

Grand Rounds

Introduction: Elmer Tu, MD (*Attending*)

This Grand Rounds issue presents several interesting cases encountered by the cornea service.

Edited by Rohan Shah, MD and Elizabeth Grace, MD. Photos by Mark Janowicz (unless otherwise noted). All photos are property of UIC.
© Copyright 2012 by the Department of Ophthalmology, University of Illinois College of Medicine. All rights reserved. Cases presented in this issue are from UI Ophthalmology Grand Rounds on 08.24.11.



Bilateral Conjunctival Chemosis: Joann Kang, MD (Resident)



A 68 year old Asian female presented to the UIC cornea clinic for complaints of foreign body sensation and irritation of both eyes for one year duration. The patient's symptoms began after her bilateral upper lid blepharoplasty with external levator advancement for ptosis a year prior. She claimed that she was completely asymptomatic prior to surgery. Approximately one month after eyelid surgery, she started to experience symptoms of foreign body sensation and irritation OU. An outside ophthalmologist diagnosed her with filamentary

keratitis in the left eye and also noted conjunctival redundancy and staining of both eyes. She was treated with aggressive lubrication. However, she continued to have symptoms of dryness and foreign body sensation. She was subsequently diagnosed with mild pretarsal swelling and dry eye syndrome and lubrication was continued. The patient's symptoms continued over the next nine months before she was diagnosed with superior limbic keratoconjunctivitis and was started on lotemax and elestat. She was also noted to have a superior epithelial defect in the left eye that resolved with erythromycin ointment. However, with lubrication therapy her symptoms did not improve and thus presented for a second opinion at the UIC cornea clinic.

The patient's past medical history is significant for hypertension, hypercholesterolemia and arthritis for which she takes Diovan and Lipitor. Her family history is non-contributory and she does not smoke, drink alcohol or use drugs.

On exam, her best corrected visual acuity was 20/25 OU and intraocular pressure was 19 OD, 22 OS. On external exam she was noted to have tight superior lids OU. On slit lamp exam she had superior redundant conjunctiva with hyperemia and enlarged conjunctival vessels. She had fine fluorescein and rose bengal staining superiorly with clear cornea centrally without staining (see Figure 1). The remainder of her anterior segment exam was within normal limits.

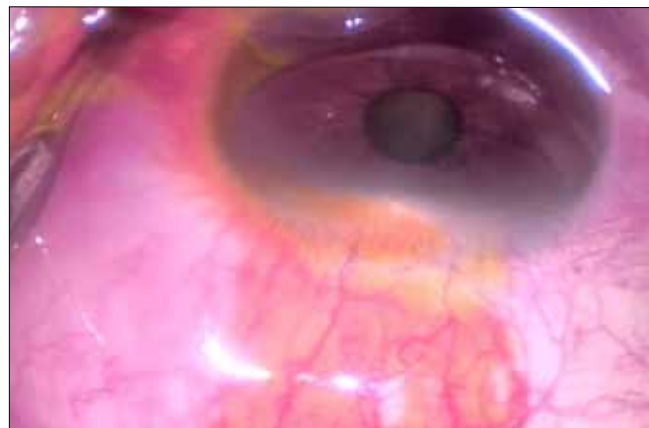


FIGURE 1
Surgical photo showing staining of the superior conjunctiva, left eye.

Bilateral Conjunctival Chemosis: (Continued)



FIGURE 2

Surgical photo showing the thickened, irregular superior conjunctiva with enlarged conjunctival vessels, left eye.

The patient was diagnosed with superior limbic keratoconjunctivitis OS>OD, likely secondary to upper lid blepharoplasty. The patient subsequently underwent conjunctival excision (see Figure 2) and placement of amniotic membrane OS. Postoperatively, the patient had complete resolution of her symptoms in her left eye and was doing well. She reported normal thyroid function test results from her primary care doctor.

DISCUSSION Frederick Theodore gave the first complete description of superior limbic keratoconjunctivitis (SLK) and coined its name in 1963. It is characterized by recurrent inflammation of superior bulbar and palpebral conjunctiva. SLK is more common in females than males and the onset is usually between 30-55 years. The disease is typically bilateral but may be asymmetric and is associated with thyroid dysfunction in 20-50% of cases. Histopathology reveals thickening and keratinization of the superior bulbar conjunctiva with loss of goblet cells. Symptoms include foreign body sensation, burning and photophobia. On exam, redundancy and thickening of superior bulbar conjunctiva with punctate staining (rose bengal) is seen. In addition, intense hyperemia of the superior bulbar conjunctiva with engorgement of the vertical blood vessels as well as keratinization of superior limbus with PEE of upper third of cornea is found. SLK can also be complicated by filamentary keratitis.

The etiology of SLK is unclear. There are several hypotheses including infectious (although unlikely), immunologic (due to its associations with thyroid dysfunction, keratoconjunctivitis sicca), tear deficiency and mechanic etiologies. The mechanical hypothesis is most favored and is due to abnormal lid-eye dynamics where laxity of superior bulbar conjunctiva and/or tight lid causes repetitive microtrauma to the superior conjunctiva. This leads to chronic inflammation and irritation. Lid abnormalities may be secondary to Graves, tight or thickened upper eyelids, blepharospasm or contact lens wear. The treatment is to alter the interaction of upper lid with superior conjunctiva.

Interestingly, Sheu et al. in 2007 published a case report of SLK after upper eyelid blepharoplasty, similar to our patient. They found that the patient's symptoms resolved after bilateral conjunctival resection and hypothesized that SLK was a result of tight upper eyelids induced postoperatively.

There are several different treatment options for SLK. Medical treatment includes topical lubrication, mast cell inhibitors, topical steroids, cyclosporine and autologous serum. Other treatment options include topical silver nitrate 0.5-1% and thermocauterization. Surgical options include superior conjunctival resection with or without amniotic membrane graft. This can be an effective treatment for SLK, especially in patients not responsive to medical therapy. Resection of redundant conjunctiva, including the underlying Tenon's capsule achieves a conjunctival reepithelialization adhering to sclera without tissue laxity.

References:

1. Cher, I. Superior limbic keratoconjunctivitis: multifactorial mechanical pathogenesis. *Clinical and Experimental Ophthalmology* (2000) 28, 181-184.
2. Gris O, et al. Conjunctival resection with and without amniotic membrane graft for the treatment of superior limbic keratoconjunctivitis.
3. Nelson JD. Superior limbic keratoconjunctivitis. *Eye* (1989) 3, 180-189.
4. Sheu et al. Development of superior limbic keratoconjunctivitis after upper eyelid blepharoplasty surgery. *Cornea* 2007; 26(4): 490-492.

Recurrent Corneal Melt: Elizabeth Grace, MD (Resident)



58 year old African American man presents with a perforated cornea ulcer that was glued at outside hospital. He reports one week prior he awoke with severe pain and photophobia in the right eye. His past ocular history was notable for severe dry eye syndrome, trichiasis, blepharoplasty 20 years ago, and puncta cauterized 7 years ago in both eyelids. His past medical history was notable for airway constriction diagnosed in 2007 and treated with a tracheal stent. His medications include: inhalers, ampicillin swish for stent infection, and hypertonic saline. Family history was notable for a father with amyloidosis. Social history was unremarkable, and ROS notable for 20 pound weight loss, fatigue, dyspnea, and dry sensitive skin.

On exam, his best corrected vision was count fingers at 2 feet OD, and 20/50 OS. CCT measured 730 OD and 519 OS, IOP 15.5 OD and 26 OS. Slit lamp exam was remarkable for madarosis of the lashes, extensive conjunctival scarring and symblepharon formation with fornix foreshortening, and injection OU. The right eye demonstrated 360 degrees of neovascularization, 2+ cornea edema, glue near the inferior cornea around 6 o'clock, wound was Seidel negative, and the anterior chamber was shallow with IK apposition inferiorly. The left eye also demonstrated dense anterior stromal haze/scarring, with neovascularization nasally. The posterior segment exam was unremarkable. With a new onset cornea melt (status post glue), and severe conjunctival scarring he was started on 4th generation quinolone eye drop, erythromycin ointment, PO prednisone, ATs, and referred to dermatology.

Due to the high suspicion for mucous membrane pemphigoid a biopsy of the conjunctiva was taken and sent for immunofluorescence, which demonstrated highly positive anti-IgG linear basement membrane zone (BMZ) staining and Anti-C3 patterns of linear and granular BMZ staining. With the diagnosis of mucous membrane pemphigoid, he was started on cyclophosphamide by dermatology.

Unfortunately he had a protracted course, and a few days after his initial visit the glue that fell off the iris was found plugging the wound and his shallow chamber did not respond to bandage contact lens placement. His first corneal patch graft was placed to cover the cornea melt in November 2010 (see Figures 1 and 2). Throughout December his cornea was unable to heal an epithelial defect over the graft, his cornea continued to leak via the suture tracks, and after multiple wound revisions, glue and BCL maintained the graft until February 2011. Subsequently, the graft continued to melt and again perforated: this time with lens cornea touch, thus requiring a second patch graft and cataract extraction with aphakia.

Unfortunately he had a protracted course, and a few days after his initial visit the glue that fell off the iris was found plugging the wound and his shallow chamber did not respond to bandage contact lens placement. His first corneal patch graft was placed to cover the cornea melt in November 2010 (see Figures 1 and 2). Throughout December his cornea was unable to heal an epithelial defect over the graft, his cornea continued to leak via the suture tracks, and after multiple wound revisions, glue and BCL maintained the graft until February 2011. Subsequently, the graft continued to melt and again perforated: this time with lens cornea touch, thus requiring a second patch graft and cataract extraction with aphakia.

Dermatology continued to increase his cyclophosphamide throughout this time to try and get systemic control of his disease. In March the graft epithelium healed, however in early April the graft quickly melted again requiring another patch graft with an amniotic membrane button placed to help the epithelium heal (see Figure 3). Unfortunately the third graft lasted one month, the epithelium never healed and it melted. In May he obtained his fourth cornea patch graft with a broad sheet of the amniotic membrane placed over the entire cornea surface (see Figure 4). During this time Heme/Onc started him on high-dose IVIG along with the cyclophosphamide dose of 150mg/175mg alternating and 50mg of prednisone. Since May, he experienced a series of pin-point leaks in the graft that responded well to glue and BCL. Currently his cornea and graft is healed and remains free of epithelial defects.



FIGURE 1
Photo of corneal melt with perforation with calipers measuring size of needed corneal patch graft

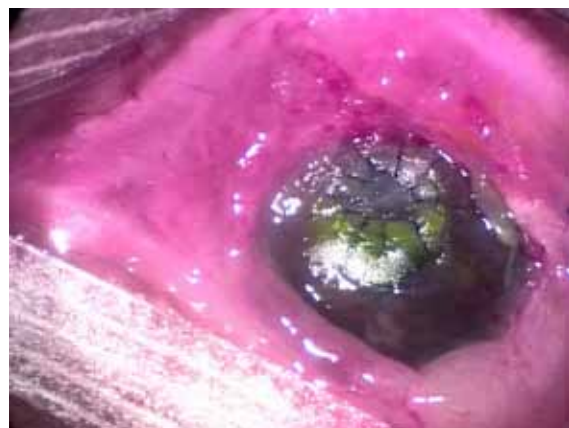


FIGURE 2
Post-operative photo of initial corneal patch graft

Cornea Melt (continued)



FIGURE 3
Pre-operative photo showing perforation of second corneal patch graft in April, just prior to third cornea patch graft placement

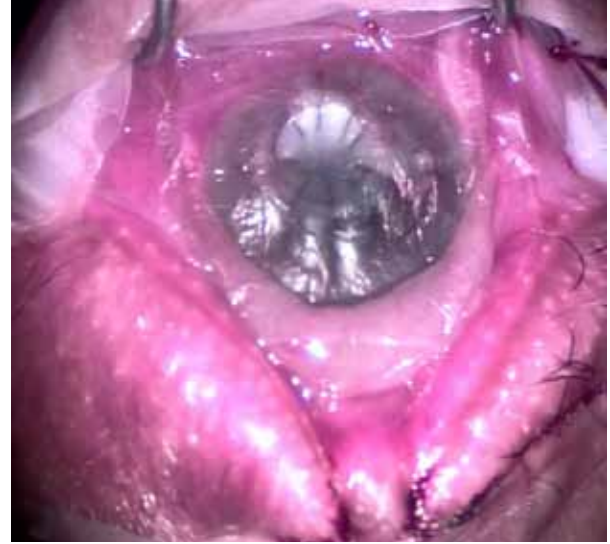


FIGURE 4
Post-operative photo of fourth corneal patch graft with amniotic membrane placement for recurrent corneal melt

DISCUSSION Mucous membrane pemphigoid (also known as ocular cicatricial pemphigoid) is a bilateral sight-threatening disorder, characterized by chronic cicatrizing conjunctivitis with corneal vascularization and scarring. The disease involves mucous membranes and in this patient was involving his trachea as well; thus illustrating the continued importance of taking a complete medical history and review of systems. Gold standard for diagnosis is a conjunctival or mucous membrane biopsy demonstrating immunofluorescent staining of the basement membrane zone with IgG, IgA or C3. Patients require systemic immunosuppression to control inflammation and limit disease progression. This is usually done in a step-ladder approach, starting with Dapsone, then azathioprine or mycophenolate for moderate disease, cyclophosphamide and PO or IV corticosteroids for severe disease, lastly IVIG or biologic agents can be added for refractory cases of MMP.

Despite systemic immunosuppression a recent retrospective study in the UK demonstrated 20% of eyes had disease progression in the first year after diagnosis, and another 20% progressed between 1-2 years.¹ In this study, overall 42% of patients showed progressive ocular surface scarring in clinically quiescent eyes. An ophthalmologist must have a high level of suspicion for MMP in patients with severely dry eyes, as the initial presentation may appear as recurrent non-specific conjunctival inflammation. This case demonstrates an extreme sequela of chronic cicatrization, dryness, and poor epithelial healing leading to repeat corneal patch melts that were ultimately controlled by increasing doses of cyclophosphamide, prednisone, and IVIG.

References

1. Williams GP, Radford C, Nightingale P, et al. Evaluation of early and later presentation of patients with ocular mucous membrane pemphigoid to two major tertiary referral hospital in the United Kingdom. *Eye* 2011, adv online pub 29 July 2011; 1-12.
2. Foster CS, de la Masa MS. Ocular cicatricial pemphigoid review. *Curr Opin Allergy Clin Immunol* 2004; 4:435-439.
3. Galdos M, Etxebarria J. Intravenous Immunoglobulin Therapy for Refractory Ocular Cicatricial Pemphigoid: Case Report. *Cornea* 2008; 27:967-969.
4. Thorne JE, Woreta FA, Jabs DA, Anhalt GJ. Treatment of ocular mucous membrane pemphigoid with immunosuppressive drug therapy. *Ophthalmology* 2008; 115:2146-2152.

An Uncommon Blepharoplasty Complication: Joshua Hou, MD (Resident)



A 58yo Caucasian female presented to the cornea clinic for evaluation of persistent chemosis of both eyes (OS>OD). She stated that the chemosis developed shortly after she underwent bilateral blepharoplasty approximately one year ago and has persisted since then. The chemosis was associated with photophobia, blurry vision, and pain and irritation that was worse with blinking. She had been treated prior to referral with artificial tears, lubrication, and aggressive topical antihistamines (Pataday TID OU) without improvement. Her past medical history was notable for multiple allergies to most classes of antibiotics, latex,

NSAIDs, ACE inhibitors, and Darvocet. She was also on twenty medications and supplements for hypertension and anxiety.

On ophthalmic exam, the patient's BCVA was 20/40 OD and OS with a mild hyperopic astigmatic correction. PHPAM showed no improvement. Anterior segment exam was remarkable for 360° of bullous shifting chemosis in both eyes (see Figure 1.) The chemosis was notably more prominent inferiorly with the patient upright, but there was no significant associated conjunctival injection. In the left eye the patient further had inferior nasal corneal scarring and thinning consistent with dell formation adjacent to the chemotic conjunctiva. The lids were notable for mild meibomian gland dysfunction but no significant lagophthalmos. Dilated fundus exam was unremarkable.

At that time the diagnosis of chronic chemosis secondary to blepharoplasty was made. A thorough review of the patient's medications and allergies was performed but no significant drug-drug interaction to explain her ocular pathology was found. CT imaging of the head and orbits was obtained to rule-out any cavernous sinus or venous obstruction that could account for her chronic chemosis. The CT scan returned negative for any abnormality.

Due to evidence of progressive dell formation and failure of prior conservative management strategies, the decision was made to proceed with surgical resection of the excessive chemotic conjunctiva with amniotic membrane placement OS. Intraoperatively, an extensive smile-like conjunctival resection was performed of the inferior 270° conjunctiva beginning approximately 1-2mm from the limbus and extending posteriorly (nasally, inferiorly, and temporally) approximately 6mm (see Figure 2.) Dissection was performed down to bare sclera and amniotic membrane was then placed to fill the defect.

Post-operatively out to 3 months, the patient did extremely well with stable vision, no residual chemosis and improved pain, irritation, and photophobia OS. Additional surgery of the right eye is planned.



FIGURE 1
Pre-operative photo of patient's left eye showing significant chemosis 360°.



FIGURE 2
Intra-operative photo showing the marked area for conjunctival resection.

DISCUSSION Though post-operative chemosis is a common post-operative complication after both transcutaneous and transconjunctival blepharoplasty of the lids upper lids, chronic chemosis (>6 months) is exceedingly rare. A retrospective review published by Weinfeld et al. 2008, found an 11.5% incidence of post-blepharoplasty chemosis in a large series of 312 cases. However all cases resolved spontaneously within 3 months. Possible risk factors for post-op chemosis include previous ocular surgery, ocular allergy, thyroid orbitopathy, lagophthalmos, and prior head/neck radiation. A number of proposed mechanisms for post-op chemosis include conjunctival exposure for lid malposition or exposure, primary lymphatic dysfunction from extensive dissection, and secondary lymphatic congestion from down-stream facial edema.

For the rare cases of chronic chemosis, no consensus on appropriate treatment is available. Most of the literature agrees that conservative therapies including surface lubrication, pressure patching, and corticosteroid drops should be attempted first. However, failing that, little evidence exists for the use of any alternative therapies. A number of isolated case reports have suggested various surgical interventions, but no large studies have been performed. Surgical therapies that have been suggested include a modified Snellen suture (Enzer et al. 1994), regional conjunctivoplasty (Thakker et al. 2005), perilimbal needle manipulation (Cheng et al. 2007), and subconjunctival tetracycline 2% (Moesen et al. 2008). Our case here demonstrated a good outcome with extensive conjunctival resection with amniotic membrane, however the long-term outcome remains to be seen. Though post-operative chronic chemosis is rare, further research is still warranted to define appropriate treatments for this debilitating disease.

An Uncommon Blepharoplasty Complication: *(Continued)*

DISCUSSION (Continued)

References:

1. Moesen I, Mombaerts I. Subconjunctival injection of tetracycline 2% for chronic bulbar chemosis after transcutaneous four-eyelid blepharoplasty. *Ophthal Plast Reconstr Surg* 2008 May-Jun;24(3):219-20.
2. Weinfeld AB, Burke R, Codner MA. The comprehensive management of chemosis following cosmetic lower blepharoplasty. *Plast Reconstr Surg* 2008 Aug;122(2):579-86.
3. Thakker MM, Tarbet KJ, Sires BS. Postoperative chemosis after cosmetic eyelid surgery. *Arch Facial Plast Surg* 2005;7:185-8.
4. Enzer YR, Shorr N. Medical and surgical management of chemosis after blepharoplasty. *Ophthal Plast Reconstr Surg* 1994;10:57-63.
5. Putterman AM. Regarding comprehensive management of chemosis following cosmetic lower blepharoplasty. *Plast Reconstr Surg* 2009 Jul;124(1):313-4
6. Levine MR, Davies R, Ross J. Chemosis following belpharoplasty: an unusual complication. *Ophthalmic Surg* 1994;25:593-6.
7. Cheng JH, Lu DW. Perilimbal needle manipulation of conjunctival chemosis after cosmetic lower eyelid blepharoplasty. *Ophthal Plast Reconstr Surg* 2007 Mar-Apr;23(2):167-9.

UPCOMING CME COURSES

March 17-23, 2012	5th Annual Illinois Eye Review
March 30, 2012	Retina Symposium
May 16, 2012	2012 Glaucoma Symposium
June 29, 2012	36th Annual Alumni Resident Day
September 14, 2012	2012 Oculoplastics Symposium

Upcoming Grand Rounds

Illinois Eye and Ear Infirmary Ophthalmology Grand Rounds are held Wednesdays at 5:00 pm on the UIC campus at 909 S. Wolcott in the College of Medicine Research Building. For a complete schedule go to www.uic.edu/com/eye and click on Grand Rounds under the Education drop down menu. Or, call 312-996-6590.