Staining of the Tenon Capsule With Trypan Blue During Enucleation Surgery

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Trypan blue vital staining has been used increasingly in ophthalmic surgery. We describe a new extraocular application of trypan blue in staining of the Tenon capsule during enucleation surgery. The most common clinical use of trypan blue is staining of the anterior Tenon capsule to assist in creating a capsulorrhexis during removal of a white or mature cataract.1-3 Trypan blue has also been implemented in staining of the posterior stromal fibers during deep lamellar keratoplasty,4 staining of the internal limiting membrane during a peel,5 and as an adjunct in the complete removal of proliferative vitreoretinopathy.6 To our knowledge, all ophthalmic uses of trypan blue have previously been intraocular.

When using vascular integrated orbital implants following enucleation surgery, closure in layers is performed to decrease the risk of exposure. These layers consist of the posterior Tenon capsule, anterior Tenon capsule, and the conjunctiva separately over the implant. It can be difficult to distinguish accurately the anterior Tenon capsule from the conjunctiva. We stained the anterior Tenon capsule with trypan blue to distinguish it visually from the conjunctiva. To our knowledge, this technique is the first extraocular application of trypan blue.

During enucleation surgery, prior to closure of the anterior Tenon capsule and conjunctiva, Vision Blue (DORC International BV, Zuidland, the Netherlands) was instilled into the wound with a syringe. The wound was then irrigated with normal saline. The Tenon capsule stained clearly with no uptake of trypan blue by the conjunctiva, allowing visualization of the Tenon capsule separate from the conjunctiva during layered closure (Figure). We were therefore able to demonstrate visually that (1) there was no entrapment of the conjunctiva in the Tenon capsule wound, and (2) there was complete closure of the conjunctiva over the Tenon capsule.

Conjunctival cysts may form secondary to incarceration of the conjunctiva accidentally inverted during closure of the Tenon capsule.7 Thus, identification and closure of the Tenon capsule and conjunctiva in separate layers could prevent conjunctival cysts from forming, particularly in cases of secondary implants with previous disruption of the anatomy.7,8 The incidence of conjunctival cysts following enucleation surgery varies among studies, ranging from 0.3%9 to 8%.10 Conjunctival cysts can result in an ill-fitting prosthesis and difficulty with retention of the prosthesis, as well as exposure and infection of the implant.7,8

Although the incidence of conjunctival cysts following enucleation appears low, we feel that our technique is a worthwhile preventive measure given the possible severe complications of conjunctival cysts. Ensuring closure of the anterior Tenon capsule and conjunctiva as separate layers may also reduce other compli-
cations such as implant exposure and/or extrusion. The use of trypan blue also provides an excellent means by which trainee surgeons can be certain that in enucleation surgery closure of the wound occurs in separate layers.

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