

Treating Bleb Dysesthesia

Our modified technique for flattening the bleb while maintaining its function and a low IOP.

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Trabeculectomy is one of the most common surgeries that glaucoma specialists perform. Bleb dysesthesia, which results from steep-walled and elevated blebs, can be much more than a nuisance for patients. These dysfunctional blebs can prevent the tear film from spreading evenly over the ocular surface, which leads to pain, discomfort, foreign body sensation, and even reduced visual acuity. The risk factors for bleb dysesthesia include young age, a superonasal or nasal location of the bleb, the use of antimetabolites, the size and amount of bleb overhang, and poor eyelid coverage.¹

In cases of dysesthetic blebs, we first try conservative management such as aggressive lubrication, topical non-steroidal anti-inflammatory drugs (NSAIDs), pressure patching, or an oversized bandage contact lens. When such measures fail, more invasive techniques to remodel the bleb may be necessary.² Some surgeons administer an autologous blood injection, apply trichloroacetic acid, or perform cryotherapy or argon laser therapy. Bleb excision, conjunctival or scleral grafts, and compression sutures achieve the same outcome (ie, reduction of the bleb to promote the patient's comfort) while attempting to preserve the bleb's function.^{3,4}

The Palmberg compression mattress suture is one technique for revising a thin-walled, ischemic bleb associated with low-to-normal IOP.⁵ These sutures are intended to remodel the bleb by inducing the conjunctiva's adherence to the underlying tissue. The surgeon anchors one or more 9-0 nylon mattress sutures to the cornea, passes them posteriorly over the portion of the bleb to be compressed, secures the sutures with an episcleral bite, and then passes them back over the bleb anteriorly. Then, he or she ties the knot and rotates it into the cornea in a shoelace or mattress pattern. The sutures should be tied fairly tightly to ensure that the overlying bleb is well compressed. They remain in place for 1 to 4 weeks. In some

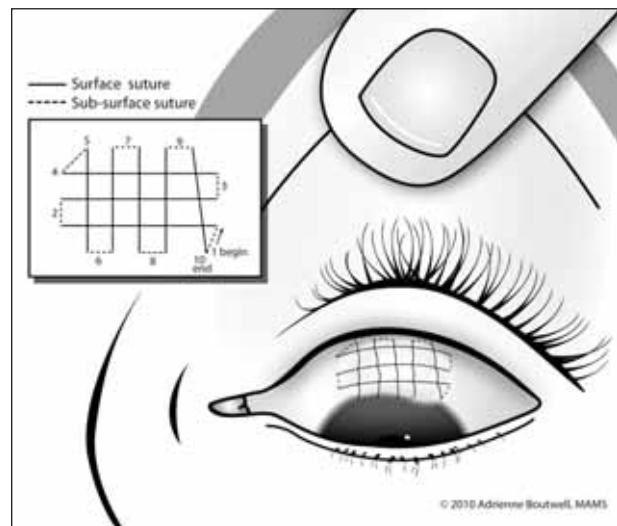


Figure 1. The suturing sequence to create the checkerboard-pattern compression mattress sutures using a single 9-0 nylon suture.

cases, however, compression is inadequate, and the dysesthesia persists.

This article shares our modification of the Palmberg procedure as an attempt to create a less dysesthetic bleb while maintaining its function.⁶

OUR MODIFIED TECHNIQUE

A small series (N = 5) of patients underwent revision for bleb dysesthesia using our modified Palmberg compression mattress suture technique. All patients were initially managed with aggressive lubrication and topical NSAIDs but experienced no relief of their symptoms. All IOPs were well controlled in the single digits or the low teens on no medications. Because of visually significant cataracts and chronic ocular discomfort refractory to conservative therapy, patients underwent uncomplicated

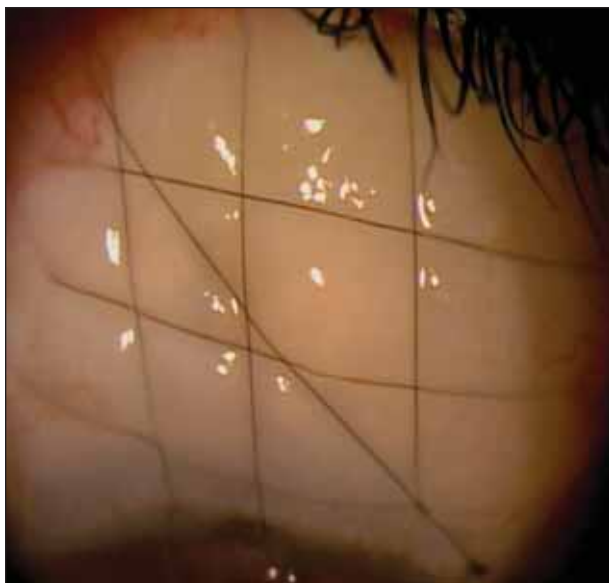


Figure 2. Modified checkerboard-pattern compression mattress suture over the bleb. One continuous nylon suture was used. In this case, the suture was brought down diagonally for greater central compression.

clear corneal phacoemulsification cataract surgery with bleb revision. In each case, we used a temporal clear corneal approach to phacoemulsification. After cataract extraction, we placed a single interrupted 9-0 nylon suture at the wound before proceeding with a superior-approach bleb revision.

We began by decompressing the bleb using a 30-gauge needle to enter the bleb 10 mm posterior to its wall. This technique avoided the creation of a track from which the bleb could leak. A single 9-0 nylon suture (TG 160-6; Ethicon, Inc., Somerville, NJ) was passed horizontally back and forth over the bleb in a horizontal mattress fashion. Next, we passed the same suture vertically back and forth over the bleb. The suture was then tied at the original entry site and rotated into clear cornea (Figure 1). All of the sutures were secured with episcleral bites peripheral to the actual bleb. The overall effect was that of a grid, with evenly placed pressure points, as seen in Figure 2, which has a slight modification.

When we removed the sutures 1 week postoperatively, the IOPs remained in the range of 9 to 14 mm Hg on no drops. This outcome was within 2 to 3 mm Hg of the patients' preoperative IOPs. The blebs were flatter but still thick walled and elevated (Figure 3). Subjectively, the patients reported a significant improvement in their dysesthesia. Steroids and NSAIDs were tapered over several weeks.



Figure 3. One week postoperatively, the sutures have been removed. The bleb remains avascular and cystic. Surrounding injection is diminished.

DISCUSSION

The initial horizontal pass of the 9-0 nylon suture through the bleb before the passage of the Palmberg-style suture may permit tighter apposition and greater flattening of the bleb compared with a simple X-patterned stitch. The checkerboard pattern also seems to allow even compression of the bleb and more effective adherence of the steep bleb conjunctiva to the underlying tissues, which produces overall flattening. Due to the evenness of the compression owing to the use of one continuous suture, we believe that this technique may work especially well for thick-walled, elevated blebs that have a large surface area.

We suspect that the sutures must be removed promptly (1 week postoperatively in our cases) to prevent over-remodeling of the bleb, which could diminish the bleb's filtering capacity. One proposed mechanism for remodeling of the bleb may be related to matrix metalloproteinases, which contribute to connective tissue remodeling and scar formation. It is possible that the level of matrix metalloproteinases is altered by the compression sutures, thereby promoting further scarring and flattening of the bleb.⁷

All of our patients underwent cataract extraction at the time of bleb revision, which may have contributed to the alteration in the bleb's structure. Perhaps the additional postoperative inflammation further flattened the bleb. Cataract extraction likely augmented the decrease in IOP and might have countered any potential pressure elevation due to diminished function of the bleb from revision.

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CONCLUSION

There are many techniques for managing bleb dysesthesia. The key is to maintain a well-functioning bleb while restoring the patient's comfort. Our modified Palmberg checkerboard compression suture may provide an alternative for relieving bleb dysesthesia while maintaining low IOPs and a functioning bleb. □

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