

Anterior segment grand rounds A bleb too far

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by **Steven Safran, MD**



This is a 60-year-old woman who had an IOP in the 40s on maximal topical medication in this, her dominant right eye. I performed a MMC trabeculectomy on her and things could not have gone more smoothly. She had an IOP of 10-14 mm Hg right from day one with no need to cut sutures. Her vision was 20/25 postop day one and never dropped below that. She had a diffuse, avascular, quiet bleb with no vessels or inflammation. Unfortunately, her bleb was a bit too diffuse for her liking, as she was bothered cosmetically by the "chemosis like" appearance of her conjunctiva with elevation of the conjunctiva in the inferior, nasal, and temporal quadrants and from a comfort standpoint as this caused a foreign body sensation. At two months postop she developed a dellen secondary to the conjunctival elevation at the nasal limbus. This did not respond to aggressive lubrication and was quite painful to her and continued to progress even after upper and lower lid punctal occlusion was performed. Although her IOP is 12-14 mm Hg on no glaucoma medications, she is unhappy, and I am concerned.

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ASGR editor

I consulted a trio of superb glaucoma surgeons, Scott Fudenberg, MD, assistant professor, Thomas Jefferson Medical College, Wills Eye Institute, Philadelphia, Jonathan Myers, MD, associate attending surgeon, Wills Eye Institute, Philadelphia, and Oluwatosin Smith, MD, glaucoma specialist, Glaucoma Associates of Texas, Dallas, for insight on how to manage this problem. **Dr. Smith commented:** "This case poses a real dilemma in the face of what I would call "the glaucoma specialist's dream"—a perfectly functioning glaucoma filtering surgery in terms of IOP and with acceptable bleb morphology combined with an unhappy/dissatisfied patient as a result of discomfort from her very diffuse bleb.

"My approach to patients with similar problems would involve graduation from less invasive management options to more invasive treatment modalities including surgery, if indicated. ... In the event that lubrication doesn't work, I typically would consider putting additional sutures in the scleral flap transconjunctivally at the slit lamp in the office with 10-0 nylon. My goal with the sutures would be to place them on either edge of the flap, attempting to direct flow posteriorly.

"If our goal is not achieved by the above, then more extensive surgical work may be required. Rarely patients may opt to have the trabeculectomy reversed and an alternate glaucoma procedure performed."

Dr. Fudenberg's thoughts on this case: "When bleb revision is necessary, I consider a few options. First, autologous blood injection into the temporal and nasal aspect of the bleb may be combined with cryotherapy (sometimes called a "snow cone") to the temporal and nasal aspect of the bleb in an attempt to scar the conjunctiva and sequester the bleb superiorly. This procedure is relatively simple to perform as an initial step, but its efficacy may be dissatisfactory. Another approach is to place compression sutures temporally and nasally, again to sequester the bleb superiorly. The approach is similar to compression sutures performed to treat overfiltration with hypotony ... it may ultimately be necessary to suture the flap closed and place a tube shunt. Placing a patch graft over the flap and a compression suture over the patch graft may be necessary to halt flow through a thin flap in an overfiltering bleb. When I place a tube at the same time as I revise a bleb, I prefer to place an Ahmed Glaucoma Valve [New World Medical, Rancho Cucamonga, Calif.] rather than a Baerveldt Glaucoma Implant [Abbott Medical Optics, Santa Ana, Calif.] with vicryl ligature so that flow is directed posteriorly because I think this helps the scleral flap seal. Communication with the patient is critical in this situation. Any further surgical intervention may cause additional discomfort and risk IOP control."

Dr. Myers said: "The perils of bleb-based surgery are well known, and bleb dysesthesia is a difficult example. Seemingly small differences in bleb morphology can create extremely uncomfortable, chronic issues for patients. Bleb elevation in the interpalpebral fissure, especially when the bleb sits upon the ledge of the lower lid margin, can be the source of great discomfort that is surprisingly resistant to lubrication, punctal plugs, NSAIDs, Restasis [cyclosporine, Allergan, Irvine, Calif.], and steroids.

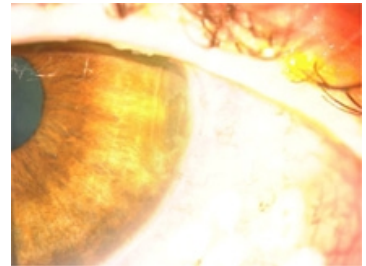


Figure 1: Dellen at nasal limbus due to conjunctival elevation

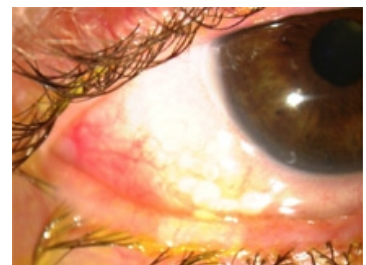


Figure 2 and Figure 3. Pictures taken right after the procedure was done. Note the radiofrequency energy application contraction "burns" in the inferior nasal and temporal quadrants.

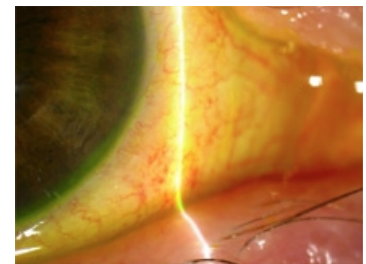
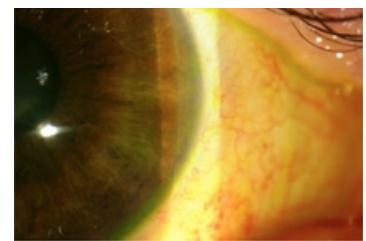


Figure 4 and Figure 5: Here is what the patient looked like a few days later with flattening of the conjunctiva and both the unwanted bleb and dellen completely resolved.

"There are many options to alter bleb morphology, and the old adage regarding the number of treatments available versus the likelihood of success comes to mind. In the past, laser and silver nitrate solution were used as options to shrink blebs, but these are not in widespread use now. Blood injection is another option, although more than one treatment may be needed to effect sufficient change.

"Delimiting the extent of the bleb to restrict it to the 10 to 2 o'clock area often is quite effective in relieving symptoms and improving appearance while maintaining adequate bleb function. Light cryo—a series of 10-second freezes placed in the interpalpebral fissure with lidocaine jelly for anesthesia—is a simple and often adequate solution. Light cautery, sometimes done in the office with a disposable unit, has also been used successfully. Compression sutures with 9-0 nylon, which are essentially mattress sutures that drape over the bleb from the cornea to the posterior sclera/episclera, work well. In a bleb with only mild elevation, I have found light cryo to be simple, effective, well tolerated, and titratable with limited potential for complications. If the interpalpebral bleb is more elevated and established, I would consider either compression sutures or a vicryl suture line to sclera along the 10 and 2 o'clock meridians to promote subconjunctival fibrosis and limitation of the filtration area."

What was done

It was clear to me that this patient absolutely needed a functioning filter, and I did not want to risk a successful outcome if at all possible. It was also clear to me that I would probably not get too many "at bats" to get a hit here. After treating aggressively with lubrication, punctal occlusion, etc., what I decided to try was to use multiple Ellman radiofrequency energy applications in the inferior nasal and temporal conjunctiva where there was unwanted conjunctival elevation to create some shrinkage and fibrosis of the tissue. In the area where I wanted the bleb to remain up top, I left the conjunctiva alone. Within a few days the dellen was gone and within a week the temporal/inferior/nasal conjunctival elevation was pretty much gone. I've used this technique on quite a few patients now. The Ellman has many advantages over cautery. It is much easier to control the application and you can create much more shrinkage of tissue without charring and less burning. This can be done if you like without penetrating conjunctiva or causing leakage. Figures 6 and 7 show another case of bleb dysesthesia before and after treatment.

In both of these cases there was no change in the IOP. I have used this method or a variation of it now in quite a few cases. Usually the applications are with a bullet-shaped electrode to the surface of the conjunctiva, however in some cases I pass a Teflon-coated needle in which only the tip is active through conjunctiva and apply radiofrequency to the undersurface of the conjunctiva to contract it, but that is a bit more of a tricky maneuver. It can be used effectively though to delineate the bleb more superiorly and cut off the flow to the sides and make a more focal bleb without damaging the bleb itself. I have used this in some cases of overfiltration.

In one case where there was extreme elevation of the conjunctiva nasally and a severe progressive dellen I treated very aggressively with the radio surgical probe at the nasal conjunctiva and did a temporary nasal tarsorrhaphy (suture on bolsters) right over that area to provide tamponade and held back on steroids. The conjunctiva stuck down nicely and the patient's pressure remained well controlled.

I believe that this is a promising technique for these cases of bleb dysesthesia due to overfiltration. The bleb can be remodeled in the office with relative safety and ease. If this method fails, more aggressive techniques can be considered.

Editors' note: *Dr. Fudenberg has financial interests with Allergan (Irvine, Calif.). Dr. Myers has no financial interests related to the article. Dr. Safran has financial interests with Bausch + Lomb (Rochester, N.Y.), Ellman (Oceanside, N.Y.), and Heidelberg (Heidelberg, Germany). Dr. Smith has no financial interests related to this article.*

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Figure 6: Another case of bleb dysesthesia before treatment

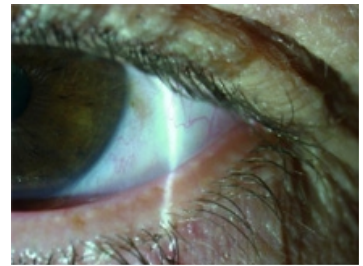


Figure 7: Case in Figure 6 after treatment. Notice the resolution of the inferior conjunctival elevation that was causing dysesthesia. Source (all): Steven Safran, MD