (33.3%)	
NS	n=4 (2.9%)	n=0 (0%)	n=1 (4.8%)	n=1 (5.6%)	n=0 (0%)	n=2 (4.2%)	n=0 (0%)	
Treatment								
Surgical excision (yes)	n=105 (76.1%)	n=29 (85.2%)	n=17 (80.9%)	n=10 (55.6%)	n=3 (25%)	n=40 (85.1%)	n=6 (100%)	**p<0.001**
Chemotherapy (yes)	n=23 (16.5%)	n=3 (8.6%)	n= 4 (19.0%)	n=5 (27.8%)	n=3 (25%)	n=2 (4.2%)	n=0 (0%)	p=0.055
Radiation (yes)	n=81 (57.9%)	n=18 (51.4%)	n=14 (66.7%)	n=12 (66.7%)	n=6 (50%)	n=26 (54.2%)	n=5 (83.3%)	p=0.59
Checkpoint inhibitor (yes)	n=37 (26.4%)	n=11 (31.4%)	n=6 (28.6%)	n=6 (33.3%)	n=5 (41.2%)	n=9 (18.8%)	n=0 (0%)	p=0.35
Outcomes								
Recurrence (yes)	n=38 (27.1%)	n=11 (31.4%)	n=8 (38.1%)	n=6 (33.3%)	n=2 (16.7%)	n=10 (20.8%)	n=1 (16.7%)	p=0.68
Distant metastatic recurrence (yes)	n=33 (23.6%)	n=9 (81.8%)	n=7 (87.5%)	n=6 (100%)	n=2 (100%)	n=8 (80%)	n=1 (100%)	p=0.70
Time to recurrence (months)	26.6 +/- 44.5	9.8 +/- 8.2	35.4 +/- 53.2	38.3 +/- 64.3	15.5 +/- 2.12	16.7 +/- 21.2	153	**p=0.017**
Death	n=30 (21.4%)	n=7 (20%)	n=6 (28.6%)	n=4 (22.2%)	n=4 (33.3%)	n=9 (18.8%)	n=0 (0%)	p=0.62
Time to Death (months)	34.0 +/- 43.3	37.1 +/- 27.0	58.7 +/- 85.0	19.0 +/- 23.2	13.0 +/- 9.5	26.1 +/- 33.0	NA	p=0.54
2 year overall survival (%)	61.3%	61.1%	60.0%	66.7%	42.8%	60.9%	100.0%	p=0.77
5 year overall survival (%)	43.4%	41.7%	33.3%	50.0%	33.3%	43.8%	100.0%	p=0.64
2 year disease-free survival (%)	49.3%	44.4%	50.0%	50.0%	50.0%	52.4%	50.0%	p=0.99
5 year disease free survival (%)	42.9%	36.4%	60.0%	42.9%	40.0%	41.7%	50.0%	p=0.97
Overall follow-up duration (months)	35.4 +/- 43.9	31.7 +/- 28.3	46.8 +/- 56.6	38.1 +/- 42.5	26.2 +/- 30.0	30.7 +/- 42.8	65.8 +/- 88.5	p=0.34

(continued)

(continued)

Figure 1

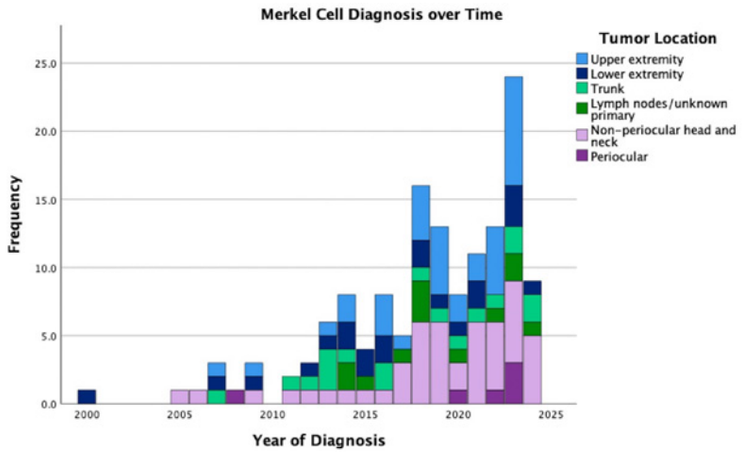


Figure 2

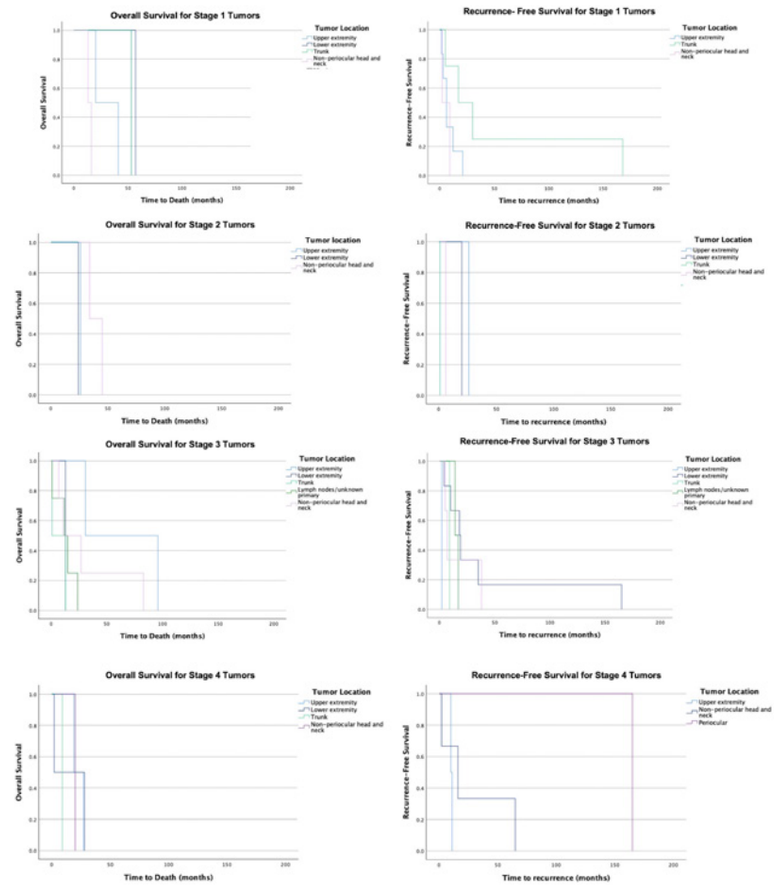
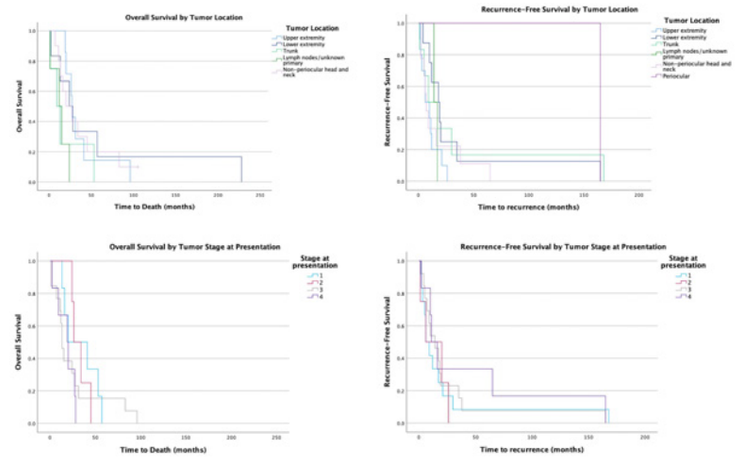


Figure 3



References:

1. Heath et al. *JAAD*, 2008.

8:22-8:28 am

Inhaled Nitrous Oxide During Local Anesthetic Injection Effectively and Affordably Reduces Overall Pain During In-Office Blepharoplasty

Malcolm Kates[1], Gerald McGwin[1], Matthew Vicinanzo[2,3]
[1]Dept of Ophthalmology and Visual Science, University of Alabama at Birmingham, Birmingham, Alabama, United States, [2]Dept of Ophthalmology and Visual Science, University of Alabama at Birmingham, Birmingham, Alabama, United States, [3]Alabama Ophthalmology Associates, Birmingham, Alabama, United States

Introduction: Nitrous oxide (N_2O), also called "laughing gas," is used in numerous fields as an adjunct to local anesthesia due to its analgesic and anti-anxiety effects. Within ophthalmology, studies from Japan show inhaled 30% N_2O may decrease pain during operating room-based cataract surgery, ptosis repair, and vitrectomy, but its effect on pain and anxiety during and after in-office blepharoplasty has not been studied [1-4].

Methods: A total of 133 consecutive cases of patients with dermatochalasis undergoing in-office blepharoplasty from 2021 to 2024 were reviewed (IRB-300010312). Of these, 92 received an inhaled mixture of 50% N_2O and 50% O_2 via a commercially-available inhalation device (Figure 1A) as an adjunct analgesic agent during local anesthetic injection (10cc of 2% lidocaine with 1:100,000 epinephrine), while 41 did not. All patients received oral diazepam (20mg or 30mg). Self-administration of N_2O occurred for 3 minutes prior to local anesthetic injection and for the duration of the injection (Figure 1B) for a total exposure time of less than 10 minutes. Patients rated their pain and anxiety postoperatively and at one-week follow-up on a numerical scale of 1 to 10.

Results: Administration of 50% N_2O during local anesthetic injection significantly decreased same-day procedural pain by 22.8% (average 4.4 vs 5.7, p=.02, Figure 2). Anxiety was also decreased, but not significantly so (Figure 3). No patients reported any N_2O-specific AEs.

Conclusions: Brief (<10 minute) exposure to inhaled 50% N_2O during local anesthetic injection effectively reduces same day pain during in-office blepharoplasty without adverse effects. This is the first study to report on the use of inhaled N_2O during in-office blepharoplasty, this concentration of N_2O (50% versus other studies using 30% N_2O), and use of this patient-controlled device in the field of ophthalmology and oculofacial plastic surgery. Given its designation as an analgesic (i.e., rather than an anesthetic when limited to 55% N_2O or less), it can be used in-office without additional training (or the need for an anesthetist). Furthermore, it has a well-established safety profile and an average cost of $10-$15 per patient over the reported 10-minute window, making it a safe and affordable adjunct to reduce operative pain during in-office blepharoplasty.

(continued)

(continued)

Figure 1

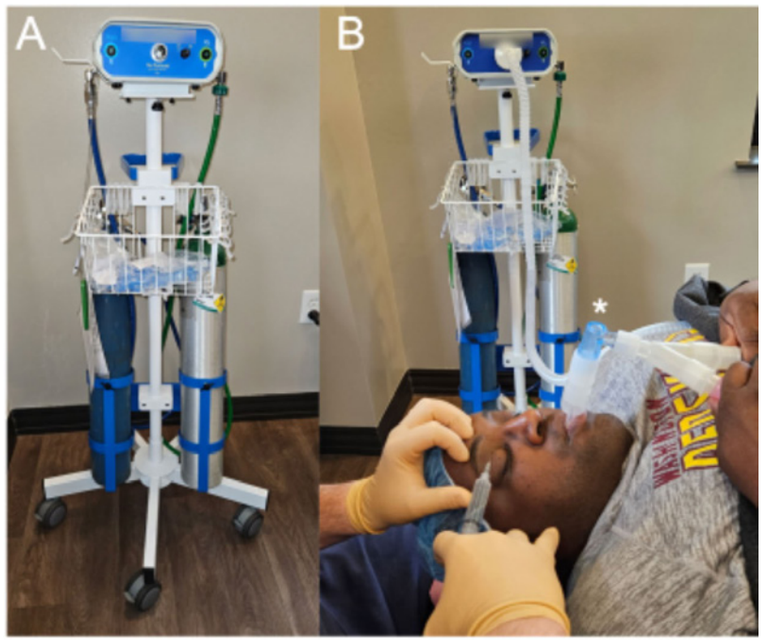


Figure 2

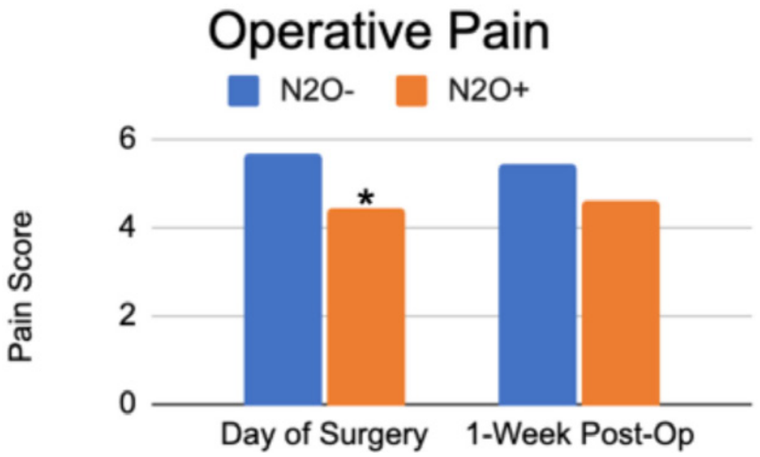
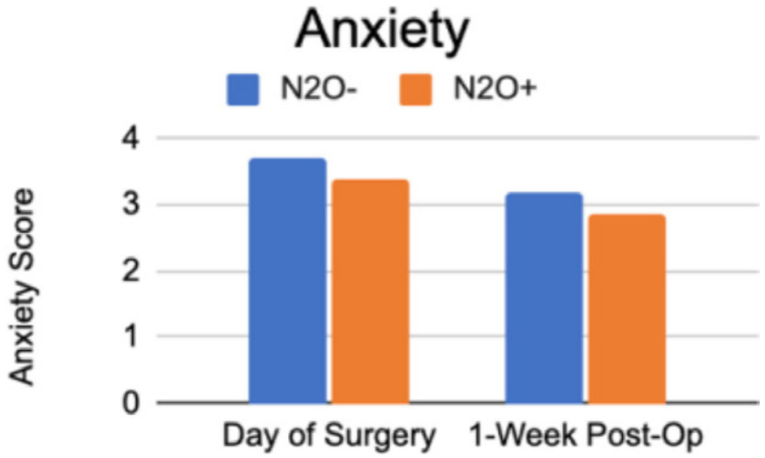


Figure 3



References:

1. Noguchi S, Nakakura S, Noguchi A, et al. Examination of the safety and effectiveness of low-concentration nitrous oxide anesthesia in cataract surgery. *J Cataract Refract Surg*. 2022;48(3):317-321.
2. Noguchi S, Nakakura S, Noguchi A, Tabuchi H. Intraocular Pressure and Safety of Vitrectomy with Vitreous Gas Replacement using Low-concentration Nitrous Oxide Gas Anesthesia. *Retina*. Published online August 2, 2024.
3. Sasajima H, Zako M, Ueta Y, Murotani K. Effects of Low-Concentration Nitrous Oxide Anesthesia on Patient Anxiety During Cataract Surgery: A Retrospective Cohort Study. *Clin Ophthalmol*. 2022;16:2803-2812.
4. Noguchi S, Nakakura S, Noguchi A, et al. Utility and safety of low-concentration nitrous oxide anesthesia in ptosis surgery. *Medicine (Baltimore)*. 2021;100(4):e23753.

8:28-8:34 am

Immune Checkpoint Inhibitor Treatment of Advanced Periocular Cutaneous Squamous Cell Carcinoma

Amee Azad[1], Kevin Emerick[2], Sophia Shalhout[2], Howard Kaufman[3], David Miller[4], Nahyoung Lee[5], Michael Yoon[1], Suzanne Freitag[1], Anna Stagner[6], Natalie Wolkow[7]
[1]Ophthalmic Plastic Surgery Service, Department of Ophthalmology, Massachusetts Eye and Ear, Harvard Medical School, Boston, Massachusetts, United States, [2]Department of Otolaryngology-Head and Neck Surgery, Massachusetts Eye and Ear, Harvard Medical School, Boston, Massachusetts, United States, [3]Department of Surgery, Mass General Hospital, Harvard Medical School, Boston, Massachusetts, United States, [4]Department of Medicine, Division of Hematology/Oncology, Mass General Hospital, Harvard Medical School, Boston, Massachusetts, United States, [5]Ophthalmic Plastic Surgery Service, Massachusetts Eye and Ear, Harvard Medical School, Boston, Massachusetts, United States, [6]David G. Cogan Laboratory of Ophthalmic Pathology, Massachusetts Eye and Ear, Harvard Medical School, Boston, Massachusetts, United States, [7]Ophthalmic Plastic Surgery Service, Massachusetts Eye and Ear, Harvard Medical School, Boston, Massachusetts, United States

Introduction: Advanced periocular and orbital cutaneous squamous cell carcinoma (SCC) is difficult to manage, often requiring orbital exenteration with or without post-operative radiation.[1] In recent years, with the advent of immune checkpoint inhibitors (ICI) such as cemiplimab[2] and pembrolizumab,[3,4] a potential globe-sparing treatment avenue for advanced periorbital SCC of cutaneous origin has been opened; however, the data remain limited.[5–10] The goal of this study was to review a single institution's experience with ICIs in advanced periorbital cutaneous SCC.

Methods: A retrospective review was performed of patients with biopsy-proven advanced periorbital cutaneous SCC treated with ICIs with or without orbital exenteration at Mass Eye and Ear, Harvard University. SCC of conjunctival origin were excluded. This study was approved by the Mass General Brigham Institutional Review Board. Demographic and clinical features at presentation, as well as the type, duration (number of cycles) of ICI and treatment response were analyzed.

Results: Seventeen patients with advanced periocular cutaneous SCC treated with ICI were identified. The median age at time of diagnosis was 71 (interquartile range (IQR) 67-77). Most patients were Non-Hispanic Caucasian (94.1%, n=16) and male (64.7%, n=11). Forty-one percent of patients (n=7) were either current or former smokers at the time of the diagnosis. Twelve patients (66.7%) were AJCC stage T3 or higher. Fifteen patients (88.2%) had orbital involvement and twelve (79.6%) had perineural invasion. Eleven (64.7%) were treated with cemiplimab, 5 (29.4%) with pembrolizumab, and 1 was started on cemiplimab after progression on pembrolizumab. Patients received a median of 10 cycles (IQR 5-16). Six patients (35.2%) had complete response, 6 (35.2%) remained stable, and 3 (17.6%) progressed on ICIs. One patient stopped ICI treatment due to side effects and another stopped due to health complications unrelated
(continued)

(continued)

to ICI treatment. Two out of the 3 patients who progressed ultimately underwent an exenteration within 2.8 and 3.1 months of initiating ICI therapy. The average follow-up time was 37 months (SD 27).

Conclusions: Patients with advanced periocular cutaneous SCC in this study responded well to ICI treatment. Of the 17 patients with advanced periocular disease, with locally advanced, orbital or perineural involvement, 12 had complete response or stable disease (70.6%) and only 3 progressed and required exenteration. This is consistent with clinical literature on the use of ICIs in locally advanced cutaneous SCC. These studies, along with the addition of ours, emphasize that ICIs enhance overall survival with good durability with a manageable safety profile and have transformed the therapeutic landscape for this aggressive skin cancer. Future studies are necessary to assess durability of response, potential for disease recurrence, and long-term quality of life impacts.

References:

1. Cruzado-Sanchez D, Tellez WA, Villarreal-Aguilar B, et al. Conjunctival squamous cell carcinoma: prognostic factors for the recurrence and metastasis and clinicopathological characteristics at an oncological hospital in Peru. *Br J Ophthalmol*. 2020;104(7):1010-1015. doi:10.1136/bjophthalmol-2019-314058
2. Migden MR, Rischin D, Schmults CD, et al. PD-1 Blockade with Cemiplimab in Advanced Cutaneous Squamous-Cell Carcinoma. *N Engl J Med*. 2018;379(4):341-351. doi:10.1056/NEJMoa1805131
3. Maubec E, Boubaya M, Petrow P, et al. Phase II Study of Pembrolizumab As First-Line, Single-Drug Therapy for Patients With Unresectable Cutaneous Squamous Cell Carcinomas. *J Clin Oncol Off J Am Soc Clin Oncol*. 2020;38(26):3051-3061. doi:10.1200/JCO.19.03357
4. Grob JJ, Gonzalez R, Basset-Seguin N, et al. Pembrolizumab Monotherapy for Recurrent or Metastatic Cutaneous Squamous Cell Carcinoma: A Single-Arm Phase II Trial (KEYNOTE-629). *J Clin Oncol Off J Am Soc Clin Oncol*. 2020;38(25):2916-2925. doi:10.1200/JCO.19.03054
5. McLean LS, Lim AM, Webb A, et al. Immunotherapy to Avoid Orbital Exenteration in Patients With Cutaneous Squamous Cell Carcinoma. *Front Oncol*. 2021;11:796197. doi:10.3389/fonc.2021.796197
6. Goldfarb JA, Ferrarotto R, Gross N, et al. Immune checkpoint inhibitors for treatment of periorbital squamous cell carcinoma. *Br J Ophthalmol*. 2023;107(3):320-323. doi:10.1136/bjophthalmol-2021-319417
7. Steren B, Burtness B, Bhatia A, et al. Cemiplimab for Orbital Squamous Cell Carcinoma in 11 Cases. *Ophthal Plast Reconstr Surg*. 2022;38(5):496-502. doi:10.1097/IOP.0000000000002190
8. Tiosano A, Ben-Ishai M, Cnaany Y, et al. Primary cemiplimab treatment for orbital squamous cell carcinoma is effective and may alleviate the need for orbital exenteration. *Eye*. 2023;37(12):2482-2487. doi:10.1038/s41433-022-02358-y
9. Cervantes JA, Fox MC. Successful treatment of recurrent advanced cutaneous squamous cell carcinoma with cemiplimab. *Dermatol Online J*. 2020;26(10). Accessed October 6, 2024. https://www.proquest.com/docview/2459252429?parentSessionId=ryyfjMxmN1DIHK7qRxKFEoOiHybZdqHRXD7sUKkK29I%3D&pq-origsite=primo&sourcetype=Scholarly%20Journals
10. Dhillon J, Li DQ, Burnier M, Shenouda G, Arthurs BP, El-Hadad C. Cemiplimab for metastatic squamous cell carcinoma of the orbit, periocular adnexa, and thigh. *Orbit*. 2024;43(2):258-264. doi:10.1080/01676830.2022.2118789

8:49-8:50 am

Single Stage Exenteration with Osseous Implant Integration

Sasha Hubschman[1], Ann Tran[1], Megan Perez[2], Chad Purnell[3], Pete Setabutr[1]
[1]Oculoplastic & Reconstructive Surgery Department, Illinois Eye and Ear Infirmary, University of Illinois Chicago, Chicago, Illinois, United States, [2]Plastic and Reconstructive Surgery Department, Northwestern University, Chicago, Illinois, United States, [3]Craniofacial Plastic Surgery Department, University of Illinois Chicago, Chicago, Illinois, United States

Introduction: An option for prosthesis fixation into the exenterated orbit is using osseointegrated implants.[1] One disadvantage of this method is the prolonged time from initial surgery to final prosthesis delivery, typically a three-stage approach, each separated by months: orbital exenteration, osseointegrated implants placement, and implants exposure.[1,2] An orbital prosthesis is fitted after patients have healed from the last stage. Herein, we describe a surgical technique for single stage exenteration and osseointegrated implants insertion. Patients subsequently undergo a second stage surgery for implants exposure and abutments placement.

Methods: A retrospective chart review from 2020 to 2025 of patients who underwent single stage orbital exenteration with osseointegrated implants placement was conducted. Data on patient demographic, medical information, prior treatment including radiation, surgical technique, and final prosthetic fit were collected.

An abbreviated version of the surgical technique is described here: Preoperatively, an anaplastologist selects optimal locations for intraosseous implants, and prints a 3-D model of the patient's skull and cutting guide for use in the operating room. Virtual reality planning using interactive software is utilized. An orbital exenteration is performed with a skin sparing technique or with eyelids removal, depending on the case. A forearm free flap is harvested. For placement of the osseointegrated implants, the 3-D printed cutting guide is used. Holes are drilled along those vectors by a starter drill (Figure 1A), followed by a countersink widening drill for 4mm implants (Figure 1B). A 4mm titanium osseointegrated implant is placed at each site (Figure 1C) and subsequently covered with a cover screw (Figure 1D). Ideally, four to five implants are placed in the superolateral and inferolateral quadrants. The forearm free flap is then placed into the orbit, covering the exposed sockets and implants.

(continued)

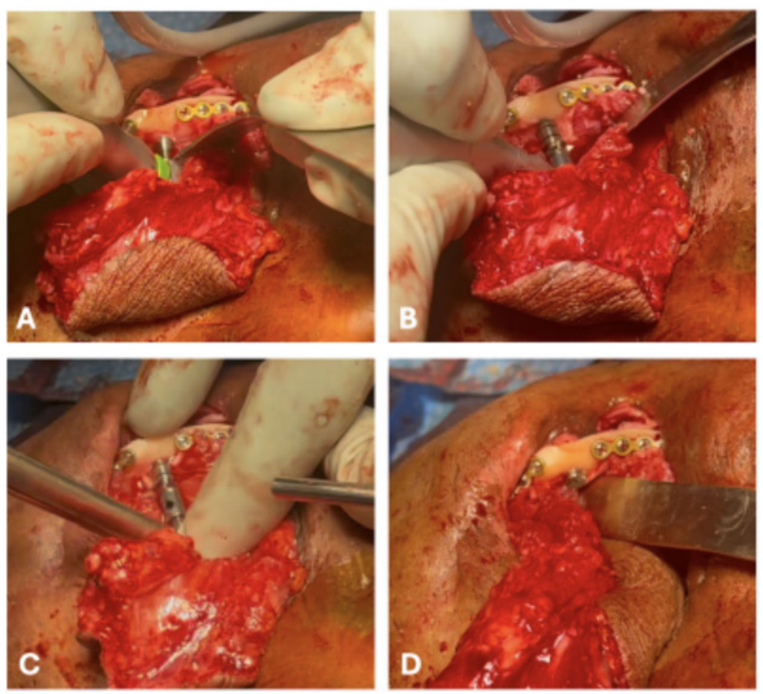
(continued)

A second stage procedure is performed 6 months later to expose the osseointegrated implants and place healing abutments. A 3-D printed guide is designed pre-operatively to mark the implants' location. During surgery, a 4mm punch biopsy is made at each spot. Soft tissue is removed with cautery, and the implants are exposed. The cover screws are removed and replaced by healing abutments.

Results: Four patients were included. All were male. The average age at presentation was 55 years. The reasons for exenteration were squamous cell carcinoma, basal cell carcinoma, and adenoid cystic carcinoma. Three patients had radiation prior to the first stage of surgery. On average, four implants were placed in each socket. The time from the first and second stages of surgery was 6 months. No implant exposure was seen in any patient, with an average follow up of 8.75 months (range 0 - 14). Two complications occurred: orbital cellulitis 2 months postoperatively, and orbital socket abscess 10 months postoperatively, which required oral antibiotics and surgical evacuation respectively. Patients who received a prosthesis, 8 to 11 months after the initial surgery, were satisfied with the cosmetic outcomes.

Conclusions: Single staged exenteration and osseous implant placement may be an option to help minimize the delay from initial surgery to final prosthesis delivery.

Figure 1



(continued)

(continued)

References:

1. Melicher Larson JS, Nerad JA. The use of osseointegration and rare earth magnetic coupling for oculofacial prosthesis retention in the exenterated orbit. *Curr Opin Ophthalmol*. Sep 2009;20(5):412-6. doi:10.1097/ICU.0b013e32832d2df4
2. Nerad JA, Carter KD, LaVelle WE, Fyler A, Branemark PI. The osseointegration technique for the rehabilitation of the exenterated orbit. *Arch Ophthalmol*. Jul 1991;109(7):1032-8. doi:10.1001/archopht.1991.01080070144054

8:50-8:51 am

Pediatric Castleman Disease Manifesting as a Lacrimal Gland Tumor

Tatiana R. Rosenblatt[1], Jacob R. Bledsoe[2], Edith R. Reshef[3]
[1]Department of Ophthalmology, Massachusetts Eye and Ear, Harvard Medical School, Boston, Massachusetts, United States, [2]Department of Pathology, Boston Children's Hospital, Harvard Medical School, Boston, Massachusetts, United States, [3]Department of Ophthalmology, Boston Children's Hospital, Harvard Medical School, Boston, Massachusetts, United States

Introduction: Castleman disease is a rare spectrum of conditions with overlapping rheumatologic, hematologic, and oncologic features and an incidence of 5 – 16 per million person years.[1] It was initially described histopathologically in 1956 in a series of mediastinal lymph node lesions. Updated diagnostic criteria characterize the disease into three discrete conditions: unicentric disease, which typically has hyaline vascular changes and can be asymptomatic, and multicentric disease, which involves plasmocytic changes and cytokine storm causing inflammatory symptoms and multiorgan dysfunction; the latter type is further classified as idiopathic or associated with HHV-8. Orbital involvement is extremely rare; lacrimal gland involvement is even less prevalent, with only a few reported cases in the literature all in adults ages 44 – 84.[2] This is the first reported case of Castleman disease in a pediatric patient with an isolated lacrimal gland lesion.

Methods: Case report.

Results: A 15-year-old otherwise healthy transgender female presented with 10 months of progressive left eye bulging and subsequent tearing, blurry vision, and intermittent periorbital pain. She otherwise felt well without any systemic symptoms. Examination revealed visual acuity of 20/25 OD and 20/30 OS, normal intraocular pressures, no relative afferent pupillary defect or dyschromatopsia, and full extraocular movements. A firm, non-tender mass was visible and palpable in the left superotemporal orbit with associated inferonasal globe displacement, 3 mm of proptosis, and upper eyelid erythema (Figure 1). Dilated fundus exam revealed subtle macular striae OS with normal appearing optic nerves. CT and MRI of the orbits demonstrated a well-defined, avidly enhancing, homogenous expansile left lacrimal gland lesion with decreased diffusivity, smooth bony remodeling, and anteromedial globe displacement (Figure 2). The lesion was excised in toto via lateral orbitotomy without bone window (Figure 3). Histopathology revealed lacrimal tissue with marked lymphoid hyperplasia and features of hyaline vascular-type Castleman disease (Figure 4). Flow cytometry demonstrated no evidence of lymphoma, and HHV-8 was negative. Post-operatively, the patient denied any dry eye symptoms or vision changes. She was referred to hematology for further workup including PET CT to evaluate for multicentric disease.

(continued)

(continued)

Conclusions: This case describes a previously healthy pediatric patient presenting with subacute proptosis secondary to an unusual lacrimal gland mass with histopathology demonstrating hyaline vascular-type Castleman disease. Imaging findings were atypical for more common lacrimal pathology such as adenoid cystic carcinoma, pleomorphic adenoma, lymphoma, or rhabdomyosarcoma, prompting in toto excisional biopsy. The lesion's well-circumscribed, homogenous nature is consistent with limited literature reports of orbital Castleman disease.[3] Surgical excision is the mainstay treatment for unicentric disease and is often curative. Full-body imaging should be performed to evaluate for multicentric involvement; however, studies show no significant difference in treatment outcomes for medical (immunotherapy, chemotherapy) versus surgical management or combination therapy.[4] Although orbital involvement is rare, Castleman disease should be included on the differential for a well-circumscribed, homogenous orbital mass with decreased diffusivity and bony remodelling in patients with or without systemic signs or symptoms of inflammation, as complete excision is usually curative.

Figure 1



Figure 1. External photographs demonstrating full extraocular movements and left superotemporal orbital fullness.

Figure 2

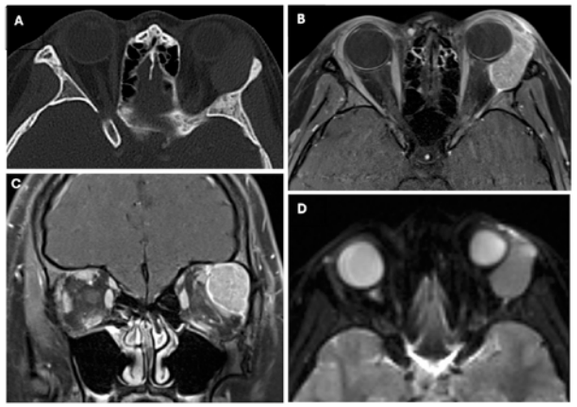


Figure 2. CT (A) and post-contrast T1-weighted fat saturation MRI axial (B) and coronal (C) images demonstrating an expansile, well-defined, homogenously enhancing lesion in the left lacrimal gland measuring 3.1 x 1.8 x 2.2 cm with posterolateral remodeling of the bony orbit and anteriomedial globe displacement. Diffusion-weighted MRI (D) showing decreased diffisivity of the lacrimal gland lesion.

Figure 3

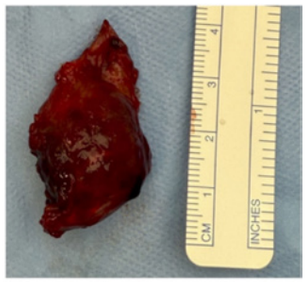


Figure 3. Gross lesion excised in toto status post orbitotomy measuring 4.2 x 2.3 x 1.2 cm.

Figure 4

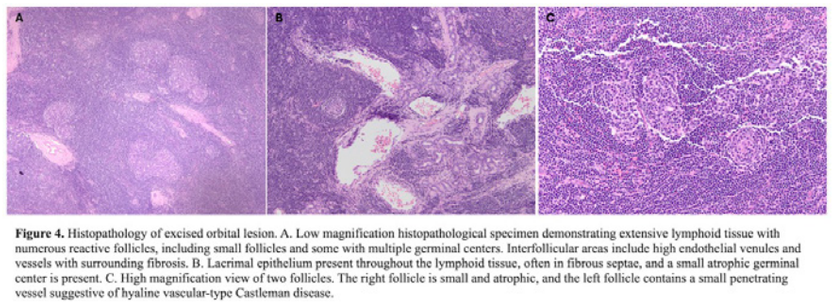


Figure 4. Histopathology of excised orbital lesion. A. Low magnification histopathological specimen demonstrating extensive lymphoid tissue with numerous reactive follicles, including small follicles and some with multiple germinal centers. Interfollicular areas include high endothelial venules and vessels with surrounding fibrosis. B. Lacrimal epithelium present throughout the lymphoid tissue, often in fibrous septae, and a small atrophic germinal center is present. C. High magnification view of two follicles. The right follicle is small and atrophic, and the left follicle contains a small penetrating vessel suggestive of hyaline vascular-type Castleman disease.

References:

1. Simpson D. Epidemiology of Castleman disease. *Hematol Oncol Clin North Am.* 2018;32(1):1-10.
2. Li D, Tang D, Sun F. Clinical analysis of Castelman's disease of the lacrimal gland. *J Ophthalmol.* 2020;1:1-7.
3. Jones NW, Fontain TR, Thakral B, Eldibany M. Castleman's disease in the orbit of a 17-year-old girl: a case report. *Ophthalmic Plast Reconstr Surg.* 2014;30(1):e17-20.
4. Talat N, Belgaumkar AP, Schulte KM. Surgery in Castleman's disease: a systematic review of 404 published cases. *Annals Surg.* 2012;225(4):677-684

8:51-8:52 am

Custom Orbital Onlay Implants for Severe Thyroid Eye Disease Proptosis

Makayla McCoskey[1], Kendall Goodyear[1], Karen Brown[1], Tanuj Nakra[1,2]
[1]TOC Eye and Face, Austin, Texas, United States, [2]Department of Ophthalmology, Dell Medical School, University of Texas at Austin, Austin, Texas, United States

Introduction: In cases of severe proptosis due to thyroid eye disease (TED), bony and soft tissue orbital decompression is the gold standard surgical intervention. However, in extreme cases, even maximal decompression may fail to adequately reduce proptosis, resulting in ongoing sequelae of eyelid retraction due to globe prominence and ocular surface exposure. In such cases, orbital rim advancement using autologous techniques or implants can provide the additional reduction needed.[1, 2] New custom implant technologies have enhanced opportunities for onlay implants.

Methods: We present a surgical case report.

Results: A 60-year-old man with a 20-year history of Graves' disease previously treated with radioactive iodine and long-standing TED presented with severe proptosis, ocular surface exposure, and ocular hypertension, referred for worsening symptoms by his optometrist. Examination revealed bilateral proptosis, restricted motility, eyelid retraction, conjunctival injection, and corneal exposure with punctate keratitis. Intraocular pressure was 30 OU on maximal topical treatment, without relative afferent pupillary defect or dyschromatopsia (Figure 1). He was counseled on smoking cessation and treated with Teprotumumab.

Six months post-therapy, he remained smoking-free and exophthalmometer measurements improved modestly to 35mm OU, but significant proptosis, motility restriction, and ocular surface disease persisted (Figure 2). Maximal orbital decompression was planned; however, due to the severity of his condition, custom two-piece porous polyethylene orbitofacial implants were incorporated to enhance the surgical outcome (Figure 3). Postoperative imaging confirmed significant orbital expansion and reduction in the distance between the neo-orbital rim and the anterior globe surface (Figure 4).

The post-operative course was notable for fulminant congestive chemosis contributing to persistent severe ocular surface disease despite aggressive topical treatment. Surgical conjunctivoplasty was then performed bilaterally; via forniceal incisions, the underlying chronically expanded subconjunctival substantial propria and Tenon's capsule was excised to promote adhesion between the conjunctiva and sclera. Semi-permanent lateral tarsorrhaphy was also performed. One week and one month post-operatively, the chemosis had fully resolved. To further address ocular surface exposure due to eyelid position, bilateral upper eyelid retraction repair was also performed three months after the initial decompression surgery.
(continued)

(continued)

Four months after surgery, the patient's exophthalmometer measurements were 28mm OU, achieving a total reduction of 10mm per side; there was significantly reduced ocular surface exposure and associated symptoms (Figure 5).

Conclusions: Custom porous polyethylene orbital rim implants are an effective adjunct to traditional orbital decompression, offering additional proptosis reduction for the most severe cases of TED-related proptosis.

Figure 1

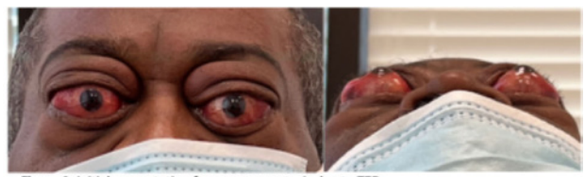


Figure 1: Initial presentation for severe proptosis due to TED.

Figure 2



Figure 2: Post-treatment with Teprotumumab.

Figure 3

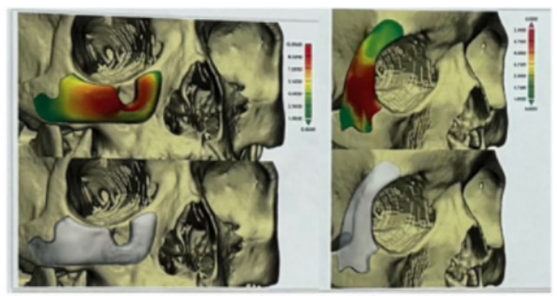


Figure 3: Custom, interlocking design for lateral and inferior orbital rim onlay implant.

Figure 4

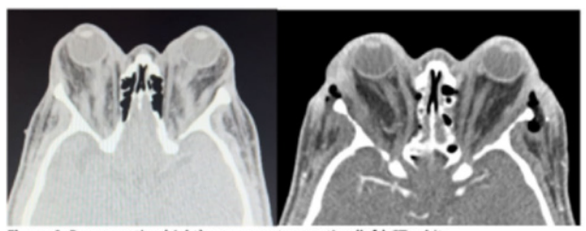


Figure 4: Pre-operative (right) versus post-operative (left) CT orbits.

Figure 5

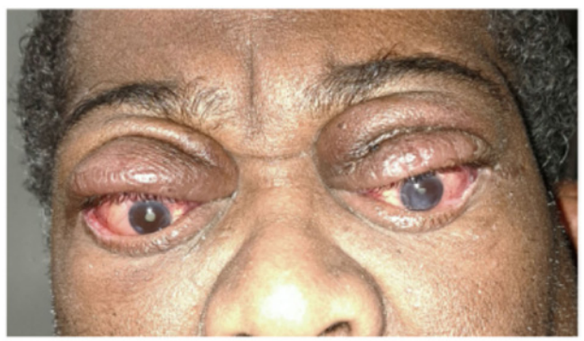


Figure 5: Four-month post-operative photo.

References:

1. Goldberg RA, Soroudi AE, McCann JD. Treatment of prominent eyes with orbital rim onlay implants: four-year experience. *Ophthalmic Plast Reconstr Surg*. 2003 Jan;19(1):38-45.
2. Weinberg DA, Goldberg RA, Hoenig J, Shorr N, Baylis HI. Management of relative proptosis with a porous polyethylene orbital rim onlay implant. *Ophthalmic Plast Reconstr Surg*. 1999 Jan;15(1):67-73.

8:53-8:58 am

Direct Surgical Resection of a Spontaneous Orbital Arteriovenous Fistula

Lisa Y. Lin[1], Christopher J. Stapleton[2], Michael K. Yoon[1]
[1]Ophthalmic Plastic Surgery Service, Department of Ophthalmology, Massachusetts Eye and Ear, Boston, Massachusetts, United States,
[2]Department of Neurosurgery, Massachusetts General Hospital, Boston, Massachusetts, United States

Introduction: An arteriovenous fistula (AVF) is characterized by a direct communication between an artery and vein, bypassing the capillary bed. Intraorbital AVFs are rare, with less than twenty cases reported in the literature.[1,2] They can be either spontaneous or traumatic, and involve a fistula from the ophthalmic artery to one of the draining ophthalmic veins. Presenting symptoms are similar to a carotid-cavernous-fistula, with signs of orbital congestion including proptosis and elevated intraocular pressure. Management can involve both conservative approaches as well as surgical management. Cases in the literature describe transarterial[3] and transvenous endovascular approaches.[3–5] However, the proximity of the shunt to the central retinal artery may make transarterial embolization risky, and transvenous embolization may exacerbate orbital congestion. Herein, we present a case of a spontaneous orbital AVF managed by transcranial orbitotomy with direct surgical disconnection and resection.

Methods: Case report.

Results: A 73-year-old male presented with two months of slowly progressive right proptosis and pain. Examination revealed a visual acuity of 20/20 in both eyes, no dyschromatopsia, or afferent pupillary defect. He had an elevated intraocular pressure (IOP) of 34 mmHg, and motility limitation in all gazes. His external exam was notable for significant right proptosis, bullous chemosis, and periorbital ecchymosis (Figure 1). His anterior and dilated fundus examinations were normal. Automated perimetry visual field testing was full. A computed tomography (CT) of the orbits showed significant distention of the right SOV, to approximately 2.5 x 1.3 cm in size (Figure 2A). CT- angiography showed progressive enhancement of the largely distended SOV during the venous phase and no discrete filling defects of the cavernous sinus. Cerebral angiogram revealed an orbital AVF of a distal branch of the ophthalmic artery and a variceal SOV.

(continued)

(continued)

Endovascular approaches were considered, however transarterial approaches were limited given the risk of central retinal artery occlusion, and transvenous approaches would not alleviate the mass effect of the variceal SOV. Therefore, it was decided to proceed with direct surgical disconnection of the ophthalmic artery- SOV fistula with excision of the variceal SOV.

The patient underwent joint excision with oculoplastics and neurosurgery. A right pterionial craniotomy approach was taken to access the superior orbit. The periorbita was then incised and the dilated SOV was identified. Doppler ultrasound was used to confirm the mixed venous and arterial flow. The anterior portion of the AVF was ligated with two 4-0 silk sutures. At this point, repeat doppler ultrasound confirmed no flow to the variceal SOV. The distal end of the enlarged SOV was then ligated with 4-0 silk sutures at the superior ophthalmic fissure. The varix was then resected, and the orbit appeared subsequently decompressed. Cerebral angiogram performed on post-operative day 2 showed resolution of orbital AVF.

Conclusions: Orbital AVFs are rare and can cause significant orbital congestion. The literature describes both transarterial and transvenous management. This unique case describes a direct approach, with successful surgical disconnection and resection the AVF via transcranial orbitotomy. The patient continued to do well at his post-operative month 6 visit, with stable vision and normalized motility and IOP.

Figure 1

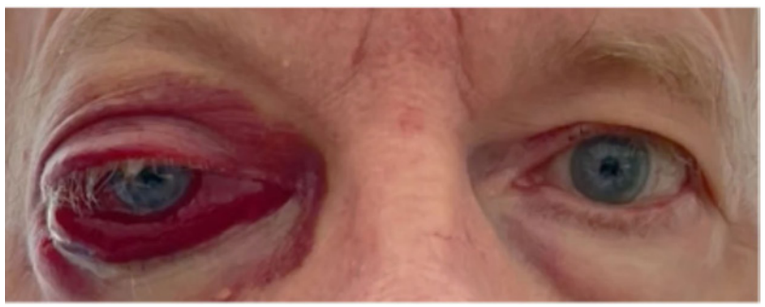
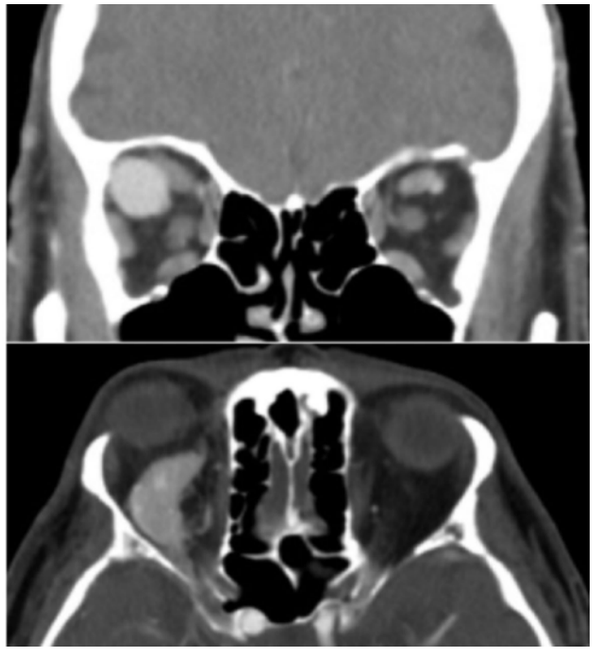


Figure 2



(continued)

(continued)

References:

1. Yazici B, Yazici Z, Erdogan C, Rootman J. Intraorbital arteriovenous fistula secondary to penetrating injury. Ophthalmic Plast Reconstr Surg 2007;23(4):275–8.
2. Williamson RW, Ducruet AF, Crowley RW, McDougall CG, Albuquerque FC. Transvenous coil embolization of an intraorbital arteriovenous fistula: case report and review of the literature. Neurosurgery 2013;72(1):E130-134; discussion E134.
3. Konstas AA, Rootman DB, Quiros PA, Ross IB. Transarterial Embolization of a Spontaneous Intraorbital Arteriovenous Fistula With n-BCA Glue. Ophthalmic Plast Reconstr Surg 2017;33(3):e63–4.
4. Subramanian PS, Gailloud PH, Heck DV, Tamargo RJ, Murphy KJ, Miller NR. Cook detachable coil embolization of a symptomatic, isolated orbital arteriovenous fistula via a superior ophthalmic vein approach. Neuroradiology 2005;47(1):62–5.
5. Deguchi J, Yamada M, Ogawa R, Kuroiwa T. Transvenous embolization for a purely intraorbital arteriovenous fistula. Case report. J Neurosurg 2005;103(4):756–9.

9:03-9:08 am

Primary Hypertrophic Osteoarthropathy Presenting with Ptosis and Floppy Eyelids: A Review of Ocular Manifestations, Histopathology, and Pathophysiology

Maja Magazin[1], Aneesha Ahluwalia[2], Andrea Kossler[2]
[1]Ophthalmology, Hamilton Eye Institute, Memphis, Tennessee, United States, [2]Ophthalmology, Byers Eye Institute, Palo Alto, California, United States

Introduction: The purpose of this study is to review ophthalmic manifestations, histopathology, and pathophysiology of primary hypertrophic osteoarthropathy (PHOA).

Methods: A comprehensive PubMed/Medline search was conducted to identify all articles reporting ophthalmic manifestations in PHOA. The authors also present a case of PHOA presenting with severe blepharoptosis, floppy and lax eyelids, and meibomian gland dysfunction (MGD).

Results: A 42-year-old male presented with a 10-year history of ptosis and chronic discharge. Exam revealed deep forehead furrows and nasolabial folds, prominent midface descent, severe eyelid ptosis, high lid creases, and a chin-up position. There was significant laxity of all four eyelids with eyelid imbrication, ectropion, and MGD (Figure1A-G). Exam revealed clubbed fingers and toes with a swan-neck deformity of the PIP joints (Figure 1H). The patient reported family members with similar features. A systemic work-up was unremarkable. A staged operation was performed to correct eyelid laxity followed by ptosis. Histopathology revealed conjunctival keratinization, tarsal fibrosis, disorganized elastin fibers, sebaceous gland (SG) hyperplasia which was consistent with PHOA (Figure 2A-D). Post-operatively, the patient experienced chronic eyelid edema with recurrent chalazia and pyogenic granulomas (Figure 1 I-J). Doxycycline was initiated with resolution of eyelid edema and improvement in MGD.

Twenty-five cases of PHOA with ophthalmic manifestations were evaluated. The mean age of presentation was 32 years (range: 20-58 years). All cases were in males with a higher prevalence in Hispanics (20%), Indian (20%) and African descent (20%). The most common ocular manifestation was blepharoptosis (96%), followed by papillary conjunctivitis (48%), floppy eyelids (40%), eyelid imbrication (36%), enlarged tarsal plates (28%), lid laxity (24%), eyelid ectropion (24%), and meibomian gland dysfunction (20%). Histologically, sebaceous gland hyperplasia was most commonly described (71%), followed by tarsal plate fibrosis (47%), mucin deposition (29%), perivascular inflammation (29%), granulomatous inflammation (24%), and meibomian gland hyperplasia (12%). Two patients underwent genetic testing to identify a homogenous mutation in the solute carrier organic anion transporter family member 2A1 (SLCO2A1) gene. Oral tetracyclines were used to reduce inflammation in 12% (3/25) of patients.

(continued)

(continued)

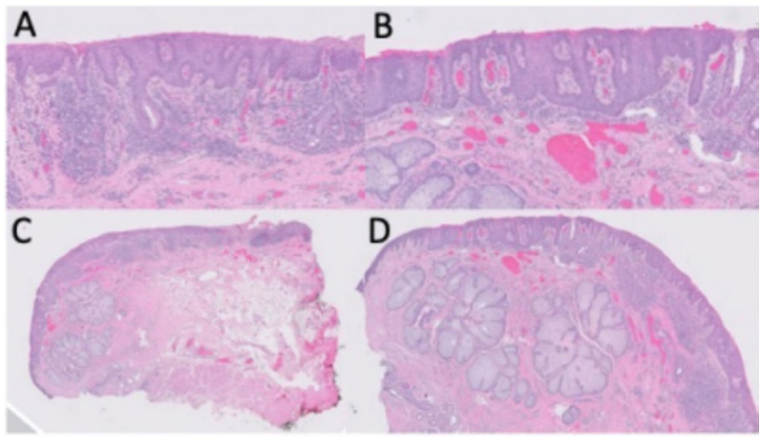
Elevated levels of prostaglandin E2 (PGE2) in PHOA are due to mutations in the 15-hydroxy prostaglandin dehydrogenase (HPGD) and SLCO2A1 gene. PGE2 is associated with SG disorders and increased mucin production, manifesting with SG hyperplasia, thick hypertrophic eyelids, mechanical ptosis, and MGD. PGE2 induces matrix metalloproteinase- 9 (MMP-9) expression which is associated with inflammatory eyelid disorders like MGD in PHOA, and tarsal elastin degradation in floppy eyelid syndrome. PGE2 leads to chronic inflammation and an increase in vascular endothelial growth factor (VEGF), promoting local angiogenesis and extravasation of inflammatory mediators, further contributing to MGD and tarsal thickening in PHOA.

Conclusions: Hormonal, inflammatory, and mechanical factors related to prostaglandin E2 overexpression, and its influence on various cytokines are at the center of disease pathogenesis in PHOA, manifesting with hypertrophic, lax, floppy eyelids. Further studies targeting disease specific cytokines, VEFG and MMP are needed to explore additional medical therapies.

Figure 1



Figure 2



References:

1. Bleyen I, White VA, Dolman PJ. Floppy Eyelid Syndrome and Ptosis in a Patient with Pachydermoperiostosis. Ophthal Plast Reconstr Surg. 2010;26(4):293-295.
2. Tsuge K, Inazumi T, Shimamoto A, Sugimoto Y. Molecular mechanisms underlying prostaglandin E2-exacerbated inflammation and immune diseases. Int Immunol. 2019;31(9):597-606.

9:13-9:18 am

Reconstruction with a Latissimus Dorsi Myocutaneous Free Flap Following Bilateral Orbital Exenteration after Severe Facial Thermal Burn Injury

Donovan Reed[1,2], Bethany Erb[3], Courtney Kelly[4], Clayton Booth[4], Brett Davies[1], Wesley Brundridge[5,6]
[1]Ophthalmology, Wilford Hall Ambulatory Surgical Center, Lackland AFB, Texas, United States, [2]Oculofacial Plastic Surgery, TOC Eye & Face, Austin, Texas, United States, [3]Ophthalmology, University of Wisconsin-Madison, Madison, Wisconsin, United States, [4]Oral Maxillofacial Surgery, Brooke Army Medical Center, Fort Sam Houston, Texas, United States, [5]Ophthalmology, Brooke Army Medical Center, Fort Sam Houston, Texas, United States, [6]Oculofacial Plastic Surgery, EyePlasTX, San Antonio, Texas, United States

Introduction: Severe facial burns involving the periorbital region pose profound reconstructive challenges.[1] We present a case of a 40-year-old male who ultimately underwent bilateral orbital exenteration and multidisciplinary reconstructive efforts following extensive facial thermal burns.

Methods: A 40-year-old male sustained 6% total body surface area full-thickness burns affecting the forehead, bilateral periocular regions, nose, cheeks, and upper extremities after being found unresponsive face down on a stovetop burner. Initial ophthalmic examination by the Cornea service revealed bilateral Roper-Hall Grade IV ocular thermal burns with complete epithelial loss, stromal haze, 360 degrees of limbal ischemia and full-thickness bilateral upper and lower eyelid burns. Bilateral amniografts were placed upon initial consultation, and topical ophthalmic antibiotics, corticosteroids, and frequent lubrication was begun. He was then evaluated by a vitreoretinal specialist who identified bilateral funnel retinal detachments and no-light-perception vision. Multiple debridements by the Burn Plastics team ensued over the following week, ultimately resulting in complete loss of the upper eyelids bilaterally and partial loss of the bilateral lower eyelids. The Oculoplastics team was then consulted, and ultra-thick cryopreserved amniotic membrane grafts were then secured over the exposed ocular surface and the residual lower eyelids were then secured to the frontal bone at the superior orbital rims as a temporizing measure. After a multi-disciplinary discussion, it was determined the globes were not salvageable. After extensive discussion with the patient, a decision was made to proceed with bilateral orbital exenteration and complete periorbital reconstruction with a latissimus dorsi flap given the lack of viable adjacent soft-tissue.

(continued)

(continued)

Results: Following uneventful bilateral exenteration, the orbits were lined with acellular dermal matrix and packed with xeroform gauze with plans for delayed definitive flap reconstruction. Six days postoperatively, Neurosurgery performed frontal bone debridement and Burn Plastic Surgery subsequently utilized a latissimus dorsi free flap to reconstruct the facial defect. The patient's recovery was marked by successful orbital and facial defect coverage, absence of infection, and restoration of facial contour. He did develop a left orbital seroma postoperatively at day 18, successfully managed with drain placement. Advanced imaging postoperatively confirmed flap viability, and the patient was successfully discharged with plans for outpatient ocularist evaluation for prosthetic construction.

Conclusions: Extensive facial burns with periorbital involvement are often complex and require a multi-disciplinary approach to reconstruction.[2] When globe salvage cannot be achieved secondary to the initial injury, reconstructive strategies to achieve complete coverage of large facial defects while ensuring the possibility of orbital prosthetic rehabilitation in the future are of paramount importance.[3] To the authors' knowledge, this is the first case of bilateral orbital exenteration secondary to thermal burn injury reconstructed with a latissimus dorsi flap. A latissimus muscle flap is ideal for reconstructing extensive soft tissue defects due to its large size and the ability to contour and utilize a skin paddle for viability monitoring.[3-5] This case highlights the importance of multi-specialty collaboration for the successful management of complex facial burn injuries involving the eye and periocular region.

Figure 1



Figure 2



Figure 3



(continued)

(continued)

Figure 4



Figure 5



References:

1. Zhang MM, Radulovich NP, Fu R, Eagle RC, Stefanyszyn MA. Electrical burn of the eye and orbit with severe delayed sequelae from an arc welding accident. Orbit. 2024. 43(5):596-599
2. Strubing F, et al. Scalp reconstruction using the latissimus dorsi free flap: a 12-year experience. J Clin Med. 2023. 12(8):2953.
3. Jategaonkar AA, Vernon D, Byrne PJ. Regional reconstruction of orbital exenteration defects. Semin Plast Surg. 2019. 33(2):120-124.
4. Kosutic D, Uglesic V, Knezevic P, Milenovic A, Virag M. Latissimus dorsi-scapula free flap for reconstruction of defects following radical maxillectomy with orbital exenteration. J Plast Reconstr Aesthet Surg. 2008. 61(6):620-7.
5. Donahue PJ, Liston SL, Falconer DP, Manlove JC. Reconstruction of orbital exenteration cavities. The use of the latissimus dorsi myocutaneous free flap. Arch Ophthalmol. 1989. 107(11):1681-3.

9:23-9:28 am

A Case of Facial and Orbital Purpura Fulminans due to Group A Streptococcal Bacteremia

Alexandra Van Brummen, Christopher Chambers, Matthew Zhang
Ophthalmology, University of Washington, Seattle, Washington, United States

Introduction: Purpura fulminans is a rare condition resulting in microvascular coagulation, which leads to areas of purpura and skin necrosis.[1] This is considered a medical emergency and can result in disseminated intravascular coagulation (DIC) and multi-organ failure. The most common subset of purpura fulminans is due to acute infectious causes and occurs in the setting of severe sepsis due to an endotoxin of gram-negative bacteria most commonly.[1] *Streptococcus spp., Staphylococcus aureus, Haemophilus influenzae*, and *Capnocytophaga canimorsus* are additional inciting bacteria.[2] Necrotizing skin infections may also be associated.[1] There are two additional subtypes of purpura fulminans: idiopathic and neonatal.[3] Idiopathic forms are a result of systemic auto-antibodies against protein C or S due to varicella or streptococcal infections.[3] Mortality from purpura fulminans is described as 20-60 percent.[2] We present the first case of purpura fulminans in the setting of Group A streptococcal bacteremia resulting in orbital and extensive facial necrosis.

Methods: Retrospective Case Report

Results: A 57 year old female presented as a transfer from an outside hospital for multiorgan failure, skin sloughing, expanding purpuric patches and plaques with eschar and necrosis of the face, and retiform purpuric patches with flaccid bullae on the breast and thighs (Figure 1A,B). Ocular exam demonstrated intraocular pressure of 16 and 20 mm Hg. There was a fixed left pupil with an afferent pupillary defect by reverse. Slit lamp examination demonstrated corneal haze, Descemet's folds, and a total epithelial defect on the left. Dilated fundus exam demonstrated extensive retinal hemorrhage on the left. Computed tomography (CT) demonstrated left optic nerve straightening with globe tenting (Figure 2). She arrived intubated and sedated with intravenous norepinephrine and vasopressin for pressor support, and was noted to have a DIC, acute renal failure, and metabolic acidosis. Initial blood cultures grew *Streptococcus pyogenes*. She was initiated on broad spectrum antibiotics with linezolid and piperacillin/tazobactam. She was taken to the operating room for debridement and tissue sampling, which demonstrated full thickness necrosis with gram positive cocci on dermatopathology evaluation. Dermatology and infectious disease teams concluded the etiology of her facial and bodily purpura was a necrotizing skin infection with associated purpura fulminans. Subsequent extensive body and facial debridement was undertaken with left orbital exenteration in order to prevent gangrene of ischemic, necrotic tissues (Figure 1C). The patient survived with decreasing pressor requirements and is awaiting possible facial transplantation versus full thickness skin grafting for facial reconstruction.

(continued)

(continued)

Conclusions: Purpura fulminans is a rare and devastating complication of sepsis and is associated with necrotizing skin infections. To our knowledge, this is the first case of facial purpura fulminans with orbital ischemia requiring facial debridement and orbital exenteration.

Figure 1



Figure 1. A. Facial desquamating purpura B. Expanding purpuric patches and plaques with eschar and necrosis C. Healthy granulation tissue after facial and orbital debridement

Figure 2



Figure 2. Computed tomography demonstrating left optic nerve straightening with tenting of the posterior globe in addition to thickening of the preseptal tissues.

References:

1. Perera TB; Murphey-Lavoie HM. Purpura Fulminans. *StatPearls* 2025; *Online*.
2. Colling ME; Bendapudi PK. Purpura Fulminans: Mechanism and Management of Dysregulated Hemostasis. *Transfusion Medicine Reviews* 2018; 32: 69-76.
3. Brozyna JR; Sardina LA; Sharma A; Theil KS; Bergfeld WF. Acute purpura fulminans- a rare cause of skin necrosis: A single-institution clinicopathological experience. *Journal of Cutaneous Pathology* 2020; 47(11): 1003-1009.

10:14-10:19 am

Outcomes of Eyelid Laceration Repair by Ophthalmology Residents in the Emergency Department

Teresa Chen[1], Georgia Schafer[2], Marina Gad El Sayed[3], Shaili Davuluru[4], Natalie Chen[1], Sandy Zhang-Nunes[5], Jennifer Hui[6], Jeremiah Tao[1]
[1]Division of Orbital and Ophthalmic Plastic Surgery, Gavin Herbert Eye Institute, University of California, Irvine, Irvine, California, United States, [2]Ophthalmology, Loma Linda University Health, Loma Linda, California, United States, [3]School of Medicine, Riverside University Health System, Riverside, California, United States, [4]Keck School of Medicine, University of Southern California, Los Angeles, California, United States, [5]Division of Orbital and Ophthalmic Plastic Surgery, Roski Eye Institute, University of Southern California, Los Angeles, California, United States, [6]Division of Orbital and Ophthalmic Plastic Surgery, Loma Linda University Health, Loma Linda, California, United States

Introduction: Eyelid lacerations are common in the emergency department (ED) and many complications can arise following laceration repair, including but not limited to scarring, epiphora, ectropion, entropion, or ptosis. This study aims to evaluate the results and complication rates of eyelid lacerations repaired by first year (PGY-2) ophthalmology residents.

Methods: We performed a multicentered retrospective case series which included 287 patients who presented to the ED with an eyelid laceration at Loma Linda University (2015-2024), Riverside University Health System (2015-2024), University of California Irvine (2020-2024), and Los Angeles General Medical Center (2022-2024).

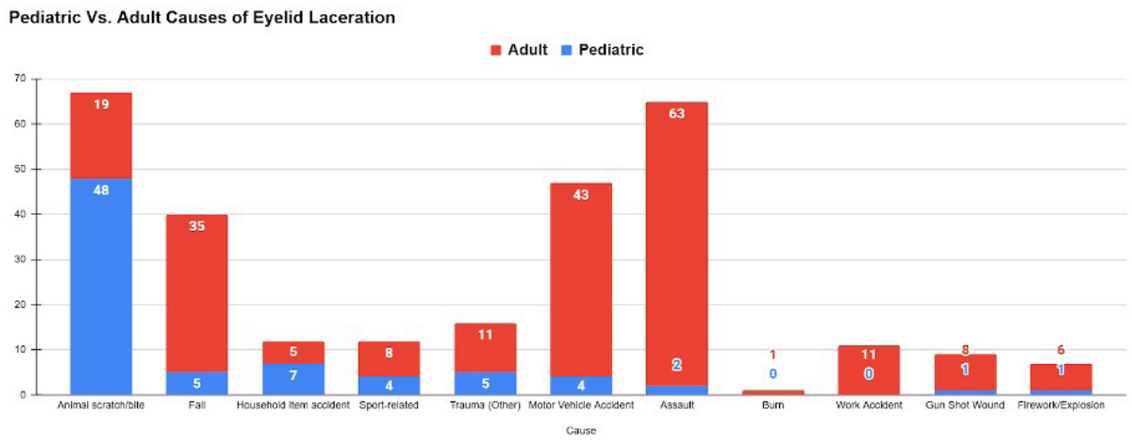
Results: The most common cause of eyelid lacerations were animal bites in children and assault in adults. The reoperation rate for simple canalicular lacerations was 29% (2/7) for PGY-2 without direct supervision and 27% (3/11) with supervision. The reoperation rate for complex canalicular laceration was 100% (2/2) for PGY-2. Laceration repair was aborted four times by the PGY-2 in the ED and required repair in the OR with an attending. The complication rate for a PGY2 repairing a laceration alone was 34% while the complication rate for a PGY2 operating with supervision was 26%. The most common complication was significant eyelid scarring or notching (10; 3.5%), followed by epiphora (8; 2.8%) and ptosis (7; 2.4%). A high rate of patients was lost to follow up (47% across four sites).

Conclusions: Although many patients were lost to follow up, the complication rate for eyelid laceration repair in the ED by PGY-2 ophthalmology residents was 26-34% in this series.

(continued)

(continued)

Figure 1



References:

1. Yuan H, Zhang YZ, Jie H, Li SL. The Application of Tissue Glue in Eyelid Laceration Repair in Children During the Coronavirus Disease 2019 Pandemic Lockdown in Wuhan. Clin Cosmet Investig Dermatol. 2021 May 20;14:541-546. doi: 10.2147/CCID.S308092. PMID: 34045878; PMCID: PMC8146746.
2. Sykes S, Chou E, Mazzoli RA, Pasternak J, Ryan DS, Sia RK, Colyer M. Comparison of Simulation-Based versus Live Tissue–Based Ocular Trauma Training on Novice Ophthalmologists: Repair of Marginal Eyelid Laceration Model. Journal of American Ophthalmology. 2018 May;10(01):e61-e68. DOI:10.1055/s-0038-1653972.
3. Han J, Chen H, Wang T, Zhang X, Jin X. A case series study of lacrimal canalicular laceration repair with the bi-canalicular stent. Gland Surgery. 2022 Nov 25;11(11).
4. Doğan E, Coşkun ŞB, Güner Sönmezoğlu B, Alagöz G. Demographic, Etiological, and Clinical Characteristics of Eyelid Lacerations. Turk J Ophthalmol. 2024 Feb 22;54(1):17-22. doi: 10.4274/tjo.galenos.2023.05684. PMID: 38385316; PMCID: PMC10895165
5. Lin CH, Wang CY, Shen YC, Wei LC. Clinical Characteristics, Intraoperative Findings, and Surgical Outcomes of Canalicular Laceration Repair with Monocanalicular Stent in Asia. J Ophthalmol. 2019 Jul 2;2019:5872485. doi: 10.1155/2019/5872485. PMID: 31341656; PMCID: PMC6636491.
6. Singh, S., Ganguly, A., Hardas, A., Tripathy, D., & Rath, S. (2017). Canalicular lacerations: Factors predicting outcome at a tertiary eye care centre. *Orbit*, *36*(1), 13–18. https://doi.org/10.1080/01676830.2017.1279646
7. Kwitny A, Baker JD. Functional results of the surgical repair of a lacerated canaliculus in children. J Pediatr Ophthalmol Strabismus. 2011 Mar-Apr;48(2):117-9. doi: 10.3928/01913913-20100518-02. Epub 2010 May 21. PMID: 20506966.
8. Xiao G, Srikumaran D, Sikder S, Woreta F, Boland MV. Assessing Resident Cataract Surgical Outcomes Using Electronic Health Record Data. Ophthalmol Sci. 2022 Dec 5;3(2):100260. doi: 10.1016/j.xops.2022.100260. PMID: 36685714; PMCID: PMC9852949.
9. Hashemi M, Rohani SC, Mukit FA, Marsili S, Sarmiento E, Zhang EJ, Dryden SC, Jerkins BM, Fowler BT. The Diagnostic Accuracy of First-Year Ophthalmology Residents on Call: Considerations for Postgraduate Year 2 (PGY-2) Standardizations of Call Structure. Cureus. 2024 Apr 28;16(4):e59206. doi: 10.7759/cureus.59206. PMID: 38807824; PMCID: PMC11131597.
10. Zhao, J., Ahmad, M., Gower, E.W. *et al.* Evaluation and implementation of a mannequin-based surgical simulator for margin-involving eyelid laceration repair – a pilot study. *BMC Med Educ* 21, 170 (2021). https://doi.org/10.1186/s12909-021-02600-3
11. Philips, Christina Daisy; Pandharpurkar, Modini. A New Perspective on Eyelid Laceration Classification: Proposal Based on Study Conducted at a Tertiary Eye Care Centre in South India. Delhi Journal of Ophthalmology 32(6):p 24-28, Oct–Dec 2022. | DOI: 10.4103/dljo.dljo_57_23
12. Chiang E, Bee C, Harris GJ, Wells TS. Does delayed repair of eyelid lacerations compromise outcome? Am J Emerg Med. 2017 Nov;35(11):1766-1767. doi: 10.1016/j.ajem.2017.04.062. Epub 2017 Apr 26. PMID: 28473278.
13. Leibovitch I, Kakizaki H, Prabhakaran V, Selva D. Canalicular lacerations: repair with the Mini-Monoka® monocanalicular intubation stent. Ophthalmic Surg Lasers Imaging. 2010 Jul-Aug;41(4):472-7. doi: 10.3928/15428877-20100525-05. Epub 2010 May 28. PMID: 20608616.

10:19-10:26 am

Orbital Reconstruction Lessons Learned in the Ukraine Warzone

Stuart Seiff[1,2], David Russell[3], Jorge Corona[4]
[1]The Pacific Center for Oculofacial and Aesthetic Plastic Surgery, San Francisco, California, United States, [2]Ophthalmology (Oculofacial Plastic Surgery), University of California San Francisco, San Francisco, California, United States, [3]Ophthalmology, Kaiser Permanente Medical Group, Vallejo, California, United States, [4]Dallas, Texas, United States

Introduction: Battlefield injuries pose unique problems in orbital, facial, and eyelid reconstruction. There often multiple facial fractures, significant tissue loss of midface and eyelids, and there is frequently severe tissue ischemia due to blast injuries. Unfortunately, loss of the eye(s) has been frequent, complicating the repair process. We have identified 3 areas of reconstruction that are worthy of discussion based on our experience: Bone reconstruction with implants, replacement of orbital volume, reconstruction of total lower eyelid loss.

Methods: Three surgical missions were undertaken by the authors from Oct 2023-Nov 2024. Cases were presented for treatment by local oculofacial plastic and maxillofacial surgeons. Cases were followed by the authors and the local team over the year. Specifically, we followed the patients for surgical success and complications over the observation period.

Results: Three types of injuries were followed over the observation period

Replacement of orbital volume: 10 orbital implants were placed including PPE, acrylic, and dermis fat grafts. There were no extrusions of PPE or acrylic implants. 1 DFG was placed in a contracted socket and this failed over 3 months due to residual conjunctival contraction. A mucus membrane graft was placed. It should be noted that many sockets did well with simple placement of a prosthesis.

Boney orbital repair: Due to loss of bone around the orbit, structural replacement was necessary. We placed 3 titanium PSI, 3 PPE/titanium, and 2 PPE implants. 1 PSI appeared to have developed an infection and 3 PSI titanium implants were removed duriing the missions that had been placed elsewhere. We did not have complications with the PPE implants

Reconstruction of total lower lid (severe retraction): 6 lower lids were reconstructed with bridge bipedicle flaps and inferior FTSG. This was done to ensure as much vascularity as possible to the new “lid margin”. These flaps and grafts all survived, however, some secondary lid retraction occurred.

(continued)

(continued)

Conclusions: Most of our patients in Ukraine had suffered polytrauma including loss of legs, arms, and facial injuries. Reconstruction of the facial injuries was critical to the rehabilitation and self esteem of these patients. Ischemia from blast injuries, by far the most common mechanism of injury we saw. created difficulty using our standard reconstruction techniques. Interestingly, placement of alloplastic materials as intraconal implants seems to work well. DFG are very appealing given the socket surface they can produce but that seems to be problematic in these ischemic orbits. Large PSI's appeared to have a higher incidence of infections than smaller implants, especially PPE coated titanium. For soft tissue reconstruction, vascular flaps seem to be able to survive. Surprisingly, small FTSG also survive. Ongoing observation of these cases will further add to our knowledge.

References:

1. Rubenstein TJ, Seiff SR, Sires BS: Re: Correction of lower eyelid retraction using acellular human dermis during orbital decompression. Ophthal Plast Reconstr Surg 32: 482, 2017
2. Prat DL, Mossarwa S, Zohar A, et al: Patient specific orbital implants vs pre formed implants for internal orbital reconstruction. Seminars in Ophthal 38:365-370, 2023

10:26-10:31 am

Rates of Depression, Anxiety, and Antidepressant Use Following Eye Removal Surgery: A Comparative Analysis of Injury Mechanisms

Tejus Pradeep[1], Natalia Davila[1], Samantha McLaughlin[1], William Evans[1], Juan Guerrero[1], Brian Wong[2], Wendy Lee[1]
[1]Ophthalmic Plastic and Reconstructive Surgery, Bascom Palmer Eye Institute, Miami, Florida, United States, [2]Department of Ophthalmology and Visual Sciences, University of Texas Medical Branch, Galveston, Texas, United States

Introduction: Eye removal surgery, whether enucleation or evisceration, may be performed for various indications including trauma, malignancy, infection, and blind painful eye among others. While this procedure can be life-saving or pain-relieving, it carries profound physical and psychological consequences. The loss of an eye often leads to significant changes in self-perception, body image, and quality of life.[1] The functional loss of vision may also compound emotional distress.[1,2]

Depression and anxiety are common psychological sequela in individuals undergoing eye removal, yet its impact in the post-operative period is poorly understood. Traumatic causes for eye removal may elicit distinct emotional responses compared to those performed for malignancy or chronic pain, given the sudden and often violent nature of traumatic injuries.[3] Similarly, patients with malignancies may fear cancer recurrence or progression, which may exacerbate depressive and anxious symptoms.[4] This study aims to compare rates of depression and anxiety across four major indications for eye removal: trauma, malignancy, infection, and painful eye.

Methods: A retrospective cohort study was conducted using the a clinical data and analytics platform, analyzing de-identified records of patients who underwent enucleation or evisceration between December 2004 and December 2024. Patients were stratified into trauma, malignancy, infection, and painful eye cohorts (Figure 1). Propensity score matching controlled for confounders, and survival analyses were performed to compare depression and anxiety incidence. Outcome measures included new onset of depression, anxiety, and antidepressant use among patients who previously did not carry these diagnoses.

Results: The trauma cohort exhibited significantly higher rates of depression compared to malignancy (1-year HR = 2.3, 95% CI: 1.724, 3.070, $p < 0.001$) and depressive symptoms compared to the infection cohort (5-year RR = 1.191, $p = 0.035$). Anxiety was significantly more prevalent in trauma than malignancy (1-year RR = 1.652, 95% CI: 1.015, 2.688, $p = 0.041$), but no significant differences were observed with infection or painful eye cohorts. Antidepressant use was highest in trauma compared to malignancy (1-year RR = 2.558, $p < 0.001$), while anxiolytic use was significantly higher in trauma versus painful eye (1-year RR = 2.065, $p <0.001$). Results at the 1 and 5 year post surgery time points are shown in Figures 2 and 3 respectively. Cox regression identified trauma cohort membership, socioeconomic hazards (1-year HR = 3.52, $p < 0.001$), and ocular pain (1-year HR = 1.554, $p < 0.001$) as predictors of depression.

(continued)

(continued)

Conclusions: Traumatic reasons for eye removal carry the highest rate of new depression and anxiety diagnoses and antidepressant use compared to other etiologies. Preoperative visits prior to eye removal surgery should aim to identify patients at risk and refer them for appropriate psychiatric services to optimally improve quality of life.

Figure 1

Demographics	Trauma (n= 3, 512)	Malignancy (n= 1,656)	Infection (n=2,009)	Pain (n=1,713)
Age at surgery, yr	48.1 ± 21.9	47.3 +/- 30.0	63.3 +/- 19.1	50.8 +/- 19.8
Male	2,135 (67.54%)	833 (55.06%)	1,057 (51.90%)	836 (56.00%)
Ethnicity				
Not Hispanic or Latino	2,102 (66.5%)	1,093 (72.24%)	1,355 (66.60%)	1,048 (70.20%)
Race				
White	1,775 (56.15%)	1,056 (69.80%)	1,310 (64.30%)	931 (62.40%)
Black/African American	658 (20.82%)	53 (3.50%)	244 (12.00%)	251 (16.80%)
Asian	67 (2.12%)	31 (2.05%)	69 (3.40%)	23 (1.50%)

Figure 2

Outcome (1 year)	Trauma vs. Infection (RR)	Trauma vs. Malignancy (RR)	Trauma vs. Pain (RR)
Depression	0.96 (p = 0.856)	2.258 (p= 0.003)	0.784 (p = 0.272)
Anxiety	1.383 (p = 0.201)	1.652 (p = 0.041)	1.154 (p = 0.527)
Depressive Symptoms	1.035 (p = 0.759)	1.756 (p < 0.001)	1.122 (p = 0.33)
Antidepressant Use	1.072 (p = 0.649)	2.558 (p < 0.001)	1.623 (p = 0.004)
Anxiolytic Use	1.221 (p = 0.205)	1.2 (p = 0.258)	2.065 (p < 0.001)
Mental and Behavioral Disorders	1.03 (p = 0.963)	1.708 (p < 0.001)	0.987 (p = 0.833)
Substance Abuse	0.941 (p = 0.828)	1.631 (p = 0.115)	0.781 (p = 0.376)

Figure 3

Outcome	Trauma vs. Infection (RR)	Trauma vs. Malignancy (RR)	Trauma vs. Pain (RR)
Depression (5 years)	1.170 (p = 0.284)	1.815 (p < 0.01)	0.769 (p = 0.067)
Anxiety (5 years)	1.194 (p = 0.271)	1.601 (p = 0.003)	0.843 (p = 0.249)
Depressive Symptoms (5 years)	1.191 (p = 0.035)	1.551 (p < 0.01)	0.901 (p = 0.212)
Antidepressant Use (5 years)	1.189 (p = 0.118)	2.181 (p < 0.01)	1.085 (p = 0.468)
Anxiolytic Use (5 years)	1.192 (p = 0.119)	1.131 (p = 0.256)	1.261 (p = 0.039)
Mental and Behavioral Disorders (5 years)	1.111 (p = 0.035)	1.551 (p < 0.01)	0.953 (p = 0.319)
Substance Abuse (5 years)	1.075 (p = 0.704)	1.787 (p = 0.004)	0.741 (p = 0.107)

References:

1. Kondo, T., Tillman, W. T., Schwartz, T. L., Linberg, J. V., & Odom, J. V. (2013). Health Related Quality of Life after Surgical Removal of An Eye. *Ophthalmic Plastic and Reconstructive Surgery*. https://doi.org/10.1097/IOP.0B013E318275B754
2. Garcia, G. A., Khoshnevis, M., Gale, J., Frousiakis, S. E., Hwang, T. J., Poincenot, L., Karanjia, R., Baron, D., & Sadun, A. A. (2017). Profound vision loss impairs psychological well-being in young and middle-aged individuals. *Clinical Ophthalmology*. https://doi.org/10.2147/OPTH.S113414
3. Hellman J, Mahmood B, Lin LK. Anxiety and Depression after Traumatic Open-Globe Injury. J Emerg Trauma Shock. 2023 Apr-Jun;16(2):59-62. doi: 10.4103/jets.jets_154_22. Epub 2023 May 22. PMID: 37583375; PMCID: PMC10424737.
4. Anchouche S, Liu J, Zaguia F, Nassrallah G, Deschênes J. Quality of life considerations in uveal melanoma patients: a systematic review. Can J Ophthalmol. 2020 Oct;55(5):413-423. doi: 10.1016/j.jcjo.2020.05.010. Epub 2020 Jul 8. PMID: 32649871.

ASOPRS FOUNDATION RALPH E. WESLEY LECTURE: KURT JAHRLING, BCO

Saturday, May 17

Moderators: David Jordan and Catherine Choi

10:39–10:59 am

Ocularistry 2025

Kurt Jahrling, BCO

(continued)

11:09-11:10 am

A Shock to the System: Anaphylactic Shock following Induction of Monitored Anesthesia Care during Bilateral Eyelid Surgery due to Tetracaine and Midazolam Allergies

Rupin Parikh[1], Amy Yoder Dowden[2], Brian Gehlbach[3], Dustin Lode[4], Erin Shriver[1]

[1]Ophthalmology, University of Iowa, Iowa City, Iowa, United States, [2]Allergy and Immunology, University of Iowa, Iowa City, Iowa, United States, [3]Critical Care, University of Iowa, Iowa City, Iowa, United States, [4]Anesthesiology, University of Iowa, Iowa City, Iowa, United States

Introduction: Anaphylactic shock is an acute and potentially life-threatening systemic hypersensitivity reaction. Manifestations include sudden bronchospasm, low oxygen saturation, and hypotension resistant to inotropes and vasopressors. While cutaneous flushing is often a common and early sign of anaphylaxis, it can be absent in perioperative shock or can go unrecognized due to sterile draping of the patient occluding visualization of the skin. Though the inciting agents are most commonly relaxants and antibiotics, there are a few reports of midazolam (a short-acting imidazobenzodiazepine depressant)-related anaphylactic shock and no reports of tetracaine-related anaphylaxis.

Methods: A retrospective chart review for a single case report was performed.

Results: A 56-year-old woman was brought to the operating room for bilateral eyebrow and upper and lower eyelid surgery. The patient had no significant past medical history or known drug allergies. Continuous infusion of lactated ringers was given through a peripheral intravenous line. Tetracaine 0.5% eye drops were placed in both eyes prior to eyelid markings. Intravenous midazolam (2mg) and propofol (100mg) were administered 7 minutes later. Approximately 9 minutes later, 15ml of 2% lidocaine with 0.5% bupivacaine and 1:100,000 epinephrine had been instilled subcutaneously and subconjunctivally in bilateral upper and lower lids, and subcutaneously in bilateral temporal hairlines. At the initiation of the surgical skin preparation, the patient was noted to have diffuse flushing of her face (Figure 1; note the area of blanching where the surgeon's finger was previously placed). Her oxygen saturation fell to 83% and systolic blood pressure was noted to be as low as 70. There was concern for anaphylactic shock after the oxygen saturation did not improve despite high flow nasal cannula and bagging. Auscultation of the lungs revealed overall decreased breath sounds with wheezing.

(continued)

(continued)

Epinephrine (0.1mg) was administered and the patient was intubated. An arterial line was placed and the patient was transferred to the intensive care unit where 12mg IV methylprednisolone and antihistamines were given. Blood tryptase was drawn approximately 2.5 hours after the incident and was within normal limits (5.5ug/L). The patient improved overnight and was discharged the next day. Outpatient allergological evaluation 1 month later with intradermal testing was positive for reactions to tetracaine and midazolam (negative to lidocaine, bupivacaine, and propofol).

Conclusions: Despite the low incidence of anaphylactic shock during oculofacial surgery, it is important to review allergies prior to surgery, have equipment and medications available to treat anaphylaxis in all procedure areas, and have the operating and procedure room teams trained and prepared to treat this life-threatening condition. Quick recognition of sudden hypotension, low oxygen saturation, and facial flushing are crucial and should trigger administration of epinephrine, oxygen supplementation, fluids, steroids, and antihistamine therapy. Evaluation of the patient's respiratory status is also critical for accurate diagnosis. Trendelenburg positioning has been reported to be beneficial. Serum tryptase – a diagnostic marker for anaphylaxis - should be drawn within 1-2 hours following the incident. It is important to document all possible exposures prior to the onset of anaphylaxis including medications, disinfectants, latex, and dyes. While the patient's anaphylaxis was most likely the result of her allergy to midazolam, anaphylaxis to tetracaine (which has not been previously reported) cannot be ruled out. Quick action and collaboration with the critical care, anesthesiology, and allergy teams is imperative for minimizing patient morbidity during the incident and future procedural cases.

Figure 1



(continued)

(continued)

References:

1. Manian DV, Volcheck GW. Perioperative anaphylaxis: evaluation and management. Clinical Reviews in Allergy and Immunology, 2022;62:383-399.
2. Takazawa T, Yamaura K, Hara T, Yorozu T, Mitsuhata H, Morimatsu H. Practical guideliens for the response to perioperative anaphylaxis. Journal of Anesthesia, 2021;35:778-793.
3. Tacquard C, Iba T, Levy JH. Perioperative anaphylaxis. Anesthesiology, 2023;138:100-110.
4. Jeon YS, Shim JW, Jun EH, Choi ST, Jung HS. Midazolam anaphylaxis during general anesthesia: a case report. Medicine, 2019;98:41
5. Shin JG, Hwang JH, Lee BS, Park HJ, Lee SH, Lee JN, Han DH, Kim JH. A case of midazolam anaphylaxis. Clin Endosc, 2014;47:262-265.
6. Yakel DL, Whittaker SE, Elstad MR. Midazolam-induced angioedema and bronchoconstriction. Critical Care Medicine, 1992;20:307-308.
7. Nucera E, Parrinello G, Buonomo A, Aruanno A, Rizzi A. Allergic reactions to midazolam: a case series from an Italian allergy unit. Allergol Immunopathol (Madr), 2021;49:167-170.
8. Mahita C, Robaye S, Levecq L, Dumesnil D, Sohy C. Anaphylactic shock following cataract surgery: a documented intracameral cefuroxime allergy. J Investig Allergol Clin Immunol, 2022;32:236-238.
9. Mertes PM, Tacquard C. Perioperative anaphylaxis: when the allergological work-up goes negative. Curr Opin Allergy Clin Immunol, 2023;23:287-293.

11:10–11:11 am

Enucleation for Treatment of Idiopathic Intractable Pain in an Anatomically Normal Eye

Makayla McCoskey, Karen Brown, Kendall Goodyear, Sean Blaydon
TOC Eye and Face, Austin, Texas, United States

Introduction: We present a case of long-standing idiopathic photo-oculodynia impacting the patient's quality of life so severely, despite numerous attempted treatments, that he ultimately underwent enucleation of this anatomically, clinically healthy eye. This resulted in complete resolution of his pain.

Methods: Case report and review of the literature.

Results: A 25-year-old man was referred to our oculoplastic surgery clinic complaining of chronic, severe left eye photophobia and pain. The patient reported that 10 years prior, he was accidentally struck in the left eye by a tree branch and diagnosed with a corneal abrasion by an ophthalmologist at that time. Over the next several months, he developed persistent, progressive photophobia. Serial ophthalmic examinations revealed no significant clinical findings. Visual acuity and optic nerve function were noted to be normal and no intraocular inflammation was observed. His symptoms became so severe that he began wearing a multi-layered, opaque, black eye patch over the left eye at all times. He was referred to neuro-ophthalmology and extensive testing was obtained, including magnetic resonance imaging of the brain and orbits, optical coherence tomography of the optic nerve and macula, electroretinography, and visual evoked potentials; these tests were all normal.

He was ultimately given the presumed diagnosis of photo-oculodynia syndrome, an idiopathic chronic eye pain syndrome characterized by hypersensitivity and pain in response to light without inflammation.[1] He was trialed on numerous treatments for his pain and photophobia, managed by both a pain specialist and neuro-ophthalmology, without significant relief of his pain. These included non-steroidal anti-inflammatory agents, gabapentin, migraine prophylactic and abortive medications, anti-depressants, and anti-convulsants. He was referred to a low-vision specialist and was prescribed specific-wavelength-blocking lenses for photosensitivity.[2] He then underwent multiple stellate ganglion blocks, as superior sympathetic ganglion blockade has also been shown to have a role in other sympathetically mediated pain syndromes.[3] Despite these extensive interventions over the course of nearly a decade, he failed to find any relief in his symptoms, and continued to consistently patch the affected eye. When attempts were made to remove this patch in clinic to examine the eye, he became diaphoretic and vomited secondary to severe photophobic pain.

(continued)

(continued)

The patient specifically requested surgical removal of this eye due to the severe impact on his quality of life. Extensive discussions were held with the patient and his family, due to the clinically unexplained nature of his pain syndrome in an anatomically normal eye with good visual potential. Ultimately, given that the patient had not had any meaningful use of this eye, keeping it fully patched during all waking hours for the past 10 years, and with no guarantee made that removal of the eye would fully relieve his pain, the decision was made to proceed with enucleation.

After surgical enucleation, pathologic examination of the globe specimen was found to be normal and unrevealing. The patient returned for his post-operative visit reporting a complete resolution in his pain. He reported "feeling like himself for the first time he could remember," and stated that this surgery changed his outlook on life. He remains pain-free now at post-operative month six.

Conclusions: Photo-oculodynia is a rarely reported and poorly understood idiopathic chronic pain syndrome. The hypersensitivity to light is believed to be sympathetically mediated, although the exact mechanism is not known. Cases are generally reported to be preceded by minor trauma with no clear anatomic cause for pain or sympathetic pathway injury, as seen in our patient.[4] While various possible treatments have been suggested for this syndrome, as described above and trialed in this patient's case, there is no known definitive treatment. This case is the first report of a patient undergoing enucleation surgery to address the debilitating symptoms caused by severe, chronic photo-oculodynia. For this patient, surgical removal of the globe fully resolved his longstanding pain and significantly improved his subjective quality of life.

References:

1. Jefferis, J. M., Littlewood, R., Pepper, I. M., & Hickman, S. J. (2018). A Stereotyped Syndrome with Retro-Ocular Pain, Photophobia, and Visual Disturbance Masquerading as Optic Neuritis: Case Series. Neuro-Ophthalmology, 42(6), 339-342.
2. Herz NL, Yen MT. Modulation of sensory photophobia in essential blepharospasm with chromatic lenses. Ophthalmology. 2005 Dec;112(12):2208-11.
3. Ferrillo MG. Treatment of complex regional pain syndrome with stellate ganglion local anesthetic blockade: a case report of one patient's experiences with traditional bupivacaine HCl and liposome bupivacaine. Clin Case Rep. 2016 Jul 27;4(9):861-5.
4. Wu, Y., & Hallett, M. (2017). Photophobia in neurologic disorders. Translational Neurodegeneration, 6(1).

11:11-11:12 am

Kalazion or Tshalazion? Pronunciation and Etymology of Key Medical Terms Derived from Greek and French Origins

Jean-Paul Abboud
Oculofacial Surgical Arts, San Diego, California, United States

Introduction: The accurate pronunciation and understanding of medical terminology are essential for effective communication among healthcare professionals. Many medical terms have roots in ancient Greek and French, which influence their pronunciation and etymological significance. However, these terms are frequently mispronounced by healthcare professionals—including those within the field of oculofacial plastic surgery—and laypeople alike. This study focuses on the linguistic and historical context of the terms *chalazion*, *dermatochalasis*, *conjunctivochalasis*, *ptosis*, *pterygium*, and *debride*, highlighting their correct pronunciation and origins. By addressing these challenges, we aim to promote linguistic awareness and precision in medical communication.

Methods: A linguistic and historical analysis was conducted on the selected terms, emphasizing their Greek and French derivations. The correct phonetic pronunciations were determined using phonological rules and reference to classical language sources. Historical uses in medical literature were also explored. The study design can be categorized as a review of linguistic and etymological sources, combined with a descriptive analysis of pronunciation patterns.

Results: Chalazion: Derived from the Greek “khalazion” (small lump), the “ch” is pronounced as a voiceless velar fricative (/k/ or /kh/) akin to the “ch” in Scottish *loch*. The term was introduced by Galen to describe eyelid inflammation associated with a small, firm lump.

- **Dermatochalasis and Conjunctivochalasis:** These terms combine “chalasis” (loosening) with “derma” (skin) and “conjunctivo” (conjunctiva). Pronounced as /der-muh-toh-kuh-leye-sis/ and /kuhn-juhngk-tuh-voh-kuh-leye-sis/, respectively, they describe laxity in skin and conjunctiva.
- **Ptosis and Pterygium:** The Greek root “pt” (πτ) represents an unaspirated stop, producing a subtle /t/ sound. *Ptosis* (drooping) and *pterygium* (wing-like growth) are pronounced as /toh-sis/ and /teh-rij-ee-uhm/, reflecting their Greek phonological structure.
- **Debride:** From the French “débrider” (to remove adhesions), this term is pronounced /deh-breed/ and is widely used in wound management.
- **Eschar:** Originating from the Greek “eskharā” (burning coal), this term refers to necrotic tissue and has been in use since the 16th century.

(continued)

(continued)

Conclusions: Understanding the correct pronunciation and etymology of medical terms enhances precision in professional communication. This study underscores the influence of Greek and French on modern medical terminology, advocating for linguistic awareness in medical education.

References:

1. Galen. *De Methodo Medendi*. Translated by William Alexander Greenhill. Oxford University Press, 1846.
2. Dorland's Illustrated Medical Dictionary, 33rd Edition. Elsevier, 2020.
3. Taber's Cyclopedic Medical Dictionary, 24th Edition. F.A. Davis Company, 2021.
4. Stedman, Thomas L. *Stedman's Medical Dictionary*, 28th Edition. Wolters Kluwer Health, 2006.

11:13-11:18 am

Truth in Advertising in Oculofacial Surgery: Policy, Intersociety Relations, and How We Represent Ourselves

Erin Shriver
Department of Ophthalmology and Visual Sciences, University of Iowa, Iowa City, Iowa, United States

Introduction: As scope of practice for non-physicians has been expanding through state legislation across the country, it has become increasingly important for patients to understand who is providing their healthcare. The American Medical Association (AMA) developed the "Truth in Advertising" campaign aimed at ensuring health care providers clearly and honestly state their level of training, education, and licensing. Resources to support state legislative and regulatory campaigns have been published including model legislation. While the Truth in Advertising campaign was initially designed to help patients identify which health care providers are physicians vs non-physicians, the principles are now being applied to differentiating qualifications between MD/DOs including residency training specialty and board certification. The extent to which board certification and the "quality" of the board doing the certifying should be included in model legislation has been contentiously debated at the AMA and at times has pitted member societies of the Section Council on Plastic, Reconstructive, and Maxillofacial Surgery against each other. Figure 1 demonstrates a California truth in advertising law with board certification language.

It is important that ASOPRS members understand this background information on the Truth in Advertising campaign as it relevant in how our we represent ourselves and how we are perceived by colleagues in other fields and patients.

Methods: Because of my role representing ASOPRS at the AMA, I have begun to critically analyze how ASOPRS members represent themselves on their practice websites and on social media including Meta and Instagram.

Results: Several members have represented themselves as being "Double" or "Triple" Board-certified and have included ASOPRS membership as a board certification. Other members have described themselves as "plastic surgeons of the face" or "facial plastic surgeons" on their websites. Transparency and accuracy is important for patients when selecting a surgeon, but also for patient satisfaction long-term. A recent newspaper article describing an ASOPRS member who had a medical malpractice claim brought

(continued)

(continued)
against him stated he "is a licensed ophthalmologist, or eye specialist, who advertises himself as a plastic surgeon". This perception that ASOPRS members are misleading the public is particularly concerning.

While investigating why ASOPRS colleagues were identifying themselves as "Plastic Surgeon" on Instagram, I noted that the business categories related to surgery include only: Doctor, Surgeon, Plastic Surgeon, Oral Surgeon, and Lasik/Laser Eye Surgeon. ASOPRS members who listed a business category typically used "Surgeon" or "Plastic Surgeon". The level of accuracy required for this category with limited options could be debated, but this discrepancy is notable.

Conclusions: It is important that ASOPRS members understand the state and national pressures behind the push for the Truth in Advertising campaign and the state laws regarding their training and certification. Discussing these issues at the Spring Meeting will hopefully help members be discerning and accurate when representing themselves on their websites and in social media which will ultimately benefit our subspecialty and its reputation. The Truth in Advertising campaign also implications for the structure of board certification if ASOPRS chooses to pursue it.

Figure 1

California AB 583 (2010)

Background

On Sept. 29, 2010, the governor of California signed Assembly Bill 583 (AB 583), which amends Division 2, Chapter 1, Article 5 of the California Business and Professions Code to include provisions related to truth in advertising.

Advertisements for health care services

With limited exceptions, all health care practitioners will be required to communicate to a patient his or her name, state-granted practitioner license type, and highest level of academic degree. The disclosure requirement may be satisfied by providing the patient a writing at the patient's initial office visit or by prominently displaying a writing in an area visible to patients in the practitioner's office.

Health care practitioners who provide information regarding health care services on the Internet will be required to prominently display the practitioner's name, state-granted practitioner license type and highest level of academic degree. Physicians who are certified by an American Board of Medical Specialties member board or equivalent board approved by the practitioner's medical licensing authority shall disclose the name of the board or association.

References:
1. AMA Advocacy Resource Center. "Truth in Advertising" Campaign. 2020. https://www.ama-assn.org/system/files/2020-10/truth-in-advertising-campaign-booklet.pdf

11:18-11:23 am

Industry Payments among Oculofacial Plastic Surgeons: An Open Payments Database Analysis

Keegan Mechels[1], Katerina Tori[2], Harold Lee[1]
[1]Ophthalmology, Oculofacial Plastic and Orbital Surgery, LLC, Indianapolis, Indiana, United States, [2]Ophthalmology, Indiana University School of Medicine, Indianapolis, Indiana, United States

Introduction: Physician involvement in pharmaceutical and medical device development has been integral in the innovation of new treatments and advancing the care provided to patients, as well as affording educational opportunities. Prior to passing the PPSA, the relationship between industry and physicians was speculated upon but remained relatively unknown to patients and can at times lead to concerns about the conflicts of interest physicians have and their influences on the decisions made on their healthcare.[1,2] This study aims to investigate the distribution of payments made to oculofacial plastic surgeons who are members of ASOPRS, to explore the regularity of financial relationships between industries and oculofacial plastic surgeons.

Methods: This analysis included all ASOPRS board certified surgeons. Annual statistical data was obtained from the Open Payments Database and all general payments distributed to oculoplastic surgeons were recorded. Data are summarized by company, of which all were recorded. The main outcome is the cumulative payments made by the three top industry companies to oculoplastic surgeons using data available from 2021-2023. Secondary outcomes looked at payments to leadership positions within ASOPRS.

Results: 627 surgeons received $13,069,190.03 over 6,831 payments. The average payment was $1,913.22, while the median payment was $117.12. The top 10 companies contributed a total of $11,540,952.07 (88.3%) of payments while the top 20 surgeons were paid $9,210,203.88 (70.5%) of all contributions. The top 3 companies contributed $9,088,333.48 (69.5%) of payments (Table 1.). In the top category of payments over $100,000, all companies made few payments to few surgeons. In the $10,000 to $99,999 category, company A contributed $2,145,840.48 to 69 surgeons, while B and C contributed $113,355.12 to 3 surgeons and $298,972.96 to 11 surgeons, respectively. Between $1,000 and $9,999, company A made payments totaling $298,331.84 to 80 surgeons, company B contributed $24,289.64 to 7 surgeons, and company C contributed $72,768.35 to 27 surgeons. (Table 2.). 56 program directors took part in training fellows in oculofacial plastic surgery. The total payment volume for odd-year programs was $2,549,997.64 with an average of $87,930.95 and median of $6,841.28. The total for even-year programs was $1,511,807.29 with an average and median of $55,992.86 and $1,326.70, respectively. Thirty-three members of ASOPRS were paid $3,975,434.02, with average payment of $120,467.70 and median payment of $3,706.88. (Table 3.)

(continued)

(continued)

Conclusions: The reporting of open payments to CMS providers is important in providing transparency between physician and industry. There exists a great discrepancy in the distribution of industry payment within oculofacial plastics, showing a very strong apical dominance with relatively few surgeons receiving a vast majority of payments and from relatively few companies.

Table 1. Summary of ASOPRS Payments Demographics

Total Recipients	627
Total Payments (n)	6,831
Volume of Payment ($)	$13,069,190.03
Average Payment	$1,913.22
Median Payment	117.12
Top 10 Companies	$11,540,952.07
Top 20 Surgeons	9,210,203.88

Table 2. Distribution of Payments by Company

Horizon

Yearly Total Payment	Volume of Contributions	Surgeons (N)	Average Payment	Percent of Sum Contributions (%)	Percent of Total Surgeons
>100,000	$1,615,546.06	5	$323,109.21	39.5%	2.1%
10,000-99,999	$2,145,840.48	69	$31,099.14	52.4%	28.5%
1,000-9,999	$289,331.84	80	$3,616.65	7.1%	33.1%
<1,000	$41,539.46	88	$472.04	1.0%	36.4%
Total	$4,092,257.84	242			

Galderma

Yearly Total Payment	Volume of Contributions	Surgeons (N)		Percent of Sum Contributions (%)	Percent of Total Surgeons
>100,000	$1,146,414.42	4	$286,603.61	87.6%	6.0%
10,000-99,999	$113,355.12	3	$37,785.04	8.7%	4.5%
1,000-9,999	$24,289.65	7	$3,469.95	1.9%	10.4%
<1,000	$24,300.06	53	$458.49	1.9%	79.1%
Total	$1,308,359	67			

Allergan

Yearly Total Payment	Volume of Contributions	Surgeons (N)		Percent of Sum Contributions (%)	Percent of Total Surgeons
>100,000	$3,021,612.65	4	$755,403.16	87.7%	2.6%
10,000-99,999	$298,972.96	11	$27,179.36	8.7%	7.2%
1,000-9,999	$72,768.35	27	$2,695.12	2.1%	17.8%
<1,000	$51,421.55	110	$467.47	1.5%	72.4%
Total	$3,444,775.51	152			

Table 3. Distribution of Payments to Surgeons in Leadership Positions

	Surgeons (n)	Volume of Payments	Percentage of Total Volume (%)	Average Payment	Median Payment
Odd-Year Programs	29	$2,549,997.64	19.5%	$87,930.95	$6,841.28
Even-Year Programs	27	$1,511,807.29	11.6%	$55,992.86	$1,326.70
All Programs	56	$4,061,804.93	31.1%	$72,532.23	$3,172.66
Executive Committee*	33	$3,975,434.02	30.4%	$120,467.70	$3,706.88

** Members included from previous 10 years prior to 2023 structure change*

References:

1. Perry JE, Cox D, Cox AD. Trust and transparency: patient perceptions of physicians' financial relationships with pharmaceutical companies. J Law Med Ethics J Am Soc Law Med Ethics. 2014;42(4):475-491. doi:10.1111/jlme.12169
2. Nejstgaard CH, Bero L, Hróbjartsson A, et al. Association between conflicts of interest and favourable recommendations in clinical guidelines, advisory committee reports, opinion pieces, and narrative reviews: systematic review. BMJ. 2020;371:m4234. doi:10.1136/bmj.m4234

11:23-11:28 am

Projected Per-Hour Medicare Reimbursement Rates for Ophthalmic Plastic and Reconstructive Surgeries in 2030 Using Mathematical Models

Janice Hernandez, Peter Timoney
Department of Ophthalmology, University of Kentucky, Lexington, Kentucky, United States

Introduction: Budget neutrality mandated by the Center for Medicare and Medicaid Services (CMS) places confinements on reimbursements for surgical procedures across medical specialties. Several studies describe the trend of decreasing reimbursement for various ophthalmic procedures. This study aims to identify a projected per-hour physician work rate in 2030 for three ophthalmic plastic and reconstructive surgeries based on data in the CMS Physician Fee Schedule from 2000-2025.

Methods: Three ophthalmic plastic and reconstructive surgeries with correlating Current Procedural Terminology (CPT) codes were identified: optic nerve sheath fenestration (67570), temporal artery biopsy (37609), and open treatment of an orbital fracture with orbital implant insertion (21390). The average physician reimbursement rates and facility fees for each CPT code during a calendar year between 2000-2025 were identified using the Physician Fee Schedule Look-Up tool on the CMS website.

Facility prices and work relative value units (wRVU) were converted to 2023 USD using the United States Bureau of Labor Statistics annual Consumer Price Index. Physician reimbursement was calculated using wRVU X Conversion Factor. Linear and 3rd order polynomial trend lines were fit to the reimbursement values and facility prices independently. The coefficient of determination (R^2) and estimated equation were reported for each trend line. Additionally, the predicted reimbursement value and facility price for 2030 were calculated using the fitted model of both trend lines.

A per-hour work rate was calculated using the polynomial predictive model and established Relative Value Scale Update Committee (RUC) times. The predicted value for 2030 from the polynomial predictive equation was divided by RUC time in minutes divided by 60 (minutes/hour).

Results: Using the predicted reimbursement value from the polynomial trend line, the projected per-hour physician income rate in 2030 will be $41.12 for temporal artery biopsy (37609), $40.18 for optic nerve sheath fenestration (67570), and $26.29 for open treatment of orbital implant insertion (21390).

The physician reimbursement rates for these three surgeries are projected to decline by at least 30% from 2000 to 2030 using linear and polynomial predictive models.

(continued)

(continued)

Conclusions: As the Medicare Physician Fee Schedule updates annually, physician reimbursement for common oculofacial plastic surgeries continues to decline. Current and future per-hour physician work rates do not reflect the surgical complexity or specialization required for optic nerve sheath fenestration (67570), temporal artery biopsy (37609), and open treatment of an orbital fracture with orbital implant insertion (21390).

References:

1. Catton E, Puddy A, Tyagi V, Kurkis GM, Shau DN. The Trend of Medicare Reimbursement for Total Joint Arthroplasty: Using Mathematical Models to Predict Possible Per-Hour Rate Out to 2030. Arthroplast Today. 2024 Jul 20;28:101434. doi: 10.1016/j.artd.2024.101434. PMID: 39100420; PMCID: PMC11295619.
2. Gong JH, Khurana A, Eltorai AEM, Wagner LH. Decline in Medicare Utilization and Reimbursement Rates in Ophthalmic Plastic and Reconstructive Surgery: 2010-2019. Ann Plast Surg. 2022 Jan 1;88(1):93-98. doi: 10.1097/SAP.0000000000002925. PMID: 34176907.

11:28-11:33 am

Is Private Practice Dying in Oculoplastic Surgery?

Kathryn Winkler[1,2], Romney Hansen[3]
[1]Chicagoland Oculoplastics Consultants, PLLC, Des Plaines, Illinois, United States, [2]Ophthalmology, Rush University Medical Center, Chicago, Illinois, United States, [3]School of Medicine, Rush University Medical Center, Chicago, Illinois, United States

Introduction: The landscape of medical practice is evolving, with private equity firms entering the healthcare market to an increasing extent. This trend has raised concerns about the future of private practice in ophthalmology, particularly in subspecialties like oculoplastic surgery. Despite some informal evidence suggesting a shift towards private equity ownership, there is a lack of comprehensive data on the current state of practice models among oculoplastic surgeons.

This study aims to provide a data-driven analysis of practice patterns among American Society of Ophthalmic Plastic and Reconstructive Surgery (ASOPRS) members. We seek to answer the pressing question: Is private practice in oculoplastic surgery declining in favor of private equity models? Understanding these trends is crucial for informing future career decisions, guiding policymaking, and anticipating changes in patient care delivery.

Methods: This cross-sectional study analyzed data from 853 ASOPRS oculoplastic surgeons listed on the organization's website. Publicly available information was collected through internet searches, personal and practice websites, and the websites of private equity firms. Data points included age, sex, fellowship details, years in practice, current practice status and settings, and details regarding private equity affiliation. The primary outcome measures were the prevalence of various practice models, with a focus on private equity involvement. Statistical analyses included chi-square tests of independence, logistic regression, and Kruskal-Wallis H tests to examine relationships between variables

Results: Contrary to prevailing assumptions, our analysis revealed no significant trend towards private equity dominance in oculoplastic surgery. Chi-square tests showed no significant association between gender and practice settings ($\chi^2(7, N = 826) = 9.88$, $p = 0.195$) or private equity affiliation ($\chi^2(1, N = 829) = 0.0324$, $p = 0.857$). Logistic regression analysis indicated that age was not a significant predictor of private equity affiliation (OR = 0.991, 95% CI [0.967, 1.015], $p = 0.441$). Similarly, years in practice did not significantly predict private equity involvement (OR = 1.00, 95% CI [0.982, 1.03], $p = 0.758$). A Kruskal-Wallis H test found no significant difference in graduation year categories between private equity and non-private equity affiliations ($\chi^2(1) = 0.0189$, $p = 0.891$). Notably, geographic analysis revealed significant variations in practice settings across regions ($\chi^2(70) = 190$, $p < 0.001$, $N = 827$), but no significant regional differences in private equity affiliation ($\chi^2(10) = 9.64$, $p = 0.473$, $N = 830$).

(continued)

(continued)

Conclusions: This comprehensive analysis of ASOPRS members shows that private practice in oculoplastic surgery is still going strong, with no significant shift towards private equity models. The lack of association between demographic factors, training background, or geographic location and private equity affiliation indicates that the choice of practice model is likely influenced by individual preferences and local market conditions rather than broader trends. These findings provide reassurance to those considering careers in private practice oculoplastic surgery and suggest that the subspecialty maintains diverse practice options. Future research should explore the factors driving individual choices in practice models and how various practice structures might affect patient care and physician satisfaction over time.

11:33-11:38 am

Gender-Affirming Facial Feminization Surgery: Global Demand and Workforce Supply

Daniel Azzam[1], Cat Burkat[2]
[1]Department of Ophthalmology, New England Eye Center, Tufts Medical Center, Boston, Massachusetts, United States, [2]Oculoplastics, Orbital and Cosmetic Facial Surgery, Department of Ophthalmology and Visual Sciences, University of Wisconsin-Madison, Madison, Wisconsin, United States

Introduction: Gender dysphoria affects over 1 million individuals in the United States (US), causing significant distress.[1] Gender-affirming facial feminization surgeries (FFS) are deemed medically necessary by the World Professional Association for Transgender Health (WPATH), based on tremendous improvements in quality of life including reduced depression, anxiety, discrimination, and self-destructive or suicidal behavior.[2] The periocular region is a critical defining area for facial feminization, making it essential to achieving optimal aesthetic outcomes. As experts in periocular anatomy and surgery, oculoplastic surgeons are uniquely positioned to excel in performing these procedures and should be highly considered for such surgeries. However, they remain notably underrepresented in the global surgeon workforce for FFS.

Prior research has shown increasing patient interest in FFS, however barriers to accessing transgender care are prevalent including high cost, limited insurance coverage, state regulations, and shortage of providers.[2,3] This study aims to leverage digital epidemiology for global health surveillance to fill the literature gap regarding the evolving the geotemporal demand patterns and surgeon workforce supply dynamics for FFS.

Methods: A cross-sectional digital epidemiology study analyzed worldwide Google search volume for FFS from 06/2014 to 06/2024. Lastly, the surgeon workforce offering FFS was evaluated from the largest worldwide directory – WPATH.

Results: Demand for FFS grew +224% in the US and +171% worldwide, surpassing control internet traffic (-32%) ($P < 0.001$, Figure 1). Despite North America having the greatest supply of 42 FFS surgeons (19 in West Pacific region), Americans showed high interest in medical tourism for FFS abroad in Eastern Asia, Latina America, Europe, and Oceania. Underserved FFS regions with high demand and low supply disparities included Northeastern US (51.0 search volume, 7 surgeons, Figures 2-3), Oceania (20.2 search volume, 3 surgeons, Figure 4), and Middle East/Northern Africa (11.6 search volume, 0 surgeons, Figure 4). Seventy-five FFS surgeons were identified worldwide, including plastic surgeons (68%), oral and maxillofacial surgeons (OMFS) (19%), otolaryngologists (12%), and general surgeons (1%) (Figure 5). International FFS surgeons were more often OMFS (32% international OMFS vs 5% US OMFS, $P = 0.003$), while US FFS surgeons were

(continued)

(continued)

more frequently otolaryngology (21% US otolaryngology vs 3% international otolaryngology, *P* = 0.014). There were **no oculoplastics FFS** surgeons identified in the database.

Conclusions: Despite three-fold growth in demand for FFS this decade, the supply of FFS surgeons remains limited. Although FFS surgery has become more accessible, especially in US West Pacific region, critically underserved areas remain in the US Northeast, Oceania, and the Middle East/Africa. American interest in travelling abroad for FFS is high, with top destinations countries often suffering a shortage of FFS surgeons themselves. Finally, the FFS surgeon workforce is mostly plastic surgeons, while oculoplastic surgeons remain scarce. An area of opportunity to expand access to FFS care includes greater presence of oculoplastic surgeons on transgender health databases like WPATH.

Figure 1

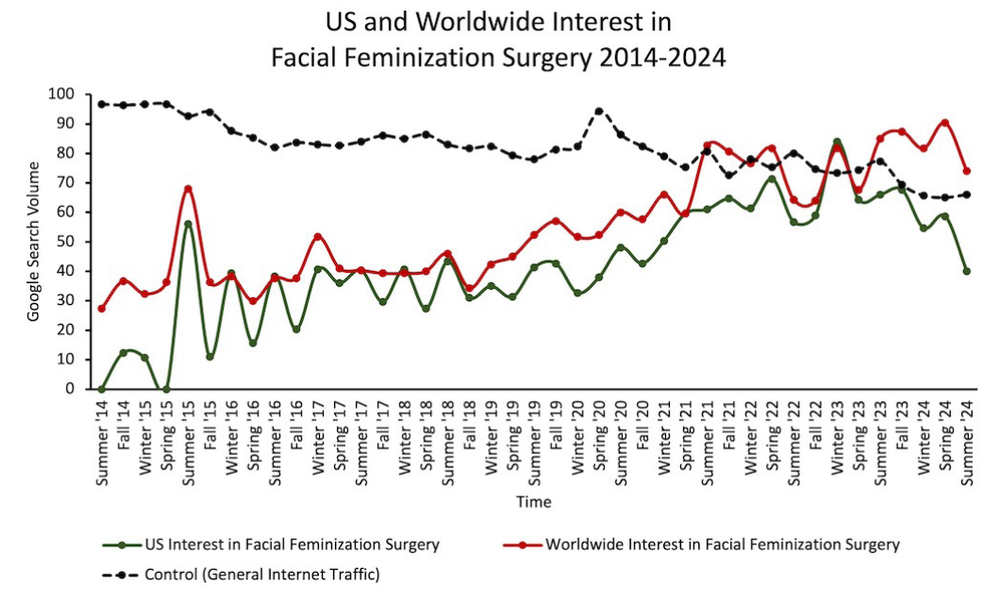


Figure 2

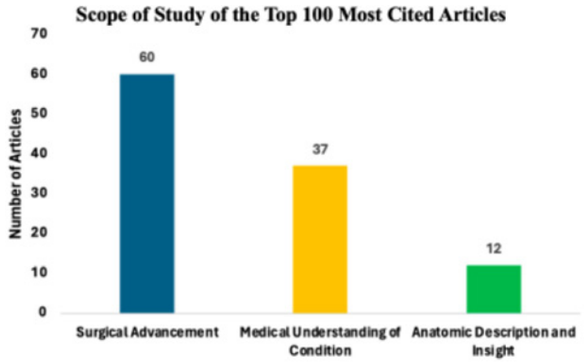
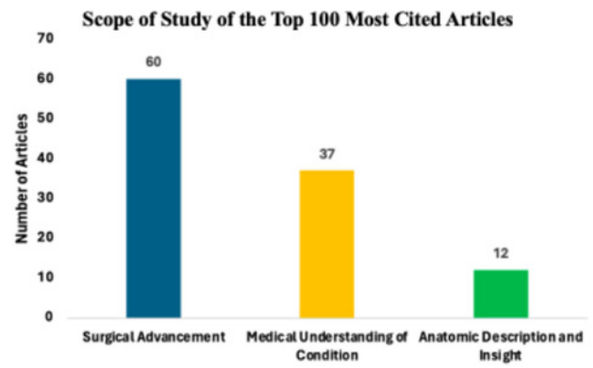


Figure 3



(continued)

(continued)

Figure 4

Demand and Supply for Facial Feminization Surgery by World Region

World Region	Demand: FFS Search Volume	*P*	Supply: # FFS Surgeons	*P*
Oceania	20.2	0.246	3	0.927
North America	17.8	0.312	42	0.064
Eastern and South-Eastern Asia	16.4	0.240	7	0.943
Latin America and Caribbean	14.7	0.305	7	0.977
Middle East and Northern Africa	11.6	0.482	0	Reference
Europe	10.2	0.483	14	0.862
Sub-Saharan Africa	4.8	0.891	0	Reference
Central and Southern Asia	2.2	Reference	2	1.000

Abbreviations: FFS, facial feminization surgery
Multiple Linear Regression Analysis

Figure 5

Summary of Specialty and Country Distribution of Facial Feminization Surgeons Worldwide

Specialty	USA	ESP	CAN	GBR	MEX	AUS	KOR	IND	CHN	ARG	THA	TWN	CHE	PHL	DEU	COL	BRA	USA	Intl.	*P*
PRS	27	1	3	1	2	3	2	2	2	1	1	1	1	1	1	1	1	27 (71%)	24 (65%)	0.566
OMFS	2	8	1	1	1	0	0	0	0	1	0	0	0	0	0	0	0	2 (5%)	12 (32%)	**0.003**
ENT	8	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	8 (21%)	1 (3%)	**0.014**
Gen. Surg.	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1 (3%)	0 (0%)	0.321
OPRS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 (0%)	0 (0%)	
Total	38	9	4	3	3	3	2	2	2	2	1	1	1	1	1	1	1	38	37	

Abbreviations: PRS, Plastic and Reconstructive Surgery; OMFS, Oral and Maxillofacial Surgery; ENT, Otolaryngology; Gen Surg., General Surgery; OPRS, Ophthalmic Plastic and Reconstructive Surgery; USA, United States of America; ESP, Spain; CAN, Canada; GBR, United Kingdom of Great Britain and Northern Ireland; MEX, Mexico; AUS, Australia; KOR, the Republic of Korea; IND, India; CHN, China; ARG, Argentina; THA, Thailand; TWN, Taiwan; CHE, Switzerland; PHL, Philippines; DEU, Germany; COL, Colombia; BRA, Brazil; Intl., International
χ^2 test for comparison of categorical variables.

References:

1. Meerwijk EL, Sevelius JM. Transgender population size in the United States: A meta-regression of population-based probability samples. *Am J Public Health*. 2017;107(2). doi:10.2105/AJPH.2016.303578
2. Aristizábal A, Escandón JM, Ciudad P, Manrique OJ. The Limited Coverage of Facial Feminization Surgery in the United States: A Literature Review of Policy Constraints and Implications. *J Clin Med*. 2023;12(16). doi:10.3390/jcm12165308
3. Teixeira JC, Morrison SD, Brandstetter KA, Nuara MJ. Is There an Increasing Interest in Facial Feminization Surgery? A Search Trends Analysis. *Journal of Craniofacial Surgery*. 2020;31(3). doi:10.1097/SCS.0000000000006220

11:38-11:43 am

Unlocking Practice Potential: Transform Your Oculoplastic Practice with a Midlevel Provider to Boost Revenue, Efficiency, and Work-Life Harmony

Zachary Keenum
Sioux Falls, South Dakota, United States

Introduction: The increasing demand for oculoplastic services presents a challenge for busy surgeons striving to balance exceptional patient care, revenue growth, and personal well-being. This presentation explores how integrating a midlevel provider, such as a nurse practitioner (NP), can streamline practice operations, boost revenue, and improve overall quality of life for the surgeon.

Methods: Through a combination of case studies, workflow optimization strategies, and financial analyses, this presentation demonstrates the key steps to successfully recruit, train, and integrate a midlevel provider into an oculoplastic surgery practice. Topics include scope-of-practice considerations, delegation of responsibilities, scheduling efficiency, and maximizing billable services. Practical advice is provided to overcome common challenges, such as patient acceptance and team dynamics, while maintaining the highest standard of care.

Results: A midlevel provider model led to significant improvements in operational efficiency, with reduced wait times for patients, enhanced pre- and postoperative care, and more streamlined follow-up visits. Additionally, revenue increased through expanded service offerings and increased clinic throughput. Integration of a midlevel provider improved work-life balance, with more time available for surgical cases, practice growth, and personal priorities.

Conclusions: Integrating a midlevel provider into an oculoplastic practice is a highly effective strategy for addressing the challenges of increasing demand while enhancing practice profitability and surgeon well-being. This approach offers a win-win solution for both patients and providers, ultimately leading to a more sustainable and fulfilling practice model.

References:

1. Seyidova, Nargiz MD, MHQS; Lin, Samuel J. MD, MBA. Impact of Physician Extenders and Midlevels in Plastic Surgery. Plastic and Reconstructive Surgery 151(5):p 1097-1103, May 2023. | DOI: 10.1097/PRS.0000000000010048

AUGMENT YOUR PRACTICE: INJECTABLE AESTHETICS PANEL

Sunday, May 18

Moderator: John P. Fezza

8:01–8:07 am

Tackling Troughs + Video

Jill A. Foster

8:12-8:18 am

Luscious Lips + Video

Sandy X. Zhang-Nunes

8:23-8:29 am

Lifting Up Lines + Video

Femida Kherani

8:34-8:41 am

Uh Oh: Filler Complications

John P. Fezza

8:46-8:52 am

Refining Botulinum + Video

David B. Samimi

(continued)

SMOOTH OPERATOR: SURGICAL AESTHETICS PANEL

Moderator: Andrew R. Harrison

Sunday, May 18

9:08-9:14 am

Fat Transposition

Andrew R. Harrison

9:19-9:25 am

Lifting it: Endoscopic Brow Repair

9:30-9:36 am

Energize it: Energy Devices in Oculoplastics

John J. Martin

Posters are hosted online before, during, and after the meeting.
No CME is provided for viewing of posters.

Bilateral Granulomas following Allograft Adipose Matrix Injections

Nickisa Hodgson[1], Kayla Ikemiya[1], Jonathan Lu[1], Loreley Smith[2,3,1], Stuart Seiff[2,3,1], Bryan Winn[1]
[1]Ophthalmology, University of California San Francisco, San Francisco, California, United States, [2]The Pacific Center for Oculofacial and Aesthetic Plastic Surgery, San Francisco, California, United States, [3]California Pacific Medical Center, San Francisco, California, United States

Introduction: Allograft adipose matrix (Renuva; MTF Biologics, Edison, N.J.) is an injectable treatment that proposes to supplement soft tissue deficits and areas of facial atrophy. Allograft adipose matrix (AAM) is a shelf-stable treatment that is derived from donated deceased human adipose tissue and intended to be an alternative to autologous fat grafting. Studies in temple and midface volume restoration suggest that AAM is safe, well tolerated, and with volume retention reported up to 24 weeks.

Methods: Case Report

Results: A 69-year-old female patient underwent transconjunctival lower eyelid blepharoplasty with fat excision at an outside clinic. Simultaneously she received two 1.5 cc syringes of AAM mixed with 1.5 cc saline injected using a 22g needle to the malar region and orbital malar junction at multiple soft tissue layers. No sutures were used for closure and no fat redraping was performed. Subsequently at 1 month post op, the patient presented with fleshy, flat lesions emanating from bilateral transconjunctival incisions and molding to globe (Figure 1-2). These lesions continued to enlarge and cause foreign body sensation and discharge prompting a referral to oculoplastics. Excisional biopsy was performed on the lesions. Pathology revealed exuberant granulation tissue and pyogenic granuloma with aggregates of neutrophils beyond the granulation tissue indicating secondary acute inflammation. Stains for microorganisms were negative. Following excision, the patient is doing well with no evidence of recurrence.

Conclusions: AAM is a novel injectable treatment for volume restoration and has been reported to be effective in rejuvenation of the midface and proposed as an alternative to autologous fat grafting. AAM is intended to support and simulate fat growth in areas with native fat and has not been studied in the periocular region. This case highlights that AAM may cause an inflammatory response when injected in or near the periorbital region. Simultaneous injection during lower eyelid blepharoplasty may increase the risk of inflammation due to disruption of anatomic barriers.

(continued)

(continued)

Figure 1



Figure 2



References:

1. Gold MH, Fagien S, Rohrich RJ. A Multicenter Pilot Study of A Novel Allograft Adipose Matrix in Malar and PRejowl Volume Restoration. Plastic Reconstr Surg Glob Open. 2024 Jan25;12(1):e5523.
2. Kokai L, Sivak WN, Schilling BK, et al. Clinical evaluation of an off-the-shelf allogeneic adipose matrix for soft tissue reconstruction. Plast Reconstr Surg Glob Open. 2020;8:e2574.
3. Kokai LE, Schilling BK, Chnari E, et al. Injectable allograft adipose matrix supports adipogenic tissue remodeling in the nude mouse and human. Plast Reconstr Surg. 2019;143:299e–309e.
4. Gold MH, Kinney BM, Kaminer MS, et al. A multi-center, open-label pilot study of allograft adipose matrix for correction of atrophic temples. J Cosmet Dermatol. 2020;19:1044–1056.

Bilateral Peri-Orbital Necrotizing Fasciitis after Aesthetic Rhinoplasty

Farzad Pakdel[1], Mohamadreza Salehi[2]
[1]Tehran University of Medical Sciences, Roseville, California, United States, [2]Tehran University of Medical Sciences, Tehran, Iran, Islamic Republic Of

Introduction: Necrotizing fasciitis (NF) is a rare, potentially fatal, complication that can occur after any type of surgery. It has been rarely reported after aesthetic facial procedures including blepharoplasty, face lift or nasal surgeries. NF following aesthetic surgeries is associated with much more diagnostic and therapeutic challenges.

Methods: We report a thirty-year-old woman who was referred to the senior author (F.P.) with assumption of post-rhinoplasty hematoma two days after an uneventful rhinoplasty. She underwent clinical exam, systemic work-up, bacteriology, CT and MRI studies.

Results: The patient was an otherwise healthy woman with no history of any systemic disease, drug abuse or use of medications. Mild left periorbital edema rapidly extended to left hemiface and other eyelid in two hours during the period of time of visit and performing CT scan. She was immediately admitted to hospital and received intravenous vancomycin, clindamycin and meropenem. We made urgent meticulous peri-orbital and facial debridement of only devitalized tissues and drainage a large amount of pus from the whole face that was repeated in the first week of admission. Finally, we could save the eyelids and facial structure. Despite necrosis of eyelid skin and part of orbicularis oculi muscles, she gained an acceptable functional and cosmetic eyelid condition in seven months follow up visit.

Conclusions: Necrotizing fasciitis after cosmetic surgeries is a rare but very serious condition. It needs prompt diagnosis and management. Quick diagnosis and proper management can save the life and provide acceptable functional and aesthetic outcome.

(continued)

(continued)

Figure 1



Figure 2

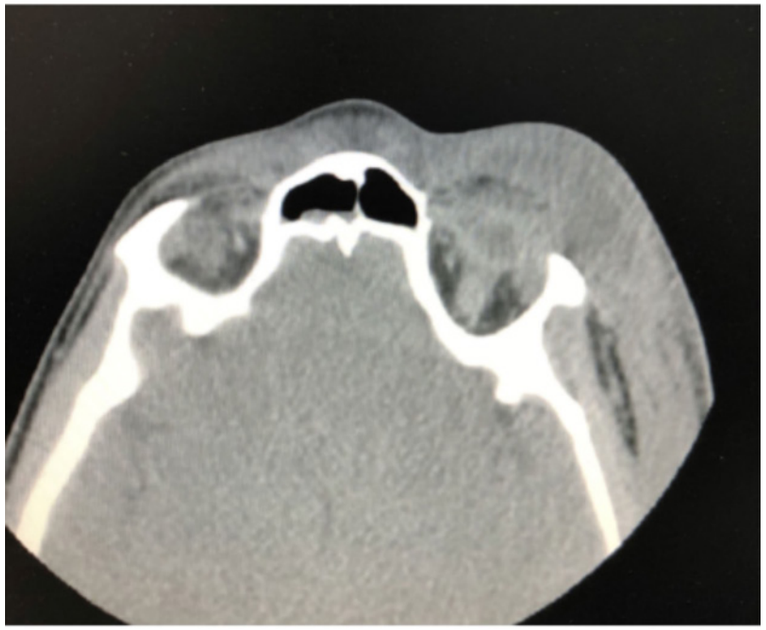


Figure 3



References:

1. Marchesi A, Marcelli S, Parodi PC, Perrotta RE, Riccio M, Vaienti L. Necrotizing Fasciitis in Aesthetic Surgery: A Review of the Literature. Aesthetic Plast Surg. 2017 Apr;41(2):352-358.
2. Josef Haik, Eli Regev, Eran Bar-Meir, Jeremy Tamir, Nir Shoham, Oren Goldan, David Mendes, Arie Orenstein, Eyal Winkler, Necrotizing Periorbital Cellulitis Following Aesthetic Rhinoplasty, *Aesthetic Surgery Journal*, Volume 25, Issue 3, May 2005, Pages 270–272,
3. Yang KC, Tseng WK, Kuo YS, Wu CC. Periorbital necrotizing fasciitis and orbital apex syndrome as a delayed but emergent complication of silicone nasal augmentation. Ann Emerg Med. 2007 Apr;49(4):542-3.

Comparing Response of Five New Hyaluronic Acid Fillers to Various Dissolution Protocols

Sandy Zhang-Nunes[1], Shaili Davuluru[1], Rasika Sudharshan[1], Julie Woodward[2], Wendy Lee[3], Femida Kherani[4,5], Jill Foster[6]
[1]Keck School of Medicine, University of Southern California, Los Angeles, California, United States, [2]Oculoplastic and Reconstructive Surgery, Duke University Eye Center, Durham, North Carolina, United States, [3]Bascom Palmer Eye Institute, Miami, Florida, United States, [4]Southern Alberta Eye Center, Department of Surgery, Cumming School of Medicine, University of Calgary, Calgary, Alberta, Canada, [5]Department of Ophthalmology & Visual Sciences, University of British Columbia, British Columbia, Canada, Vancouver, Canada, [6]Department of Ophthalmology, Ohio State University, Columbus, Ohio, United States

Introduction: Hyaluronic acid (HA) filler administration continues to rise globally with a corresponding increase in severe ischemic and non-ischemic complications. Given that no standardized protocol for filler dissolution currently exists, we seek to explore various protocols to optimize the dissolution of various HA fillers.

Methods: Five new HA fillers (Evolysse Lips, Eye, Lift, Sculpt, Smooth; Symatese Chaponost, France) were tested using three separate protocols in this experimental study.

In the multi-dose protocol, 0.2mL filler aliquots received serial 20 unit (u) doses of recombinant human hyaluronidase (RHH) every 30 minutes over 3 hours (a total of 120u of RHH per aliquot). They were observed for a total of 9 hours and graded for dissolvability with videos stirring the aliquots at 2, 3, and 9 hours.

In the single dose protocol, 0.2mL filler aliquots received single doses of RHH up to 140u to determine the minimum amount needed for dissolution. Aliquots were left undisturbed for 6 hours at which point they were stirring/videographed to confirm dissolution.

In the intermittent stirring protocol, 0.2mL filler aliquots received single doses of RHH determined by the single dose protocol with periodic stirring over 3 hours. The aliquot was stirred for 3 minutes upon injection and then stirred for 1 minute every 30 minutes over the 3 hour observation period.

In all protocols, photos were taken from bird's eye and lateral views at each time point with videos when stirring occurred for comparison and evaluation of dissolution.

Results: At 3 hours, Evolysse Lips dissolved with 20u RHH with intermittent stirring, but not when left undisturbed in the single dose protocol (Figure 1). Evolysse Eye appeared to dissolve at 10u RHH at 2 hours in the single dose, 10u at 1 hour in intermittent stir, and 60u (1.5 hours) in the multi-dose protocol (Figure 2). With 120u RHH, Evolysse Smooth dissolved by 1.5 hours with intermittent stirring, but
(continued)

(continued)
dissolution was not observed until 9 hours in the multi-dose protocol (Figure 3). Evolysse Lift and Sculpt required single doses greater than 100u RHH and Smooth greater than 80u RHH for dissolution. Full dissolution of Evolysse Lift and Sculpt was also only achieved after 120u RHH at 9 hours in the multi-dose protocol.

Conclusions: Intermittent stirring, which emulates massaging clinically, appears to accelerate the dissolution process, with fillers dissolving faster than when left unagitated at the same doses. The duration exposed to RHH is also a significant factor; most fillers (Lips, Lift, Smooth, Sculpt) dissolved by 9 hours, but not by 3 hours in the multi-dose protocol. Rheological properties of each filler also inform its dissolution ability.[1-2] In the multi-dose protocol, for instance, Evolysse Smooth appeared more dissolved than Lift after 120u RHH at 3 hours which may be attributed to the lower HA concentration in Smooth (20mg/mL) than Lift (22mg/mL).[1-6] Understanding the dissolution responses of fillers under various protocols significantly enhances a clinicians ability to optimize filler dissolution.

Figure 1

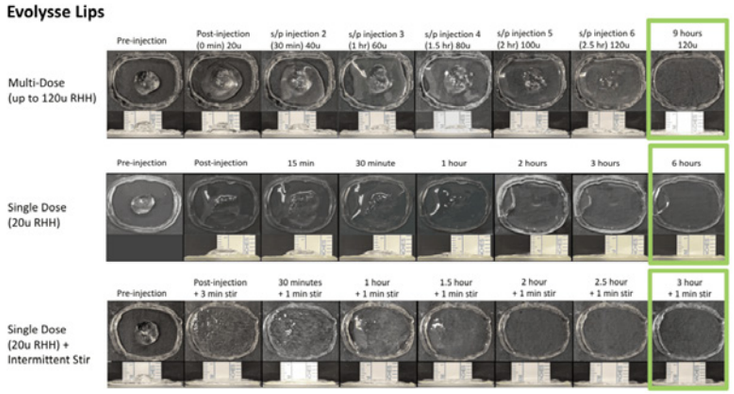


Figure 2

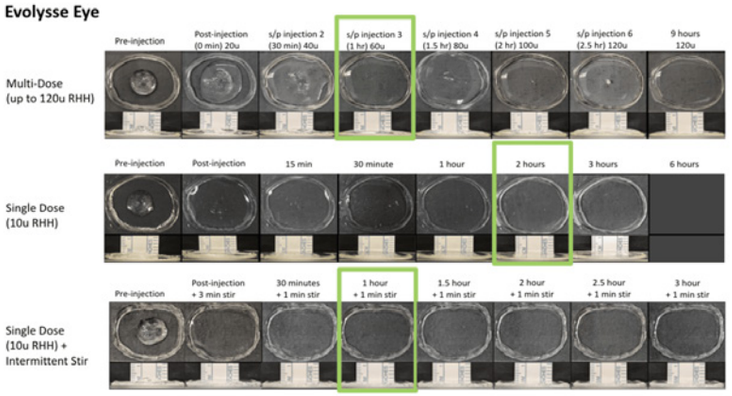
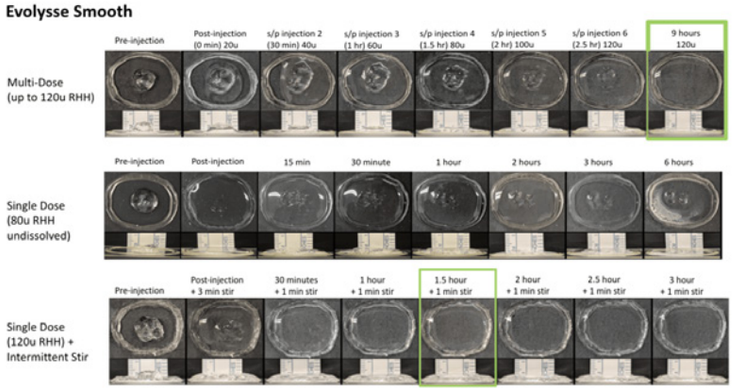


Figure 3



(continued)

(continued)

References:

1. Park KE, Mehta P, Kherani F, Lee WW, Woodward JA, Foster JA, et al. Response of 21 Hyaluronic Acid Fillers to Recombinant Human Hyaluronidase. Plast Reconstr Surg Glob Open. 2023 Dec;11(12):e5457.
2. Sudharshan R, Davuluru S, Shen A, Gupta S, Saeedi N, et al. Identifying Minimum Single Dose of Recombinant Human Hyaluronidase for Dissolution of Twenty-Two Hyaluronic Acid Fillers. Pre-publication in Plast Reconstr Surg Glob Open.
3. Lheritier C, Converset S, Rzany BJ, Cartier H, Ascher B. Efficacy of a New Hyaluronic Acid Dermal Filler on Nasolabial Folds Correction: A Prospective, Comparative, Double-Blinded Clinical Trial. Dermatol Surg. 2024;50(8):746-751. doi:10.1097/DSS.0000000000004207
4. Evolus. Scientific Investor Presentation. 2024. https://s29.q4cdn.com/603291515/files/doc_presentations/2024/May/EVOLUS_INVESTOR-DECK_SCIENTIFIC_MAY-2024.pdf
5. Reddy S, Mihori M, Rostami S. In Vitro Analysis of Dissolution of 18 HA-based Dermal Fillers with Tailored Hyaluronidase Dosing to Achieve Urgent Reversal of Vascular Complications. The American Journal of Cosmetic Surgery. 2024;41(4):274-285. doi:10.1177/07488068231210181
6. Ryu C, Lu JE, Zhang-Nunes S. Response of twelve different hyaluronic acid gels to varying doses of recombinant human hyaluronidase. J Plast Reconstr Aesthetic Surg JPRAS. 2021 Apr;74(4):881–9.
7. Zhang-Nunes S, Ryu C, Cahill K, Straka D, Nabavi C, Czyz C, Foster J. Prospective in vivo evaluation of three different hyaluronic acid gels to varying doses of hyaluronidase with long-term follow-up. J Plast Reconstr Aesthet Surg. 2021 Apr;74(4):874-880. doi: 10.1016/j.bjps.2020.10.052. Epub 2020 Nov 6. PMID: 33281083.
8. Cavallini M, Pierce A, Nakab L. Comparative in vivo degradation of hyaluronic acid-based fillers following injection of hyaluronidase. Journal of Cosmetic Dermatology 2024;23:356–7. https://doi.org/10.1111/jocd.15932.

Delayed Diffuse Eyelid Papillomatosis Following Lower Lid Blepharoplasty and CO_2 Laser Resurfacing

Ana Carolina Victoria[1], Gloria Victoria Cabrero[2], Jessica Vallori[3]
[1]Ophthalmology, Center for Excellence in Eye Care, Miami, Florida, United States, [2]Indiana University School of Medicine, Indianapolis, Indiana, United States, [3]Center for Excellence in Eye Care, Miami, Florida, United States

Introduction: Carbon dioxide (CO_2) laser resurfacing is often considered the "gold standard" for cosmetic skin rejuvenation with high patient satisfaction and a favorable safety index. CO_2 laser resurfacing treatments are often utilized as an adjunctive procedure to functional and cosmetic blepharoplasty surgeries to treat rhytids, photoaging, and the appearance of scarring. Although CO_2 resurfacing is a historically safe treatment method, adverse effects may still occur. Common adverse effects of CO_2 resurfacing include skin peeling and erythema. Other possible complications include hyper/hypopigmentation, formation of milia or acne, dermatitis, reactivation of HSV, and bacterial infections.

Methods: In this case report, we describe a novel clinical presentation of diffuse human papillomavirus (HPV) on the skin surrounding the upper and lower eyelids of a 69-year-old patient one year post-operative of a lower eyelid blepharoplasty with CO_2 laser treatment.

Results: The patient presented 1.5 years post-op with small, diffuse periocular epidermal papules of unclear etiology on the bilateral upper and lower eyelids and her bilateral fingers and palms, present for 6 months. A biopsy was acquired from the left lateral canthus and the patient was referred to a dermatologist who performed cryotherapy using liquid nitrogen to a single, large verrucous papule on the left distal thumb. The tissue pathology confirmed the periocular lesions to be chronic verruca vulgaris. The dermatologist recommended retinol cream and the oculoplastic surgeon offered staged cautery for the removal of the papillomas.

Conclusions: This report represents the first documented case of diffuse papillomas involving the upper and lower eyelids, attributed to an HPV infection that manifested one-year post-bilateral upper eyelid blepharoplasty with adjunctive CO_2 laser resurfacing treatment. This case underscores the potential for unintentional viral transmission or the reactivation of latent HPV, which resides dormant within the basal layer of the epithelial cells, as a postoperative complication. Additionally, this case highlights the importance of pre-operatively addressing individual patient risk factors, including potential viral exposure.

(continued)

(continued)

Figure 1

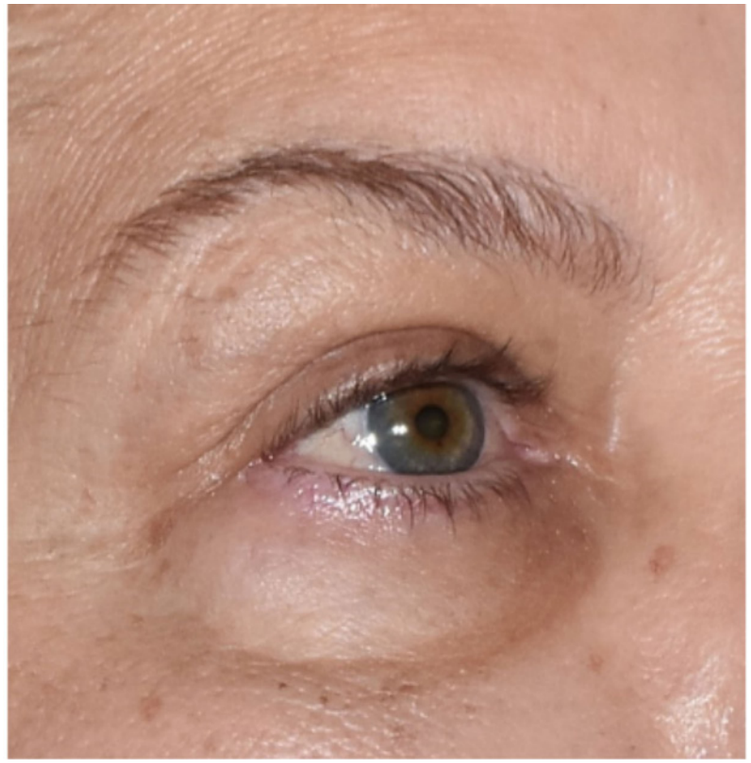


Figure 2



Figure 3



References:

1. Longworth, M. S., & Laimins, L. A. (2004). Pathogenesis of human papillomaviruses in differentiating epithelia. Microbiology and Molecular Biology Reviews, 68(2), 362–372.
2. Maglennon, G. A. (2012). The biology of papillomavirus latency. The Open Virology Journal, 6(1), 190–197. https://doi.org/10.2174/1874357901206010190
3. Nanni CA, Alster TS. Complications of carbon dioxide laser resurfacing. Dermatol Surg. Mar 1998;24(3):315-20
4. Petrov A. Efficiency of Carbon Dioxide Fractional Laser in Skin Resurfacing. Open Access Maced J Med Sci. Jun 2016;4(2):271-6.
5. Ramsdell WM. Fractional CO2 Laser Resurfacing Complications. Semin Plast Surg. 2012 Aug;26(3):137-40. doi: 10.1055/s-0032-1329415. PMID: 23904822; PMCID: PMC3580977.

Dysmorphic Tendencies among Diasporic Asians Considering Cosmetic Facial Procedures

Cat Burkat MD FACS[1], Katriel Tan[2], Qianqian Zhao[3]
[1]Oculoplastics, Orbital, & Cosmetic Facial Surgery; Department of Ophthalmology and Visual Sciences, University of Wisconsin-Madison, Madison, Wisconsin, United States, [2]University of Wisconsin School of Medicine and Public Health, Madison, Wisconsin, United States, [3]Department of Biostatistics and Medical Informatics, University of Wisconsin School of Medicine and Public Health, Madison, Wisconsin, United States

Introduction: This study investigates dysmorphic tendencies among diasporic Asians (individuals identifying as "with Asian heritage" while living in a predominantly non-Asian society) considering cosmetic facial procedures. It also evaluates the utility of a new Facial Dysmorphic Concern Questionnaire, a novel screening tool adapted from existing body dysmorphia assessments, in identifying high-risk individuals. Additionally, the study explores the historical and sociocultural influences shaping cosmetic procedure preferences among diasporic Asians, emphasizing the interplay of dual cultural influences from their heritage and host societies.

Methods: Qualtrics online survey was conducted with three parts: demographic questions, a cosmetic procedure questionnaire, and the newly developed Facial Dysmorphic Concern Questionnaire. Statistical analyses were performed to evaluate associations between dysmorphic tendencies, interest in cosmetic procedures, and psychological factors including historical and cultural trends in this population.

Results: The Facial Dysmorphic Concern Questionnaire demonstrated excellent internal consistency. Participants with high dysmorphic concern scores (≥7) were significantly more likely to express interest in cosmetic facial procedures (70.73%) compared to those with low dysmorphic concern scores (24.44%, $p<0.0001$). A history of being bullied for physical features was predictive of a desire to change facial characteristics (66.67% vs. 33.33%, $p=0.0083$). High dysmorphic concern scores were also associated with previous mental healthcare evaluations (80.49% vs. 55.56%, $p=0.0207$) (Table 1). Historical patterns and sociocultural pressures, including the influence of Western beauty ideals and the internalization of dual cultural standards, were identified as significant factors contributing to these trends.

Conclusions: High dysmorphic concern scores among diasporic Asians are associated with interest in cosmetic facial procedures and a desire to alter facial features, likely influenced by societal pressures, personal experiences of bullying, and historical-cultural dynamics. The Facial Dysmorphic Concern Questionnaire shows promise as a targeted screening tool for facial dysmorphia tendencies. Future validation may enhance preoperative assessments and enable culturally sensitive care for this unique population.

(continued)

(continued)

Table 1. Comparison between low dysmorphic concern and high dysmorphic concern

	low dysmorphic concern (N=45)	high dysmorphic concern (N=41)	P-value
Consider getting a cosmetic facial procedure done: 40 (46.51%)	11 (24.44%)	29 (70.73%)	<.0001
Would change facial features: 50 (58.14%)	20 (44.44%)	30 (73.17%)	0.0089
Been evaluated by a mental health professional: 58 (67.44%)	25 (55.56%)	33 (80.49%)	0.0207

References:

1. Kaw, E. (1993). Steven Polgar Prize essay (1991). Medicalization of racial features: Asian American Women and Cosmetic Surgery. *Medical Anthropology Quarterly*, *7*(1), 74–89. https://doi.org/10.1525/maq.1993.7.1.02a00050

Perceptions of Femininity: Exploring Eyelid Morphology and Periocular Features in Facial Feminization

Narmien Murdock[1,2], Maria Jabbour[3], Kenneth Morgenstern[1], Cat Burkat[4]

[1]Department of Ophthalmic Plastic and Reconstructive Surgery, Morgenstern Center for Orbital and Facial Plastic Surgery, Wayne, Pennsylvania, United States, [2]Department of Ophthalmic Plastic and Reconstructive Surgery, Wills Eye Hospital, Philadelphia, Pennsylvania, United States, [3]Oculoplastics, Orbital, & Cosmetic Facial Surgery, Dept of Ophthalmology & Visual Sciences, University of Wisconsin - Madison, Madison, Wisconsin, United States, [4]Oculoplastics, Orbital, & Cosmetic Facial Surgery, Dept of Ophthalmology & Visual Sciences, University of Wisconsin - Madison, Madison, Wisconsin, United States

Introduction: Facial structures play a crucial role in gender perception and gender-affirming healthcare, yet these procedures often rely on binary beauty standards that marginalize non-binary identities.[1] While femininity and attractiveness are commonly associated with symmetry and balance, the specific features influencing gender perception, particularly in the periocular region, remain poorly understood.[2,3] Spiegel (2010) highlighted the upper third of the face as central to femininity, yet detailed studies on eyelid-specific contributions are lacking.[4] Although eye size has been linked to perceived attractiveness,[4-6] the features defining a feminine, attractive eye remain ambiguous and culturally variable.[4-9] This study investigates eyelid feminization standards to evaluate perceptions of femininity across diverse cultural and gender identities and to clarify whether these procedures enhance the perception of femininity.

Methods: We surveyed participants to identify periocular features that contribute to a feminine-appearing eye. The survey included both free-text responses and multiple-choice questions that explored participants' perceptions of features such as eyelid crease height, superior sulcus depth, and vector of the outer canthal angles. Responses from diverse cultural and gender identities were analyzed to understand sociocultural influences on femininity perceptions and the variations deemed most feminizing.

Results: A total of 88 responses were recorded. Participants identified as Caucasian (48.9%), Asian (25.0%), Middle Eastern/North African (20.5%), Hispanic/Latinx (9.1%), and Black (4.5%). Most were cisgender females (64.8%) or cisgender males (29.5%), with 4.5% identifying as transgender or non-binary.

Participants' responses for the main characteristic of a feminine eye most often included the eyelashes, cat-like shape, round shape, and the eyebrows (Figure 1). An upward slant of the lateral canthal angle was reported by 90.8% as enhancing the feminine appearance of the eye. Additionally, 80.2% perceived increased visibility of the upper eyelid and a hollow appearance as more feminine than a fuller eyelid.

(continued)

(continued)

Interestingly, 53.6% of participants viewed a more prominent supraorbital rim as feminine. Of three proposed modifications to enhance periocular femininity, the two most often selected were an upward tilt to the lateral canthus and an elevated eyelid crease (Figure 2). While most cultural groups favored an elevated crease, only 16.7% of Hispanic/Latinx participants shared this preference. The aesthetic of more dramatic feminine periocular modification was preferred by 60.2% of cisgender participants and 50.0% of transgender/non-binary participants.

Conclusions: This study offers important insights into the role of the periocular region in shaping perceptions of femininity. Our findings indicate that an upward lateral canthal tilt is the most significant factor contributing to a feminine-appearing eye, followed by an elevated eyelid crease and increased tarsal platform visibility. By focusing on the eyelid and periocular area, this study builds on Spiegel's research, highlighting the eyelid as a critical element for facial feminization.

Aging can alter eyelid morphology, often diminishing feminine traits and leading to a more masculine or neutral appearance. For instance, a lower brow position, hooding with reduced visibility of the upper eyelid, and downward lateral canthal tilt are typical signs of aging that detract from feminine aesthetics. These findings emphasize the importance of restoring or enhancing these features during cosmetic and feminization procedures.[10]

Figure 1

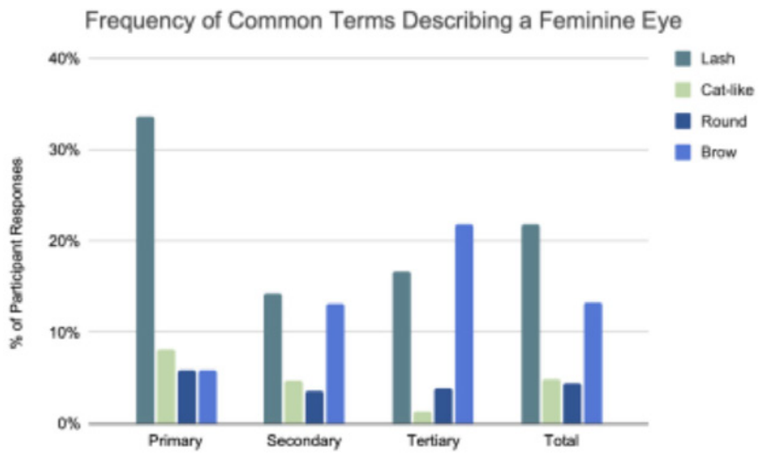
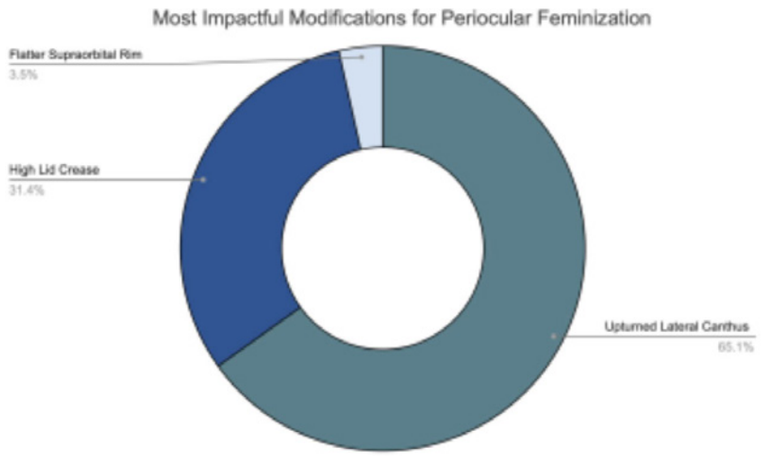


Figure 2



(continued)

(continued)

References:

1. Gonsalves, T. (2020). Gender Identity, the Sexed Body, and the Medical Making of Transgender. Gender & Society, 34(6), 1005-1033.
2. Carlson JM, Aday J. In the presence of conflicting gaze cues, fearful expression and eye-size guide attention. Cogn Emot. 2018 Sep;32(6):1178-1188.
3. Przylipiak M, Przylipiak J, Terlikowski R, Lubowicka E, Chrostek L, Przylipiak A. Impact of face proportions on face attractiveness. J Cosmet Dermatol. 2018 Dec;17(6):954-959.
4. Spiegel JH. Facial determinants of female gender and feminizing forehead cranioplasty. Laryngoscope. 2011 Feb;121(2):250-61.
5. Matsushita S, Morikawa K, Yamanami H. Measurement of eye size illusion caused by eyeliner, mascara, and eye shadow. J Cosmet Sci. 2015 May-Jun;66(3):161-74.
6. Esté Jaloveckas A, Granero R. The eyes as the exclamation mark of the face: exploring the relationship between eye size, intensity of female facial expressions and attractiveness in a range of emotions. Front Psychol. 2024 Aug 8;15:1421707.
7. Senju A, Vernetti A, Kikuchi Y, Akechi H, Hasegawa T, Johnson MH. Cultural background modulates how we look at other persons' gaze. Int J Behav Dev. 2013 Mar;37(2):131-6.
8. Rohrich RJ, Coberly DM, Fagien S, Stuzin JM. Current concepts in aesthetic upper blepharoplasty. Plast Reconstr Surg. 2004 Mar;113(3):32e-42e.
9. Broer PN, Juran S, Liu YJ, Weichman K, Tanna N, Walker ME, Ng R, Persing JA. The impact of geographic, ethnic, and demographic dynamics on the perception of beauty. J Craniofac Surg. 2014;25(2):e157-61.
10. Pokrowiecki R, Šufliarsky B, Jagielak M. Feminization Surgery of the Upper Face as the Crucial Factor in Gender Confirmation-Pearls and Pitfalls. Medicina (Kaunas). 2024 Jan 9;60(1):120.

Rare Morganella morganii Abscess Following Lower Eyelid Blepharoplasty in a Patient With Chronic Sinusitis

Cat Burkat MD FACS[1], Parabhjot Singh BS[2], Colin P Froines MD[3]

[1]Department of Ophthalmology & Visual Sciences, University of Wisconsin-Madison; Oculoplastics, Orbital, & Cosmetic Facial Surgery, Madison, Wisconsin, United States, [2]University of Wisconsin School of Medicine and Public Health, Madison, Wisconsin, United States, [3]Department of Ophthalmology and Visual Sciences, University of Wisconsin-Madison, Madison, Wisconsin, United States

Introduction: We report the first case of a postoperative severe eyelid abscess caused by the gastrointestinal organism *Morganella morganii* following bilateral lower lid blepharoplasty in a healthy, immunocompetent man with history of chronic sinusitis. This case underscores the rapid progression and urgent need for aggressive intervention, as *M. morganii* is difficult to treat and poses significant risks for orbital extension and visual impairment. Limited studies have addressed M. morganii, but the organism is becoming increasingly recognized as a public health threat due to high antibiotic resistance, with the mortality rate for *M. morganii* bacteremia 41%, particularly in patients with a comorbidities or immune compromise. *M. morganii* typically originates from the urinary tract (41.3 %) and gastrointestinal system. Susceptibility testing of *M. morganii* isolates often show ubiquitous resistance to first-generation cephalosporins and ampicillin-clavulanate, trimethoprim/sulfamethoxazole, gentamicin, amoxicillin, nitrofurantoin, ciprofloxacin. Therefore, the optimal treatment is carbapenems and aggressive surgical drainage and debridement of necrotic tissue.

Methods: Case report and literature review

Results: A 66-year-old man presented for cosmetic lower blepharoplasty. Medical history was significant for left keratoconjunctivitis secondary to herpes zoster, and chronic left maxillary sinusitis s/p endoscopic maxillary and inferior meatus antrostomy 7 months prior. Cosmetic bilateral lower lid blepharoplasty was performed with pre-operative otolaryngology clearance for chronic sinusitis. On postoperative day 4 he reported rapidly progressive left lower eyelid swelling and pain (which he stated had started immediately after surgery) and started on oral amoxicillin/clavulanate potassium. Urgent evaluation to rule out hemorrhage vs abscess demonstrated: visual acuity 20/60 OS, normal pupils/motility, and a large, fluctuant, erythematous, painful tense left lower eyelid abscess (Figure 1). Office incision & drainage yielded three mL of purulent fluid which revealed *Morganella morganii* as the causative pathogen.

Despite initial drainage, the abscess rapidly recollected the next day, and the patient returned to surgery for repeat drainage, aggressive debridement of necrotic and infected tissue, antibiotic irrigation. ID consult was obtained, with the recommendation to institute carbapenem. The abscess was widely incised externally with immediate expression of thick yellow-green fibrinous purulence.

(continued)

(continued)

Intraoperative IV ertapenem was given and the incision left open and packed with antibiotic-impregnated gauze. The packing was slowly removed in several days, with another recollection of purulence within the abscess reported. He slowly improved on ciprofloxacin 750 mg BID (he deferred oral carbapenem due to cost), ciprofloxacin ophthalmic drops, neomycin/polymyxin/dexamethasone ointment, and warm compresses (Figure 2). One week after repeat abscess drainage, the patient switched to amoxicillin/clavulanate potassium due to diarrhea with ciprofloxacin.

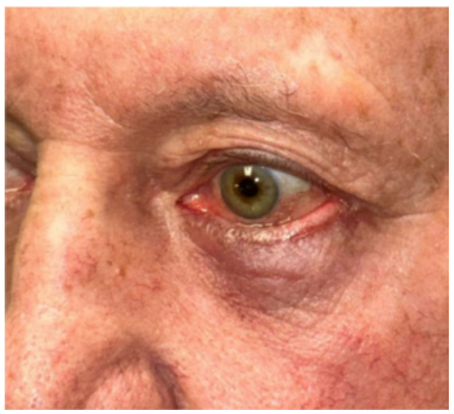
Conclusions: To the authors' knowledge, this is the first reported case of a postoperative abscess with Morganella morganii following routine cosmetic lower blepharoplasty. This patient's recent sinus surgery may have predisposed to abscess formation. Only 3 single case reports of Morganella morganii in the ocular/periorbital region have been described: 1. following dacryocystitis, 2. post-vitrectomy and, 3. post-trans-nasal sphenoidal approach for mass removal.

The high recurrence rate of abscess formation highlights the necessity for early and repeated interventions that include topical and systemic antibiotics (carbapenem), immediate surgical drainage, debridement, leaving the incision open with packing due to risk of recollection. In one previous case report, the patient also had significant sinus infections as in our patient, thus further studies should consider potential association with sinus active/recurrent infections. Surgeons should be aware that presence of this organism requires rapid drainage and source control with surgical tissue debridement to prevent orbital extension and systemic spread.

Figure 1



Figure 2



References:

1. Allen, M. V., Cohen, K. L., & Grimson, B. S. (1985). Orbital cellulitis secondary to dacryocystitis following blepharoplasty. Annals of Ophthalmology, 17(8), 498–499. PMID: 3901857.
2. Carruth, B. P., & Wladis, E. J. (2012). Orbital abscess from dacryocystitis caused by Morganella morganii. Orbit, 32(1), 39–41.

A Solution to a Giant Problem: Scraping of Palpebral Giant Papillae in Patients with Contact Lens Wear Intolerance

Rupin Parikh, Christine Sindt, Erin Shriver
Ophthalmology, University of Iowa, Iowa City, Iowa, United States

Introduction: Giant papillary conjunctivitis is a common complication in contact lens wearers that can preclude patients from tolerating lens use. In many patients with corneal pathologies such as keratoconus, corneal ectasia, and corneal scarring, contact lenses are often necessary to maximize their vision potential. Inability to wear these lenses can be debilitating to affected patients. Current therapies for giant papillary conjunctivitis include contact lens holidays, decreasing lens deposits with more frequent cleansing, topical anti-allergy therapies (mast cell stabilizers, antihistaminic agents, dual-acting agents), topical steroids, and immunomodulatory therapy (such as tacrolimus). Significant disease processes can often be refractory to these treatments despite an extended duration of therapy.

Methods: A retrospective case series of patients with giant papillary conjunctivitis who have undergone conjunctival scraping due to contact lens wear intolerance was performed. Contact lens fit was confirmed to be appropriate each visit with slit lamp examination and anterior segment OCT imaging. The procedure involved application of topical anesthetic (tetracaine/proparacaine eye drops and 4% lidocaine on a cotton tip applicator), followed by subconjunctival and subcutaneous instillation of 2% lidocaine with 0.5% bupivacaine with epinephrine 1:100,000. The palpebral conjunctiva was then exposed by placing a 4-0 silk traction suture through the lid margin and then everting the lid over a Desmarres retractor or closed chalazion clamp. A #15 Bard-Parker blade was then used to scrape the giant papillae as well as some areas of inflamed palpebral conjunctiva. Bipolar cautery was used judiciously for hemostasis and to induce cicatrix. Erythromycin ointment was prescribed to be used three times daily on the eye for 7 days. All surgeries were initially performed unilaterally to allow for determination of the benefit and outcome of the procedure before proceeding with the contralateral lid.

(continued)

(continued)

Results: Three contact lens-intolerant patients with keratoconus and giant papillary conjunctivitis underwent the procedure on a total of 5 eyelids. All patients were men with a mean age of 42.7 years. Average duration of contact lens use prior to the procedure was 8.3 years. Two patients wore custom scleral lenses, while the third used rigid gas-permeable lenses. Pre-operative complaints included significant lens rotation, mucus buildup, and irritation. Patients reported post-operative eyelid swelling for approximately 7 days. Contact lens use was resumed after a two-week holiday post-operatively. All five eyelids were able to better tolerate contact lens wear following the procedure through an average follow-up of 15.2 months (range 1-65 months). While expectant scarring of the palpebral surface was found, no tarsal kinking or ridges, recurrence of papillae, symblepharon, or difficulty with eyelid eversion was noted. Pre- and post-operative photos of the three patients are included in Figures 1-3.

Conclusions: Manual scraping of giant papillary conjunctivitis is an option to treat patients who are no longer tolerating contact lens wear. Further experience both with volume of procedures and length of follow up is needed to better understand the safety profile and which patients will benefit from the procedure.

Figure 1

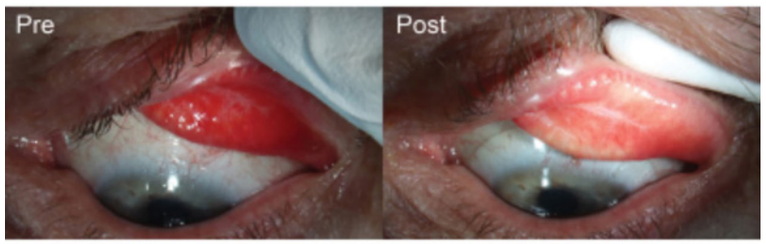
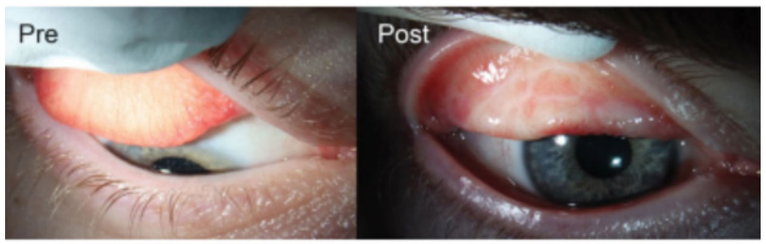


Figure 2



Figure 3



References:

1. Kenny SE, Tye CB, Johnson DA, Kheirkhah A. Giant papillary conjunctivitis: a review. The Ocular Surface, 2020;18:396-402.
2. Elhers WH, Donshik PC. Giant papillary conjunctivitis. Current Opinion in Allergy and Clinical Immunology, 2008;8:445-449.

Blepharoptosis with Oculomotor Synkinesis following Acquired Third Cranial Nerve Palsy Managed with Frontalis Suspension and Levator Extirpation

Donovan Reed[1,2], Aaron Grant[1], Wesley Brundridge[3,4], Brett Davies[1]

[1]Ophthalmology, Wilford Hall Ambulatory Surgical Center, Lackland AFB, Texas, United States, [2]Oculofacial Plastic Surgery, TOC Eye & Face, Austin, Texas, United States, [3]Ophthalmology, Brooke Army Medical Center, Fort Sam Houston, Texas, United States, [4]Oculofacial Plastic Surgery, EyePlasTX, San Antonio, Texas, United States

Introduction: As with Marcus Gunn jaw winking, ptosis with oculomotor synkinesis poses specific challenges regarding appropriate surgical techniques to correct the ptosis and improve visual function while preserving ocular surface integrity.[1-4] We present a case of a 58-year-old female who suffered a chronic CNIII palsy secondary to a hemorrhagic stroke and ultimately developed aberrant regeneration with complete ptosis in primary gaze and significant upper eyelid retraction ('Pseudo Von-Graefe Sign') in attempted adduction. She was ultimately managed with frontalis silicone rod suspension and levator extirpation, which resulted in satisfactory eyelid position in primary gaze and resolution of the synkinetic phenomenon.

Methods: A 58-year-old female presented to the Oculoplastics service approximately 4.5 years following a hemorrhagic stroke resulting in a chronic left CNIII palsy and a left homonymous hemianopia. She had previously undergone multiple strabismus surgeries to correct her diplopia and realign her eyes, and desired correction of her left upper eyelid blepharoptosis. On examination, she was noted to have a MRD1 of 0.5mm right and -4mm left in primary gaze with resolution of left blepharoptosis (MRD1 of 0.5mm) on attempted left eye adduction in right gaze, consistent with oculomotor synkinesis of the inferior branch of CNIII to the superior branch of CNIII. After extensive discussion was had with the patient regarding the presence of strabismus and realistic possibility of diplopia with blepharoptosis correction, she ultimately wished to proceed with surgical intervention.

Results: The patient underwent successful blepharoptosis correction with frontalis silicone rod suspension and levator extirpation. The patient did develop a small peripheral bacterial keratitis inferiorly secondary to exposure keratopathy in the early postoperative course that was successfully managed with ophthalmic antibiotic drop therapy and frequent lubrication. She has otherwise recovered very well, with an excellent left upper eyelid position in primary gaze with frontalis activation and resolution of the blepharoptosis with absence of eyelid retraction on attempted adduction.

(continued)

(continued)

Conclusions: Aberrant regeneration of the inferior branch of CNIII to the superior branch of CNIII following a hemorrhagic neurovascular incident resulting in acquired CNIII palsy is relatively rare, but can present with findings similar to Marcus Gunn Jaw Winking in pediatric patients born with synkinesis.[2,4] Oculomotor synkinesis following acquired CNIII palsy with ptosis and ipsilateral eyelid retraction on attempted adduction can be managed successfully with silicone rod suspension and levator extirpation. This case highlights the importance of addressing both the eyelid malposition and the oculomotor synkinesis for successful management of complex cases of blepharoptosis with ipsilateral CNIII aberrant regeneration.

Figure 1



Figure 2



References:

1. Bagheri A, Borhani M, Salehirad S, Yazdani S, Tavakoli M. Blepharoptosis associated with third cranial nerve palsy. Ophthalmic Plast Reconstr Surg. 2015. 31(5):357-60.
2. Sibony PA, Lessell S, Gittinger Jr JW. Acquired oculomotor synkinesis. Surv Ophthalmol. 1984. 28(5):382-90.
3. Lelli GJ Jr, Much DC, Frueh BR, Nelson CC. Outcomes in silicone frontalis suspension surgery for high-risk noncongenital blepharoptosis. Ophthalmic Plast Reconstr Surg. 2009. 25(5):361-5.
4. Lim JM, Hou JH, Singa RM, Aakalu VK, Setabutr P. Relative incidence of blepharoptosis subtypes in an oculoplastics practice at a tertiary care center. Orbit. 2013. 32(4):231-4.

Cicatricial Entropion in a Toddler with Filaggrin Mutation Disease

John Thompson, Megan LaRocca, Zhenyang Zhao, Ted Wojno, Adam de la Garza
Department of Ophthalmology, Emory University, Atlanta, Georgia, United States

Introduction: Loss of function mutations in the filaggrin (FLG) gene leads to epidermal breakdown and dermatologic disease.[1] This skin barrier breakdown and subsequent allergen invasion can result in an increased risk of developing atopic diseases, including contact allergies, asthma, and hay fever.[2] Additionally, these patients can present with multiple food allergies. Ichthyosis vulgaris is associated with FLG disease and cicatricial ectropion is the most common ocular manifestation.[2] Cicatricial entropion has, to our knowledge, not been previously reported. Herein, we describe a case of bilateral cicatricial entropion in a pediatric patient with FLG mutation disease.

Methods: This is a case study. Informed consent was obtained. It was compliant with the Health Information Portability and Accountability Act of 1996 and the Declaration of Helsinki.

Results: This study includes an 18-month-old male patient with cicatricial entropion of both upper eyelids (Figure 1). There was cicatrix of both inferior eyelids that was not severe enough to result in entropion. There was subepithelial scarring on the palpebral conjunctiva of each eyelid (Figure 2). Concurrently, he was treated for atopic dermatitis and inflammatory bowel disease. He had multiple food allergies including banana, egg, peanut, and chickpea. Testing by dermatology was positive for FLG loss-of-function mutation. He was treated with infliximab followed by dupilimumab. Surgically, skin incisions along the eyelid creases to the level of the tarsus were made and everting sutures were placed which successfully repaired the entropion. The posterior lamella was left undisturbed to avoid further inflammation. Histology from his inferior fornix revealed chronic inflammation and scarring with IgM staining of cytoid bodies. He was doing well at post-operative month one.

Conclusions: FLG mutation is associated with dermatologic disease, including atopy, food allergy, and ichthyosis vulgaris.[1] Filaggrin is expressed in mucosal tissue, and these patients often have concurrent inflammatory bowel disease.[3] The most common ophthalmic manifestation is cicatricial ectropion, typically associated with ichthyosis vulgaris.[2] Cicatricial entropion is an unusual finding and filaggrin has been found to be present in only diseased conjunctiva.[4] Interestingly, cicatricial entropion with IgM staining of cytoid bodies has been found in lichen planus, which can have mucosal involvement.[5] The association between the filaggrin loss-of-function mutation and cicatricial entropion in this patient is unclear, and further studies of conjunctiva in these patients could lead to better understanding.

(continued)

(continued)

Figure 1

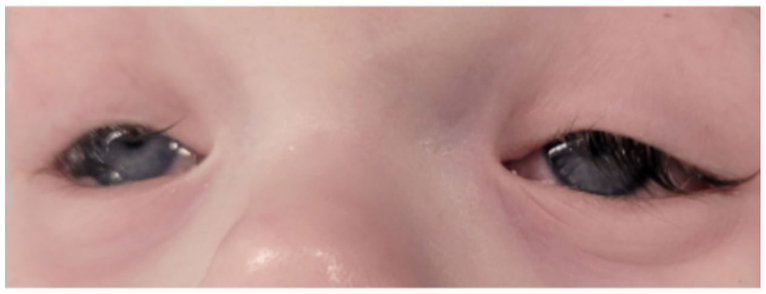
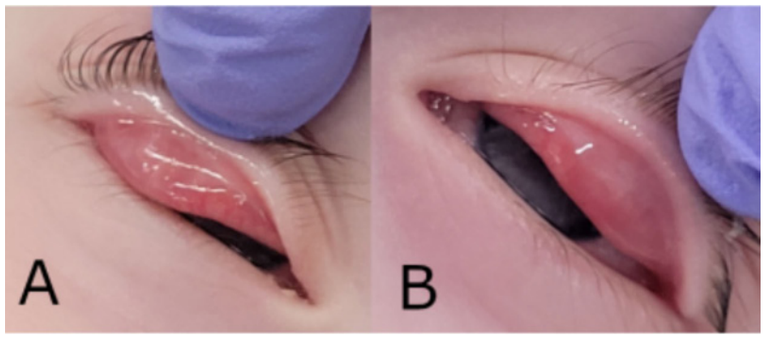


Figure 2



References:

1. Gupta J, Margolis DJ. Filaggrin gene mutations with special reference to atopic dermatitis. *Curr Treat Options Allergy*. 2020;7(3):403-413. doi:10.1007/s40521-020-00271-x
2. Thyssen JP, Godoy-Gijon E, Elias PM. Ichthyosis vulgaris: the filaggrin mutation disease. *Br J Dermatol*. 2013;168(6):1155-1166. doi:10.1111/bjd.12219
3. Van Limbergen J, Russell RK, Nimmo ER, et al. Filaggrin loss-of-function variants are associated with atopic comorbidity in pediatric inflammatory bowel disease. *Inflamm Bowel Dis*. 2009;15(10):1492-1498. doi:10.1002/ibd.20926
4. Lund AS, Heegaard S, Prause JU, Toft PB, Skov L. Expression of filaggrin in normal and keratinized conjunctiva. *Open Ophthalmol J*. 2012;6:137-140. doi:10.2174/1874364101206010137
5. Chen S, Vaughan H, Seitzman GD, Connolly MK, Haemel A. Cicatricial conjunctivitis secondary to discoid lupus erythematosus. *JAAD Case Rep*. 2020;6(12):1323-1326. Published 2020 Aug 29. doi:10.1016/j.jdcr.2020.08.027

Clinical Course of Chalazia in a Large Series

Teresa Chen[1], Joy Li[1], Leena Lim[2], Jeremiah Tao[1]
[1]Division of Orbital and Ophthalmic Plastic Surgery, Gavin Herbert Eye Institute, University of California, Irvine, Irvine, California, United States, [2]School of Medicine, University of California, Irvine, Irvine, California, United States

Introduction: Chalazia are chronic lipogranulomatous eyelid lesions. Even though they are benign, they can cause disfigurement, irritation, and sometimes visual symptoms from induced astigmatism or mechanical eyelid malposition. It is understood that many resolve spontaneously with or without warm compresses, antibiotic-steroid ointment, and eyelid hygiene yet some will require incision and drainage (I&D). While there are multiple studies describing risk factors and treatments of chalazia, the literature is sparse on the clinical course or the probability of resolution with medical management. Our study aims to characterize the clinical course of chalazia in patients referred to an oculofacial plastic clinic.

Methods: Retrospective case series of consecutive patients between 2015 and 2024 seen in one tertiary eye institute with the diagnosis codes for hordeolum or chalazion: H00.01, H00.02, H00.03, H00.11, H00.12, H00.13, H00.14, H00.15, H00.16 and H00.19.

Results: A total of 853 patients were identified. The average age was 48.4 ± 24.1 years old (range 14 months to 101 years old), 331 were male (39%) and average follow-up period of 30 days (range 0 to 20.3 months). Most patients had a single chalazion (735, 86%). Prior to the initial visit, all patients tried warm compresses and eyelid hygiene, 84 (10%) reported antibiotic-steroid eyedrop or ointment use, 49 (6%) tried oral antibiotics (30 using doxycycline and 19 using others: trimethoprim/sulfamethoxazole, amoxicillin/clavulanate or azithromycin), 14 (2%) had prior steroid injections and 55 (6%) had prior incision and drainage. All patients seen in the oculofacial plastic clinic received the same protocol: warm compresses, eyelid hygiene, and antibiotic-steroid ointment, with a minority (32, 4%) also started on oral doxycycline. The majority (813, 95%) were also scheduled for I&D within 2-12 weeks, with instruction to cancel the procedure if the chalazion resolved. 449 patients (52%) canceled the procedure and did not return after their initial visit, 26 (3%) patients received intralesional steroid injections and 357 patients (42%) received incision and drainage (with 9 requiring repeat I&D or excision). Eight patients (0.9%) reported mild post-operative scarring and there were no other complications reported.

Conclusions: Less than half (42%) of patients with chalazia referred to an oculofacial plastic went on to receive an I&D procedure.

(continued)

(continued)

References:

1. Chen L, Chen X, Xiang Q, et al. Prevalence of low serum vitamin a levels in young children with chalazia in southwest china. *Am J Ophthalmol*. 2014;157(5):1103-1108.e2. doi:10.1016/j.ajo.2014.02.020
2. Cottrell DG, Bosanquet RC, Fawcett IM. Chalazions: the frequency of spontaneous resolution. *Br Med J (Clin Res Ed)*. 1983;287(6405):1595.
3. Evans J, Vo KBH, Schmitt M. Chalazion: racial risk factors for formation, recurrence, and surgical intervention. *Can J Ophthalmol*. 2022;57(4):242-246. doi:10.1016/j.jcjo.2021.04.023
4. Honda M, Honda K. Spontaneous resolution of chalazion after 3 to 5 years. *Eye Contact Lens*. 2010;36(4):230-232. doi:10.1097/ICL.0b013e3181e4a5ef
5. Jiang J, Yang X, Du F, Zheng W, Yang Y. Therapeutic effect of intense pulsed light on different types of chalazion in children. *Sci Rep*. 2024;14(1):3645. doi:10.1038/s41598-024-54161-2
6. Kim DH, Briceño CA, McGeehan B, VanderBeek BL. Risk Factors for Chalazion Diagnosis and Subsequent Surgical Excision. *Ophthalmic Epidemiol*. 2024;31(1):84-90. doi:10.1080/09286586.2023.2199838
7. Lee JWY, Yau GSK, Wong MYY, Yuen CYF. A Comparison of Intralesional Triamcinolone Acetonide Injection for Primary Chalazion in Children and Adults. *The Scientific World Journal*. 2014;2014(1):413729. doi:10.1155/2014/413729
8. Patel S, Tohme N, Gorrin E, Kumar N, Goldhagen B, Galor A. Prevalence and risk factors for chalazion in an older veteran population. *Br J Ophthalmol*. 2022;106(9):1200-1205. doi:10.1136/bjophthalmol-2020-318420
9. Pizzarello LD, Jakobiec FA, Hofeldt AJ, Podolsky MM, Silvers DN. Intralesional Corticosteroid Therapy of Chalazia. *American Journal of Ophthalmology*. 1978;85(6):818-821. doi:10.1016/S0002-9394(14)78111-5
10. Simon GJB, Rosen N, Rosner M, Spierer A. Intralesional Triamcinolone Acetonide Injection Versus Incision and Curettage for Primary Chalazia: A Prospective, Randomized Study. *American Journal of Ophthalmology*. 2011;151(4):714-718.e1. doi:10.1016/j.ajo.2010.10.026
11. Wojtowicz JC, Butovich IA, McMahon A, et al. Time-dependent degenerative transformations in the lipidome of chalazia. *Exp Eye Res*. 2014;127:261-269. doi:10.1016/j.exer.2014.08.008
12. Yagci A, Palamar M, Egrilmez S, Sahbazov C, Özbek SS. Anterior Segment Ischemia and Retinochoroidal Vascular Occlusion After Intralesional Steroid Injection. *Ophthalmic Plastic & Reconstructive Surgery*. 2008;24(1):55. doi:10.1097/IOP.0b013e31815c938f

Impact of Age and Surgical Technique on Dry Eye in Postoperative Lagophthalmos After Blepharoptosis Repair

Tejus Pradeep[1], Natalia Davila[1], Samantha McLaughlin[1], Chloe Shields[1], Niloufar Bineshfar[1], William Evans[1], Juan Guerrero[1], Brian Wong[2], Wendy Lee[1]

[1]Ophthalmic Plastic and Reconstructive Surgery, Bascom Palmer Eye Institute, Miami, Florida, United States, [2]University of Texas Medical Branch, Department of Ophthalmology and Visual Sciences, Galveston, Texas, United States

Introduction: Lagophthalmos is a recognized complication of blepharoptosis repair that can lead to significant ocular surface issues such as dry eye disease and exposure keratopathy. The resulting discomfort, visual disturbance, and tear film instability may compromise quality of life and necessitate long-term management. Among surgical techniques for ptosis repair, frontalis muscle (FM) sling and levator muscle (LM) resection are commonly employed, each with distinct mechanisms and risk profiles. The choice of technique is influenced by patient factors such as age, levator function, and ptosis severity. However, the impact of these techniques on postoperative lagophthalmos and subsequent dry eye risk remains poorly characterized, particularly when stratified by patient age.

Understanding these relationships is critical for optimizing surgical planning and improving patient outcomes. While FM techniques are typically used for congenital ptosis in younger patients, LM techniques are more common in older individuals with acquired ptosis. Age-related changes in ocular anatomy and physiology, such as decreased tear production, meibomian gland dysfunction, and eyelid laxity, may exacerbate the risk of dry eye in older populations. This study aimed to evaluate the influence of surgical technique and age on the development of dry eye and exposure keratopathy in patients with postoperative lagophthalmos, providing evidence to guide preoperative expectations.

Methods: This retrospective cohort study utilized data from the a clinical data and analytics platform, including patients who underwent ptosis surgery between October 2004 and October 2024. Patients were grouped by surgical technique and stratified based on the presence of postoperative lagophthalmos. Outcomes, including dry eye disease, punctate keratitis, and exposure keratopathy, were evaluated at 3 months, 6 months, and 1 year. Propensity score matching was used to control for confounding variables, and statistical significance was determined with a p-value threshold of <0.05.

(continued)

(continued)

Results: In the FM group (n=2,322, mean age 6 years), lagophthalmos occurred in 2.6% of patients. Dry eye disease was rare in this cohort, with no significant differences observed between patients with and without lagophthalmos at any follow-up interval. Similarly, cases of punctate keratitis and exposure keratopathy were minimal, with fewer than 10 instances reported in any period. In the LM group (n=33,929, mean age 62 years), lagophthalmos was similarly rare occurring in 1.8% of patients. However, the risk of dry eye disease was significantly elevated. At 1-year, dry eye affected 12.7% of post-levator muscle surgery lagophthalmos patients compared to 5.7% of controls (RR = 2.20; p = 0.001). Exposure keratopathy was also more common in these LM lagophthalmos patients, with risk more than doubling by the 1-year mark (4.4% vs. 1.7%; RR = 2.53; p = 0.013).

Conclusions: FM repair, primarily performed on younger patients, is associated with higher rates of lagophthalmos but minimal dry eye risk. Contrastingly, the lagophthalmos occurring with LM repair, commonly performed on older patients, significantly increased dry eye risk. This provides useful data to counsel parents that pediatric lagophthalmos does not often cause clinically significant dry eye. Age related tear film instability and factors ought to be considered in preoperative counseling of ptosis surgery in older patients.

TABLE 1. Baseline characteristics between patients who underwent FM technique with and without postoperative lagophthalmos

	Before Propensity Score Matching				After Propensity Score Matching			
Variable	**FM Lagophthalmos (n= 60)**	**FM (n= 2,260)**	**Standard difference**	***P-value***	**FM Lagophthalmos (n=59)**	**FM (n=59)**	**Standard difference**	***P-value***
Age at surgery, yr	8.7 ± 8	5.8 ± 7.1	0.398	*0.001**	8.3 ± 7.3	8.3 ± 8.3	0.045	*0.806*
Male	35 (58.3%)	1,335 (62%)	0.075	*0.563*	35 (59.3%)	32 (54.2%)	0.034	*0.852*
Ethnicity								
Hispanic/Latino	18 (30%)	491 (22.8%)	0.164	*0.192*	17 (28.8%)	14 (23.7%)	0.118	*0.528*
Race								
White	39 (65%)	1,094 (50.8%)	0.292	*0.029**	38 (64.4%)	37 (62.7%)	<0.001	*1*
Asian	10 (16.7%)	151 (7%)	0.3	*0.005**	10 (16.9%)	10 (16.9%)	<0.002	*1*
Black/African American	10 (16.7%)	440 (20.4%)	0.095	*0.474*	10 (16.9%)	10 (16.9%)	<0.003	*1*

*This variable was significantly different between cohorts based on a threshold for p-value of <0.05.

A comparison of baseline characteristics between patients who had blepharoptosis repair using the FM technique before and after propensity matching.

FM, frontalis muscle.

TABLE 2. Baseline characteristics between patients who underwent LM technique with and without postoperative lagophthalmos

	Before Propensity Score Matching				After Propensity Score Matching			
Variable	**LM Lagophthalmos (n=614)**	**LM (n=32,235)**	**Standard difference**	***P-value***	**LM Lagophthalmos (n=598)**	**LM (n=598)**	**Standard difference**	***P-value***
Age at surgery, yr	60.8 ± 21.2	61.5 ± 20.6	0.036	*0.369*	61 ± 21.1	60.9 ± 21.3	0.004	*0.939*
Male	207 (35%)	11,281 (37.5%)	0.037	*0.372*	207 (34.6%)	206 (34.4%)	0.004	*0.952*
Ethnicity								
Hispanic/Latino	50 (8.5%)	2,870 (9.5%)	0.03	*0.474*	50 (8.4%)	50 (8.4%)	<0.001	*1*
Race								
White	441 (74.5%)	22,224 (73.9%)	0.043	*0.308*	441 (73.7%)	444 (74.2%)	0.011	*0.843*
Asian	27 (4.6%)	1,176 (3.9%)	0.037	*0.35*	27 (4.5%)	25 (4.2%)	0.016	*0.777*
Black/African American	46 (7.8%)	2,418 (8%)	0.004	*0.927*	46 (7.7%)	45 (7.5%)	0.006	*0.913*

A comparison of baseline characteristics between patients who had blepharoptosis repair using the LM technique before and after propensity matching.

LM, levator muscle.

(continued)

(continued)

Figure 3

TABLE 3. Outcomes between FM with and without lagophthalmos after propensity score matching

	Immediate interval (<3 mo)					Intermediate interval (<6 mo)					Long-term interval (<1 yr)				
Variable	FM Lagophthalmos	FM	Risk ratio	Risk Difference	*p-value*	FM Lagophthalmos	FM	Risk Ratio	Risk Difference	*p-value*	FM Lagophthalmos	FM	Risk Ratio	Risk Difference	*p-value*
Dry eye	0 (50)	0 (55)	-	-	-	0 (52)	0 (56)	-	-	-	≤10 (53)	0 (59)	-	0.19 (0.08,0.29)	< *0.001**
Punctate keratitis	≤10* (54)	0 (55)	-	0.19 (0.08,0.29)	*<0.001**	≤10 (56)	0 (57)	-	0.18 (0.08,0.28)	*0.001**	≤10 (58)	0 (59)	-	0.17 (0.08,0.27)	*<0.001**
Exposure keratopathy	0 (44)	≤10* (55)	-	0.18 (0.28,0.08)	*0.003**	0 (45)	≤10 (57)	-	0.18 (0.27,0.08)	*0.003**	0 (46)	≤10 (59)	-	0.17 (0.27,0.07)	*0.003**

A comparison of the incidence of dry eye, punctate keratitis, and exposure keratopathy between 59 patients with lagophthalmos and 59 controls, during the immediate, intermediate, and long- term follow-up intervals. Dry eye category counts patients presenting with either dry eye disease and/or meibomian gland dysfunction.

*Statistical significance was reached with $p < 0.05$.

FM, frontalis muscle.

Figure 4

TABLE 4. Outcomes between LM with and without lagophthalmos after propensity score matching

	Immediate interval (<3 mo)					Intermediate interval (<6 mo)					Long-term interval (<1 yr)				
Variable	LM Lagophthalmos	LM	Risk Ratio	Risk Difference	*p-value*	LM Lagophthalmos	LM	Risk Ratio	Risk Difference	*p-value*	LM Lagophthalmos	LM	Risk Ratio	Risk Difference	*p-value*
Dry Eye	16 (324)	≤10 (435)	2.15 (0.98-4.67)	0.03 (0.01,0.05)	*0.048*	29 (324)	17 (435)	2.29 (1.28-4.1)	0.05 (0.01,0.09)	*0.004**	41(324)	25 (435)	2.20 (1.37-3.55)	0.07 (0.03,0.11)	< *0.001**
Punctate keratitis	≤10 (572)	≤10 (586)	1.02 (0.43-2.44)	0.01 (0.01,0.02)	*0.957*	≤10 (572)	≤10 (586)	1.02 (0.43-2.44)	0.01 (0.01,0.02)	*0.957*	≤10 (572)	≤10 (586)	1.02 (0.43-2.44)	0.01(0.01,0.02)	*0.957*
Exposure keratopathy	13 (432)	≤10 (575)	1.73 (0.77-3.91)	0.01 (0.01,0.03)	*0.182*	17 (432)	≤10 (575)	2.26 (1.04-4.89)	0.02 (0.01%,0.04)	*0.033**	19(432)	≤10 (575)	2.53 (1.19-5.38)	0.03 (0.01,0.05)	*0.013**

A comparison of the incidence of dry eye, punctate keratitis, and exposure keratopathy between 598 patients with lagophthalmos and 598 controls, during the immediate, intermediate, and long-term follow-up intervals. Dry eye category counts patients presenting with either dry eye disease and/or meibomian gland dysfunction.

*Statistical significance was reached with $p < 0.05$.

LM, levator muscle.

Lateral Tarsoconjunctival Flap for Correction of Multifactorial Cicatricial and Enophthalmos-Related Lateral Ectropion and Retraction in Patients with Parry-Romberg Syndrome

Cat Burkat[1], M. Kristine Carbullido[2], Ryan Larochelle[1], John Siebert[3]

[1]Department of Ophthalmology and Visual Sciences, University of Wisconsin-Madison, Oculoplastics, Orbital, & Cosmetic Facial Surgery, Madison, Wisconsin, United States, [2]University of Wisconsin Hospitals & Clinics, Division of Plastic Surgery, Madison, Wisconsin, United States, [3]Division of Plastic Surgery, University of Wisconsin Hospitals & Clinics, Madison, Wisconsin, United States

Introduction: Idiopathic Progressive Hemifacial Atrophy (IPHA), or Parry-Romberg syndrome, is a rare disorder characterized by unilateral facial atrophy that can involve skin, soft tissue, muscle, cartilage, and bone. One of its most common ocular manifestations is enophthalmos, which complicates lower eyelid reconstruction by limiting proper apposition to the globe. While free tissue transfers can address soft tissue defects and facial asymmetry, they do not address enophthalmos or lid incompetence. Current treatments for enophthalmos, such as injectable fillers, fat grafting,and implants, carry risks of vascular occlusion, hemorrhage, strabismus, implant cysts. Standard canthal fixation techniques may fail to provide adequate support in the presence of thick scarring and enophthalmos. Furthermore, the presence of enophthalmos may add additional challenges to placing the lower canthal tendon posteriorly enough along the lateral wall. We propose the lateral tarsoconjunctival flap as a low risk solution to correct enophthalmos-related lateral lower lid ectropion, eyelid competence, and cicatricial retraction to improve eyelid competence in patients with IPHA (Parry-Romberg).

Methods: Case report/series, review of the literature. A 14-year-old patient with Parry-Romberg syndrome and a history of multiple facial reconstructive surgeries presented with worsening epiphora and lower eyelid ectropion. The patient had undergone a free tissue transfer (IMECS) at age 3, followed by several flap revisions (resuspension of the IMECS flap with contracture release and rotation advancement flap to the infraorbital region and periorbita) and upper eyelid ptosis repair and repeat ectropion repair at age 9. On examination, the patient exhibited lateral canthal dystopia, poor apposition of the lateral lower eyelid to the globe, and significant cicatricial and mechanical inferior retraction.

Results: The lateral tarsoconjunctival upper eyelid flap was performed in conjunction with lower facial flap revision. The upper lid was everted over a clamp and calipers were used to measure 2.5 mm above the lid margin on the upper lateral lid to preserve the architecture and vasculature of the upper lid margin. The tarsoconjunctival flap was sutured inferiorly into the lower eyelid tarsus, and then the lateral flap was secured inside the lateral rim periosteum similar to a tarsal strip procedure. 11 months later, the lower eyelid

(continued)

(continued)
remains in improved position, well-apposed to the lateral globe, and elevated with the lateral commissure 1.5 mm higher than the medial to establish normal aesthetic contour and facilitate tear flow.

Conclusions: In the setting of Parry-Romberg Syndrome or IPHA, orbital volume augmentation with or without management of orbital content contraction from associated fibrosis, is key. Potential treatment options for IPHA-associated enophthalmos include autologous fat grafting, dermal fillers, and implants, such as enophthalmic wedges that can pose additional risks, including vascular occlusion, retrobulbar hemorrhage, diplopia, implant cysts. In lieu of a procedure that violates the orbit in these patients, external techniques to address the lateral globe-ectropion may be considered. However, the added complexity of the IPHA disease process and multiple necessary facial reconstructive flap surgeries, along with the underlying enophthalmos, lead to a high risk of recurrence of lateral ectropion either due to cicatricial evolution, mechanical weight, or a combination of both. Many of these patients may undergo multiple lower eyelid suspension surgeries, with high recurrences and suboptimal lateral globe apposition. The lateral transconjunctival flap counters the pull of facial flap weight and scar tissue by translating the lower lid's tension upward and laterally. Its connection to the upper eyelid provides a posterior vector, allowing the lateral canthus and eyelid to sit more naturally on the globe, without the typical lateral eyelid gap. To the best of our knowledge, this is the first use of the lateral transconjunctival flap for lower eyelid multifactorial ectropion/retraction in patients with IPHA and enophthalmos. This technique is a low-risk approach to enophthalmos in patients with IPHA and similar conditions, particularly in those with prior free tissue transfer and locoregional tissue rearrangement.

Figure 1



(continued)

(continued)

References:

1. Israel JS, Chen JT, Farmer RL, Siebert JW. Challenging Traditional Thinking: Early Free Tissue Transfer for Active Hemifacial Atrophy in Children. Plast Reconstr Surg. 2020 Feb;145(2):483-492.
2. Anzeljc AJ, Saunders JA, Wojno TH. A modification to the Hughes tarsoconjunctival flap for a challenging case of recurrent lower eyelid retraction. Ophthalmic Plast Reconstr Surg. 2015 May-Jun;31(3):245-7.

This work was supported by Research to Prevent Blindness, Inc. under an unrestricted grant to the University of Wisconsin-Madison Department of Ophthalmology and Visual Sciences.

Periocular Necrotizing Fasciitis: A Case of Coinfection with Bartonella Henselae

George Villatoro[1,2], Nikhita Mummaneni[3], Katherine Williams[1,2]
[1]Ophthalmology, Cullen Eye Institute, Baylor College of Medicine, Houston, Texas, United States, [2]Ophthalmology, Texas Children's Hospital, Houston, Texas, United States, [3]Baylor College of Medicine, Houston, Texas, United States

Introduction: Periorbital necrotizing fasciitis is a rare but life-threatening soft tissue infection affecting the eyelid and surrounding orbital region. It is characterized by rapid tissue destruction, severe pain, swelling, erythema, and discoloration, often progressing to necrosis. The condition is usually caused by polymicrobial infections, including Group A Streptococcus (*Streptococcus pyogenes*) or other pathogens. Trauma, surgical wounds, or infections in the periorbital area can act as entry points. While it usually manifests unilaterally, it can present bilaterally in up to 35% of cases.[1]

Parinaud's oculoglandular syndrome is an uncommon manifestation of cat-scratch disease (CSD). It presents with unilateral conjunctivitis and regional lymphadenopathy. It typically develops when *Bartonella henselae* infects the conjunctiva, often through direct contact with contaminated cat saliva or scratches near the eye.[2,3]

While Parinaud's oculoglandular syndrome is often linked to infections such as cat-scratch disease or tularemia, it has not been associated with necrotizing soft tissue infections, including those caused by Group A Streptococcus. We describe an unusual case of bilateral necrotizing fasciitis and Parinaud's oculoglandular syndrome in a pediatric patient.

Methods: This is a case report.

Results: A 17-year-old healthy female presented with 1 day of left greater than right periorbital swelling, left jaw pain and fevers. A detailed history revealed she had a 3 cm laceration to her frontal scalp from striking her head on a wall 4 days prior and she had a new kitten who scratched her forearm 1.5 weeks prior.

Exam was notable for left greater than right periorbital edema and erythema, blistering and discoloration of the left upper eyelid, left eye mucopurulent drainage, tenderness of the left parotid gland, left submandibular lymphadenopathy, and conjunctival chemosis on the left, (Fig. 1). Her vision, intraocular pressure, pupils, motility, and dilated fundus exam were unremarkable. She was febrile and had a leukocytosis but was hemodynamically stable. Imaging demonstrated bilateral facial edema, enhancement of the left parotid gland, and no organized fluid collections (Fig. 2). Her ocular discharge was cultured, and she was started on intravenous acyclovir, vancomycin, and ampicillin/sulbactam.

(continued)

(continued)

After 24 hours of treatment, there was marginal improvement in periorbital edema. The infectious disease team ordered serologic bartonella and HSV testing and broadened coverage with doxycycline and rifampin for presumed Parinaud's oculoglandular syndrome. Two days later, HSV PCR returned negative, so acyclovir was stopped; eye discharge PCR and cultures were positive for *S. Pyogenes*. HIV testing was negative. Over the next few days, her vitals remained stable, and her periorbital edema and erythema significantly improved; however, the left upper lid was noted to have developed eschar with underlying slough (Fig. 3). Given her medical stability, debridement was deferred, and antibiotics were continued. Her *Bartonella henselae* IGG titer resulted at 1:1024 (positive > 1:256). After 6 days of admission, she was discharged on amoxicillin/clavulanate potassium for 14 days and doxycycline for 7 days.

On follow up 3 weeks later, her visual function remained at baseline. She had minimal left lower lid edema, discoloration of the left upper lid along with retraction on downgaze and no lagophthalmos (Fig. 4)

Conclusions: This is the first documented case describing periorbital necrotizing fasciitis occurring with *Bartonella henselae* coinfection in an immunocompetent host. The side affected by Parinaud's oculoglandular syndrome suffered higher morbidity from the sequela of necrotizing fasciitis, suggesting a synergistic effect between these infections. It is important to be able to recognize these disease processes to rapidly tailor appropriate treatment.

Figure 1



Figure 2

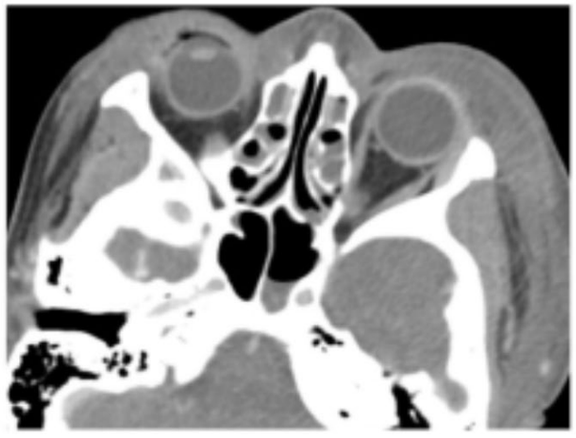
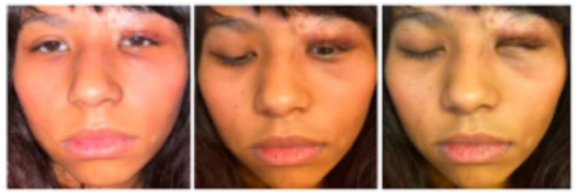


Figure 3



Figure 4



References:

1. Amrith S, Hosdurga Pai V, Ling WW. Periorbital necrotizing fasciitis – a review. *Acta Ophthalmol (Copenh)*. 2013;91(7):596-603. doi:10.1111/j.1755-3768.2012.02420.x
2. Ormerod LD, Dailey JP. Ocular manifestations of cat-scratch disease. *Curr Opin Ophthalmol*. 1999;10(3):209-216. doi:10.1097/00055735-199906000-00010
3. Johnson A. Ocular complications of cat scratch disease. *Br J Ophthalmol*. 2020;104(12):1640-1646. doi:10.1136/bjophthalmol-2019-315239

Reoperation Success Rate of Silicone Rod Frontalis Sling

Thomas Bersani[1], Isaac Kim[1], Robert Contento[2], Yannis Dimitroff[2], George Salloum[1], Bryant Carruth[1], Robert Hill[1]
[1]Department of Ophthalmology and Visual Sciences, State University of New York Upstate Medical University, Syracuse, New York, United States, [2]Norton College of Medicine, State University of New York Upstate Medical University, Syracuse, New York, United States

Introduction: Reoperation rates of silicone rod frontalis sling have been documented in the literature. However, reports of improvement and success rate of reoperation is sparse. In setting of gaining popularity of the frontalis muscle flap suspension, the authors aim to demonstrate the ease of reoperation on a silicone rod frontalis sling and report the success rate achieved.

Methods: This study was a retrospective case series conducted on 29 patients and total of 39 eyelids, who underwent a silicone rod frontalis sling and a secondary readjustment procedure of the sling by three oculoplastic surgeons in a single practice from 2007 to 2023. The etiology of ptosis, MRD1 pre and post-adjustment, time between primary suspension and readjustment procedure, and location of readjustment procedures were collected. Secondary readjustment procedures included sling tightening, placement of tarsal suture, sling tightening and tarsal suture placement, and placement of a new sling.

Results: The mean MRD1 improvement after the readjustment procedure was 1.46 mm with a mean time to readjustment of 38 months and a success rate of 89.7% (35/39 eyelids) with success defined as improvement of MRD1 by 0.5 mm or greater (Table 2). 2 eyelids did not have any improvement and 2 eyelids had worsening of their ptosis after the readjustment. 32 eyelids underwent sling tightening, 1 eyelid underwent placement of tarsal suture, 3 eyelids underwent a combination of sling tightening and placement of tarsal suture, and 3 eyelids underwent placement of a new sling (Table 3). 6 eyelids were adjusted in the office minor procedure room and 33 eyelids were adjusted in the operating room of the outpatient surgery center (Table 4).

Conclusions: This case series demonstrates the authors' experience of reoperation of silicone rod frontalis slings and reports the success rate achieved in a single practice. Most of reoperations were successful in improving lid excursion, with further sling tightening to be the most frequently performed readjustment. Several of the eyelids were able to be readjusted in the office minor procedure room under local anesthesia. This case series supports silicone rod as the optimal material of choice for a frontalis sling given its readily availability, ease, and success of readjustment. The authors believe it is important to report this data as a comparison for the gaining popularity of frontalis muscle flap suspension.

(continued)

(continued)

Figure 1

Table 1. Indication for Primary Frontalis Sling

Etiology of Ptosis	Number of Eyelids
Congenital	12
Oculopharyngeal Muscular Dystrophy	2
Blepharophimosis Ptosis Epicanthus Inversus Syndrome	3
Chronic Progressive External Ophthalmoplegia	8
Other Myopathic	12
Cranial Nerve 3 Palsy	2

Figure 2

Table 2. Improvement, Time to Readjustment, and Success Rate

Mean MRD1 Improvement	Mean time between Primary Sling and Readjustment	Success Rate
1.46 mm	37.9 months	89.7%

Figure 3

Table 3. Readjustment Procedures of Primary Sling

Type of Secondary Readjustment Procedure	Number of Eyelids
Sling tightening	32
Tarsal suture	1
Sling tightening and tarsal suture	3
New sling	3

Figure 4

Table 4. Location of Readjustment

Location of Secondary Readjustment Procedure	Number of Eyelids (proportion)
Office	6 (15.4%)
OR	33 (84.6%)

References:

1. Kim CY, Son BJ, Son J, et al. Analysis of the causes of recurrence after frontalis suspension using silicone rods for congenital ptosis. *PLoS One*. 2017;12(2):e0171769. doi:10.1371/journal.pone.0171769
2. Rizvi SAR, Gupta Y, Yousuf S. Evaluation of safety and efficacy of silicone rod in tarsofrontalis sling surgery for severe congenital ptosis. *Ophthalmic Plast Reconstr Surg*. 2014;30(1):11-14. doi:10.1097/IOP.0b013e3182a74f44
3. Lee MJ, Oh JY, Choung HK, et al. Frontalis sling operation using silicone rod compared with preserved fascia lata for congenital ptosis a three-year follow-up study. *Ophthalmology*. 2009;116(1):123-129. doi:10.1016/j.ophtha.2008.08.049
4. Ben Simon GJ, Macedo AA, Schwarcz RM, et al. Frontalis suspension for upper eyelid ptosis: evaluation of different surgical designs and suture material. *Am J Ophthalmol*. 2005;140(5):877-885. doi:10.1016/j.ajo.2005.05.031
5. Bernardini FP, de Conciliis C, Devoto MH. Frontalis suspension sling using a silicone rod in patients affected by myogenic blepharoptosis. *Orbit*. 2002;21(3):195-198. doi:10.1076/orbi.21.3.195.7171
6. Landau Prat D, Zhao CS, Ramakrishnan M, et al. Outcome of silicone sling frontalis suspension in children with simple congenital and complex ptosis. *Can J Ophthalmol*. 2024;59(4):264-269. doi:10.1016/j.jcjo.2023.06.002
7. Lelli GJ, Musch DC, Frueh BR, Nelson CC. Outcomes in silicone rod frontalis suspension surgery for high-risk noncongenital blepharoptosis. *Ophthalmic Plast Reconstr Surg*. 2009;25(5):361-365. doi:10.1097/IOP.0b013e3181b3b183
8. Bansal RK, Sharma S. Results and complications of silicone frontalis sling surgery for ptosis. *J Pediatr Ophthalmol Strabismus*. 2015;52(2):93-97. doi:10.3928/01913913-20150313-11
9. Landau Prat D, Ramakrishnan M, Zhao C, et al. Silicone sling frontalis suspension for congenital ptosis: Outcome of 174 consecutive cases. *Clin Exp Ophthalmol*. 2022;50(6):608-614. doi:10.1111/ceo.14112
10. Rosenberg JB, Andersen J, Barmettler A. Types of materials for frontalis sling surgery for congenital ptosis. *Cochrane Database Syst Rev*. 2019;4(4):CD012725. doi:10.1002/14651858.CD012725.pub2

Isolated Unilateral Congenital Agenesis of the Lacrimal Gland

Shanlee Stevens[1], Anna Marmalidou[2], Julie Shabto[1], Celestine Gregerson[1], Michael Kazim[1]
[1]Columbia University Medical Center, New York, New York, United States, [2]Tufts Medical Center, Boston, Massachusetts, United States

Introduction: Congenital absence of the lacrimal gland due to agenesis is a rare entity identified in children and young adults.[1] It can occur as an isolated condition or in association with genetic syndromes.[1,2] Few cases of isolated congenital alacrima without systemic findings have been reported in families with suggested autosomal recessive inheritance.[3–6] We present a case of isolated unilateral agenesis of the lacrimal gland in a young adult presenting with unilateral dry eye and ptosis

Methods: This is a report of a single case of isolated unilateral agenisis of lacrimal gland in a young adult female.

Results: A 25-year-old female was initially evaluated by an outside provider for right upper eyelid ptosis and several years of dry eye symptoms refractory to topical lubricants and steroids. She reported remote history of blunt trauma to the right periocular area, which she temporally associated with the ptosis. Her visual acuity was 20/20 in both eyes. The pupillary diameter in the right eye was 0.5 mm smaller than the left in both light and dark. There was no relative afferent pupillary defect. Extraocular motility was full. She had 1.5 mm of right upper eyelid ptosis. Minimally decreased corneal sensation was observed on the right. She had corneal punctate epithelial erosions in the right eye only. Fundus examination was normal. Iopidine test for Horner's syndrome was negative. Magnetic resonance imaging (MRI) of the orbits demonstrated absence of lacrimal gland on the right and normal lacrimal gland on the left (Figure 1). The patient was prescribed oxymetazoline eye drops for ptosis.

Two years later, the patient was referred to our service for continuing care. Her external examination was unchanged (Figure 2). Upon eversion of the right upper eyelid, absent lacrimal ductules were noted. A punctal plug was placed in the inferior punctum of the right eye with improvement in the patient's dry eye symptoms.

Conclusions: We report the first case of isolated unilateral agenesis of lacrimal gland diagnosed in an adult, manifesting as unilateral dry eye symptoms. Our patient's diagnosis at an older age may be attributed to the mild symptoms due to intact basal tear production from the accessory lacrimal glands.

(continued)

(continued)

We postulate that the lacrimal gland agenesis may relate to the patient's eyelid ptosis, as a genetic mutation could affect the oculomotor nerve innervating the levator palpebral superioris muscle, neuromuscular junction, or the muscle itself, although this patient did not undergo genetic testing, and the MRI demonstrated a normal levator muscle. It is also possible that prior ocular trauma led to disinsertion of the levator aponeurosis that resulted in eyelid ptosis.

Orbital imaging can identify absence of the lacrimal gland. The diagnosis of lacrimal gland agenesis in a child warrants systemic work-up given the association with a number of genetic syndromes. Management aims to achieve symptomatic relief by improving ocular surface integrity.

This case illustrates the importance of considering lacrimal gland agenesis in patients presenting with unilateral dry eye symptoms and particularly when lacrimal ductulaes cannot be identified.

Figure 1

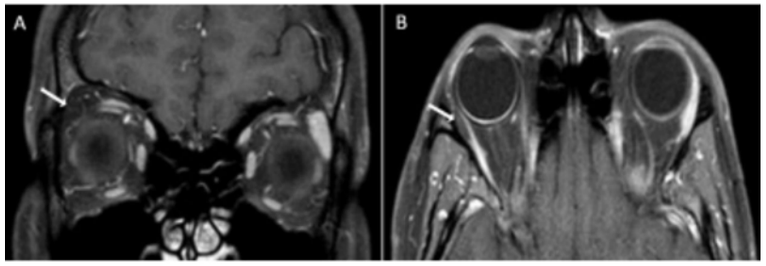


Figure 2



References:

1. 1.Willems M, Wells CF, Coubes C, Pequignot M, Kuony A, Michon F. Hypolacrimia and Alacrimia as Diagnostic Features for Genetic or Congenital Conditions. *Invest Ophthalmol Vis Sci*. 2022;63(9):3. doi:10.1167/iovs.63.9.3
2. 2.Talsania SD, Robson CD, Mantagos IS. Unilateral Congenital Lacrimal Gland Agenesis With Contralateral Lacrimal Gland Hypoplasia. *J Pediatr Ophthalmol Strabismus*. 2015;52 Online:e52-54. doi:10.3928/01913913-20151007-11
3. 3.Hegab SM, al-Mutawa SA. Congenital hereditary autosomal recessive alacrima. *Ophthalmic Genet*. 1996;17(1):35-38. doi:10.3109/13816819609057867
4. 4.Hegab SM, Sheriff SM, el-Aasar ES, Lashin EA, Phillips CI. Congenital alacrima without associated manifestations (AD). An affected father and son. *Ophthalmic Paediatr Genet*. 1991;12(4):161-163. doi:10.3109/13816819109025811
5. 5.Chebil A, Falfoul Y, Limaiem R, El Matri L. Bilateral congenital agenesis of lacrimal glands in a Tunisian family. *Tunis Med*. 2016;94(1):72-75.
6. 6.Mondino BJ, Brown SI. Hereditary congenital alacrima. *Arch Ophthalmol*. 1976;94(9):1478-1484. doi:10.1001/archopht.1976.03910040312003

Lacrimal Gland Prolapse: An Unrecognized Contributing Factor to Dry Eye Disease Through Duct Kinking

Cat Burkat[1], Bethany Erb[2], Renata Martins Maia[3]
[1]Oculoplastics, Orbital, & Cosmetic Facial Surgery, Dept of Ophthalmology & Visual Sciences, University of Wisconsin-Madison, Madison, Wisconsin, United States, [2]University of Wisconsin School of Medicine and Public Health, Madison, Wisconsin, United States, [3]Department of Ophthalmology, University of São Paulo, São Paulo, Brazil

Introduction: Lacrimal gland prolapse, characterized by the descent of the gland anterior to the superolateral orbital rim, is typically regarded as a cosmetic concern. However, its potential role in exacerbating dry eye disease through mechanical kinking of lacrimal gland ducts has been underappreciated. In this study, we investigate the impact of lacrimal gland prolapse repair via suture dacryopexy on objective and subjective metrics of dry eye disease, hypothesizing surgical repositioning may restore aqueous secretion by alleviating duct distortion. This may also support the medical necessity for functional coverage of this surgery.

Methods: A prospective study was conducted of 41 patients (54 eyelids) with concurrent lacrimal gland prolapse and dry eye disease who underwent surgical lacrimal gland repositioning between January 2018 and June 2024 at a tertiary care center. Lacrimal gland prolapse was defined as palpable gland descent anterior to the orbital rim. Data collected included demographics, baseline tear film metrics (e.g., Schirmer test, tear lake height, corneal staining), artificial tear usage, and subjective symptomatology. All patients underwent suture dacryopexy to reposition the gland into the superolateral gland fossa, either as standalone surgery or adjunctive to upper eyelid blepharoplasty or levator repair. Postoperative outcomes were assessed using the same metrics over a follow-up range of 2 weeks to 56 months.

Results: Most patients (n=32, 78%) first presented to clinic with bothersome lateral eyelid fullness. The rest (n=9, 22%) were found to have lacrimal gland prolapse during upper eyelid surgery. Mean age at time of diagnosis was 52.8 ± 14.4 (range: 28-88) with a M:F ratio of 14:27. Less than half of patients (n=14, 34.1%) had bilateral lacrimal gland prolapse. 75.6% of patients (n=31) had three or more dry eye symptoms. 95.1% of patients (n=39) reported at least daily artificial tear usage. Most prolapsed orbital glands (n=41, 75.9%) were classified as severe (> 6 mm or more) (range: 4-18 mm). 83.0% percent of patients (n=34) reported symptom improvement within one-week post-surgery, with significant increases in tear lake height (>0.2 mm) and Schirmer test results observed in 78% of cases (n=32). All patients with intraoperatively discovered prolapse (n=9, 100%) reported improvement in dry eye symptoms post-surgery. At final follow-up, 70.7% (n=29) reported complete resolution of symptoms, including cessation of artificial tear use, while 17% (n=7) experienced some degree of improvement with reduced artificial tear usage. Patients who underwent concurrent blepharoplasty or ptosis repair did not report dry eye symptom exacerbation, unexpected given typically increased post-operative ocular surface exposure.
(continued)

(continued)

Conclusions: Our findings suggest surgical repositioning of prolapsed lacrimal glands via suture dacryopexy improves dry eye disease symptoms and tear film quality by unkinking prolapsed ductules that have been bent over the lateral horn of the levator, thus facilitating restored tear flow analogous to relieving obstruction in a bent garden hose (Figure 1). Suture dacryopexy may be a medically necessary intervention that facilitates ocular surface homeostasis. Further studies are needed to validate these findings and support policy efforts to recognize lacrimal gland prolapse repair as a reimbursable medical procedure, rather than cosmetic.

Figure 1

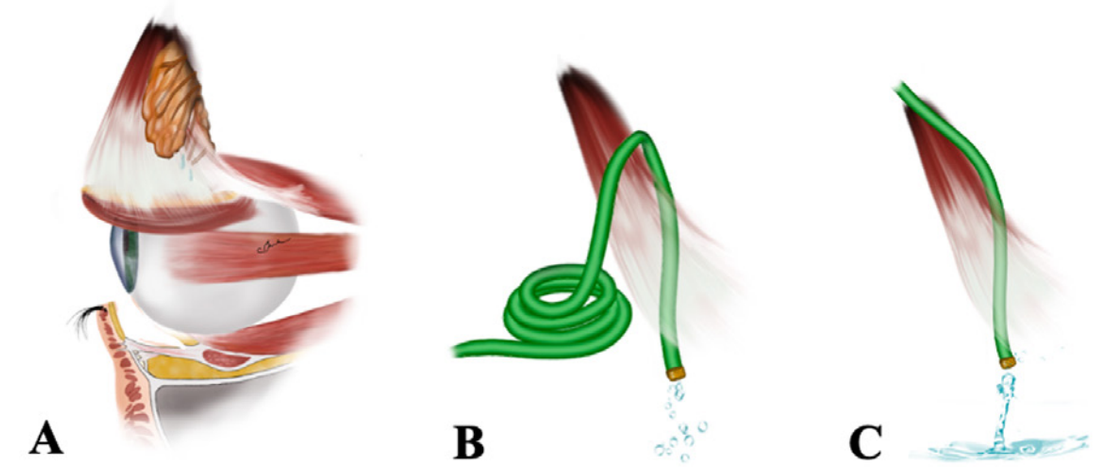


Figure 1. An artistic rendition of lacrimal gland prolapse. A. The prolapsed orbital lobe extending infero-anterior to the superolateral orbital rim (not pictured). B. The orbital gland ductules may become kinked as a result of the prolapsed orbital lobe, decreasing aqeous fluid secretion from connected palpebral ductules into the superior fornix to help form the multi-layered tear film. C. Surgical re-suspension of the orbital lobe to the superolateral periosteum during suture dacryopexy may unkink the orbital ductules, allowing aqeous tear secretion to flow unobstructed. Illustration courtesy of Cat Nguyen Burkat, MD, FACS.

Radiographic Changes of the Nasolacrimal Duct in Silent Sinus Syndrome

Lisa Y. Lin[1], Nandini Bothra[2], Michael K. Yoon[1]
[1]Ophthalmic Plastic Surgery Service, Department of Ophthalmology, Massachusetts Eye and Ear, Boston, Massachusetts, United States,
[2]Govindram Seksaria Institute of Dacryology, L.V. Prasad Eye Institute, Hyderabad, India

Introduction: Silent sinus syndrome (SSS) describes patients with chronic maxillary atelectasis with progressive inward collapse of the maxillary sinus walls and bowing of the orbital floor due to negative antral. This condition can be managed with endoscopic sinus surgery (ESS) to correct existing deformities and prevent further progression. The literature describes the radiographic changes to the sinus and orbit dimensions and volumes in SSS after ESS[1–3], but little is known regarding the anatomy of nasolacrimal duct (NLD) in these patients. The authors hypothesized that negative antral pressures in SSS could contribute to anatomic changes of the NLD, and they aimed to compare the radiographic changes on the affected and unaffected sides, as well as pre- and post-ESS.

Methods: A retrospective review of medical records between 2015 and 2023 at a single institution was performed. Patients were included if they had a CT face/orbit with radiographic findings of SSS. Patients who underwent ESS who also had a post-operative CT scan were included for secondary analysis. Those with other sinus pathology, trauma, or prior sinus surgery were excluded. The NLD, sinus, and orbit were measured in a standardized fashion. The primary outcome was defined as the measured difference on the affected side compared to the unaffected side. The secondary outcome was defined as the measured difference on the affected side pre- and post-ESS. A paired-t test was used, with a p value of <0.05 deemed to be statistically significant.

Results: The study included 20 patients (11 female, 9 male) with radiographic findings of SSS (11 right-sided, 9 left-sided). The average age of presentation was 43.4 years (range, 19.2 to 67.6, SD 16.4), and all patients were white. A subset of 12 patients (7 female, 5 male, mean age 50.7 years) were included for post-surgical analysis (mean time to post-ESS CT was 1.12 years, range 0.22 to 3.47, SD 1.00). The mean differences from the unaffected side to the affected side are presented in Table 1. The distal NLD (lateral) was found to be 0.44mm larger on the affected side ($p=0.01$), but all other NLD measurements were not significant. The maxillary sinus width and height, and orbit height were found to be statistically smaller on the affected side ($p<0.001$). The mean differences from the post- to pre-ESS affected side are presented in Table 2. There were no differences found in the NLD, sinus, or orbit measurements after ESS.

(continued)

(continued)

Conclusions: Overall, the NLD did not show major anatomic distortions in SSS patients. The only significant difference was the lateral dimension of the distal opening of the NLD was 0.44mm larger on the affected side. This could be due to bowing of the inferior turbinate. However, the remainder of the NLD did not appear to change, nor were there any impacts on the NLD dimensions after ESS. The study did reveal a difference in orbit height, sinus height, and sinus width compared to the unaffected side, as is expected in SSS, but no significant difference after ESS. Future directions could consider 3-D volumetric analysis of the NLD.

Figure 1

Comparison of the Affected and Unaffected Side in SSS			
Location	**Mean Difference (Unaffected minus Affected)**	**P value**	**95% Confidence Interval**
NLD: Sac-NLD Junction (AP)	0.02	0.91	-0.45 to 0.41
NLD: Sac-NLD Junction (Lateral)	0.29	0.16	-0.72 to 0.13
NLD: mid (AP)	0.03	0.87	-0.44 to 0.38
NLD: mid (AP)	0.08	0.56	-0.35 to 0.20
NLD: distal (AP)	0.16	0.68	-0.95 to 0.64
NLD: distal (lateral)	-0.44	**0.01**	0.11 to 0.78
Maxillary Sinus (width)	7.59	**<0.001**	-9.70 to -5.48
Maxillary Sinus (height)	7.50	**<0.001**	-9.70 to -5.29
Orbit (width)	1.13	0.22	-2.96 to 0.71
Orbit (height)	4.20	**<0.001**	3.20 to 5.19

Figure 2

Comparison of the Affected Side Pre- and Post- Endoscopic Sinus Surgery in SSS			
Location	**Mean Difference (Post minus Pre)**	**P value**	**95% Confidence Interval**
NLD: Sac-NLD Junction (AP)	0.31	0.15	-0.76 to 0.13
NLD: Sac-NLD Junction (Lateral)	0.05	0.81	-0.49 to 0.39
NLD: mid (AP)	-0.05	0.87	-0.59 to 0.68
NLD: mid (AP)	-0.04	0.83	-0.37 to 0.45
NLD: distal (AP)	0.07	0.85	-0.82 to 0.69
NLD: distal (lateral)	-0.31	0.19	-0.17 to 0.79
Inter-sinus Distance	0.33	0.40	-1.17 to 0.05
Maxillary Sinus (width)	-0.80	0.13	-0.28 to 1.88
Maxillary Sinus (height)	-0.09	0.89	-1.38 to 1.56
Orbit (width)	0.04	0.90	-0.76 to 0.68
Orbit (height)	-0.58	0.17	-0.30 to 1.46

References:

1. Lin GC, Sedaghat AR, Bleier BS, et al. Volumetric analysis of chronic maxillary atelectasis. Am J Rhinol Allergy 2015;29(3):166–9.
2. Hernaiz-Leonardo JC, Alqunaee M, Moghimi S, et al. Maxillary sinus volume changes after functional endoscopic sinus surgery in patients with chronic maxillary atelectasis and silent sinus syndrome. Int Forum Allergy Rhinol 2022;12(9):1212–5.
3. Amin D, Chitguppi C, Xu V, et al. Volumetric Analysis of the Sinus and Orbit in Silent Sinus Syndrome After Endoscopic Sinus Surgery. Otolaryngology–Head and Neck Surgery 2023;169(1):151–6.

Mitigating Perioperative Neuropsychiatric Complications and Sedation-Associated Disinhibition in Veterans: A Toolkit for Applying Trauma-Informed Care and Evidence-Based Practices to Oculofacial Surgery

Chad Lewis[1], Mitchell Dotson[2], Eva Schoen[3], Olivia DiGioia[4], Rupin Parikh[1], Chau Pham[1], Keith Carter[1], Erin Shriver[1]

[1]Dept. of Ophthalmology and Visual Sciences, University of Iowa, Iowa City, Iowa, United States, [2]Dept. of Anesthesia, Iowa City Veterans Affairs Medical Center, Iowa City, Iowa, United States, [3]Dept. of Psychiatry, University of Iowa, Iowa City, Iowa, United States, [4]Carver College of Medicine, University of Iowa, Iowa City, Iowa, United States

Introduction: Perioperative neuropsychiatric complications (PNC) such as post-operative delirium, emergence delirium, and emergence agitation have generally been described as acute confusion and agitation upon discontinuation of anesthetic or sedative medications.[1,2] Patients with history of psychological trauma such as veterans can often be challenging as they have higher prevalence of PTSD, which significantly increases the risk and severity of these occurrences.[3,4] Based on our experiences performing oculofacial surgery while using conscious sedation on veterans, similar clinical challenges have been observed intraoperatively during episodes of what we have coined "sedation-associated disinhibition" (SAD) as patients' sedation waxes and wanes. Examples of dangerous disinhibited behavior include excessive movement, incessant or inappropriate speech during surgery, or combative behavior.

Using a combination of multidisciplinary best practices and a trauma-informed approach, we are modeling our oculofacial care after "Project Golden Eagle," a novel intervention to prevent emergence delirium developed at the Pittsburgh VA Medical Center.[4] We aim to improve prevention and management of SAD and other PNC while highlighting the concept that challenges with perioperative patient behavior may be significantly influenced by their trauma history. While this project was initially developed due to intraoperative complications, the core principles should apply to many other clinical situations involving this uniquely vulnerable population.

Methods: We are developing an interprofessional toolkit for anesthesia providers, surgeons, nurses, and other perioperative staff. The toolkit consists of three main principles: (1) Understanding the impact of past psychological trauma on perioperative outcomes, (2) recognizing and assessing risk for perioperative neuropsychiatric complications and the identification of patients with a trauma history, (3) implementing evidence-based interventions for SAD/PNC prevention and management including preoperative screening and psychological preparation (tailored avoidance of triggering stimuli, etc.), evidence-based anesthesia techniques (such as the avoidance of volatile anesthetics and increased use of dexmedetomidine), and employment of trauma-informed care principles throughout the perioperative process.

(continued)

(continued)

Results: In addition to the development of the toolkit, pre- and post-intervention surveys are being created to measure improvement in participants' knowledge of the link between trauma and SAD/PNC and confidence in implementing these evidence-based interventions. We will use tools such as the Riker Sedation-Agitation Scale to measure SAD/PNC incidence and severity in our patients to allow for the possibility of retrospectively measuring the efficacy of our intervention in the future.[5]

Conclusions: This program uses a multifaceted approach, including preoperative psychological screening and intervention, intraoperative anesthetic modifications, and postoperative pain and anxiety management protocols to mitigate SAD and other perioperative neuropsychiatric complications in veterans undergoing oculofacial surgery. We aim to provide tools to the oculofacial surgeon that can improve both patient and provider experiences from a trauma-informed perspective. Ultimately, the lessons learned, and processes developed for veterans through this program may also help better care for patients with other forms of trauma such as sexual or intimate partner violence.

References:

1. McLott J, Jurecic J, Hemphill L, Dunn KS. Development of an Amygdalocentric Neurocircuitry-Reactive Aggression Theoretical Model of Emergence Delirium in Posttraumatic Stress Disorder: An Integrative Literature Review.
2. Tolly B, Waly A, Peterson G, Erbes CR, Prielipp RC, Apostolidou I. Adult Emergence Agitation: A Veteran-Focused Narrative Review. Anesth Analg. 2021;132(2):353-364. doi:10.1213/ANE.0000000000005211
3. Tolly B, Erbes CR, Apostolidou I. Posttraumatic stress disorder and anesthesia: Respect for the military veteran's mind. J Clin Anesth. 2021;71:110242. doi:10.1016/j.jclinane.2021.110242
4. Taylor M, Pileggi W, Boland M, Boudreaux-Kelly M, Julian D, Beckstead A. A Perioperative Intervention to Prevent and Treat Emergence Delirium at a Veterans Affairs Medical Center. Patient Saf. Published online December 16, 2022:26-35. doi:10.33940/med/2022.12.3
5. Riker RR, Picard JT, Fraser GL. Prospective evaluation of the Sedation-Agitation Scale for adult critically ill patients: Crit Care Med. 1999;27(7):1325-1329. doi:10.1097/00003246-199907000-00022

Acute Vision Loss in Natural Killer/T-Cell Lymphoma With Orbital Involvement

Sudarshan Srivatsan[1], George Sanchez[1], Angela Oh[2], Katherine Lucarelli[2], Daniel Rootman[2], Robert Goldberg[2], H. Joon Kim[1], Robert Kersten[1]
[1]Ophthalmology, John Moran Eye Center, University of Utah, Salt Lake City, Utah, United States, [2]Ophthalmology, Jules Stein Eye Institute, UCLA, Los Angeles, California, United States

Introduction: Extranodal Nasal-Type Natural Killer/T-Cell lymphoma (ENKTL) represents less than 1% of all lymphoma cases involving the ocular adnexa and typically presents as an extension of the paranasal sinuses. Invasion into the orbit is uncommon but can lead to ocular and orbital inflammation, resulting in ophthalmoplegia and vision changes.[1,2]

Methods: We present a case series of two young male patients with orbital involvement of ENKTL complicated by ophthalmic artery occlusion resulting in no light perception (NLP) vision.

Results: A 35-year-old Chinese male (Patient #1) presented with progressive sinusitis, right eyelid swelling, double vision, and proptosis. Best corrected visual acuity was 20/25 in the right eye and 20/20 in the left eye. The patient had a normal pupillary examination, symmetric color vision, and normal intraocular pressures. Ocular motility was limited in all directions of gaze in the affected eye with asymmetric proptosis. Dilated fundus examination was normal. A 41-year-old Spanish male (Patient #2) presented similarly with progressive sinusitis, right eyelid swelling, double vision, and proptosis. Best corrected visual acuity was 20/20-1 in the right eye and 20/20 in the left eye. He had a normal pupillary examination, symmetric color vision, and normal intraocular pressures. Right ocular motility was limited in all directions of gaze with asymmetric proptosis. Similarly to patient #1, dilated fundus examination was normal. Initial nasal biopsies were performed for both patients with nonspecific results. Subsequent biopsies demonstrated CD56 positive, Epstein–Barr virus positive ENKTL.

Prior to initiation of chemotherapy, both patients experienced sudden, unilateral painless vision loss to NLP. Both patients demonstrated disc edema, vessel tortuosity, and macular whitening, consistent with ophthalmic artery occlusion (Figure 1). On repeat orbital imaging, both patients had interval progression of the tumor with globe tenting and stretching of the optic nerve. Optical coherence tomography in patient #2 showed poor differentiation of the inner retinal layers (Figure 2). Time to ischemic event and vision loss from initial presentation was approximately 10 days for patient #1 and 25 days for patient #2.

(continued)

(continued)

Inpatient chemotherapy was initiated 15 days after initial presentation in patient #1 with surgical debulking deferred. After chemotherapy, patient #1 showed significant improvement in ocular motility, proptosis, and eyelid swelling, but vision remained NLP. Patient #2 underwent exenteration due to right orbital/periocular necrosis and inpatient chemotherapy was initiated 86 days after initial presentation.

Conclusions: Ophthalmic artery occlusion is a devastating complication of ENKTL in the orbit and can lead to sudden and permanent vision loss.[3] These cases illustrate the rapidity of tumor progression and potential visual complications from optic nerve involvement. Early diagnosis with initiation of chemotherapy and close monitoring for optic neuropathy for ENKTL patients with orbital involvement are essential.

Figure 1

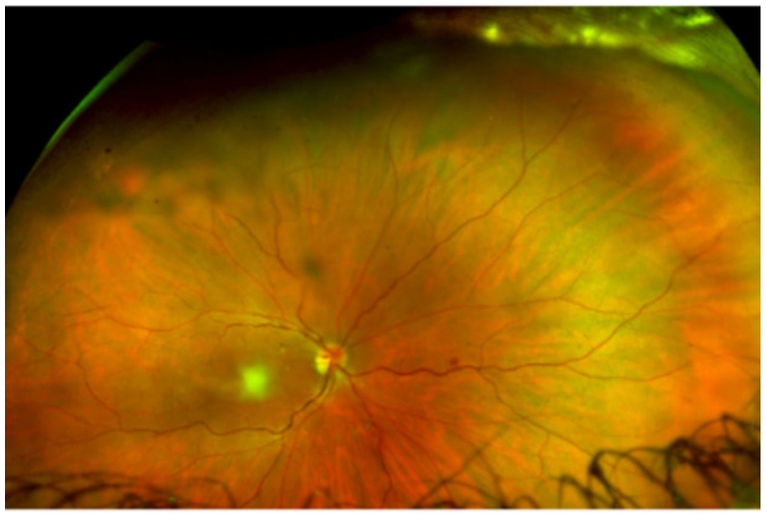
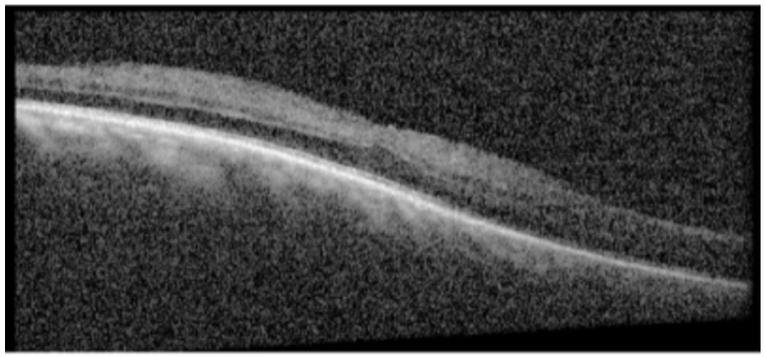


Figure 2



References:

1. Wolkow N, Jakobiec FA, Habib LA, Freitag SK. Orbital Nasal-Type Extranodal Natural Killer/T-Cell Lymphoma: An Ongoing Diagnostic Challenge Further Confounded by Small-Cell Predominance. Ophthalmic Plast Reconstr Surg. 2019 Sep/Oct;35(5):478-483. doi: 10.1097/IOP.0000000000001333. PMID: 30865070.
2. Ferry JA, Fung CY, Zukerberg L, Lucarelli MJ, Hasserjian RP, Preffer FI, Harris NL. Lymphoma of the ocular adnexa: A study of 353 cases. Am J Surg Pathol. 2007 Feb;31(2):170-84. doi: 10.1097/01.pas.0000213350.49767.46. PMID: 17255761.
3. Garg A, Margolin E, Micieli JA. No Light Perception Vision in Neuro-Ophthalmology Practice. J Neuroophthalmol. 2022 Mar 1;42(1):e225-e229. doi: 10.1097/WNO.0000000000001340. Epub 2021 Jul 27. PMID: 34334760.

Extranodal Marginal Zone Lymphoma with Simultaneous Extensive Choroidal and Orbital Involvement

Marissa K. Shoji[1], Alison X. Chan[2], Nahia Dib El Jalbout[1], Rolika Bansal[1], Nathan Scott[3], Catherine Liu[1], Don Kikkawa[1], Bobby Korn[1]
[1]Oculofacial Plastic and Orbital Surgery, Shiley Eye Institute, San Diego, California, United States, [2]Ophthalmology, Shiley Eye Institute, San Diego, California, United States, [3]Ocular Oncology and Vitreoretinal Surgery, Shiley Eye Institute, San Diego, California, United States

Introduction: Orbital lymphoma is the most common orbital neoplasm in older patients, but simultaneous choroidal involvement is extremely rare. This report highlights a patient who presented with an orbital mass with extensive choroidal infiltration and optic nerve involvement diagnosed as extranodal marginal zone lymphoma. A literature review of cases of simultaneous orbital and choroidal lymphoma is included.

Methods: Case report and PubMed literature review from January 1980– December 2024 with keywords: “lymphoma”, “orbit”, and “choroid”. Publications written in English with biopsy-proven lymphoma with simultaneous orbital and choroidal involvement were included.

Results: A 66-year-old man with prior diagnosis of pars planitis OS and presumed multiple sclerosis presented with two years of headaches and blurry vision in the left eye. He reported unintended weight loss and decreased appetite, but denied recent fevers, night sweats, or history of malignancy. Exam revealed exudative retinal detachment and retinal pigmentary changes OS without vitritis or optic nerve abnormalities (Figure 1). OCT demonstrated subretinal fluid, choroidal folds, and diffuse choroid infiltration OS (Figure 2A); this was confirmed on B-scan ultrasound, which additionally demonstrated a hypoechoic extrascleral lesion OS (Figure 2B). The right eye was normal. Neuroimaging showed circumferential thickening and enhancement within the left globe, with a retro-orbital and intraconal enhancing soft tissue mass encasing the left optic nerve, measuring approximately 1.5 x 1.5 x 1.9 cm with nodular extension along the optic nerve and wispy enhancement extending to the orbital apex and extraconal space laterally (Figure 3).

The patient underwent anterior orbitotomy via a superomedial lid crease approach. Irregular, firm tissue adherent to the globe and adjacent to the optic nerve was carefully biopsied (Figure 4A). Histopathology demonstrated small mature CD+, CD43+ lymphocytes with monocytoid morphology and low Ki-67 consistent with extranodal marginal zone lymphoma (Figure 4B). Initial systemic imaging was only notable for borderline mediastinal lymph nodes but otherwise negative. He is undergoing systemic workup including positron emission tomography scan and bone marrow biopsy.

(continued)

(continued)

A review of 76 articles identified 18 eligible studies (31 patients, mean age 56.8 years, 74.2% male, Table 1). Most cases involved unilateral disease with symptoms of vision loss (n=12), inflammation (n=5), or proptosis (n=4). Choroidal findings included thickening/infiltration (n=26), folds (n=4), nevus (n=1), yellow-lesions (n=1), or effusion (n=1). Most patients (n=22) had discrete orbital lesions although 8 had microscopic orbital disease identified on enucleation histopathology (NS 2 patients). Treatment varied by disease extent but included systemic chemotherapy, radiation, and intravitreal chemotherapy.

The patient underwent anterior orbitotomy via a superomedial lid crease approach. Irregular, firm tissue adherent to the globe and adjacent to the optic nerve was carefully biopsied (Figure 4A). Histopathology demonstrated small mature CD+, CD43+ lymphocytes with monocytoid morphology and low Ki-67 consistent with extranodal marginal zone lymphoma (Figure 4B). Initial systemic imaging was only notable for borderline mediastinal lymph nodes but otherwise negative. He is undergoing systemic workup including positron emission tomography scan and bone marrow biopsy.

A review of 76 articles identified 18 eligible studies (31 patients, mean age 56.8 years, 74.2% male, Table 1). Most cases involved unilateral disease with symptoms of vision loss (n=12), inflammation (n=5), or proptosis (n=4). Choroidal findings included thickening (n=26), folds (n=4), nevus (n=1), yellow-lesions (n=1), or effusion (n=1). Most patients (n=22) had discrete orbital lesions although 8 had microscopic orbital disease identified on enucleation histopathology (NS 2 patients). Treatment varied by disease extent but included systemic chemotherapy, radiation, and intravitreal chemotherapy.

Conclusions: Lymphoma with simultaneous choroidal and orbital involvement is extremely rare, with orbital lymphomas uncommonly causing choroidal pathology. Orbital surgeons may facilitate diagnosis through orbital biopsy, which may be associated with fewer intraocular complications than choroidal biopsy. Multidisciplinary collaboration with orbital surgeons, ocular oncologists, and hematologist-oncologists is crucial for optimizing outcomes.

(continued)

(continued)

Figure 1

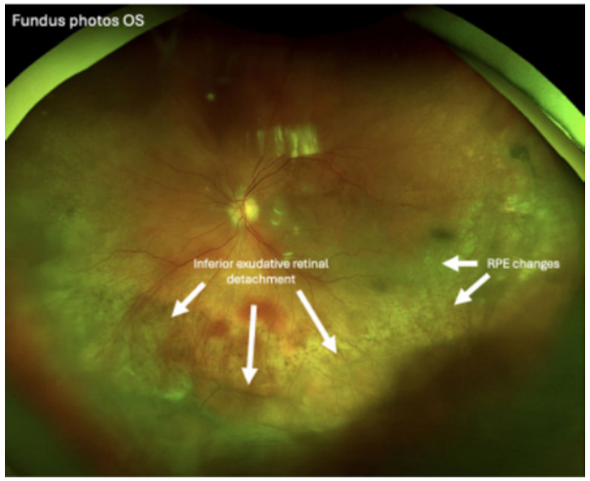


Figure 2

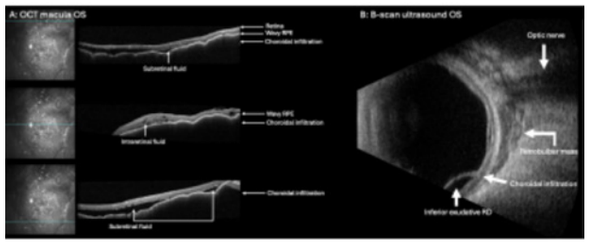


Figure 3

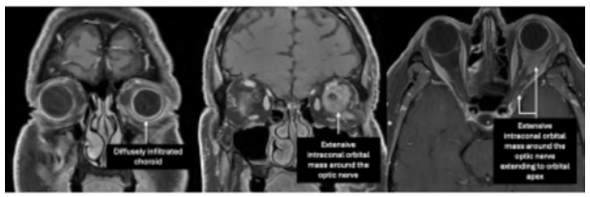


Figure 4

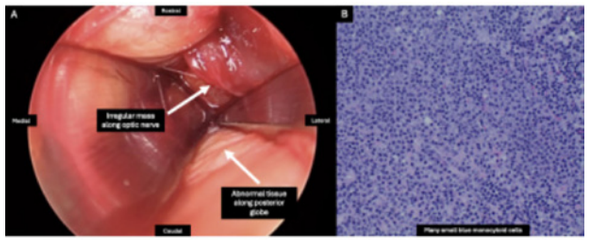


Table 1. Literature review of cases of lymphoma with simultaneous choroidal and orbital involvement

References	Age	Sex	Laterality	Symptoms	Orbital involvement	Choroidal involvement	Other structures involved	Systemic involvement	Diagnostic method	Type of lymphoma	Treatment	Duration of follow-up (months)	Visual Outcomes	Survival Outcomes
Wang et al. 2022	57	F	Left	Red eyes, vision loss	Irregular soft tissue around the eyeball and the optic nerve	Choroidal thickening, local exudative retinal detachment, wavy RPE	Conjunctiva	None	Conjunctival biopsy	MALT	Intravitreal methotrexate	3	No improvement	Alive with disease
Wang et al. 2022	58	M	Right	Red eyes, vision loss	Irregular hypoechoic orbital lesions with abundant blood flow	Choroidal thickening, exudative retinal detachment, wavy RPE	Ciliary body	None	Conjunctival biopsy	MALT	Intravitreal methotrexate	3	No improvement	Alive with disease
Wang et al. 2022	54	F	Right	Red eyes, vision loss	Retrobulbar lesion involving the optic disc and surrounding the intraorbital segment of the optic nerve	Choroidal thickening, exudative retinal detachment, wavy RPE	None	None	Conjunctival biopsy	MALT	Intravitreal methotrexate	3	No improvement	Alive with disease
Williams et al. 2022	80s	M	Right	None, regular follow-up for choroidal nevus	Superotemporal homogeneously enhancing lesion measuring 2.5 × 3.3 × 1.9 cm, displacing the superior and lateral rectus muscles	Choroidal nevus	None	Yes	Orbital biopsy	Mantle cell	None	NS	NS	Alive with disease
Zhao et al. 2019	64	M	Bilateral	Shortness of breath, proptosis, chorioretinal folds, intraretinal hemorrhages in the right eye	Bilateral extraconal orbital hyperdensities with mass effect, measuring 4.9 x 2.1 cm on the right and 3.2 x 1.3 cm on the left	Bilateral choroidal folds	None	Yes - lymph node, pleural space	Supraclavicular lymph node biopsy	Mantle cell	R-CHOP	NS	Improvement in vision	Alive with disease
Gao et al. 2015	38	M	Right	Vision loss	Two lobulated soft tissue masses were seen around the optic nerve	Choroidal thickening, inferior exudative retinal detachment, RPE changes	None	None	Examination of enucleated eye	EZML/MALT	Intravitreal triamcinolone, experimental intravitreal ranibizumab, enucleation	NS	No light perception vision, enucleated	NS
Ochiuri et al. 2015	44	M	Right	Uveitis	Retrobulbar mass surrounding optic nerve	Choroidal thickening, exudative retinal detachment	None	None	Orbital biopsy	MALT	R-CHOP	18	Decreased VA due to retinal degeneration and cataracts	Alive without disease
Tuncer et al. 2015	39	M	Left	NS	No specifics	No specifics	Conjunctiva	None	Incisional biopsy, location NS	MALT	Rituximab	20	NS	Alive without disease
Aronow et al. 2014	58	M	Left	Orbital congestion	Small mass near the optic nerve	Yellow white choroidal infiltrates	NS	NS	Orbital biopsy	EZML/MALT	NS	NS	NS	NS
Aronow et al. 2014	59	F	Left	Vision loss	Discrete extrascleral extension adjacent to the optic nerve in the temporal quadrant	Choroidal thickening, exudative retinal detachment, irregular RPE	None	NS	NS	NS	Radiation	3	Resolution of choroidal infiltration, almost total resolution of orbital component, normalization of foveal architecture	Alive with disease
Aronow et al. 2014	68	M	Right	Conjunctival lesions, high intraocular pressure	Orbital involvement on ultrasound	Choroidal thickening	Conjunctiva	NS	Conjunctival biopsy	NS	Rituximab	12	Continued conjunctival, choroidal, and orbital disease	Alive with disease
Respond-Kubiak et al. 2013	71	M	Left	Vision loss	Two retrobulbar lesions around the optic nerve (6.6x4.4mm and 5.8x3.3mm)	Choroidal thickening, exudative retinal detachment	Conjunctiva	None	Conjunctival biopsy	B-cell lymphoma	CHOP then chlorambucil	12	Improved vision with resolution of choroidal mass, regression of retrobulbar lesions	Alive with disease
Baryla et al. 2012	62	M	Left	Distorted vision	Lobulated, elongated soft tissue mass encasing the optic nerve	Choroidal thickening, exudative retinal detachment, RPE changes	Conjunctiva	None	Conjunctival biopsy	EZML/MALT	Radiation	6	Improvement in lesion size	Alive with disease
Hammoudi et al. 2010	71	M	Right	Proptosis, recurrent choroidal effusion, periorbital edema	3.5 x 2 cm intraconal mass extending from the posterior aspect of the right globe to the orbital apex and obscuring the optic nerve	Choroidal effusion	None	Yes: bone marrow, spleen, subcutaneous nodules in abdomen and chest	Orbital biopsy	EZML/MALT	R-CHOP + radiation	NS	Resolution of optic disc swelling and choroidal effusion, improved vision	Alive without disease
Panda et al. 2010	53	F	Right	Vision loss, uveitis	Orbital soft tissue thickening with enhancement of the intraorbital optic nerve	Choroidal thickening, exudative retinal detachment	None	None	Orbital biopsy	MALT	Rituximab + radiation	NS	Resolution of intraocular inflammation and subretinal fluid	Alive with disease
Yoshikawa et al. 2006	64	M	Right	Right eyelid swelling, proptosis	Multiple tumorous lesions in both orbits	Choroidal folds	None	None	Orbital biopsy	Adult T-cell leukemia/lymphoma	CHOP	12	Resolution of orbital tumor and regression of proptosis	Alive without disease
Sarraf et al. 2005	55	M	Left	Vision loss	Bilateral diffusely infiltrating, contiguous intraocular and extraocular lesion extending around the globe and optic nerve	Choroidal effusion	Conjunctiva	None	Conjunctival biopsy	MALT	Radiation	NS	Improved conjunctival lesions bilaterally, resolved uveal effusion and subretinal fluid in left eye, improved choroidal infiltrates in right eye	Alive with disease
Neudorfer et al. 2004	68	M	Right	Vision loss	Mass-like lesion measuring 7x11 mm behind and attached to the posterior part of the globe	Choroidal thickening	None	None	Orbital biopsy	Small lymphocytic B-cell lymphoma	None	NS	NS	NS
Neudorfer et al. 2004	42	F	Left	Vision loss, metamorphopsia	Periocular mass adjacent to the optic nerve	Choroidal thickening	None	None	Orbital biopsy	low grade lymphoma inflammatory cells - but technically challenging, presumed lymphoma	None	NS	NS	NS
Neudorfer et al. 2004	69	M	Right	Asymptomatic	Periocular mass adjacent to the sclera behind the intraocular mass	Choroidal thickening	None	Yes - prior lymphoma	Orbital biopsy		Radiation	NS	Decrease in size of intraocular and extraocular tumors	Alive with disease
Mori et al. 2003	43	F	Bilateral	Vision loss, proptosis	Orbital masses extending to the orbits and the nasal cavities, right parapharyngeal space, and both parotid spaces	Choroidal thickening	None	Yes - extremities and axillary	Axillary tumor biopsy	Pleomorphic type adult-type lymphoma	Chemotherapy: etoposide, vindesine, carboplatin	1.5	Visual acuity improved in right eye, stable in left eye, decreased orbital lesion	Alive with disease
Cockerham et al. 2000	40	F	NS	NS	Microscopic orbital involvement	Diffuse lymphocytic infiltration of the ciliary body and choroid	Ciliary body	None	Enucleation	Well-differentiated small cell lymphoma	Enucleation + radiation	300	NS	NS
Cockerham et al. 2000	40	M	NS	NS	Microscopic orbital involvement	Diffuse lymphocytic infiltration of the ciliary body and choroid	Ciliary body	None	Enucleation	Well-differentiated small cell lymphoma	Enucleation + radiation	216	NS	NS
Cockerham et al. 2000	45	M	NS	NS	Microscopic orbital involvement	Diffuse lymphocytic infiltration of the ciliary body and choroid	Ciliary body	None	Enucleation	Well-differentiated small cell lymphoma	Enucleation + radiation	120	NS	NS
Cockerham et al. 2000	64	M	NS	NS	Microscopic orbital involvement	Diffuse lymphocytic infiltration of the ciliary body and choroid	Ciliary body	None	Enucleation	Well-differentiated small cell lymphoma	Enucleation	84	NS	NS
Cockerham et al. 2000	33	M	NS	NS	Microscopic orbital involvement	Diffuse lymphocytic infiltration of the ciliary body and choroid	Ciliary body	None	Enucleation	Well-differentiated small cell lymphoma	Enucleation	108	NS	NS
Cockerham et al. 2000	63	M	NS	NS	Microscopic orbital involvement	Diffuse lymphocytic infiltration of the ciliary body and choroid	Ciliary body	None	Enucleation	Well-differentiated small cell lymphoma	Enucleation	84	NS	NS
Cockerham et al. 2000	59	F	NS	NS	Microscopic orbital involvement	Diffuse lymphocytic infiltration of the ciliary body and choroid	Ciliary body	None	Enucleation	Well-differentiated small cell lymphoma	Enucleation	60	NS	NS
Cockerham et al. 2000	73	M	NS	NS	Microscopic orbital involvement	Diffuse lymphocytic infiltration of the ciliary body and choroid	Ciliary body	None	Enucleation	Well-differentiated small cell lymphoma	Enucleation	NS	NS	NS
Holz et al. 1999	53	M	Right	NS	Small tumor adjacent to the sclera and optic nerve	Choroidal folds, exudative retinal detachment	None	None	Orbital biopsy	Low-grade B-cell non-Hodgkin's lymphoma	Steroids + radiation	0.5	Resolution of uveal thickening	Alive without disease
Mutrkin et al. 1994	71	M	Left	Pain, vision loss	Intraconal mass molding to the posterior sclera, extending to the apex of the orbit with cavernous sinus extension	Focal microscopic neoplastic infiltration	None	None	Orbital biopsy	Large cell lymphoma	Enucleation + radiation	21	Enucleated, residual orbital tumor	Deceased

References:

1. Wang et al. *BMC ophthalmology*. 2022
2. Aronow et al. *Ophthalmology*, 2014.

Utilization of a Sterile Button for Reconstruction of the Medial Canthal Depression

Ivan Vrcek[1], Ashtyn Vogt[2]
[1]Ivan Vrcek MD PA, Dallas, Texas, United States, [2]Ophthalmology, Dean McGee Eye Institute, Oklahoma City, Oklahoma, United States

Introduction: Defects following skin cancer excision in the inner canthus pose a unique aesthetic and functional challenge, namely, recreating the three-dimensional depression in this location. Many different techniques have been described in the literature to achieve functional aesthetic outcomes in this area.[1] The majority of the techniques described involve forehead and cheek rotation flaps or full-thickness skin grafts.[2-4] However, these have their own shortcomings and do not always provide adequate recreation of the contour and functionality of the medial canthal depression.[5] One previously undescribed option is the use of a sterile button. A button provides an optimal bolster material, because of its pre-existing holes, and the variety of shapes allows for customization. We find this to be superior to using traditional bolsters because of the ease of use and shape. This is particularly useful in situations where a skin graft is used to prevent shallowing of the medial canthus.

Methods: We describe a case series of five patients in which a sterile button was used to help to recreate the medial canthal depression. All surgeries were performed by a single surgeon. Each patient gave permission for their health data to be used in this project and has been sufficiently deidentified. Informed consent was obtained from each patient before each surgical procedure. Patients were excluded if they had less than 6 months of follow up data. External photographs were obtained pre-operation and at post-operative month three. Patient satisfaction scores were obtained through a standardized questionnaire rating their post-operative results as very dissatisfied, somewhat dissatisfied, somewhat satisfied, and very satisfied.

Results: All five patients
responded to the standardized questionnaire stating they were very satisfied with their post-operative outcomes.

Conclusions: We conclude that use of a sterile button for reconstruction of the medial canthal depression is a viable option for addressing the aesthetic and functional nature of the medial canthal region. Surgeons specializing in periocular reconstructive techniques should be aware of the feasibility of button placement as to provide their patients with a surgical option that addresses both the aesthetic and functional nature of the medial canthal depression.

(continued)

(continued)

Figure 1



References:

1. Yang WJ, Hu Y, Peng JZ, Luo XY. Reconstruction of a Complex Medial Canthal Defect. Dermatol Surg. Published online November 6, 2024. doi:10.1097/DSS.0000000000004491
2. Bhandari PS. Reconstruction of Medial Canthal Defects by Local/Loco-Regional Flaps. J Craniofac Surg. 2022;33(3):e287-e290. doi:10.1097/SCS.0000000000008146
3. Ogino A, Onishi K, Okada E, Nakamichi M. Medial canthal reconstruction with multiple local flaps. JPRAS Open. 2017;15:4-9. Published 2017 Sep 29. doi:10.1016/j.jpra.2017.08.007
4. de Jongh FW, Pouwels S, Weenen C, van den Bosch WA, Paridaens D. Medial Canthal Reconstruction of Skin Defects With Full-Thickness Skin Grafts. Dermatol Surg. 2021;47(8):1135-1137. doi:10.1097/DSS.0000000000002973
5. Lee MH, Kim HS, Bae YC. Comparison of local flaps versus skin grafts as reconstruction methods for defects in the medial canthal region. Arch Craniofac Surg. 2024;25(3):133-140. doi:10.7181/acfs.2024.00220

Characteristics and Complications of Patients with Periorbital Necrotizing Fasciitis Using a National Inpatient Database

Janice Hernandez[1], Sinan Akosman[2], Elizabeth Dugan[3], Peter Timoney[1]
[1]Department of Ophthalmology, University of Kentucky, Lexington, Kentucky, United States, [2]School of Medicine, George Washington University, Washington, District of Columbia, United States, [3]Department of Ophthalmology, University of Louisville, Louisville, Kentucky, United States

Introduction: Periorbital necrotizing fasciitis is an uncommon but life-threatening condition typically involving treatment by oculofacial plastic and reconstructive surgeons. Existing literature on this topic includes case reports and low-powered retrospective reviews. This is the first study utilizing a national inpatient database sample to explore the characteristics and complications of patients with periorbital necrotizing fasciitis.

Methods: A retrospective cross-sectional study of adult patients (aged >18 years) admitted to United States (US) hospitals with a primary diagnosis of necrotizing fasciitis localized to the periorbital region was conducted using data from the National Inpatient Sample (NIS) from 2016-2021. The NIS is the largest publicly available all-payer inpatient healthcare database designed to produce U.S. regional and national estimates of inpatient utilization, access, cost, quality, and outcomes. Individual-level characteristics including sociodemographics, mortality, and medical comorbidities were identified.

Results: The study included a weighted estimate of 250 patients admitted for periorbital necrotizing fasciitis over the six-year period. The average age of patients admitted with periorbital necrotizing fasciitis was 49 years. Inpatient length of stay for this diagnosis averaged approximately 15 days with $242,005 in charges per admission. 41% of patients were from a southern region of the US. The mortality rate for patients admitted with periorbital necrotizing fasciitis was 7%. 37% of patients were from the quartile of lowest median household income.

Conclusions: This is the first study exploring the characteristics and outcomes of patients with periorbital necrotizing fasciitis based on a national inpatient database sample. Our study demonstrates a possible regional predilection for this condition. Although rare, periorbital necrotizing fasciitis contributes a significant financial burden to the healthcare system and disproportionally affects patients in lower-income categories.

(continued)

(continued)

References:

1. Rajak SN, Figueira EC, Haridas AS, Satchi K, Uddin JM, McNab AA, Rene C, Sullivan TJ, Rose GE, Selva D. Periocular necrotising fasciitis: a multicentre case series. Br J Ophthalmol. 2016 Nov;100(11):1517-1520. doi: 10.1136/bjophthalmol-2015-307445. Epub 2016 Feb 2. PMID: 26837505.
2. Pertea M, Fotea MC, Luca S, Moraru DC, Filip A, Olinici-Temelie D, Lunca S, Carp AC, Grosu OM, Amarandei A, Veliceasa B. Periorbital Facial Necrotizing Fasciitis in Adults: A Rare Severe Disease with Complex Diagnosis and Surgical Treatment-A New Case Report and Systematic Review. J Pers Med. 2023 Nov 16;13(11):1612. doi: 10.3390/jpm13111612. PMID: 38003927; PMCID: PMC10672041.

Delayed Intra-Orbital Foreign Body Giant Cell Reaction to Silastic Orbital Implant

Leo M. Hall[1,2], Henry Bair[1,2], Ari August[3], Tatyana Milman[3,2], Charlotte L. Marous[1,2]
[1]Oculoplastic and Orbital Surgery, Wills Eye Hospital, Philadelphia, Pennsylvania, United States, [2]Ophthalmology, Sidney Kimmel Medical College of Thomas Jefferson University, Philadelphia, Pennsylvania, United States, [3]Pathology, Wills Eye Hospital, Philadelphia, Pennsylvania, United States

Introduction: Orbital floor fractures represent 40% of eye trauma and are associated with ophthalmic morbidity including diplopia, enophthalmos, extraocular muscle dysmotility, and hypoesthesia.[1,2] Surgical intervention is used to repair anatomic defects, improve aesthetic appearance, and restore binocular vision. Silastic (Dow Corning, Midland, MI, USA) sheet alloplastic implants were used for orbital fracture repair in the past, however, have been largely replaced by other alloplastic media, namely titanium and polydioxane (PDS).[3,4] Hematic cysts formation is a known complication of alloplastic orbital implants, including silastic. We report a case of hematic cyst formation with foreign body giant cell reaction inducing significant globe dystopia approximately 40 years following reconstruction of an orbital fracture using a silastic implant, the longest documented case to date.

Methods: Case report.

Results: A 73-year-old man was referred to the oculoplastic clinic with 3-4 years of progressive left eye “bulging” and horizontal diplopia in extreme gazes. His visual acuity was 20/20 OD and 20/30 OS. Intraocular pressure was normal in both eyes and there was no afferent pupil defect. Left eye motility was reduced by 70% in abduction and 20% in infraduction. There was 6 mm of left eye relative proptosis and hyperglobus (Figure 1) and 11.5 mm lagophthalmos inducing exposure keratopathy. Magnetic resonance imaging (MRI) of the orbits demonstrated a large cystic mass along the left orbital floor and medial wall with septations (Figure 2). On further history, the patient recalled a remote left orbital wall fracture with unknown orbital implant placement in the 1980s. Surgery via a transconjunctival approach to the orbital floor revealed a cystic lesion lying within a depressed ossified capsule along the orbit floor, which expelled thick, yellow-brown secretions upon incision. A silicone implant was noted centrally within the capsule and removed (Figure 3A). The area was irrigated with antibiotics and left without secondary implant. Histopathology of the yellow fluid showed hemosiderin laden macrophages and ghost cells (Figure 4); the silicone implant was covered in cholesterol crystals (Figure 3B). At post-operative week five, the patient was healing well with significant improvement of his proptosis and resolution of exposure keratopathy and diplopia (Figure 5).

(continued)

(continued)

Conclusions: Silastic sheet alloplastic implant was introduced in the 1960s and was used widely due to its pliability and chemically inert properties.[5] Complications, including early removal, infection, implant migration, and cyst formation, lessened their appeal.[3,6] There are multiple documented cases of late silicone-associated epithelial and hematic cyst formation ranging from 3 to 31 years after initial surgery.[7-9] In each of these cases, there is agreement about implant removal, however, there was surgical variation in whether to replace the implant, how to excise the cyst, and if so, whether to treat the orbit with absolute alcohol or trichloroacetic acid to prevent recurrence. Our case represents the latest presentation of hematic cyst following silastic implant placement for orbital floor fracture. Given that silicone implants have fallen out of favor and been replaced by other alloplastic media, surgeons should be aware of this complication in patients presenting with remote history orbital trauma and unclear perioperative history.

Figure 1



Figure 2

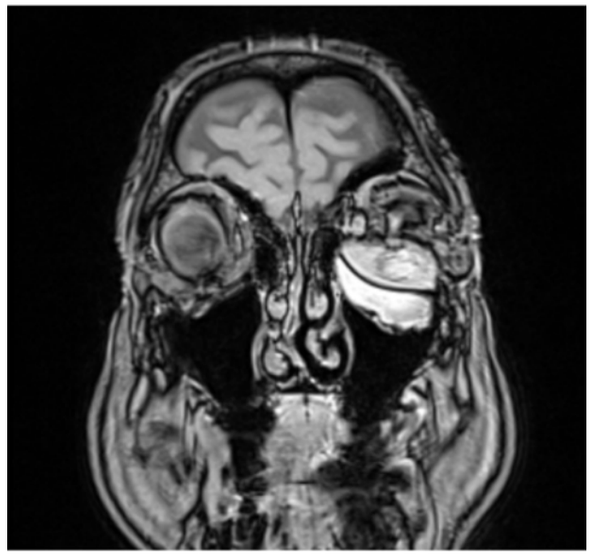


Figure 3

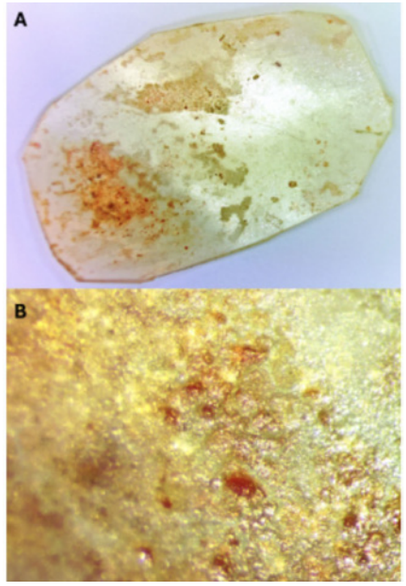


Figure 4

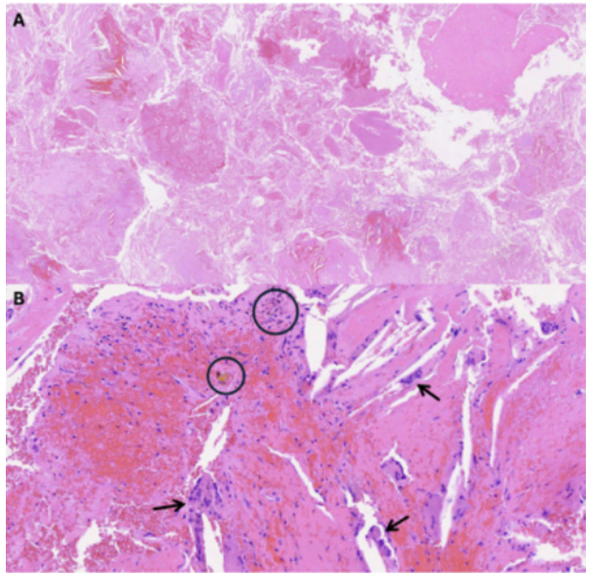


Figure 5



(continued)

(continued)

References:

1. Iftikhar M, Latif A, Farid UZ, Usmani B, Canner JK, Shah SMA. Changes in the Incidence of Eye Trauma Hospitalizations in the United States From 2001 Through 2014. *JAMA Ophthalmology*. 2019;137(1):48-56. doi:10.1001/jamaophthalmol.2018.4685
2. Bartoli D, Fadda MT, Battisti A, et al. Retrospective analysis of 301 patients with orbital floor fracture. *Journal of Cranio-Maxillofacial Surgery*. 2015/03/01/ 2015;43(2):244-247. doi:10.1016/j.jcms.2014.11.015
3. Avashia YJ, Sastry A, Fan KL, Mir HS, Thaller SR. Materials used for reconstruction after orbital floor fracture. *J Craniofac Surg*. Nov 2012;23(7 Suppl 1):1991-7. doi:10.1097/SCS.0b013e31825aada1
4. Bourry M, Hardouin JB, Fauvel F, Corre P, Lebranchu P, Bertin H. Clinical evaluation of the efficacy of materials used for primary reconstruction of orbital floor defects: Meta-analysis. *Head Neck*. Feb 2021;43(2):679-690. doi:10.1002/hed.26518
5. Schmidt BL, Lee C, Young DM, O'Brien J. Intraorbital squamous epithelial cyst: an unusual complication of Silastic implantation. *J Craniofac Surg*. Sep 1998;9(5):452-5; discussion 456-8.
6. Joseph S, Cheung D. Late Orbital Floor Implant Migration Presenting as Recurrent Episcleritis. *Orbit*. 2014/04/01 2014;33(2):132-134. doi:10.3109/01676830.2013.851256
7. Tahhan M, Alkhardaji F, Durrani OM, Price NJ. Intraorbital epithelial cyst formation: a rare complication of silastic implantation. *Arch Ophthalmol*. Dec 2002;120(12):1768-9. doi:10.1001/archopht.120.12.1768
8. Bourgault S, Bordua-Robert MF, Molgat YM. Recurrent orbital cyst as a late complication of silastic implant for orbital floor fracture repair. *Can J Ophthalmol*. Aug 2011;46(4):368-9. doi:10.1016/j.jcjo.2011.06.017
9. Verma S, Garg A, Nastri A. Orbitomaxillary mass after repair of the orbital floor. *Br J Oral Maxillofac Surg*. Dec 2014;52(10):977-9. doi:10.1016/j.bjoms.2014.08.015

Modified Gundersen Flap with Mucous Membrane Graft for Scleral Shell Wear in Blind Eyes

Christine Ryu[1], John Holds[2,3]
[1]John F. Hardesty, MD, Department of Ophthalmology and Visual Sciences, Washington University in St. Louis, St. Louis, Missouri, United States, [2]Ophthalmic Plastic and Cosmetic Surgery Inc., Des Peres, Missouri, United States, [3]Departments of Ophthalmology and Otolaryngology-Head and Neck Surgery, Saint Louis University, St. Louis, Missouri, United States

Introduction: The Gundersen flap is a total conjunctival flap over the cornea used to treat severe ocular surface disease.[1] Common indications include bullous keratopathy, corneal ulcers, and neurotrophic keratopathy.[1,2] The Gundersen flap is used less frequently now due to newer treatments including improved topical antibiotics, amniotic membrane grafts, and advances in corneal transplants. However, the Gundersen flap remains an excellent option for patients who are unable to tolerate a scleral shell due to corneal sensitivity.

We would like to report a case series of four patients who underwent a modified Gundersen flap with a buccal mucosal graft to the flap donor site. One of the most crucial aspects of executing the Gundersen flap is avoiding tension on the conjunctival flap to prevent retraction.[1,3] This may be difficult in eyes with conjunctival scarring from prior surgeries, trauma, or radiation. In our modification, a mucous membrane graft was placed over the conjunctival flap donor site to minimize tension on the conjunctival flap and scarring of the donor bed.

Methods: This retrospective case series covers four eyes which underwent a modified Gundersen flap with mucous membrane grafting from 2008 to 2024. A 360-degree peritomy was created and the conjunctiva and Tenon fascia undermined. The corneal epithelium was debrided. A superotemporal rhombic transpositional conjunctival flap was created and draped over the corneal surface for three patients (Figure 1). An inferotemporal flap was dissected for one patient with superior conjunctival scarring. The conjunctival donor site was then covered by a mucosal graft from the inferior oral fornix (Figure 2). We recommend a handheld dermatome to harvest the mucosal graft. The conjunctival flap and mucosal graft were secured with 8-0 polyglactin sutures (Figure 3). Patient records were reviewed for preoperative ocular history, postoperative scleral shell wear, and complications such as flap retraction.

(continued)

(continued)

Results: Four eyes underwent the modified Gundersen flap with mucous membrane grafting. Patient age ranged from 47 to 68. Three patients had a history of ruptured globe repair and one with retinal detachment repair. Preoperative vision ranged from counting fingers to no light perception. All four patients were unable to tolerate scleral shell wear preoperatively. All four were able to comfortably wear a scleral shell postoperatively. There were no cases of conjunctival flap retraction. All mucosal membrane graft harvest sites healed without complications. No patient required further surgery. Follow up ranged from 3 to 22 months.

Conclusions: The modified Gundersen flap with mucous membrane grafting is an excellent option for patients who are unable to wear scleral shells due to corneal sensitivity. This is a less invasive alternative to evisceration or enucleation. Covering the donor site with a mucosal graft decreases the tension on the conjunctival flap and the risk of flap retraction or fornix shortening, especially in patients with conjunctival scarring. All four of our patients were able to comfortably wear a scleral shell.

Figure 1

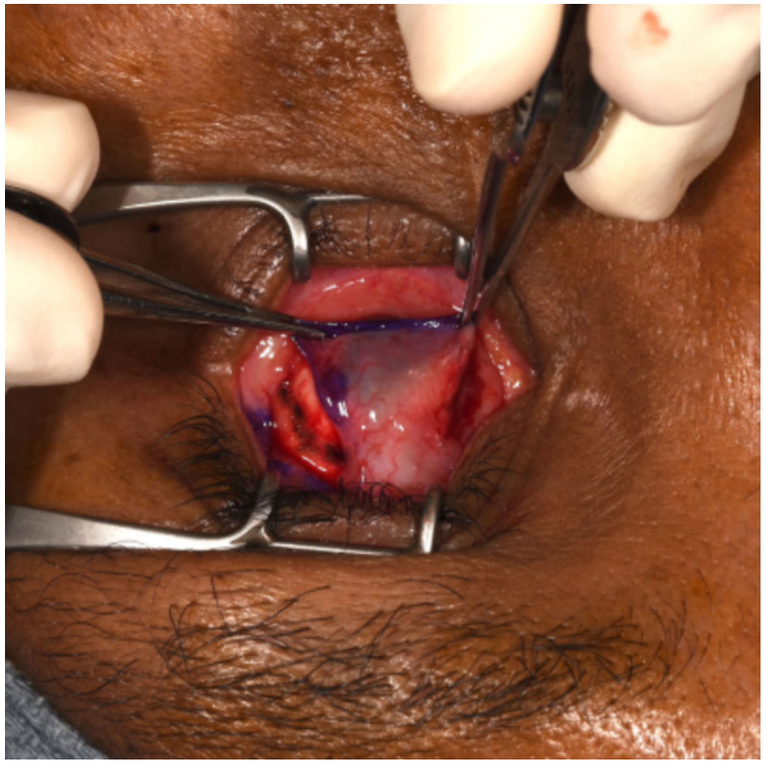


Figure 2



Figure 3



(continued)

(continued)

References:

1. Gundersen T. Conjunctival flaps in the treatment of corneal disease with reference to a new technique of application. *AMA Arch Ophthalmol*. 1958;60(5):880-888. doi:10.1001/archopht.1958.00940080900008
2. Zemba M, Stamate AC, Tataru CP, Branisteanu DC, Balta F. Conjunctival flap surgery in the management of ocular surface disease (Review). *Exp Ther Med*. 2020;20(4):3412-3416. doi:10.3892/etm.2020.8964
3. Putterman AM. Conjunctival flap-cosmetic shell-ptosis procedure. Treatment of blepharoptosis in severe keratopathy. *Arch Ophthalmol*. 1989;107(12):1816-1818. doi:10.1001/archopht.1989.01070020898035

Modified Weber-Ferguson Incision for Debulking of Maxillary Monostotic Fibrous Dysplasia

Makayla McCoskey, Karen Brown, Kendall Goodyear, Anish Abrol, Tanuj Nakra
TOC Eye and Face, Austin, Texas, United States

Introduction: Fibrous dysplasia (FD) is a rare condition in which normal cancellous bone is replaced by intramedullary fibro-osseous proliferation due to disrupted osteogenesis. The maxilla is the most common bone affected in monostotic craniofacial FD.[1-3] In stable FD, bone contouring can be performed to address mass effect and to improve aesthetics. Here, we describe a modified Weber-Ferguson approach for bone contouring in a patient with monostotic maxillary FD causing hyperglobus, lacrimal outflow obstruction, nasal obstruction, and midface deformity. This unique approach allows access to the orbital floor and maxilla while avoiding incision through the pretarsal orbicularis, therefore minimizing the risk of postoperative orbicularis paresis.

Methods: Case report.

Results: A 25-year-old man was referred for left maxillary monostotic FD with associated lower eyelid malposition and ocular surface exposure. He had undergone multiple prior debulking surgeries via subciliary transcutaneous and intraoral approaches over the past 10 years. On exam, left maxillary prominence was noted, with significant weakness of the left pretarsal and preseptal orbicularis muscle, lagophthalmos, and lower eyelid mechanical and paralytic ectropion. Maxillofacial computed tomography (CT) demonstrated FD of the left maxilla with extension to the anterior orbital floor causing hyperglobus, as well as medial extension to the left nasal cavity (Figure 1). His disease process appeared to be in a quiescent phase based on stable radiographic and clinical surveillance.

(continued)

(continued)

The patient deferred total resection, and the decision was made to proceed with contouring of the left maxillary and orbital component of the tumor. For adequate exposure, a Weber-Ferguson approach was utilized, modified to prevent additional surgical trauma to the inferior palpebral orbicularis muscle. A conjunctival incision was made along the horizontal length of the lower eyelid and dissection was carried down in a preseptal plane to the orbital rim. The medial conjunctival incision was then extended onto the medial canthal skin with transection and release of the medial canthal tendon. This resulted in transection of the inferior canaliculus. The incision was then carried down along the junction of the nasal side wall and the cheek, extending to the alar groove (Figure 2). A subperiosteal dissection was performed to expose the anterior and lateral face of the maxilla and the soft tissue flap was retracted (Figure 3). The tumor was then debulked and the maxilla sculpted with sharp osteotome dissection. The orbital component of the tumor was sculpted in a similar fashion until the contour was flush with the adjacent orbital floor (Figure 3). Once desired contour was achieved, the flap was repositioned using suspension sutures anchored to the bone along the inferior orbital rim. The tagged medial canthal tendon was also secured to the bone. Due to the lack of cancellous bone in this region, the soft tissue flap and medial canthal tendon were able to be anchored with passage of the suture needle directly through bone. The incision was then closed in a layered fashion and a Frost suture placed. An endonasal approach was used to debulk the nasal component of the tumor to improve nasal valve patency.

The patient tolerated the procedure well. At 3 months postoperatively, significant improvement in maxillary contour and globe position was noted. The lower eyelid malposition will be further addressed as a second stage procedure.

Conclusions: Transconjunctival approach to the inferior orbital rim as a modification to the Weber-Ferguson approach allows for exposure of the maxilla without surgical trauma to the pretarsal orbicularis muscle. Reconstruction of the medial canthal tendon and inferior canaliculus can be performed to maintain eyelid function and nasolacrimal outflow.

(continued)

(continued)

Figure 1

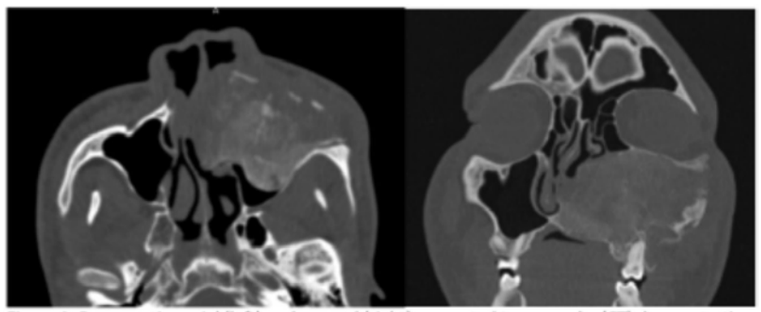


Figure 1. Preoperative axial (left) and coronal (right) computed tomography (CT) demonstrating "ground glass" appearance to the maxillary tumor, with extension into the inferior orbit and involvement of the left nasal vault.

Figure 2



Figure 2. Incision design. The dashed line along the lower eyelid represents the conjunctival incision for approach to the orbital floor. The solid line demonstrates the skin incision along the medial canthus and nasal side wall.

Figure 3



Figure 3. intraoperative photograph of the exposed maxilla (left) and the orbital component of the tumor (right).

References:

1. MacDonald-Jankowski D. Fibrous dysplasia: a systematic review. *Dentomaxillofac Radiol*. May 2009;38(4):196-215.
2. Espinosa JM, Elizalde A, Aquerreta JD, Alcalde J, Zubieta JL. Fibrous dysplasia of the maxilla. *Ann Otol Rhinol Laryngol*. Feb 1998;107(2):175-7.
3. Hu AC, Lee CJ, Hsu FPK, Vyas RM. Extensive Polyostotic Craniofacial Fibrous Dysplasia With Optic Nerve Impingement. *J Craniofac Surg*. Jul-Aug 01 2021;32(5):e435-e437.

Orbital Cellular Myofibroma Masquerading as a Cavernous Hemangioma: A Rare Case with Detailed Vascular Characterization

Dan DeAngelis[1], Kenneth Chang[1], Brendan Dickson[2], Pascal Mosimann[3], Sonia Anchouche[1]
[1]Department of Ophthalmology and Vision Sciences, University of Toronto, Toronto, Ontario, Canada, [2]Department of Pathology and Laboratory Medicine, University of Toronto, Toronto, Ontario, Canada, [3]Department of Radiology, University of Toronto, Toronto, Ontario, Canada

Introduction: Myofibromas are rare benign mesenchymal tumors, most commonly observed in pediatric patients, first described in 1954[1,2]. These soft tissue tumors typically present as solitary lesions but can also manifest as myofibromatosis, a less common form characterized by multiple tumors involving the soft tissues, bones, and, in severe cases, the cardiopulmonary or gastrointestinal systems[3,4]. Cellular myofibroma, an exceedingly rare subtype first identified in 2017, is defined by a recurrent SRF-RELA gene alteration and has never been reported in the orbit[5,6]. This case report is the first to provide a comprehensive characterization of the immunohistochemical and vascular features of an orbital cellular myofibroma which masqueraded as a cavernous hemangioma.

Methods: Case report and review of the literature.

Results: A 30-year-old female with a proptotic right eye and no other visual symptom was initially diagnosed with cavernous hemangioma after imaging confirmed a vascular lesion. After two years of monitoring, newly reported loss of vision in the right eye led to cerebral angiography to further assess the orbital vascular lesion. Angiography revealed a highly vascular retro-orbital mass supplied by the ophthalmic artery which was then embolized with endovascular metallic coils(Figure 1). A lateral orbitotomy was then performed for surgical resection. Intraoperatively, the tumor was unexpectedly unencapsulated, friable, and did not grossly resemble a hemangioma. The coils were observed within some of the vasculature (Figure 2). Morphologically the neoplasm was composed of spindle cells with a fascicular architecture (Figure 3). Immunohistochemistry was positive for desmin, smooth muscle actin, and H-caldesmon, in addition to staining for CD34 and pancytokeratin. Targeted next-generation sequencing identified an *SRF::RELA* gene fusion. Based on these findings, the tumour was classified as a cellular myofibroma. The patient showed significant improvement in proptosis postoperatively despite some residual tumour at three-month follow-up.

Conclusions: This case is noteworthy due to the initial mischaracterization of an orbital hemangioma, which led to thorough vascular characterization and preoperative coil embolization prior to surgical intervention. The biopsy revealed an unexpected diagnosis of cellular myofibroma—a very rare tumour that, to our knowledge, has never been reported in the orbit. This atypical radiologic

(continued)

(continued)

impression, where a tumour with pericytic differentiation closely resembled the more common cavernous hemangioma, highlights the challenges of distinguishing rare orbital tumors. Notably, in a retrospective review of cases initially diagnosed as cavernous hemangioma based on preoperative radiologic imaging, histopathologic analysis confirmed the diagnosis in only 64% of cases[7]. Additionally, the case highlights the importance of including pericytic and perivascular tumors in the differential diagnosis of benign orbital lesions, especially when imaging suggests a vascular component. This unusual clinical course, combined with the rare tumor type and its unique presentation, serves as a valuable reminder to consider a broad spectrum of diagnoses in atypical orbital pathologies.

Figure 1

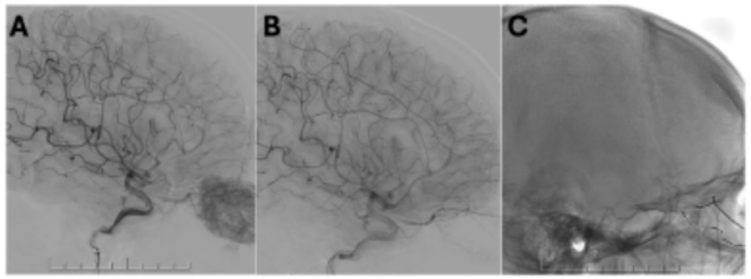


Figure 1:
A. Pre-embolization showing a highly vascular lesion, exclusively supplied by the right ophthalmic artery.
B. Post-endovascular coiling demonstrating successful embolization with no residual choroidal blush.
C. In-situ endovascular metallic coils.

Figure 2

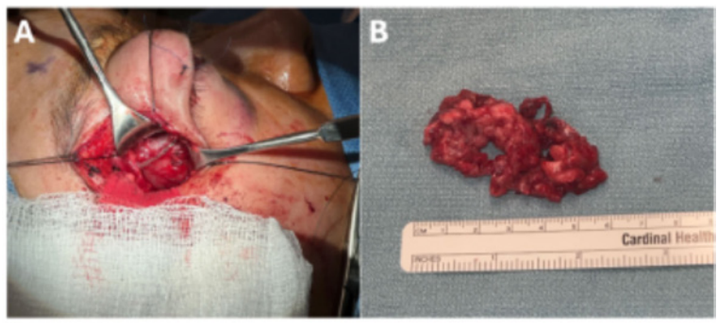


Figure 2:
A. Intra-operative image of the orbital mass with visible endovascular metallic coils.
B. The resected lesion was unencapsulated, friable, and its gross morphology did not resemble that of a hemangioma.

Figure 3

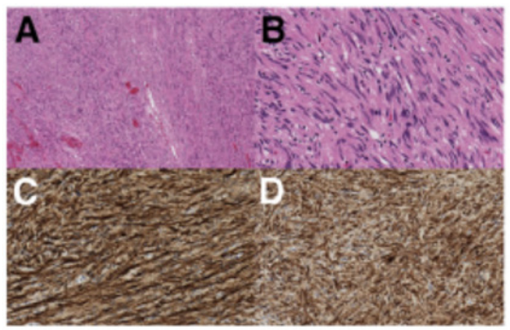


Figure 3: Representative photomicrographs of cellular myofibroma highlighting:
A. a spindle cell neoplasm with a fascicular architecture (H&E, x100)
B. eosinophilic cytoplasm with bland ovoid nuclei (H&E, x400)
C. immunohistochemistry for desmin (x200)
D. immunohistochemistry for keratin (AE1/AE3) (x200)

References:

1. Purdy A. JUVENILE FIBROMATOSES n.d. https://doi.org/10.1002/1097-0142(195409)7:5<953::AID-CNCR2820070520>3.0.CO;2-W.
2. Beck JC, Devancy KO, Weatherly RA, Koopmann CF, Lesperance MM. Pediatric Myofibromatosis of the Head and Neck. Arch Otolaryngol Neck Surg 1999;125:39–44. https://doi.org/10.1001/ARCHOTOL.125.1.39.
3. Römer T, Wagner N, Braunschweig T, Meyer R, Elbracht M, Kontny U, et al. Aggressive infantile myofibromatosis with intestinal involvement. Mol Cell Pediatr 2021;8:1–9. https://doi.org/10.1186/S40348-021-00117-9/TABLES/1.
4. Mynatt CJ, Feldman KA, Thompson LDR. Orbital infantile myofibroma: a case report and clinicopathologic review of 24 cases from the literature. Head Neck Pathol 2011;5:205–15. https://doi.org/10.1007/S12105-011-0260-4.
5. Antonescu CR, Sung YS, Zhang L, Agaram NP, Fletcher CD. Recurrent SRF-RELA Fusions Define a Novel Subset of Cellular Variants in the Myofibroma/Myopericytoma Spectrum: A Potential Diagnostic Pitfall with Sarcomas with Myogenic Differentiation. Am J Surg Pathol 2017;41:677. https://doi.org/10.1097/PAS.0000000000000811.
6. Zhou Y, Sun Y-W, Liu X-Y, Shen D-H. Misdiagnosis of synovial sarcoma - cellular myofibroma with SRF-RELA gene fusion: A case report. World J Clin Cases 2024;12:1326. https://doi.org/10.12998/WJCC.V12.I7.1326.
7. Jayaram A, Cohen LM, Lissner GS, Karagianis AG. A retrospective review of cases preoperatively diagnosed by radiologic imaging as cavernous venous malformations. Orbit 2017;36:128–34. https://doi.org/10.1080/01676830.2017.1279666.

Orbital Involvement in Parry Romberg Syndrome: Clinical Manifestations and Management

Lilly Wagner, Caroline Yu
Ophthalmology, Mayo Clinic, Rochester, Minnesota, United States

Introduction: Parry Romberg syndrome (PRS) is a rare progressive condition of unknown etiology, characterized by hemifacial atrophy, often resulting in significant orbital deformity that can impair visual function and quality of life[1,2]. The role of surgical intervention is poorly understood based on prior case series.

Methods: A retrospective medical record review of patients with PRS treated at a single academic institution was performed, and 11 patients with PRS who had orbital or ocular involvement were identified. Clinical abnormalities and surgical interventions were recorded, and the use of a custom three-dimensional (3D) polyetheretherketone (PEEK) implant for orbital reconstruction in one patient is described.

Results: The most common ocular manifestations included lagophthalmos (54.5%), enophthalmos (45.5%, figure 1), exposure keratopathy (36.4%), and skin hyperpigmentation (36.4%). Other findings were asymmetry of eyebrows/lashes (27.3%), pseudoptosis (27.3%), and eyelid atrophy (18.2%). Surgical interventions included eyelid reconstructive procedures (27.3%), orbital implant (9.1%) and fat grafting (18.2%). One patient was treated with a custom PEEK orbital implant placed through a transconjunctival inferior orbitotomy approach, with postoperative improvement in orbital symmetry and globe position (Figure 2,3).

Conclusions: PRS presents with a range of ocular manifestations requiring tailored treatment approaches. In one patient symptomatic with deformity due to enophthalmos and hypoglobus, a custom 3D PEEK implant could achieve functional and aesthetic improvement. Further research is required to assess candidate selection and long-term efficacy of this technique in managing PRS-related orbital and facial deformities.

(continued)

(continued)

Figure 1



Figure 2

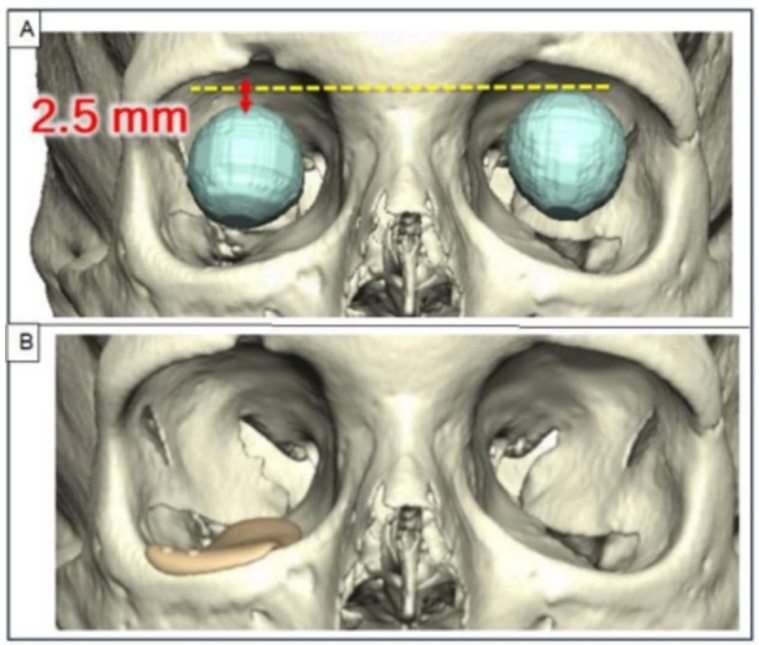


Figure 3



References:

1. Bucher F, Fricke J, Neugebauer A, Cursiefen C, Heindl LM. Ophthalmological manifestations of Parry-Romberg syndrome. Surv Ophthalmol. 2016;61:693-701.
2. Ullman S, Danielsen PL, Fledelius HC, Daugaard-Jensen J, Serup J. Scleroderma en Coup de Sabre, Parry-Romberg Hemifacial Atrophy and Associated Manifestations of the Eye, the Oral Cavity and the Teeth: A Danish Follow-Up Study of 35 Patients Diagnosed between 1975 and 2015. Dermatology. 2021;237:204-212

Phenotype of Recurrent Thyroid Eye Disease Following Teprotumumab Treatment: A Retrospective Case Series

Shanlee Stevens, Julie Shabto, Celestine Gregerson, Michael Kazim
Columbia University Medical Center, New York, New York, United States

Introduction: Teprotumumab is a human monoclonal antibody that targets the insulin-like growth factor 1 receptor. It was approved by the Food and Drug Administration (FDA) for the treatment of adults with active thyroid eye disease (TED) in 2020[1, 2]. The FDA expanded its use to include TED patients in the stable phase of the disease in 2023[3, 4].

Of the 34 patients who met primary response criteria in the OPTIC trial, 10 (29.4%) relapsed[5]. Hwang *et al.* identified a recurrence rate of 48% among 24 initial clinical responders[6].

In this retrospective case series, we analyzed the clinical phenotype of patients who recurred following treatment with teprotumumab and subset-examined the cohort based on the phase of TED during which they were treated.

Methods: This is an Institutional Review Board-approved, retrospective case series of patients diagnosed with TED who experienced recurrence following teprotumumab. Data collected included: demographics, prior treatments, disease duration and activity, dates of teprotumumab infusions, time to and duration of recurrence, and adverse reactions. The primary outcome was duration of activity following recurrence. Secondary outcomes were time from treatment completion to recurrence and clinical presentation at recurrence.

Results: The cohort included 22 patients, with a mean age of 53. Sixteen patients began teprotumumab during their active phase of TED (Table 1). Five patients did not complete the eight-infusion treatment due to side effects. Patients who began teprotumumab during the active phase had a shorter average time to recurrence (8.7 months) compared to those who started during the stable phase (11 months). The average duration of disease activity following recurrence was longer in patients who were treated during the active phase (10.1 months) compared to those who started during the stable phase (4.7 months).

The most common feature of TED prior to treatment was extraocular motility (EOM) restriction in both groups. Patients treated during the active phase more commonly relapsed with proptosis as their main symptom, while patients treated during the stable phase most commonly recurred manifesting EOM restriction. One patient treated during their active phase developed optic neuropathy at recurrence (Table 1).

(continued)

(continued)

Five patients (31%) treated during the active phase reported gastrointestinal (GI) symptoms, and four (25%) reported fatigue, while only one patient who started during their stable phase reported GI upset, and none reported fatigue (Table 1).

Conclusions: This case series highlights the difference in clinical phenotype of recurrence among patients who initiated teprotumumab while in the active versus stable phase of TED. We found that patients treated during their active phase experienced recurrence sooner and endured longer interval of disease activity compared to those started during their stable phase. The length of the post active phase relapse is nearly the same length of the unmodified natural history of TED, suggesting that in this group of patients, relapses behave much like the original active episode. Conversely, relapses following stable phase treatment are of shorter duration, suggesting that a different biologic event may be responsible. Further research is needed to understand the long-term efficacy teprotumumab and the factors that contribute to recurrence.

Table 1. Patient Demographics, Disease Features, and Recurrence Characteristics

Variable	Value	Started Teprotumumab During Active Phase n = 16 (%)	Started Teprotumumab During Stable Phase n = 6 (%)	Total n = 22 (%)
Age (Years)	Average (Range)	55 (28-86)	45 (28-74)	53 (28-86)
Sex	Female	8 (50%)	4 (67%)	12 (55%)
	Male	8 (50%)	2 (33%)	10 (46%)
Race	White (Caucasian)	10 (63%)	3 (50%)	13 (59%)
	Asian	4 (25%)	3 (50%)	7 (32%)
	Black	2 (13%)	0 (0%)	2 (9%)
Smoking Status	Never Smoker	13 (81%)	5 (83%)	18 (82%)
	Previous Smoker	2 (13%)	1 (17%)	3 (14%)
	Current Smoker	1 (6%)	0 (0%)	1 (4%)
Prior Treatments	Oral steroids	8 (50%)	2 (33%)	10 (46%)
	Intravenous Steroids	1 (6%)	2 (33%)	3 (14%)
	Prior Teprotumumab	2 (13%)	1 (17%)	3 (14%)
	Orbital Radiotherapy	0 (0%)	2 (33%)	2 (9%)
	Orbital Decompression	0 (0%)	2 (33%)	2 (9%)
	None	9 (56%)	1 (17%)	10 (46%)
Time from TED Diagnosis to Teprotumumab Start (Months)	Average (Range)	10 (0-31.8)	102 (8.2-421)	35 (0-421)
Prominent Features of TED before Teprotumumab	EOM Restriction	9 (56%)	3 (50%)	12 (55%)
	Proptosis	8 (50%)	3 (50%)	11 (50%)
	Optic Neuropathy	2 (13%)	1 (17%)	3 (14%)
	Eyelid swelling	1 (6%)	1 (17%)	2 (9%)
Prominent Features of TED at Recurrence Post- Teprotumumab	Proptosis	12 (75%)	3 (50%)	15 (68%)
	EOM Restriction	7 (44%)	4 (67%)	11 (50%)
	Optic Neuropathy	1 (6%)	0 (0%)	1 (4%)
Length of Time from Teprotumumab to Recurrence (Months)	Mean (Range)	8.7 (3-26)	11 (0-20)	9.4 (0-26)
Length of "Activity" After Recurrence (Months)	Mean (Range)	10.1 (1-22)	4.7 (1-10)	8.5 (1-22)

(continued)

(continued)

References:

1. Douglas RS, Kahaly GJ, Patel A, Sile S, Thompson EHZ, Perdok R, et al. Teprotumumab for the Treatment of Active Thyroid Eye Disease. N Engl J Med. 2020;382(4):341-52. doi: 10.1056/NEJMoa1910434.
2. FDA approves first treatment for thyroid eye disease [Internet]. FDA.gov; 2020; January 21. Available from: https://www.fda.gov/news-events/press-announcements/fda-approves-first-treatment-thyroid-eye-disease
3. Diniz SB, Cohen LM, Roelofs KA, Rootman DB. Early Experience With the Clinical Use of Teprotumumab in a Heterogenous Thyroid Eye Disease Population. Ophthalmic Plast Reconstr Surg. 2021;37(6):583-91. doi: 10.1097/IOP.0000000000001959.
4. Subramanian PS, Cho RI, Kahana A. Efficacy of teprotumumab therapy in patients with long-duration thyroid eye disease. Curr Opin Ophthalmol. 2023;34(6):487-92. doi: 10.1097/ICU.0000000000000997.
5. Douglas RS, Kahaly GJ, Ugradar S, Elflein H, Ponto KA, Fowler BT, et al. Teprotumumab Efficacy, Safety, and Durability in Longer-Duration Thyroid Eye Disease and Re-treatment: OPTIC-X Study. Ophthalmology. 2022;129(4):438-49. doi: 10.1016/j.ophtha.2021.10.017.
6. Hwang CJ, Rebollo NP, Mechels KB, Perry JD. Reactivation After Teprotumumab Treatment for Active Thyroid Eye Disease. Am J Ophthalmol. 2024;263:152-9. doi: 10.1016/j.ajo.2023.12.001.

Pseudomonas Orbital Apex Syndrome Associated with Ocrelizumab

Christine Ryu[1], Andrew Lee[1], Gregory Van Stavern[1], John Schneider[2], Bhuvic Patel[3], Steven Couch[1]
[1]John F. Hardesty, MD, Department of Ophthalmology and Visual Sciences, Washington University in St. Louis, St. Louis, Missouri, United States, [2]Department of Otolaryngology, Washington University School of Medicine, St. Louis, Missouri, United States, [3]Department of Neurological Surgery, Washington University School of Medicine, St. Louis, Missouri, United States

Introduction: We would like to report the first known case of a *Pseudomonas* orbital apex abscess associated with ocrelizumab.

Orbital apex syndrome is an uncommon condition that affects the optic nerve and cranial nerves III, IV, V1, and VI. Causes include infectious, inflammatory, neoplastic, vascular, and traumatic conditions. Patients typically present with optic neuropathy and ophthalmoplegia. Orbital apex syndrome or severe orbital cellulitis due to *Pseudomonas* are rare and often associated with an immunocompromised state.[1,2]

Ocrelizumab is a recombinant humanized anti-CD20 monoclonal antibody that was approved by the Food and Drug Administration for multiple sclerosis in 2017. There is an increased risk of nonserious infections, most commonly upper respiratory tract infections, urinary tract infections, and cellulitis.[3,4] Serious or opportunistic infections are uncommon aside from hepatitis B.[4] Case reports of infections associated with ocrelizumab include *Ureaplasma urealyticum* tubo-ovarian abscess with subsequent abdominal abscesses and pleural empyema, babesiosis, and *Mycoplasma pneumoniae* septic sigmoid sinus thrombosis with meningitis and intracranial abscess.[5-7]

Methods: This is a case report of a patient on ocrelizumab who developed an orbital apex syndrome with an apical lesion seen on imaging. The patient's clinical course was followed over 6 weeks.

Results: A 66-year-old male with relapsing remitting multiple sclerosis on ocrelizumab presented with a partial right cranial nerve VI palsy and decreased visual acuity to 20/70, decreased color vision, and relative afferent pupillary defect of the right eye. He had no previous episodes of optic neuritis. Dilated fundus exam was unremarkable. CT and MRI were unremarkable. The patient was treated as possible giant cell arteritis with high dose steroids and temporal artery biopsy. Over the course of three days, vision loss acutely progressed to no light perception and he developed complete ophthalmoplegia. Repeat imaging showed enhancement at the right orbital apex with perineural enhancement of the inferior canalicular optic nerve. There was minimal sinusitis. A PET scan from skull to thigh revealed a hypermetabolic lesion at the right orbital apex without other hypermetabolic abnormalities.

(continued)

(continued)

The patient underwent an endoscopic right orbital apex decompression. An encapsulated pocket of soft, white material was found at the orbital apex. Multiple samples of this white material was sent for pathological and microbiological examination. Cultures revealed *Pseudomonas aeruginosa*. The patient received a 3 week course of antibiotics. At 6 weeks follow up, the patient's visual acuity remained no light perception and with ophthalmoplegia. The next dose of ocrelizumab will be held.

Conclusions: Infection must be strongly considered in the differential for orbital apex syndrome in patients on ocrelizumab. Coordination with neurology and infectious disease colleagues is recommended to discuss resuming ocrelizumab and antimicrobial coverage.

References:

1. Koh SY, Hsu MH, Ko SF, Chen CH. Orbital apex syndrome secondary to Pseudomonas aeruginosa sinusitis in a child with hyperimmunoglobulin M syndrome. *Pediatr Neonatol*. 2024;65(4):412-413. doi:10.1016/j.pedneo.2024.03.006
2. Rosser A, Modha DE. Pseudomonas aeruginosa retro-orbital abscess and cerebritis leading to a diagnosis of interleukin-1 receptor-associated kinase-4 deficiency. *J Microbiol Immunol Infect*. 2015;48(1):119-120. doi:10.1016/j.jmii.2013.09.009
3. Hauser SL, Kappos L, Montalban X, et al. Safety of Ocrelizumab in Patients With Relapsing and Primary Progressive Multiple Sclerosis. *Neurology*. 2021;97(16):e1546-e1559. doi:10.1212/WNL.0000000000012700
4. Seery N, Sharmin S, Li V, et al. Predicting Infection Risk in Multiple Sclerosis Patients Treated with Ocrelizumab: A Retrospective Cohort Study. *CNS Drugs*. 2021;35(8):907-918. doi:10.1007/s40263-021-00810-3
5. Poulsen EE, Jensen-Fangel S, Rudolf F. Severe *Ureaplasma urealyticum* infection in a patient with ocrelizumab-induced hypogammaglobulinaemia. *BMJ Case Rep*. 2023;16(9):e256029. Published 2023 Sep 26. doi:10.1136/bcr-2023-256029
6. Haberli N, Coban H, Padam C, Montezuma-Rusca JM, Creed MA, Imitola J. Babesia microti infection in a patient with multiple sclerosis treated with ocrelizumab. *Mult Scler Relat Disord*. 2021;48:102731. doi:10.1016/j.msard.2020.102731
7. Madžar D, Nickel FT, Rothhammer V, et al. Meningitis and intracranial abscess due to Mycoplasma pneumoniae in a B cell-depleted patient with multiple sclerosis. *Eur J Clin Microbiol Infect Dis*. 2024;43(11):2227-2231. doi:10.1007/s10096-024-04935-3

Rare Initial Presentation of Acute Myeloid Leukemia as an Isolated Orbital Mass in an Adult

Natalie (Homer) Hoesly[1], Lin Wang[2], Joshua Menke[2], Cindy Zhao[3]
[1]Department of Ophthalmology, Oregon Health & Science University, Portland, Oregon, United States, [2]Department of Pathology, Stanford University, Stanford, California, United States, [3]Department of Ophthalmology, Stanford University, Palo Alto, California, United States

Introduction: Myeloid sarcoma (MS) is an extramedullary hematolymphoid tumor comprised of immature myeloid cells found in 2-9% of cases of acute myelogenous leukemia (AML).[1,2] Isolated MS is extremely rare with an estimated incidence of 2 cases per million adults and uncommonly involves the orbit. Herein we present a unique case of myeloid sarcoma presenting as an isolated orbital mass in an adult.

Methods: Case report and literature review.

Results: A 61-year-old man presented with several weeks of right eye pain, proptosis, and diplopia. Examination demonstrated 20/25 visual acuity, 4 mm of relative proptosis with limitation of supraduction and abduction (Figure 1). There were no signs of optic neuropathy.

Computed tomography (CT) and magnetic resonance imaging (MRI) revealed a diffusely infiltrative right retrobulbar soft tissue density involving the extraocular muscles and optic nerve (Figure 2). Laboratory workup for inflammatory and infectious etiologies, including complete blood count with differential and blood smear, was normal other than a mildly elevated lysozyme.

The patient had initial complete clinical response to a high-dose oral steroid taper (Figure 3a-c) until symptoms recurred 1 month after treatment (Figure 3d). Biopsy was pursued via lower eyelid transconjunctival orbitotomy. Histopathology (Figure 4) revealed medium-sized immature mononuclear cells with irregular nuclear contours and prominent nucleoli infiltrating fibroadipose tissue, expressing CD34 and lysozyme, consistent with a diagnosis MS. Next generation sequencing demonstrated *CEBPA* mutations. Lumber puncture (LP) revealed a myeloid blast population, consistent with central nervous system (CNS) AML. Bone marrow biopsy and peripheral smear were normal. Positron emission tomography-CT showed no metastatic disease.

Management was initiated with 21 cycles of alternating intrathecal methotrexate and cytarabine and 24 Gy of concurrent radiation to the orbit. At eighteen month follow-up, no blasts were seen on LP. Clinically he demonstrated resolution of proptosis and supraduction deficit, with mild continued abduction deficit (Figure 5). MRI demonstrated no residual disease.

(continued)

(continued)

Conclusions: Myeloid sarcoma is a rare disease that more commonly presents in the skin and lymph nodes.[9–11] Orbital MS is even more unusual and warrants referral to oncology for systemic work-up and treatment. While more common in children,[8] adults rarely present with orbital MS.[9-14] The most common manifestation of orbital MS was proptosis,[3,4] with other symptoms including diplopia, periorbital swelling, abnormalities in extraocular motility, blurred vision, or eye pain. Imaging is helpful to determine the extent of involvement and plan for biopsy, with findings ranging from a homogenous, ill-defined soft tissue abnormality to a well-circumscribed mass, without specific identifying features.[7,8] The patient presented herein had no hematologic abnormalities at time of presentation. Biopsy is indicated when an orbital mass recurs or does not fully respond to anti-inflammatory treatment. Establishing an MS diagnosis is a histopathological challenge, and alternative diagnoses including extranodal NK/T cell lymphoma should be ruled out.[12,13] Further cytogenetic and molecular studies guide treatment.[4] The *CEBPA* mutations in the bZIP domain are associated with a good prognosis.[3,4] Management varies based on systemic findings with lack of consensus guidelines but often includes daunorubicin- and cytarabine-based chemotherapy for AML, along with radiotherapy.[4]

Figure 1

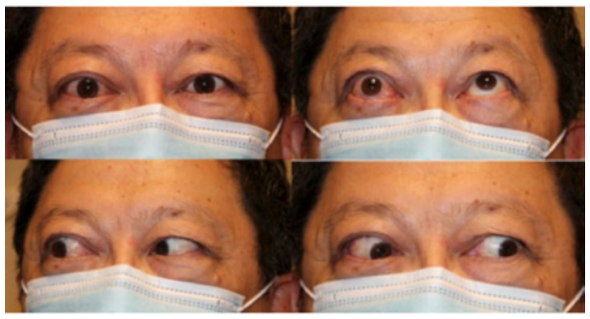


Figure 2

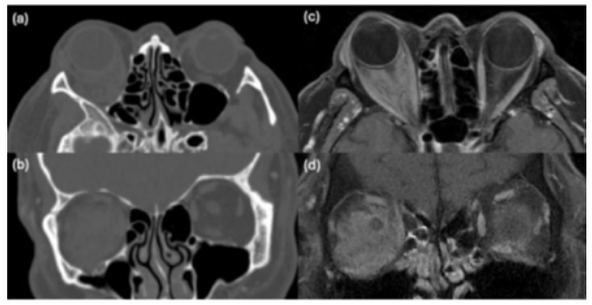
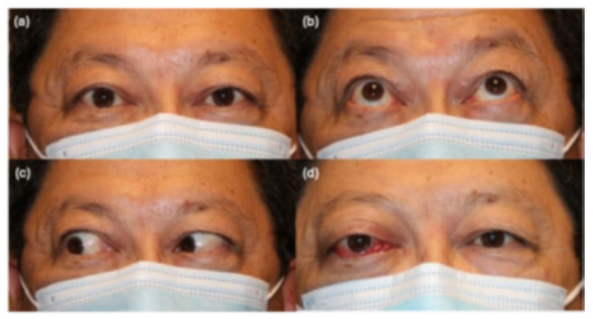


Figure 3



(continued)

(continued)

Figure 4

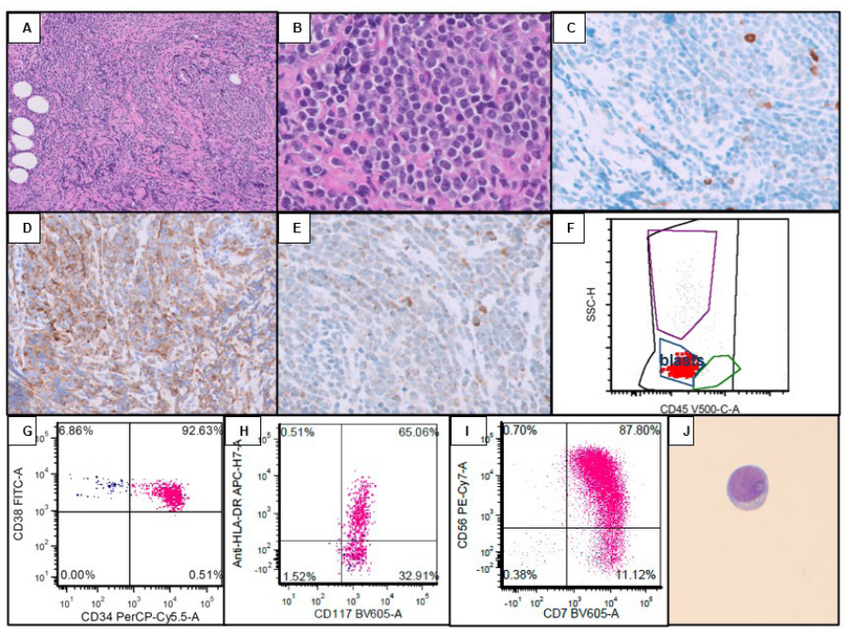
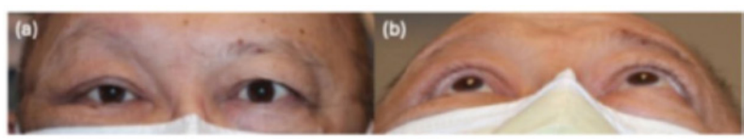


Figure 5. (A). Neoplastic cells diffusely infiltrate background fibroadipose tissue (H&E stain, 100X). (B). High magnification demonstrating poorly cohesive neoplastic cells with scant cytoplasm, high nuclear to cytoplasmic ratio and prominent nucleoli (H&E stain, 400X). Tumor cells stains negative for CD3 (C), positive for CD34 (D), and dimly positive for lysozyme (E) by immunohistochemistry. Flow cytometry analysis of the orbital mass showed an abnormal blast population with dim CD45 and low side scatter (F). The blasts express CD38 and CD34 (G), as well as myeloid markers CD117 and HLA-DR (H); cells aberrantly express NK/T markers CD56 and CD7 (I). Cerebrospinal fluid reveals involvement by similar neoplastic mononuclear cells characterized by a high nuclear to cytoplasmic ratio and fine chromatin pattern, consistent with blasts (Giemsa stain, 400X) (J).

Figure 5



(continued)

(continued)

References:

1. Avni B, Koren-Michowitz M. Myeloid Sarcoma: Current Approach and Therapeutic Options. *Ther Adv Hematol*. 2011;2(5):309-316. doi:10.1177/2040620711410774
2. Almond LM, Charalampakis M, Ford SJ, Gourevitch D, Desai A. Myeloid Sarcoma: Presentation, Diagnosis, and Treatment. *Clinical Lymphoma Myeloma and Leukemia*. 2017;17(5):263-267. doi:10.1016/j.clml.2017.02.027
3. Zimmerman LE, Font RL. Ophthalmologic Manifestations of Granulocytic Sarcoma (Myeloid Sarcoma or Chloroma). The Third Pan American Association of Ophthalmology and American Journal of Ophthalmology Lecture. *Am J Ophthalmol*. 1975;80(6):975-990. doi:10.1016/0002-9394(75)90326-8
4. Aggarwal E, Mulay K, Honavar SG. Orbital Extra-Medullary Granulocytic Sarcoma: Clinicopathologic Correlation with Immunohistochemical Features. *Surv Ophthalmol*. 2014;59(2):232-235. doi:10.1016/j.survophthal.2013.06.004
5. Phelps PO, Marcet MM, Hong AR, Nichols JW. Eyelid Myeloid Sarcoma: Ominous Presentation of Acute Myelogenous Leukemia. *Orbit*. 2015;34(1):30-32. doi:10.3109/01676830.2014.938169
6. Kang H, Takahashi Y, Takahashi E, Kakizaki H. Myeloid Sarcoma in an Eyelid That Developed during Chemotherapy for Acute Myeloid Leukemia. *Case Reports in Ophthalmology*. 2016;7(1):25-29. doi:10.1159/000443202
7. Payne C, Olivero WC, Wang B, et al. Myeloid Sarcoma: A Rare Case of an Orbital Mass Mimicking Orbital Pseudotumor Requiring Neurosurgical Intervention. *Case Reports in Neurological Medicine*. 2014;2014:e395196. doi:10.1155/2014/395196
8. Pruksakorn V, Tirakunwichcha S, Assanasen T. Orbital Myeloid Sarcoma in Adult Mimicking Nasolacrimal Duct Obstruction: A Case Report. *Am J Ophthalmol Case Rep*. 2016;4:35-37. doi:10.1016/j.ajoc.2016.08.003
9. Ramia de Cap M, Chen W. Myeloid Sarcoma: An Overview. *Seminars in Diagnostic Pathology*. 2023;40(3):129-139. doi:10.1053/j.semdp.2023.04.009
10. Pileri SA, Ascani S, Cox MC, et al. Myeloid Sarcoma: Clinico-Pathologic, Phenotypic and Cytogenetic Analysis of 92 Adult Patients. *Leukemia*. 2007;21(2):340-350. doi:10.1038/sj.leu.2404491
11. Shallis RM, Gale RP, Lazarus HM, et al. Myeloid Sarcoma, Chloroma, or Extramedullary Acute Myeloid Leukemia Tumor: A Tale of Misnomers, Controversy and the Unresolved. *Blood Reviews*. 2021;47:100773. doi:10.1016/j.blre.2020.100773
12. Menasce LP, Banerjee SS, Beckett E, Harris M. Extra-Medullary Myeloid Tumour (Granulocytic Sarcoma) is Often Misdiagnosed: A Study of 26 cases. *Histopathology*. 1999;34(5):391-398. doi:10.1046/j.1365-2559.1999.00651.x
13. Markoc F, Bozdogan N, Yükrük FA, Gumuc EB, Akdur NC. Granulocytic Sarcomas: Difficulties in Diagnosis. *Tumori*. 2010;96(1):149-153. doi:10.1177/030089161009600124

Atypical Infantile Orbital Cellulitis with Bacteremia and Inferior Orbital Abscess

Edith Reshef
Department of Ophthalmology, Boston Children's Hospital, Boston, Massachusetts, United States

Introduction: Two cases of infantile orbital cellulitis presented with methicillin-resistant *Staphylococcus Aureus* (MSSA) inferior orbital abscess and associated bacteremia. Both cases failed to treatment with intravenous broad-spectrum antibiotics and ultimately required surgical drainage.

Methods: Case report.

Results: Two infants (2 month-old boy, and 6-month old girl) with normal birth history and unremarkable medical history each presented with several days of unilateral periorbital swelling, congestion, and fevers (100.5 and 101.3°F). Initial examination of each patient demonstrated lethargy, intermittent symmetric fixation, normal intraocular pressures, and no relative afferent pupillary defect. There was unilateral eyelid edema and erythema, and an unremarkable limited dilated fundus exam (Figures 1a and 2a). The first patient had diffuse chemosis and conjunctival injection, and extraocular motility could not be assessed. The second patient had mild limitation of supraduction and abduction.

Maxillofacial computed tomography of the first patient demonstrated a left inferior subperiosteal abscess with associated ethmoid sinusitis, dehiscence of the lamina papyracea and orbital floor, and dehiscence of the maxillary floor with adjacent small fluid collection in the palate (Figure 1b). Maxillofacial computed tomography for the second patient demonstrated opacification of the maxillary sinuses and ethmoid air cells, and a right inferior subperiosteal orbital abscess (Figure 2b).

Both patients were treated with intravenous vancomycin, ceftriaxone, and metronidazole. Blood cultures drawn at presentation demonstrated gram positive cocci in clusters that ultimately grew MSSA. After 48-72 hours of no improvement, both patients underwent orbitotomy with abscess drainage and limited endoscopic sinus surgery. Intraoperative wound cultures also grew MSSA. Both patients showed rapid clinical improvement after surgical drainage and continued antibiotic therapy, with full recovery at four-month follow-up.

Conclusions: Although orbital cellulitis is known to affect children more than adults, infantile orbital cellulitis is relatively less common.[1,2] Ethmoidal sinusitis is the underlying cause of the vast majority of cases, with *Staphylococcus aureus* and *Streptococcus pyogenes* being the most common responsible organisms. The current literature demonstrates an overall trend of older children being more likely to require surgical intervention due to higher chance of polymicrobial infections and more developed sinuses, and younger

(continued)

(continued)

children being more likely to resolve with expectant observation and intravenous antibiotics.[3,4,5] There are few studies that focus solely on infantile orbital cellulitis, and of these, all describe medial abscesses either adjacent to infected ethmoid sinuses or an infected maxillary tooth. The largest such study to-date described nine cases of infantile orbital cellulitis with ethmoid sinusitis as the source in all cases, *Staphylococcus* as the most common organism, and all but one with medial subperiosteal abscesses, and none with bacteremia. In this study, 55.6% of patients did not require surgical management.[1] The current study describes two atypical cases of infantile orbital cellulitis with inferior subperiosteal abscess and MSSA bacteremia. In such cases, earlier surgical intervention should be considered.

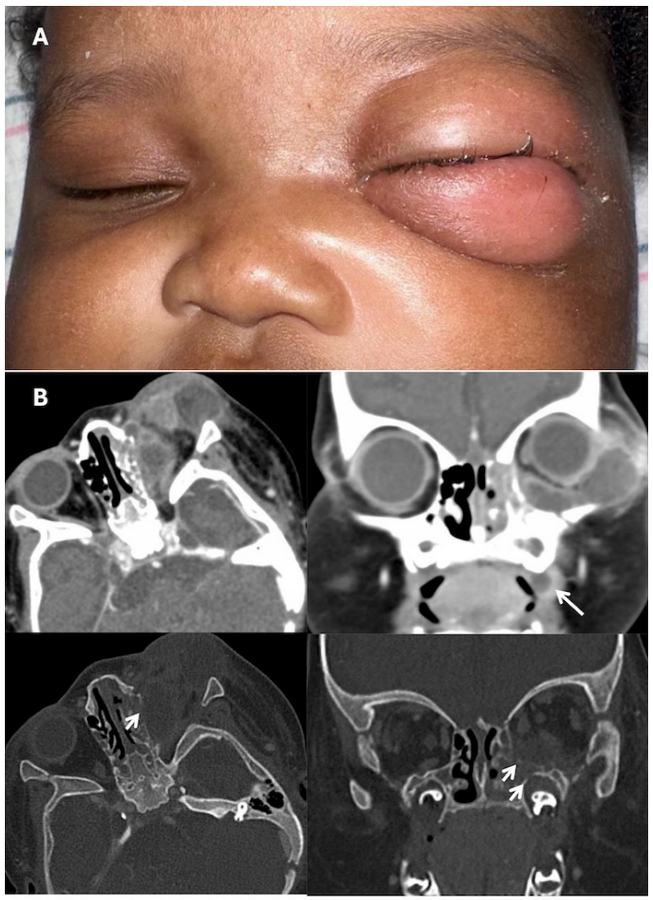


Figure 1: (A) External photograph from initial presentation demonstrating marked left eyelid edema and erythema. **(B)** Computed tomography images with soft tissue window (top) demonstrating large inferior and medial orbital subperiosteal abscesses, ethmoid and maxillary sinus disease, and a small palatine abscess (long arrow). Bone window (bottom) showing bony dehiscence of the lamina papyracea, orbital floor, and maxillary floor (short arrows).

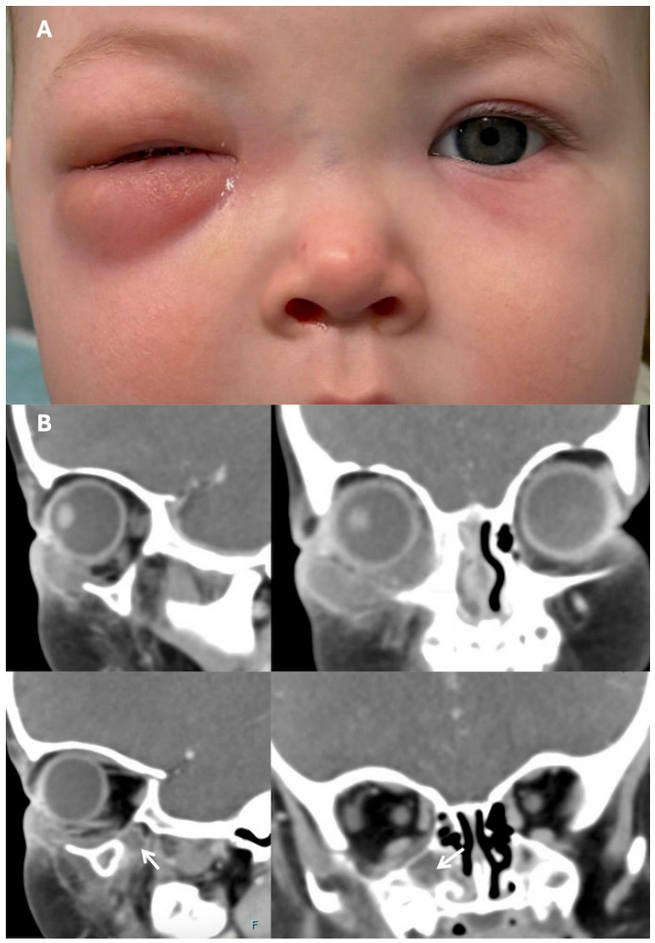


Figure 2: (A) External photograph from initial presentation demonstrating marked right periorbital edema and erythema. **(B)** Computed tomography images with saggital (right) and coronal (left) sections demonstrating a large inferior orbital subperiosteal abscess, with ethmoid and maxillary sinus disease (arrow)

(continued)

(continued)

References:

1. Miller A, Castanes M, Yen M, Coats D, Yen K. Infantile orbital cellulitis. Ophthalmology. 2008;115:594. doi: 10.1016/j.ophtha.2007.10.011.
2. Rubin SE, Rubin LG, Zito J, Goldstein MN, Eng C. Medical management of orbital subperiosteal abscess in children. J Pediatr Ophthalmol Strabismus. 1989 Jan-Feb;26(1):21-7.
3. G.H. Garcia, G.J. Harris, Criteria for nonsurgical management of subperiosteal abscess of the orbit: analysis of outcomes 1988–1998, Ophthalmology 107 (8) (2000) 1454–1456.
4. J.M. Smith, E.M. Bratton, P. DeWitt, B.W. Davies, E.M. Hink, V.D. Durairaj, Predicting the need for surgical intervention in pediatric orbital cellulitis, Am. J. Ophthalmol. (May 2014).
5. E. Marchiano, M.D. Raikundalia, E.T. Carniol, et al., Characteristics of patients treated for orbital cellulitis: an analysis of inpatient data, Laryngoscope (August 2015).

Glucagon-Like Peptide 1 Agonist Use in Ophthalmic Surgical Patients

Teresa Chen[1], Leena Lim[2], Natalie Chen[1], Sarah Guo[1], Sarah Zhou[1], Lilangi Ediriwickrema[1], Jeremiah Tao[1], Seanna Grob[1]
[1]Division of Orbital and Ophthalmic Plastic Surgery, Gavin Herbert Eye Institute, University of California, Irvine, Irvine, California, United States, [2]School of Medicine, University of California, Irvine, Irvine, California, United States

Introduction: Diabetes mellitus (DM) and obesity are a growing global health concern and public interest in glucagon-like peptide 1 (GLP-1) agonists for DM and weight loss has increased significantly in the last few years.[1] GLP-1 agonists promote insulin synthesis and secretion and inhibit glucagon release, as well as suppress appetite and delay gastric emptying.[2] Due to this mechanism of action, GLP-1 agonists can cause gastrointestinal (GI) side effects and more importantly, may increase the intraoperative risk of vomiting and aspiration.[3–5] The current American Society of Anesthesiologists (ASA) guidelines are to discontinue GLP-1 agonist one day prior to surgery for those who use it daily and one week prior to surgery for those who use it weekly, and to consider delaying surgery if patients have GI symptoms on the day of surgery.[6] There is no data on optimal duration of fasting prior to surgery.[7,8] This study aims to characterize GLP-1 agonist use and rate of associated intraoperative adverse events in ophthalmic surgical patients.

Methods: This was a retrospective case series of patients on GLP-1 agonists undergoing ophthalmic surgeries at one tertiary care academic eye center from July 2023 to June 2024. Baseline characteristics of patients were obtained. Type of anesthesia, type of and duration of time on GLP-1 agonist, duration of fasting before procedure, duration of time off GLP-1 agonist, duration of surgery, and adverse events (if any) were recorded.

Results: A total of 108 patients on GLP-1 agonists were identified, with a total of 138 surgical encounters, which was 2% of the total surgeries (6663) performed. The average age was 68 ± 12 years old (range 34-92), 48 were male (44%) and indications for GLP-1 agonist use were diabetes mellitus (88, 81%) and obesity (20, 19%). GLP-1 agonists included semaglutide injection 83 (77%), semaglutide oral tablet 11 (10%), exenatide injection 1 (<1%), dulaglutide injection 8 (7%), and liraglutide injection 5 (5%). 105 of the 138 surgical cases (76%) received monitored anesthesia care with local anesthesia and the remainder were general (endotracheal or laryngeal mask) anesthesia. Duration of GLP-1 agonist use prior to surgery was 615 ± 659 days (range 10-2600), duration of fasting before procedure was 10 hours 35 minutes ± 13 minutes, duration of time off GLP-1 agonist injections was 10 ± 12 days (range 0-90; 22 encounters of discontinuation less than one week with 3 not stopping at all) and tablets was 3 ± 3 days (range 1-9), and duration of surgery was 55 ± 44 minutes. Intraoperative adverse events occurred in 3 patients on semiglutide injection: 1 patient (off medication for 1 week) vomited during induction and required intubation and bronchoscopy assisted suction of gastric contents and 2 patients (off medication for less than 1 week) required multiple doses of anti-emetics for nausea. There were no postoperative complications.
(continued)

(continued)

Conclusions: Patients on GLP-1 agonist comprised a small percentage (2%) of total ophthalmic surgical patients in this study. Most patients were adherent to the ASA guidelines for preoperative GLP-1 agonist discontinuation and fasting. Adverse events were nausea and vomiting and occurred in 2% of patients on GLP-1 agonists.

References:

1. Han SH, Safeek R, Ockerman K, et al. Public Interest in the Off-Label Use of Glucagon-like Peptide 1 Agonists (Ozempic) for Cosmetic Weight Loss: A Google Trends Analysis. *Aesthet Surg J*. 2023;44(1):60-67. doi:10.1093/asj/sjad211
2. Suran M. As Ozempic's Popularity Soars, Here's What to Know About Semaglutide and Weight Loss. *JAMA*. 2023;329(19):1627-1629. doi:10.1001/jama.2023.2438
3. Klein SR, Hobai IA. Semaglutide, delayed gastric emptying, and intraoperative pulmonary aspiration: a case report. *Can J Anaesth*. 2023;70(8):1394-1396. doi:10.1007/s12630-023-02440-3
4. Kobori T, Onishi Y, Yoshida Y, et al. Association of glucagon-like peptide-1 receptor agonist treatment with gastric residue in an esophagogastroduodenoscopy. *J Diabetes Investig*. 2023;14(6):767-773. doi:10.1111/jdi.14005
5. Silveira SQ, da Silva LM, de Campos Vieira Abib A, et al. Relationship between perioperative semaglutide use and residual gastric content: A retrospective analysis of patients undergoing elective upper endoscopy. *J Clin Anesth*. 2023;87:111091. doi:10.1016/j.jclinane.2023.111091
6. American Society of Anesthesiologists Consensus-Based Guidance on Preoperative Management of Patients (Adults and Children) on Glucagon-Like Peptide-1 (GLP-1) Receptor Agonists | American Society of Anesthesiologists (ASA). Accessed January 12, 2025. https://www.asahq.org/about-asa/newsroom/news-releases/2023/06/american-society-of-anesthesiologists-consensus-based-guidance-on-preoperative
7. Joshi GP, Abdelmalak BB, Weigel WA, et al. 2023 American Society of Anesthesiologists Practice Guidelines for Preoperative Fasting: Carbohydrate-containing Clear Liquids with or without Protein, Chewing Gum, and Pediatric Fasting Duration-A Modular Update of the 2017 American Society of Anesthesiologists Practice Guidelines for Preoperative Fasting. *Anesthesiology*. 2023;138(2):132-151. doi:10.1097/ALN.0000000000004381
8. Practice Guidelines for Preoperative Fasting and the Use of Pharmacologic Agents to Reduce the Risk of Pulmonary Aspiration: Application to Healthy Patients Undergoing Elective Procedures: An Updated Report by the American Society of Anesthesiologists Task Force on Preoperative Fasting and the Use of Pharmacologic Agents to Reduce the Risk of Pulmonary Aspiration. *Anesthesiology*. 2017;126(3):376-393. doi:10.1097/ALN.0000000000001452

Risk Factors Associated with Delays in Teprotumumab Treatment for Thyroid Eye Disease

Lisa Y. Lin, Amee Azad, Sri Meghana Khonda, Suzanne K. Freitag
Ophthalmic Plastic Surgery Service, Department of Ophthalmology, Massachusetts Eye and Ear, Boston, Massachusetts, United States

Introduction: Teprotumamab is the only Food and Drug Administration approved medication for the treatment of thyroid eye disease (TED). However, it is costly, and the insurance approval process can cause delays in treatment. This study aimed to analyze the time from patient enrollment to treatment with teprotumumab and to identify factors contributing to delays in treatment.

Methods: A retrospective study was performed at a single institution. TED patients over 18 years of age who were prescribed teprotumumab between January 2020 and August 2024 were included (excluding patients enrolled during October 2020-March 2021 due to the national drug shortage). The study calculated the time from date of treatment enrollment to the date of first infusion with the primary outcome of treatment delay defined as a gap of more than 90 days to treatment, including patients ultimately denied coverage by insurance. Risk factors were analyzed using a multivariate logistic regression model and we reported odds ratios (OR) with a 95% confidence interval (CI). All analyses were performed using R, version 4.3.3 (R Project for Statistical Computing), with statistical significance defined as 2-sided $P < .05$.

Results: This study included 213 patients (155 (72.8%) females, average age 54.7 years). Twenty-three patients (10.8%) did not pursue treatment after initial enrollment and were excluded from further analysis (8 due to prescriber's decision: 5 with pre-existing hearing loss, 2 pregnant, 1 pre-diabetic; and 15 due to patient's decision: 6 with concern about side effects, 4 lost to follow up, 3 unknown reason, 2 other medical comorbidities, 2 improved without treatment). One-hundred and ninety patients were included in the regression analysis and, among these, a total of 71 patients (37.4%) experienced a delay of 90 days or more days (including 7 patients (3.7%) who never received treatment due to insurance denial). Patients who experienced delays were more likely to identify as Black or Hispanic ethnicity and be primarily insured by Medicaid. (Table 1) In multivariate analysis, Black patients were significantly more likely to experience a delay in treatment (OR 26, 95% CI 4.71-48.79) relative to White patients when adjusting for age, sex, primary insurer, and pre-treatment CAS.

(continued)

(continued)

Conclusions: This retrospective study demonstrated that over one-third of patients experience a delay in initiating treatment with teprotumumab. TED can be disfiguring, vision threatening, and have significant impacts on patients' quality of life, and delays in treatment could lead to progression of disease and a significant hardship on patients. The insurance approval process adds additional burden, as denials and appeals can often be cumbersome to the patient and the provider. Denials also may lack transparency or be discordant with clinical practice guidelines. This study found that patients who identify as Black was a significant factor in contributing to delays in treatment. Further research is needed to better understand potential biases that contribute to payor delays in order to ensure timely and appropriate care for all TED patients.

Table 1: Patient Characteristics for Delays in Teprotumumab Initiation

	Total (N=190)	Delay (N=71)		No Delay (N=119)		
	n/mean (SD/IQR)	*n/mean*	*SD/%*	*n/mean*	*SD/%*	*P-Value*
Age at Teprotumumab Enrollment						0.057
≤50	122	39	32.0%	*83*	68.0%	
>50	68	32	47.1%	36	52.9%	
Sex						0.229
Female	139	56	40.3%	83	59.7%	
Male	51	15	29.4%	36	70.6%	
Insurance						**0.025**
Medicaid	16	11	68.8%	5	31.3%	
Medicare	50	17	34.0%	33	66.0%	
Private	124	43	34.7%	81	65.3%	
Race/Ethnicity						**<0.001**
Asian	27	9	33.3%	18	66.7%	
Black	14	13	92.9%	1	7.1%	
Hispanic	11	6	54.5%	5	45.5%	
White	138	43	31.2%	95	68.8%	
Pre-Teprotumumab CAS						0.854
0-3	32	11	34.4%	21	65.6%	
4 or greater	158	60	38.0%	98	62.0%	

[a]Treatment Delay defined as Teprotumumab initiation more than 3 months after enrollment
**Statistics were calculated using a T-test for continuous variables, Chi-square and Fisher's Exact for categorical variables

Table 2: Univariate and Multivariate Logistic Regression Analysis of Predictors for Delay in Teprotumumab Initiation

		Odds Ratio	95% CI	*p-value*	Adjusted Odds Ratio	95% CI	*p-value*
Age at Enrollment							
	≤50	*reference*			*reference*		
	>50	0.53	0.29-0.97	**0.040**	0.62	0.29-1.32	0.215
Sex							
	Female	*reference*			*reference*		
	Male	0.62	0.30-1.21	0.172	0.59	0.27-1.24	0.176
Insurance							
	Private	*reference*			*reference*		
	Medicare	0.97	0.48-1.92	0.932	1.39	0.62-3.12	0.421
	Medicaid	4.14	1.41-13.87	**0.013**	3.12	0.95-11.25	0.067
Race/Ethnicity							
	White	*reference*			*reference*		
	Asian	1.10	0.44-2.60	0.824	0.94	0.34-2.41	0.895
	Black	28.72	5.46-53.01	**0.001**	26.00	4.71-48.79	**0.002**
	Hispanic	2.65	0.76-9.66	0.123	1.92	0.51-7.42	0.330
Pre-Treatment CAS							
	0-3	*reference*			*reference*		
	4 or greater	1.17	0.54-2.67	0.701	1.65	0.68-4.39	0.288

*Treatment Delay defined as Teprotumumab initiation more than 3 months after enrollment
**CI denotes Confidence Interval

Don’t Discount the Pretrichial Approach

Cameron Nabavi[1,2], Jill Foster[1,2], Craig Czyz[3], Jessica Crawford[4,5], Antonios Dimopoulos[1,2], Kenneth Cahill[6,7]
[1]Department of Ophthalmology and Visual Sciences, The Ohio State University, Columbus, Ohio, United States, [2]Department of Ophthalmology, Nationwide Childrens Hospital, Columbus, Ohio, United States, [3]Division of Ophthalmology, Section Oculofacial Plastic and Reconstructive Surgery, Ohio University/OhioHealth Doctor’s Hospital, Columbus, Ohio, United States, [4]Department of Ophthalmology and Visual Sciences, The Ohio State University, Columbus, Ohio, United States, [5]Department of Ophthalmology, Nationwide Childrens Hospital, Columbus, Ohio, United States, [6]Department of Ophthalmology and Visual Sciences, The Ohio State University, Columbus, Ohio, United States, [7]Department of Ophthalmology, Nationwide Childrens Hospital, Columbus, Ohio, United States

Introduction: Brow lifting is a powerful tool in both functional and cosmetic correction of brow ptosis. Techniques have progressed over time including direct supraciliary supraciliary approach, bicoronal approach, pretrichial approach and the more contemporary ideology of the endoscopic approach or temporal-only brow lift. Too often, we tend to abandon older techniques as inferior and not appropriate given newer technology and advances, despite natural shortcomings of these more modern approaches, especially in patients with higher hairlines or with severe brow heaviness. We discuss re-visiting the technique of pretrichial brow lifting as a viable and even preferred option in certain patient populations depending on specific patient goals given their forehead and hair anatomy.

Methods: The rationale behind pretrichial-approach brow lifting as the preferred choice in certain patients is discussed. The technique is revisited and step-by-step manner with personal pearls to maximize efficiency and safety during surgery.

Results: Pretrichial brow lifting approach begins with patient selection. Once a patient is deemed a good candidate for a brow lift, the clinical findings that may lead towards the decision of a pretrichial approach involve hairline location, patient’s preferred hairstyle, patient goals, and patient’s wound healing risks. If a patient has a low hairline, pretrichial approaches may lower the hairline further and be an undesirable option. Endoscopic or coronal approaches would be preferable in these cases (1) . A high hairline may benefit from brow lifting via a pretrichial approach as it is not only powerful at lifting the brow and forehead but also lowers a possibly undesirable hairline (2,3,4). Second, a patient’s hairstyle plays into decision making. A good candidate for the pretrichial approach would be a patient with thick hair density who prefers bangs to help cover the pretrichial incision rather than a patient that pulls their hair back. Third, the surgeon must always consider patients’ wound healing with such an incision. A larger pretrichial incision rather than small incision endoscopic approach has more risk of disrupting vascular supply to hair follicles. Vasculopaths such as patients with diabetes or heart disease may be poor candidates due to risk of ischemic alopecia. In addition, patients with poor wound healing may have a more undesirable incision line that may be more evident.
(continued)

(continued)

Surgery is performed under intravenous sedation with local anesthetic. The pretrichial incision is marked centrally just in front of the hair follicles, and inside the hairline temporally on either side. 2% lidocaine with 0.75% Marcaine in a 1:1 mix with 1:200,000 epinephrine is injected at the arcus marginalis across the brows and glabella. Similar anesthetic is injected at our incision markings. The remainder of the forehead is anesthetized with a 1:4 dilution of our local anesthetic. After proper sterilization of our surgical field, a #10 blade is used to incise our pretrichial incision down the periosteum where the periosteum is also incised. This is then carried temporally and slightly more superficially between the superficial temporal fascia and deep temporal fascia so as to avoid frontal branches of the facial nerve. A Freer elevator, followed by a short periosteal elevator are used to carry our dissection to the superior orbital rim. With retraction, the arcus marginalis is identified and Westcott scissors are used to incise the arcus marginalis temporally, this is carried carefully medially so as to not disrupt the supraorbital neurovascular bundles. Once the arcus is freed across the extent of the brows, our opening is further freed with blunt dissection with facelift scissors. The corrugator, procerus and frontalis muscles are then disrupted to allow for further lifting and reduction of rhytides. The forehead is then lifted to judge the amout of skin to be excised. Skin in the pretrichial portion is removed rostral (inferior) to our incision, while temporally, hair-bearing skin caudal (superior) to our incision. The pretrichial skin incision is then closed with buried 5-0 poly-glactin sutures for the subcutaneous tissue followed by 5-0 prolene in a running horizontal mattress fashion. The post-trichial portion is closed with skin staples.

Typical results of pretrichial brow lift are shown (Figure 1 postoperative month 3, Figure 2 postoperative week 1).

Conclusions: Pretrichial forehead and brow lifting can be a powerful modality to address heavy eyebrows in the right patient. For patients desiring forehead reduction including those desiring gender affirmation surgery or those with a high hairline and severe brow ptosis, pretrichial approach has benefits by lowering the central hairline, tissue removal to mechanically elevate the eyebrows. This technique can be as efficient as endoscopic lifting and has additional benefits of reduced cost without the need for special instrumentation and supplies. Although pretrichial brow approaches may not be the correct choice for every patient, we encourage keeping it in your surgical armamentarium as not every patient may be the ideal patient for more contemporary endoscopic approaches.

(continued)

(continued)

Figure 1



Figure 2



References:

1. Adamson PA, Cormier R, McGraw BL. The coronal forehead lift--modifications and results. J Otolaryngol. 1992 Feb;21(1):25-9
2. Dutton JW Jr, Chang IA, Zins JE. The Hairline Brow Lift. Clin Plast Surg. 2022 Jul;49(3):349-356
3. Walrath JD, McCord CD. The open brow lift. Clin Plast Surg. 2013 Jan;40(1):117-24
4. Tower RN, Dailey RA. Endoscopic pretrichial brow lift: surgical indications, technique and outcomes. Ophthalmic Plast Reconstr Surg. 2004 Jul;20(4):268-73

Reverse Spock: Brow Peak Excisional Direct Brow Lift

Liane Dallalzadeh, Phillip Tenzel, Ronald Mancini
Division of Oculoplastic and Orbital Surgery, Department of Ophthalmology, University of Texas Southwestern Medical Center, Dallas, Texas, United States

Introduction: To describe a variation of the direct brow lift for male patients with a preoperative prominent brow peak to avoid inadvertent feminization of the brow.

Methods: This is an IRB-approved retrospective study of adult patients who underwent direct brow lift at a single academic institution in 2024. Inclusion criteria included male sex, age > 18 years, bilateral brow ptosis, and postoperative follow-up > 3 months. All patients were noted to have a prominent brow peak preoperatively. Markings were drawn intentionally through the peak rather than following above the brow cilia (Figure 1). The incision was created with identical bevels on both the upper and lower aspects followed by excision within the subcutaneous fat plane (Figure 2). The wound was subsequently closed in layers with interrupted 5-0 Vicryl sutures followed by a 5-0 Prolene in a running-X fashion.

Results: Five male patients met inclusion criteria with mean age 71 years. All patients exhibited improvement in brow ptosis with an observed flattening of the brow peak at last postoperative visit (Figure 3).

Conclusions: The ideal male brow is generally described as thicker and more nearly horizontal than the female counterpart.[1-4] Male patients with a preoperative prominent peak risk inadvertent feminization of their brow by accentuating this feature with a traditional supraciliary incision. Here we describe a variation of incision design for such patients that intentionally includes excision of the peak to result in an overall flatter brow contour.

(continued)

(continued)

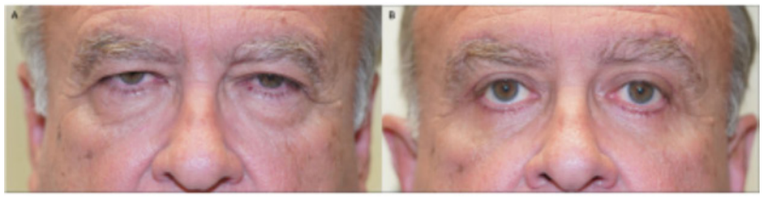
Figure 1



Figure 2



Figure 3



References:

1. Austell PJ, Williams EF 3rd. Male Brow Lift and Blepharoplasty. Facial Plast Surg Clin North Am. 2024 Aug;32(3):383-390.
2. Sedgh J. The Aesthetics of the Upper Face and Brow: Male and Female Differences. Facial Plast Surg. 2018 Apr;34(2):114-118.
3. Pietruski P, Majak M. The Male Eyebrow and Eyelid: An Anthropometric Analysis of White Professional Models. Plast Reconstr Surg. 2023 Aug 1;152(2):248e-256e
4. Hamamoto AA, Liu TW, Wong BJ. Identifying ideal brow vector position: empirical analysis of three brow archetypes. Facial Plast Surg. 2013 Feb;29(1):76-82.

Outcomes of Lower Eyelid Spacer Graft Surgery for Exposure Keratopathy in Patients with Neurologic and Neuromuscular Blink Dysfunction

Bryan Winn[1,2], Jonathan Lu[1], Nickisa Hodgson[1], Loreley Smith[1], Stuart Seiff[1], Julie Schallhorn[1,2], Elana Meer[1], Reza Vagefi[3]
[1]Ophthalmology, University of California - San Francisco, San Francisco, California, United States, [2]Ophthalmology Section, Surgical Service, San Francisco Veterans Affairs Health Care System, San Francisco, California, United States, [3]Ophthalmology, Tufts University - New England Medical Center, Boston, Massachusetts, United States

Introduction: Neurologic and neuromuscular disorders, such as Parkinson's disease, myotonic dystrophy, and polysensory neuropathy, are frequently associated with significant blink dysfunction, including hypometric, infrequent, or delayed blinking. These abnormalities compromise tear film stability, leading to chronic exposure keratopathy and symptoms such as burning, photophobia, and corneal breakdown. Lower eyelid spacer graft surgery elevates the lower eyelid, reducing lagophthalmos and minimizing corneal exposure. This small case series evaluates the outcomes of this procedure in patients with neurologic and neuromuscular disorders, focusing on functional and symptomatic improvement.

Methods: This retrospective review included all patients who underwent lower eyelid en glove spacer graft surgery ("lower eyelid buttress procedure") at the San Francisco Veterans Affairs Hospital from 2019 to 2024. Inclusion criteria were a confirmed neurologic or neuromuscular disorder with blink dysfunction and exposure keratopathy. Patients undergoing surgery for non-neurological causes were excluded. Data included demographics, pre- and postoperative visual acuity, eyelid position/lagophthalmos, corneal findings, and symptoms.

The procedure involved lateral canthotomy and inferior cantholysis to release the lower lid retractors, followed by blunt dissection in the sub-retractor plane. (Figure 1.) With blunt Stevens tenotomy scissors in place to hold open the sub-retractor space, an en-glove dissection and lysis of the lower eyelid retractors was then performed with Westcott scissors. A nasal conjunctival/retractor incision allowed placement of a trimmed 4 cm × 1 cm × 1-mm acellular porcine dermal collagen spacer (to 27 mm × 7mm × 1mm), which was anchored under the tarsal plate with mattressed 6-0 chromic gut sutures. (Figure 2.) A lateral tarsal strip procedure or canthal resuspension was performed for horizontal tightening. Temporary superior traction was applied with a 4-0 silk suture, removed 4-7 days postoperatively. This fast (< 30 minutes per eye), minimally invasive approach preserved conjunctival integrity, reducing discomfort and corneal risks.

(continued)

(continued)

Results: Three male patients (ages 33.7–80.9 years) underwent bilateral surgery for multifactorial exposure keratopathy with polyneuropathy, Parkinson's disease with Salzmann nodules, and myotonic dystrophy with chronic photophobia, respectively. Preoperative lagophthalmos ranged from 1 mm to 4 mm, with severe punctate epithelial erosions and filamentary keratopathy.

Postoperatively, all patients demonstrated improved lagophthalmos reduced to ≤1 mm. Visual acuity improved or remained stable. Symptoms, including pain and photophobia, resolved or significantly improved, with one patient reporting 99% symptomatic relief. Corneal findings showed marked reductions in punctate epithelial erosions, with only trace residual staining or scarring. One patient was lost to follow-up shortly after surgery, limiting outcome assessment.

At a mean follow-up of 36 months, eyelid position and corneal health remained stable, with no major surgical complications reported.

Conclusions: Lower eyelid spacer graft surgery effectively addresses exposure keratopathy in patients with neurologic or neuromuscular disorders affecting blink dynamics by improving eyelid position, reducing lagophthalmos, and alleviating symptoms. This procedure is a valuable intervention for mitigating the impact of blink dysfunction on ocular surface health. Further studies are needed to confirm long-term outcomes and refine patient selection criteria.

Figure 1

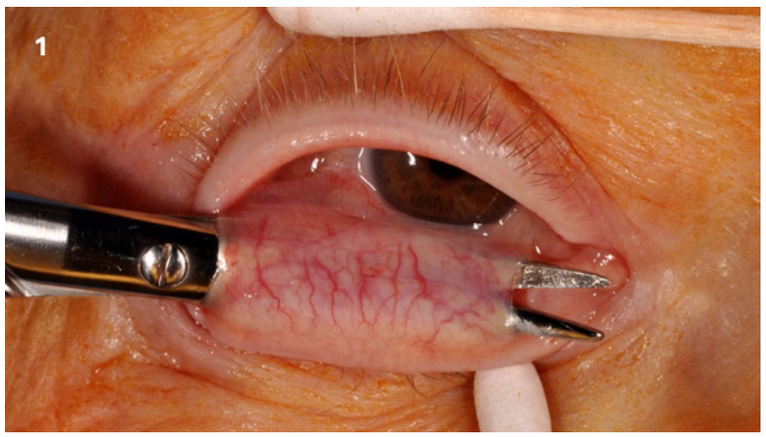
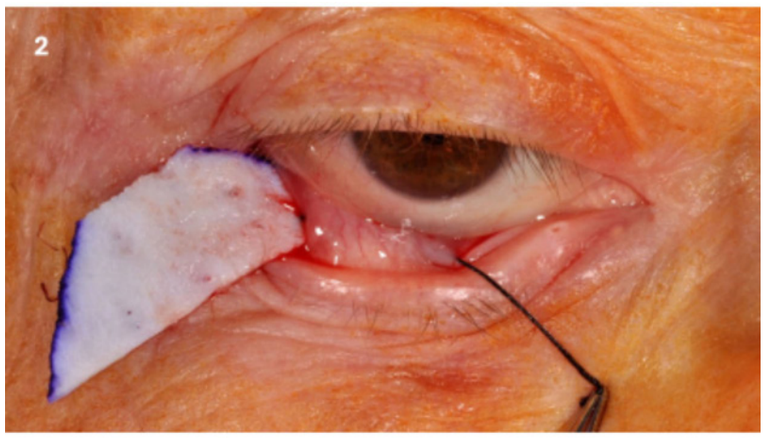


Figure 2



(continued)

(continued)

References:

1. Agostino R, Bologna M, Dinapoli L, Gregori B, Fabbrini G, Accornero N, Berardelli A. Voluntary, spontaneous, and reflex blinking in Parkinson's disease. Mov Disord. 2008 Apr 15;23(5):669-75. doi: 10.1002/mds.21887. PMID: 18175339.
2. Campla CK, Awh C, Rebollo NP, Perry JD. Cheeklift With and Without Posterior Lamellar Spacer Grafts for Treatment of Lower Eyelid Retraction. Aesthetic Plast Surg. 2024 May;48(10):1920-1925. doi: 10.1007/s00266-024-03950-1. Epub 2024 Mar 18. PMID: 38499878; PMCID: PMC11133198.
3. Demirci S, Gunes A, Koyuncuoglu HR, Tok L, Tok O. Evaluation of corneal parameters in patients with Parkinson's disease. Neurol Sci. 2016 Aug;37(8):1247-52. doi: 10.1007/s10072-016-2574-1. Epub 2016 Apr 7. PMID: 27056377.
4. Esteban A, Traba A, Prieto J. Eyelid movements in health and disease. The supranuclear impairment of the palpebral motility. Neurophysiol Clin. 2004 Feb;34(1):3-15. doi: 10.1016/j.neucli.2004.01.002. PMID: 15030796.
5. Ferri M, Oestreicher JH. Treatment of post-blepharoplasty lower lid retraction by free tarsoconjunctival grafting. Orbit. 2002 Dec;21(4):281-8. doi: 10.1076/orbi.21.4.281.8555. PMID: 12610767.
6. Golbe LI, Davis PH, Lepore FE. Eyelid movement abnormalities in progressive supranuclear palsy. Mov Disord. 1989;4(4):297-302. doi: 10.1002/mds.870040402. PMID: 2811889.
7. Grumbine FL, Idowu O, Kersten RC, Deparis SW, Vagefi MR. Correction of Lower Eyelid Retraction with En Glove Placement of Porcine Dermal Collagen Matrix Implant. Plast Reconstr Surg. 2019 Mar;143(3):743-746. doi: 10.1097/PRS.0000000000005376. PMID: 30817645.
8. Guney F, Demir O, Gonen MS. Blink reflex alterations in diabetic patients with or without polyneuropathy. Int J Neurosci. 2008 Sep;118(9):1287-98. doi: 10.1080/00207450701870378. PMID: 18698511.
9. Hamedani AG, Gold DR. Eyelid Dysfunction in Neurodegenerative, Neurogenetic, and Neurometabolic Disease. Front Neurol. 2017 Jul 18;8:329. doi: 10.3389/fneur.2017.00329. PMID: 28769865; PMCID: PMC5513921.
10. Kokubun N, Hirata K. Neurophysiological evaluation of trigeminal and facial nerves in patients with chronic inflammatory demyelinating polyneuropathy. Muscle Nerve. 2007 Feb;35(2):203-7. doi: 10.1002/mus.20679. PMID: 17063459.
11. Messina C, Tonali P, Scoppetta C. The lack of deep reflexes in myotonic dystrophy. J Neurol Sci. 1976 Dec;30(2-3):303-11. doi: 10.1016/0022-510x(76)90136-2. PMID: 1003250.
12. Nakayama T, Okano M, Saitoh Y, Uchiyama T, Yatabe K, Kawai M. [Decreased blink frequency in myotonic dystrophy]. Rinsho Shinkeigaku. 1998 Oct-Nov;38(10-11):945-7. Japanese. PMID: 10203980.
13. Oestreicher JH, Pang NK, Liao W. Treatment of lower eyelid retraction by retractor release and posterior lamellar grafting: an analysis of 659 eyelids in 400 patients. Ophthalmic Plast Reconstr Surg. 2008 May-Jun;24(3):207-12. doi: 10.1097/IOP.0b013e3181706840. PMID: 18520836.
14. Patel BC, Patipa M, Anderson RL, McLeish W. Management of postblepharoplasty lower eyelid retraction with hard palate grafts and lateral tarsal strip. Plast Reconstr Surg. 1997 Apr;99(5):1251-60. doi: 10.1097/00006534-199704001-00007. PMID: 9105351.
15. Patipa M, Patel BC, McLeish W, Anderson RL. Use of hard palate grafts for treatment of postsurgical lower eyelid retraction: a technical overview. J Craniomaxillofac Trauma. 1996 Fall;2(3):18-28. PMID: 11951453.
16. Rana HS, Liddell AT, Patadia AH, Dertinger JE, Fante RG, Willoughby BJ. Buccal fat pedicle flap with a delayed tarsoconjunctival flap for lower eyelid retraction: a new surgical methodology. Orbit. 2024 Oct 15:1-6. doi: 10.1080/01676830.2024.2412789. Epub ahead of print. PMID: 39405080.
17. Reddy VC, Patel SV, Hodge DO, Leavitt JA. Corneal sensitivity, blink rate, and corneal nerve density in progressive supranuclear palsy and Parkinson disease. Cornea. 2013 May;32(5):631-5. doi: 10.1097/ICO.0b013e3182574ade. PMID: 22832867.
18. Scruggs JT, McGwin G Jr, Morgenstern KE. Use of Noncadaveric Human Acellular Dermal Tissue (BellaDerm) in Lower Eyelid Retraction Repair. Ophthalmic Plast Reconstr Surg. 2015 Sep-Oct;31(5):379-84. doi: 10.1097/IOP.0000000000000353. PMID: 25607517.
19. Tao JP, Aakalu VK, Wladis EJ, Sobel RK, Freitag SK, Foster JA, Yen MT. Bioengineered Acellular Dermal Matrix Spacer Grafts for Lower Eyelid Retraction Repair: A Report by the American Academy of Ophthalmology. Ophthalmology. 2020 May;127(5):689-695. doi: 10.1016/j.ophtha.2019.11.011. Epub 2019 Dec 30. PMID: 31899031.
20. Wang W, Litchy WJ, Mandrekar J, Dyck PJ, Klein CJ. Blink reflex role in algorithmic genetic testing of inherited polyneuropathies. Muscle Nerve. 2017 Mar;55(3):316-322. doi: 10.1002/mus.25250. Epub 2016 Dec 2. PMID: 27422849.
21. Yoon MK, McCulley TJ. Autologous dermal grafts as posterior lamellar spacers in the management of lower eyelid retraction. Ophthalmic Plast Reconstr Surg. 2014 Jan-Feb;30(1):64-8. doi: 10.1097/IOP.0000000000000012. PMID: 24398491.

A Cutaneous Clue: Metastatic Breast Cancer Mimicking Periorbital Cellulitis

Helena Lam[1], Wesley Brundridge[1,2]

[1]EyeplasTX, San Antonio, Texas, United States, [2]Brooke Army Medical Center, San Antonio, Texas, United States

Introduction: Periorbital cellulitis is a common and serious infection of the tissues surrounding the eye. In older adults, a cellulitic appearance may instead represent metastatic disease. This case report describes rare periorbital cutaneous findings with metastatic invasive lobular disease which had been treated for a prolonged course as cellulitis. Review of literature identified 65 cases of breast cancer metastasis to the eyelids with limited prognostic information.

Methods: A 73-year-old female was referred for painless left-sided periorbital redness, swelling, and blurry vision for two months. Notably, she was being treated for "long-standing orbital cellulitis" with multiple oral and intravenous antibiotic courses without improvement. The patient reported a history of breast cancer with resection and negative sentinel lymph node biopsy four years ago, at the time, not requiring neo- or adjuvant treatments. Cutaneous exam was remarkable for firm, erythematous, and broad nodularity of the entire left upper and lower lids with broad extension surrounding the orbital rim, and a more subtle involved region along the right upper orbital rim and eyelid (Figure 1). The rest of her exam was unremarkable for orbital signs. No improvement was noticed with empiric high-intensity oral steroids (60 mg/day) and was discontinued after five days from intolerance. Imaging isolated the infiltrated regions preseptally, while also noting high metabolic activity in the bone marrow.

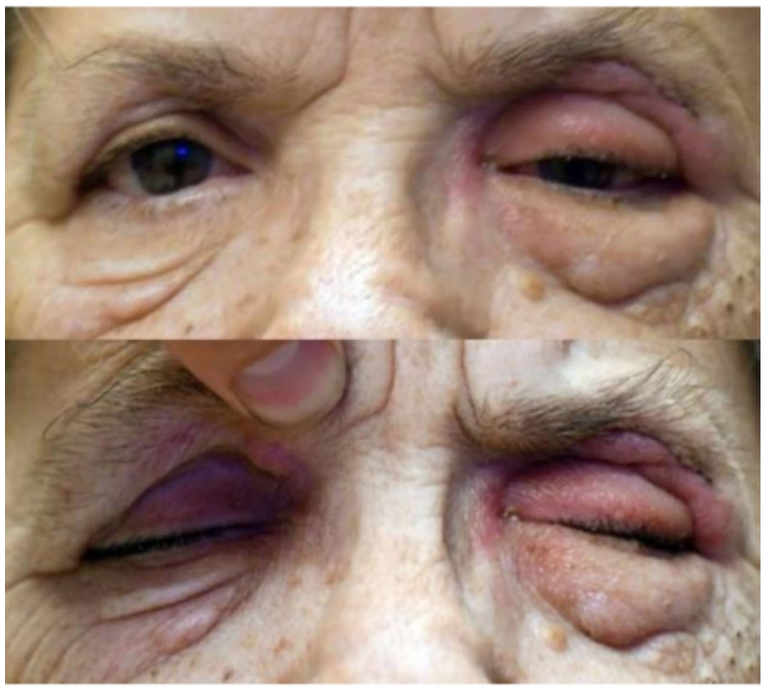
Results: Initial biopsy resulted as a "probable chalazion" on histopathologic review. Further biopsy and debulking revealed thick and gray tissue invading from the dermis layer down to the periosteal rims. Significant bleeding of the tumor tissue was likely related to microvascular proliferation seen with high-grade tumor activity in addition to thrombocytopenia seen with bone marrow involvement.[1] Pathologic analysis revealed +ER, +PR, -HER2 high-grade invasive lobular breast carcinoma.

(continued)

(continued)

Conclusions: This case underscores the importance of considering metastatic disease in the differential diagnosis of periorbital cellulitis, particularly in older adults with a history of malignancy. Breast cancer is the most frequent malignancy in women, but is also particularly notorious for its diversity of metastatic manifestations, including orbital involvement in all compartments in and around the eye. Similar to orbital metastases, eyelid involvement tends to be more likely lobular, however many are notably histiocytoid in subtype which can lead to pathologic misidentification.[2] Review of prior limited outcomes of eyelid metastasis have reported regression of cutaneous manifestations with chemo- and radiotherapy, however there is a paucity of survival information based on immunologic subtype. Early detection of metastases to the orbital region may improve patient outcomes by facilitating timely oncological management.

Figure 1



References:

1. Stevens RJ, Rusby JE, Graham MD. Periorbital cellulitis with breast cancer. *J R Soc Med*. 2003 Jun;96(6):292-4.
2. Hood CI, Font RL, Zimmerman LE: Metastatic mammary carcinoma in the eyelid with histiocytoid appearance. *Cancer*. 1973;31(4):793-800.

Orbital Hydatid Cyst in a Pediatric Patient

Lisa Y. Lin[1], Amos Twinamasiko[2,3], Suzanne K. Freitag[1]
[1]Ophthalmic Plastic Surgery Service, Department of Ophthalmology, Massachusetts Eye and Ear, Boston, Massachusetts, United States, [2]Department of Ophthalmology, Mbarara University of Science and Technology, Mbarara, Uganda, [3]Ruharo Eye Hospital, Mbarara

Introduction: Echicococcus granulosis causes hydatid disease, one of the most common zoonotic diseases worldwide. It is endemic in Middle East, India, Africa, South America, New Zealand, Australia, Turkey, and Southern Europe. Humans can serve as accidental intermediate hosts if eggs are ingested. The larvae pass through the intestines and disseminate to different organisms through hematogenous spread, localizing as cysts most commonly in the liver, lung, or abdominal cavity. Orbital cysts are rare, with reports of <1% occurring in the orbit.[1–6] Herein, we present a unique case of an orbital hydatid cyst in a pediatric patient, with accompanying histopathology and management this rare zoonotic disease.

Methods: Case report.

Results: A previously healthy 2-year old boy presented with left-sided proptosis and pain to an outside, international facility. He was admitted for intravenous antibiotics for empiric treatment of orbital cellulitis, but had progression of proptosis and lateral displacement of the globe after several days of treatment (Figure 1). His exam was notable for fixes and follow vision in both eyes, with normal pupils and intraocular pressures. An ultrasound-guided needle decompression of the lesion was performed, with aspiration of purulent fluid. The patient was then referred to us for further management.

Computed tomography imaging revealed an extensive medial orbital lesion, that was well circumscribed and cystic in appearance, with large loculations (Figure 2). An anterior orbitotomy was performed for exploration and decompression of the lesion. Intraoperatively, a cystic structure with overlying conjunctival injection was noted. Subconjunctival dissection revealed a large cystic lesion filled with dozens of white ovoid structures, which was subsequently extracted. Histopathology was consistent with an orbital hydatid cyst filled with numerous echinococcus parasites. Post-operatively, he did well, with improvement in proptosis. He was evaluated for other systemic cysts and treated with 3 months of albendazole.

(continued)

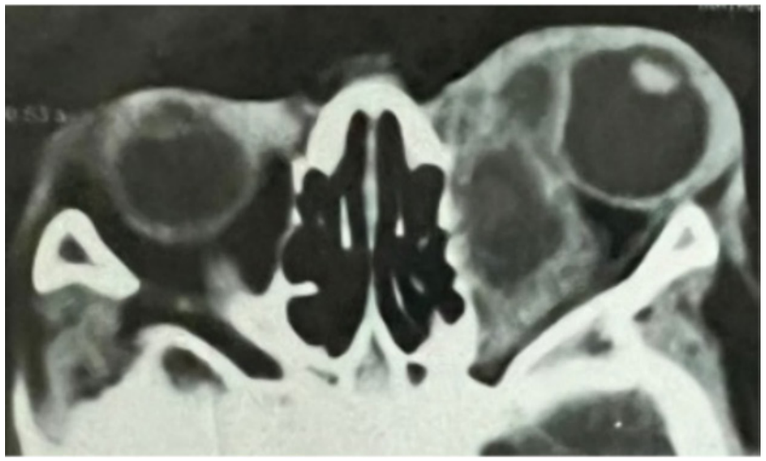
(continued)

Conclusions: This is a unique case of an extraction of an orbital hydatid cyst in a pediatric patient that was performed during a surgical mission trip to Uganda. The case initially presented after delayed care and was performed with minimal imaging, due to the limited resources in this region. Orbital hydatid cysts are rare, and intraoperative removal can be challenging due to the thin cystic wall, adherence to neighboring structures, and restricted access to the orbit. Care must be taken to avoid rupturing the cyst, as this can lead to secondary dissemination or local recurrence, or in some cases, peri-operative anaphylaxis.[5] If a hydatid cyst is suspected, some suggest surgical pre-treatment with albendazole may aid in sterilization of the cyst and reduce risk of anaphylaxis, and should continue treatment for a three month course.[1] At 1-year follow up, our patient had mild motility limitations but otherwise was doing well without evidence of local or systemic recurrence.

Figure 1



Figure 2



References:

1. Bagheri A, Fallahi MR, Yazdani S, Rezaee Kanavi M. Two different presentations of orbital echinococcosis: a report of two cases and review of the literature. Orbit 2010;29(1):51–6.
2. Anandpara KM, Aswani Y, Hira P, Sathe PA. Isolated primary orbital hydatid disease presenting as multiple cystic lesions: a rare cause of proptosis. Ann Parasitol 2015;61(3):193–5.
3. Benazzou S, Arkha Y, Derraz S, El Ouahabi A, El Khamlichi A. Orbital hydatid cyst: review of 10 cases. J Craniomaxillofac Surg 2010;38(4):274–8.
4. Berradi S, Hafidi Z, Lezrek O, Lezrek M, Daoudi R. Orbital hydatid cyst. QJM: An International Journal of Medicine 2015;108(4):343–4.
5. Chtira K, Benantar L, Aitlhaj H, Abdourafiq H, Elallouchi Y, Aniba K. The surgery of intra-orbital hydatid cyst: a case report and literature review. Pan Afr Med J 2019;33:167.
6. Lentzsch AM, Göbel H, Heindl LM. Primary Orbital Hydatid Cyst. Ophthalmology 2016;123(7):1410.