Technique for Shortening a Long Clear Corneal Incision

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An optimal clear corneal incision creates a self-sealing intrastomal tunnel. Variability in incision length may pose surgical difficulties for subsequent phacoemulsification. An incision that is too long may lead to challenges including decreased instrument mobility, decreased visibility due to corneal striae, stromal hydration, and a difficult angle of approach to the cataract. These sequelae may lead to surgical complications or abandonment of the original incision. We describe a technique for shortening a long clear corneal incision with the intentional creation of a flap of corneal tissue at the posterior internal wound edge. This technique is a simple and quick modification that may avoid the pitfalls of an incision that is too long.


The clear corneal incision (CCI) is the most commonly performed incision in cataract extraction by phacoemulsification.1 Ideal incisions are stable in wound architecture and have a self-sealing, valve-like intrastromal tunnel design.2 Wound architecture may also be important in preventing hypotony and postoperative endophthalmitis.3 Premature posterior entry or delayed anterior entry into the anterior chamber results in a wound tunnel that is too short or too long, respectively. A short tunnel can lead to loss of anterior chamber stability, iris prolapse, and decreased self-sealing tissue apposition. A long tunnel decreases surgical instrument mobility; excessive manipulation of surgical instruments can lead to corneal striae or edema, which in turn decreases intraoperative visibility. A long incision also limits access to subincisional structures, making capsulorrhexis and cortical removal more difficult. Herein, we present a technique for shortening a long CCI.

METHODS

The shortening of a long corneal incision can be accomplished by intentionally creating a posterior corneal tongue.4 To do this, viscoelastic is first introduced into the intrastromal tunnel to facilitate entry of a paracentesis blade or a metal keratome into the anterior chamber through the original plane of the incision. The cutting edge of the paracentesis blade or metal keratome is then used to make a downward vertical incision at the lateral wall of the intrastromal tunnel to incise the posterior corneal lip at the junction of the tunnel entry into the anterior chamber. This is repeated on the opposite wall of the intrastromal tunnel with the other cutting edge of the metal keratome, as seen in the Figure. This results in a posterior corneal tongue on an internal hinge, effectively shortening the length of the intrastromal tunnel and allowing for a less steep approach to the anterior chamber, as in the video (http://www.archophthalmol.com). Because of limited mobility within the confines of the wound architecture, it may be difficult to create a purely vertical incision, necessitating a slightly diagonal component to the cut. Alternatively, vertical scissors can be used to create the incisions of the lateral wound edge. Prior to the end of the procedure, it is important to reposit the posterior corneal tongue to its anatomical position and ensure that it is not everted into the intrastromal tunnel, as this phenomenon has been observed to result in postoperative wound leaks.5

Video available online at www.archophthalmol.com

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A CCI with a long intrastromal tunnel makes phacoemulsification a more technically challenging procedure. Our technique for shortening a long CCI provides a quick, simple modification to allow for better wound control and anterior chamber accessibility. Potential disadvantages of this technique include overcorrection, resulting in a wound that is too short and focal loss of endothelium at the site of the posterior corneal tongue. Additionally, the surgeon may inadvertently widen the wound in an attempt to make a vertical cut, leading to excessive outflow of irrigating solution. In our experience using this technique in 4 cases, there were no surgical complications; the corneal flap was reposited, creating a self-sealing incision that did not require suturing.

In summary, we describe a technique for shortening a long CCI that may avoid the need to abandon the original incision. This technique may be particularly useful in teaching residents cataract surgery when variability in wound construction is common.

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REFERENCES