American Society of Ophthalmic Plastic and Reconstructive Surgery

Sea Island

2024 Spring Scientific Symposium

May 16-19, 2024 | Sea Island Resort, Sea Island, Georgia

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 ***11 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.

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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.

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Abstract information is published as submitted.

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Steven M. Couch	Speaker, Scientific Symposia Committee, Abstract Reviewer	Horizon - Researcher (not ended), Sling - Researcher (not ended), Viridian - Researcher (not ended)
Andrew R. Harrison	Co-Author	Horizon/Amgen - Consultant/Advisor, Speakers Bureau, RVL - Consultant/Advisor, Speakers Bureau, Lassen - Consultant/Advisor, Viridian - Research
Femida Kherani	Co-Author	Allergan - Consultant/Advisor (not ended), Tarsus - Consultant/Advisor (not ended)
Don O. Kikkawa	Co-Author	Horizon Therapeutics - Consultant/Advisor, Immunovant - Consultant/Advisor, Lassen Therapeutics - Consultant/Advisor, Elsevier Publishing - Royalties or Patent beneficiary
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Gary J. Lelli	Speaker, Moderator, Introducer, Co-Author	Amgen - Consultant/Advisor (not ended)
Ilya M. Leyngold	Speaker	Axogen - Consultant/Advisor (not ended)
Catherine Y. Liu	Co-Author	Horizon Therapeutics - Consultant/Advisor, Wolters Kluwer - Consultant/Advisor
Karim G. Punja	Speaker	Clarion Medical Technologies - Consultant/Advisor (not ended)
Fatemeh Rajaii	Speaker, Abstract Reviewer	Amgen - Consultant/Advisor (ended), Immunovant - Researcher (not ended), Acelyrin - Consultant/Advisor (ended), Roche - Researcher (not ended), Viridian - Researcher (not ended)
Daniel B. Rootman	Co-Author	Horizon Therapeutics - Consultant/Advisor (not ended)
Roman Shinder	Abstract Reviewer	Horizon Therapeutics - Consultant/Advisor
Julie A. Woodward	Speaker, Co-Author	Allergan - Consultant/Advisor (not ended), Galderma - Consultant/Advisor (not ended), Prollenium - Speakers Bureau (ended), Merz - Speakers Bureau (ended), SkinCeuticals - Consultant/Advisor (not ended), Revance - Consultant/Advisor (ended)
Michael T. Yen	Abstract Reviewer, Co-Author	Ipsen Innovation - Consultant/Advisor (ended), Viridian Therapeutics - Researcher (not ended), Sling Therapeutics - Consultant/Advisor (not ended), Amgen - Researcher, Lassen Therapeutics - Researcher, Argenx - Researcher
Michael K. Yoon	Scientific Symposia Committee, Abstract Reviewer	Viridian Therapeutics - Researcher (not ended), Sling Therapeutics - Researcher (not ended)

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Lisa Akintilo	Featured speaker	Ferndale Healthcare - Consultant/Advisor (not ended), RBC Consultants - Consultant/Advisor (not ended)
Jacqueline R. Carrasco	Speaker, Moderator	Amgen - Speakers Bureau (not ended)
Alon Kahana	Speaker	Sling, Acelyrin, Immunovant, Viridian, Tourmaline, Lassen - Researcher (not ended), Bio-Tissue - Consultant/Advisor (not ended), Stryker - Consultant/Advisor (ended), Genentech - Researcher (ended)
Andrea L. Kossler	Speaker	Viridian - Consultant/Advisor, Researcher (not ended), Sling Therapeutics - Independent Contractor (not ended), AmGen - Consultant/Advisor (not ended), Immunovant - Consultant/Advisor (not ended), Genentech - Consultant/Advisor (not ended), Lassen - Consultant/Advisor, Researcher (not ended), Kriya Therapeutics - Consultant, Researcher (not ended), Acelyrin Therapeutics - Consultant (not ended), Argenx - Consultant/Advisor (not ended)
John D. Ng	Moderator	Bio-Logic Aqua Research, Inc. - Stocks (not ended), Horizon Therapeutics, Amgen - Researcher (not ended), Immunovant - Researcher
Chau Pham	Co-Author	Regeneron and Edwards Life Sciences - Stocks
Dianne M. Schlachter	Moderator	Horizon Therapeutics/Amgen - Speakers Bureau, Consultant (not ended)
Erin M. Shriver	Co-Author	Horizon Therapeutics/Amgen - Speakers Bureau, Consultant (not ended)
Van Ann Tran	Moderator	Genetech/Roche - Researcher (not ended)
Suzanne W. van Landingham	Moderator	Immunovant - Researcher (not ended), Sling Therapeutics - Researcher (not ended)

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Ana Carolina Victoria	Moderator	Tarsus - Consultant/Advisor (not ended), Horizon/Amgen - Speakers Bureau (not ended), Candela Medical - Speakers Bureau (not ended), RVL - Speakers Bureau (ended), Galderma - Consultant/Advisor (not ended), Allergan - Consultant/Advisor (not ended)
Sara Tullis Wester	Speaker	Horizon Therapeutics - Consultant/Advisor (not ended), Lassen Therapeutics - Consultant/Advisor (not ended), Sling Therapeutics - Researcher (not ended), Immunovant - Consultant/Advisor (not ended)
Sandy X. Zhang-Nunes	Moderator	Horizon Therapeutics – Speakers Bureau (not ended); Sciton – Consultant/Advisor (not ended); Tarsus – Consultant/Advisor (ended)

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

7:31-7:35 am

Ocular Globe Position in Facial Nerve Palsy

Irene Lee[1], Nishita Sheth[2], Sandra Stinnett[3], Julie Woodward[1], Richard Allen[4], Christopher Dermarkarian[1]
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Introduction: The position of the ocular globe in the setting of facial nerve palsy has not been well described. We hypothesize that facial nerve palsy may be associated with ipsilateral exophthalmos of the globe, and that such exophthalmos may contribute to lower lid malposition in facial nerve palsy.[1,2]

Methods: A retrospective chart review at Duke Eye Center from January to November 2023 analyzed 500 cases of facial nerve disorders, identified by ICD codes G51.0 – G51.9. Patients were eligible for inclusion if they had both (1) a diagnosis of unilateral facial nerve palsy and (2) available computed tomography (CT) imaging obtained after their diagnoses were made. Patients were excluded if they had bilateral CN 7 palsy or CT images with poor resolution slices. Axial position of the globe was measured on CT scans using two methods, both previously shown to correlate with Hertel exophthalmometry measurements. Method 1 measured the perpendicular distance to the posterior surface of the cornea from the lateral-to-lateral orbital rim (Figure 1).[3] Method 2 measured perpendicular distance to posterior cornea from medial-to-lateral orbital rim (Figure 2).[3] Statistical analyses were performed to compare the unaffected vs. affected sides to assess for relative exophthalmos.

Results: Of the 500 charts reviewed, 55 patients met inclusion criteria. 55% (n=30) of patients were male, and 58% (n=32) had a right-sided CN 7 palsy. Etiologies of the CN 7 palsies consisted of: 76% (n=42) acute Bell's palsy, 5% (n=3) chronic Bell's palsy, 2% (n=1) tumor invasion of the facial nerve, 11% (n=6) surgery-related nerve injury, 4% (n=2) trauma. The most commonly reported symptom was facial droop/asymmetry (90.9%), followed by lagophthalmos (65.5%) and facial numbness (38.2%). Based on CT measurements, the side affected by CN 7 palsy was found to have a statistically significant relative exophthalmos when compared to the unaffected side. There was an average 0.89 mm of exophthalmos via Method 1 ($p<0.001$) and an average 0.92 mm of exophthalmos via Method 2 ($p<0.001$). Age, sex, race, and ethnicity had no associations with observed CT measurements.

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Conclusions: This study found that the side affected by CN 7 palsy had a statistically significant relative exophthalmos compared to the unaffected side, based on CT imaging. This phenomenon may be secondary to the reduced orbicularis oculi tone that occurs in seventh nerve dysfunction, which may lead to the globe shifting anteriorly. In addition, such exophthalmos may contribute to the commonly observed lagophthalmos that is secondary to decreased orbicularis function in CN 7 palsy. Our study is the first to highlight the changes in ocular globe position in CN 7 palsies. Further studies are needed to better elucidate the mechanism of our findings.

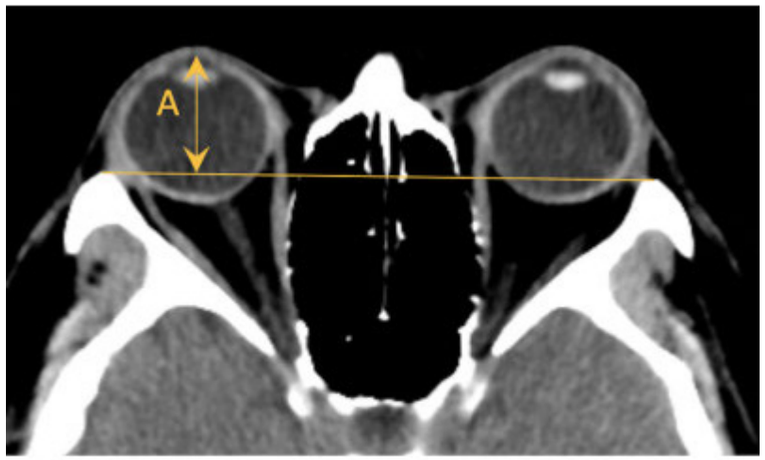

Figure 1. Method 1: A line is drawn between the lateral orbital rims on the axial plane. Line A measures the perpendicular distance to the posterior surface of the cornea.

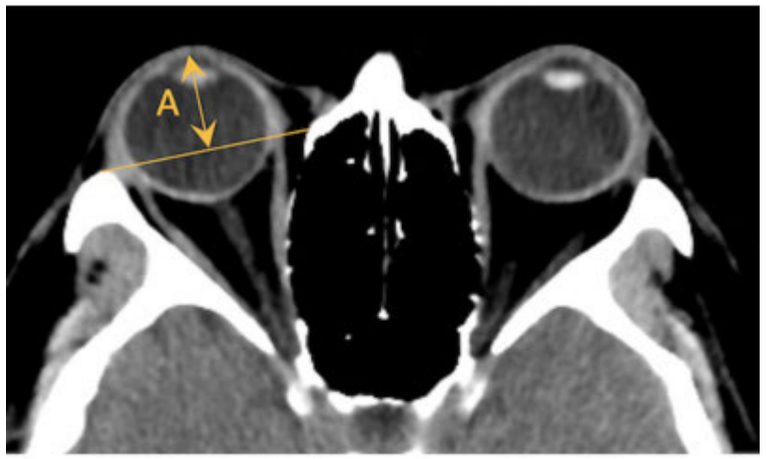

Figure 2. Method 2: A line is drawn between the medial and lateral orbital rim on the axial plane. Line A measures the perpendicular distance to the posterior surface of the cornea.

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7:35-7:39 am

Periocular Cicatrizing Infectious Disease: A Case of Eyelid Cutaneous Leishmaniasis

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Introduction: Infectious periocular cicatricial disease can result in a severe cicatricial ectropion, although its presentation in the United States is rare. Primary causative agents include *Bacillus anthracis*, *Leishmania* species., and *Mycobacterium tuberculosis*. The rarity of such infectious cases in the United States poses challenges in both diagnosis and management. We present a case of cicatricial ectropion secondary to cutaneous leishmaniasis.

Methods: The details of the case were obtained from the patient chart.

Results: A 66-year-old Caucasian male with a hobby of cave-diving presented as a referral from his primary ophthalmologist in February 2022 for possible dacryocystitis. He had worsening left lower lid swelling and erythema for 2 weeks, despite oral and topical antibiotic treatment (Figure 1). The area of involvement felt fluctuant and a same day incision and drainage was planned. Once incised, there was no purulence expressed, so a biopsy was performed. The biopsy revealed non-necrotizing granulomatous inflammation and amastigotes within histiocytes, indicative of cutaneous leishmaniasis. He reported his most recent cave-diving trip was in Tulum, Mexico about 2 months prior to initiation of his symptoms. With referrals to infectious disease and dermatology, amphotericin B infusion was initiated, but after the fifth infusion, the patient developed acute kidney injury, leading to a switch to fluconazole. Despite fluconazole treatment, approximately one month later, the lesion continued to progress to an erythematous ulceration, prompting the addition of Bacitracin ung QID (Figure 2). DNA molecular testing revealed *Leishmania mexicana*, consistent with the area of his cave-diving trip. This prompted the initiation of miltefosine. The ulceration started to heal and he developed a cicatricial ectropion (Figure 3). He subsequently worsened after stopping the miltefosine. He improved with a second course of miltefosine but worsened again once the medication was stopped. The patient was then placed on topical paromomycin ointment and imiquimod ointment for 2 months, resulting in a significant improvement in symptoms and resolution of the ulceration which progressed to a linear scar with cicatricial ectropion, approximately one year after his trip to Mexico (Figure 4). He has since been lost to follow up.

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Conclusions: This case illustrates the challenging diagnosis of cutaneous leishmaniasis in non-endemic areas of the United States and the significance of exploring multiple pharmacotherapies. Periocular cicatricial disease is a rare complication affecting only 2-5% of individuals and continues to lack a definitive diagnosis and appropriate treatment because cicatricial entropion resembling conditions such as cellulitis and eyelid tumor [2, 3]. Periocular cicatricial disease has also been reported in cutaneous infections with Bacillus anthracis and Mycobacterium tuberculosis, where surgical reconstruction is necessary for cicatricial ectropion. Various surgical techniques, including flaps and grafts, z-plasty, local skin flap, full-thickness skin grafts, lateral tarsal strip, and filler injections, are used. The choice of the surgical approach is multifactorial (ie. extent of ectropion, degree of scarring, severity of lid laxity), with no single method superseding the others [4]. It is crucial to include cutaneous leishmaniasis in the list of potential diagnoses when considering both the diagnosis and treatment of a patient presenting with cicatricial entropion.

Figure 1

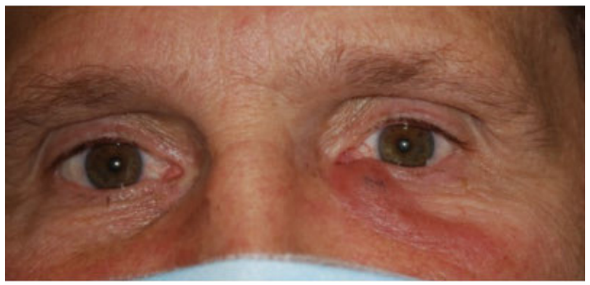


Figure 2

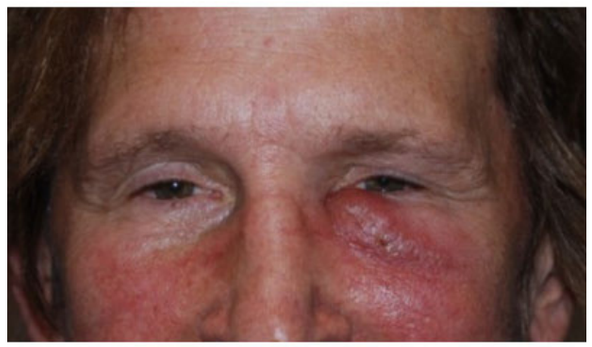


Figure 3

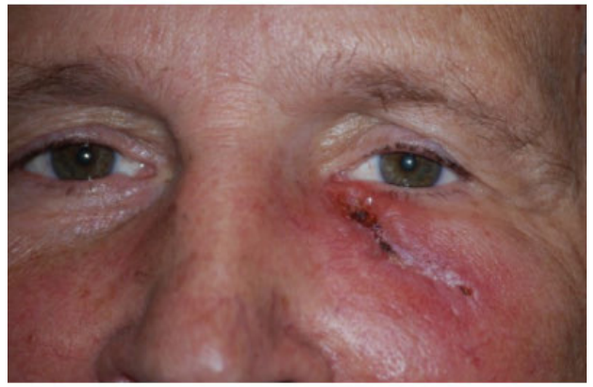
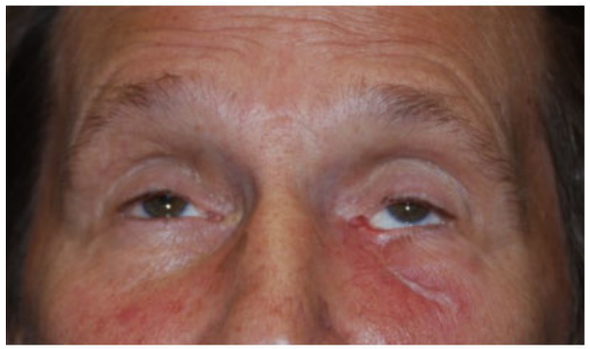


Figure 4



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7:39-7:43 am

Effect of Prior Botulinum Toxin A Treatment on Persistence and Recurrence of Hemifacial Spasm Following Microvascular Decompression Surgery

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Introduction: Hemifacial spasm (HFS) is a movement disorder with involuntary tonic-clonic contractions of unilateral facial muscles and is often caused by vascular compression of the facial nerve.[1] Treatment options include botulinum toxin (BTX) injections into the facial muscles or microvascular decompression (MVD) of the facial nerve.[1,2] It is not uncommon for patients to initially receive BTX injections and later undergo MVD if the neurotoxin cannot successfully control spasms.[3] However, as many as 10-40% of patients may have persistent spasms or delayed resolution of spasms after MVD.[4] The purpose of this study was to evaluate whether a history of BTX injections has an effect on post-MVD hemifacial spasm persistence or recurrence rates.

Methods: A retrospective chart review was conducted on patients with HFS who underwent first-time MVD with a single surgeon (DP) from 2013-2023. Data collected from patient records included demographics, prior treatment with BTX, and post-operative outcomes including HFS persistence, HFS recurrence, and timing of recurrence. Length of postoperative follow-up ranged from 6 weeks to 8 years. HFS persistence was defined as any duration of continued facial spasm or delayed resolution of facial spasm post-MVD.[4] HFS recurrence was defined as the return of facial spasm following a symptom free period post-MVD.[4,5] Patients were then divided into two groups: those with no prior treatment (Control) and those treated previously with BTX (BTX). Logistic regression analyses and comparative statistics were used to assess the relationship between prior BTX injection and HFS persistence and recurrence.

Results: A total of 38 patients were included in the study. Twenty-two patients were in the BTX group (60.3±11.3 years, 4 males, 18 females); the average number of BTX injections given was 11.8±17.1 with a duration of treatment of 46.8±62.5 months and cumulative units of 125.0±144.9. Sixteen patients (55.1±13.8 years, 7 males, 9 females) were in the Control group. The time to recurrence for the BTX group was 60.0±42.4 days versus 35±35.4 days for the Control group (p=0.06). There was no difference in HFS recurrence rates between the Control (12.5%) and the BTX group (9.1%, p=0.75). However, the BTX group had a significantly higher persistence rate (40.9%) compared to the Control group (6.3%, p=0.04) (Figure 1). Among the BTX group with persistent HFS, 5 patients (55.6%) had delayed resolution of HFS while 4 patients (44.4%) required re-operation. Prior BTX treatment was significantly associated with HFS persistence (OR 10.4, 95%

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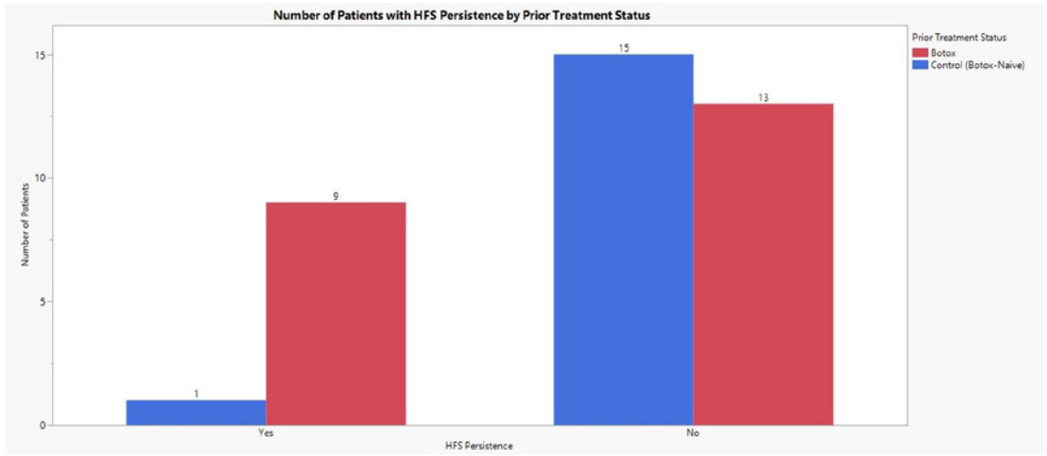
CI: 1.2, 93.3, p=0.04) but not with HFS recurrence (OR 0.7, 95% CI: 0.08, 6.4, p=0.74). Cumulative BTX dose (p=0.56, p=0.34), number of BTX treatments (p=0.27, p=0.27), duration of BTX treatment (p=0.24, p=0.51), and time from last BTX treatment until MVD (p=0.51, p=0.99) were not significantly associated with HFS persistence or recurrence, respectively.

Conclusions: The preliminary results show that botulinum toxin A treatment is associated with persistence, but not recurrence, of HFS post-MVD. Further analysis with a larger sample size is necessary to draw significant conclusions about the effect of BTX and factors that can identify patients who are at higher risk of HFS persistence or recurrence post-MVD.

Figure 1



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7:43-7:47 am

Small-Incision Lamellar Recession for Eyelash Ptosis

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Introduction: To describe a surgical technique to address upper eyelid lash ptosis.

Methods: This is a retrospective study of patients who have undergone small-incision anterior lamellar recession for segmental upper eyelid lash ptosis in 2023 at a single academic institution. Inclusion criteria included age > 18 years and segmental or diffuse upper eyelid lash ptosis without entropion. Exclusion criteria included concurrent upper eyelid surgery aimed to address eyelash ptosis including blepharoplasty specifically with eyelid crease forming sutures that incorporate the levator aponeurosis, upper eyelid wedge excision, or lateral tarsal strip.[1] Primary outcome measure included improvement in lash ptosis rating (LPR) post-operatively.[1,2]

Results: Three patients met inclusion criteria (33.3% female, 74.7 ± 4.5 years old [mean ± SD]). All three underwent bilateral small-incision anterior lamellar repositioning for lash ptosis, 1 underwent concurrent bilateral upper eyelid blepharoplasty without crease forming sutures and 1 underwent concurrent bilateral upper eyelid conjunctival-sparing sutureless ptosis repair. Median pre-operative LPR in the more affected eye was 2, corresponding to lash position greater than 30 degrees from the horizontal meridian (Figure 1). Median LPR at first post-operative visit (12.0 ± 5.3 days) was 1 and at last post-operative visit (68.5 ± 21.9 days) was 0.5 (Figure 2).

Surgical technique performed was as follows. Supra-lash incisions in areas of lash ptosis were created using sharp Westcott scissors and carried down to the upper eyelid tarsus. Pretarsal dissection was continued to the upper border of the tarsus to create a mobilization plane. A 5-0 Vicryl suture was then passed through the previously dissected pretarsal plane from the lashes to the top of the tarsus and exited through the conjunctiva just superior to the upper edge of tarsus. The needle was then reversed, entered through the same point where it exited, and passed in a parallel plane to the first pass to exit the supra-lash incision. These sutures, when tightened, allowed for excellent eversion of the lashes in this area. Similar passes were then made for each supra-lash incision.

Conclusions: Eyelash ptosis refers to the inferior projection of the lashes of the upper eyelid and has been described in floppy eyelid syndrome, congenital and acquired blepharoptosis, and topical prostaglandin analog use, among other etiologies.[2-7]Management of eyelash ptosis begins with addressing an identifiable underlying cause. Surgical options previously described include upper eyelid blepharoplasty with additional eyelid crease formation and lateral tarsal strip procedures to address horizontal eyelid laxity when

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present. Here we describe a small-incision lamellar repositioning procedure to address diffuse or segmental lash ptosis which can be combined with concurrent upper eyelid surgery. Our findings thus far in an initial 3 patients demonstrate improvement in lash ptosis.

Figure 1

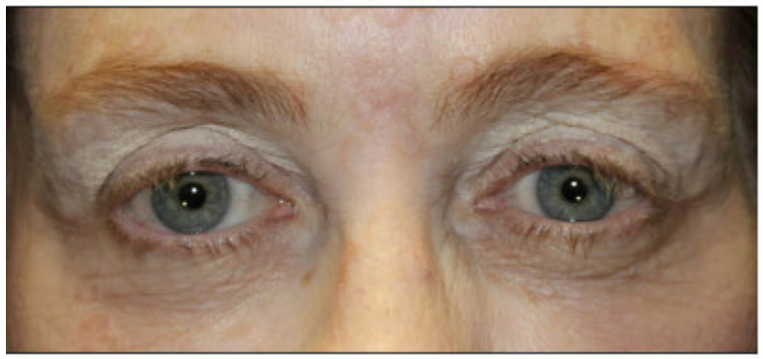
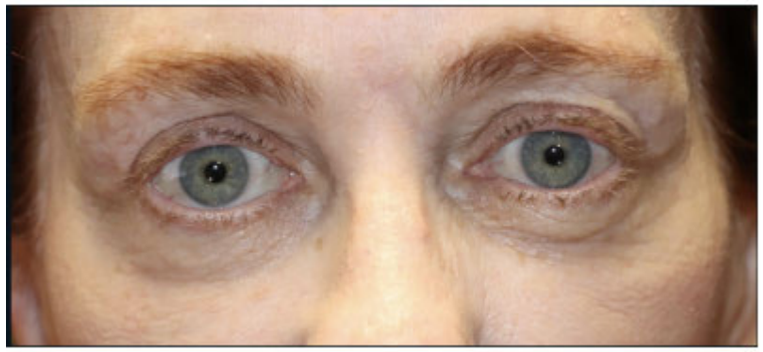


Figure 2



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7:47-7:51 am

Beyond the Lid: A Case of Bupivacaine-Induced Local Anesthetic Systemic Toxicity with Blepharoplasty

Kendall Goodyear, Bruce B. Becker
Division of Orbital and Ophthalmic Plastic Surgery, Stein Eye Institute at the University of California, Los Angeles, Los Angeles, California, United States

Introduction: Bupivacaine is a commonly used local anesthetic that is known to cause local anesthetic systemic toxicity (LAST), most often resulting in cardiotoxic effects and fatal arrythmias.[1,2] LAST is felt to be due to inadvertent intravascular administration or local anesthetic overdose and most commonly occurs with peripheral nerve blocks.[3] While LAST has been reported as a consequence of retro- and peribulbar local anesthetic administration,[4] it has not previously been reported secondary to local injection for eyelid surgery. Despite its recognized risks, Bupivacaine has been shown to be a common and sometimes preferred local anesthetic agent for ophthalmologists.[5]

Methods: Case presentation of a patient who suffered ventricular fibrillation and cardiac arrest following local anesthesia administration for cosmetic upper eyelid blepharoplasty.

Results: A 63-year-old woman with no significant past medical history presented to an ambulatory surgery center (ASC) for quad blepharoplasty. Pre-operative evaluation including a normal EKG categorized her as low-risk. During surgery, the upper eyelids were anesthetized with a total of 6ccs of 1:1 Lidocaine 2% with 1:100,000 epinephrine and Bupivacaine 0.50% with 1:100,000 epinephrine administered subcutaneously and the upper lid procedure was performed without complications. Attention was then turned to the lower eyelids. Approximately two minutes after administering an additional 3ccs of the same mixture to each lower eyelid, given both subconjunctivally and subcutaneously, the patient developed ventricular tachycardia (Figure 1) which degenerated into ventricular fibrillation. Prompt intervention led to return of circulation at the ASC and the patient was transferred to the nearest hospital for further evaluation. Cardiac echo in the emergency room demonstrated an anterior wall motion abnormality and ejection fraction of 50%. Despite further extensive evaluations, including coronary angiography, CT pulmonary angiogram, and continuous telemetry monitoring, no other cardiac pathology was identified. Follow-up consultations with cardiologists and electrophysiologists as an outpatient also failed to reveal underlying pathology. Considering the temporal relationship to local administration and the absence of other cardiac issues, the cardiac arrest was attributed to bupivacaine toxicity.

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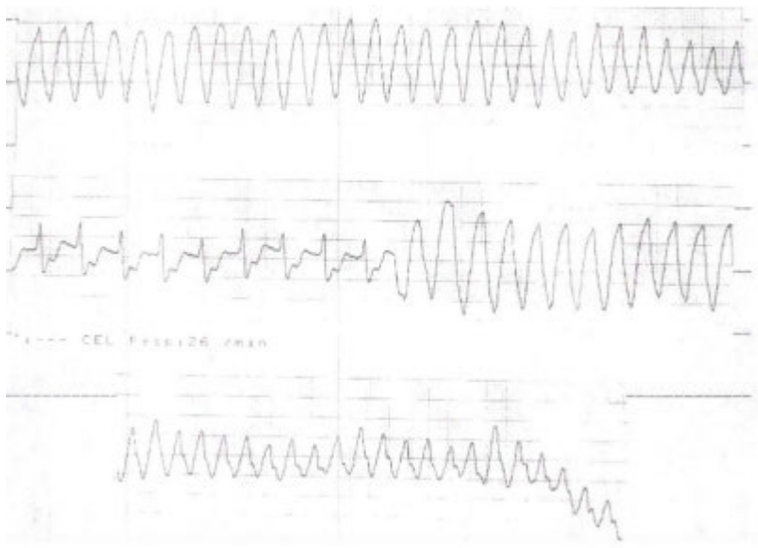
Conclusions: The routine use of local anesthetic before blepharoplasty is common and generally considered safe. Nevertheless, this case highlights the potential for systemic complications, particularly when using bupivacaine, and emphasizes the need for heightened awareness during periorbital administration.

Figure 1



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8:04-8:08 am

Sutureless Mullerectomy without Special Equipment

Narmien Murdock[1], Karine Shebaclo[2], Leo Hall[3], Jacqueline Carrasco[2]
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Introduction: Among the most common techniques used for ptosis repair is the Müller's muscle-conjunctival resection (MMCR), which often includes the use of absorbable sutures and equipment specific to the procedure (e.g., Putterman clamp). Herein, the authors present their experience in performing MMCR without sutures or specialized equipment.

Methods: This is a retrospective review of 18 patients (32 eyelids) that underwent sutureless MMCR for acquired ptosis. Standard MMCR technique was carried out with the use of two curved hemostats to clamp the plicated tissue (Figure 1a-b). Following resection of the plicated tissue, bipolar cautery was applied to the tissue edges prior to removal of the hemostats (Figure 1c). No sutures were placed. Preoperative and postoperative margin-to-reflex distance (MRD1) were measured using the ImageJ application (Figure 2).

Results: Among the 32 eyelids that underwent sutureless MMCR, the average increase in MRD1 was 2.05 mm (range 0.2-3.8 mm, SD = 0.83). In the cohort of 14 patients that underwent bilateral ptosis repair, the average difference in postoperative MRD1 between the two upper eyelids was 0.14mm (range 0-0.4 mm, SD = 0.15). Upper eyelid contour was found to be aesthetically pleasing to the patient and without lid peaking or poor curvature. There were no cases with postoperative complications, including corneal abrasion or eyelid hematoma. None of the cases required revision.

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Conclusions: The sutureless MMCR technique described here is an effective and efficient technique for internal ptosis repair that can be performed without sutures or special equipment. It is a useful adjunct in patients with mild to moderate ptosis when undergoing blepharoplasty. The use of two curved hemostats may allow adjustment of the tissue resection to respect and titrate the eyelid contour for a customized and aesthetically pleasing result. This sutureless technique may also be safer than standard MMCR for patients with ocular surface pathology. In the future, a blinded, randomized control study could investigate long-term outcomes, eyelid contour, and patient experience between sutured and sutureless MMCR.

Figure 1

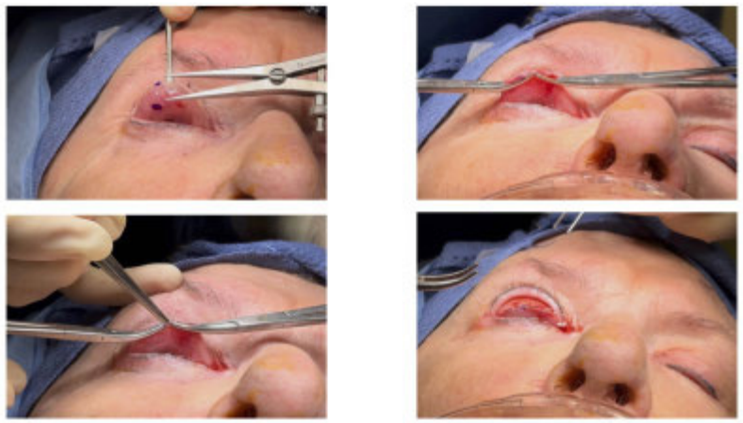
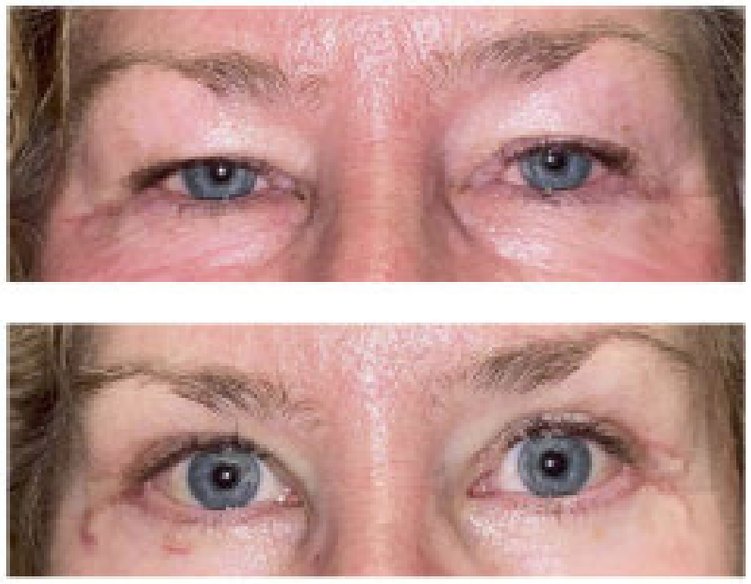


Figure 2



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8:08-8:12 am

Sutureless Mullerectomy Technique Video & Discussion

Jacqueline R. Carrasco

8:12-8:16 am

Frontalis Muscle Flap Eyelid Reanimation Technique in Adults with Severe Ptosis or Apraxia of Eyelid Opening

Alon Kahana[1,2], Jane Spadaro[1,3], Nikita Patel[4]
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Introduction: We evaluated the utility of frontalis muscle flap eyelid reanimation technique for adults with severe ptosis or apraxia of eyelid opening.

Methods: A retrospective case series of 30 eyes of 19 patients who underwent frontalis muscle flap eyelid reanimation surgery to treat apraxia of lid opening and paralytic ptosis. Outcomes were assessed for margin to reflex distance 1 (MRD1, mm), lagophthalmos (mm), subjective symptoms, surgical complications, and need for subsequent surgical intervention. A 14-item questionnaire pertaining to vision-related activities and symptoms (Figure 1) was obtained retrospectively to assess impact of surgery on quality of life, and a paired t test was used to compare preoperative and postoperative scores.

Results: Thirty eyes of 19 patients underwent surgery (Figure 2). There were 14 female and 5 male patients, with an average age of 55 years (range, 18-76). The preoperative MRD1 was -0.6mm (range, -5 to 2 mm). Seventeen eyes had a myogenic etiology, five had a paralytic etiology, six had blepharospasm with apraxia of lid opening, and two had a neurodegenerative etiology. Nineteen eyes (63%) had previously undergone ptosis repair. Post-operative MRD1 was 2.5 mm (range, 0.5 to 5 mm), over an average follow-up of 63.3 days (Figures 3 & 4). There were no serious surgical complications, but minor complications including dry eye symptoms, ocular surface keratopathy, and one patient who required surgical revision. Twelve of 19 patients responded to the quality of life questionnaire and indicated significant improvement in vision-related symptoms postoperatively ($p=0.02$). 83% of respondents stated that they felt it was worthwhile to undergo surgical intervention.

Conclusions: The use of the frontalis muscle flap eyelid reanimation technique, with or without the combined levator flap, was very effective in this case series and provided good upper eyelid position and patient satisfaction. This technique should be considered in adults with severe ptosis or apraxia of eyelid opening who may benefit from rewiring of the eyelid opening neurocircuitry.

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Figure 1

Quality of Life Questionnaire
Please rate the following as: 1. excellent, 2. good, 3. fair, 4. poor, 5. very poor.
Your vision
Your upper visual field
Your general level of health
Your energy level
Your general well-being
Your self-image
Your eye/eyelid appearance
Since surgery, please rate the following as: 1. never, 2. rarely, 3. occasionally, 4. usually, 5. always
Do you keep your head in a chin up position?
Do your eyelids get in the way of your vision?
Do you have to raise your eyebrows to see?
A heavy feeling or an ache around your eyes?
Tearing, redness, burning, or dryness of your eyes?
Rate the following: 1. definitely yes, 2. probably yes, 3. indifferent, 4. probably not, 5. definitely not.
Do you feel that it was worth it to have surgery on your eyelids?
Would you recommend eyelid surgery to a friend or family who has a similar problem?

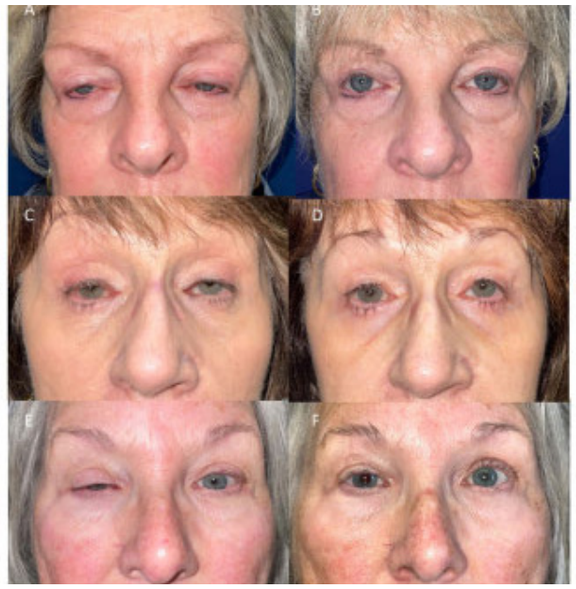
Figure 2

Table 1. Baseline demographic and preoperative clinical data	
	N = 19 patients or 30 eyes No. (%)
Age, mean (range)	55 (18-76)
Female	14 (74%)
Male	5 (26%)
Laterality*	
Right	5 (17%)
Left	3 (10%)
Bilateral Surgery	11 (58%)
Etiology*	
Myogenic	17 (57%)
Paralytic	5 (17%)
Blepharospasm	6 (20%)
Neurodegenerative	2 (7%)
Prior ptosis repair*	19 (63%)
MRD1, mean (range), mm*†	-0.59 (-5 to 2)
Value reported as number of patients unless otherwise noted *Reported as number of eyes †MRD1 was unable to be measured in 1 patient due to severity of blepharospasm MRD1, margin- to-reflex distance	

Figure 3

Table 2. Postoperative clinical outcomes	
	N = 19 patients or 30 eyes No. (%)
Postoperative period, mean (range), days	63.3 (3-167)
MRD1, mean (range), mm*	2.5 (0.5-5)
Lagophthalmos, mean (range), mm*	1.0 (0-4)
Surgical Technique*	
Frontalis flap	14 (46%)
Combined levator & frontalis flap	16 (53%)
Complications	
Ocular surface keratopathy	3†
Surgical revision	1
Value reported as number of patients unless otherwise noted *Reported as number of eyes †One patient experienced keratopathy due to an unrelated etiology MRD1, margin- to-reflex distance	

Figure 4



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8:16-8:20 am

Frontalis Muscle Flap Technique Video & Discussion

Alon Kahana

8:26-8:30 am

Use of the TT Clamp for Lower Eyelid Surgery

Shannath Merbs[1], Jacinta Feksi[2], Jerusha Weaver[3], Emily Gower[4], Harran Mkocha[5]
[1]Ophthalmology and Visual Sciences, University of Maryland, Baltimore, Maryland, United States, [2]Benjamin Mkapa Hospital, Dodoma, Tanzania, United Republic of,
[3]University of North Carolina, Chapel Hill, North Carolina, United States, [4]Department of Epidemiology, University of North Carolina, Chapel Hill, North Carolina, United States, [5]Kongwa Trachoma Project, Kongwa, Tanzania, United Republic of

Introduction: The trachomatous trichiasis (TT) clamp, designed for the bilamellar tarsal rotation (BLTR) procedure of the upper eyelid, can also be useful for lower eyelid surgery.

Methods: We designed the trachomatous trichiasis clamp to address the shortcomings of the standard instrumentation for the BLTR procedure to help nonphysicians perform the procedure more safely, reproducibly, and successfully.[1] The TT clamp comes in 3 sizes, and the smaller sizes can also be used on the lower eyelid.

Results: The TT clamp resembles a modified chalazion clamp with an open top plate that secures the eyelid against a solid base plate, which is slightly curved to accommodate the curvature of the globe. The solid base plate between the eyelid and the globe allows the surgeon to make a straight, precise, full-thickness incision with a scalpel blade in a bloodless field. For BLTR, the incision is parallel to the upper eyelid margin. The clamp can also be used to stabilize the eyelid for full-thickness resections and eyelid splitting procedures. This stabilization and hemostasis are particularly helpful for the lower eyelid. We have tested the TT clamp in a pilot study using posterior lamellar advancement to treat lower eyelid trichiasis in the setting of trachoma in Tanzania.

Conclusions: Although originally designed for the upper eyelid, the TT clamp can be helpful for lower eyelid surgery as well. The clamps (small Trachoma forceps – AA 3611) are available from Appasamy Associates (https://www.appasamy.com/microsurgicals-instruments/microsurgicals?tab=forceps, Tamil Nadu, India).

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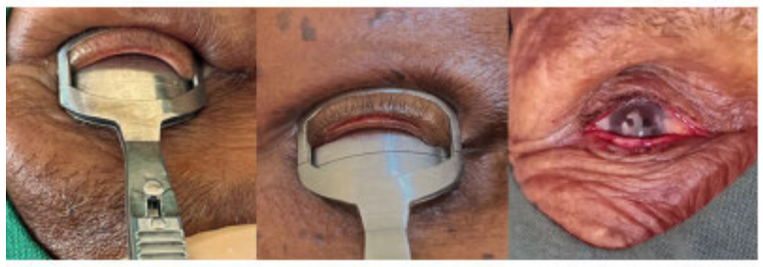
Figure 1



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8:30-8:34 am

TT Clamp Technique Video & Discussion

Shannath L. Merbs

8:34-8:38 am

Long-Term Outcomes of Lateral Tarsoconjunctival Onlay Flap for Lower Eyelid Suspension in Patients with Paralytic Lagophthalmos: A 15-year Experience

Teresa Chen[1], Michael Han[1], Patsuda Thariya[2], Brian Lung-Chi Lee[3], Jenny Wang[1], Jeremiah Tao[1]
[1]Division of Orbital and Ophthalmic Plastic Surgery, Gavin Herbert Eye Institute, Irvine, California, United States, [2]Division of Orbital and Ophthalmic Plastic Surgery, Khon Kaen University, Khon Kaen, Thailand, [3]Department of Ophthalmology, Tri-Service General Hospital, Taipei, Taiwan (Greater China)

Introduction: There are many surgical treatments of paralytic lagophthalmos, such as lid weights, tarsorrhaphy, canthoplasties, fascial slings, tarsal pillars, and palpebral springs.[1–7] However, these surgical techniques have limitations, such as induced ptosis, implant extrusion, loss of effect over time, occlusion of vision, and poor cosmesis. An addition to the surgical arsenal is the tarsoconjunctival onlay flap (TaO flap), a widely used technique for reconstruction of posterior lamellar eyelid defects.[8] Its use as a lower eyelid suspension procedure to improve paralytic lagophthalmos has been previously discussed by Tao *et al.* as a 5-year study from 2008 to 2013, which reported improved lower eyelid position and decreased lagophthalmos and ocular surface exposure. This updated 15-year study identifies patients from 2008 to 2023 to assess the long-term outcomes of this surgical technique in the treatment of paralytic lagophthalmos.

Methods: Retrospective case series of consecutive patients between 2008 and 2023 performed in one hospital center with paralytic lagophthalmos that were treated with TaO flap alone or in conjunction with lateral canthoplasty. Pre- and post-operative measurements of eyelid position, lagophthalmos, and ocular surface disease were recorded. Follow-up time, prior treatments, postoperative complications and subsequent management were also recorded.

Results: A total of 98 patients were identified with an average age of 63.1 ± 20 years old and an average follow-up period of 28 ±35 months (range 1 week to 14 years). Twenty patients had prior surgeries: gold weight placement (17/20, with 2 extruding and requiring removal at time of TaO flap placement), canthoplasties (4/20), tarsorrhaphy (1/20), and palpebral springs (1/20, extruded and removed prior to initial assessment). Eyelid position, lagophthalmos, and ocular surface disease were improved in all cases, with an improvement in eye irritation symptoms. Fifteen patients required further surgery: TaO flap augmentation (6/15), medial tarsorrhaphy (8/15), repeat canthoplasties (3/15), and gold weights (1/15). Complications occurred in 8 patients, including pyogenic granulomas (6/8) and decreased visual field (2/8). Flap reversal occurred in four patients due to recovery of facial nerve function (3/4) and cosmetic concerns (1/4).

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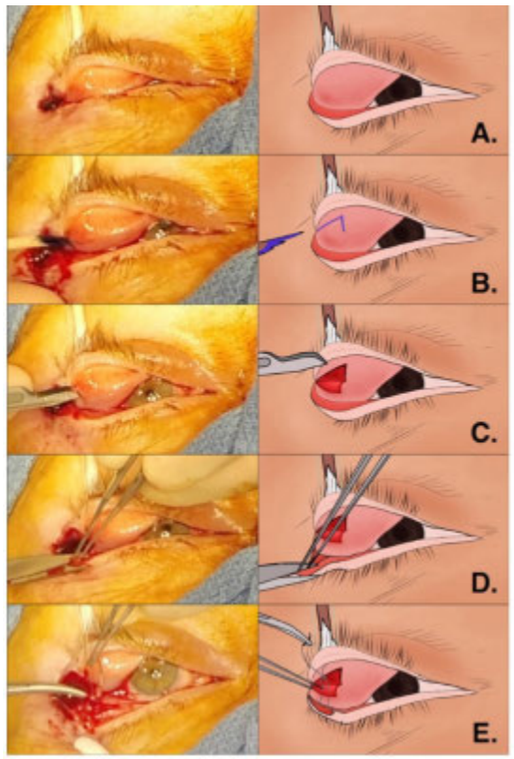
Conclusions: The TaO flap is a highly effective long-term surgical option in patients with paralytic lagophthalmos. Improved eyelid position, lagophthalmos, and ocular surface disease were universal. Some patients had required additional surgeries or reversal and complications from the TaO flap were minimal.

Figure 1



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8:38-8:42 am

Tarsoconjunctival Onlay Flap Technique Video & Discussion

Seanna Grob

8:51-8:57 am

What are Artificial Intelligence-Driven Large Language Models Saying about Oculofacial Surgery? Implications for Scope of Practice

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Introduction: There are ever-expanding resources available for the public to access medical information and seek medical guidance from appropriate health professionals. A recent resolution submitted by the American Academy of Ophthalmology to the American Medical Association highlighted inherent issues with scope of practice and artificial intelligence-driven large language models (LLM). With increased use of LLMs by the public, it is important to assess the perceived identity of oculofacial surgery (OFS), ASOPRS certification, and the scope of the subspecialty by LLMs. This study aims to evaluate the responses of three different LLMs when asked questions regarding OFS as a subspecialty and assess for response overlap between OFS and other specialties.

Methods: A list of questions were compiled and entered into ChatGPT 3.5 (OpenAI), Bard (Google), and Copilot (Bing). Procedure or symptom-specific queries began with the prompt “What type of doctor should I see for…” while other queries were submitted to acquire a list of procedures the platform believed oculofacial surgeons performed, as well as the importance of ASOPRS certification and training. Responses were evaluated based on procedures or specialties provided. Each question was submitted in a new session to prevent AI “learning” throughout the process.

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Results: Thirty-nine questions were compiled and submitted (Figure 1). Findings of the 31 procedure or symptom-specific inquiries are summarized in Figure 2. Bard provided the largest average number of specialties per query (3.1, range 2-5), followed by ChatGPT (2.3, range 2-5), and Copilot (1.4, range 1-3). The OFS subspecialty was mentioned most frequently in responses by the Bard platform (77.4%), followed by ChatGPT (67.7%), and least frequently by Copilot (19.4%). The subspecialty was listed first in nearly half of the responses by both ChatGPT and Bard (42.9% and 45.8%, respectively), and in none of the responses by Copilot. The title "oculoplastic surgeon" was used in every response from all three LLMs when referring to OFS, while titles such as "oculofacial surgeon" or "oculofacial plastic surgeon" were not mentioned in any of the 93 responses across all 3 LLMs (Figure 3). When asked what procedures OFS performed (Figure 4), the answer varied both between and within each platform based on which title was used, with Bard responding with the most procedures on average (12.2). When asked, all three platforms accurately described the extent of training and qualifications ASOPRS surgeons possess - though only Copilot directly stated ASOPRS certification was "important."

Conclusions: The scope of OFS is overall well-represented on AI LLMs especially considering the small size of the subspecialty. The evolving nature of these LLMs is a limitation of the study as these findings may not accurately represent the responses provided by future updates. Additionally, the investigators noted that changing specific words (such as "do" instead of "perform") resulted in different responses from a portion of the LLMs. Therefore, the included responses do not encompass all variations of the topics queried in the study.

As many "oculoplastic" surgeons transition to the title "oculofacial" surgeon, it is important to note that the public may not be familiar with the latter title at this time.

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Figure 1

Queries Entered into Each Large Language Model Platform
What types of surgeries does an ASOPRS surgeon perform?
What types of surgeries does an oculofacial plastic surgeon perform?
What types of surgeries does an oculofacial surgeon perform?
What types of surgeries does an oculoplastic and reconstructive surgeon perform?
What types of surgeries does an oculoplastic surgeon perform?
What types of surgeries does an ophthalmic plastic surgeon perform?
How much training does an ASOPRS surgeon have?
Is it important that my oculoplastic surgeon is ASOPRS certified?
What type of doctor should I see for an eyelid issue?
What type of doctor should I see for a blepharoplasty?
What type of doctor should I see for blepharospasm?
What type of doctor should I see for botox around my eyes?
What type of doctor should I see for a brow lift?
What type of doctor should I see for bulging eyes?
What type of doctor should I see for cosmetic eyelid surgery?
What type of doctor should I see to drain a stye?
What type of doctor should I see for an enucleation of evisceration of an eye?
What type of doctor should I see for eyelid surgery?
What type of doctor should I see for excess tearing?
What type of doctor should I see for facial filler?
What type of doctor should I see for fat grafting to the periorbita or cheek?
What type of doctor should I see to fix droopy eyelids?
What type of doctor should I see for a forehead lift?
What type of doctor should I see to get rid of bags under my eyes?
What type of doctor should I see for a lesion on an eyelid?
What type of doctor should I see for a mid-facelift?
What type of doctor should I see for an optic nerve sheath fenestration?
What type of doctor should I see for an orbital decompression?
What type of doctor should I see for ptosis repair?
What type of doctor should I see for reconstruction of an eyelid?
What type of doctor should I see to remove an eye?
What type of doctor should I see to remove a mass behind an eye?
What type of doctor should I see to repair an orbital fracture?
What type of doctor should I see for resection of an orbital tumor?
What type of doctor should I see for a rhinoplasty?
What type of doctor should I see for surgery on my tear duct?
What type of doctor should I see for surgery related to the optic nerve?
What type of doctor should I see to treat eyelid trauma?
What type of doctor should I see for a tumor of my eyelid?

Figure 1: List of queries compiled and entered into each AI chatbot

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Figure 2

"What type of doctor should I see for..."	Type of Physician	ChatGPT	Copilot	Bard
Blepharoplasty	Oculoplastic Surgeon	x	x	1
	Ophthalmologist		x	
	Facial Plastic Surgeon	x		
	Plastic Surgeon	x	x	x
	Dermatologist			x
Blepharospasm	Oculoplastic Surgeon			
	Ophthalmologist	x	x	x
	Neurologist	x	x	x
Brow Lift	Oculoplastic Surgeon			x
	Ophthalmologist			
	Plastic Surgeon	x	x	x
	Facial Plastic Surgeon	x		
	Dermatologist			x
Bulging Eyes	Oculoplastic Surgeon	1		x
	Ophthalmologist	x	x	x
	Endocrinologist			x
	Primary Care			x
Cosmetic Eyelid Surgery	Oculoplastic Surgeon	x	x	1
	Ophthalmologist		x	
	Plastic Surgeon	x	x	x
	Facial Plastic Surgeon	x		x
	Dermatologist			x
Drain a Stye	Oculoplastic Surgeon			x
	Ophthalmologist	x	x	x
	Primary Care	x	x	x
Droopy Eyelids	Oculoplastic Surgeon	1		x
	Ophthalmologist	x		x
	Plastic Surgeon		x	
	Primary Care			x
	Neurologist			x
Enucleation/Evisceration	Oculoplastic Surgeon	x		
	Ophthalmologist	x	x	x
	Primary Care			x
Excess Tearing	Oculoplastic Surgeon			x
	Ophthalmologist	x	x	x
	Allergist			x
	Otolaryngologist			x
	Primary Care			x
Eyelid Issue	Oculoplastic Surgeon	x		
	Ophthalmologist	x	x	x
	Optometrist			x
Eyelid Lesion	Oculoplastic Surgeon			
	Ophthalmologist	x	x	x
	Dermatologist	x		x
	Primary Care			x
Eyelid Reconstruction	Oculoplastic Surgeon	1		1
	Ophthalmologist			x
	Plastic Surgeon	x	x	x
Eyelid Surgery	Oculoplastic Surgeon	1		1
	Ophthalmologist		x	
	Facial Plastic Surgeon	x		
	Plastic Surgeon			x
Eyelid Trauma	Oculoplastic Surgeon	x		x
	Ophthalmologist	x	x	x
Eyelid Tumor	Oculoplastic Surgeon	x		1
	Ophthalmologist	x	x	x
	Head and Neck Surgeon			x

"What type of doctor should I see for..."	Type of Physician	ChatGPT	Copilot	Bard
Facial Filler	Oculoplastic Surgeon	x	x	x
	Ophthalmologist		x	
	Dermatologist	x		x
	Plastic Surgeon	x	x	x
	Facial Plastic Surgeon	x		x
	Nurse Practitioner or Physician Assistant	x		
Fat Grafting to Periorbita/Cheek	Oculoplastic Surgeon	x	x	x
	Ophthalmologist		x	
	Plastic Surgeon	x	x	x
	Facial Plastic Surgeon			x
Forehead Lift	Oculoplastic Surgeon			x
	Plastic Surgeon	x	x	x
	Facial Plastic Surgeon	x		
	Dermatologist			x
Midface Lift	Oculoplastic Surgeon			x
	Plastic Surgeon	x	x	x
	Facial Plastic Surgeon	x		x
Optic Nerve Sheath Fenestration	Oculoplastic Surgeon			
	Ophthalmologist		x	x
	Neuro-Ophthalmologist	x		x
	Neurosurgeon	x		
Orbital Decompression	Oculoplastic Surgeon	1		1
	Ophthalmologist		x	x
	Plastic Surgeon			x
Orbital Fracture Repair	Oculoplastic Surgeon	1	x	1
	Ophthalmologist	x	x	x
	Oral and Maxillofacial Surgeon			x
	Plastic Surgeon			x
Orbital Tumor Resection	Oculoplastic Surgeon	1		1
	Ophthalmologist			
	Ophthalmic Oncologist	x		
	Neurosurgeon	x	x	x
Periorbital Botox	Oculoplastic Surgeon	x		x
	Ophthalmologist		x	x
	Dermatologist	x		x
	Plastic Surgeon	x		x
	Facial Plastic Surgeon	x		
	Cosmetic Surgeon	x		
Ptosis Repair	Oculoplastic Surgeon	x		x
	Ophthalmologist	x	x	x
	Primary Care			x
	Neurologist			x
Remove Eye	Oculoplastic Surgeon	x		
	Ophthalmologist	x		x
	Neurosurgeon		x	
	Primary Care			x
Remove Mass Behind Eye	Oculoplastic Surgeon	x		1
	Ophthalmologist	x		x
	Neurosurgeon		x	x
Rhinoplasty	Oculoplastic Surgeon			x
	Otolaryngologist	x		x
	Plastic Surgeon	x	x	x
Surgery of Optic Nerve	Oculoplastic Surgeon			x
	Ophthalmologist		x	x
	Neuro-Ophthalmologist	x		x
	Neurosurgeon	x	x	x
Tear Duct Surgery	Oculoplastic Surgeon	1		1
	Ophthalmologist	x	x	x
Under Eye Bags	Oculoplastic Surgeon	1	x	1
	Ophthalmologist		x	
	Primary Care			x
	Dermatologist	x		x
	Plastic Surgeon		x	
	Facial Plastic Surgeon	x		
	Cosmetic Surgeon	x		
	Aesthetic Medicine Practitioner	x		

Figure 2: List of procedure and symptom-specific queries with the specialities included in each chatbot response. Boxes are highlighted a chatbox-specific color and marked with "x" if the specialty was mentioned by the chatbot. The box is highlighted yellow with a number "1" replacing the "x" if the oculofacial subspecialty was mentioned first in the chatbot's response.

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Figure 3

Titles for "Oculofacial Surgeon"	ChatGPT	Copilot	Bard
ASOPRS	0 (0%)	0 (0%)	0 (0%)
Oculofacial Surgeon	0 (0%)	0 (0%)	0 (0%)
Oculofacial Plastic Surgeon	0 (0%)	0 (0%)	0 (0%)
Oculoplastic and Reconstructive Surgeon	15 (71.4%)	0 (0%)	0 (0%)
Oculoplastic Surgeon	**21 (100%)**	**6 (100%)**	**24 (100%)**
Ophthalmic Plastic Surgeon	1 (0.05%)	0 (0%)	0 (0%)

Figure 3: Occurences of different titles for "oculofacial surgeon" across each chatbot. Percentages refer to the rate of the specific title mentioned in 21 ChatGPT responses, 6 Copilot responses, and 24 Bard responses that listed the specialty.

Figure 4

"What type of surgeries does an ___ surgeon perform?"	Number of Procedures Listed			
	ChatGPT	Copilot	Bard	*Average*
ASOPRS	8	5	11	*8.00*
Oculofacial Plastic	11	6	13	*10.00*
Oculofacial	7	5	12	*8.00*
Oculoplastic	12	6	13	*10.33*
Oculoplastic and Reconstructive	9	5	12	*8.67*
Ophthalmic Plastic	9	5	12	*8.67*
Average	*9.33*	*5.33*	*12.17*	

Figure 4: Quantity of procedures listed by each chatbot response based on the specific title of oculofacial surgeon used in the query

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8:57-9:03 am

Trends in Presenters at ASOPRS Fall Meetings from 2017-2023

Lauren D. Mileo[1,2], Evan H. Black[3,2,4], Dianne M. Schlachter[1,2,4]
[1]Oculoplastics, Consultants in Ophthalmic and Facial Plastic Surgery, P.C., Southfield, Michigan, United States, [2]Ophthalmology, Oakland University William Beaumont School of Medicine, Rochester, Michigan, United States, [3]Southfield, Michigan, United States, [4]Ophthalmology, Kresge Eye Institute, Detroit, Michigan, United States

Introduction: To evaluate the trends in the types of podium presenters at ASOPRS fall meetings over the last several years.

Methods: A retrospective review was conducted of podium presentations at the annual fall ASOPRS meetings. The programs of the fall meetings publicized on the society's website were analyzed. The topic of presentation, associated institution, and level of training were investigated for each presenter. Types of presentations not included were thesis, poster, breakout or lunch session, and surgical video. Of note, in the fully virtual meeting of 2020, the narrated presentations were included as podium presentations. Additionally, the level of training of each presenter was based on the prior academic year at the time of abstract submission.

Five types of presenters were defined: student, resident, fellow, attending, and international. Students included college, medical, MD/PHD, or researchers. Residents were those completing an accredited national ophthalmology residency program. Fellows were those in a respective ophthalmological fellowship program including oculoplastic (ASOPRS, non-ASOPRS or international), oncology, and pediatric. Attendings were defined as medical doctors practicing ophthalmic plastic and reconstructive surgery at either private practice or national academic institutions. Finally, international presenters were defined based on their professional affiliation documented on their abstracts. The percentages of each presenter type were calculated for overall podium presentations and compared across the seven years. The presentation topics across all meetings were categorized (YASOPRS, eyelid, aesthetics, orbit, and oncology), and analyzed according to presenter type.

Results: Annual fall ASOPRS programs from 2017 to 2023 were reviewed. The average number of podium presentations per year was 72.2, with the lowest being in 2017 (57) and the highest being in 2021 (90). The institutions with the most frequent presenters at each meeting were Bascom Palmer and Stein Eye Institutes. Most presenters who performed two or more podium presentations were residents, fellows, or international.

Figure 1 demonstrates the percentages of presenter type for podium presentations from 2017-2023. There appears to be a trend toward more students and international presenters and fewer attendings (Fig 2 A-C). The most frequent presenter type for YASOPRS presentations is fellow, except in 2018 when there were more resident presenters and a tie between residents in 2020 and 2023 (Fig

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3). There has been a general trend toward fewer attendings and more international presenters for eyelid and aesthetics podium presentations (Fig 4 A-B). Finally, no specific trends were demonstrated in the presenter type for the orbit and oncology categories.

Conclusions: The ASOPRS annual fall meetings allow medical professionals to honorably demonstrate research and clinical advances in the field of ophthalmic plastic and reconstructive surgery. The types of podium presenters have shifted toward more lower levels of trainees who are interested in becoming members of ASOPRS. Statistical analysis of podium presenter types across meetings and its representation of the equality and diversity in the field is recommended.

Figure 1

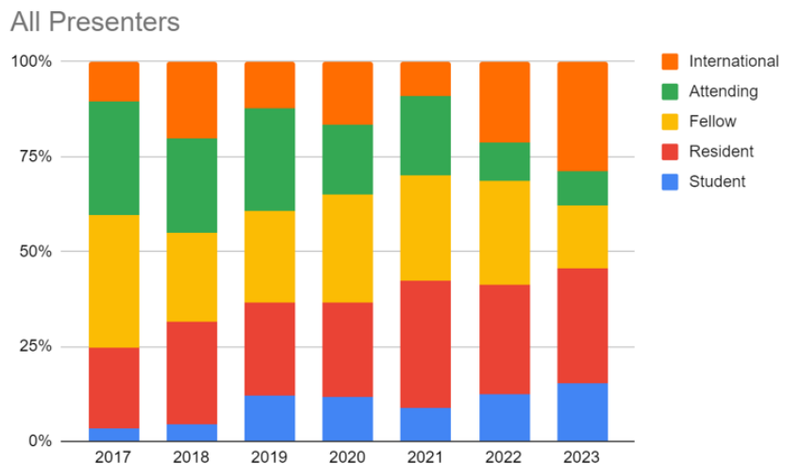


Figure 2

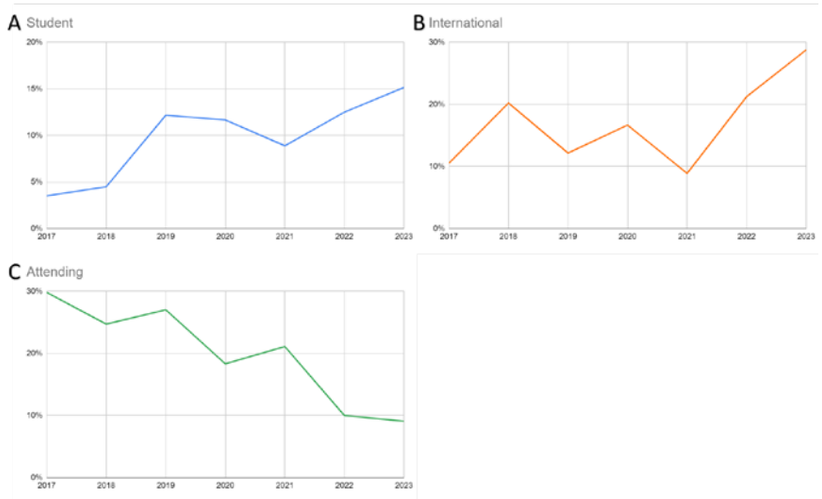


Figure 3

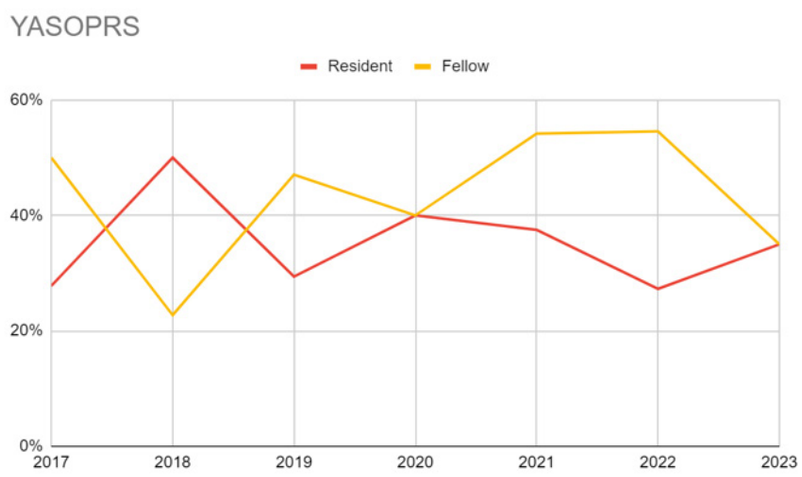
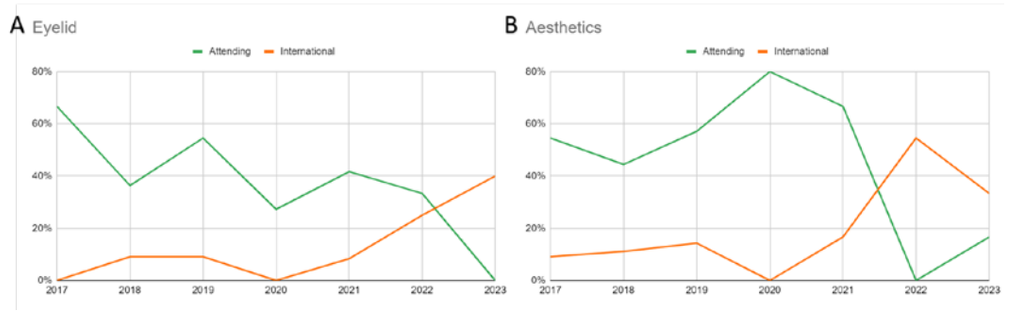


Figure 4



9:03-9:09 am

Residency Performance of Students Matching into ASOPRS Fellowships

Andrea Tooley[1], Gary Lelli[2], Kyle Godfrey[2], Ann Tran[2], Andrew Harrison[2], Jeremiah Tao[2], Andrew Barkmeier[1]
[1]Rochester, Minnesota, United States, [2]New York, New York, United States

Introduction: The purpose of this study was to compare residency performance of ASOPRS fellowship applicants to all ophthalmology residents, and to identify factors predictive of future performance. ASOPRS fellowship application selection is a competitive process with highly qualified applicants from ophthalmology residencies. Factors within the ophthalmology residency application have been shown to predict future resident performance.[1] How ASOPRS applicant resident performance compares to all ophthalmology residents, is unknown.

Methods: This multi-institutional, cross-sectional, observational study retrospectively reviewed residency application materials of ophthalmology residents who graduated from residency from 2006 through 2018. A sub-analysis was performed to characterize residents matching into ASOPRS fellowships. Resident performance was scored by 2 faculty reviewers in 4 domains (clinical, surgical, academic, and global performance). Correlation between specific elements of the residency application and resident performance was assessed by Spearman correlation coefficients (univariate) and linear regression (multivariate) for continuous variables and logistic regression (multivariate) for categorical variables. Performance of residents matching into ASOPRS fellowships was compared to the entire cohort.

Results: Of the 256 residents included in the study, 28 (11%) matched into an ASOPRS fellowship. Residents with United States Medical Licensing Examination Step 1 scores higher than the national average for that year had significantly higher scores in all 4 performance domains than those who scored at or below the mean (all domains $P < 0.05$). Residents who had honors in at least 4 core clerkships and who were members of Alpha Omega Alpha Medical Honor Society also had higher scores in all 4 performance domains (all domains $P \leq 0.04$). Step 1 score ($\rho=0.26$, $P < 0.001$) and the difference between Step 1 score and the national average for that year ($\rho=0.19$, $P = 0.009$) positively correlated with total resident performance scores. Residents who passed the American Board of Ophthalmology Written Qualifying Examination or Oral Examination on their first attempt had significantly higher Step 1 and 2 scores ($P \leq 0.005$), Ophthalmology Knowledge Assessment Program scores ($P = 0.001$), and resident performance scores ($P \leq 0.004$). When comparing residents who matched into an ASOPRS fellowship with other residents, those who chose a career in oculofacial surgery had higher total performance scores as well as surgical and global domain scores, were more likely to be AOA, and performed higher on OKAPS, $p<0.05$.

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Conclusions: Applicants to ASOPRS fellowships represent the highest performing residents across multiple domains including surgical performance.

References

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9:17-9:27 am

Physician Extenders in Oculofacial Surgery

Julian D. Perry

9:27-9:37 am

Private Equity in Ophthalmology

Gary J. Lelli

10:16-10:22 am

Lower Eyelid Fat Transposition

Catherine J. Hwang

10:22-10:28 am

Lower Face Lifting Techniques

Jonathan Hoenig

10:28-10:34 am

Fixation Techniques in Endoscopic Brow Lifting

Evan H. Black

10:34-10:37 am

Fixation Techniques in Endoscopic Brow Lifting

Bobby S. Korn

10:42-10:48 am

Mid-Face Lift Dissection

Julie A. Woodward

10:48-10:54 am

Upper Eyelid Fat Transfer to A-Frame

Julie A. Woodward

FEATURED SPEAKER: LISA AKINTILO, MD, MPH

Friday, May 17

Moderator: Gary J. Lelli

11:01-11:21 am

Pan-Facial Rejuvenation with Lasers and Energy-Based Devices

Lisa Akintilo, MD, MPH

11:30-11:35 am

Exosomes for Skin Rejuvenation

John J. Martin

11:35-11:40 am

The Temporal Subcutaneous Browlift with Orbicularis Suspension

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

Introduction: Standard subcutaneous brow lifting involves an incision immediately anterior to or within the temporal hairline, with subcutaneous dissection to the lateral orbital rim.[1-6] This relies on an elliptical or hairline skin excision and skin redraping to obtain the vertical lift. Orbicularis incision and manipulation has been introduced as an adjunct to the skin excision for the subcutaneous brow lift procedure[7]. We describe a novel adaptation of these techniques with non-incisional suture suspension of the orbicularis to further improve lateral brow ptosis and contour.

Methods: Twelve patients underwent a direct temporal brow lift with suspension of the superotemporal orbicularis to augment the lift. The procedure begins with local and tumescent anesthetic administration. Next, an incision is made along the temporal hairline, either behind or at the hairline (trichophytic approach) depending on the location of the temporal tuft and the desired vector of lift. Subcutaneous dissection is then carried out toward the superotemporal orbital rim until the orbicularis muscle fibers are identified (Figure 1). The superotemporal orbicularis muscle edge is then engaged with 4-0 polyglactin suture and suspended to the deep temporalis fascia in the intended vector for the desired lift (Figure 2). To avoid postoperative orbicularis weakness, the orbicularis muscle is left intact and no incisions were made into the muscle fibers. An additional suspension sutures are placed as needed to enhance brow contour and symmetry. The incision is then closed with deep interrupted 4-0 poliglecaprone suture and the skin closed with running 5-0 plain gut or polypropylene suture.

Results: All patients reported satisfaction with the procedure and subjective improvement in lateral brow ptosis postoperatively, with an average follow up period of 3 months (range 1- 6 months). On postoperative exam, there was no orbicularis weakness or lagophthalmos. There were no instances of postoperative healing complications, including wound dehiscence, hypertrophic scarring, ischemia, extended paresthesia or infection. One of the twelve patients (8%) reported worsened dry eye following the procedure, which had improved to baseline at 1 month follow-up.

Conclusions: Subcutaneous temporal brow lifting with orbicularis lift may provide benefit to patients seeking or requiring an enhanced lift of the lateral brow. While suture suspension of the orbicularis has been described[2] these descriptions include transection of orbicularis fibers which inherently weaken the lateral orbicularis tone during the lift.[7] We propose suture suspension without transection

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of the orbicularis muscle fibers without engaging underlying tissues-this allows for a more robust lift and avoids traction on the deeper tissues still adherent to underlying bone, ultimately resulting in reduced postoperative orbicularis weakness and risk of lagophthalmos or worsened dry eye.

Orbicularis suspension is a promising adjunct to subcutaneous temporal brow lifting to effectively and safely address lateral brow ptosis and aesthetic contour.

Figure 1

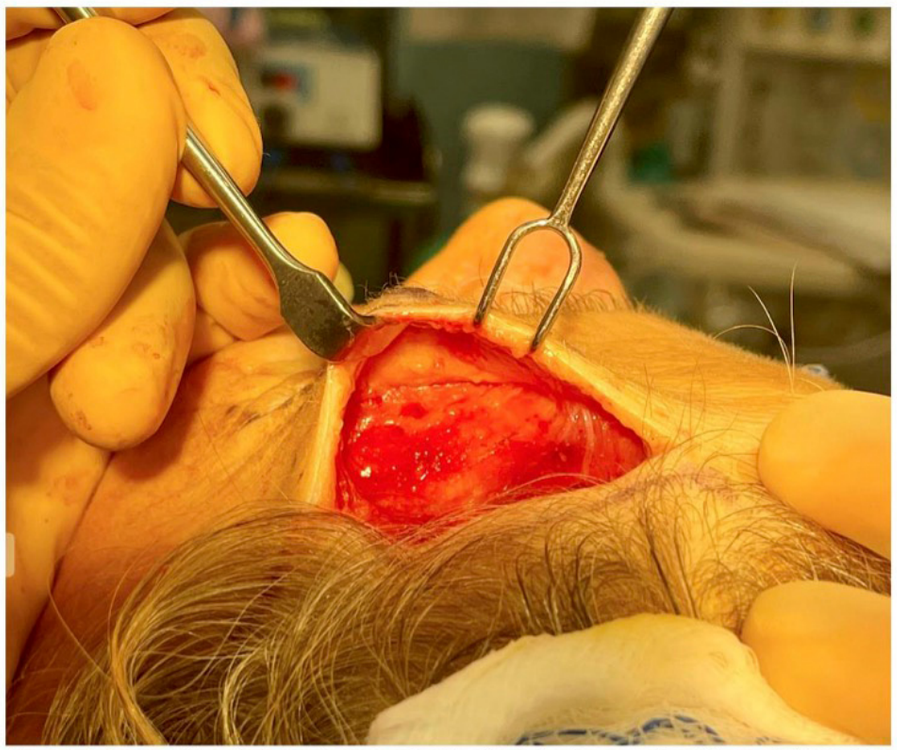

Figure 1. Intraoperative photograph demonstrating the subcutaneous dissection and direct view of the superotemporal orbicularis at the orbital rim.

Figure 2

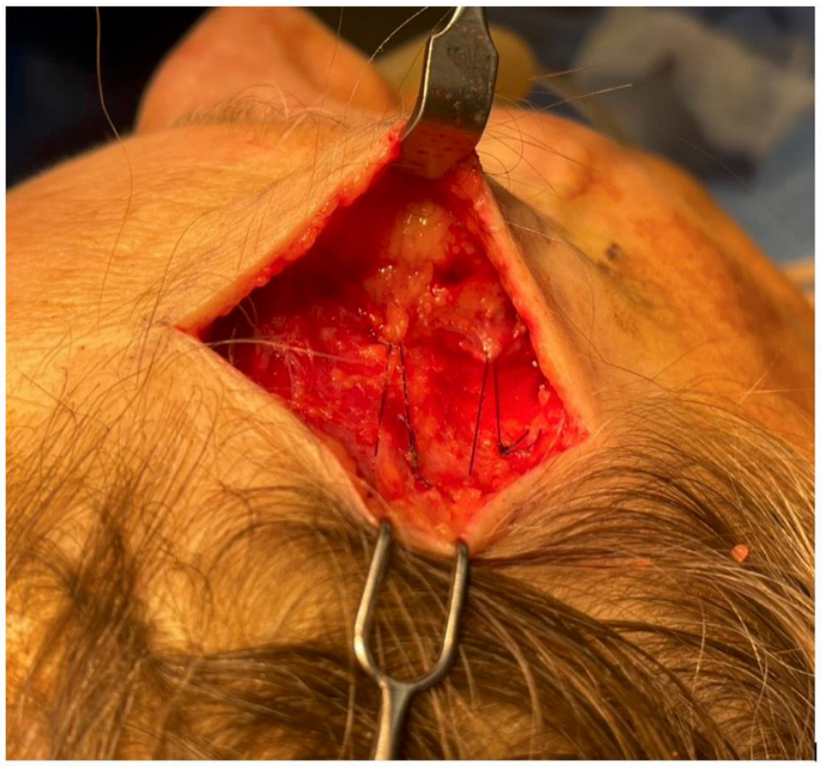

Figure 2. Intraoperative photograph demonstrating suture suspension of the orbicularis to the deep temporalis fascia.

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11:40-11:45 am

Is it Necessary and Sufficient to Release the Conjoint Tendon During Eyebrow Lifting? Part 1 Literature Review

Carl Rebhun[1,2], Samantha Madala[1], Michael Burnstine[1,2]
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Introduction: To assess the quality of information in the literature on why the conjoint tendon is released during eyebrow lifting surgery.

Eyebrow evaluation and possible elevation is a critical component to upper face rejuvenation. Methods used to elevate the ptotic eyebrow include use of neurotoxins, fillers as well as surgical approaches like internal eyebrow elevation, direct temporal eyebrow elevation, direct full eyebrow elevation, midforehead lifting, coronal (pretricheal and posttricheal) approaches, temporal (pre- and post-tricheal) approaches, and endoscopic browlifting.[1] Understanding the anatomic components of the brow is integral to achieve an ideal patient outcome. Despite the variety of terminology of the forehead and temporal fossa anatomy in the literature, there is widespread consensus that the robustness of a forehead lift, particularly an endoscopic lift, is attained by complete tissue release.[2-13] Herein, we examine the literature on the release of the confluence between the deep temporal fascia, the temporoparietal fascia, and periosteum of the frontal bone called the conjoint tendon[14] (also known as the conjoint fusion[11,14], zone of adhesion,[3,4] superior temporal septum,[7] and superficial temporal crest line[15]) (Figure 1). We discuss why the conjoint tendon is released and the strength of evidence supporting the recommendation using the recommendation.

Methods: A PubMed/MEDLINE literature review was performed. Articles published between 1980 to the March 1, 2023, were retrieved using the key words “brow lift”, “forehead lift”, “coronal brow lift”, “endoscopic brow lift”, and “endoscopic forehead lift”. Exclusion criteria included book chapters, articles not originally published in English, letters to the editor, articles pertaining to fixation in brow lifting, and articles not germane to the current topic. Suggested reason for release of the conjoint tendon was extracted from each article.

Each article was rated on the strength of the evidence for release based on the levels of evidence as defined by the Oxford Center for Evidence Based Medicine.[16] A level of evidence was assigned to each article on a scale from 1 to 5, with 1 being considered the highest and 5 considered the lowest level of evidence.

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Results: A systematic search yielded a total of 772 publications. Eighty-four publications directly discussed the need for conjoint tendon release. No articles directly evaluated the need for tendon release. The average level of evidence of included publications was 4.2. There were three articles that were rated as level 2 and one article that was rated as level 3. The rest of the 80 articles (95.2%) were rated as either level 4 or 5.

Conclusions: The brow lifting literature is filled with confusing anatomic terminology and surgical approaches to eyebrow elevation. The level of evidence and strength of evidence to support conjoint tendon release is poor.

Figure 1

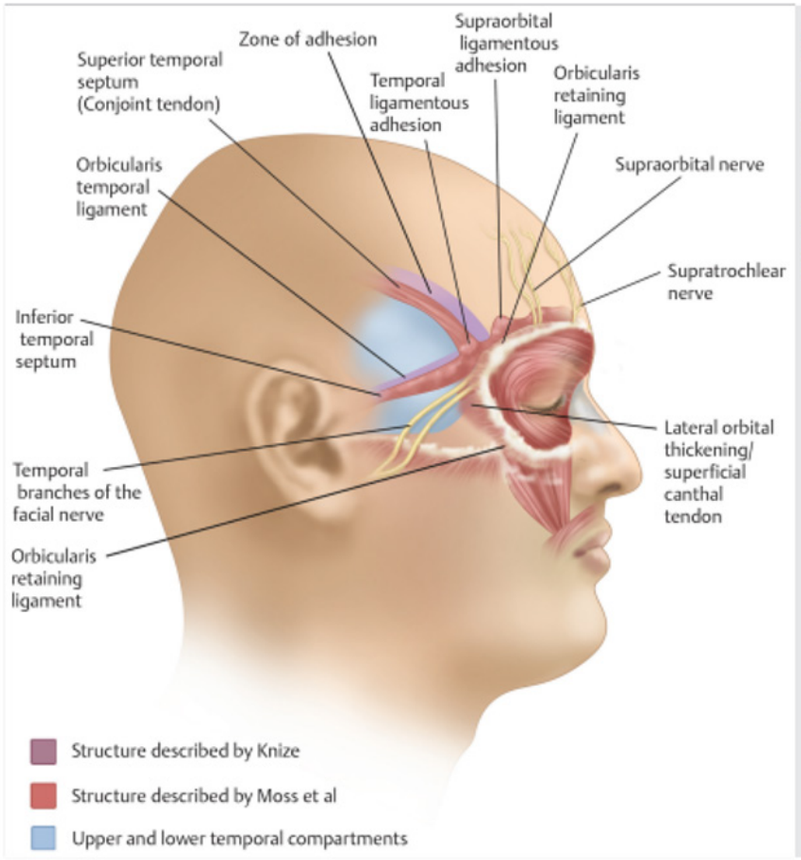

Fig. 2.3 Retaining ligaments of the upper face. Illustration of the retaining ligaments of the upper face. The circumferential orbicularis retaining ligament extends between the deep orbicularis oculi muscle and the orbital rim, and condenses laterally as the lateral canthal tendon. The conjoint tendon/superior temporal septum represents the fusion of the deep temporal fascia, the temporoparietal fascia, and the periosteum of the frontal bone. (Reproduced with permission from Alghoul and Codner.[6])

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11:45-11:50 am

Evaluating Hyaluronidase Amounts Required to Dissolve Twenty-One Hyaluronic Acid Fillers using a Single Dose

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Introduction: Hyaluronic acid (HA) fillers are widely used for clinical and aesthetic purposes. They are often preferred over other types of fillers due to their ability to be dissolved with hyaluronidase. Excess hyaluronidase is often used to dissolve filler, which can cause adverse effects such as tissue damage, overcorrection, local inflammation, delayed healing, allergic reactions, and more.[1] We have previously evaluated 21 hyaluronidase fillers in vitro with a multiple dosing protocol using 20 units every 30 minutes until 120 units.2 This new study analyzes 21 commercially available fillers that aims to delineate the least amount of hyaluronidase required to fully dissolve with a single dose within 6 hours.

Methods: 0.2 mL aliquots of 21 hyaluronidase fillers were placed on slides. Varying amounts of recombinant human hyaluronidase (RHH), with a maximum of 140 units, were injected into the center of the aliquot and observed for 6 hours. RHH amounts were as follows: 0, 2.5, 5, 10, 20, 40, 60, 80, 100, 120, or 140 units of RHH. Filler aliquots were not mixed until the end of 6 hours to resemble the process of injecting hyaluronidase in a patient. Bird's eye and lateral photographs were taken of the slides at the following time points to note progression of filler dissolution: pre-hyaluronidase injection, post-injection, 15 minutes, 30 minutes, 1 hour, 2 hour, 3 hour, and 6 hours (Figure 1-Representative Photos). After 6 hours, 10-second videos were taken of each aliquot + hyaluronidase being stirred to confirm the full dissolution of the initial aliquot. This process was repeated twice per filler. If fillers dissolved in both trials with the same amount of hyaluronidase, they were considered to dissolve at that amount. If not, they were tested at a higher amount of hyaluronidase.

Results: With this single dose escalation protocol of hyaluronidase into 0.2 mL aliquots of filler, Juvederm Volbella, Juvederm Vollure, Restylane-L, Restylane Lyft, and Restylane Silk were the least resistant fillers, requiring less than 20 units to dissolve. RHA 2, RHA 3, RHA 4, Belotero Volume, and Revanesse Versa were classified as most resistant, requiring 120 units or more to dissolve. Table 1 shows the complete data.

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Conclusions: This study works with previous studies to further help elucidate dissolution characteristics of 21 hyaluronic acid gel fillers using a single dose from 2.5 units/0.2 mL to 140 units/0.2 m unstirred until 6 hours to confirm dissolution. When compared with existing literature, our data shows that these fillers across varying methodologies have similar dissolution profiles with some fillers dissolving quite easily and others requiring a lot of time and hyaluronidase to dissolve.[2-6] When paired with other in-vivo and in-vitro studies2,4,5, this study can help physicians further refine how to dissolve hyaluronic acid gel filler.

Figure 1

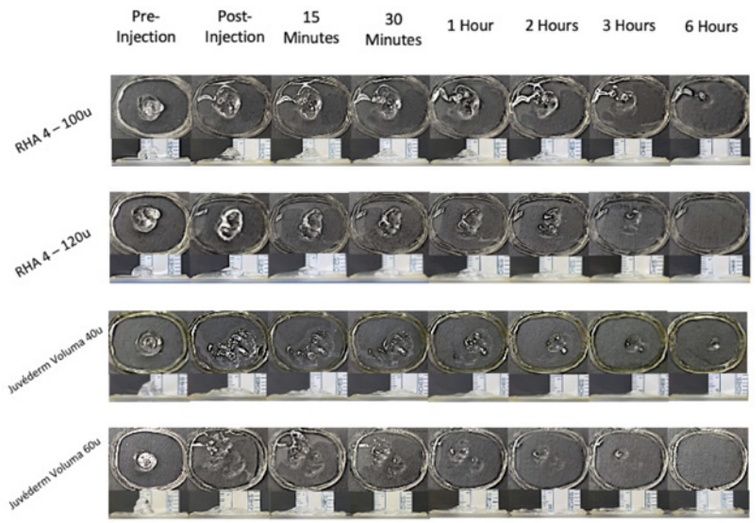

Figure 2

Filler Name	Least # of Units Required to Dissolve 0.2 mL with One Injection
RHA 1 / Redensity	60
RHA 2	120
RHA 3	120
RHA 4	140
Belotero Balance	100
Belotero Intense	60
Belotero Volume	140
Juvéderm Ultra XC	100
Juvéderm Ultra Plus XC	100
Juvéderm Volbella	5
Juvéderm Vollure	10
Juvéderm Voluma	60
Juvéderm Volux	100
Restylane-L	2.5
Restylane Lyft	2.5
Restylane Silk	40
Restylane Contour	100
Restylane Defyne	100
Restylane Kysse	100
Restylane Refyne	100
Revanesse Versa	120

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11:50-11:55 am

The Role of Refunds in Managing the Unsatisfied Aesthetic Surgical Patient

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Introduction: There is limited literature regarding management of the unsatisfied cosmetic surgical patient, with even less discussion on the role of refunds.[1-3] The purpose of this study is to present cosmetic surgery refund data from a multi-center private oculoplastic surgery practice, and to review the literature regarding management strategies to most effectively alleviate post-operative patient concerns.

Methods: A retrospective chart review was conducted on patients who received cosmetic surgery refunds for aesthetic upper and lower blepharoplasty, browlifts, ptosis repairs, fat grafting, and facelifts from July 2016 – December 2023 in our oculoplastic surgery private practice. Financial data was reviewed to identify patients who received refunds. Reasons for refund, demographics, and medical history were collected.

Results: Eight patients (1M, 7F) with a mean age of 60.5±16.1 years received cosmetic surgery associated refunds during the study period. This included 6 Caucasian, 1 Hispanic, and 1 Asian patient. Patients either underwent a single surgery or combination of procedures (Table 1). Five of 8 patients had prior cosmetic treatments, including upper blepharoplasty, breast augmentation, rhinoplasty, botulinum toxin, fillers, and abdominoplasty. Three patients received a full refund, one received a full refund minus the consultation fee, and the remaining four patients received a partial refund ranging between 50-80%.

During the study period, 1909 upper blepharoplasties, 1704 lower blepharoplasties, 427 brow lifts, 1323 internal or external ptosis repairs, 67 fat grafts, and 18 facelifts were performed. Procedures performed in our refunded cohort were upper blepharoplasty (8), lower blepharoplasty (5), brow lift (2), and ptosis repair (2). Reasons for patient dissatisfaction leading to refund were perception of residual excess upper eyelid skin (3), lateral canthal web (1), prolonged malar edema (1), lower eyelid retraction (1), asymmetric palpebral fissure on downgaze (1) and pretrichial temporal browlift scar (1). Dissatisfaction with respective procedures led to refunds in 4/1909 upper blepharoplasties (0.21%), 3/1704 lower blepharoplasties (0.23%), and 1/427 browlifts (0.23%). The gross amount refunded represented 0.41% of the total cosmetic surgery income, and the 8 patients represented 0.23% of total aesthetic surgical patients undergoing these procedures. Unsatisfied patients had a high number of post-op visits to address their concerns, with a mean of 6 post-op visits (range: 2-12). Many patients were offered additional procedures at no cost but declined. Six of 8 patients signed a liability and non-disclosure

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agreement, waiving any right to future legal claims and discussion of the case on review websites. To the authors knowledge, there were no negative online reviews or discussion of adverse results with our community colleagues, and no litigation against the practice was pursued by any refunded patient.

Conclusions: Unsatisfied patients are inevitable in the cosmetic surgery field. The most common reason for dissatisfaction in our cohort was perception of residual upper eyelid skin in patients undergoing upper, lower eyelid blepharoplasty, and brow lift. Although willingness of practitioners to provide refunds after services have been rendered vary, when combined with pre-operative patient selection and expectation management, issuance of refunds may be an additional tool to help alleviate post-operative patient concerns and minimize negative reviews and lawsuits.

Figure 1

Patient	Performed procedure(s)	Refunded procedure(s)	History of prior cosmetic procedures	Reason for Refund	Amount refunded (%)
1	Upper and lower blepharoplasty, ptosis repair	Upper blepharoplasty	-	Extra upper eyelid skin laterally	80%
2	Upper and lower blepharoplasty, ptosis repair	Lower blepharoplasty	Upper blepharoplasty	Lower eyelid festoons, mild edema	50%
3	Upper and lower blepharoplasty	Upper and lower blepharoplasty	-	Lower eyelid retraction	100%
4	Upper and lower blepharoplasty, brow lift	Upper and lower blepharoplasty, brow lift	-	Extra upper eyelid skin	78%
5	Upper blepharoplasty	Upper blepharoplasty	Breast augmentation, rhinoplasty, botox, filler	Asymmetric palpebral fissure on downgaze	100%
6	Upper blepharoplasty	Upper blepharoplasty	Rhinoplasty, filler	Extra upper eyelid skin, scar	96%
7	Upper and lower blepharoplasty	Lower blepharoplasty	Abdominoplasty	Lateral canthal webbing/dystopia	100%
8	Upper blepharoplasty, brow lift	Upper blepharoplasty, brow lift	Botox, filler	Pretrichial scar, unmet pre-op expectations	61%

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7:31-7:35 am

NXP-2 Antibody Positive Dermatomyositis Presenting as a Unilateral Heliotrope Rash

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Introduction: Dermatomyositis is an idiopathic inflammatory myopathy that can often be difficult to diagnose in its early stages due to its wide variability in organ involvement and clinical manifestations. A heliotrope rash is a common cutaneous manifestation of dermatomyositis, presenting as a violaceous discoloration of the eyelids with or without periorbital edema. This finding is found in 30-60% of patients with dermatomyositis, often bilateral and symmetric[1]. The purpose of this study is to present a patient with a unilateral, heliotrope rash with an ulcerated lesion as an isolated presenting finding of dermatomyositis.

Methods: Case report

Results: A 50 year-old female with history of 5 months of intermittent left upper eyelid swelling thought to be due to recurrent chalazia presented to the oculoplastics clinic. She was found to have violaceous discoloration and edema of the left upper eyelid with an ulcerated lesion (figure 1). MRI orbit imaging was notable for STIR hyperintense edema within the preseptal soft tissue extending to the superior rectus tendon. A biopsy of the ulcerated lesion showed mixed intraepithelial inflammation and parakeratosis consistent with non-specific inflammation. Given persistent swelling and erythema, she was treated with oral prednisone 40 mg daily and oral doxycycline, however continued to develop worsening of the dermatitis (figure 1C) and right upper extremity weakness and pain. Upon referral to rheumatology, she had an elevated CPK (1606) and NXP-2 antibody positive. EMG results were consistent with a non-irritable myopathy. These findings were consistent with a diagnosis of dermatomyositis. She was subsequently treated with high dose prednisone and azathioprine with worsening of symptoms. She was started on IVIG with recurrence of symptoms on a prednisone taper. She is actively being managed with mycophenolate mofetil with stable clinical disease.

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Conclusions: This case highlights the importance of keeping a broad differential for patients presenting with eyelid dermatitis and periorbital edema, especially if symptoms worsen despite treatment with oral corticosteroids and antibiotics and with non-specific histopathology findings. Patients with dermatomyositis who do not respond to oral corticosteroids and azathioprine are considered resistant, in which treatment options include IVIG and mycophenolate mofetil.

Figure 1

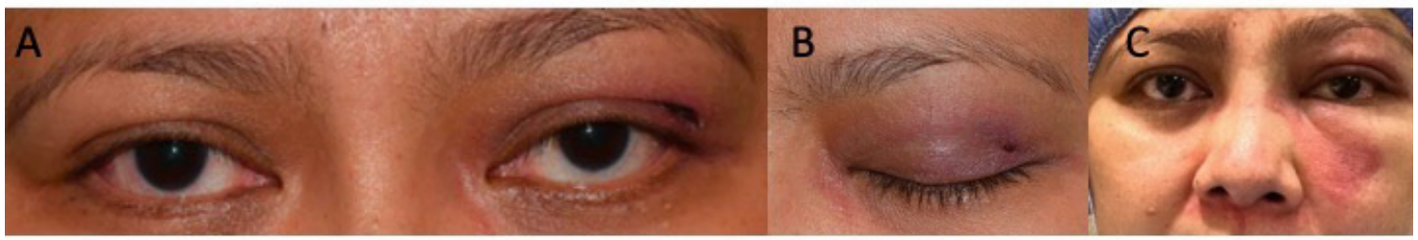

Figure 1: External photographs of the left eye at presentation (A-B) and after two rounds of high dose oral steroids (60 mg of prednisone daily) followed by a taper.

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7:35-7:39 am

A Rare Case of Chronic Fungal Orbital Infection in the Setting of Undiagnosed CARD9 Deficiency

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Introduction: To describe a rare case of chronic indolent fungal orbital infection in the setting of previously undiagnosed CARD9 deficiency.

Methods: This is a retrospective case report managed by a multi-institution and multidisciplinary team. The study was performed in compliance with the tenets of the Declaration of Helsinki.

Results: A 48-year-old immunocompetent male presented with right sided chronic indolent orbital inflammation. His symptoms started ten years prior to presentation following an episode of allergic rhinitis, and included right sided proptosis, loss of right peripheral vision, and tearing. He had undergone multiple treatments, including multiple orbital debridements and biopsies, as well as systemic treatment with voriconazole, micafungin, isavuconazole, rituximab, intralesional steroids, intravenous amphotericin, and most recently with Olorofirm, an investigational pyrimidine synthesis inhibitor. Pathology from prior biopsies showed scattered pauciseptate fungal elements with a predominantly lymphoplasmacytic inflammation, and polymerase chain reaction (PCR) of orbital tissue from a prior biopsy was positive for *Aspergillus flavus*.

On presentation, the patient's visual acuity was 20/25 in the right eye, there was no afferent pupillary defect (APD), and Hertel exophthalmometry measurements were 20mm and 18mm in the right and left eye respectively (Figure 1a). The patient had a large angle exotropia and hypotropia of the right eye and, due to both systemic side effects from his antifungal therapy and debilitating strabismus, had considered right sided exenteration. Repeat imaging showed a T1/T2 hypointense infiltrative process within the right orbit associated with right medial rectus enlargement (Figure 1b). Due to question of concurrent IgG4 orbitopathy, he was taken for a repeat orbital biopsy. Intraoperatively, there was fibrotic tissue in the superomedial orbit including the lacrimal gland, which was debulked and sent for analysis (Figure 2). Histopathologic and microbiologic analysis showed fibrosis and chronic granulomatous inflammation associated with the presence of septate fungal hyphae on GMS stain and fungal culture showed rare *A. flavus* colonies. An intraorbital catheter was placed to allow for a course of postoperative intraorbital amphotericin flushes.

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Despite triple antifungal therapy and source control, the patient's right orbital inflammation failed to improve. He was referred for workup of possible immune dysfunction, and whole genome sequencing revealed a homozygous pathogenic variant in CARD9, which encodes a signaling adapter protein that plays a critical role in innate and adaptive immunity against fungal infections and has been previously reported to be associated with susceptibility to fungal disease of the central nervous system[1,2].

He was transitioned from voriconazole to posaconazole by his infectious disease specialist and was discontinued off of micafungin. Close follow up has shown radiographic evidence of improvement in right lacrimal gland infiltration, and decreased FDG uptake on PET scan in the right orbit. His strabismus is being observed for now, and he is planned for lifelong antifungal suppression with posaconazole due to his CARD9 deficiency.

Conclusions: In cases of invasive, intractable fungal orbitopathy in otherwise immunocompetent hosts, genetic workup should be considered as CARD9 deficiency is as an emerging risk factor.

Figure 1

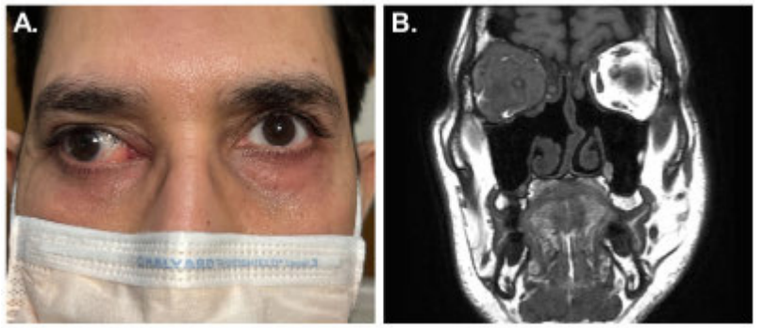
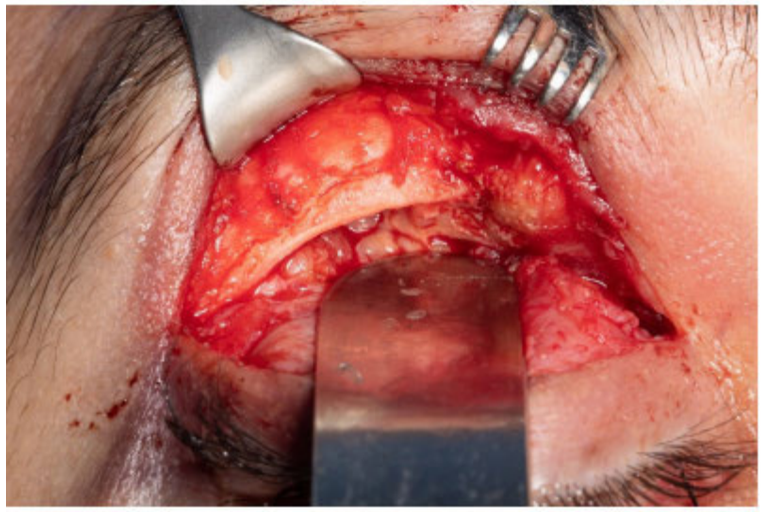


Figure 2



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7:39-7:43 am

Sino-Cranio-Orbital Aspergilloma Treated with Oral Voriconazole

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Introduction: We present a rare case of sinus aspergilloma invading into the orbit and cranium. Clinical course as well as management are described along with a review of the literature.

Methods: Case report and literature review.

Results: A 46-year-old immunocompetent woman presented with a four-year history of progressive left sided proptosis and worsening diplopia. She was known for a sino-orbital lesion that was previously biopsied 4 years prior from an endonasal approach but with inconclusive diagnosis based on pathological examination. At presentation, her visual acuity was 20/20 in the right eye and 20/25 in the left eye. Her intraocular pressure was 17 mmHg in both eyes. The left eye ductions had a -1 limitation in supraduction and -2 limitation in abduction. Her left eye was 5 mm proptotic relative to the right eye by Hertel exophthalmometry. Magnetic resonance imaging revealed an enhancing and enlarging left extraconal mass measuring 2.3 cm x 2.9 cm x 2.3 cm originating from the sinuses and extending through the orbital roof into the cranium, with dural thickening and enhancement. After consultation with otolaryngology, an orbital approach for repeat biopsy was felt to give the highest likelihood for a definitive diagnosis. An incisional biopsy was carried out via an upper lid crease approach. Pathological examination revealed granulomatous inflammation with invasive fungal elements. Subsequent polymerase chain reaction revealed Aspergillus flavus complex. After discussion at multidisciplinary surgical rounds, a decision was made to refer the patient to infectious diseases for treatment with Voriconazole. She was started on a dose of 200 mg twice daily, with the intention to treat for several months. One month after the initiation of treatment, her proptosis was reduced to 2 mm and her extraocular motility was full.

Conclusions: Orbital aspergilloma with extension from sinuses and into the cranial cavity is a rare entity. While surgical debulking of the lesion is an option for treatment modality, there may be significant morbidity associated with this approach. These lesions may respond very well to oral antifungals, eliminating the risks associated with more extensive surgery.

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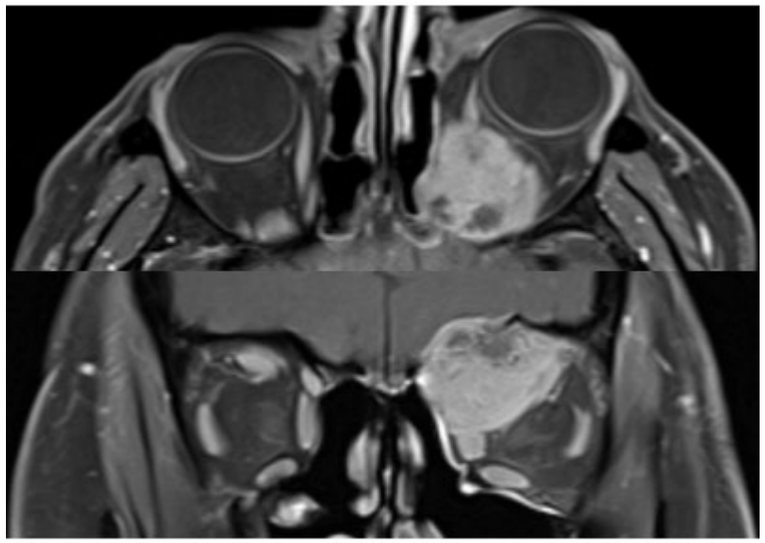
Figure 1



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7:43-7:47 am

Atypical Disseminated Mycobacterium Infection with Multineural and Cutaneous Involvement in a Lupus Patient

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Introduction: To describe the challenges in diagnosis and management of a 64-year-old woman with lupus with disseminated mycobacterial infection.

Methods: A retrospective case review

Results: A 64-year-old woman with a history of lupus, managed with methotrexate and prednisone, presented with a six-week painful left forehead ulcerated lesions in the V1 dermatome area, accompanied by blurry vision and vertical diplopia. Despite acyclovir and valacyclovir treatment for presumed herpes zoster, symptoms persisted, leading to admission at outside hospital. MRI revealed left pre-septal cellulitis and a 19 mm abscess near the left supraorbital ridge, accompanied by an associated bony defect and left superior rectus myositis. She was started on intravenous (IV) vancomycin and cefepime and was narrowed to vancomycin for presumed bacterial superinfection. She was transferred for specialized care. On presentation, visual acuity was 20/30 in both eyes. The slit lamp and dilated fundus exam were normal. External examination showed encrusted lesions over the left eyebrow and forehead. Repeat MRI revealed left post-septal cellulitis associated with a 6.7 mm subperiosteal hyperintensity under the orbital roof, concerning for an abscess (Figure 2A). Treatment with IV vancomycin and acyclovir were initiated. Acyclovir was discontinued after negative PCR for herpes simplex and varicella zoster viruses. She showed improvement and was discharged with a six-week plan of vancomycin for suspected orbital cellulitis and possible orbital osteomyelitis.

Ten weeks later, she returned with worsening left forehead lesions and new lesions on her chest and extremities. MRI showed an increase in left supraorbital hyperintensity spreading along the V1 nerve into the orbital apex (Figure 2B). Given the persistent enlargement of the hyperintensity with V1 nerve spread, refractory to antibiotics and antivirals, findings were concerning for primary cutaneous malignancy with perineural spread. However, biopsies of the left forehead and chest revealed numerous acid-fast bacilli within a granulomatous infiltrate, concerning for a mycobacterial infection. Oral amoxacillin / clavulanic acid 875/125 mg twice daily was prescribed for two weeks. Subsequent PCR identified Actinomyces neuii and mycobacterium haemophilum, leading to treatment for presumptive M. haemohpilum with azithromycin 250 mg, moxifloxacin 400 mg, and rifabutin 300 mg all once daily. Despite clinical

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improvement, new lesions and V1/V2 trigeminal and vidian nerve involvement were observed on repeat MRIs. Additional biopsies (left supraorbital nerve, right forehead, left medial canthus) were negative for malignancy; tests for various pathogens, including leprosy, returned negative. She was on a six-month treatment course, resulting in improved signs and symptoms. She remains on prednisone 5 mg daily.

Multidisciplinary teams, including oculoplastics, dermatology, and infectious disease, were involved in her care.

Conclusions: We present a challenging case of mycobacterial infection involving multiple nerves in a 64-year-old lupus patient. Despite initial concerns for malignancy, pathology indicated an infectious origin involving mycobacterium. Persistent mycobacterial infections often present variably and are challenging to treat.[1] The prolonged course may have been exacerbated by lupus-related immunosuppression. These infections are treated with long-course multidrug treatment based on susceptibility tests [2]. Ophthalmologists and oculoplastics surgeons should consider mycobacterium in immunosuppressed patients with persistent multineural and skin infections.

Figure 1

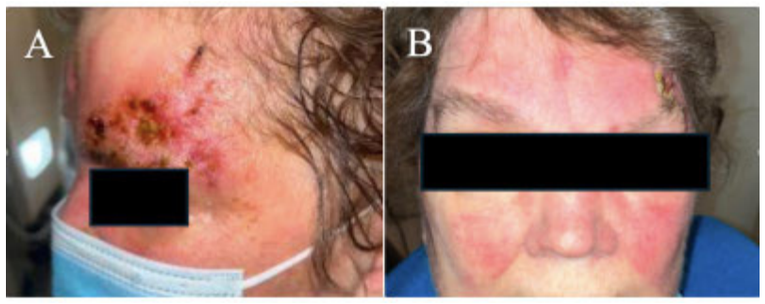
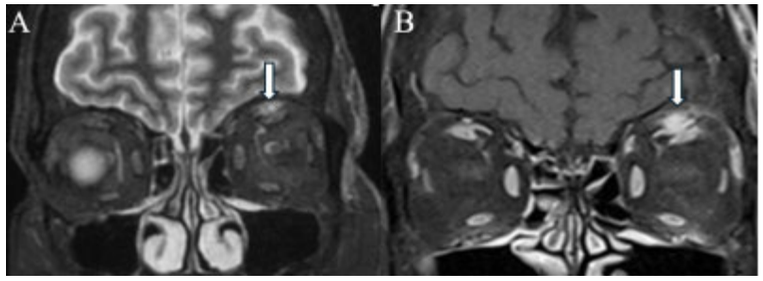


Figure 2



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7:47-7:51 am

Analysis of an Integrated Surgical Knowledge and Suture Skills Curriculum for Ophthalmology Interns

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Introduction: The recent introduction of an integrated ophthalmology internship nationwide creates an opportunity to provide a strong surgical foundation. A curriculum and wet lab course aimed at building and equalizing introductory surgical knowledge and basic suture skills for the Post-Graduate Year (PGY) 1 ophthalmology resident was developed.

Methods: The curriculum consisted of synchronous and asynchronous didactics and 3 one-on-one suture skills sessions using a bench model completed over 3 sessions totaling approximately 6 hours. A 4-hour wet lab course using human cadaveric specimens was attended by a subset of trainees. Assessments included pre- and post-curriculum knowledge quizzes, suturing skills video assessment, and self-assessment.

PGY1 self-reported exposure and confidence pre- and post-curriculum: Fifteen PGY1 residents completed the curriculum and data was available for 11. Prior to the curriculum, 3 of 11 interns (27.2%) reported exposure to types of needles and sutures, and 4 of 11 (36.3%) reported exposure to ophthalmic surgical instrumentation. Ten of 11 interns (90.1%) reported exposure to and performance of suture skills – the forms of exposure were observation (72.7% of respondents), performance on a patient (63.6%), via wet lab (36.3%), and via lecture (27.2%) (Figure 1).

Self-reported confidence (1-10 on a sliding scale) in knowledge of operating room (OR) safety, needles/sutures, ophthalmic instruments, and suture technique improved on average by 4.9 (range 3.3 to 6.5). Median objective knowledge quiz score improvement was 23.86%.

Confidence in ability to perform simple interrupted suture, simple running, and horizontal mattress increased on average by 4.8 (range 2-8), 5.6 (range 3-9), and 6.3 (range 4-9) respectively. The aggregate standard deviation in confidence scores from pre- to post-curriculum decreased from 2.19 to 1.45 for knowledge and 1.98 to 1.56 for skills performance.

PGY1 objective skills analysis: Four residents were included in the bench suture skills analysis – half were able to perform more than one suture type prior to curriculum completion. All were able to perform all tested suture types after completion. Quantitative and qualitative metrics such as time to perform suture, suture symmetry, and suture consistency showed improvement at curriculum completion (Table 1).

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Self-reported confidence post-wet lab course: A subset of 10 trainees attended the wet-lab course. Survey data was available for 8. Two PGY1, 4 PGY2, and 4 PGY3 were in attendance. Average self-reported confidence increased by 1.5, 1.1, and 2.3 for knowledge, performance of suture skills, and performance of basic eyelid procedures respectively. When evaluating increase in confidence for each subject area and between trainee level, the largest increase in confidence was seen in performance of procedures by PGY2-level trainees (2.75). (Figure 2)

Conclusions: The described curriculum for ophthalmology interns resulted in improvements in self-reported confidence, objective knowledge assessment, and objective ability to perform basic suture techniques. Early learners report little exposure to didactic or simulation training of suture skills prior to performance on patients. Cadaveric wet-lab experience may be most useful for training performance of basic oculoplastic procedures for the PGY2 level trainee. Future directions include continued refinement with a larger group and comparison within the same class across different years of their residency.

Figure 1

PGY1 self-report of prior exposure to performance of basic suturing skills

Trainee	No experience	Independent	Lecture	Wet lab	Observation	On patient
1		x	x			x
2					x	x
3					x	x
4				x		
5		x	x	x	x	x
6	x					
7					x	
8				x	x	x
9			x		x	x
10				x	x	x
11					x	x

Figure 1: Survey answers to the question, "Before this course, have you had any exposure to performance of suture skills? If yes, in what form was the exposure?". (PGY1 – Post-Graduate Year 1)

Figure 2

Quantitative and qualitative improvement in performance of suture skills after PGY1 curriculum completion

PGY1 trainee	Performance of simple interrupted suture								
	Time (min:sec)		Decrease in time	Symmetry		(+)Δ Symm	Consistency		(+)Δ Consist
	pre	post		pre	post		pre	post	
1	07:43	0:06:36	01:07	3	4	1	4	4	0
2	07:58	0:07:07	00:51	3	3	0	1	5	4
3	09:41	0:05:46	03:55	2	3	1	2	4	2
4	07:52	0:04:16	03:36	2	3	1	3	4	1
Average			**02:22**			**0.75**			**1.75**

PGY1 trainee	Performance of simple running suture								
	Time (min:sec)		Decrease in time	Symmetry		(+)Δ Symm	Consistency		(+)Δ Consist
	pre	post		pre	post		pre	post	
1	06:45	05:28	01:17	1	3	2	1	4	3
2	ND	05:16	NA	ND	4	NA	ND	5	NA
3	ND	03:46	NA	ND	3	NA	ND	3	NA
4	05:58	05:00	00:58	2	3	1	3	4	1

PGY1 trainee	Performance of interrupted horizontal mattress								
	Time (min:sec)		Decrease in time	Symmetry		(+)Δ Symm	Consistency		(+)Δ Consist
	pre	post		pre	post		pre	post	
1	ND	07:18	NA	ND	4	NA	ND	5	NA
2	ND	12:41	NA	ND	4	NA	ND	4	NA
3	ND	07:51	NA	ND	4	NA	ND	5	NA
4	ND	07:29	NA	ND	4	NA	ND	5	NA

Table 1: Trainees were tested on performance of 5 interrupted sutures (simple and horizontal mattress) or 5 passes of a running suture using a bench model. Timing started when the first instrument contacted the suture pad and stopped when the final suture was tied and trimmed. Symmetry across the incision and consistency of distance between sutures were graded on a 5-point scale with 1 indicating zero of the five suture throws demonstrated symmetry or consistency, and 5 indicating perfect symmetry and consistency between all five throws. ND – "not done"; NA – "not applicable"

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Figure 3

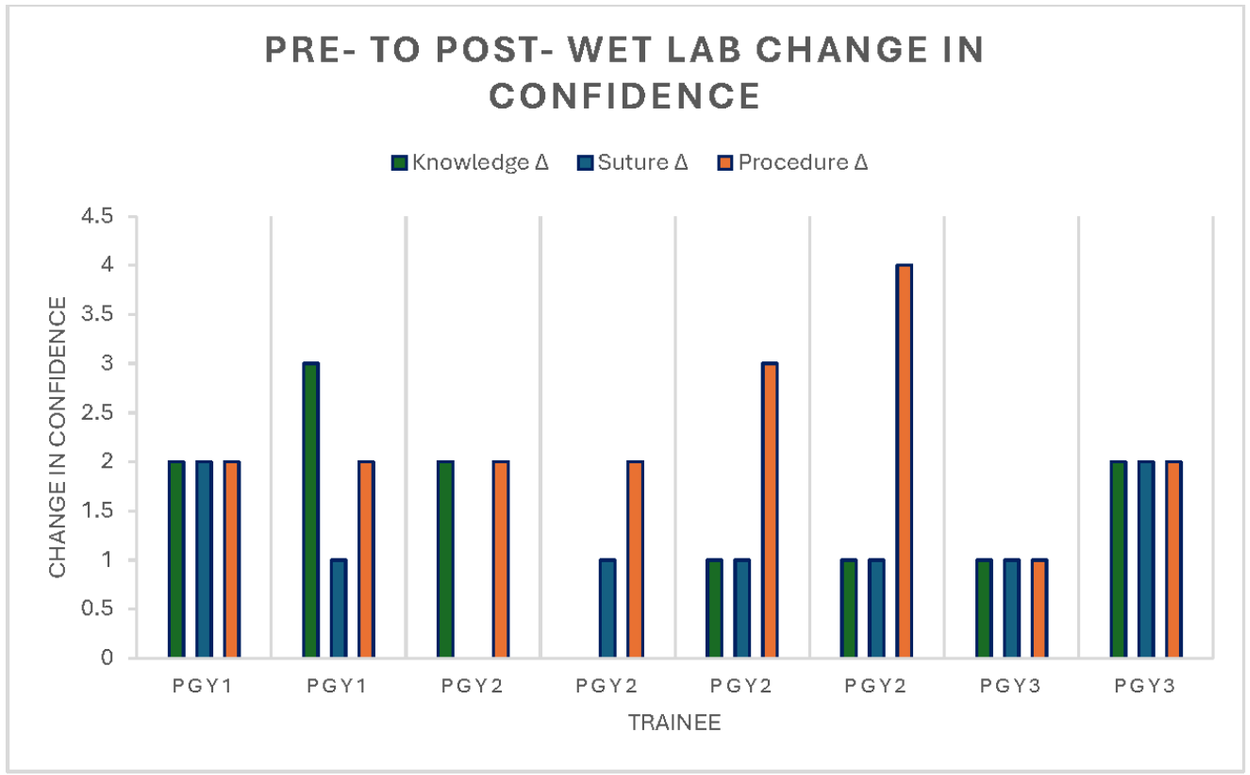

Figure 2: Average increase (n=8) in confidence after attendace of a wet-lab was 1.5 for knowledge, 1.1 for basic suture skills, and 2.3 for performance of basic oculoplastic procedures on a 10-point scale. The greatest increase in confidence was for peformance of procedures, and this change was greatest for PGY2 level trainees (average increase of 2.75 as compared to 1.5 and 2 for PGY3 and PGY1 respectively).

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Moderators: Robert A. Goldberg and Dianne M . Schlachter

8:02-8:10 am

Oculofacial Surgery Experiences in Ukraine

Raymond I. Cho

8:10-8:18 am

Global Opportunities Committee Experiences

Sara Tullis Wester

8:23-8:29 am

Validation of Novel Open-Source 3D-Printed Hertel and Naugle Exophthalmometers

Karim G. Punja[1,2], Wasim Shayyan[3], Mason Kraushar[4], Carson Schell[1], Michael Mak[5], David Plemel[6], Michael Kryshtalskyj[1]
[1]Surgery, University of Calgary, Calgary, Alberta, Canada, [2]Orbit Eye Center, Calgary, Alberta, Canada, [3]Medicine, University of Saskatchewan, Saskatoon, Saskatchewan, Canada, [4]Engineering, University of Saskatchewan, Saskatoon, Saskatchewan, Canada, [5]Ophthalmology & Visual Sciences, McGill University, Montreal, Quebec, Canada, [6]Ophthalmology, University of Western Ontario Ivey Eye Institute, London, Ontario, Canada

Introduction: This study aims to validate the accuracy of alternative, low-cost, 3D-printed Hertel and Naugle exophthalmometers against commercial gold-standards.

Methods: Prospective, observational study. 3D-printed Hertel and Naugle exophthalmometer prototypes were developed with recursive expert input. 24 healthy adult patients were enrolled between 2023-2024. Each patient received 8 exophthalmometry measurements: with 3D-printed Hertel and Naugle exophthalmometers, their commercial gold-standard equivalents (Oculus®), and by 2 observers each (CS, MK). Inter-eye difference (mm) was compared between 3D-printed and commercial exophthalmometers to test concurrent validity. Inter-rater reliability was assessed using Cohen's kappa.[1]

Results: Exophthalmometer prototypes were created using Solidworks® software, polylactic acid filament, medium-density fiberboard, mirrors, and superglue. Cost to print and assemble each exophthalmometer was <$7 CAD. Average inter-eye differences (mm ± SD) for the various exophthalmometers used were: 0.31 ± 0.45 mm (Oculus® Naugle), 0.36 ± 0.54 mm (3D-printed Naugle), 0.13 ± 0.32 mm (Oculus® Hertel), and 0.35 ± 0.44 mm (3D-printed Hertel). Average inter-eye differences between the 3D-printed Naugle and the Oculus® Naugle were not statistically different, while inter-eye differences using the 3D-printed Hertel were accurate to within 0.22 ± 0.55 mm ($p<0.02$) of its commercial alternative. Between observers, there was 100% agreement within 1 mm of inter-eye difference for both the 3D-printed Hertel and Naugle exophthalmometers. For inter-eye differences <0.5 mm, 69% inter-rater agreement was observed for the 3D-printed Naugle (k = 0.54 (0.15-0.93, 95% CI)), compared with 54% for the 3D-printed Hertel (k = 0.31 (-0.12-0.73, 95% CI)).

Conclusions: These 3D-printed Hertel and Naugle exophthalmometers offer an accurate, low-cost alternative to commercial devices. Their use may enhance quality of care in low-resource areas.[2,3]

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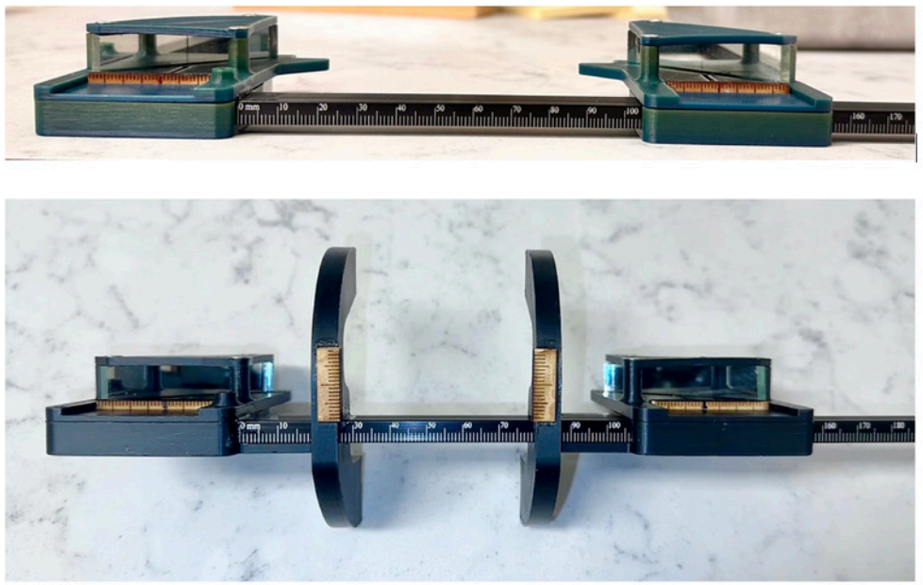
Figure 1



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3. Huang W, Zhang X. 3D Printing: Print the Future of Ophthalmology. *Invest Ophthalmol Vis Sci*. 2014;55(8):5380-5381. doi:10.1167/IOVS.14-15231.

8:29-8:35 am

Orbital Socket Reconstruction using Muscle Free-Flap with or without an Overlying Dermis Fat Graft in Cases of Eyelid and Conjunctival Sparing Exenterations

Kevin Heinze[1], Chad Purnell[2], Lee Alkureishi[2], Pete Setabutr[1], Ann Q Tran[1]
[1]Department of Ophthalmology, University of Illinois Chicago, Chicago, Illinois, United States, [2]Department of Plastic Surgery, University of Illinois Chicago, Chicago, Illinois, United States

Introduction: Anophthalmic socket reconstruction following exenteration, post-radiated sockets or chronic socket infections can pose a significant challenge for a cosmetically pleasing prosthetic fit. In select cases where eyelid and conjunctiva-sparing exenteration can be employed, a temporalis muscle flap transfer has traditionally been utilized to fill the socket space.[1–3] However, this technique can lead to bothersome temporalis wasting. We present a new technique for anophthalmic reconstruction with an eyelid and conjunctiva sparing exenteration utilizing a free muscle flap with or without an overlying dermis fat graft to maintain orbit volume and socket lining, allowing for traditional ocular prosthetic placement.

Methods: A case series from 2021 – 2024 at a single institution on patients undergoing eyelid and conjunctival sparing exenterations or socket reconstruction with utilization of a free muscle flap with or without a dermis fat graft.

Results: Three patients were identified in this study. Indications for eyelid and conjunctiva-sparing exenteration included a recurrent grade two spheno-orbital meningioma in a blind painful eye, a malignant and rapidly progressive solitary fibrous tumor and a chronic nasocutaneous fistula in a previously radiated socket following treatment of a squamous cell carcinoma of the lacrimal sac with dacryocystectomy and maxillectomy and enucleation for a chronically blind and painful eye. Locations of the harvest of the free flap included the adductor magnus (n=1) and radial forearm (n=2) all anastomosed to the superficial temporal artery. A dermis fat graft was placed on top of the free muscle flap in two cases, with conjunctivalization of the dermis face and maintenance of the fornix depth post-operatively by month two (Figure 1). In one case, the preservation of native flap dermis face was maintained without the need of a dermis fat graft, with conjunctivalization of the socket by post-operative week 6 (Figure 2). No socket or free flap complications were encountered. A traditional ocular prosthesis or medium size conformer was able to be placed in all cases.

Conclusions: Utilization of a muscle free flap with overlying dermis fat graft or preservation of native muscle flap dermis face offers an alternative method to anopthalmic socket reconstruction. In appropriately selected cases, this technique allows for adequate orbital volume and use of a traditional ocular prosthetic.

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Figure 1

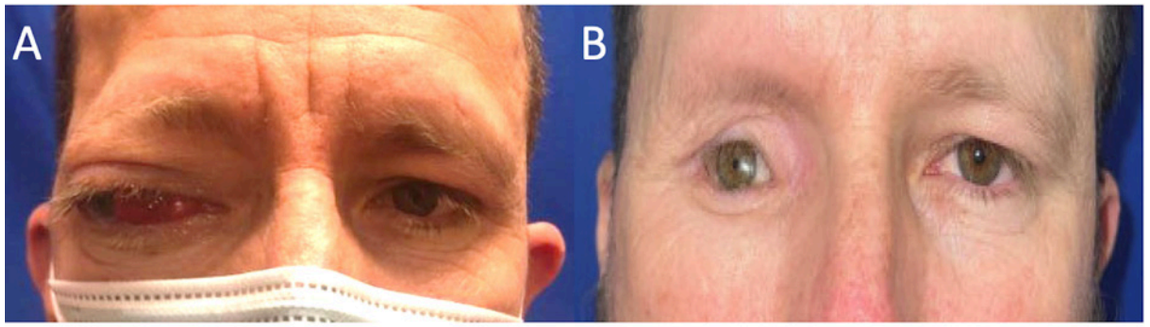

FIGURE 1. (A) Pre-operative photo of patient with recurrent grade 2 spheno-orbital meningioma of the right orbit. (B) Post-operative month 18 following fronto-orbito zygomatic craniotomy and eyelid and conjunctiva-sparing exenteration with adductor magnus free flap and dermis fat graft reconstruction allowing use of a scleral shell ocular prosthesis.

Figure 2

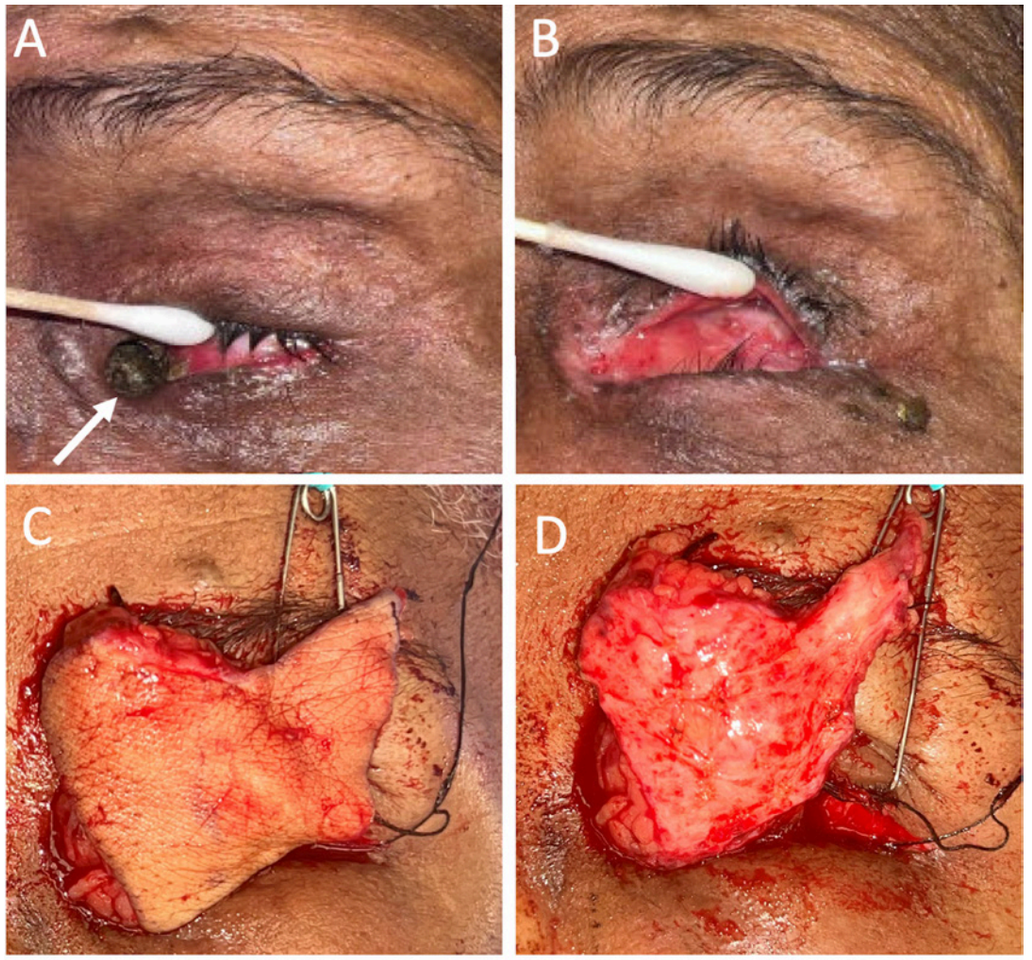

FIGURE 2. (A) Pre-operative photo of patient with nasocutaneous fistula (arrow) in a post-radiated anophthalmic socket. (B) Post-operative month 1 after radial forearm free flap placement with maintenance of the native dermis face that has now conjunctivalized. Intra-operative photos of the anastomosis of the radial forearm free flap before (C) and after (D) the epidermal face is removed and placed into the socket and attached to the remnant conjunctiva.

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8:35-8:41 am

Orbital Necrotizing Fasciitis Treated with a Temporary Indwelling Retrobulbar Catheter

Sruti Akella, Emily Xu
Ophthalmology & Visual Sciences, The Ohio State University Wexner Medical Center, Columbus, Ohio, United States

Introduction: This report describes a case of orbital necrotizing fasciitis that was treated with the novel use of a temporary indwelling retrobulbar catheter for antibiotic delivery to deep orbital tissues.

Methods: This is a case report of a single patient at a tertiary care center. Collection and evaluation of protected patient health information were Health Insurance Portability and Accounting Act compliant. All interventions adhered to the tenets of the Declaration of Helsinki.

Results: A 42-year-old African American female with stage 4 lupus with nephritis on chronic prednisone was transferred to our institution with sudden and rapidly progressing right-sided facial swelling since that morning. She denied any inciting trauma or recent surgery. Visual acuity (VA) was hand motion in the right eye and Jaeger 1+ (J1+) in the left eye. Intraocular pressure (IOP) could not be measured in the right eye and 10 mmHg in the left eye. The right eye had a relative afferent pupillary defect (rAPD). The external examination was significant for a tense right orbit with marked eyelid edema, multiple bullae, and sloughing of the periorbital skin (Figure 1). A computed tomography (CT) scan of the face from the outside hospital revealed diffuse right-sided facial soft tissue swelling that extended into the periorbital region without any well-defined collections, abscesses, or fractures. Given the high degree of suspicion for necrotizing fasciitis, she was immediately brought to the operating room for surgical debridement.

Immediately postoperatively, vision in the affected eye improved to count fingers and the pupillary responses normalized. Intraoperative tissue cultures confirmed an infection with Streptococcus pyogenes, but despite maximal antibiotic therapy, her clinical course deteriorated and she underwent a second debridement. Given her lack of response to systemic antibiotics, the decision was made to secure two indwelling Penrose drains deep in the orbit (Figure 2).

Alongside systemic ceftriaxone and wet-to-dry dressings of the periorbital skin, approximately 10cc of ceftriaxone was irrigated through the drains twice daily for five days, then once daily for five days. After 10 days, the drains were removed. The patient continued to improve and was discharged on hospital day 19 and ultimately achieved 20/20 vision by postoperative month 1 (Figure 3).

Conclusions: This case highlights the novel use of Penrose drains as a temporary indwelling retrobulbar catheter for access to deeper spaces in the orbit in the case of severe infection.

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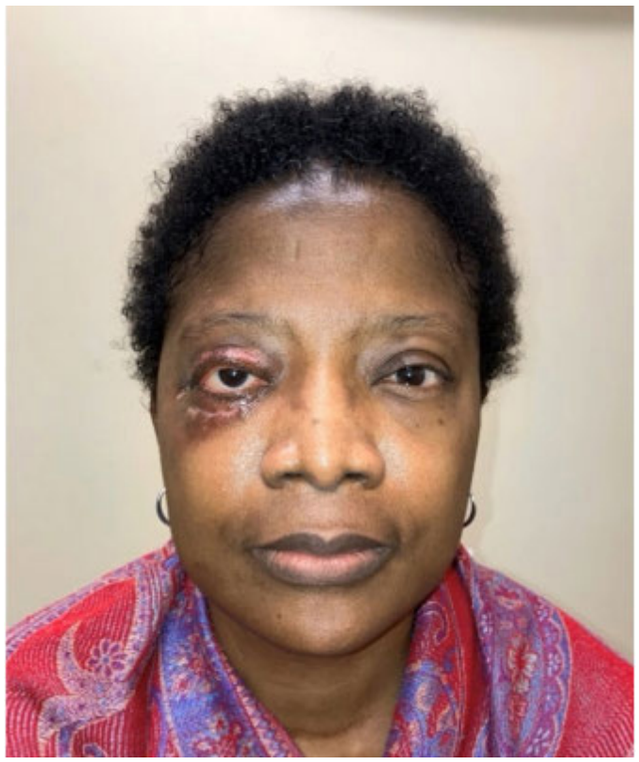
Figure 1

Figure 2

Figure 3



ASOPRS FOUNDATION RALPH E. WESLEY LECTURE: NEIL R. MILLER, MD, FACS

Moderator: Shannath L. Merbs

8:54-9:09 am

But Everything Went Great!

Neil R. Miller, MD, FACS

9:18-9:24 am

Bilateral Same-Day Optic Nerve Sheath Fenestration for Vision Threatening Papilledema

Andrea Tooley
Rochester, Minnesota, United States

Introduction: The purpose of this study is to describe same-day, bilateral optic nerve sheath fenestration (ONSF) through a supero-medial eyelid crease approach as a safe and effective option for patients with severe vision threatening papilledema (VTP). ONSF is a surgical intervention for the treatment of VTP, often secondary to idiopathic intracranial hypertension.[1] Traditionally, ONSF is performed unilaterally given the high risk nature of the procedure and the bilateral effect of pressure reduction around the optic nerve sheath. Approximately 50% or more patients with unilateral surgery receive a bilateral reduction in papilledema.[2,3] In cases of severe papilledema however, bilateral ONSF may be safely performed.

Methods: A retrospective review of patients undergoing bilateral same day ONSF by a single surgeon (AAT) was performed. Data collected included patient demographics, pre-operative ophthamic exam, and imaging parameters including Humphrey visual field mean deviation and visual field index and optical coherence tomography (OCT) retinal nerve fiber layer (RNFL) thickness both pre and post-operatively. Surgery was performed through a supero-medial eyelid crease incision on the worse seeing eye first, followed by the contralateral eye.

Results: A total of 4 patients (8 eyes) underwent bilateral ONSF. Initial visual acuity ranged from 20/25-20/400 in the poorer seeing eye with one patient having light perception (LP) vision. Papilledema was grade 4-5 in all patients. Mean presenting retinal nerve fiber layer (RNFL) thickness was 248 um. All patients had improvement in visual acuity post-operatively with 2 patients returning to 20/20 vision and patients with severe presenting VA improving to 20/200-20/400. Mean post-operative RNFL thickness 1 month post-operatively was 124 um. There were no complications including ptosis, diplopia, hemorrhage, infection, or vision loss.

Conclusions: The supero-medial eyelid crease approach is a safe and effective technique for performing bilateral ONSF with a low incidence of complications. Given the low morbidity of this approach, bilateral same-day ONSF may be performed in cases of high grade vision threatening papilledema.

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9:24-9:30 am

Optic Nerve Sheath Fenestration Technique: Transconjunctival Approach

Steven M. Couch

9:39-9:45 am

Corneal Neurotonization: Infraorbital Dissection and Co-aptation

Ilya M. Leyngold

9:45-9:51 am

Corneal Neurotonization: Supraorbital Dissection and Co-aptation

Andrea L. Kossler

10-10:06 am

Transorbital Embolization of Carotid-Cavernous Fistulae

Lucy Mudie, Michael Yen
Department of Ophthalmology, Baylor College of Medicine, Houston, Texas, United States

Introduction: Three patients had traumatic carotid-cavernous fistulae (CCF) that were unable to be accessed by traditional endovascular approaches so embolization was performed transorbitally in collaboration between oculoplastic and neuro-interventional radiology. This procedure has been described previously by Goldberg et al.[1], however the opportunity to perform this procedure is rare and there are unique features and nuances of each case that many oculoplastics surgeons may not have encountered.

Methods: The first patient was a 41 year old female with a history assault 6 month prior who presented with a red proptotic eye and elevated intraocular pressure, embolization attempts via standard radial and femoral approaches, and even via cannulation of the angular vein were unsucessful. An anterior orbitotomy was performed and the superior ophthalmic vein was isolated and cannulated with an 18 guage angiocatheter (Figure 1). The cannula was secured, and then neuro-interventional radiology performed embolization of the fistula via this transorbital approach. The second patient was a nine year old girl who had been in a motor vehicle accident two years prior, again standard endovascular approaches to embolization failed, the same procedure was performed, this time, after successful embolization of the CCF, a fistula of the sphenoparietal dural arteriovenous fistula became apparent. Multiple attempts were made to embolization the sphenoparietal fistula, however they were unsuccessful and ultimately the decision was made by the neuro-interventional radiologist to sacrifice the internal carotid artery (ICA). The final case was a 22 year old female who sustained a gun shot wound to the left face and neck resulting in complete obliteration of her left ICA and internal jugular vein (IJV). The development of the CCF resulted in a vascular steal phenomenon where the collateral flow from the right ICA was being “stolen” by the fistula (Figure 2), resulting in complete nonperfusion of the left cerebral hemisphere. The initial attemps at embolization via transfemoral approaches were unsuccessful due to the obliateraion of the ICA/IJV, so a transorbital approach was used (Figure 3), which restored collateral flow through the left middle cerebral artery (Figure 4).

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Results: The first patient had immediate relief of her symptoms and normalization of her intraocular pressure and proptosis and has done very well postoperatively. The second patient had successful embolization of her CCF, however this allowed another, more rare, dural sinus fistula to become apparent and ultimately the patient required embolization of her ICA to close the other fistula. Her eye exam remained normal pre and post embolization. The third patient had improvement in her proptosis and normalization of her intraocular pressure following closure of her fistula, however she had significant reperfusion cerebral edema requiring emergent decompression craniotomy; she remained critically ill and ultimately passed away from her other injuries.

Conclusions: The transorbital approach to embolization of CCF is unique in offering a direct approach to the cavernous sinus, allowing endovascular treatment of otherwise recalcitrant fistulae. Although this method has been described in the literature for almost 30 years, it requires knowledge of the orbital vascular anatomy and experience in complex orbital surgery. Even a successful orbitotomy and cannulation of the superior ophthalmic vein does not absolve the distinct challenges each fistula may present.

Figure 1

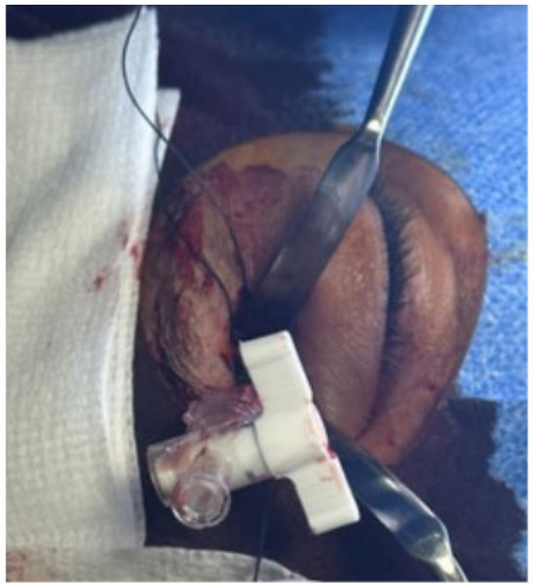


Figure 2

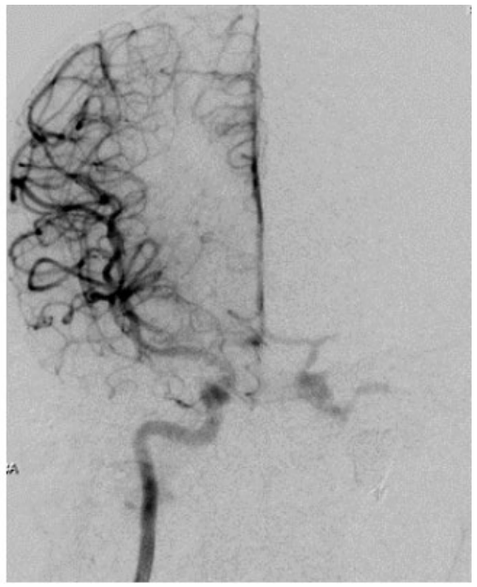


Figure 3

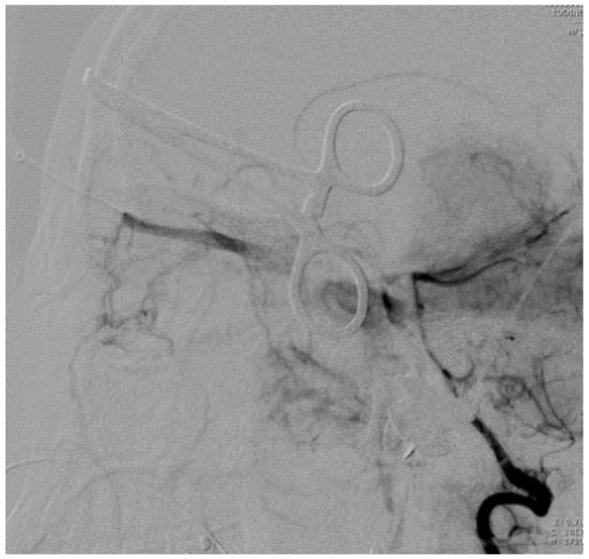
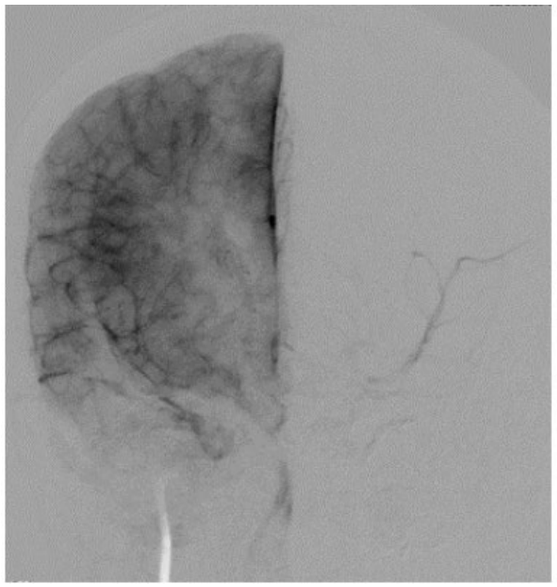


Figure 4



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10:06-10:12 am

Carotid-Cavernous Fistula Cannulization Technique Video & Tips

Neil R. Miller, MD, FACS

10:51-10:57 am

Nasolacrimal Duct Obstruction following Radioactive Iodine: New Screening Recommendations

Natalie Homer[1], Kaniksha Desai[2]

[1]Ophthalmology, Stanford Medical Center, Palo Alto, California, United States, [2]Department of Endocrinology, Gerontology, & Metabolism, Stanford Medical Center, Palo Alto, California, United States

Introduction: Radioactive Iodine (RAI) is an established treatment for differentiated thyroid carcinoma, with initial treatment doses commonly ranging from 75 – 250 mCi.[1] Nasolacrimal duct obstruction (NLDO) has been reported in 2.2 – 18% of patients following RAI for carcinoma,[2] though specific recommendations regarding screening and prophylactic management are not well-established.

Methods: Retrospective review of patients treated with RAI for thyroid carcinoma at a single academic center, comparing those who developed symptomatic nasolacrimal duct obstruction (Group 1) to age and gender-matched controls who did not develop NLDO (Group 2) (Figure 1). Statistical analysis was performed using two-tailed T-tests with $p < 0.05$ considered significant.

Results: Fifty patients with history of RAI for thyroid carcinoma were reviewed, including 25 patients who subsequently developed epiphora and were diagnosed with NLDO, and 25 age and gender-matched RAI-treated patients who did not develop NLDO. The time from initial RAI treatment to NLDO diagnosis was median 7.7 years (range 8 months – 32 years). Bilateral obstruction was seen in 56% of affected patients.

The mean cumulative RAI dose was 223.4 mCi for the NLDO group and 121.4 mCi for the non-NLDO group ($p = 0.0092$) (Table 1). The mean initial treatment dose was 128.9 mCi and 100.0 mCi for the two groups, respectively ($p = 0.0317$). The mean number of RAI treatment sessions in patients who developed NLDO was 1.48 (range 1-3), compared to 1.16 (range 1-2) in the non-NLDO group ($p = 0.0387$) (Table 2).

Conclusions: NLDO following RAI is hypothesized to result from sodium-iodide symporters in the nasolacrimal sac and duct that allow RAI accumulation and ensuing fibrosis.[3] Radioactivity has been found in tears of patients following RAI doses as low as 15 mCi.[4] Bilateral NLDO incidence was previously reported in 64.7% - 74.5% of affected patients.[2] In our study, only 56% of patients had bilateral NLDO, suggesting that preexisting susceptibility from anatomic variation (e.g. ipsilateral septal deviation) may also play a contributing role in

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unilateral obstruction. Previous reports found age greater than 45 to be associated with increased NLDO risk.[5] In our study 20% (n = 5) were under the age of 45 years, implying higher vulnerability in younger patients than previously understood.

A significantly greater incidence of NLDO was found in patients receiving a higher initial and cumulative treatment dose of RAI. Prior small studies have suggested a cumulative dose of 150 mCi to be the minimum necessary for significant NLDO risk.[5-7] In the present study we found 44% (n = 11) of patients with NLDO to have a cumulative treatment dose less than 150 mCi. We also uniquely found a higher incidence of NLDO in patients requiring multiple RAI treatment sessions, irrespective of total cumulative dose. We recommend increased counseling and screening of patients undergoing RAI at lower doses than previously indicated, particularly in those who undergo multiple treatment sessions. Consideration for prophylactic nasolacrimal stenting or closer follow-up may be beneficial for high-risk patients found to have partial NLDO upon screening.

Figure 1

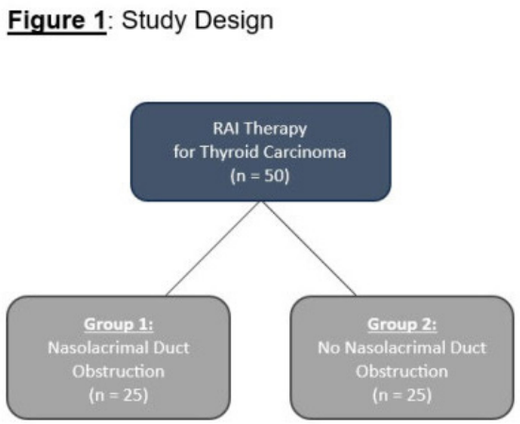

Figure 2

Table 1: Radioactive Iodine Treatment Dose

	Group 1: NLDO (n = 25)	Group 2: No NLDO (n = 25)	p-value
First RAI Dose			
Minimum	29.9 mCi	30.0 mCi	
Maximum	206.0 mCi	206.0 mCi	
Mean	**128.9 mCi**	**100.9 mCi**	**0.0317**
Cumulative RAI Dose			
Minimum	76 mCi	50 mCi	
Maximum	632 mCi	412 mCi	
Mean	**223.4 mCi**	**121.4 mCi**	**0.0092**

RAI = Radioactive Iodine
NLDO = Nasolacrimal duct obstruction

Figure 3

Table 2: Number of Radioactive Iodine Treatment Sessions

	1	2	3	Mean	p-value
Group 1: NLDO (n = 25)	15	8	2	1.48	
Group 2: No NLDO (n = 25)	22	3	0	1.16	0.0387

NLDO = Nasolacrimal duct obstruction

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10:57-11:03 am

Regression and Retreatment of Thyroid Eye Disease with Teprotumumab

Daniel Rootman[1], Ashley Shirriff[1], Marissa Shoji[2], Adam Neuhouser[3], Caden Hullin[4], Michael Tze-Chien Yen[5], Jennifer Murdock[6], Andrew Harrison[3], Gary Lelli[7], Don Kikkawa[2]
[1]Stein Eye Institute, University of California, Los Angeles, Los Angeles, California, United States, [2]Shiley Eye Institute, University of California, San Diego, San Diego, California, United States, [3]University of Minnesota, Minneapolis, Minnesota, United States, [4]South Florida Eye Health, Aventura, Florida, United States, [5]Department of Ophthalmology, Baylor College of Medicine, Houston, Texas, United States, [6]South Florida Eye Health, Aventura, California, United States, [7]Department of Ophthalmology, Weill Cornell Medical College, New York, New York, United States

Introduction: The standard therapeutic course for teprotumumab in the treatment of thyroid eye disease (TED) involves 8 infusions over an approximately 6-month period. As experience with this medication has accumulated it is becoming evident that a small proportion of patients experience regression to a level that a repeat course of therapy may be considered. This study investigates the clinical course for a cohort of such patients managed across 6 institutions.

Methods: In this multi-institutional cross sectional cohort study, patients undergoing at least 2 treatment courses of teprotumumab were included in the investigation. Demographic, presentation characteristics and clinical data regarding the course of therapy were collected from electronic patient records. The time course of changes in CAS, proptosis, motility, strabismus and diplopia is presented descriptively. Interval therapy, side effects and complications from treatment are additionally presented. Four time points were defined: pre-teprotumumab 1 (baseline), post-teprotumumab 1 (T1), pre-teprotumumab 2 (T2) and post-teprotumumab 2 (T3). Descriptive statistics and repeated measures ANOVA were utilized where appropriate. The more proptotic eye was defined as the study eye for analysis.

Results: Twenty patients from 6 institutions were included in this investigation. The mean time from completion treatment 1 to start of treatment 2 was 13.05 months. For CAS, Hertel, diplopia and vertical restriction, the main effect of time was significant, indicating the variable changed significantly over time (table 1). The mean value at baseline and at T2 (pre-treatment 2) was not significantly different for any of the variables. Similarly, the mean values at T1 (after treatment 1) and T3 (after treatment 2) were not significantly different for any variable. Four patients presented with optic neuropathy, all 4 resolved at T1 and 2/4 recurred after treatment 1, prior to treatment 2. The mean number of side effects in treatment 1 was 2, for treatment 2 this number was 1.44. The average percent of overlapping side effects was 28.2%.

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Conclusions: In this cohort of patients, for CAS, Hertel, Diplopia and vertical restriction, after the first course of treatment regression to near baseline occurred. After a second course of teprotumumab patients improved to a similar level as with the first course of therapy.

Figure 1

Table 1: Mean (standard deviation) value and significance for CAS, proptosis, diplopia score, motility restriction and strabismus.

	B	T1	T2	T3	P value
CAS	5.2 (1.2)	1.3 (1.2)	4.9 (1.5)	1.9 (1.8)	<0.01
Hertel	24.9 (3.9)	20 (4.1)	23.4 (4.6)	19.7 (3.1)	<0.01
Diplopia	1.7 (1.3)	0.8 (1)	1.6 (1.2)	1 (1)	0.028
Restriction (H)	18.4 (14.2)	10.5 (12.9)	17.1 (15.6)	12.8 (14.1)	0.07
Restriction (V)	22.7 (15.3)	8 (12.5)	14.9 (16)	8.3 (12)	<0.01
Strabismus (H)	4.7 (8.9)	8.3 (10.2)	7.8 (10.7)	6.7 (10.7)	0.077
Strabismus (V)	9.3 (12)	3.8 (6.9)	10 (11.7)	5.3 (8.8)	0.31

*CAS: clinical activity score, H: horizontal, V: vertical, B: baseline, T1: post teprotumumab #1, T2: pre-teprotumumab #2, T3: post-teprotumumab #2

11:03-11:15 am

Thyroid Eye Disease Studies Update

Fatemeh Rajaii

FEATURED SPEAKER: NEIL R. MILLER, MD, FACS

Saturday, May 18

Moderator: Ashley Campbell

11:26-11:41 am

The Molecular Genetics of Optic Pathway Gliomas: Impact on Treatment

Neil R. Miller, MD, FACS

7:31-7:35 am

Treatment of Idiopathic Hemolacria with Tranexamic Acid Eyedrops: A Case Series

Suzanne van Landingham[1], Ryan Larochelle[1], Elaine Downie[2], Cat Burkat[1], Mark Lucarelli[1]
[1]Ophthalmology and Visual Sciences, University of Wisconsin-Madison, Madison, Wisconsin, United States, [2]Ophthalmology, University of Michigan, Ann Arbor, Michigan, United States

Introduction: Hemolacria is an uncommon condition characterized by bloody tears. Various lesions of the lacrimal gland, lacrimal sac, and periorbital soft tissue have been implicated, as have bleeding diatheses, trauma, and factitious disorder.[1–4] Most cases resolve spontaneously or with treatment of the underlying condition. Idiopathic hemolacria is particularly challenging to manage as there is no underlying cause to target.

Tranexamic acid (TXA) is a synthetic lysine analogue which inhibits plasmin formation and inhibits plasmin's action on clots.[5] TXA is employed systemically to treat menorrhagia and traumatic or surgical blood loss, and has been used topically for treatment of hyphema.[6,7]

To our knowledge, the treatment of hemolacria with an anti-fibrinolytic has not yet been described. Herein, we report three cases of idiopathic hemolacria treated with topical TXA eyedrops.

Methods: Patient information was handled in compliance with HIPAA guidelines. A PubMed literature review of relevant cases was performed using keywords including "hemolacria," "haemolacria," "bloody tears," "eye," "ocular," "tranexamic acid," and "antifibrinolytic."

Results: Patient 1: A 28-year-old woman presented with unilateral hemolacria that occurred first following removal of a hormonal intrauterine device. During a subsequent pregnancy, she had bloody tearing 5-8 times daily, which resolved upon miscarriage at 9 weeks gestation. At the time of her consultation, she was 16 weeks pregnant and again experiencing multiple daily episodes of gross hemolacria. These ultimately became so severe that she required blood transfusion. Figure 1 demonstrates the severity of an episode that occured in-office.

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Ocular, adnexal, and intranasal examinations were unremarkable, and she denied history of other abnormal bleeding. Extensive laboratory and imaging work-up was unremarkable.

After discussion with her obstetrician, she was started on a 50 mg/ml compounded solution of TXA eye drops every 8 hours 6 weeks prior to delivery, and her hemolacria resolved. Her bleeding resumed 72 hours prior to delivery, then ceased again at delivery, with no further episodes reported since.

Patient 2: A 17-year-old woman presented with right sided frank epiphora and bloody drainage for seven months. She described mild eye discomfort and a pressure sensation behind her eye during episodes. She had a remote history of facial trauma. External exam revealed no palpable lesions. Lacrimal irrigation showed moderate right lower canalicular stenosis with partial reflux of blood. Imaging and laboratory work-up was unremarkable.

She underwent bilateral external dacryocystorhinostomy with nasolacrimal intubation. Intraoperative findings were normal and hemostasis was not challenging. Pathology of a lacrimal sac biopsy showed chronic inflammation and fibrosis.

One month following surgery, she trialed TXA eyedrops for 14 days. She noticed a mild reduction in the volume of bleeding, but not the frequency, so she did not refill her prescription.

Patient 3: A 34-year-old man with remote history of unrepaired orbital fracture was referred with several months of right hemolacria occurring approximately once daily for a few minutes. He also described moderate aching pain over his right brow. External exam was unremarkable. CT demonstrated subtle right osseous thinning around the lacrimal sac and nasolacrimal duct, but was otherwise normal. Laboratory work-up was unremarkable. He was prescribed TXA eyedrops, which markedly decreased the severity of his bleeding.

Conclusions: In our series, TXA eyedrops were well tolerated and were associated with resolution or significant improvement of symptoms in two out of three cases. This represents an important finding, as to our knowledge there are no other treatments described for idiopathic hemolacria. This treatment may be especially useful in those with a contraindication to systemic therapy, such as the pregnant patient described here, and may be applicable for patients with hemolacria due to bleeding diatheses. Additional study would be useful to determine response rate, effectiveness, and treatment parameters for these patients.

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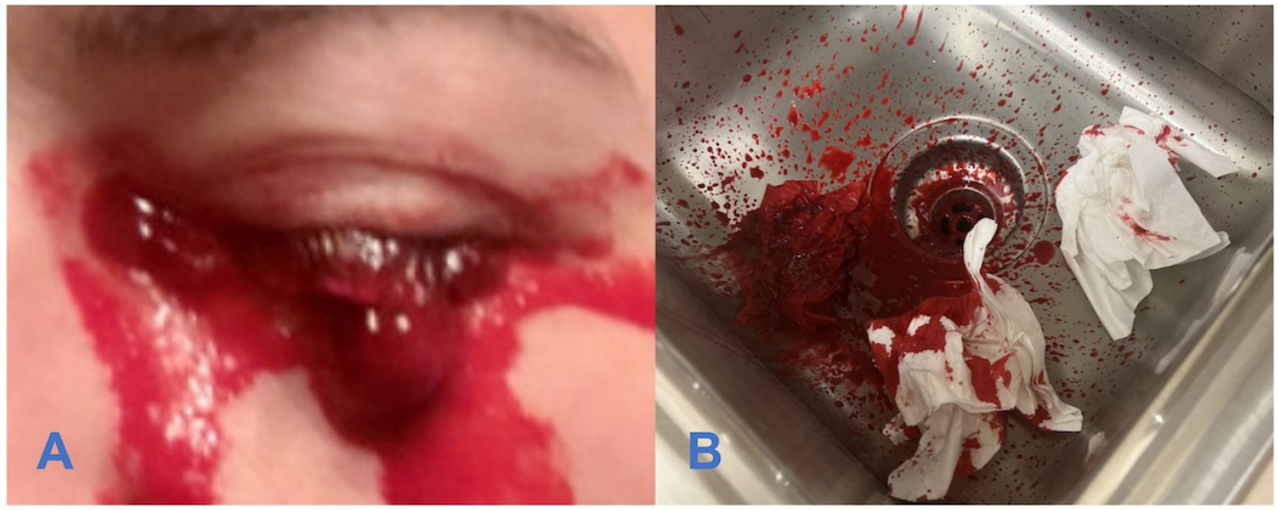
Figure 1



7:35-7:39 am

Radiographic Characterization of Orbital and Skull Base Cavernous Venous Malformations using Arterial Spin-Labeled Perfusion MRI

Natalie Homer[1], Nancy Fischbein[2]
[1]Ophthalmology, Stanford Medical Center, Palo Alto, California, United States, [2]Radiology, Stanford Medical Center, Palo Alto, California, United States

Introduction: Arterial Spin Labeling (ASL), an emerging magnetic resonance imaging (MRI) modality used to characterize and quantify tissue perfusion without need for intravenous contrast,[1] has seen limited application in orbital masses to date. We assessed ASL perfusion parameters of pathology-proven cavernous venous malformations (CVM), the most common benign orbital tumor in adults.

Methods: A retrospective single institution review was performed of patients who underwent pre-operative MRI including ASL sequence to qualitatively and quantitatively assess pathologically-confirmed cavernous venous malformations of the orbit and skull base. ASL perfusion characteristics were assessed qualitatively on both color (when available) and grayscale sequences (Figures 1-3). Tumor blood flow (TBF) on ASL imaging was quantified by measuring and averaging across multiple tumor regions-of-interest on grayscale images scaled by proton density.[1] All patients had diffusion weighted imaging (DWI), and apparent diffusion coefficient (ADC) values were measured and averaged across multiple tumor regions-of-interest.

Results: MRI images of seven patients were reviewed, including four patients with orbital and three patients with cavernous sinus CVMs (Table 1). All tumors demonstrated characteristic T2 hyperintensity (Figures 1A, 2A) and gadolinium enhancement in a speckled or homogenous pattern (Figures 1B, 2B, 3C). Contrast "fill in" between early and late scans was observed in two patients (28.5%). On ASL imaging, two lesions showed generalized high signal intensity (Figure 1 C-D, arrow), while three lesions had low signal intensity with a focal area of high signal intensity (Figure 2 C-D, arrow) and the remaining two lesions demonstrated low signal throughout the lesion (Figure 3 D, arrow). Perfusion ranged from 16-130 ml/100 g/min across lesions, with a median TBF of 57.8 ml/100 g/min when averaged over multiple tumor areas. On DWI, median ADC was 1.5×10^{-3} mm^2/s (range $[1.2 – 2.5] \times 10^{-3}$ mm^2/s), concordant with published values (Figure 3 A-B).[2,3]

Conclusions: Cavernous venous malformations, accounting for 13–22% of all orbital tumors, are considered to be low-flow vascular lesions.[4] On MR imaging these lesions are typically T2 bright and show early nodular enhancement followed by late homogenous filling,[5] but this characteristic pattern is not consistently demonstrated.[6-8] Relying on gadolinium enhancement pattern to differentiate CVMs from alternate pathologies has limitations, and gadolinium use may be contraindicated in certain patients.

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ASL is a noninvasive imaging modality not previously studied in orbital CVMs that can characterize and quantify tumor blood flow. ASL has been used in conjunction with DWI for the differentiation of orbital lymphoproliferative lesions from malignant lymphoma, with a higher predictive value when quantitative information from the two modalities was combined.[9] In the current study, a large range of tumor perfusion values were found in pathology-proven CVMs. In particular, focal areas of high ASL signal were seen in the majority of CVMs, not clearly correlating with distinct or focal findings on other imaging sequences. These areas may represent lesion components that can inform tumor pathophysiology and/or predict intraoperative behavior. Further studies of ASL imaging in orbital CVMs, correlating with intraoperative and pathologic findings, will be informative.

Figure 1

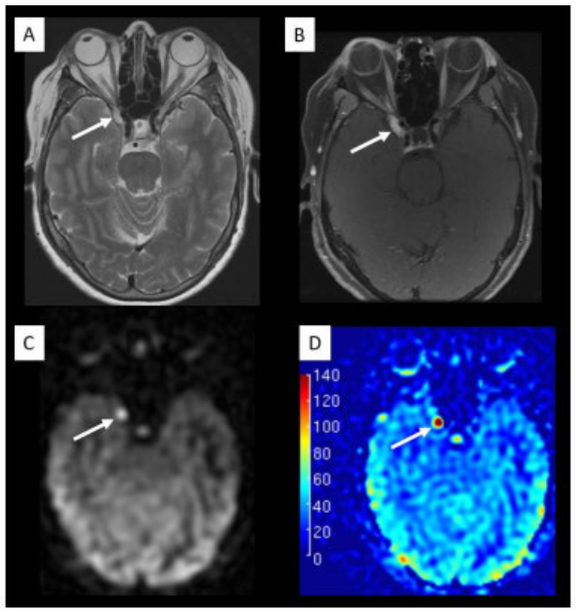

Figure 2

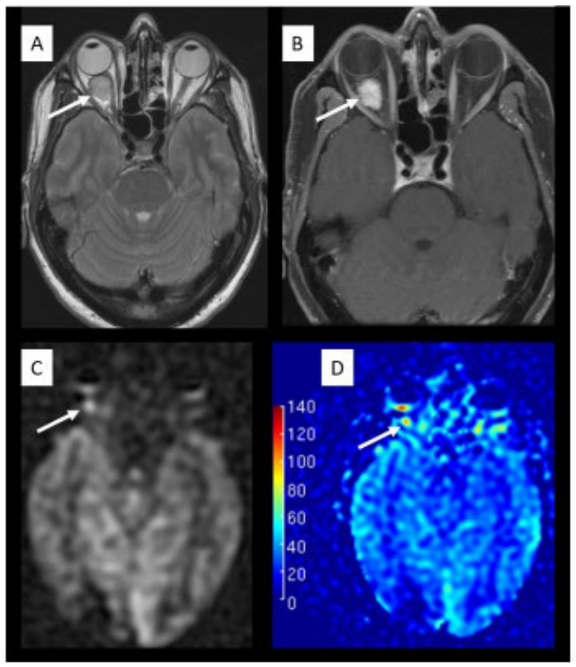

Figure 3

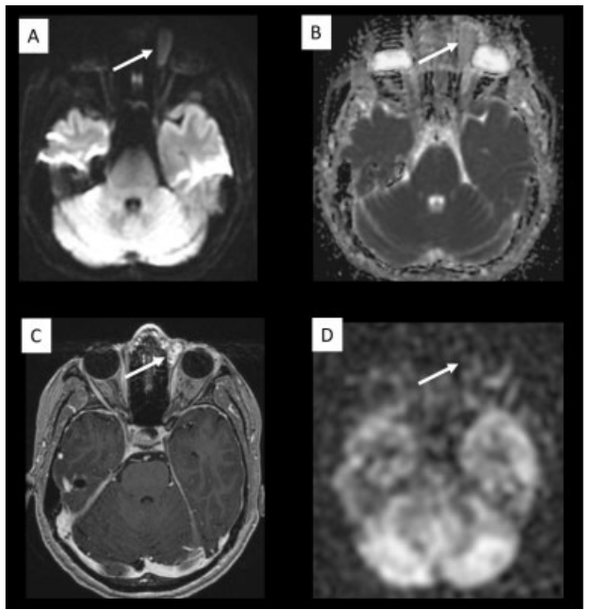

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Figure 4

Patient	Gender	Age (yrs)	Presenting Symptoms	Tumor Characteristics	T2	Gadolinium	ADC ($\times 10^{-3}$ mm²/s)	ASL Qualitative	TBF Average (Min – Max) (ml/100 g/min)
1	F	40	None	6.3 x 9.1 x 12.9 mm, well-circumscribed, superior extraconal	Hyperintense	Speckled enhancement	1.2	Low signal throughout	54.5
2	F	36	Upper eyelid swelling during pregnancy	8.5 x 10.5 x 15.3 mm, well-circumscribed, medial extraconal	Hyperintense	Speckled enhancement	2.1	Low signal throughout	16.5
3	M	51	Blurred vision	14.0 x 13.3 x 15.0 mm, well-circumscribed, intraconal, adjacent to optic nerve	Hyperintense	Homogenous enhancement	1.4	Low signal with focal high signal	75.0
4	F	51	None	19.4 x 21.7 x 25.0 mm, primarily extraconal extending to orbital apex and through superior orbital fissure	Hyperintense	Speckled enhancement	1.2	Low signal with focal high signal	57.8 (11.5 - 104)
5	F	75	Ipsilateral headache, upper eyelid ptosis	11.4 x 10.3 x 9.9 mm, centered within the right oculomotor cistern	Hyperintense	Speckled enhancement	2.5	Low signal with focal high signal	27.3
6	F	58	Ipsilateral headache, CN III palsy	5.7 x 5.8 x 10.5 mm, involving right cavernous sinus, orbital apex and superior orbital fissure	Hyperintense	Homogeneous enhancement	1.5	High signal	130.0
7	F	48	None	45.4 x 34.8 x 42.1 mm, arising from cavernous sinus and extending into middle cranial fossa and ambient cistern	Hyperintense	Homogenous enhancement	1.6	Heterogenous with focal areas of low and high signal	79.5 (38 – 121)

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7:39-7:43 am

A Novel Approach in the Correction of Refractory Cicatricial Lower Eyelid Retraction: Introducing the Ultra-Thick Umbilical Cord Allograft

Karine Shebaclo[1], Leo Hall[2], Jacqueline Carrasco[1], Mary Stefanyszyn[1]
[1]Department of Oculoplastic and Orbital Surgery, Wills Eye Hospital and Jefferson University Hospital, Philadelphia, Pennsylvania, United States, [2]Department of Ophthalmology, Wills Eye Hospital and Jefferson University Hospital, Philadelphia, Pennsylvania, United States

Introduction: Ultra-thick human amniotic membrane tissue (UT-hAMT) has seldom been described in the oculoplastic literature for the use of periorbital reconstruction. We propose a novel method for the repair of refractory cicatricial lower eyelid retraction in patients.

Methods: A single-center retrospective chart review was performed to identify patients who underwent reconstruction of the lower eyelids using (UT-hAMT). These patients were selected based on refractive lower eyelid retraction that was not successfully addressed with prior medical or surgical interventions.

Results: Twenty-two patients received UT-hAMT for refractory cicatricial ectropion. Using our novel technique, 28 UT-hAMT were implanted for the reconstruction of lower eyelids with successful deepening of shortened fornices, re-attachment of lower eyelid retractors, and correction of anterior lamellar scarring. Patient demographics, preoperative and postoperative photos were collected. The primary outcome was the rate of the successful intervention. Approximately 92.9% of patients with refractory lower eyelid retraction were successfully corrected using our novel UT-hAMT. 70.58% of patients noted resolution of epiphora ($p<0.0022$), and 83.33% noted resolution of pre-operative exposure keratitis ($p<0.0001$). Only three eyelids required further minor revisions but were successful after the final intervention using the same technique.

Conclusions: Cryopreserved ultra-thick human umbilical amnion is an excellent first-line surgical intervention that demonstrates ideal postoperative outcomes in the management of refractory lower eyelid retraction repair, forniceal reconstruction, and anterior lamellar shortening. This technique using UT-hAMT allows for tissue regeneration in patients with shortened fornices. If needed, secondary repairs can then be attempted for proper eyelid positioning at the discretion of the surgeon. Further studies from our institution aim to elucidate the histopathology behind its remarkable capacity for conjunctival regeneration as well as its anti-inflammatory and anti-fibrotic properties in the periorbita.

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Figure 1

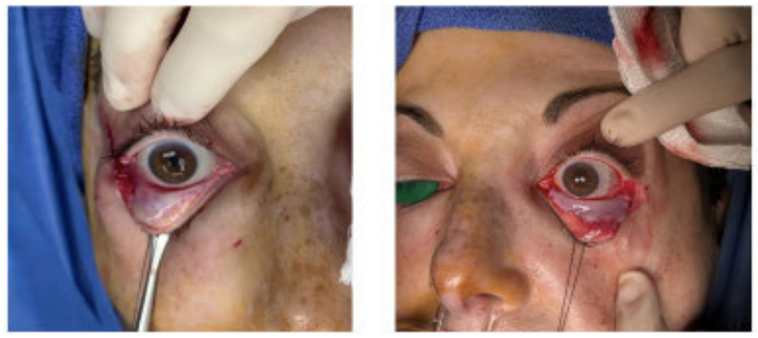


Figure 2

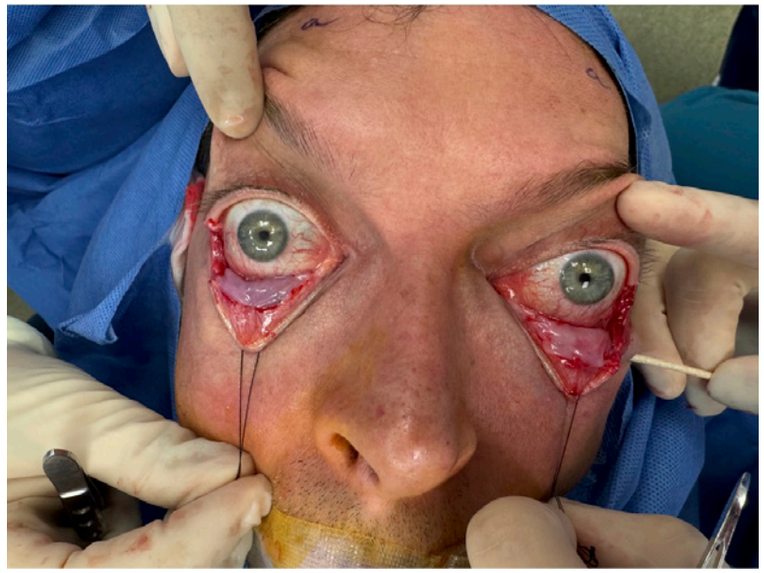
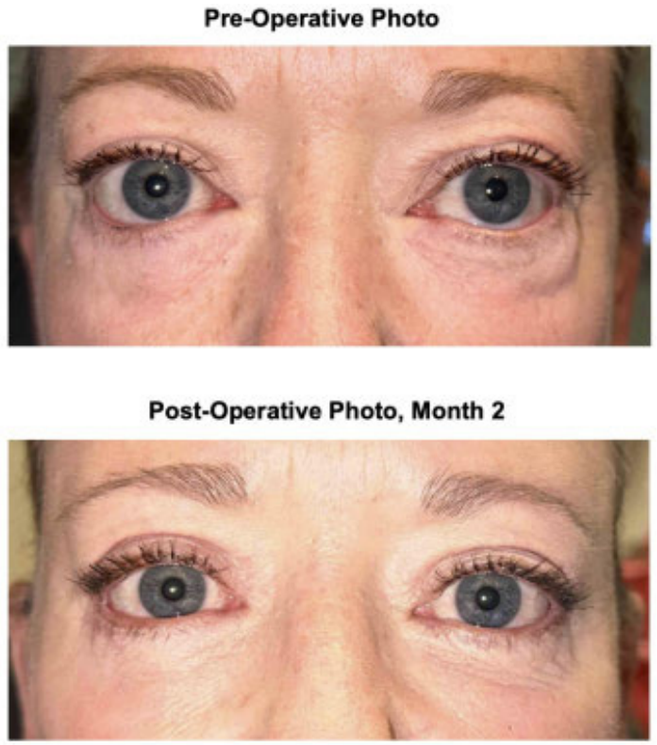


Figure 3



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7:43-7:47 am

Chronic Lymphocytic Leukemia Infiltration of the Lacrimal Sac: Case Series and Review of the Literature

Jessica Crawford[1,2], Daniel Straka[1], Kenneth Cahill[1,2], Cameron Nabavi[1,2], Jill Foster[1,2]
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Introduction: Secondary nasolacrimal duct obstruction may be caused by a myriad of etiologies, including inflammation, trauma, mechanical obstruction, or neoplasm. Malignancy resulting in acquired lacrimal drainage obstruction is a rare cause of secondary nasolacrimal duct obstruction. Rarer still are lymphoproliferative malignancies of the lacrimal sac. Several studies have reported most cases of secondary lacrimal sac lymphoma were due to chronic lymphocytic leukemia/small lymphocytic lymphoma (CLL/SLL), followed by extra-nodal marginal zone lymphoma (EMZL), and follicular lymphoma.[1,2,3,4]

Methods: Retrospective case series of two patients found to have chronic lymphocytic leukemic infiltration of the lacrimal sac. Clinical history and examination findings were evaluated for each patient. All tissues underwent complete histopathologic evaluation including immunohistochemical studies and cell markers.

Results: Two patients with a history of CLL underwent lacrimal sac biopsy. One patient was a male and one patient was a female. The average age at presentation was 79.5 years of age. One patient presented from an outside facility with a fistulous tract that failed to respond to multiple prior attempts of incision and drainage, requiring dacryocystectomy for definitive treatment due to concerns for comorbidities. The other patient underwent a dacryocystorhinostomy for chronic dacryocystitis and was found to have lacrimal sac thickening. The biopsy of both patients was consistent with chronic lymphocytic leukemia in the lacrimal sac. Immunohistochemical staining was positive in both cases for CD5, CD20, and CD23. Neither patient had received any previous treatment for their CLL before presentation.

Conclusions: CLL describes abnormal circulating lymphocytes in conjunction with abnormal lymphocytes in the bone marrow. In contrast, small lymphocytic lymphoma (SLL) typically has few abnormal circulating lymphocytes, and the bulk of the disease is in the lymph nodes, bone marrow, and other lymphoid tissues. Nasolacrimal duct obstruction secondary to chronic lymphocytic leukemic infiltrate of the lacrimal sac has been described in the literature. Interestingly, ocular adnexal lymphomas are most commonly due to diffuse large B-cell lymphoma and MALT lymphomas, with CLL rarely reported. Leukemic infiltration of the lacrimal sac has been described only in the context of CLL/SLL, where there appears to be a lymphomatous transformation of the CLL within the lacrimal sac.[5] However, this phenomenon is not documented to the same degree within any other orbital tissue. Leukemic infiltration/small cell

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lymphoma transformation is more common than primary lymphoma of the lacrimal sac. The purpose of this case series is to promote further discussion of what predisposes this occurrence in the lacrimal sac.

Figure 1

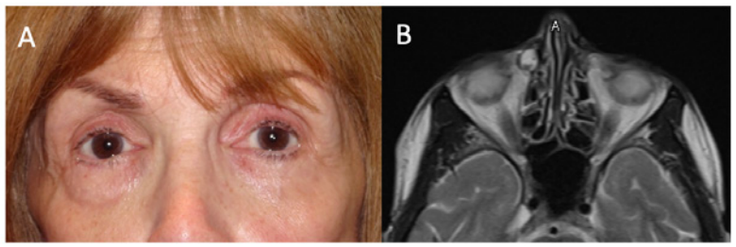

Figure 1: 73-year-old patient with a history of CLL who presented with chronic dacryocystitis. Biopsy revealed chronic lymphocytic leukemic infiltration of the lacrimal sac. A. External photograph showing subtle erythema and enlargement of the right lacrimal sac. B. T2-weighted magnetic resonance imaging showing irregular enhancement of the right lacrimal sac.

Figure 2

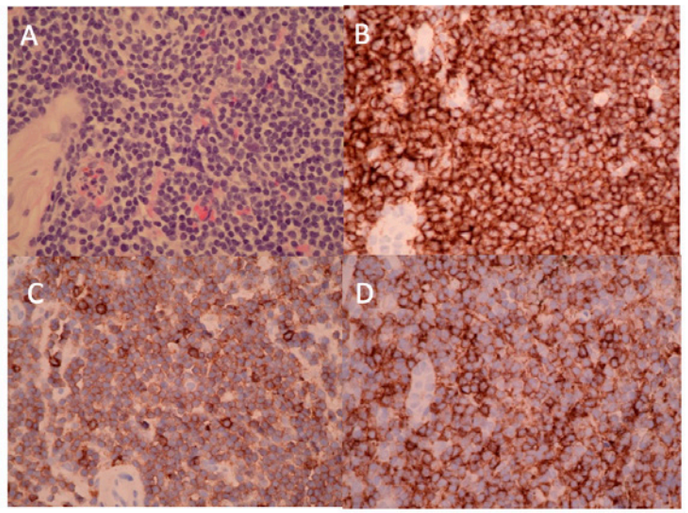

Figure 2: A. Lacrimal sac high power shows diffuse small mature lymphocytes with mature chromatin pattern and no identified mitotic activity. B. CD20 shows that nearly all the lymphocytes are B-cells. C. CD23 is positive in the neoplastic cells (positive in CLL and negative in mantle cell). D. CD5 is strongly positive in the few T-cells and weakly positive in the B-cells.

Figure 3

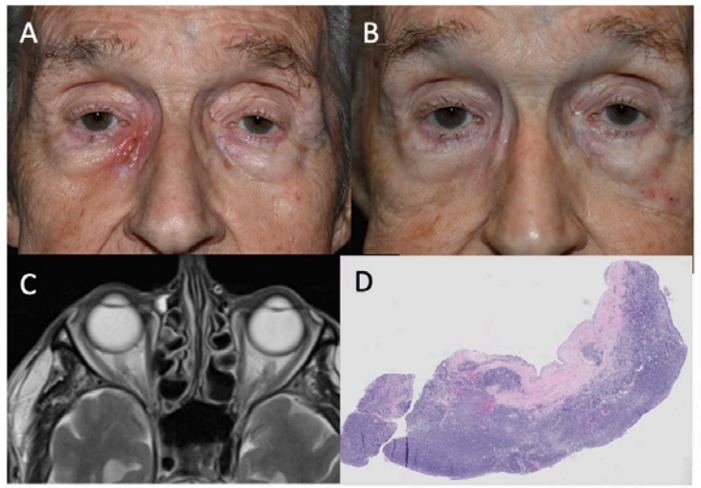

Figure 3: 86-year-old male with a history of chronic lymphocytic leukemia developed recurrent right dacryocystitis. He underwent multiple incision and drainage attempts prior to presentation. A. Pre-operative external photograph showing right-sided cutaneous lacrimal fistula B. Post-operative external photograph revealing resolution of fistulous tract. C. T2-weighted magnetic resonance imaging showing right sided enhancement of the lacrimal sac. D. Lacrimal sac high power shows diffuse small mature lymphocytes with mature chromatin pattern and no identified mitotic activity. The specimen was also positive for CD20, CD23, and CD5.

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7:31-7:35 am

Orbital Myositis in the Setting of Drug-Induced Lupus with Factor Xa Inhibitor

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Introduction: Apixaban is reported to be a rare cause of drug-induced lupus (DIL).[1,2] We present a case of skin nodules and right orbital inflammation with myositis due to drug-induced lupus in the setting of recent initiation of apixaban therapy.

Methods: Case presentation and review of the literature.

Results: A 79-year-old man presented with acute onset right periorbital pain and swelling. He had been started on apixaban 6 weeks prior for a lower extremity deep vein thrombosis. Two weeks after initiation of apixaban, he developed acute onset swelling of the submandibular region with associated dysphasia, which resolved with a 6-day methylprednisolone taper. Apixaban was transitioned to rivaroxaban due to concern for a possible allergic reaction to apixaban. Approximately 2-3 weeks later, he then developed multifocal tender red edematous nodules on his left upper arm, extensor surface of his right forearm, and flexor surface of his left middle finger. One week after onset of the dermatologic symptoms, he developed acute right periorbital edema (Figure 1) with pain and limitation with upgaze. Magnetic resonance imaging (MRI) of the orbits with contrast demonstrated diffuse orbital edema and enlargement and enhancement of the right extraocular muscles, especially notable in the right superior rectus muscle (Figure 2).

He underwent an inflammatory laboratory workup (Table 1). Complete blood count demonstrated pancytopenia (hemoglobin 3.2, white blood cell count 11.8, platelets 120). Complement 4 (C4) was normal but C3 level was elevated. Ferritin was elevated, and C-reactive protein (CRP) and erythrocyte sedimentation rate (ESR) were also elevated (4.9 and 52, respectively). Histone antibody, a marker for drug-induced lupus, was elevated. Punch biopsies of the involved upper extremity regions demonstrated nonspecific perivascular non-granulomatous chronic lymphocytic infiltrate. Biopsy of the right superior rectus muscle also demonstrated perivascular chronic inflammatory infiltrate without other pathologic findings. He was started on intravenous methylprednisolone with brisk resolution of the focal areas of skin edema, significant improvement in and eventual resolution of the right orbital inflammation and motility deficit. His rivaroxaban was discontinued and clinical monitoring for DVT was favored by his hematology team. His systemic steroid therapy was continued at high dose (60 milligrams (mg) Prednisone) with a slow taper of 10mg each week. His orbital symptoms remained resolved at his 1 month, 3 month and 6 month follow up.

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Conclusions: Drug-induced lupus accounts for approximately 10 percent of new lupus cases each year, with the most common culprits being hydralazine and procainamide.[3-6] Other less commonly associated medications include anti-tumor necrosis factor (TNF) agents, interferon-alpha, sulfasalazine, propylthiouracil, quinidine, select antibiotics, antifungals, antipsychotics and anti-epileptics.[3,5,6] While there are now over 80 drugs associated DIL, there are few reports of DIL due to factor Xa inhibitors.[1,2] While orbital myositis has been reported in idiopathic SLE,[7,8] there are no reported cases of myositis due to DIL. The pathogenesis of orbital myositis or orbital inflammation in the setting of SLE is incompletely understood.

In conclusion, drug induced lupus is a rare complication of factor Xa inhibitors. We present a case of dermatologic manifestations and orbital inflammation with myositis due to apixaban-associated DIL. DIL should remain on the differential for new onset auto-immune or inflammatory symptoms in the appropriate clinical setting.

Figure 1

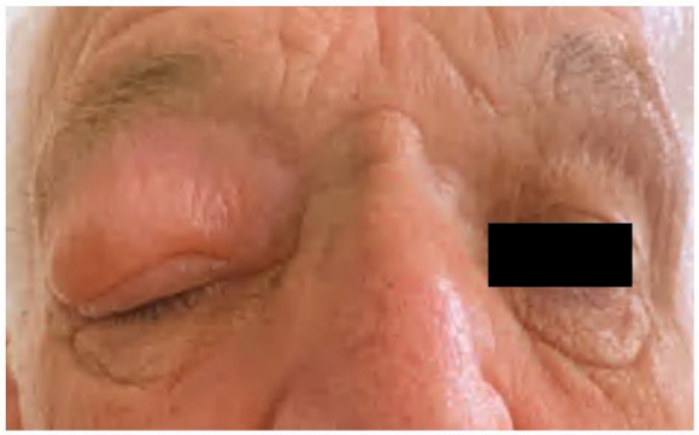

Figure 1. Clinical photo demonstrating right periorbital edema at presentation.

Figure 2

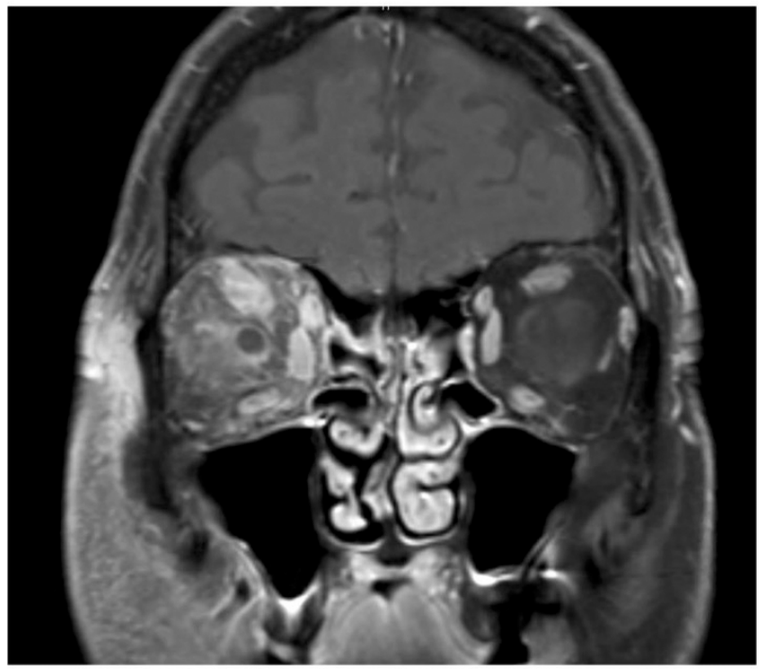

Figure 2. Coronal view of a T1-weighted post-contrast MRI of the orbits demonstrates enlargement and enhancement of the right superior rectus muscle and enhancement of the right orbital soft tissue, consistent with myositis and orbital cellulitis, respectively.

Figure 3

Table 1. Laboratory evaluation at patient presentation.

Abnormal	Normal
Hemoglobin (low, 3.2)	BMP
WBC count (low, 11.8)	Anti-CCP
Platelets (low, 120)	Ds-DNA
C3 (high)	Lyme disease serology
Ferritin (high)	MPO antibodies
CRP (high, 4.9)	Proteinase 3 antibodies
ESR (high, 52)	Rheumatoid factor
Histone antibody (high)	ANA
	C4

ANA – antinuclear antibody, BMP – basic metabolic panel, C – complement, CCP – cyclic-citrullinated peptide, CRP – C reactive protein, ds-DNA – double stranded deoxyribonucleic acid, ESR – erythrocyte sedimentation rate, MPO – myeloperoxidase, WBC – white blood cell count

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8:02-8:08 am

Immune Checkpoint Inhibitor Therapy for Periocular Squamous Cell Carcinoma with Perineural Spread to the Orbit and Skull Base

Tracy Lu[1], Janet Fan[1], Hila Goldberg[1], Lorena Bolanos[1], Sharia Hernandez[1], Luana Sousa[1], Neal Akhave[1], Renata Ferrarotto[2], Bita Esmaeli[1]
[1]MD Anderson, Houston, Texas, United States, [2]Head and Neck Oncology, MD Anderson, Houston, Texas, United States

Introduction: Periocular squamous cell carcinoma (SCC) with perineural spread (PNS) and skull base involvement is challenging to treat and traditionally involves high dose radiation which is associated with significant ocular toxicity. We present a case series of 8 patients with recurrent SCC with PNS who were treated at a single tertiary cancer center with PD-1 inhibitor therapy as an alternative treatment.

Methods: Eight patients with periocular SCC with PNS who were treated with PD-1 inhibitor therapy at a single tertiary cancer center were retrospectively reviewed. Patients who had radiation therapy concurrent with PD-1 inhibitor therapy were excluded. Patient demographics, clinical and radiologic data at presentation, duration of immunotherapy, response to treatment, and follow up data were analyzed. Treatment related side effects were also reviewed.

Results: All 8 patients presented to our center with recurrent SCC with PNS and orbital and skull base involvement that had been previously heavily treated elsewhere with Mohs surgery, radiation therapy, chemotherapy, or a combination of these modalities. The cohort consisted of 7 men and 1 woman with median age of 65 years (range 55 to 81 years) and a treatment duration ranging from 2 to 24 months (median = 12 months). Cranial nerves involved included V1 (6), V2 (1), V3 (2), III (1), VII (1), and VIII (1). Seven patients were treated with cemiplimab and 1 was treated with pembrolizumab. Six patients demonstrated a partial response and 2 had a complete response on imaging. No patients experienced progression of their disease or recurrence during the follow-up period, which ranged from 6 to 41 months (median 23 months) (Table 1). Radiation therapy was avoided in all 8 patients during the follow up period. Toxicity associated with immunotherapy was generally mild with only one patient experiencing more than grade I toxicity; he developed diabetic ketoacidosis and had to stop immunotherapy after 2 months (4 cycles). The treatment response in this patient has been durable and there has been no further progression of his orbital disease in the subsequent 23 months after stopping PD-1 inhibitor therapy.

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Conclusions: Treatment with PD-1 Inhibitors can produce significant responses in patients with periocular SCC with PNS into the orbit and skull base and should be considered as an alternative to traditional high dose radiation therapy. All patients in our small cohort avoided radiation and its associated eye complications during the follow-up period. Careful long-term follow up including serial imaging is needed to assess long term durability of response to PD-1 inhibitors.

Figure 1

Age	Sex	CN involvement	Treatment	Duration of Tx (mos)	Follow-up Period (mos)	Response
55	M	V1	Cemiplimab	24	41	Complete
71	M	V2,V3	Cemiplimab	12	24	Complete
85	M	V1	Cemiplimab	4	8	Partial
71	M	III, V1	Cemiplimab	16	52	Partial
80	M	V1	Cemiplimab	6	6	Partial
65	M	V3, VII, VIII	Cemiplimab	22	22	Partial
65	F	V1	Pembrolizumab	12	12	Partial
65	M	V1	Cemiplimab	2	25	Partial

Table 1: Summary of patient characteristics

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8:08-8:14 am

High Success Rates of Large Interpolated Mycutaneous Flaps without Secondary Posterior Mucosal Reconstruction for Very Large Full-Thickness Eyelid Mohs Defects: Do They Induce Conjunctiva-Like Regeneration?

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[1]Department of Ophthalmology and Visual Sciences, University of Alabama - Birmingham / Heersink School of Medicine, Birmingham, Alabama, United States, [2]Alabama Oculoplastic Associates, P.C., Birmingham, Alabama, United States

Introduction: Contrary to traditional recommendations, large Mohs related eyelid defects resulting in greater than a 50% loss of the total ocular palpebral conjunctiva, do not need posterior mucosal augmentation (i.e. buccal mucosa, free tarsal grafts, etc) when repaired using large interpolated mycutanous flaps, as they show histological evidence of conjunctiva-like regeneration / extension.

Methods: At a tertiary academic medical center, over a 2-year period, consecutive large Mohs defects resulting in a loss of greater than 50% the total ocular palpebral conjunctiva (i.e. a combination of the upper eyelid, lower eyelid, and/or canthi) that were repaired by large interpolated myocunateous flaps (e.g. paramedian forehead flap, Fricke flap) without any attention to a posterior mucosal reconstruction were followed for greater than 6 months. Post operative complaints of dry eyes, corneal exposure, diplopia, and other visual compromise were recorded. Corneal slit lamp examinations were recorded. Demographic information of gender, age, need for additional reconstruction, and cancer type was recorded. Biopsies of the posterior side of 3 total lower eyelid (100%) interpolated flaps were taken from 3 patients at the time of the scheduled 4 week secondary separation for histologic study.

Results: 20 patients (14 males / 6 females) were identified, with 13 patients losing at least 100% of one eyelid and at least 1 canthus. 16 defects were secondary to basal cell carcinoma and 4 were secondary to squamous cell carcinoma. The average patient age was 73.6 years. 2 patients had complaints of intermittent diplopia with minor restrictive extraocular movement. 3 patients had dry eye complaints successfully treated with ointment/rewetting drops, with only minor exposure on slit lamp examination. No patient necessitated additional surgery after the scheduled secondary 4 week flap separation; all 3 posterior flap biopsies showed newly generated non-keritinized “squamous epithelium” on the previously dissected posterior side of the transferred interpolated flap tissue at the time of separation.

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Conclusions: It has generally accepted that the repair of very large, full-thickness eyelid defects necessitate mucous membrane augmentation by buccal mucosal grafting or free tarsal grafting in order to reduce the incidence of dry eye syndrome, ocular irritation, corneal exposure, and restrictive strabismus. This pilot study shows that this is not necessarily true and suggests that large interpolated mycutanous flaps may act as a matrix for the de novo regeneration or extension of conjunctival-like squamous epithelium on the posterior portion of the newly created eyelids. Additional histological studies are needed.

Figure 1

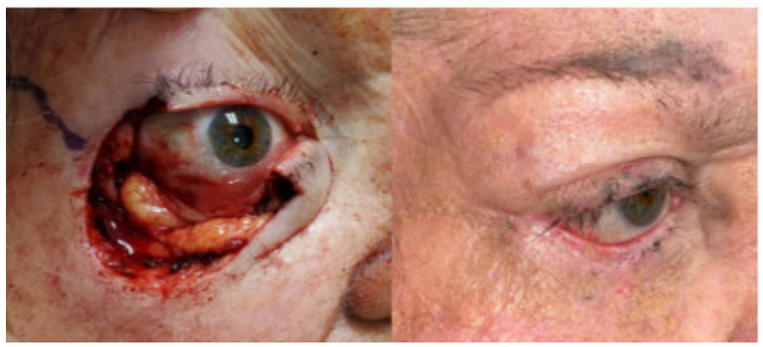


Figure 2

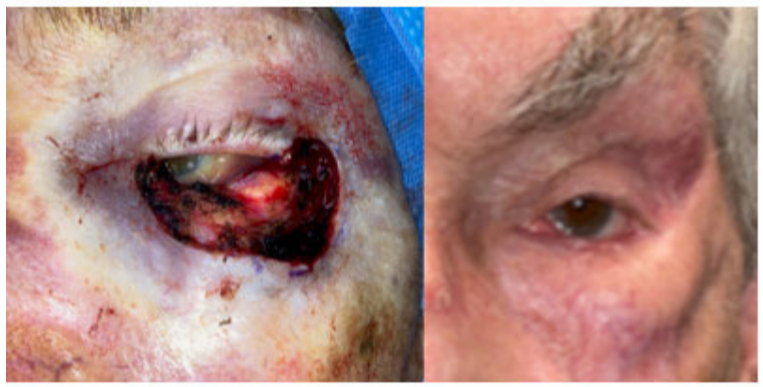
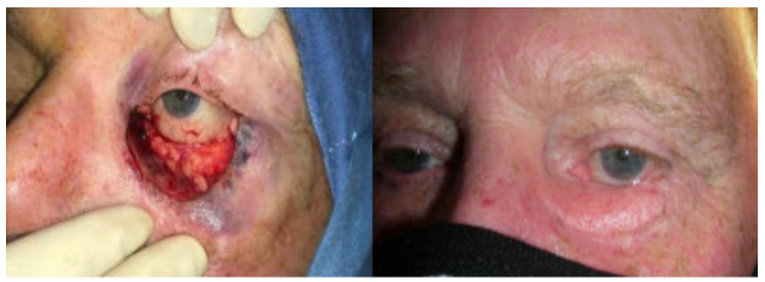


Figure 3



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8:14-8:20 am

Cranial Neuropathies Arising from Perineural Spread of Squamous Cell Carcinoma: A Multi-Centered Series and Review of the Literature

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Introduction: Cutaneous squamous cell carcinoma (SCC) has a propensity for perineural invasion and retrograde spread can result in several cranial neuropathies, most commonly V and VII. Treatment of perineural spread (PNS) has traditionally involved surgical resection, when possible, and adjuvant radiation and/or chemotherapy. More recently, immune checkpoint inhibitors have been added to the armamentarium.[1,2] The purpose of this study is to describe the use of immunotherapy in a heterogeneous cohort of patients with cranial neuropathies due to PNS of SCC.

Methods: Multi-center case series and review of the literature.

Results: A total of 13 patients with a mean age of 72.2 ± 10.9 years and AJCC 8th edition stage ranging from TxN0M0 to T4N3bM0 were included. Presentation with cranial neuropathy due to PNS occurred at a mean of 21.0 ± 23.9 months (range: 0 – 65 months) after initial diagnosis of SCC. Cranial nerve V was most often involved (12/13; 92.3%), followed by CN VII (9/13; 69.2%). Of those with House-Brackmann (HB) scores documented, all but one was HB 6 (5/6; 83.3%).

In some cases, diagnosis of PNS was based on characteristic imaging features alone (4/13; 30.8%); however, many cases were confirmed by biopsy (9/13; 69.2%). Treatments included radiotherapy (6/13; 46.2%), chemotherapy (6/13; 46.2%) and/or immunotherapy (8/13; 62.5%), with many patients receiving a combination of modalities throughout their disease course (9/13; 69.2%). Immunotherapies used included cemiplimab (6/8; 75%) and pembrolizumab (2/8; 25%).

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Of the patients that received immunotherapy, 62.5% (5/8) demonstrated at least partial clinical and/or imaging response. Changes in cranial nerve function were less common, with only 1 patient (1/9; 11%) having documented improvement in cranial neuropathy. This patient had a partial improvement in V2 hypoesthesia. Cemiplimab was discontinued due adverse events (hepatitis and colitis) in 2 patients (2/9; 22%).

A review of the literature identified 58 articles describing a total of 833 patients with cranial neuropathies secondary to PNS of SCC. Most patients were treated with various combinations of surgery, chemotherapy and/or radiotherapy, with immunotherapy only reported in a total of 15 patients from the two most recent publications.[3,4] Outcomes with respect to cranial nerve function were only documented in four patients. Unlike most of our cases, all four of these patients had at least some improvement following treatment with cemiplimab.[3]

Conclusions: Immunotherapy plays an important role in the management of patients with advanced SCC.[1,2] At present, the impact on cranial nerve function in patients with extensive PNS is unclear. This may hold important clinical implications regarding timing of oculoplastic surgical intervention, particularly with respect to CN VII palsy.

Figure 1

Table 1. Demographic and clinical features of 13 patients with cranial neuropathy secondary to extensive perineural spread of cutaneous squamous cell carcinoma.

Patient	Sex	Laterality	AJCC	Cranial neuropathies	Location initial SCC	Time from initial SCC to CN palsy (months)	Treatment
1	Female	Left	T4N0M0	IV, V1	Upper lip	Unknown	R, C
2	Male	Left	TxN0M0	Left CN: III, IV, V1-V2, VI, VII. Right CN V1 palsy.	Scalp and ear	60	C, I
3	Male	Left	T3N3bM0	II, III, V1, VI, VII	Upper eyelid and temple	7	C, I
4	Male	Right	T4N0M0	V1 & V3, VII	Forehead	6	R, C
5	Male	Right	T3N0M0	V, VII	Cheek	28	I
6	Female	Right	T4N3bM0	VII	Forehead	1	I
7	Male	Left	TXN0M0	V2	Lower eyelid	8	I
8	Female	Right	TxN0M0	II, III, IV, V1	Glabella	48	I
9	Female	Right	TxN0M0	II, III, IV, V1, VI	Forehead	7	R, I
10	Male	Right	TxN0M0	III, V3, VII	Forehead and ear	18	R, C
11	Male	Right	T3N0M0	CN III, VII, XI	Ear	0	R
12	Male	Left	TxN0M0	III, V2, VII	Cheek	1	R, I
13	Male	Right	TxN0M0	III, V2, VII	Not documented	65	C

R = radiotherapy, C = chemotherapy, I = immunotherapy

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8:20-8:26 am

Clinical Characteristics and Outcomes of Concurrent Eyelid and Conjunctival Melanoma

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Introduction: Concurrent eyelid and conjunctival melanoma occurs rarely [1,2], and as a result, is not well described in the literature. The aim of this study was to describe long term outcomes from patients diagnosed with concurrent eyelid and conjunctival melanoma.

Methods: This was a retrospective descriptive study of patients with biopsy-confirmed concurrent eyelid and conjunctival melanoma seen at a single academic institution between January 1, 2000, and December 31, 2021. Charts were reviewed for demographics, presenting tumor features, location, American Joint Committee on Cancer (AJCC) staging, treatment, outcomes, and mortality. Statistical analysis was performed using Microsoft Excel (Redmond, Washington).

Results: There were 16 patients diagnosed with concurrent eyelid and conjunctival melanoma, with a mean age of 70.5 years old, 9 (56%) were male, and 16 (100%) were white. Mean follow up time was 82 months (1-450 months, median 28.4 months). Presumed tumor origin was most frequently from conjunctiva (n=11, 68.8%), and less commonly was from the eyelid (n=4, 25%) or unknown (n=1, 6.3%). The lower lid was most frequently involved (n=8, 50%), followed by the upper lid (n=5, 31.3%) and both upper and lower lid involvement (n=3, 18.8%). Local tumor recurrence occurred in 5 patients (31.3%) after a mean time of 50 months (18-160), and 4 (25%) patients experienced distant metastases, including to the parotid gland (n=3), lung (n=2), CNS (n=2), and liver (n=1).

Primary treatment of the eyelid lesions was exenteration in 8 patients (50%), wedge resection in 6 (38%), and Mohs micrographic surgery in 2 (12%), with one patient undergoing secondary exenteration following primary wedge excision due to tumor recurrence. Systemic treatment included immunotherapy (n=2), chemotherapy (n=2) and adjuvant radiation (n=3). There was no statistically significant difference in rate of local tumor recurrence between patients managed with globe sparing treatment (28.9%) and those with globe sacrificing surgeries (33%). In patients managed with globe sparing treatments, 2 (28.6%) had decrease in best corrected visual acuity of the affected eye of 3 lines or greater compared to baseline exam. Deaths attributable to melanoma at a mean time of 58.3 months from date of diagnosis occurred in 3 (18.8%) patients.

Conclusions: Melanoma presenting with simultaneous eyelid and conjunctival involvement is rare and has a high rate of local recurrence, development of distant metastasis, and melanoma associated mortality. Globe sacrificing surgery may not be sufficient for disease control and interdisciplinary collaboration is important for close surveillance as well as systemic therapy.
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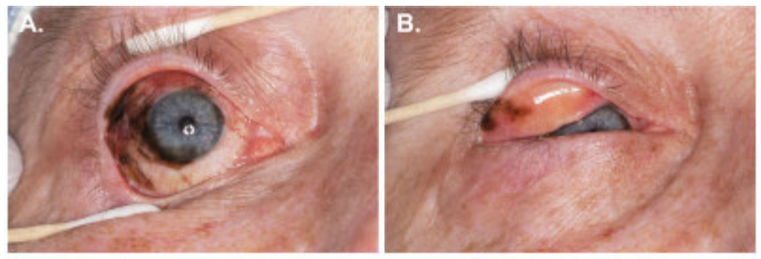
Figure 1



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8:26-8:32 am

Repair of Sino-Orbital-Cutaneous Fistula with Combined Pericranial Flap and Paramedian Forehead Flap

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Introduction: Resection of sinonasal malignancies involving the orbit is often followed by postsurgical complications due to the loss of normal anatomic structures, poor vascular supply, and extensive scarring from multiple surgeries and radiation. The author describes a case of orbital implant exposure and sino-orbital-cutaneous fistula repaired with a combined pericranial flap and paramedian forehead flap.

Methods: Surgical case report

Results: A 58-year-old man with sinonasal squamous cell carcinoma underwent a left maxillectomy with removal of the orbital floor and osteocutaneous radial forearm free flap reconstruction. The early postoperative course was complicated by loss of the flap, necessitating removal and subsequent placement of a scapular tip free flap. Following completion of postoperative adjuvant radiation, the patient developed enophthalmos, globe dystopia, and motility restriction with diplopia, and a secondary orbital floor reconstruction was performed with a titanium patient-specific implant (PSI), followed by strabismus surgery. Six months later, the patient presented with orbital implant exposure and a sino-orbital-cutaneous fistula. The orbital implant was removed and replaced with a bioabsorbable implant, and the fistula and periocular defect were repaired with a combined pericranial flap and paramedian forehead flap. Successful repair without recurrence of the fistula was noted postoperatively.

Conclusions: Sino-orbital-cutaneous fistulas can occur following resection of sinonasal malignancies involving the orbit, and are more likely to occur with the use of alloplastic implants. Local flaps can be used in combination to treat these complications.

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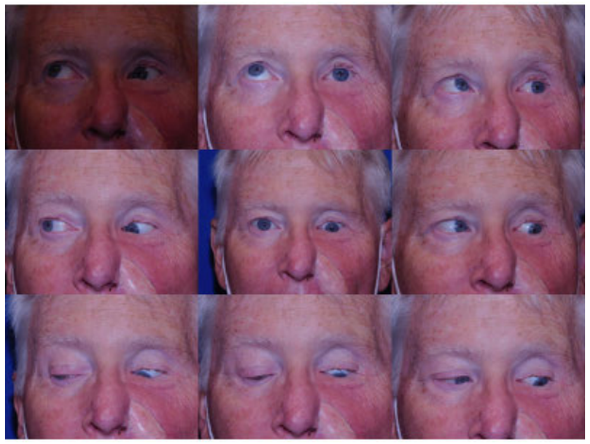
Figure 1



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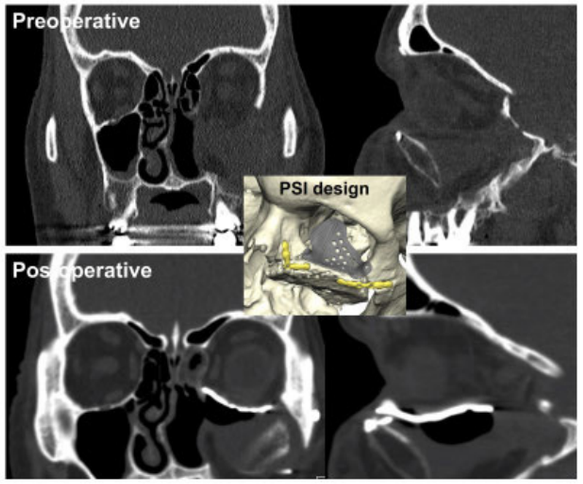

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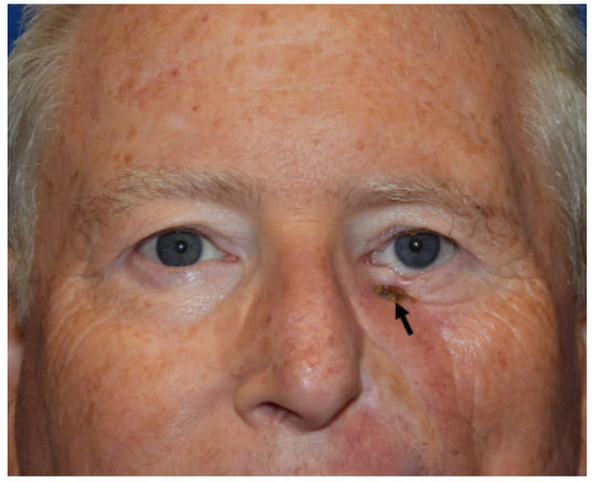

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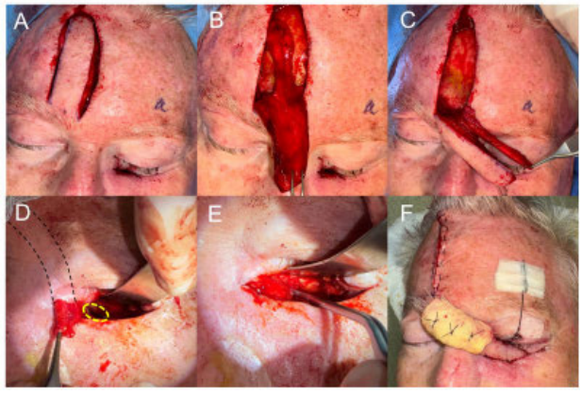

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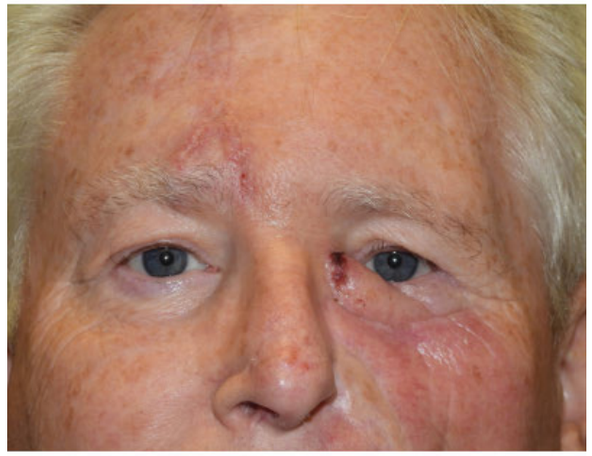

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8:47-8:53 am

Negative-Pressure Wound Therapy and Other Techniques in Reconstructing Large Defects from Periocular Necrotizing Fasciitis

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Introduction: This video demonstrates the use of several techniques to reconstruct large defects resulting from in periocular necrotizing fasciitis: negative-pressure wound therapy (NPWT) dressings,[1,2] attempt at conservative skin debridement, skin grafting, use of biodegradable temporizing matrix (BTM), and musculocutaneous forehead flaps.

Methods: Surgical video – case series. A 65-year-old lady with metastatic lung cancer on immunotherapy, a 57-year-old man with uncontrolled diabetes, and a 57-year-old man with non-resolving preseptal cellulitis of sinus origin presented with 2 days of rapidly progressive periocular, eschar, necrosis, and deterioration of vitals. Conservative skin debridement was attempted in 2/3 cases, while 1 case received traditional wide debridement. After a period of 4-7 days of regular debridement, wound care, and observation for progressive infection, NPWT dressings were applied over tarsorrhaphized remaining posterior lamellar lid structures. Thick granulation tissue was produced in all cases. No ophthalmic complications were encountered: intraocular pressures remained normal ([3] In case 1, closure was achieved using a temporalis “turn-over flap” to cover a small area of bare bone, followed by full- and partial-thickness skin grafts. In case 2, a large bare-bone defect was addressed by placing biodegradable tissue matrix (BTM) over decorticated frontal bone diploë. Following 3 weeks of BTM vascularization and granulation, full- and partial- thickness skin grafts were placed over the BTM. In case 3, an upper brow skin and muscle flap was used to close an upper eyelid defect.

Results: Full closure of large periocular defects was achieved using the above techniques, with preservation of eyelash cilia and ocular integrity.

Conclusions: This series illustrates the utility of NPWT dressings in producing thick granulation tissue, facilitating further reconstructive techniques to close large defects in periocular necrotizing fasciitis.
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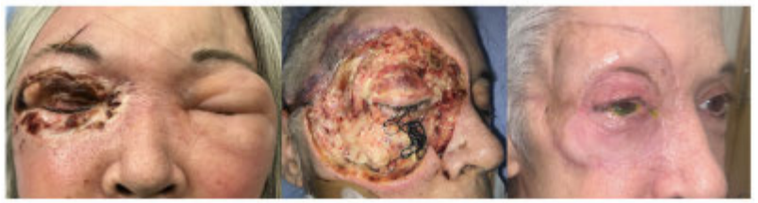
Figure 1



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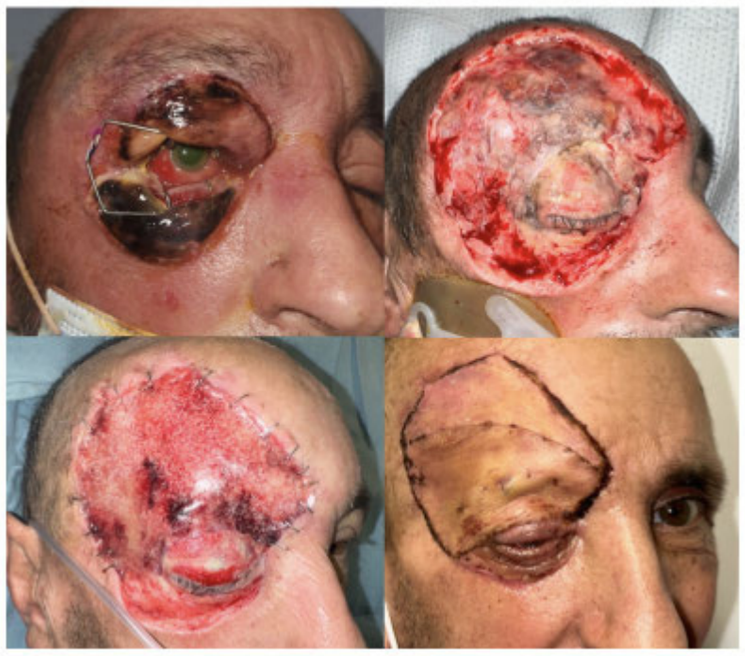

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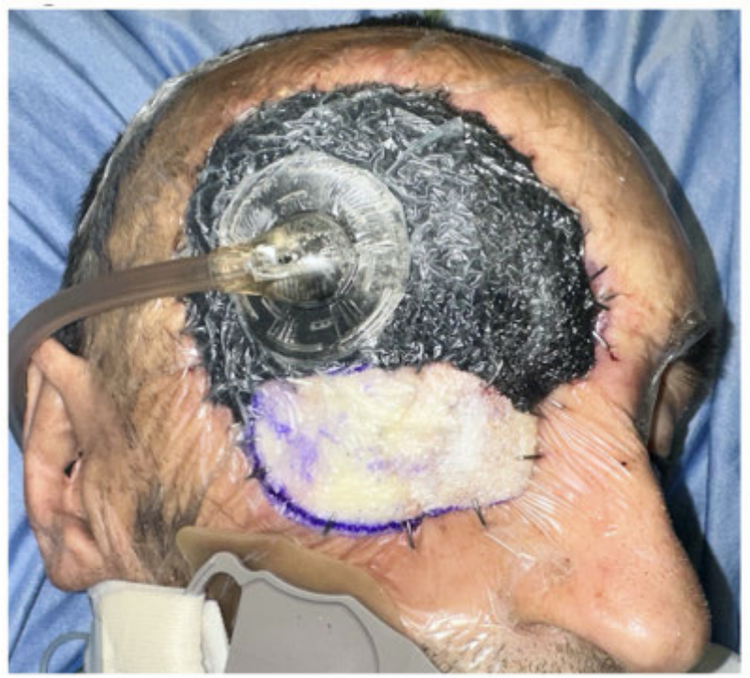

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8:53-8:59 am

Combined Supraorbital Eyebrow Craniotomy and Enucleation to Achieve Maximal Resection of Prechiasmal Pilocytic Astrocytoma of the Optic Nerve

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[1]Oculofacial Plastic and Reconstructive Surgery, Casey Eye Institute, Oregon Health & Science University, Portland, Oregon, United States,
[2]Ophthalmology, Casey Eye Institute, Oregon Health & Science University, Portland, Oregon, United States

Introduction: Pilocytic astrocytomas of the optic nerve are low-grade neoplasms often amenable to surgical resection.[1] This report describes a unique combined supraorbital craniotomy with enucleation to achieve maximum tumor resection in a pediatric patient with a large mass approaching the optic chiasm.

Methods: A previously healthy 3-year-old girl with a 6-month history of left eye vision loss was evaluated and found to have an inability to perceive light, an afferent pupillary defect, and 6 mm of relative proptosis of the left eye (Figure 1). The right eye visual acuity was 20/20 with normal color vision. Magnetic resonance imaging revealed a large fusiform mass on the left optic nerve (Figure 2). She underwent optic nerve biopsy, confirming a diagnosis of pilocytic astrocytoma (WHO grade I). Workup for systemic neurofibromatosis was negative.

Chemotherapy was initiated and discontinued after 6 months due to lack of tumor regression. Concern for intracranial extension and monocular status led to the recommendation of a combined enucleation and resection with release of the nerve from the optic canal.

The patient underwent a left supraorbital craniotomy via an eyebrow incision for lysis and resection of the prechiasmal optic nerve (Figure 3). The optic nerve was then freed from the dural edges and cuff as it exited the skull base. A standard enucleation was subsequently performed, and the globe was removed with the tumor grossly attached (Figure 4). Posteriorly within the apex, the nerve had partially avulsed, and residual fragments within the optic canal and skull base were removed. An ocular implant was successfully placed.

Results: A biopsy of the optic nerve just anterior to the chiasm was negative for malignancy. The segment of optic nerve attached to the enucleated globe measured 19 mm in length. Histopathology was consistent with optic nerve pilocytic astrocytoma. The secondarily removed intracanalicular and intracranial portions of the nerve were negative for malignancy.

The patient's incision healed with a small scar within the brow cilia (Figure 5). Over the following 8 years, the patient's clinical and MRI results remained stable without tumor recurrence or contralateral visual deficits.

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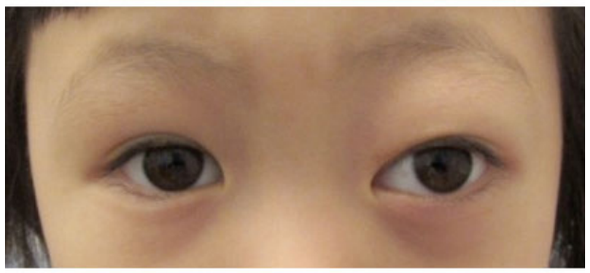
Conclusions: Standard enucleation in pediatric patients using scissors or snare enables an average optic nerve resection of 11.05 mm and 13.35 mm, respectively.[2] Using the described approach, a greater optic nerve resection was possible. Complete tumor resection is particularly important given the high recurrence rate in incompletely resected pilocytic astrocytoma of the optic nerve, especially those with evidence of progression towards the chiasm.[3] After 8 years of surveillance, there was no evidence of recurrence. Additional benefits of this approach include improved cosmetic outcomes, decreased surgical morbidity, reduced operative time, and shorter postoperative recovery compared to larger more invasive approaches.[4,5]

Tumors extending deep to the orbital apex pose a surgical challenge, as their complete removal often requires neurosurgical intervention with large craniotomies. This case describes an innovative combined approach for enucleation and resection with release of nerve from the optic canal to decrease morbidity, improve cosmesis, and potentially prolong remission.

Figure 1



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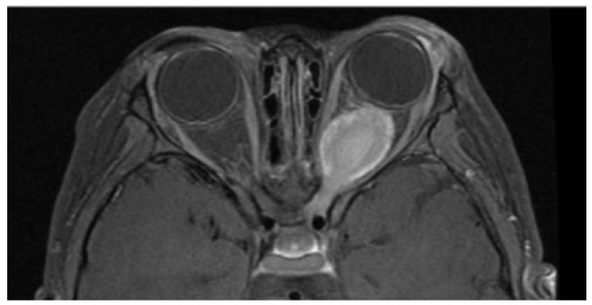

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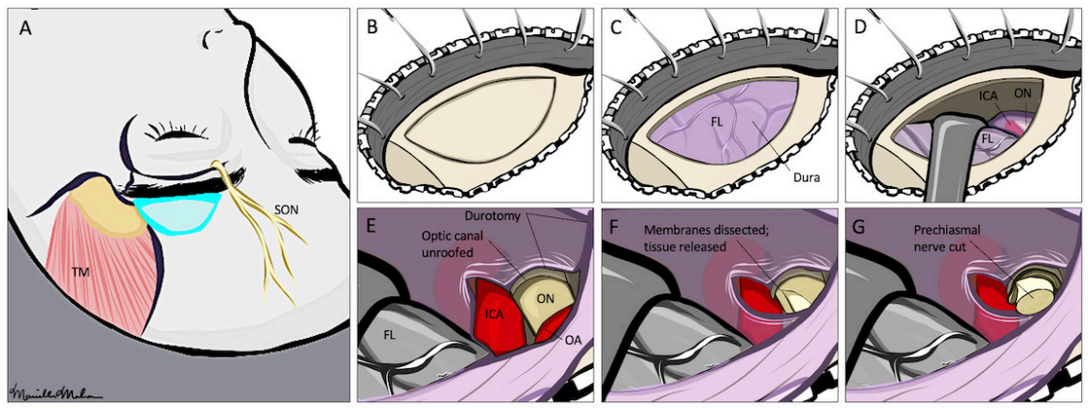

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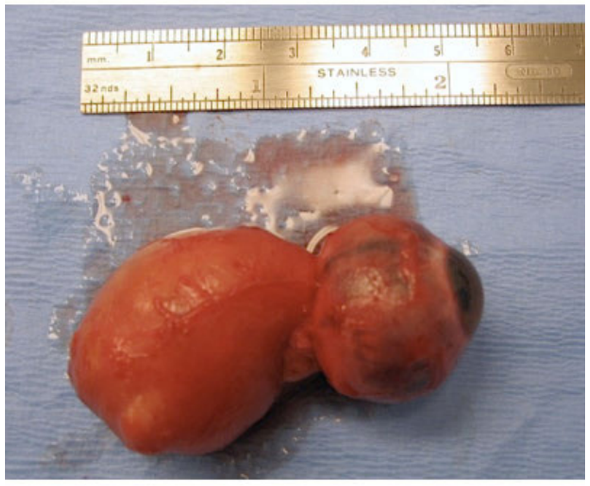

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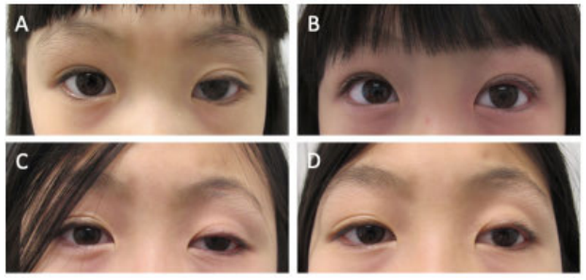

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8:59-9:05 am

Distinguishing Tumor from Bland Thrombus: A Case of Diffuse Large B-Cell Lymphoma Presenting as Bilateral Cavernous Sinus Thrombosis and Left Superior Ophthalmic Vein Thrombosis

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[2]Department of Radiology, University of Kentucky College of Medicine, Lexington, Kentucky, United States

Introduction: Thrombosis of the cavernous sinus and superior ophthalmic vein (SOV) is commonly associated with septic causes including paranasal sinusitis and orbital cellulitis. Aseptic causes may include vascular malformations, trauma, hematological disorders, autoimmune disease, hormonal changes, and malignancy.[1] We report a case of a patient with bilateral cavernous sinus thrombosis and left SOV thrombosis due to tumor as opposed to bland thrombus, leading to a diagnosis of diffuse large B-cell lymphoma (DLBCL).

Methods: Case report.

Results: A 66-year-old female with history of sinusitis was sent to the emergency room by her ophthalmologist for persistent diplopia for 2 months and worsening eyelid swelling for 2 weeks. Examination revealed bilateral vision loss, a right CN VI palsy, and left CN III, IV, and VI palsies. There was left chemosis and left upper eyelid ptosis and edema (Figure 1). There was no afferent pupillary defect, and the optic nerves had no edema or pallor. C-reactive protein was elevated to 43.7 mg/L, but the white blood cell count was within normal limits. An initial CT head revealed left sphenoid sinus opacification and bilateral ethmoid disease along with lesions along the roof and medial wall of the left orbit. CT venogram showed lack of filling of bilateral cavernous sinuses and partial thrombosis of the left SOV (Figure 2), in addition to multiple foci of thrombosis in the dural venous sinuses. Tumor was not entertained. In the setting of possible intracranial and orbital complications, the patient was treated with antibiotics and underwent endoscopic sinus surgery to open the affected sinuses and evaluate any possible contribution of the sinus infection to the overall clinical picture. No purulent drainage, inflammation or suspicious masses were seen. Subsequently, MRI of the orbits demonstrated enhancing lesions in the extraconal space of the left orbit along with bulky enhancement of bilateral cavernous sinuses and the left SOV (Figure 3). The bulky enhancement was indicative of tumor rather than bland clot, and T2 hypointensity within the tumor further suggested lymphoma. CT of the chest, abdomen, and pelvis revealed a large mass in the right axilla and retroperitoneal lymphadenopathy. The axillary mass was biopsied, confirming large B-cell lymphoma. The sphenoid sinus tissue similarly demonstrated large B-cell lymphoma. The patient was treated with chemotherapy, anticoagulation, and high-dose steroids with marked improvement in vision, motility, periorbital edema, and chemosis.

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Conclusions: This case illustrates a presentation of DLBCL as thrombosis of the cavernous sinuses and SOV, initially misdiagnosed as septic and/or bland thrombus. Treatment with antibiotics and anticoagulants would have been insufficient. Bulky enhancement of the cavernous sinus and SOV on MRI is the hallmark of tumor thrombus and distinguishes it from bland thrombus. This case highlights the importance of a thorough workup of orbital venous thrombosis for septic and aseptic causes and provides the first report, to our knowledge, of involvement of the SOV by DLBCL.

Figure 1

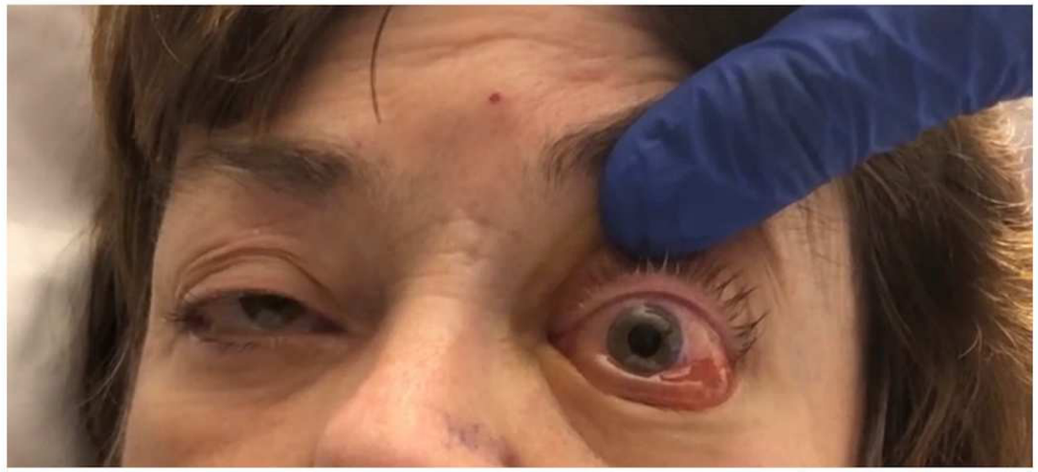

Figure 1: Clinical photograph of the patient showing chemosis and proptosis of the left eye.

Figure 2

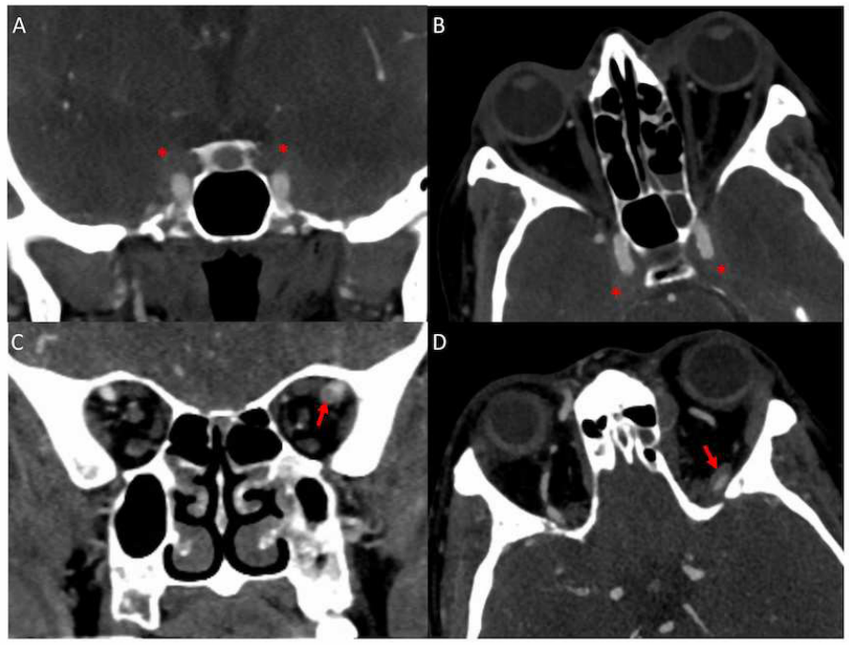

Figure 2. CT venogram of the head in the coronal plane (left column) and axial plane (right column). Lack of contrast in the cavernous sinuses (asterisks) indicates thrombosis. There is also partial thrombosis of the left superior ophthalmic vein (arrows).

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Figure 3

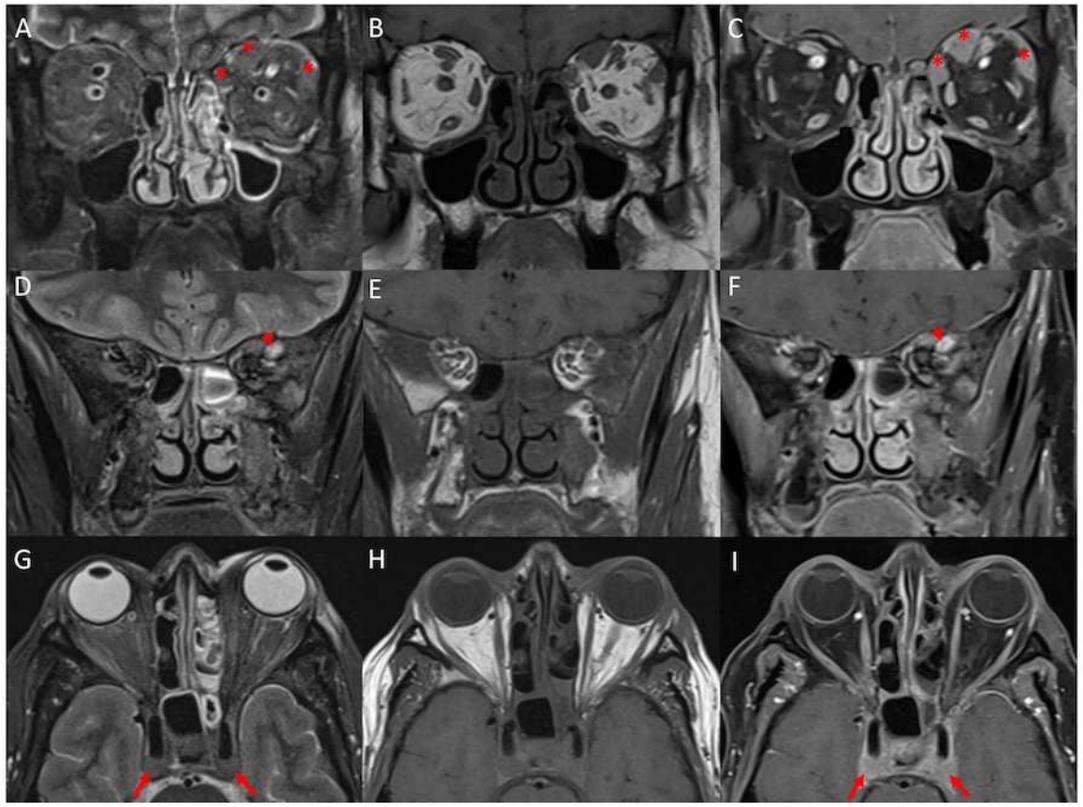

Figure 3. MRI of the orbits in the coronal plane (top two rows) and axial plane (bottom row), including T2-weighted fat-saturated (left column), pre-contrast T1-weighted (middle column), and post-contrast T1-weighted fat-saturated (right column) images. There are bulky masses characterized by T2 hypointensity and homogenous enhancement (asterisks) in the extraconal space of the left orbit as well as in the cavernous sinuses (arrows), confirming tumor, most likely lymphoma. The thrombus in the left superior ophthalmic vein also enhances (arrowheads).

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9:05-9:11 am

Shortened Fornix Syndrome (SFS) after Posterior-Approach Ptosis Repair

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Introduction: This case series describes shortened fornix syndrome (SFS) in patients after previous conjunctival Mueller's muscle resection (CMMR).

Methods: Case series describing clinical characteristics and management of patients diagnosed with fornix shortening and symblepharon after posterior-approach ptosis surgery.

Results: Case 1: A 74-year-old woman presented with ptosis of her left upper eyelid and diplopia one month after bilateral CMMR by an outside ophthalmologist. Of note, the clamp reportedly slipped during left CMMR. She denied significant ocular history or ocular medication use. Exam demonstrated left upper eyelid ptosis with MRD1 0 mm with left hypertropia and restriction in downgaze (Figure 1A). The left superior fornix was shortened with scarring and symblepharon (Figure 1B). The right fornix was normal. Observation was recommended with initial plan for staged ocular surface reconstruction and ptosis repair via external levator advancement. In the interim, she received two 5-fluorouracil injections with improvement in her hypertropia and scarring, with subsequent plan for ptosis repair via external levator advancement.

Case 2: A 67-year-old woman presented with left upper eyelid ptosis, diplopia, and left eye irritation. She previously underwent bilateral CMMR at an outside hospital with a second posterior-based operation on her left eyelid due to residual ptosis. Her symptoms began two weeks after her surgery. Her past ocular history included radial keratotomy, and ocular medications included bromfenac and dexamethasone-neomycin-polymyxin B prescribed postoperatively. Exam demonstrated left ptosis with MRD1 -4 mm (Figure 2A). Extraocular movements were restricted in the left eye, especially downgaze. Manual elevation of her left eyelid revealed fornix shortening with conjunctival injection, scarring, and symblepharon (Figure 2B). Her right fornix was normal. She underwent fornix reconstruction with symblepharon release and amniotic membrane graft placement followed by left external levator advancement with good results (Figure 2C,D).

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Case 3: A 68-year-old man presented with right eye irritation for 6 months. He previously underwent multiple right CMMR procedures at an outside hospital. His past ocular history included amblyopia, chronic corneal scarring, and remote history of strabismus surgery, and he was not using any ocular medications. Exam demonstrated right ptosis with MRD1 1 mm, superior fornix shortening with conjunctival scarring and a broad-based symblepharon as well as a stable chronic corneal scar (Figure 3A,B). Conjunctival biopsy was negative for infection or ocular cicatricial pemphigoid. He underwent fornix reconstruction with an amniotic membrane graft with significant in eyelid position and fornix depth postoperatively (Figure 3C,D).

Conclusions: CMMR is a successful technique to address blepharoptosis. Possible adverse effects include keratopathy, ectropion, and under- or over-correction. One prior case series reported symblepharon in post-CMMR patients concomitantly using topical glaucoma medications.[1] None of our patients were on glaucoma medications. SFS occurs in patients with prior CMMR and presents with symblepharon, mechanical ptosis, and extraocular muscle restriction. Caution should be exercised in patients undergoing repeat CMMR and large resections, especially beyond the fornix reflection. Careful examination, including assessing the fornix and extraocular movements, is required for all patients with ptosis, especially those who have undergone prior eyelid surgery.

Figure 1

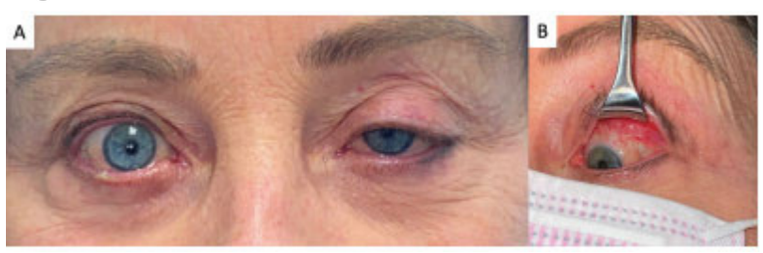


Figure 2

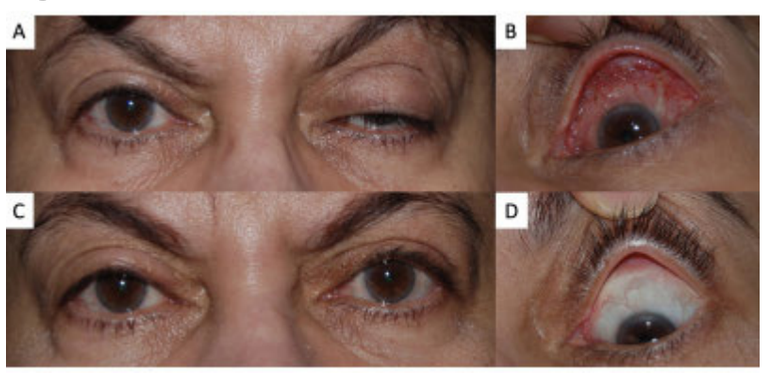
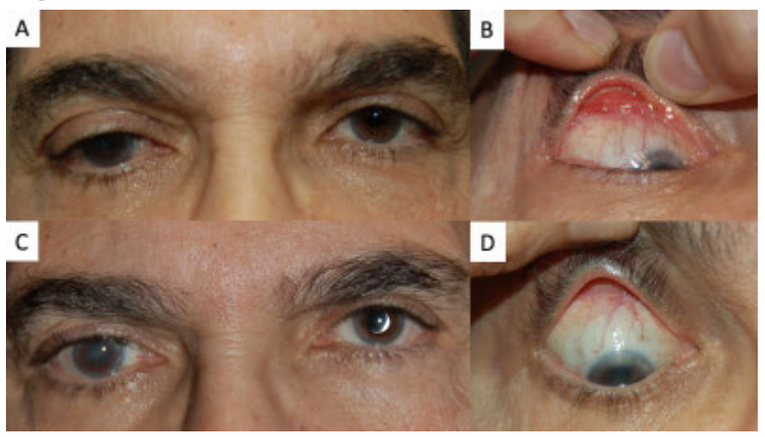


Figure 3



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9:11-9:17 am

Initial Results of Periocular Reconstruction Utilizing the Acellular Dermal Regeneration Matrix

Liane Dallalzadeh[1], Anne Bennett[2], Ronald Mancini[1], Kamel Itani[1], James Thornton[2]
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Introduction: To describe initial results of utilizing the acellular dermal regeneration matrix for periocular reconstruction following Mohs micrographic or surgical excision of cutaneous malignancy.

Methods: This is a retrospective study of patients who underwent periocular reconstruction using the acellular dermal regeneration matrix from 2017-2023 at a single academic institution. Inclusion criteria included age >18 years and post-excision defect involving at least 1 periocular subunit including brow, temple, cheek, medial and/or lateral canthal areas. Primary outcome measure was the rate of post-operative eyelid malposition by periocular subunit involved.

Results: Nine patients were included (44.% female, 65.7 ± 10.4 years old [mean ± SD], 33.3% current smokers). Two patients had history of basal cell carcinoma, 2 squamous cell carcinoma, 4 melanoma in-situ, and 1 melanoma with mean post-excision defect area measuring 31.8 ± 23.9 cm^2. Acellular dermal regeneration matrix was specifically chosen in five cases as a placeholder for patients awaiting final pathological clearance of margins and in one case due to need for radiation. Mean time from Acellular dermal regeneration matrix placement to re-epithelialization was 33 ± 8 days, where four cases underwent split thickness skin grafting from color-matched head/neck donor site and five underwent full thickness skin grafting or adjacent tissue transfer to repair the defect.

Three patients' defects included the upper and/or lower eyelid necessitating simultaneous eyelid reconstruction of posterior lamella via tarsoconjunctival and/or periosteal flaps and anterior lamella via full thickness skin grafting at time of Acellular dermal regeneration matrix placement (Figure 1). Periocular subunits that resulted in greatest incidence of cicatricial eyelid malposition included the brow (100%, 2/2 cases), lateral canthus (67%), temple (60%), and cheek (60%). Neither of the two cases involving the medial canthal area alone resulted in cicatricial eyelid malposition (Figure 2).

Conclusions: Acellular dermal regeneration matrix is a bilayer acellular dermal regeneration matrix from bovine collagen crosslinked with glycosaminoglycans covered by a silicone membrane. It is one of many dermoconductive tissue-based products that provides scaffolding for surrounding tissue to migrate and create a neodermis.[1-3] Previous literature has described its use in nasal, scalp, lip, cheek, and exenteration socket reconstruction as well as traumatic periocular tissue loss.[4-10] This study demonstrates its utility in

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reconstruction of large periocular defects following excision of cutaneous malignancy, and specifically the subunits that are more likely associated with subsequent cicatricial eyelid malposition.

Figure 1

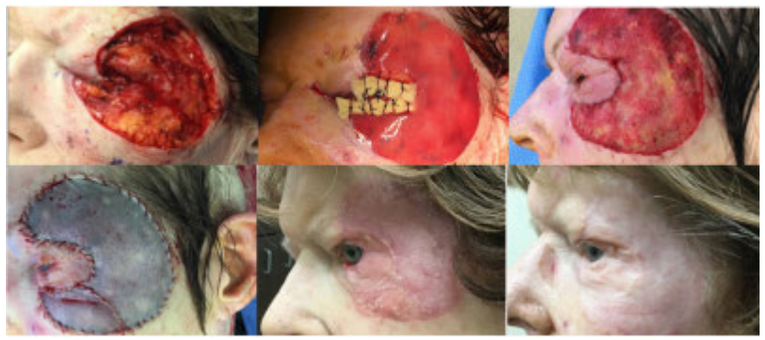
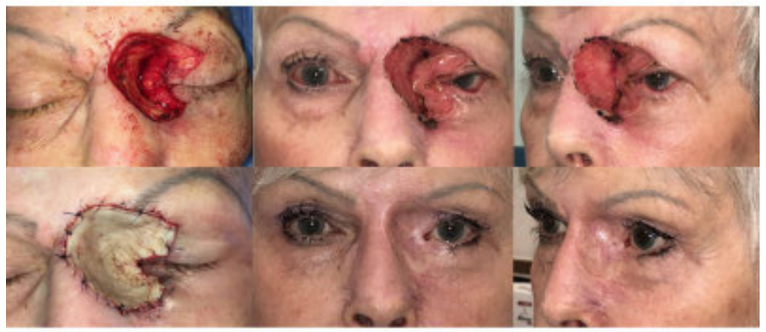


Figure 2



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YASOPRS ASK SASOPRS: A MENTORSHIP PANEL

Moderators: Van Ann Tran, Ashley Campbell, and John D. Ng

10:01-10:07 am

Expanding Minimally Invasive Cosmetic Services

John B. Holds

10:07-10:13 am

Expanding Surgical Cosmetic Services

Jeffrey A. Nerad

10:25-10:37 am

Work-Life Balance

William P. Mack

10:37-10:43 am

Mindfulness Exercises

John D. Ng

Anterior Lamella Shortening Following Upper Eyelid Fractionated CO_2 Laser Resurfacing

Karen Brown[1], Makayla McCoskey[1], Alison Watson[2], Natalie Homer[3], Tanuj Nakra[1,4]
[1]TOC Eye and Face, Austin, Texas, United States, [2]Oculoplastic and Orbital Surgery, Wills Eye Hospital, Philadelphia, Pennsylvania, United States, [3]Byers Eye Institute, Stanford University, Palo Alto, California, United States, [4]Department of Ophthalmology, Dell Medical School, The University of Texas at Austin, Austin, Texas, United States

Introduction: Fractionated laser resurfacing is utilized for periorbital rejuvenation.[1-4] Laser resurfacing can be employed as an adjunct or alternative to upper blepharoplasty. While laser resurfacing has been shown to be clinically effective in reducing anterior lamellar redundancy, the degree of anterior lamellar change following CO_2 laser resurfacing has not been studied. We present a quantitative analysis of anterior lamellar change following fractionated CO_2 laser treatment to the upper eyelid.

Methods: We performed a prospective review of patients who underwent upper eyelid fractionated carbon dioxide laser resurfacing. All treatments were performed by a single oculoplastic surgeon (TN). Patients who had previous or concurrent incisional upper blepharoplasty were excluded from this review. The upper eyelid anterior lamella was measured pretreatment and posttreatment by the same surgeon (AW) using a flexible ruler centrally, medially, and laterally at rest and with the skin placed on maximum stretch.

Results: This review yielded 20 eyelids in 10 patients with an average follow up of 9 months (range 5-13 months). Mean pretreatment anterior lamellar measurements at rest were 24.5mm centrally, 19.8mm medially, and 21.6mm laterally. Mean pretreatment anterior lamellar measurements with maximal stretch were 27.4mm centrally, 23.8 mm medially, and 26.4mm laterally. Following treatment with fractionated carbon dioxide laser mean anterior lamellar measurements at rest were 20.9mm centrally, 17.5mm medially, and 17.6mm laterally. Mean posttreatment anterior lamellar measurements with maximal stretch were 24.6mm centrally, 19.8 mm medially, and 20.8mm laterally. The average decrease in length of anterior lamella at rest was 3.6mm (15%) centrally, 2.3mm (12%) medially, and 4mm (19%) laterally. The average decrease in length of anterior lamella with maximal stretch was 2.8mm (10%) centrally, 4mm (17%) medially, and 5.6mm (21%) laterally. The average stretch in anterior lamella pretreatment was 4.9mm centrally, 3.9mm medially, 4.4mm laterally. Post-treatment the average anterior lamella elasticity measured 3.8mm, 2.3mm, and 3.1mm respectively. This correlated with a respective reduction in anterior lamellar elasticity of 24%, 41%, and 30% post-laser. None of the patients developed post-operative adverse events related to their laser treatment.

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Conclusions: Laser resurfacing of the upper eyelids can produce a 10-21% shortening of upper eyelid anterior lamella, supporting its use as an alternative to skin removal for patients with mild dermatochalasis. The reduction in post-laser skin elasticity also demonstrates decreased upper eyelid laxity following laser.

Figure 1

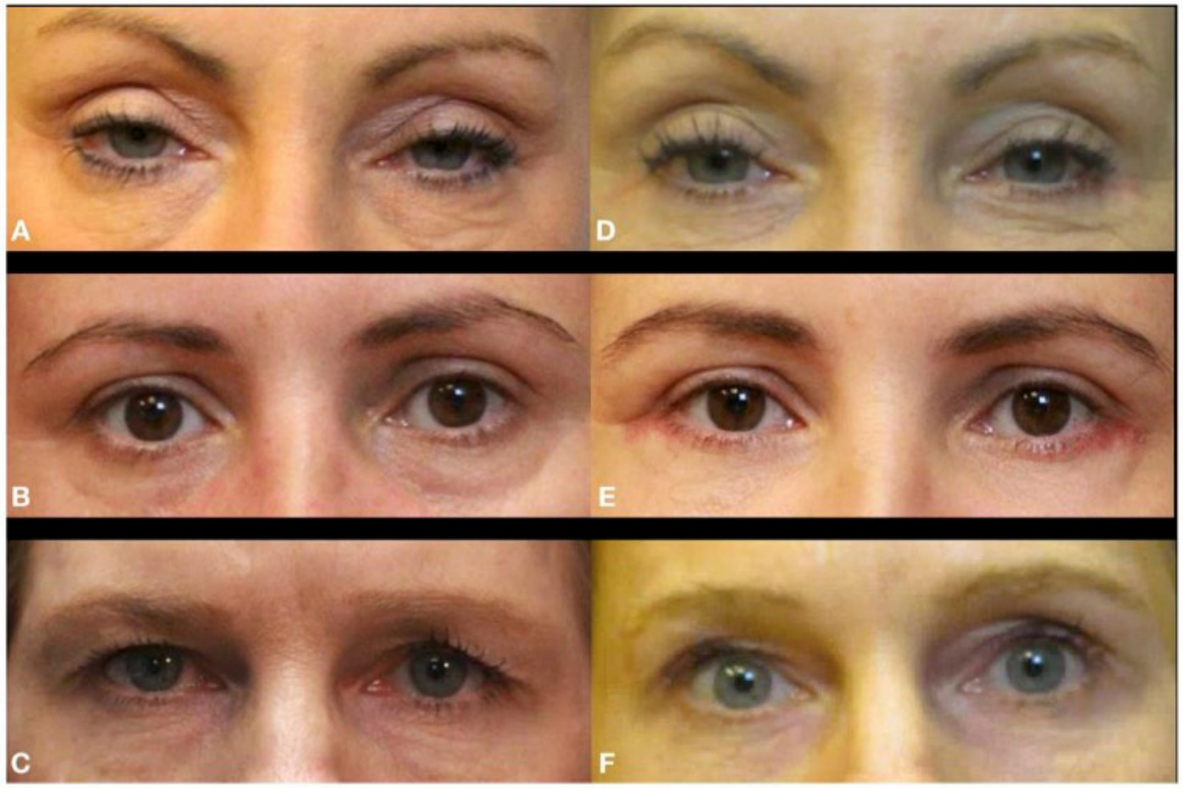

Figure 1. Pretreatment (left) and posttreatment (right) periorbital photographs demonstrating reduced dermatochalasis following upper eyelid fractionated CO2 laser treatment.

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Hemifacial Spasm and Blepharospasm after Filler Injection

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[1]Ophthalmology & Visual Sciences, The Ohio State University Wexner Medical Center, Columbus, Ohio, United States, [2]Ophthalmology, Nationwide Children's Hospital, Columbus, Ohio, United States

Introduction: Cosmetic dermal filler injections have become increasingly common, with over 1 million filler injections administered in 2021- 2022 in the United States.[1] Though soft tissue fillers are considered and marketed as relatively safe, rare severe adverse events have been reported including dermal necrosis, anaphylaxis, vascular occlusion, severe inflammatory reaction with disfigurement, facial paralysis, and permanent vision loss.[2-5] To the authors knowledge, there have been no cases of filler associated hemifacial spasm or blepharospasm in the literature. This report describes an unusual case of unilateral hemifacial spasm and blepharospasm after receiving soft tissue filler to the bilateral face.

Methods: This is a case report of a single patient present to the authors' institution.

Results: A 57-year-old woman with a history of hypertension and hyperlipidemia was referred to Neuro-Ophthalmology clinic for evaluation of left upper lid ptosis and concern for myasthenia gravis. The patient described episodes of her left eye closing involuntarily and blinking more frequently, sometimes triggered by bright lights. She noted that the symptoms had been present for 10 months and began within 2 days of receiving injections of an unspecified type of dermal filler to her bilateral temples and cheeks at a local Medspa. On exam, her afferent visual function was normal. She was observed to have an intermittent left hemifacial spasm and frequent left blepharospasm. Ocular structures were normal.

MRI of the brain and face was negative for any vascular abnormalities. The presence of subcutaneous filler in the left cheek was visualized on imaging (Figure 1). Overall, her clinical presentation was most consistent with hemifacial spasm and blepharospasm due to a compressive etiology from persistent filler deposited adjacent to the bifurcation of the buccal and frontozygomatic branches of the left facial nerve. Direct nerve injury is another potential etiology, although the chronic duration and consistent persistence of the patient's symptoms is less consistent with this hypothesis. It is unclear whether the filler was erroneously injected in the incorrect location or whether the filler migrated shortly after injection.[4,5] The patient declined additional procedures to dissolve the filler and was instead started on oral gabapentin, which significantly reduced the frequency of her spasms.

Conclusions: Soft tissue filler for reflation of the temple region can cause ipsilateral hemifacial spasm and blepharospasm. The authors postulate that this spastic activity is caused by compression of branches of the facial nerve.

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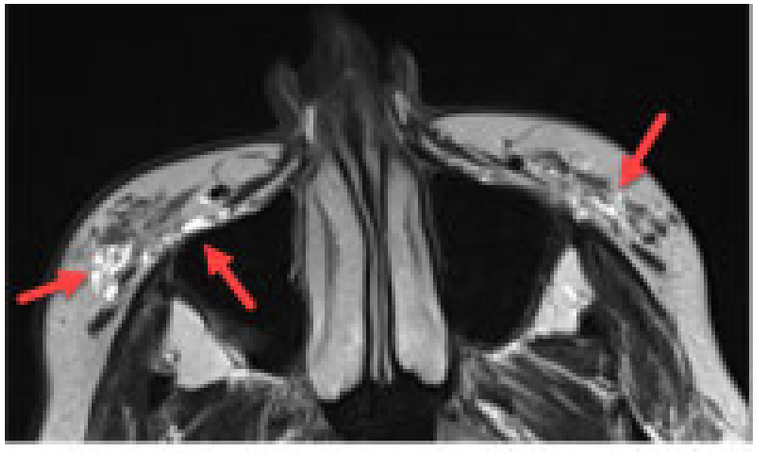
Figure 1



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Hemostatic Net in Oculofacial Surgery: A Simple Technique to Minimize Ecchymosis, Hematoma and Seroma

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[1]TOC Eye and Face, Austin, Texas, United States, [2]Department of Ophthalmology, Dell Medical School, The University of Texas at Austin, Austin, Texas, United States

Introduction: Hemostatic netting has been demonstrated to safely and effectively reduce the incidence of hematoma in rhytidectomy,[1-4] with applications also in breast surgery[5] and skin grafting.[6] We present an expanded use of hemostatic netting in oculofacial surgery.

Methods: Case series describing the application and utility of hemostatic suture netting for oculofacial procedures.

Results: The records of 6 patients who underwent hemostatic net placement in the setting of temporal brow lift were reviewed (Figure 1). An additional 3 patients had undergone hemostatic net placement in the setting of genioplasty with submentoplasty (Figure 2). There was no incidence of seroma or hematoma development in the postoperative period. There was a trend towards reduced ecchymosis. All patients underwent efficient healing without complications.

Conclusions: The application of hemostatic netting has diversified over the past decade, to include prevention of hematoma in rhytidectomy,[1-4] enhanced skin redraping in mastopexy,[5] and hematoma and seroma prevention in skin grafts.[6] We present the technique of a hemostatic net to prevent subcutaneous fluid collection such as seroma or hematoma in the setting of subcutaneous dissection for temporal brow lift.

The hemostatic net provides a simple, minimally invasive method to reduce risk of hematoma or seroma development in oculofacial plastics, with potential applications for oculofacial cosmetic and reconstructive procedures.

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Figure 1

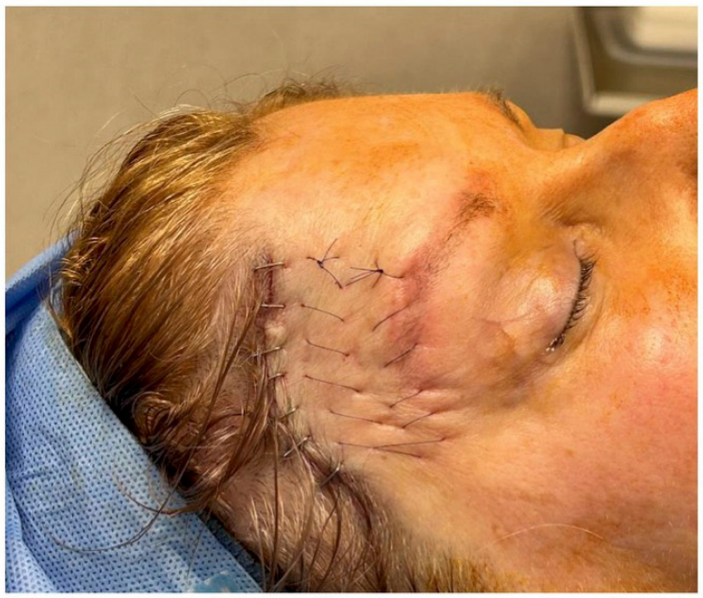

Figure 1. Intraoperative photograph of hemostatic net placement in a patient undergoing pretrichial direct temporal brow lift.

Figure 2

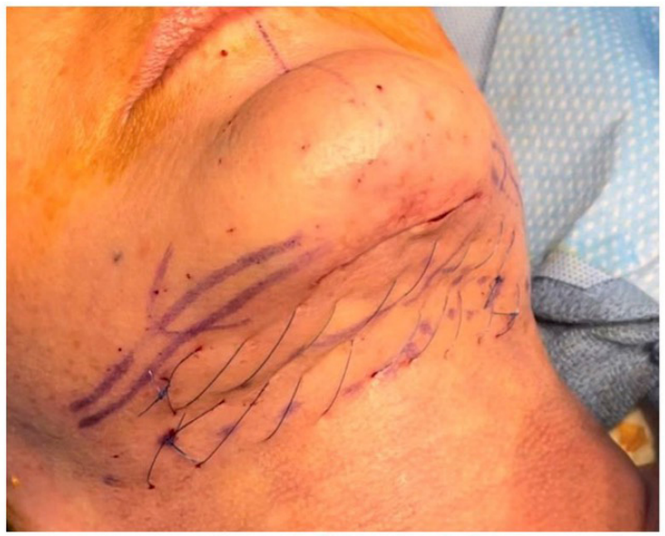

Figure 2. Intraoperative photograph of hemostatic net placement in a patient undergoing genioplasty and submentoplasty.

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Labiomentoplasty during Genioplasty to Reduce the Labiomental Groove

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Introduction: The labiomental fold is the horizontal depression between the lower lip and soft tissue chin pad and is an important feature to consider in genioplasty. Aesthetically, the optimal depth of the labiomental fold is approximately 4mm in women and 6mm in men, located of the junction of the upper and middle third of the chin when measuring from the stomion to the cheilion.[1-2] Alloplastic augmentation genioplasty aims to augment the sagittally deficient chin but poses the risk of deepening the labiomental groove in select patients, especially with horizontal augmentation or in patients with vertical deficiency and an already prominent labiomental fold.[2-5] Various methods have been used to prevent deepening of the groove. Zide et al[5] advocate for intraoperative sculpting of the implant to shorten the implant height in these cases. Rosen et al.[6] describe simultaneous advancement and lengthening of the menton during advancement (osseous) genioplasty with use of hydroxyapatite spacer into the osteomy gap. Carlino et al.[7] address the deepened fold with use of a solid graft (cartilage, cortico-cancellous bone, or commercial chin prosthesis) placed into the concavity to deemphasize the fold. In the current study, the authors illustrate soft tissue manipulation via mentalis redraping to mitigate the risk of a deepened labiomental fold in alloplastic augmentation genioplasty.

Methods: Six patients underwent mentalis redraping with alloplastic augmentation genioplasty with a silicone implant. A similar technique was also used for an additional patient with a prominent labiomental groove who underwent lower face and neck lift without genioplasty. Subperiosteal dissection of the central region of the chin was performed via a submental incision. Dissection was carried out rostrally to the alveolar process. The submental periosteum was fragmented via vertical spreading with a sharp tenotomy scissors, and similarly, the muscle belly was stretched longitudinally. In the patients who underwent alloplastic genioplasty, the silicone implant was placed in a subperiosteal plane in standard fashion and secured to the periosteum using nonabsorbable suture. The edge of freed periosteum and overlying soft tissue of the dissected chin pad were then engaged with nonabsorbable suture and secured to the intact periosteum, creating downward and posterior distraction of the mental soft tissue. The incision was then closed in a layered fashion without tension. Preoperative and postoperative sagittal photos were reviewed in Image J, with attention to the anterior-posterior depth of the labiomental groove.

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Results: Mentalis distraction resulted in stable (+/- 1mm from preoperative measurements) labiomental fold depth in all patients. There were no cases of lower lip incompetence, increased mandibular incisor show, facial nerve injury, sensory injury, implant displacement, or chin ptosis. No patients required revision surgery. All patients were satisfied with the aesthetic results.

Conclusions: Mentalis distraction is a simple technique to help mitigate the risk of deepening of the labiomental sulcus in select patients undergoing augmentation genioplasty.

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Adjunct Botulinum Toxin for Cicatricial Pemphigoid

Liane Dallalzadeh[1], Frank Mei[1], Preston Choi[1], Jennifer Cao[2], Phillip Tenzel[1], Ronald Mancini[1]
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Introduction: To describe use of botulinum toxin as an adjunctive treatment option for blepharospasm and entropion in patients with ocular cicatricial pemphigoid (OCP).

Methods: This is retrospective case series of patients with OCP treated with botulinum toxin injections to the junction of the pretarsal-preseptal lower eyelid orbicularis oculi to address blepharospasm and entropion at a single academic institution. Inclusion criteria included age > 18 years, ocular cicatricial pemphigoid with lower eyelid entropion and resultant lash-ocular surface touch, and concurrent treatment with immunomodulatory therapy. Exclusion criteria included cicatricial or spastic entropion of alternate etiology.

Results: Case 1: A 63-year-old female with history of biopsy-proven mucus membrane pemphigoid presented with bilateral lower eyelid subconjunctival fibrosis and inferior forniceal shortening (Foster grade II) resulting in entropion with lash-conjunctival touch and blepharospasm with orbicularis override (Figure 1). Her disease was currently being treated with rituximab. BTX-A was injected bilaterally with 50U administered to each lower eyelid . She demonstrated improvement in blepharospasm and eyelid position one week later (Figure 2).

Case 2: A 70-year-old female with history of cicatrizing conjunctivitis secondary to OCP presented with bilateral lower greater than upper eyelid entropion. She had undergone 3 surgical entropion repairs without improvement prior to presentation and was currently being treated with cyclophosphamide. She demonstrated four-eyelid entropion with lash-corneal touch and blepharospasm with orbicularis override, with severe photophobia and pain with manipulation of the eyelids limiting examination. BTX-A was injected bilaterally with 50U administered to each lower eyelid.

Case 3: A 66-year-old female with history of biopsy-proven mucus membrane pemphigoid treated with rituximab presented with bilateral lower greater than upper eyelid entropion. Exam of the right eye demonstrated ankyloblepharon with obliteration of inferior fornix and diffuse neovascularization of the cornea (Foster grade IV). Exam of the left eye demonstrated shortening of the inferior fornix with extensive inferior symblepharon (Foster grade III). The patient had undergone serial epilation of lashes in addition to failed bandage contact lens and ocular surface lubrication to address lash-corneal touch. There was bilateral lower eyelid orbicularis

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override (Figure 3). BTX-A was injected bilaterally with 45U administered to each lower eyelid. She reported improvement in irritation and photophobia as well as lower eyelid position of the left greater than right two weeks later (Figure 4), though still required epilation for remaining lash-corneal touch.

All three patients are currently maintained on adjunct injections every 3 months.

Conclusions: Ocular findings of OCP include conjunctivitis, subconjunctival fibrosis, forniceal shortening, and symblepharon with resultant entropion and trichiasis that can lead to vision-threatening keratopathy.[1,2] Patients can also develop secondary blepharospasm, further exacerbating entropion.[3] Traditionally, ocular sequelae are managed medically until disease stabilization because surgical manipulation of the posterior lamella without adequate suppression treatment risks further cicatrization.[4] Here we report improvement in blepharospasm and entropion in three patients with active yet varying grades of disease severity. This non-surgical approach can avoid disease exacerbation while addressing a primary cause for vision loss in OCP.

Figure 1

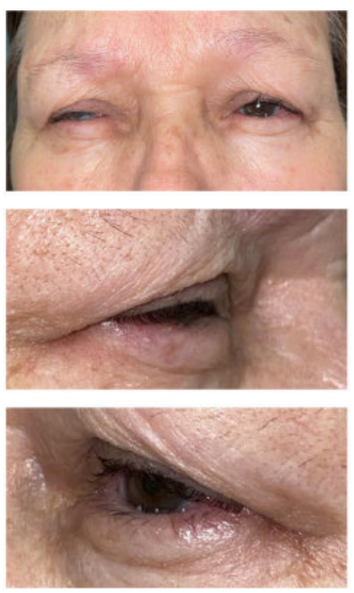


Figure 2

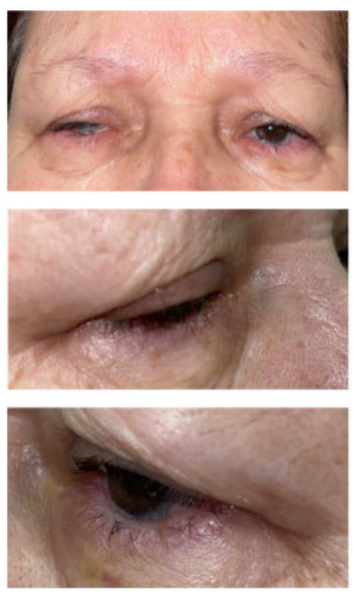


Figure 3

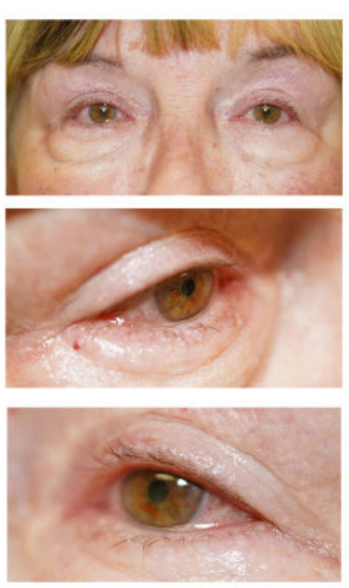
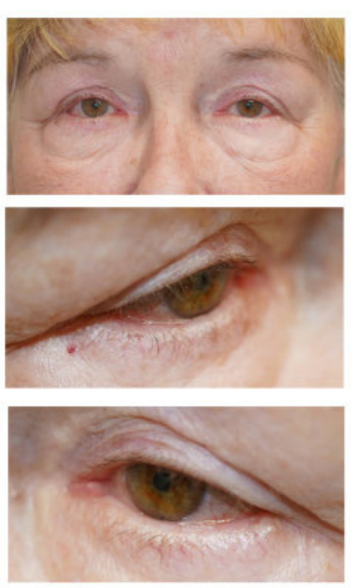


Figure 4



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Examining 5-year Mortality Among Patients with Entropion

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Introduction: Involutional entropion occurs most often in elderly patients and has a prevalence of 2.1%.[1] A case series has demonstrated the 4-year mortality risk among entropion patients undergoing surgical repair was 30%, though the reasoning remains unclear.[2] Our goal was to assess the mortality risk in patients with entropion.

Methods: A retrospective cohort study was conducted using a multicenter database of ~100 million patient records. Patients (≥65 years old) were queried by ICD-10 from 2018-2023 to identify those with a diagnosis of entropion and compared to a control geriatric population without a recorded entropion diagnosis. 1:1 matched propensity score analysis was conducted, adjusting for comorbidities and demographics, to calculate adjusted hazard ratios (aHR) with 95% CI for 5-year mortality risk. aHR was estimated using the Cox proportional hazard model. Kaplan-Meir (KM) analysis was used to estimate survival probability where comparisons between KM curves were compared using the log-rank test. Additionally, a subgroup analysis was performed among entropion patients to examine 5-year mortality risk among patients with and without a history of surgical repair.

Results: 17,581 geriatric patients were identified with entropion. A matched cohort of 9,287 entropion patients was compared to 9,287 geriatric controls. Entropion patients had a significantly higher 5-year mortality risk (aHR[95%CI]=1.15[1.06,1.24], log-rank test: $p<0.001$) compared to patients with no entropion history. In subgroup analysis, a matched cohort of 4,632 of entropion patients with a history of surgical repair were compared to 4,632 entropion patients with no history of repair. Entropion patients with surgical repair had a significantly lower 5-year mortality risk (0.888[0.80, 0.98], log-rank test: $p=0.02$) compared to entropion patients with no history of surgical repair.

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Conclusions: Patients over 65 years old with entropion have a significantly higher 5-year mortality rate compared to those without entropion. While surgical repair is associated with improved mortality risk in these patients, it is likely that those who seek surgical treatment may be more likely to seek care for their other comorbidities as well. With the underlying histology of entropion due to collagen degeneration and elastosis of the tarsal plate and canthal tendons, future studies should examine further associations between entropion and systemic comorbidities that may lead to increased mortality risk.[3]

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Medication-Induced Lymphomatoid Granulomatosis Presenting as a Solitary Periocular Cutaneous Lesion

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Introduction: Lymphomatoid granulomatosis (LYG) is a rare EBV-driven lymphoproliferative disorder, which was previously defined by categorical pulmonary involvement with possible invasion into the skin, central nervous system, liver, and kidneys. However, recent reports have documented confirmed cases of LYG without lung involvement. In this report, the authors present a 70-year-old male with lymphomatoid granulomatosis presenting in the periocular location as a solitary lesion. Lesion morphology initially raised suspicion for basal cell carcinoma. However, histopathologic evaluation with immunohistochemical staining confirmed grade 3 lymphomatoid granulomatosis.

Methods: A retrospective, single-patient case report and review of the literature.

Results: A 70-year-old white male with a history of rheumatoid arthritis (RA) on methotrexate and tofacitinib presented to the ophthalmology clinic with a two-month history of a painful lesion involving the right lower eyelid. The lesion initially appeared as a small papule that had progressively grown. On clinical exam, there was a 4 cm x 2 cm erythematous plaque with central ulceration (Figure 1), initially raising concern for basal cell carcinoma. A shave biopsy was performed, and histopathologic evaluation demonstrated an inflammatory infiltrate consisting of large, atypical B lymphocytes and reactive T cells with areas of necrosis (Figure 2A-B). Atypical B cells were highlighted with CD20, and background reactive T cells were characterized with CD3 (Figure 3A-B). Stains were negative for bacterial and fungal organisms. Epstein-Barr encoding region (*EBER*) in situ hybridization (ISH) was performed, which exhibited EBV-positivity in lesional B cells (Figure 3C). The angiocentric and angiodestructive polymorphous lymphoid infiltrate, along with density of EBV-positive cells, led to the diagnosis of grade 3 lymphomatoid granulomatosis. Patient was referred to the oncology service, and imaging studies revealed no evidence of internal involvement. This patient's lymphoproliferative disease is thought to be secondary to immunosuppressive medications, and discussions with his rheumatologist to consider discontinuation and alternative treatments.

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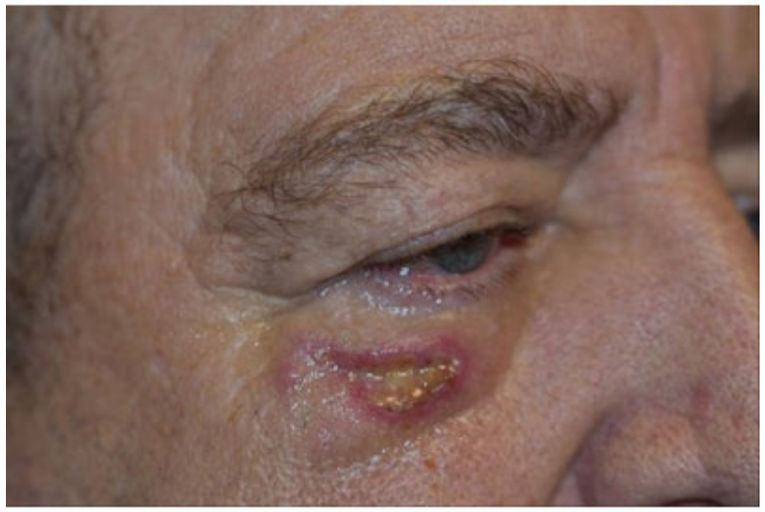
Conclusions: This case describes a unique case of LYG, arising in the setting of immunosuppression as a singular cutaneous lesion on the right periocular region without pulmonary involvement and diagnosed via skin biopsy. Cutaneous lesions of LYG rarely occur on the head and neck, and the majority of LYG present with pulmonary nodules. Previously reported cases of ophthalmic LYG had internal organ involvement and diagnosed via lung biopsy. LYG may be associated with underlying immunosuppression, and MTX-induced LYG has been well-documented in the literature. Due to the rarity of the disease, there is limited data regarding treatment options. Management of these patients often requires a multidisciplinary approach. While chemotherapy has been shown to be efficacious for high-grade LYG, cases of medication-induced LYG have been reported to resolve with cessation of immunosuppressants

Figure 1



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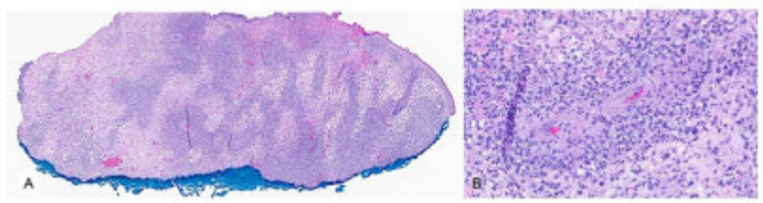

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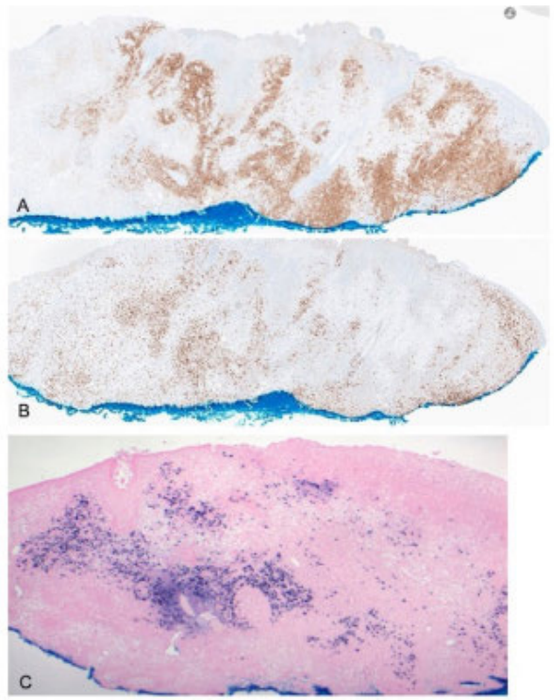

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"No Time to Waste:" Periocular Administration of Rabies Immunoglobulin for Post-Exposure Prophylaxis

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Introduction: Rabies virus causes an infection of the central nervous system (CNS) that is uniformly fatal if not promptly and fully treated with post-exposure prophylaxis (PEP).[1,2] This case illustrates a technique and outcomes of periocular infiltration of rabies immune globulin (RIG) in a high-risk exposure.

Methods: A 42-year-old female presented 6 days following a bite injury to her left upper eyelid by a bat in Mexico. Under recommendation of the local Medical Officer of Health, pre-septal tissues of the left ocular adnexa were treated with 150 IU/mL solution of RIG. Using aseptic technique and a 30G needle, 1.5 cc of RIG were injected broadly over the central left upper eyelid wound site. Since the rabies virus spreads proximally to the CNS via sensory and motor nerves, 3 cc of RIG were used to surround the supraorbital and supratrochlear nerves, as well as the temporal and zygomatic branches of the facial nerve. The remaining 5.5 cc (825 IU) of the patient's weight-based RIG dosing were infiltrated by emergency medicine around the right hand, another site of contact with the bat. A 4-step rabies vaccination series was administered to the left deltoid.

Results: RIG may be associated with local and systemic pro-inflammatory adverse events.[1] Immediately post-procedure, significant painless left upper eyelid swelling, erythema and chemosis were encountered, which completely self-resolved after 24 hours. No orbital inflammation or systemic inflammatory response was noted. The patient remained free of rabies symptoms at 6-months' follow-up.

Conclusions: While practitioners can be hesitant to deliver RIG periocularly,[3] complete infiltration of primary wound sites is essential in preventing mortality in rabies.[1,2] We illustrate a technique to thoroughly infiltrate periocular wounds and adnexal nerves in offering complete PEP.

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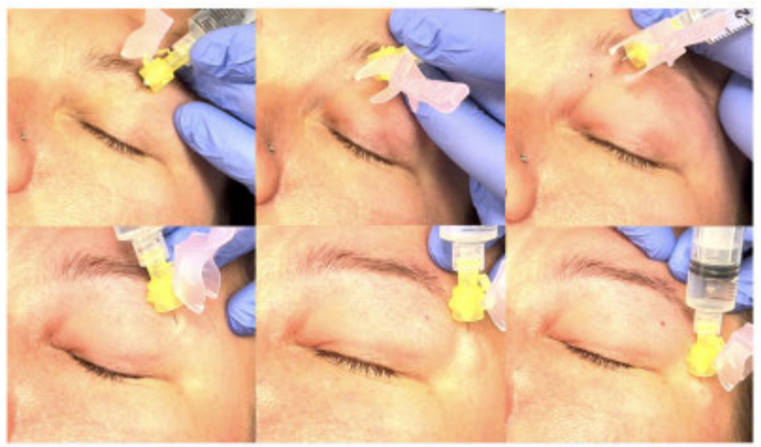
Figure 1



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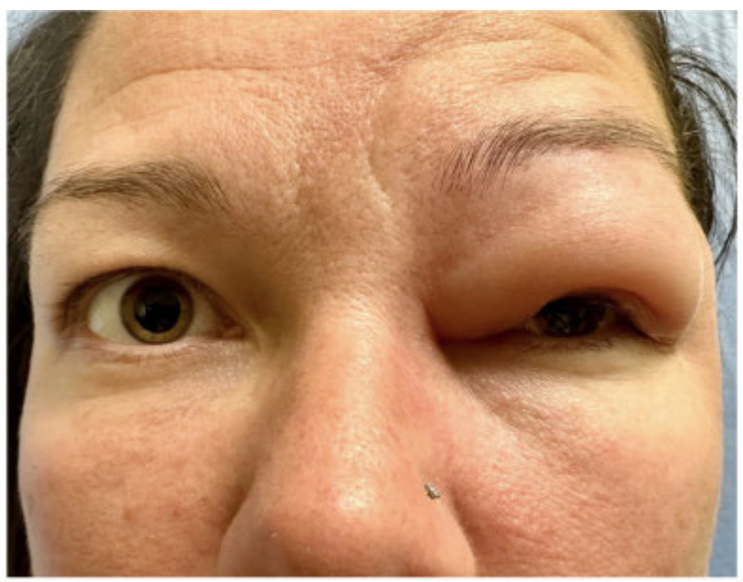

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Tarsal Advancement Onlay: A Novel Adjunctive Treatment For Euryblepharon

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Introduction: Euryblepharon is a congenital lid defect characterized by increased vertical separation of the temporal aspect of the palpebral fissure, causing separation of the palpebral conjunctiva from the globe (1,2). This can lead to lagophthalmos, exposure keratitis, poor lubrication of the ocular surface, epiphora and chronic conjunctival injection. Current techniques include canthoplasty, full thickness skin graft, midface lift and resuspension (3), vertical lengthening of the lower lid with a spacer graft and tarsorraphy with varying degrees of success. We present a case report of employing currently used modalities but constructing a previously described lateral tarsconjunctival onlay flap (4) to improve lid position, lagophthalmos and to reduce exposure keratitis.

Methods: A lateral tarsoconjunctival onlay flap is applied to complement previously established modalities used in management of euryblepharon. A tarsal advancement onlay flap is constructed using a 4mm by 4mm laterally based upper lid tarsoconjunctival flap that is then secured to the de-epitheliazed gray line of the lateral lower lid with interrupted 5-0 polyglactin sutures. This flap, as opposed to a traditional tarsorraphy, provides lower lid support not only in a superior vector, but also in a posterior one due to the levator's inherent direction of action.

Results: A 6-year-old female patient with Down's syndrome and a history of previous bilateral lateral canthoplasty for right greater than left lower lid euryblepharon and ectropion presented with recurrent right euryblepharon causing right-sided epiphora, discharge, punctate keratitis and chronic palpebral conjunctival injection. A lateral canthotomy and inferior cantholysis was performed. An incision through the conjunctiva and eyelid retractors was created inferior the lower lid tarsus and extended along the horizontal extent of the eyelid. The lower lid retractors were recessed, creating a recipient bed for a dermal substitute. After securing the dermal substitute, a 4mm lateral tarsoconjunctival onlay flap was constructed and secured to the de-epithelialized lid margin as previously described, followed by lateral canthoplasty.

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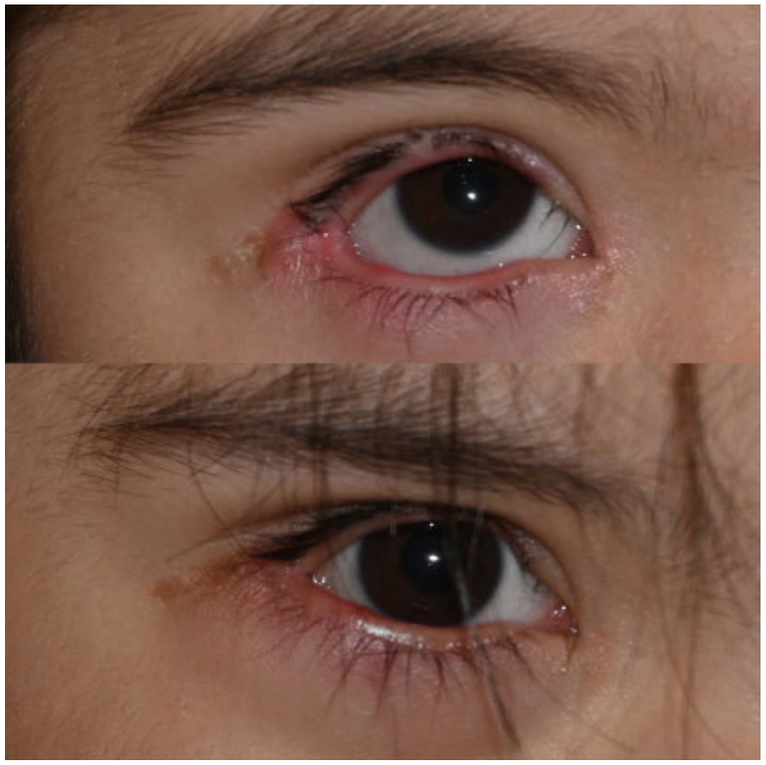
Conclusions: Euryblepharon is exceptionally challenging due to shortening of the anterior and posterior lamella, leading to lagophthalmos and exposure keratitis. Although a lateral canthoplasty and full thickness skin graft may be beneficial, a full thickness skin graft is an undesirable modality the pediatric population. Our application of a previously described lateral tarsoconjunctival onlay flap in conjunction with lateral canthoplasty and possibly a lower spacer graft may have added benefit. Longer followup and a greater number of patients would help support this benefit in these difficult cases.

Figure 1



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Tarsal Dermoid Cyst of the Upper Eyelid in an Adult

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Introduction: Dermoid cysts are benign choristomas that consist of keratinized epithelium and adnexal structures, and they account for up to 9% of orbital masses. Less commonly, they occur confined to the eyelid and have only rarely been reported involving the tarsal plate in children. We report the first case of an eyelid dermoid cyst of the tarsal plate in an adult.

Methods: This is a report of a single case. The presentation, management, histopathology, and result are reviewed.

Results: A 56-year-old man with familial adenomatous polyposis presented with a right upper eyelid mass that recurred one year after two attempted transconjunctival excisions with an outside surgeon. Examination demonstrated a cystic anterior lesion visible below the conjunctiva causing mechanical ptosis (panel A). The remaining ophthalmologic examination was unremarkable. The patient underwent excision of the mass via an eyelid crease incision. On dissection of the pre-septal plane, the lesion appeared cystic (panel B) and was found to involve full-thickness tarsus. The lesion was excised *in toto*, leaving a central, one-third tarsal defect. Re-approximation of the tarsal edges was attempted; however, this resulted in an eyelid kink. Allo- and autografts were considered, but the decision was made to allow secondary intention healing. Histopathological examination of the specimen revealed a cystic lesion lined by stratified squamous epithelium with cutaneous adnexal structures in the fibroconnective tissue wall, including sebaceous glands at 80x magnification (panel C), diagnostic of a dermoid cyst. The patient had resolution of the ptosis on one month follow-up (panel D).

Conclusions: Eyelid dermoid cysts involving the tarsus have only been reported in the literature in children. There are reports of eyelid dermoid cysts in adults that do not involve the tarsus. To the authors' best knowledge, this is the first reported case of an eyelid dermoid cyst with tarsal involvement in an adult patient.

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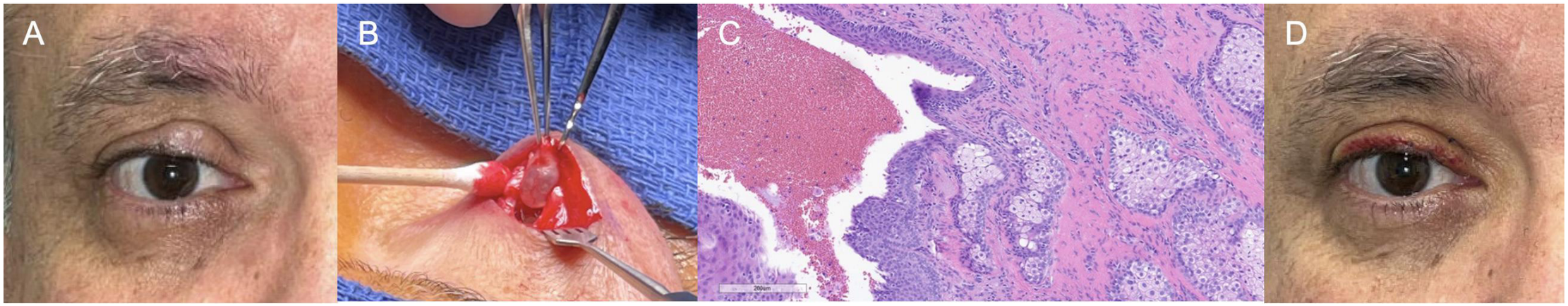
Figure 1



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What's Hiding in the Clamp? A Histopathologic Review of Müller's Muscle-Conjunctival Resection

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Introduction: To identify the composition of tissue resected during internal ptosis surgery using a Müller's muscle-conjunctival resection (MMCR) technique.

Methods: Single-center case series of adult patients undergoing MMCR surgery for ptosis, performed with three surgeons using the same surgical technique. While performing Müller's muscle-conjunctival resection, tissue resected within the Putterman ptosis clamp was evaluated using histopathologic techniques, and categorized as containing smooth muscle (Müller's), striated muscle (levator), or conjunctiva only. Histopathology was interpreted by two ophthalmic pathologists (MH, AK).

Results: 222 MMCR procedures were performed on 126 patients between 2023-2024. 211 histopathologic samples were examined. Of these, 199 (94%) contained smooth muscle. Striated muscle was identified in 2 samples (1%). 12 samples (6%) contained conjunctiva only.

Conclusions: Tissues previously described in MMCR surgery have varied. While one study (n=37) reported 87.5% of specimens containing minimal (if any) smooth muscle, others have reported both smooth and skeletal muscle (n=13, 16).[1–4] Our study provides a significantly larger sample size than otherwise shown in the literature and may offer further insight into the mechanism of Müller's muscle-conjunctival resection.

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Dacryoadenitis Secondary to Emotional Lacrimation

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Introduction: This is a case report describing recurrent episodes of dacryoadenitis secondary to emotional lacrimation and subsequent successful treatment.

Methods: The details of the case were obtained from the patient chart. Patient consent was obtained.

Results: A 53 year-old Caucasian female with no significant medical history who presented in February 2023 due to a 15 year history of bilateral lacrimal gland enlargement and severe bilateral periorbital edema after crying due to emotional reasons. Her symptoms would take several days, occasionally up to a week to resolve. She reported that episodes never occurred after other causes of lacrimation, such as with a conjunctival foreign body or hypersecretion in reaction to wind or cold. The symptoms were significantly distressing to the patient and she would attempt to suppress her emotions and avoid situations in which she may cry. She was previously evaluated by another oculoplastic specialist in 2016. The patient presented after an episode of emotional lacrimation and was noted to have 3+ periorbital edema and lacrimal gland enlargement (Figure 1). At that time, a CT scan was completed which was within normal limits. Notably, though, her symptoms had resolved by the time the CT scan was done. Inflammatory blood markers were also normal. Outside of these episodes related to emotional lacrimation, her exam was within normal limits (Figure 2). Each episode would resolve with a methylprednisolone taper.

Two units of botulinum toxin A were injected into each lacrimal gland in an attempt to reduce the severe periorbital inflammation associated with her emotional lacrimation. After the first injection of botulinum toxin injection, patient was instructed to return in 3 weeks for evaluation and was asked to cry the evening before her appointment. She returned with only mild pretarsal edema (Figure 3). She has since been receiving 2 units of botulinum toxin A to each lacrimal gland every three months. She reports a significant improvement in her quality of life. Interestingly, she reports her daughter, who is in her late 20s, has started to have mild similar episodes after emotional lacrimation

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Conclusions: This is, to our knowledge, the first reported case report of severe dacryoadenitis related to emotional lacrimation. While it is known that botulinum toxin A can treat functional epiphora, it has not been reported as a treatment modality for dacryoadenitis[1,2]. This presentation demonstrates a treatment modality for noninfectious, recurrent idiopathic dacryoadenitis secondary to emotional lacrimation.

Figure 1

Figure 2

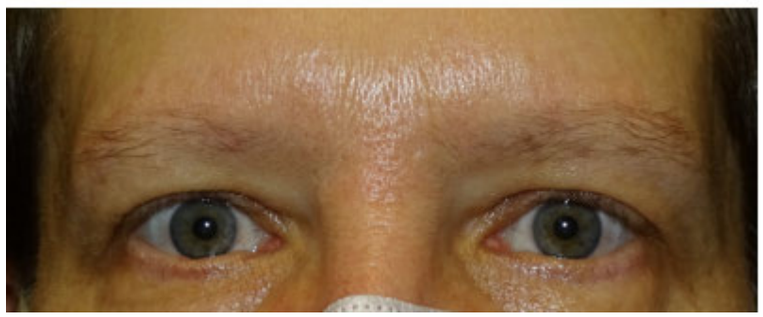
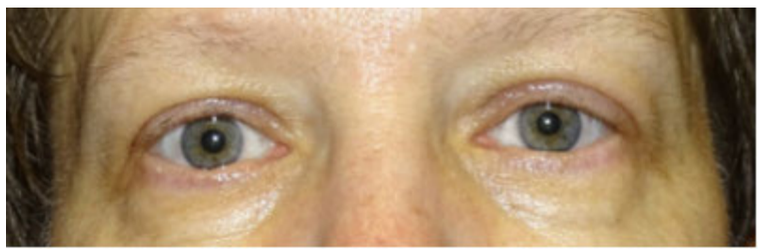


Figure 3



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Surgical Rehabilitation using Ultra-Thick Human Amniotic Umbilical Membrane Tissue after Devastating Diesel Fuel Injury to the Orbit

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Introduction: A 52-year-old man was seen in the emergency room for periorbital swelling, pain, and vision loss following a high-pressure hydraulic diesel fuel injury to the left face. Clinical examination revealed profound proptosis, left-sided ophthalmoplegia, and no light perception vision. CT scan imaging demonstrated globe rupture, as well as diffuse air and soft tissue infiltration of the orbit with extension into the optic canal and proximal cavernous sinus. An uncontrollable chemical cellulitis of the left orbit followed, resulting in total vision loss, tissue necrosis, and debilitating neuropathic pain. Aggressive measures following the injury included intravenous steroids and antibiotics, globe evisceration and multiple orbitotomies for debridement; however, all measures failed to salvage the orbit. High-pressure diesel fuel injury cases are exceedingly rare. Severe consequences, including need for wide surgical excision, have previously been reported in the literature. The fuel is injected through the skin with deep penetration, resulting in major loss of tissue. We document the surgical rehabilitation of a degenerate orbit utilizing ultra-thick human amniotic umbilical membrane tissue (UT-hAMT) that resulted in successful secondary placement of an orbital implant, almost complete restoration of extra-ocular motility, and reconstruction of periocular eyelid architecture.

Methods: Clinical review of a high-pressure diesel fuel injury to the left orbit with subsequent periorbital reconstruction utilizing UT-hAMT.

Results: High-pressure diesel fuel injuries to the orbit lead to deep tissue penetration, resulting in a profound and rapidly progressive chemical cellulitis that ultimately leads to an orbital compartment syndrome, compressive optic neuropathy, and debilitating pain. Oftentimes these patients have such profound tissue necrosis that prevents reconstruction and results in exenteration. We describe our experience with successful anopthalmic socket reconstruction with secondary placement of an orbital implant wrapped in UT-hAMT as well as forniceal reconstruction of the upper and lower eyelids. Full-thickness skin grafting was used in surgical correction of the cicatricial ectropion of the lower lid. The patient had almost complete restoration of his extra-ocular motility and is currently undergoing fitting for ocular prosthesis.

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Conclusions: Cryopreserved ultra-thick human umbilical amnion is a novel adjunct in the reconstruction of the anophthalmic socket after devastating injury resulting in severe tissue loss and fibrosis. UT-hAMT has excellent regenerative properties that promote differentiation of adjacent tissues that is useful for wound healing in cases with extensive tissue deficiency. Because of its anti-inflammatory properties and tectonic support, UT-hAMT allows for satisfactory results in the challenging management of anophthalmic sockets that require secondary placement of an orbital implant and restoration of the upper and lower fornices.

Figure 1

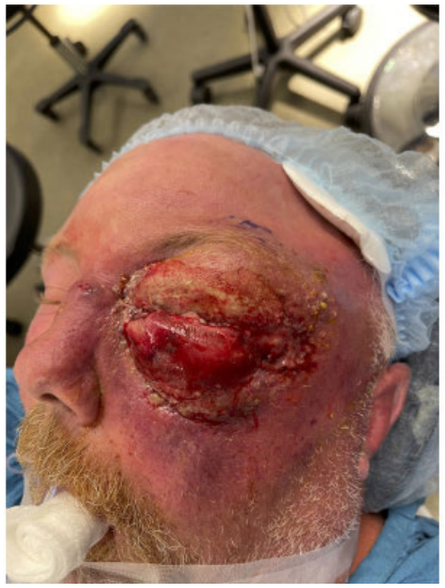
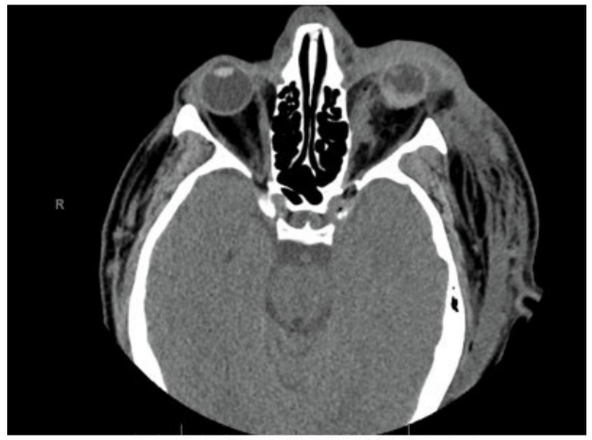


Figure 2



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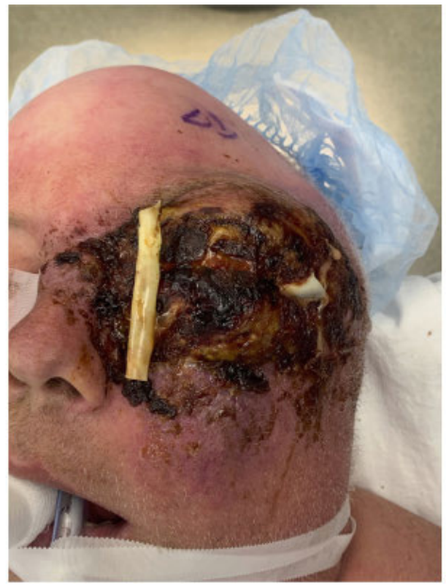

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Figure 4

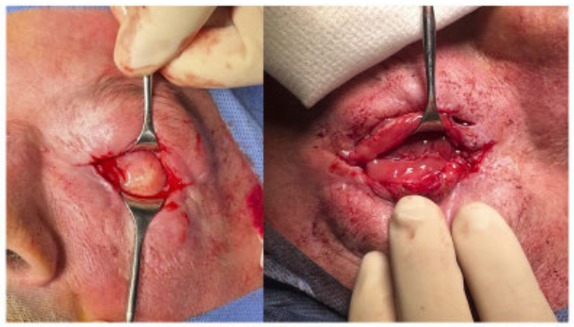

Figure 5

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The Utility of Dynamic CT imaging with Pre- and Post-Valsalva Maneuvers for Confirmation of Suspected Orbital Varices

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Introduction: This case highlights the application of pre- and post-Valsalva maneuver in CT imaging for the conclusive assessment of orbital varix, a rare orbital tumor.

Methods: Case report and review of literature.

Results: A 71-year-old female presented with a singular episode of bilateral transient vision loss after bending at the waist. She denied diplopia. Exam noted 20/20 vision bilaterally (OU), normal intraocular pressures OU, and full extraocular movements and visual fields OU. There was no proptosis. Initial CT identified a left intraconal mass (13 x 8 x 8 mm) between the left optic nerve and inferior rectus with initial radiographic suspicion for a cavernous hemangioma. While biopsy was considered, the decision was made to observe with follow-up imaging.

A subsequent MRI performed 3 months later showed decreased interval size of the mass, suggesting an orbital venous varix as the more likely etiology given the fluctuation in size between examinations. For further evaluation, the patient underwent thin cut CT of the orbits with and without Valsalva maneuver to evaluate for dynamic change in size of the lesion. The non-contrast CT in the patient's resting state displayed a small ovoid structure adjacent to the optic nerve extending posteriorly toward the apex (Figure 1A and 1C). Contrast-enhanced CT during Valsalva maneuver revealed a marked increase in size with resultant proptosis, confirming the suspicion of an orbital varix (Figure 1B and 1D).

Conclusions: An orbital varix is a rare orbital tumor, representing less than 1.3% of all orbital pathology.[1] Variability in size of a lesion between examinations should raise suspicion for an orbital varix. This study underscores the utility of CT imaging with dynamic Valsalva maneuver for definitive evaluation of suspected orbital varix. The ability to visualize changes in size proves instrumental in distinguishing this condition from other orbital pathologies, enhancing diagnostic capabilities in clinical practice and preventing morbidity associated with orbital biopsy. We thus recommend utilizing the Valsalva maneuver for any orbital lesion suspicious for a varix. While most varices may be carefully monitored, intervention may be indicated if there are recurrent thromboses, severe proptosis, pain, or optic neuropathy.[2] Interventions include endovascular/cyanoacrylate embolization, alcohol sclerotherapy, and surgical excision.[3, 4] Of

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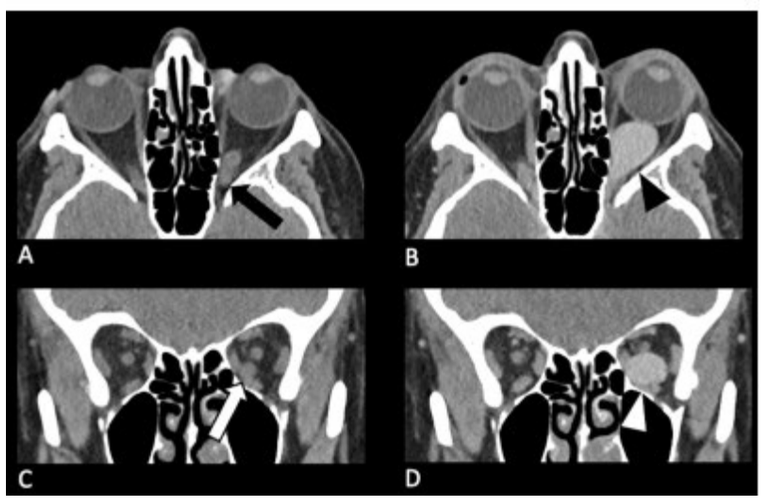
note, surgical intervention can be very challenging and high risk due to collapsed state of the varix while supine and the high risk for hemorrhage, given the friable nature of the lesion.[2,3]

Figure 1



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Utilization of Hyperbaric Oxygen Therapy in Oculoplastic Surgery: A Case Series

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Introduction: Hyperbaric oxygen therapy (HBOT) has emerged as a versatile tool in managing an array of medical conditions, such as tissue ischemia and wound healing. HBOT is well utilized in other medical subspecialties, such as plastic surgery and burn management, however, HBOT is not yet routinely utilized in ophthalmic plastic and reconstructive surgery. Data exists to support the utility of hyperbaric oxygen in many conditions encountered within oculofacial surgery, such as soft tissue necrotizing infections, and for retinal vascular events, which can occur as a complication of aesthetic injectables or orbital surgery. A series of ophthalmologic and oculofacial cases treated with HBOT as adjunct therapy are reviewed, including a 38-year-old woman with acute hyaluronic acid filler-associated blindness, a 44-year-old man with orbital necrotizing fasciitis, and a 47-year-old man with a retinal vascular event one day after orbital surgery.

Methods: The authors additionally explore the unique and diverse mechanisms of action of HBOT, which facilitate its efficacy in varied pathophysiologic conditions, and review supporting literature to utilize HBOT in oculofacial plastic and orbital surgery. For this case series, all protected patient information was collected in a HIPAA-compliant fashion with manuscript adherence to the tenets of the Declaration of Helsinki.

Results: Conclusions: Within this report, HBOT was utilized as a component of multi-modal management, resulting in favorable clinical outcomes despite a guarded initial visual prognosis. We aim to highlight the utility of hyperbaric oxygen, a relatively safe and impactful adjunct therapy for visual and life-threatening orbital and oculofacial conditions.

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Figure 1

Figure 2

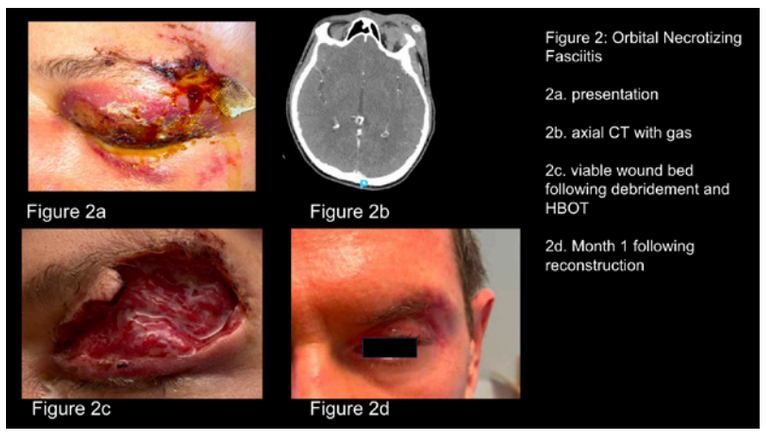
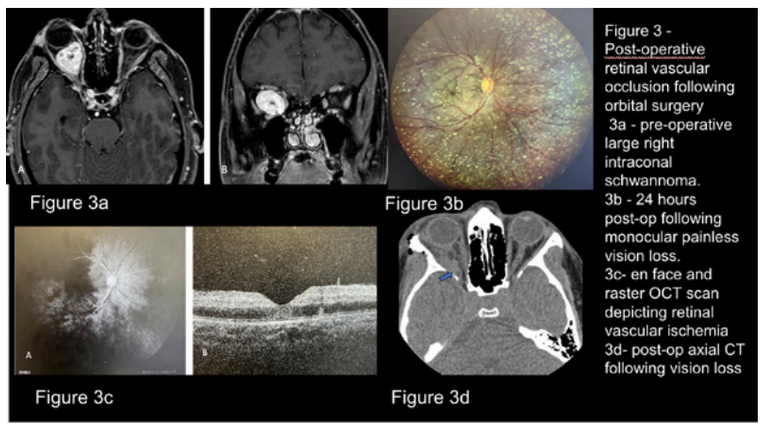


Figure 3



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Intravascular Lobular Capillary Hemangioma of the Temporal Artery: A Case Report

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Introduction: Lobular capillary hemangiomas (LCHs), previously referred to as pyogenic granulomas, are common, benign, vascular tumors that typically present as solitary, painless, well-circumscribed red papules or nodules and arise in the skin and mucous membranes of children and young adults.[1] It has been hypothesized that LCHs may form as a hyperproliferative vascular response to various factors such as trauma, chronic irritation, hormonal changes, medications, and viral infections.[1] On histology, LCH consists of proliferation of capillaries in a loose lobular configuration within a fibromyxoid stroma.[2]

LCHs have also been described to arise from other tissues, rarely from within vessels. Intravascular LCHs (IVLCH) were first reported in 1979 and may present as subcutaneous nodules with nonspecific features, typically in the upper extremity or neck veins of young women.[3] Here, we present a case of an IVLCH of the temporal artery, which has very rarely been described in literature.

Methods: A single patient was examined and had a temporal artery biopsy to rule out vasculitis. A review of literature was performed in PubMed using the terms “lobular capillary hemangioma,” “intravascular,” “intravenous,” and “temporal artery.”

Results: A 60-year-old male presented for biopsy of a left temple mass to rule out vasculitis. He had developed a palpable, tender mass three weeks prior to presentation without a significant increase in size. He reported intermittent blurry vision, headaches, intermittent jaw pain, bilateral shoulder and neck pain, and fatigue. He had a history of hypertension, gastroesophageal reflux disease, benign prostate hyperplasia and a remote history of right-sided facial fractures. On serology, his complete blood count and C-reactive protein were within normal. His comprehensive metabolic panel was unremarkable. Ultrasound of the left forehead identified a focal outpouching of a blood vessel with a thickened wall and arterial flow. Pathology of the lesion demonstrated numerous capillaries amidst a fibromyxoid stroma arising within a preexisting vessel. CD31 stain highlighted the numerous capillaries within the lesion.

Figure 1. A. Numerous capillaries amidst a fibromyxoid stroma (hematoxylin and eosin stain at 200 magnification). B. CD31 stain highlighting numerous capillaries within temporal artery lesion (at 200 magnification).

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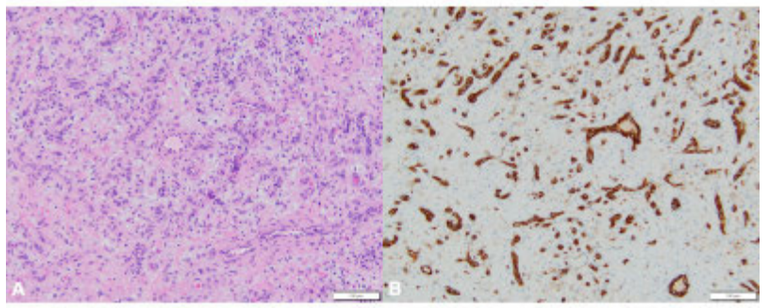
A literature search only revealed two prior reports of an intravascular lobular capillary hemangioma of the temporal artery. In both prior cases, one of the 27-year-old man and another of a 47-year-old man, the patient presented acutely with a tender nodule of the right temple.[4,5] Notably, our patient was older that the previously described cases.

On ultrasound an IVLCH may appear as a solid lesion lying wholly within the lumen of a superficial vein. The differential diagnosis for an IVLCH include vascular-related entities including angiosarcoma, intravascular papillary endothelial hyperplasia (Masson's tumor), cyst, thrombus, AV fistula, among other disease entities.

Conclusions: While lobular capillary hemangiomas are common benign vascular tumors, they rarely present within the lumen of a vessel. There have only been two prior cases of an intravascular lobular capillary hemangioma arising from the temporal artery reported in literature. Although rare, intravenous lobular capillary hemangioma should be considered in the differential for temporal artery pathology.

Figure 1



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Metastatic Neuroendocrine Carcinoma Masquerading as an Intraconal Hemorrhagic Cavernous Hemangioma

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Methods: Case report and review of the literature.

Results: An 89-year-old gentleman with a history of hypertension and stroke presented with a one-day history of right sided proptosis and acute vision loss. Exam was consistent with compartment syndrome which was temporized with canthotomy and cantholysis. Computed tomography (CT) of the orbits demonstrated a large well circumscribed 3.3cm in greatest dimension intraconal mass with heterogeneous enhancement consistent with cavernous hemangioma (Figure 1). Magnetic resonance imaging (MRI) supported this radiographic diagnosis (Figure 2). Due to rapid onset of presentation and the imaging findings, the presumed diagnosis was hemorrhagic cavernous hemangioma. He underwent orbitotomy for mass removal. Due to the size of mass and the intraconal location abutting the medial rectus muscle, the orbitotomy was performed via a transconjunctival approach with takedown of the medial rectus muscle. As the medial rectus muscle was transected and reflected for exposure, there was noted to be an adherent tumor with gross infiltration of the medial rectus muscle belly. The tumor was debulked as much as safely possible but without gross total resection due to the infiltrative and adherent nature of the mass. Histopathologic analysis was consistent with high-grade neuroendocrine carcinoma, metastatic from the gastrointestinal tract.

Conclusions: Metastatic neuroendocrine carcinoma is a rare cause of orbital mass lesions.[1-3] Typical radiographic features include well-circumscribed borders and heterogeneous or minimal contrast enhancement.[3,4] Magnetic resonance imaging remains the imaging of choice for these tumors.[4] Treatment options for metastatic disease includes radiation, hormonal or chemotherapy.[2] Overall prognosis depends on the degree of atypia present on histological evaluation, but is generally poor.[5]

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Figure 1

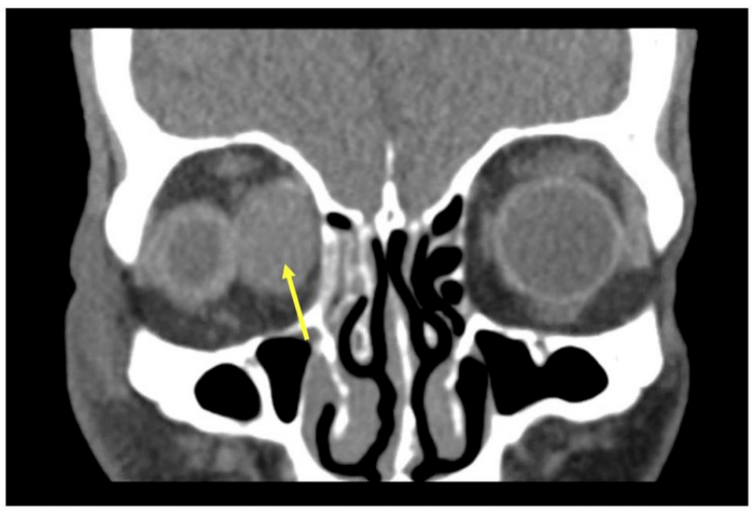

Figure 1. Computed tomography (CT) of the orbits demonstrating a large well circumscribed medial intraconal mass (arrow).

Figure 2

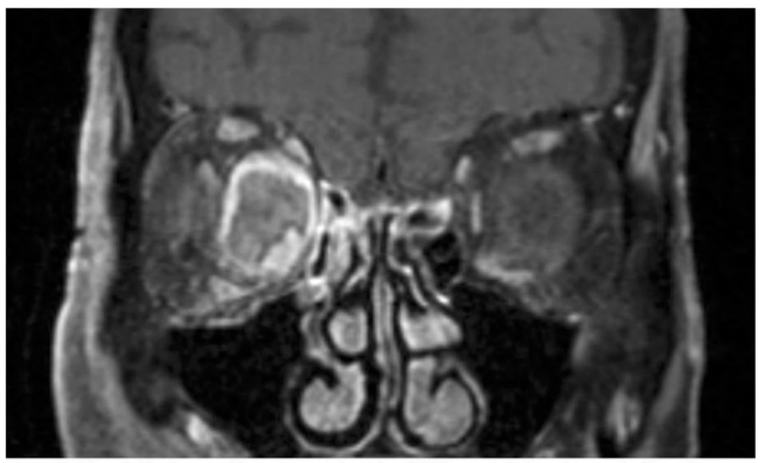

Figure 2. T1-weighted magnetic resonance imaging (MRI) coronal view demonstrating a large peripherally enhancing well circumscribed mass in the medial intraconal space of the right orbit.

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Nasolacrimal Duct-Ectomy – The Minimally Invasive Medial Maxillectomy

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Introduction: Tumors within the nasolacrimal duct (NLD) are traditionally managed utilizing an open medial maxillectomy. While this has yielded satisfactory outcomes, removal of bone may not be necessary when the tumor is contained within the nasolacrimal sac and duct. In addition, the lateral rhinotomy incision can have suboptimal aesthetic results. We present two patients with squamous cell carcinoma extending into the duct and treated with a novel maxillectomy-sparing technique.

Methods: Case series.

Results: Patient 1: A 60-year-old male presented with known conjunctival papillary squamous cell carcinoma (SCC) of the right lower eyelid with extension into the lacrimal sac. Surgery entailed removal of the caruncle, lower canaliculus, and overlying skin. Through this existing cutaneous incision, the lacrimal sac was removed. Then, Kerrison rongeurs were used to remove the frontal process of the maxilla, as well as the anterior wall of the maxillary bone overlying the length of the NLD canal to the level of the nasal ala. Complete excision of the duct was accomplished without the need for a lateral rhinotomy incision or powered tools. The distal margin of the duct was free of tumor. Post-op scan showed a well healed maxilla.

Patient 2: An 81-year-old male receiving chemotherapy for mantle cell lymphoma presented with recurrent cutaneous SCC affecting the right medial canthus and lacrimal sac. The identical modified NLD resection was performed. After removal of the affected skin, the adjacent subcutaneous and anterior orbital tissue was excised along with the nasolacrimal duct. Pathologic examination revealed a free distal margin. The patient tolerated the procedure well.

Conclusions: These cases demonstrate successful implementation of a modified surgical approach for NLD removal. This technique offers direct visualization of the nasolacrimal system, and thorough examination of the surrounding bony and soft tissue, enabling preservation of tissues that are found to be uninvolved, and requires a less extensive resection than a traditional medial maxillectomy. No powered tools were required, and the procedure was completed with the existing eyelid incision and avoiding a lateral rhinotomy incision. For patients with soft tissue tumors within the lacrimal sac and duct, this approach can be considered.

Unilateral Entropion as the Presenting Sign of Orbital Lymphoma: A Case Series

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Introduction: The literature describing entropion or enophthalmos as the presenting sign of lymphoma is sparse and often involves both eyelids.[1-3] This abstract highlights two distinct cases of unilateral entropion that were discovered to be related to underlying lymphoma.

Methods: The details of the cases were obtained from the patient charts.

Results: A 72-year-old male presented to oculoplastic surgery in 03/2023 with a two-month history of entropion of the left lower eyelid (LLL) (Figure 1). The patient had a history of mantle cell lymphoma diagnosed in 2010, not previously present in the orbit, which was in remission after treatment with six cycles of rituximab and bendamustine. He had a recurrence of mantle cell lymphoma in the neck in 2020. Given that biopsy of a right neck lymph node revealed low-grade mantle cell lymphoma, observation was chosen at that time and no treatment was pursued. The patient was noted to have an entropion of the LLL as well as a unilateral conjunctival lesion on the left (Figure 2 and 3). The patient underwent conjunctival biopsy with flow cytometry and LLL entropion repair via lateral tarsal strip and capsulopalpebral fascia reattachment in 05/2023. Biopsy was consistent with known history of low grade, CD5 mantle cell lymphoma. Computed tomography at that time revealed cervical, pelvic, and intraabdominal lymphadenopathy. Pancreatic head mass biopsy in 07/2023 revealed mature B cell lymphoma. The patient was last evaluated by oculoplastic surgery in 09/2023, at which point he had started on rituximab therapy per oncology. Physical examination at postoperative visit in 09/2023 revealed the conjunctival mass and entropion had resolved (Figure 4).

The second case involved a 61-year-old male who presented to oculoplastic surgery in 2019 with recurrence of right lower eyelid (RLL) entropion that was initially repaired by another surgeon approximately one year earlier. The patient was found to have bilateral inferior conjunctival forniceal masses on exam. He had no known history of lymphoma. The patient underwent bilateral conjunctival biopsy with flow cytometry and RLL entropion repair via lateral tarsal strip and capsulopalpebral fascia reattachment in 2019. Biopsy of both conjunctival lesions were consistent with marginal lymphoma. The patient was referred to oncology and started on systemic chemotherapy. He presented again to oculoplastic surgery in 01/2023 with entropion of the LLL without conjunctival masses, likely to be senile entropion. The patient underwent LLL entropion repair via lateral tarsal strip and capsulopalpebral fascia reattachment in 04/2023. He was on maintenance chemotherapy at the time of surgery. The patient has since been lost to follow up.

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Conclusions: These cases underscore the importance of comprehensive evaluation, including physical examination, potential biopsy, and collaboration with oncology, in managing orbital manifestations of lymphoproliferative disorders. Additionally, they emphasize the need for vigilant follow-up to address evolving idiosyncratic clinical presentations and optimize patient outcomes.

Figure 1

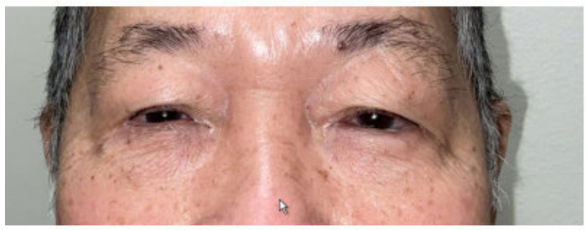
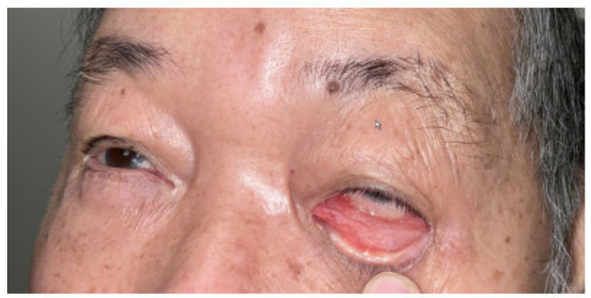


Figure 2



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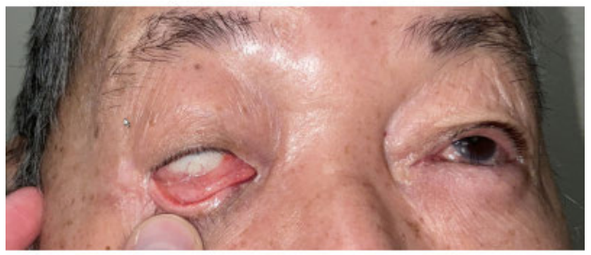
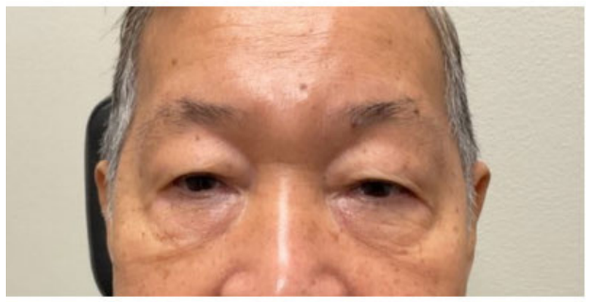


Figure 4



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A Series of Three Unique Orbital Meningiomas

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Introduction: Orbital meningiomas consist of 3-8% of orbital lesions.[1,2] Tumors originating from the central nervous system (CNS) are classified into World Health Organization (WHO) Grade I, II or III.[3,4] Orbital meningiomas tend to be benign and slow growing, though some can lead to compressive optic neuropathy, strabismus or vision loss via mass effect and infiltration of extraocular muscles. This case series describes three patients with orbital meningioma.[5-7]

Methods: Case series and literature review

Results: Case 1. A 34 year old male with history of medulloblastoma status post surgical resection and adjuvant chemotherapy and radiation when he was 4 years old presented with left eye proptosis. CT orbits (Image 1) demonstrated left orbital mass from the superolateral rim extending to the apex, measuring 4x1.7x2.8 cm. The patient underwent an orbitotomy for lesion biopsy via upper eyelid crease incision. Pathology was consistent with a WHO Grade I meningioma. The patient will undergo radiotherapy.

Case 2. A 21 year old male presented with progressive left periorbital swelling with progressive proptosis, hypoglobus and lateral dystopia with associated protrusion of the pre-aponeurotic fat pads. Photos provided by the patient demonstrated a progressive process over the span of 3 years. CT and MRI orbits (Image 2) demonstrated normal orbital structures with extensive expansion of the frontal and ethmoid sinuses on the left. There was no evidence of lesions or masses on the orbital and facial imaging. The patient underwent a combined transorbital decompression and transnasal left frontal sinusotomy, maxillary antrostomy and sphenoid sinusotomy. There was intraoperative visualization of a friable lesion arising from the septum obstructing the anterior aspect of the sinonasal cavity. The mass was removed. Pathology was consistent with a sinonasal meningioma. The patient will undergo complete resection of lesion with adjuvant radiation.

Case 3. An 85-year-old female who presented with progressive left-sided vision loss and diplopia. On examination visual acuity was 20/100, presence of a left afferent pupillary defect, 8 mm left proptosis, and global restrictive ophthalmoplegia. MRI orbits and brain (Image 3) revealed an enhancing sphenoid wing mass with diffusion restriction extending into the middle cranial fossa and orbital apex. Orbital CT face obtained nine months prior due to orbit fracture from a fall demonstrated a minimally displaced right orbital floor fracture but did not demonstrate any lesion in the left orbit. The patient underwent a lateral orbitotomy which revealed a WHO Grade

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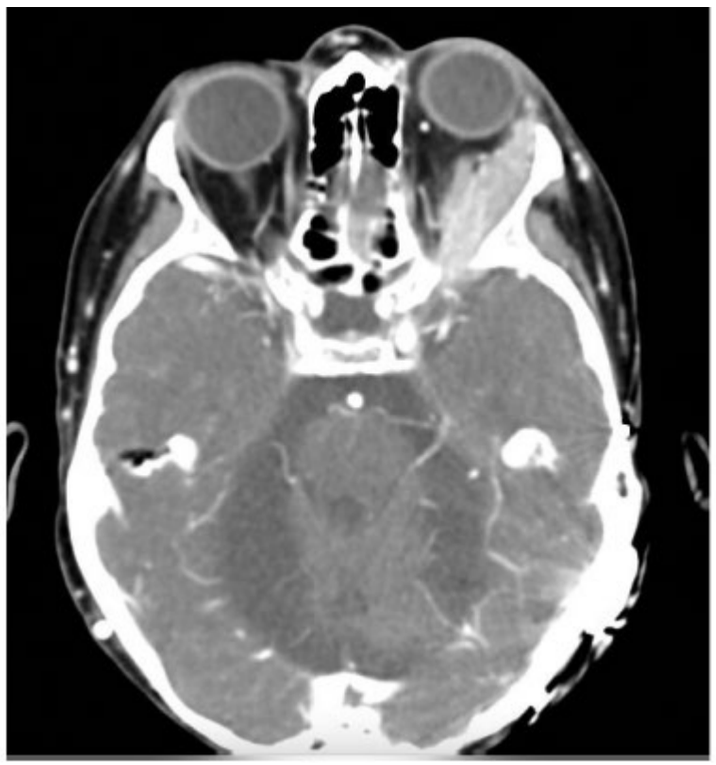
II meningioma. In the early post-operative period, her vision deteriorated further to counting fingers, and she subsequently underwent transorbital endoscopic debulking of surgery. Adjuvant radiation to follow.

Conclusions: Orbital meningiomas comprise a small percent of orbital lesions. Management consists of surgical debulking or excision with adjuvant radiotherapy.

Figure 1



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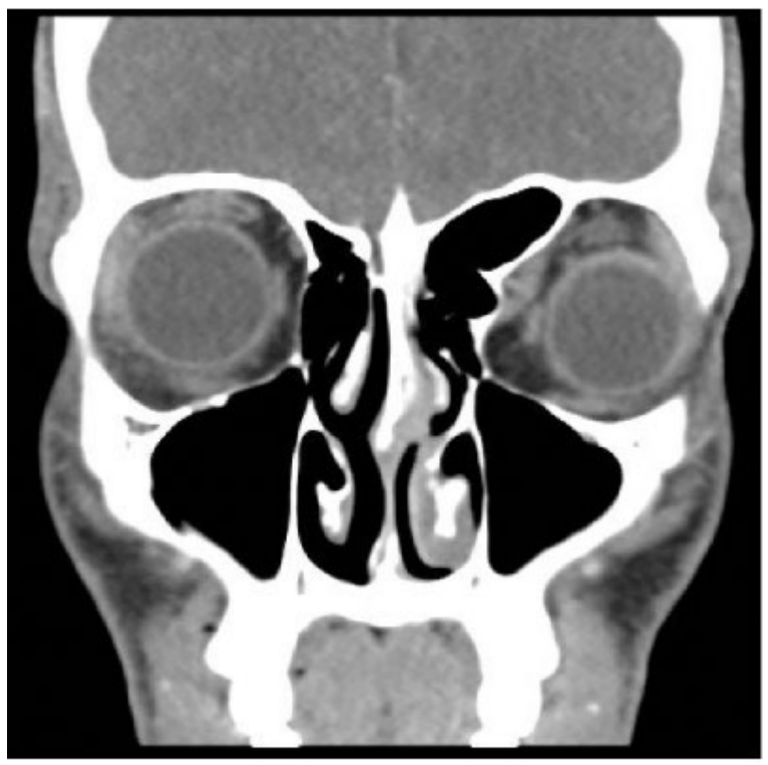

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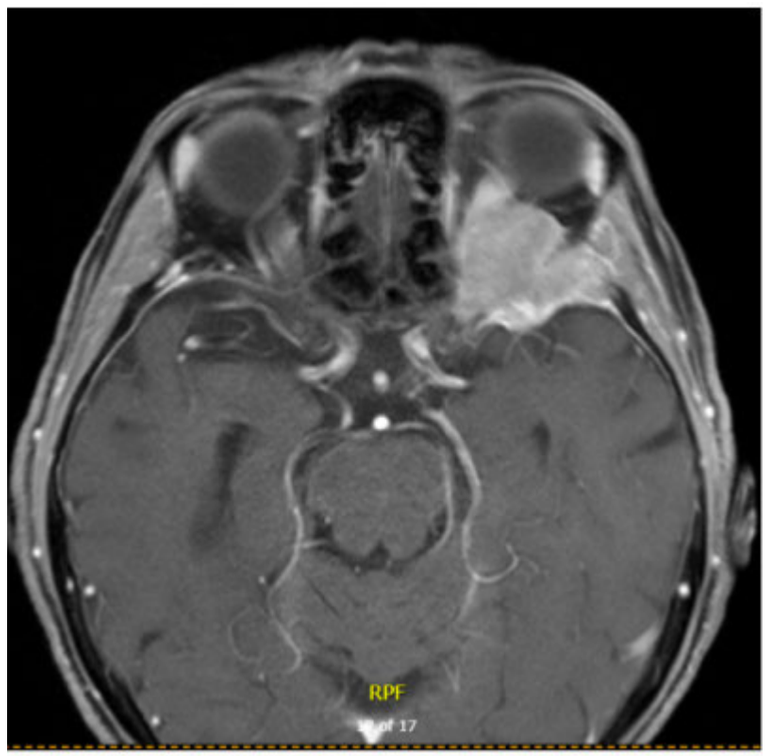

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Characteristics and Management of Proptosis Regression in Thyroid Eye Disease Patients after Teprotumumab

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Introduction: This study aims to investigate characteristics of thyroid eye disease (TED) patients with regression in proptosis after teprotumumab.

Methods: Retrospective case series of five TED patients who received 8 infusions of teprotumumab with subsequent regression in proptosis. Charts were reviewed for patient demographics, including age, gender, smoking history, and clinical measures including exophthalmolmetry and clinical activity score (CAS) prior to medication, immediately after completion of all 8 teprotumumab infusions, and at subsequent follow-up appointments. Additionally, data reviewed included baseline radiographic features including orbital fat-to-muscle ratio and laboratory values including thyroid stimulating immunoglobulin (TSI) and thyrotropin receptor antibody (TRAB).

Results: Five patients (10 orbits) were included (Figures 1-5, Table 1). Patients had a mean age of 58 ± 24.7 years (range 21 to 80 years), the majority were female (80%), and all were non-smokers. The average duration of TED symptoms was 2 ± 9.1 years (range 2 to 22 years). Two patients (40%) had compressive optic neuropathy for which one had previously undergone bilateral orbital decompression and pulsed steroids and the other received steroids alone. One additional patient underwent multiple decompression surgeries many years prior without improvement in her proptosis. The average baseline CAS was 4 ± 1.1 (range 2-5), and baseline exophthalmolmetry was 21 ± 3.4 mm (Figure 1-5A). Neuroimaging demonstrated significant muscle enlargement disease with low fat-to-muscle ratios in all patients (Figure 1-5B). Laboratory values were available for 4 patients. TRAB was elevated in all 4 patients (mean 21.9 ± 19.6 IU/L, range 2.54-40, normal <1.75 IU/L). TSI was available in 3 of the 4 patients and found to be elevated (mean 6.2 ± 6.2 IU/L, range 2.29 -13.4, normal <0.54 IU/L). The average reduction in proptosis was -3.25 ± 1.4 mm (Figures 1-5C). At an average of 14.8 ± 6.4 months following the last teprotumumab infusion, patients demonstrated an average regression of 3.4 ± 1.2 mm in proptosis compared to exophthalmolmetry at their visit immediately after the final infusion of teprotumumab (Figure 1-5D). Two orbits of two different patients demonstrated disease regression beyond the baseline exophthalmolmetry measurements. One patient underwent right orbital decompression, and two patients completed retreatment with 8 infusions of teprotumumab with improvement in their symptoms. Two patients are currently being retreated with additional teprotumumab.

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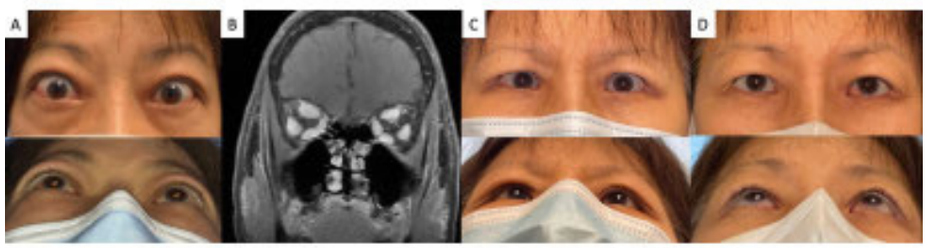
Conclusions: While teprotumumab has demonstrated efficacy in reducing proptosis, longitudinal follow-up has demonstrated that patients may experience regression.[1,2] Our patients similarly demonstrated regression in proptosis and were noted to have predominantly enlarged muscle TED phenotype[3] on baseline imaging as well as significantly elevated thyroid inflammatory biomarkers, which have not previously been identified as risk factors. Retreatment may be beneficial in patients who demonstrate regression.

Figure 1



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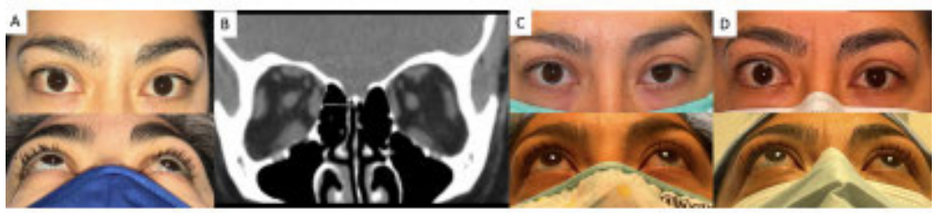

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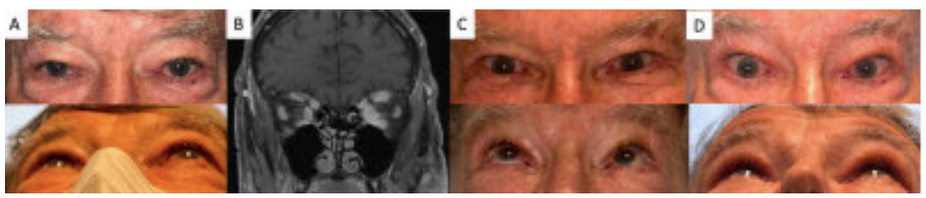

Figure 4

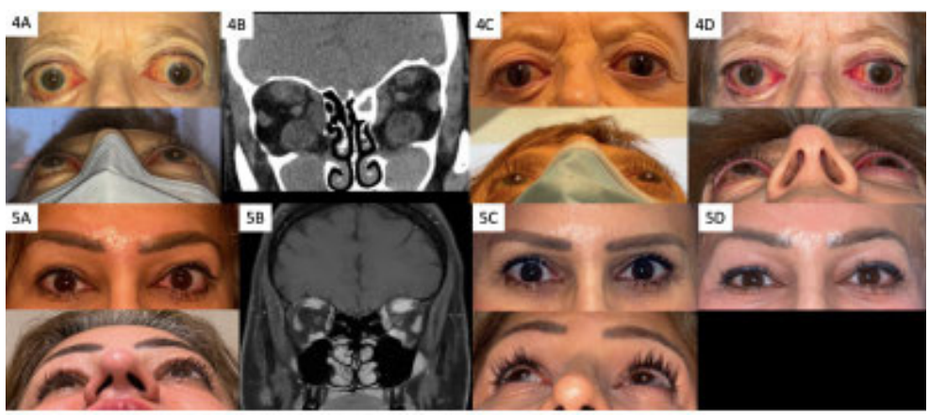

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Figure 5

Table 1. Characteristics and Outcomes of Patients with Regression after Teprotumumab

ID	Age	Gender	Smoking History (yes/no)	Duration of Thyroid Disease (years)	Duration of TED (years)	Previous TED surgery	Baseline CAS	Post-teprotumumab CAS	CAS at regression	Baseline Proptosis OD (mm)	Post-teprotumumab Proptosis OD (mm)	Proptosis OD at Regression (mm)	Baseline Proptosis OS (mm)	Post-teprotumumab Proptosis OS (mm)	Proptosis OS at Regression (mm)	Change in Proptosis After Teprotumumab OD (mm)	Change in Proptosis After Teprotumumab OS (mm)	Regression OD (mm)	Regression OS (mm)	Adverse effects	Duration between last infusion and regression (months)
1	61	F	No	3	3	Bilateral orbital decompression + orbital radiotherapy for CON	5	1	5	21	11	15	21	11	14	10	10	4	3	Bone pain, fatigue, loss of appetite, muffled hearing	14.8
2	21	F	No	5	1	None	2	2	2	21	18	24	21.5	19	22	-3	-2.5	0	3	None	20.8
3	80	M	No	2	0.5	None	4	0	2	17.5	15	17	21	15	17.5	-2.5	-6	2	2.5	None	7.1
4	80	F	No	23	22	Bilateral orbital decompression + eyelid surgery+ strabismus surgery	4	0	0	27	22	26	27	23	26	-5	-4	0	3	Sensorineural hearing loss stable from pre-teprotumumab	17.6
5	48	F	No	2	2	None	4	1	6	17	15	17	19.5	16	20.5	-1	1	5	4.5	None	6.3

Abbreviations: CAS: clinical activity score, CON: compressive optic neuropathy; F: Female; M: Male; mm: millimeter; NS: not specified, OD: right eye; OS: left eye; TED: thyroid eye disease

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Hypereosinophilic Syndrome Causing Eyelid Swelling and Enlargened Extraocular Muscles

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Introduction: The hypereosinophilic syndromes (HES) are a group of disorders marked by the overproduction of eosinophils which can infiltrate and cause damage to multiple organs. Although causes include allergic (asthma, drug hypersensitivity), infectious (parasites, fungal, viral), inflammatory (sarcoidosis, IgG disease) and neoplastic disorders (eosinophilic leukemia, myeloid/lymphoid neoplasms), the etiology in up to 75% of HES remains undefined. Periorbital involvement can mimic thyroid orbitopathy.

Methods: Case report

Results: A 47 year-old-lady with history of asthma and primary hypothyroidism was admitted for acute angioedema 2/2022 requiring intubation. Blood eosinophils were elevated at 6.86 K/µl (normal 0.15-0.30 K/µl). IgE was elevated to 184 IU/mL (normal <150 IU/ml). May 2022, she developed bilateral fluctuating periorbital edema (Figure 1). A diagnosis of idiopathic HES was made following unremarkable extensive workup. Bloodwork showed normal ACE, IgG, ANCA, complement, treponema, and lyme. Thyroid bloodwork was normal (TSH 0.8 ulU/ml, TSI <89%, TSH receptor antibody 0.83 IU/L). CT showed bilateral enlarged recti muscles, worse on right (Figure 2 & 3). Lacrimal gland biopsy showed chronic inflammation with scattered eosinophils. Bone marrow showed increased eosinophils (17%, normal 1-6%) and normal karyotype. She was treated initially with steroids, then when became steroid-dependent, subcutaneous mepolizumab injections (monoclonal antibody which blocks interleukin-5 signaling protein) every 4 weeks for 5 months with resolution of periorbital swelling.

Conclusions: Idiopathic hypereosinophilic syndrome with involvement of lacrimal glands and enlargement of extraocular muscles can mimic clinical presentation of thyroid orbitopathy. An awareness of HES is important, especially in patients with thyroid disease where misdiagnosis may occur.

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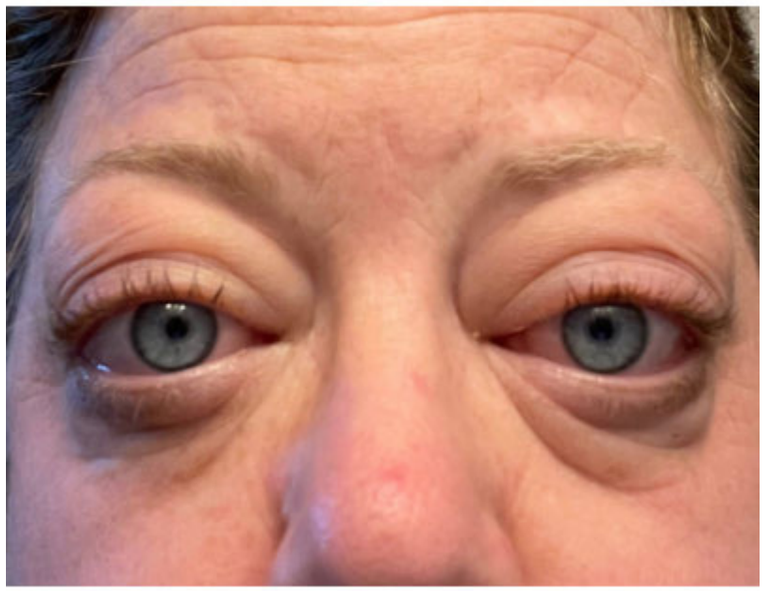
Figure 1



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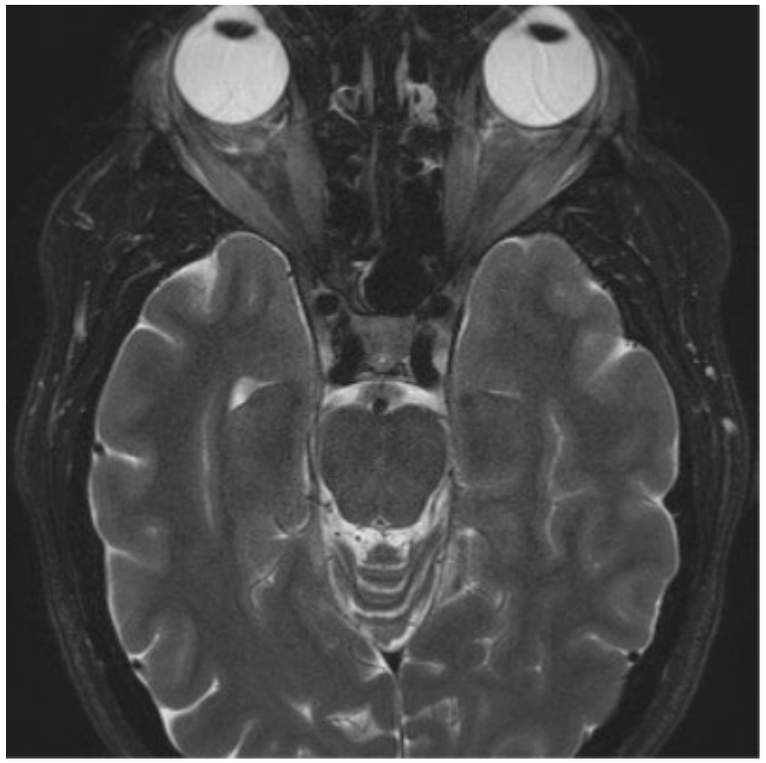
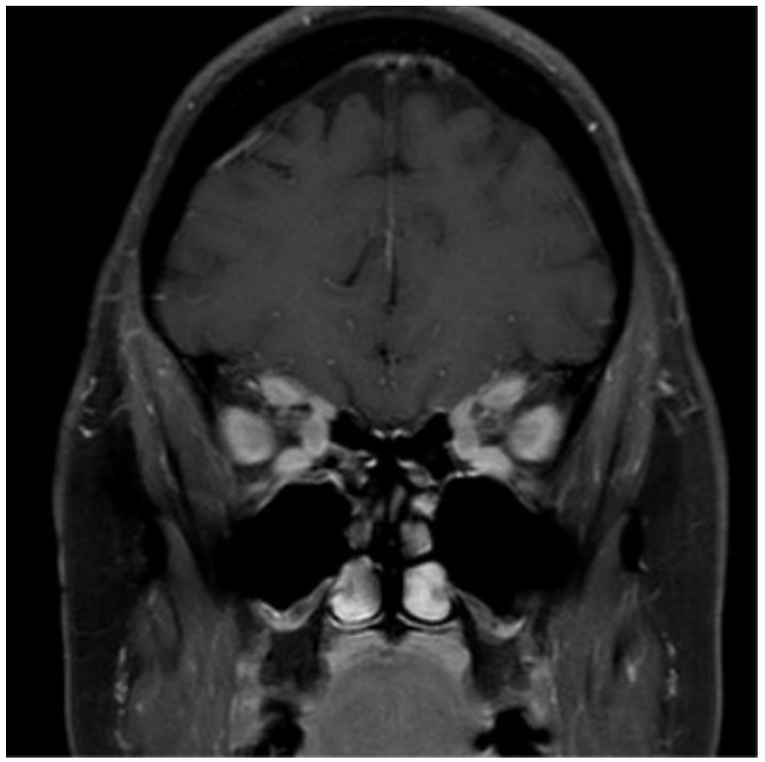


Figure 3



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Monocular Precautions after Evisceration, Enucleation, or Exenteration

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Introduction: Patients with monocular status after enucleation, evisceration, or exenteration of the contralateral eye should be counseled about the importance of protecting their remaining eye; however, emphasis on this may vary among physicians. Few studies have assessed physician counseling as well as patient understanding and risk factors for non-compliance. This study evaluates the frequency of monocular precautions counseling and patient understanding in patients who underwent evisceration, enucleation, or exenteration.

Methods: A retrospective chart review of medical records from 2015-2022 at a single institution was conducted. Patients 18 and 100-years-old who underwent enucleation, evisceration, or exenteration were included. Patients were excluded if the remaining eye had vision worse than hand motion. Medical records were reviewed for demographics, clinical and surgical details, and documentation of monocular precautions. Simultaneously, a cross-sectional survey study was conducted; 125 patients were randomly selected to contact to complete a telephone survey regarding their awareness of monocular precautions and mental health.

Results: 282 patients met inclusion criteria for the chart review. The average age was 62 years, and the majority were male and white (Table 1). Underlying etiology resulting in eye removal included trauma (26.2%), infection (24.4%), or neoplasm (27.3%). Most patients had no light perception (NLP) vision of the surgical eye immediately prior to removal. Patients underwent enucleation (74.4%), evisceration (16.0%), and exenteration (9.6%), most often with placement of a porous polyethylene implant under monitored anesthesia care with retrobulbar block (Table 2). Documentation of monocular precautions post-operatively was identified in medical records for 169 patients (60%), most often by oculoplastic surgery attendings, over a mean 8.1 office visits and 17.9 month duration follow-up (Table 3).

125 patients were randomly selected to contact for the survey. Of these patients, 37 patients were unable to be contacted due to invalid phone number (30%) and 24 were deceased (19%). Of the remaining 64, 14 (22%) consented to participate in the survey. The average age, gender, race, surgical procedure, and pre-operative vision were approximately similar to the overall group (Table 4). Ten patients (71.4%) had documented discussion regarding monocular precautions. In answering the survey, 12 reported wearing polycarbonate glasses, the majority of which were full-time (Table 5). Reasons cited for not wearing glasses full-time included inconvenience, lack

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of vision improvement, and cost. Four patients did not recall their ophthalmologist discussing monocular precautions with them, two of whom had documentation of monocular precautions in the medical record. Additionally, two of the ten patients who did recall counseling from their ophthalmologist did not have documented discussion of monocular precautions.

Conclusions: Patients who undergo enucleation, evisceration, or exenteration should receive counseling regarding the importance of monocular precautions. Documentation of monocular precautions is important; however, this may not truly reflect the conversations between physician and patient as evidenced by our survey. Similarly, even if precautions are documented, care should be taken to emphasize these upon follow-up visits and address patient concerns that may reduce compliance. Lastly, care should be taken to regularly update monocular patients' contact information to ensure appropriate follow-up scheduling and examination of their remaining eye.

Table 1. Baseline Characteristics of Patients who Underwent Evisceration, Enucleation, or Exenteration

Age (years)	62.1 ± 18.5
Gender (Female)	n = 124 (44.0%)
Race	
White	n = 195 (69.1%)
Black	n = 56 (19.9%)
Other	n = 31 (11.0%)
Etiology	
Trauma	n = 74 (26.2%)
Infection	n = 69 (24.4%)
Tumor	n = 77 (27.3%)
Other	n = 62 (22.0%)
Pre-operative glasses (%yes)	n = 108 (38.3%)
Pre-operative vision of the removed eye	
NLP	n = 148 (52.5%)
LP to 200 E at face	n = 90 (31.9%)
20/100 - 20/800	n = 13 (4.6%)
20/50 - 20/100	n = 10 (3.5%)
20/20 - 20/50	n = 10 (3.5%)
NS	n = 11 (3.9%)

LP: light perception, NLP: no light perception, NS: not specified

Table 2. Characteristics of Eye Removal Procedures

Surgery	
Enucleation	n = 210 (74.4%)
Evisceration	n = 45 (16.0%)
Exenteration	n = 27 (9.6%)
Implant type	
Acrylic	n = 42 (14.9
Porous polyethylene	n = 218 (77.3%)
Silicone	n = 2 (0.7%)
Plastic	n = 1 (0.3%)
None	n = 39 (13.8%)
NS	n = 2 (0.7%)
Average implant size (mm)	20.5+2.0
Anesthesia type	
MAC/retrobulbar block	n = 218 (77.3%)
General	n = 61 (21.6%)
NS	n = 3 (1.1%)

MAC: monitored anesthesia care, NS: not specified

Table 3. Documentation of Monocular Precautions Following Enucleation, Evisceration, or Exenteration

Documentation of monocular precautions (yes)	n = 169 (60%)
Documentation in more than one note (if documented)	n = 127 (75.1%)
Documenter Specialty	
Oculoplastics	n = 102 (60.3%)
Other	n = 67 (39.4%)
Documenter Training	
Attending	n = 134 (79.2%)
Resident	n = 32 (18.9%)
Follow-up	
Number of office visits	8.1 ± 11.6
Duration (months)	17.9 ± 21.0

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Figure 4

Table 4. Characteristics of the Survey Respondent Monocular Patients

Age (years)	56.4 ± 21.4
Gender (Female)	n = 6 (40%)
Race	
White	n = 8 (57.1%)
Black	n = 4 (28.5%)
Other	n = 3 (21.4%)
Etiology	
Trauma	n = 1 (7.1%)
Infection	n = 6 (42.8%)
Tumor	n = 4 (28.5%)
Other	n = 3 (21.4%)
Pre-operative glasses (%yes)	n = 5 (35.7%)
Pre-operative vision of the removed eye	
NLP	n = 6 (42.8%)
LP to 200 E at face	n = 6 (42.8%)
20/100 - 20/800	0
20/50 - 20/100	0
20/20 - 20/50	n = 2 (14.3%)
NS	0
Surgery	
Enucleation	n = 8 (57.1%)
Evisceration	n = 4 (28.5%)
Exenteration	n = 2 (14.3%)
Documentation of monocular precautions (yes)	n = 10 (71.4%)
Documentation in more than one note (if documented)	n = 7 (70%)
Documenter Specialty	
Oculoplastics	n = 8 (80%)
Other	n = 2 (20%)
Documenter Training	
Attending	n = 10 (100%)
Resident	
Follow-up	
Number of office visits	10.9 ± 6.9
Duration (months)	23.5 ± 6.9

LP: light perception, NLP: no light perception, NS: not specified

Figure 5

Table 5. Survey Answers of Monocular Patients

Wearing polycarbonate glasses	n = 12 (85.7%)
Frequency of Wear	
Full-time	n = 9 (64.3%)
Frequently	n = 3 (21.4%)
Occasionally	n = 1 (7.1%)
Never	n = 1 (7.1%)
Reasons for not wearing if not full-time	
Inconvenience	n = 2 (14.3%)
Too expensive	n = 1 (7.1%)
Doesn't help vision	n = 2 (14.3%)
Recollection of physician discussing monocular precautions	n = 10 (71.4%)
Recollection of physician discussing wearing protective glasses	n = 2 (14.3%)
Wearing prosthesis	n = 10 (71.4%)
Mental Health	
Diagnosed with depression	n = 2 (14.3%)
Taking medications for depression	n = 2 (14.3%)
Diagnosed with anxiety	n = 5 (35.7%)
Taking medications for anxiety	n = 3 (21.4%)

Orbital Hybrid Neurofibroma/Schwannoma

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Introduction: We present a rare case of an orbital hybrid neurofibroma/schwannoma.

Methods: Case report and literature review.

Results: A 77-year-old man with no pertinent past medical history presented to the emergency department complaining of headaches. Magnetic resonance imaging found a large, well-circumscribed oval mass in the superotemporal quadrant of the left intraconal space measuring 1.6 x 1.4 x 2.3 cm (Figure 1). His visual acuity was 20/20 bilaterally (OU), his intraocular pressure was 11 in the right eye (OD) and 13 in the left (OS), and he did not have a relative afferent pupillary defect. His MRD1 was 3 OU, and he had 3mm of exophthalmos OS without lagophthalmos. He did not have any motility deficit. His dilated fundus exam was unremarkable. He was consented for a posterior orbitotomy with biopsy of the lesion.

A vertical lid split orbitotomy approach was used to access the lesion and an incisional biopsy was performed. Grossly, the mass appeared solid and friable. Microscopically, it demonstrates a combination of fascicular growth in a myxoid background and rhythmic palisading, along with the presence of Schwann cells, EMA+ perineural cells, and CD34+ fibroblasts. Due to these findings, a diagnosis of hybrid neurofibroma/schwannoma was made. The patient denied a history of, and did not exhibit any clinical signs of neurofibromatosis. At the postoperative month 1 visit, the patient had residual ptosis and motility restriction secondary to postoperative swelling. He was referred to radiation oncology for evaluation and treatment. At the time of writing, he has declined radiotherapy.

Conclusions: Hybrid neurofibroma/schwannoma are classified among hybrid peripheral nerve sheath tumors (HPNSTs). These tumors are exceedingly rare in the orbit, with a handful of case reports in the literature with limited follow-up data. Extraorbital hybrid neurofibroma/schwannoma have an association with systemic neurocutaneous disorders, however this has yet to be demonstrated in orbital cases. While extraorbital tumors have been reported to recur after surgical resection, to date there have been no reports of malignant transformation. Further case series are needed to better understand the natural history of this tumor in the orbit.

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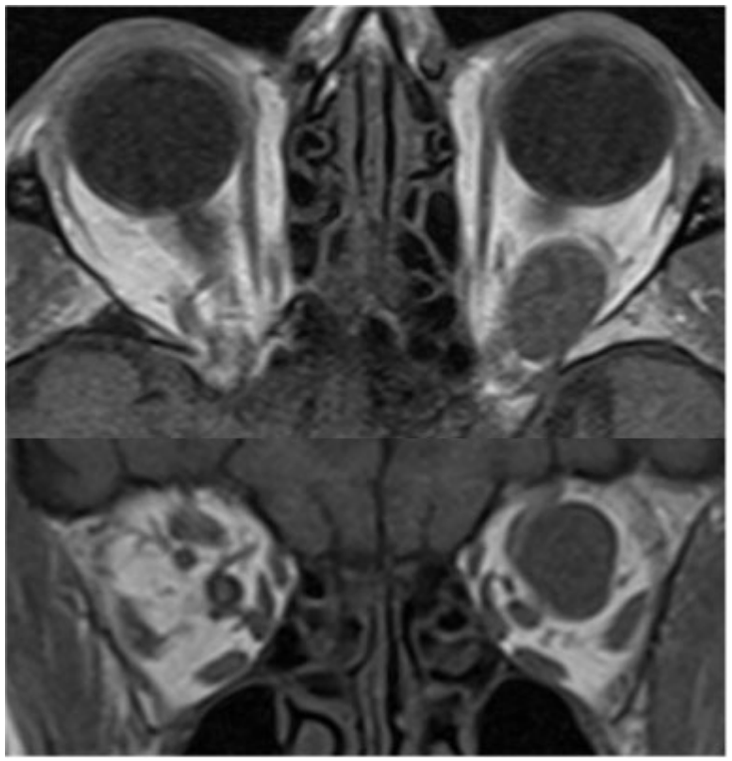
Figure 1



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Orbital Manifestations in Patients Diagnosed with Cherubism

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Introduction: Cherubism is a rare, congenital autosomal dominant fibroosseous disease in which maxillary and mandibular bone is gradually replaced with fibrous dysplastic tissue, resulting in painless bilateral enlargement of the jaws and lower face. Orbital involvement can occur rarely[1-3] and is not well described. In this paper, we describe orbital and eyelid manifestations in patients diagnosed with cherubism.

Methods: This study was a retrospective descriptive study of all patients with a diagnosis of cherubism seen at a single academic institution between January 1, 2000 and December 31, 2023. Charts were identified using Mayo Data Explorer (MDE) and were reviewed for demographics, presenting visual acuity, intraocular pressure, Hertels exophthalmometry, fundus exam, external photographs, visual field, computed tomography (CT), and magnetic resonance imaging (MRI) results. Proptosis was estimated from radiographic images by drawing a horizontal line between the lateral orbital rims on an axial plane that bisects the lens and then drawing a perpendicular line forward to the posterior surface of the cornea. External photographs were analyzed by a single observer, and inferior scleral show was extrapolated using an assumption that horizontal corneal diameter was 11.0 mm for all patients.

Results: 8 patients diagnosed with cherubism were identified, with a mean age of 32.6, 5 (55.6%) were male, and 7 (87.5%) were white. 4 (50.0%) patients had been seen by ophthalmology, 6 (75.0%) had either CT or MRI imaging available, and 6 had external facial photographs available (75.0%). Of the 4 patients with a documented eye exam, patients had intact vision, with an average LogMAR of 0.0 in the right eye and 0.18 in the left eye as well as full Ishihara color plates bilaterally in all patients. Intraocular pressure was on average 18.3 mmHg (range 17 to 21mmHg) and 17.3 mmHg (range 15 to 19 mmHg) in the right and left eyes respectively. Two patients exhibited anisometropia. The most common ophthalmic symptoms were binocular diplopia (n=2) and vision distortion (n=1). For the two patients with diplopia, both exhibited net incyclotorsion with incomitant hypertropia. Dilated fundus exams were performed in 3 patients, with 1 patient exhibiting choroidal folds in their inferotemporal left macula.

For the 6 patients with external photographs available, 4 patients had inferior scleral show, 2 had superiorly displaced lateral canthi, and no patients had lagophthalmos. For the 6 patients with CT imaging available, 4 patients had radiographic evidence of orbital involvement and proptosis was on average 19.1 mm (range 15.7 to 21.6mm) and 19.0 mm (15 to 22.3mm) in the right and left orbits respectively.

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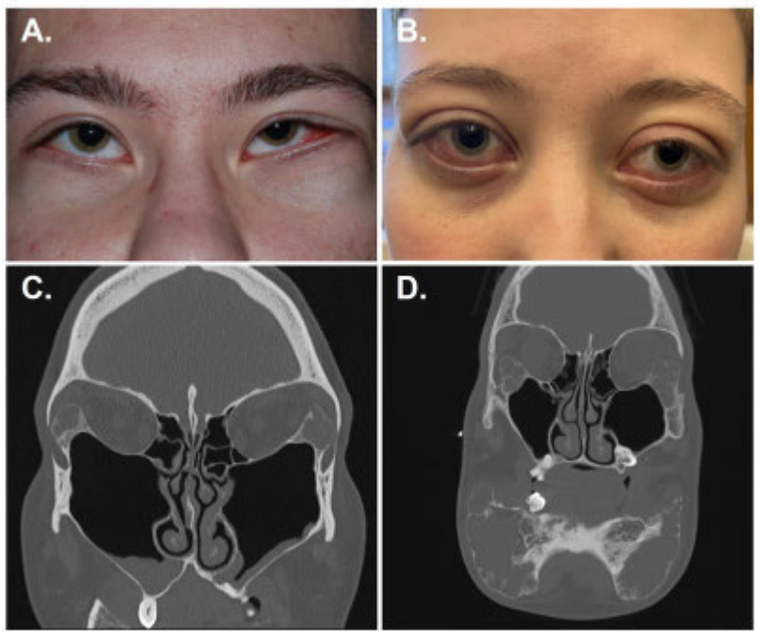
Ophthalmic management of these patients included observation (n=7) and strabismus surgeries (n=1). Notably, one patient had repeat CT imaging that showed significant improvement with improved bilateral maxillary sinus aeration as well as partial reduction of the mandibular fibro-osseous expansion over an 8-year follow period.

Conclusions: Cherubism is a rare inherited disorder that can be associated with orbital involvement. In this series, ophthalmic manifestations included proptosis, anisometropia, strabismus, lateral canthal displacement, inferior scleral show, and choroidal folds. Ophthalmic examination should be obtained in all patients with cherubism, and expectant management can be considered in cases without vision threatening manifestations as visual prognosis is overall good.

Figure 1



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Sphenoid Sinus Approach for Residual Orbital Apex Tumor

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Introduction: Orbital liposarcoma is a rare, malignant tumor of adipose tissue that is often treated with orbital exenteration to minimize the risk of recurrence. While radiotherapy treatment has been described in the context of local recurrence of orbital liposarcomas, literature on how cases are managed in patients with positive margins following exenteration is sparse[1-3].

Methods: The details of the case were obtained from the patient chart. Consent was obtained from the patient.

Results: A 59-year-old female who was referred due to a three-month history of left lid ptosis and was found on exam to have a visible subconjunctival fat pad underneath the left upper lid that was causing a 6 mm relative proptosis (Figure 1). Biopsy of the lesion revealed well-differentiated liposarcoma. She underwent a left lid-sparing orbital exenteration to minimize the risk of recurrence. Left exenteration was performed and the orbital bone was covered with the eyelid skin and a dermal regeneration matrix (Figure 2). Due to the well-differentiation of the tumor, frozen sections were unable to differentiate tumor from normal orbital fat so several biopsies at the orbital apex were sent to ensure no residual tumor existed. FISH probe revelated the biopsies to be positive for *MDM2* amplification, indicating residual tumor cells at the apex. To prevent transformation to a higher-grade tumor, the decision was made to attempt to resect further tissue at the orbital apex. Due to the anatomy of the orbital apex and the adherence of tissue surrounding the optic nerve stump as it enters the optic canal, a novel surgical technique was employed. Approaching from the orbit, the residual tissue was dissected as much as possible from the underlying bone. In conjunction with a sinus surgeon, the optic canal was accessed via the sphenoid sinus. The portion of the optic nerve contained within the canal was grasped within the canal and severed. The anterior severed optic nerve was then advanced anteriorly through the optic foramen. All residual biopsies were negative for tumor. The patient has remained tumor free (Figure 3).

Conclusions: This case offers a solution to invasive orbital tumors requiring exenteration but complicated by positive posterior margins. Without this multidisciplinary approach, we would have not been able to fully access the posterior apical tissue.

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Figure 1

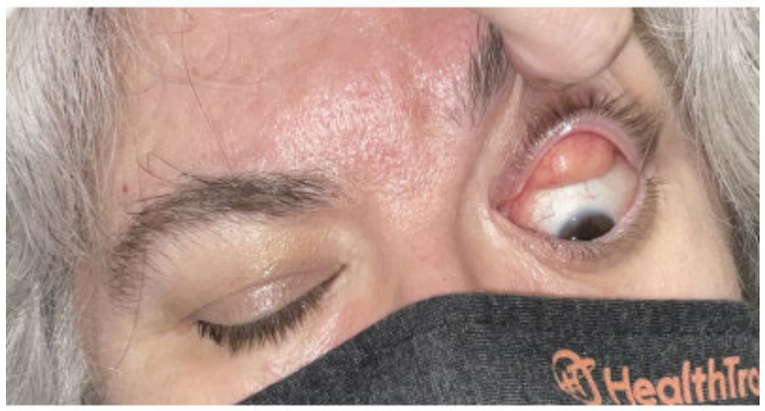


Figure 2

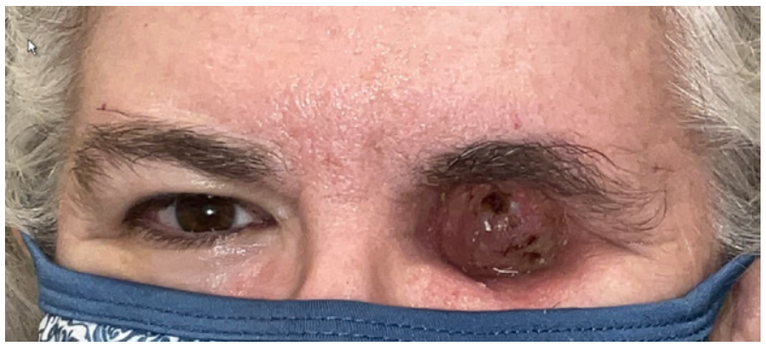
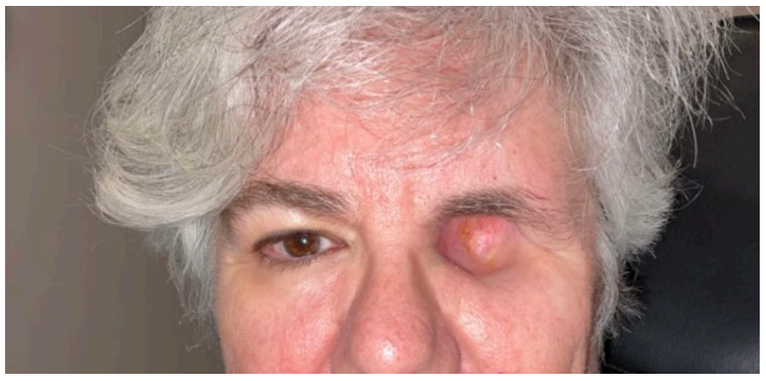


Figure 3



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A Rare Presentation of Orbital Inflammation in the Pediatric Population

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Introduction: The clinical presentation of orbital inflammation can be variable in the pediatric population. Often, patients present with abrupt onset periocular pain, swelling, and chemosis. The pediatric patient can present with more rapid onset and severe findings and symptoms than their adult counterpart. In contrast to this, idiopathic sclerosing orbital inflammation (ISOI) lacks many of the typical inflammatory symptoms and is reported less frequently in children. We present a complicated case of a pediatric patient with ISOI that initially presented with tearing and lacrimal outflow obstruction and progressed to a mass lesion and proptosis with additional systemic findings.

Methods: A case report is presented describing a 9 year old girl referred to the pediatric oculoplastics clinic for evaluation of epiphora. Her medical and surgical course is described as well as her imaging and laboratory workup.

Results: A 9-year old girl with persistent left sided epiphora despite previous probe and irrigation with stent placement presented for further management of her tearing. A dacryocystorhinostomy was initiated, but aborted due to abnormal tissue seen between the lacrimal sac and lacrimal sac fossa. The bones were left intact and a biopsy of thickened periosteum adjacent to the lacrimal sac was described as fibrovascular tissue with fibrosis and reactive chronic inflammation. This was interpreted as inflammation related to the chronic lacrimal outflow obstruction. The tearing persisted, and a left dacryocystorhinostomy was then pursued five months later and biopsy of lacrimal sac tissue again showed benign fibrotic tissue.

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She represented to the clinic four months later with new onset progressive left-sided proptosis (Figure 1), as well as left-sided headaches. Her exam was otherwise unremarkable. Orbital imaging via a CT scan and MRI revealed a large fusiform mass in the medial orbit as well as perineural spread involving the infraorbital nerve and spreading into the pterygopalatine fossa (Figure 2). The imaging was concerning for a malignant neoplasm. She underwent urgent left anterior orbitotomy with exploration and biopsy. Biopsy results were consistent with a chronic fibroinflammatory lesion. Despite extensive genetic and immunohistochemistry testing, the lesion evaded further characterization. Her systemic laboratory testing revealed only an elevated ESR and CRP but was otherwise unremarkable for normal serum IgG4 levels, ACE, lysozyme, c-ANCA, and complement levels.

Extensive evaluation completed by rheumatology and pulmonology was notable for CT chest, abdomen, and pelvis revealing few calcifications of the spleen, calcification of the mediastinal and hilar lymph nodes, as well as a mildly positive fungal antibody panel for Histoplasmosis felt to be consistent with a previous granulomatous infection. Our patient also reported mild shortness of breath with exertion and was ultimately diagnosed with asthma.

She was started on a prolonged oral prednisolone taper, which improved her shortness of breath and her proptosis. Repeat orbital imaging showed interval improvement in orbital mass. Two years later she continues to be monitored off treatment without change in her symptoms, exam findings or imaging (Figure 3). She has been off steroids for 13 months, and imaging one month ago showed no evidence of recurrence.

Conclusions: In the absence of other explanations, she was diagnosed with ISOI. ISOI is a challenging disease to manage, more so in the pediatric population. ISOI typically occurs in the superior or lateral quadrant of the orbit, with infrequent extraorbital extension.[1-3] However, our patient presented with abnormal tissue in the extraorbital space between the lacrimal sac and lacrimal sac fossa along the medial wall and floor of the orbit with extension into the pterygopalatine fossa. Her systemic workup revealed evidence of previous granulomatous infection, possibly due to histoplasmosis, but this did not appear to be related to her orbital disease. Fortunately, surgical debulking followed by oral steroids has kept her clinically stable while also reducing her shortness of breath.

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Figure 1

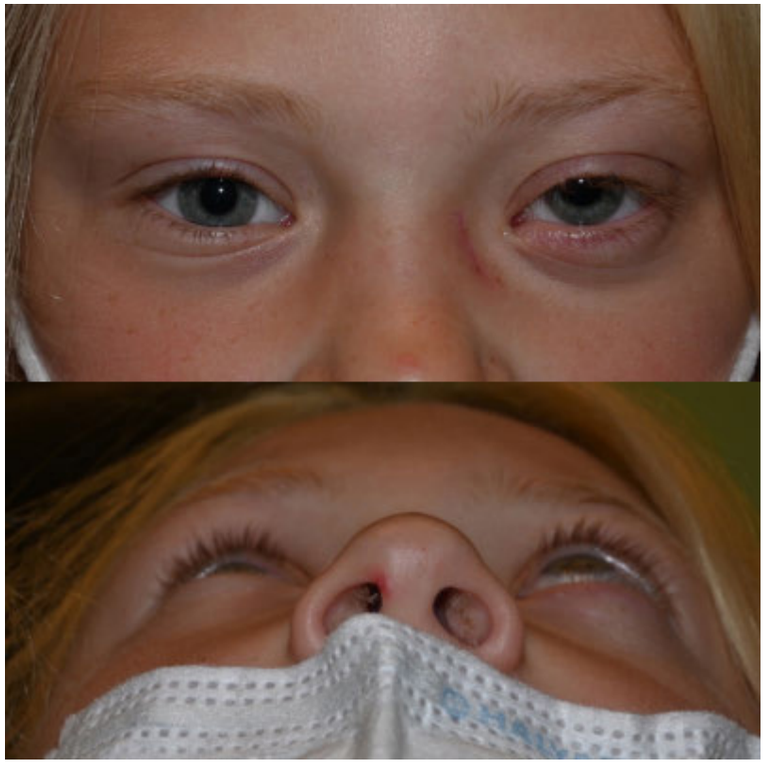


Figure 2

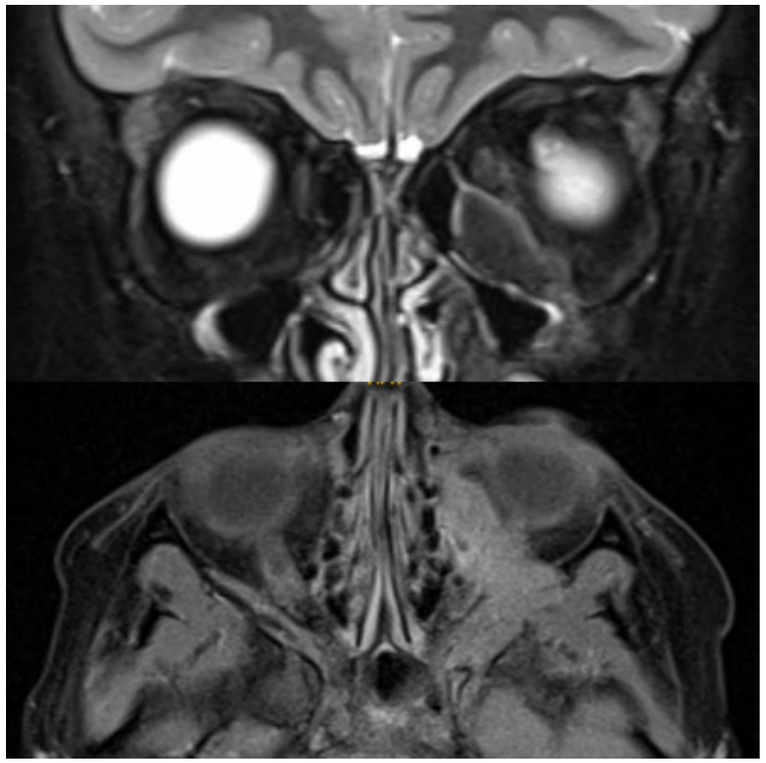
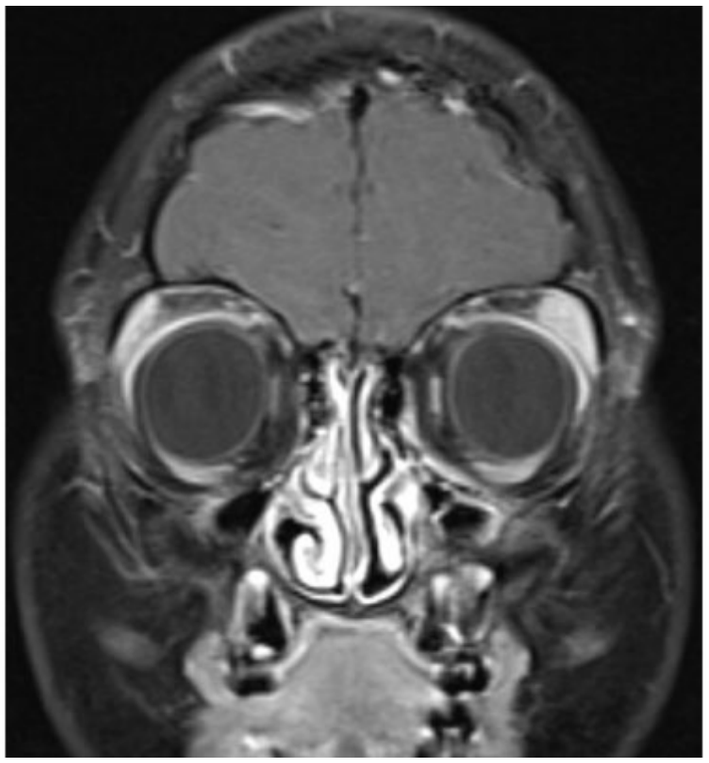


Figure 3



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Current Practice Pattern and Perception Regarding Transgender Care: A Survey of ASOPRS Ophthalmic Plastic Surgeons

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Introduction: Gender-affirming procedures have significantly increased over the recent years. This study aimed to assess current members of the American Society of Ophthalmic Plastic and Reconstructive Surgery (ASOPRS) on the practice pattern and perception regarding transgender care.

Methods: Current ASOPRS members were surveyed through a web-based anonymous survey distributed via email. The survey consisted of 20 questions which were used to gain insight on current practice patterns, perceptions, and education goals with regards to transgender health care among ophthalmic plastic surgeons. Kruskal-Wallis rank-sum test and the Wilcoxon rank-sum test were used to analyze the survey results.

Results: Thirty-three ASOPRS members responded to the survey, of which 19 (58%) have been in practice for more than 10 years. Nine surgeons (27%) currently work at an academic institution, 14 (42%) are in private practice and 10 (30%) are in a mixed type of practice. Most (70%) of the members have provided care to 1 to 10 transgender patients in their career. Twenty-one (64%) providers reported no experience in performing gender-affirming surgeries compared to 11 (33%) that have performed 1 to 10 surgeries. We found that clinicians who have performed more gender-affirming surgeries (1-10 surgeries) compared to those who have not (0 surgery) were more comfortable in asking transgender patients their preferred pronouns (P=0.019), more competent in consulting transgender patients (P=0.036), more likely to want to seek additional training in transgender care (P=0.045) and felt more competent in performing gender-affirming surgeries (P=0.008). No significant difference was found in these aforementioned question responses based on surgeon's age, years in practice, or number of transgender patients under care. Overall, 54% of providers feel competent in caring for transgender patients, 66% feel that ophthalmic plastic surgeons receive adequate transgender-related training, 57% are interested in learning more about transgender care, and 51% believe transgender care should be incorporated into ophthalmology residency and/or ophthalmic plastic fellowship curriculums.

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Conclusions: The majority of ASOPRS members have some experience providing care to transgender patients and feel competent in caring for these patients. Ophthalmic plastic surgeons with more experience in performing gender-affirming surgeries feel more competent in consulting transgender patients and performing these surgeries. In addition, those surgeons who have more experience with transgender care are more likely to seek further training in this area.

Figure 1

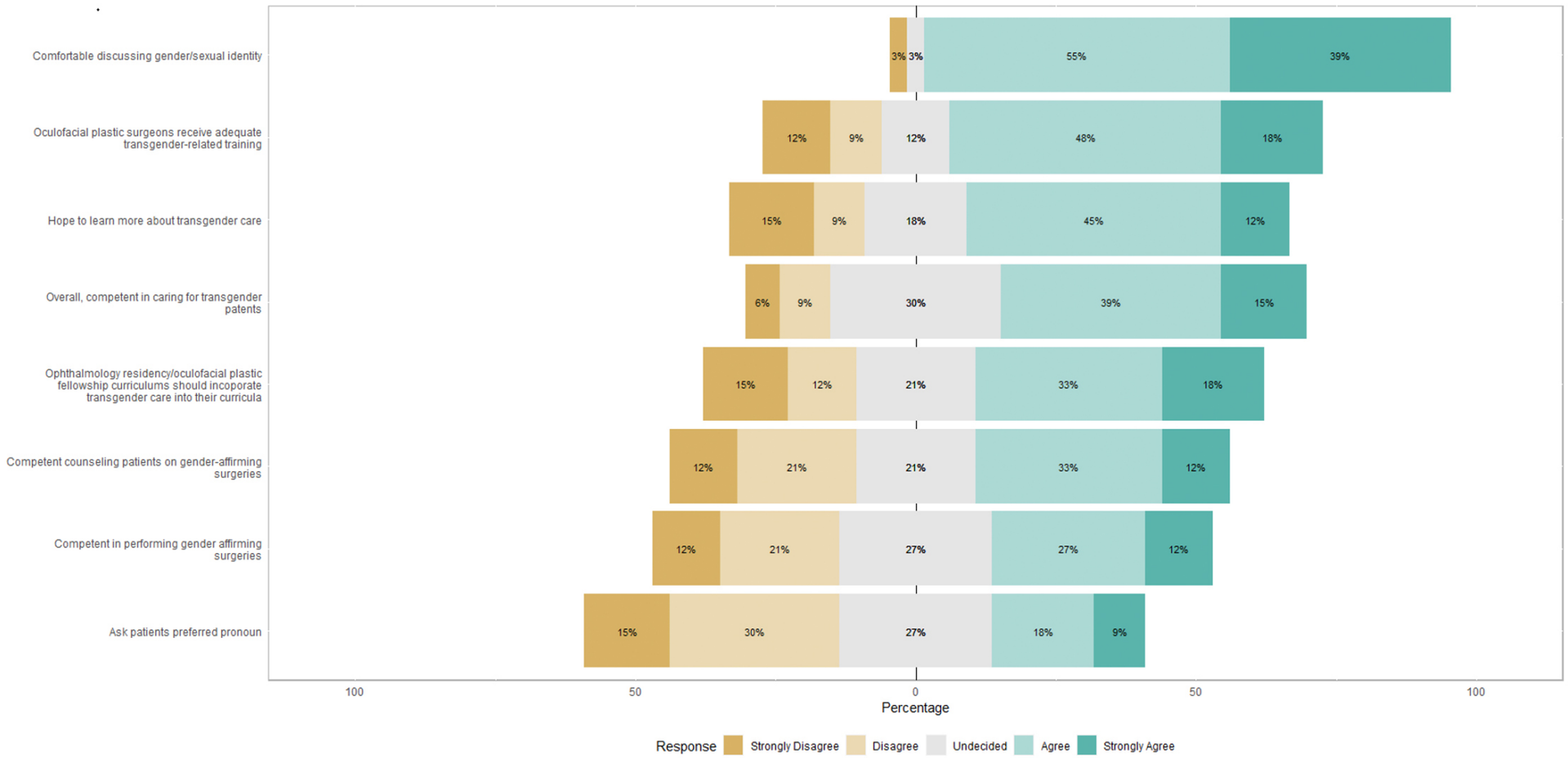

Figure 1. Survey response to questions regarding subjective comfort and competency in transgender care

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Treatment Patterns and Comfortability with Lateral Canthotomy and Cantholysis for Orbital Compartment Syndrome among Emergency Medicine Providers

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Introduction: This study aims to obtain data from emergency medicine physicians about their experience with orbital compartment syndrome (OCS), specifically as it pertains to recognition and treatment options, including lateral canthotomy and cantholysis (LCC).

Methods: An online questionnaire will be e-mailed to emergency medicine physicians in the state of Indiana who frequently refer patients to our center. The anonymous responses will be collected on via third-party software. Information collected will include demographic information about the provider, information about their practice setting, distance from nearest trauma center, access to ophthalmology services, and experience. As it pertains to experience, information regarding how many LCC they have done and their comfort level. Questions will be asked regarding orbital compartment syndrome, its signs, and their level of comfort recognizing this entity before imaging.

Results: Responses were gathered from *** physicians across Indiana, ***% of the total who received the survey. Information regarding survey results will be presented here, regarding experience with LCC as well as recognition of OCS.

Conclusions: There exists demonstrated discomfort among the emergency medicine community as it pertains to early recognition of OCS. Additionally, easier access and better education on treatment of OCS with pressure-relieving procedures is needed to prevent unnecessary loss of vision among these patients.

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