

Clinical Experience With the Tube Extender

A look at how this device may fit in the surgical armamentarium.

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Glaucoma drainage devices have been used for several years and are effective in surgery for refractory glaucomas. The Tube Extender (New World Medical, Inc., Rancho Cucamonga, CA) is a device for which we have found a variety of uses in several unique and difficult situations. This article provides a brief overview of the Tube Extender and its role in the surgical revision of glaucoma drainage implants.

BACKGROUND

The Tube Extender (Model TE) is 1.14 mm high and 3.05 mm wide. It is composed of a 24-mm-long piece of silicone tubing attached to a silicone plate with two positioning holes for scleral fixation (Figure 1). The opposite end of the plate has a junction with a slightly larger bore that can be connected to the tube from the drainage device. The surgeon may cut the tubing to the appropriate length and place it in the anterior chamber, thereby establishing aqueous flow to the plate. One of the advantages of the Tube Extender is that it can create a secure junction with any glaucoma drainage device when greater length of the tube is necessary.

In several circumstances, the Tube Extender has proven invaluable to us, such as in cases of retracted and exposed tubes. In addition, we have used the device when revising a tube that we wished to relocate from the pars plana to the anterior chamber. Theoretically, the Tube Extender could also be helpful in cases where the drainage tube was cut too short at the time of implantation or any time the tube was inadvertently cut.

RETRACTION OF THE TUBE

A 5-year-old male, who had undergone implantation of a drainage implant when he was 5 months old, was referred to our office. On examination, the patient's IOP was 37 mm Hg on medical therapy, and the tube was not visible in the anterior chamber. Gonioscopy clearly showed that the tube had retracted from the anterior chamber. As anticipated preoperatively, it was not possible to extend the tube back



Figure 1. The Tube Extender (Model TE).

into the anterior chamber during surgical revision, and the Tube Extender was needed. The patient's IOP has been well controlled in the mid- to high teens on 0.25% timolol q.a.m. for more than 18 months after the revision.

We have had several other patients with retracted tubes referred to us for a revision. Rather than struggle to move the plate or place a new implant altogether, we have used the Tube Extender with complete success. We have not experienced any failure of or leakage from the device.

EROSION OF THE TUBE

A 7-year-old male was referred to our practice when the tube of his drainage device became exposed through the conjunctiva. The exposed area involved over half of the tube, which may have been uncovered for a prolonged period, possibly months. There was no sign of infection.

During surgical revisions for small areas of exposure, we often debride the affected area, treat it with alcohol, place a new patch graft over the existing tube, and mobilize conjunctiva in order to completely cover the new patch graft. Because of the extensive and prolonged exposure in this case, we removed the tube from the anterior chamber and excised the area of the tube that had been exposed. We connected a Tube Extender to the implant's plate, which we positioned in an adjacent area that was not eroded or exposed. After placing the tube in the anterior chamber, we

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covered it with a new patch graft and conjunctiva. In this case, the Tube Extender allowed us to revise a drainage system without using a tube that had been potentially exposed for months.

REPOSITIONING A TUBE

A 64-year-old male was referred to us for the treatment of an IOP of 30 mm Hg on maximum tolerated medical therapy in his right eye. The patient had undergone cataract surgery and the placement of an Ahmed Glaucoma Valve (New World Medical, Inc.) through the pars plana in his right eye 1 year prior to the consultation with us.

During the revision, we found that the tube had become kinked. Rather than place it back in the pars plana, we cut the tube, lengthened it with the Tube Extender, and implanted the tube in the anterior chamber. This approach restored the flow of aqueous and avoided a possible vitrectomy in the future. The patient's IOP has since remained in the low to midteens.

Pars plana tube insertion may be helpful in avoiding corneal problems in patients with corneal grafts or compromised corneas. In some patients, the anterior chamber may be shallower than normal. Also, in patients treated for retinal problems, it may be more convenient to place tubes through the same pars plana incision used for retinal surgery. With this patient, there were no potential problems with anterior chamber tube insertion.

CONCLUSION

The Tube Extender is useful in eyes that have undergone the implantation of a glaucoma drainage implant that requires revision and a lengthened tube. A retracted tube is probably the most common, but by no means the only, indication for using the device. By employing a Tube Extender, clinicians may be able to avoid the need to place a second drainage implant or to perform a cyclodestructive procedure. It is likely that the uses for the Tube Extender will increase as more ophthalmologists become familiar with the device. □

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