

Pseudo anterior capsule barrier for the management of posterior capsule rupture

Soon-Phaik Chee, FRCOphth

A technique that uses an implanted intraocular lens (IOL) to create a barrier for the management of posterior capsule rupture is described. When a rupture occurs, surgery is halted and a dispersive ophthalmic viscosurgical device (OVD) injected into the anterior chamber to prevent vitreous prolapse. The remaining nucleus is maneuvered into the anterior chamber away from the pupillary space. The posterior capsule tear is converted into a continuous curvilinear capsulorhexis where possible. Dissociated anterior vitrectomy is performed as indicated, keeping the large nuclear fragments trapped in the OVD-filled anterior chamber. An IOL is implanted in the capsular bag or sulcus with optic capture through the anterior capsulorhexis. Using reduced parameters, phacoemulsification of the remaining fragments is completed over the IOL, which functions as a barrier to seal off the vitreous cavity. Residual nuclear fragments and vitreous are cleared from beneath the optic by placing the vitreous cutter under the optic, recapturing the optic before the instruments are removed from the eye.

Financial Disclosure: The author has no financial or proprietary interest in any material or method mentioned.

J Cataract Refract Surg 2012; 38:1309–1315 © 2012 ASCRS and ESCRS

 Online Video

As we strive toward perfect visual outcomes for our patients with the advent of femtosecond laser refractive surgery, which is considered by some advocates to be able to create the perfect continuous curvilinear capsulorhexis (CCC) and corneal incisions, surgeons are still plagued by the occurrence of posterior capsule rupture.¹ Posterior capsule rupture is a recognized complication of cataract surgery, with an incidence during phacoemulsification ranging from 0.45% to 3.6%.^{2–9} Despite the recent improvement in the fluid dynamics of modern phacoemulsification technology

coupled with the necessary precautionary measures, such as structured surgical training, adjustment of the phacoemulsification machine parameters to match the experience of the surgeon, the density of the cataract and the stage of nucleus removal, posterior capsule rupture can occur. Although the rate of posterior capsule rupture is higher among trainee surgeons,¹⁰ it happens in the most experienced hands.²

Posterior capsule rupture develops most frequently during removal of the last nuclear fragment following a transient post-occlusion surge, especially when dealing with a dense nucleus or in the presence of unrecognized misdirection of aqueous/balanced salt solution resulting in the fluid being trapped behind the posterior capsule, which comes forward unexpectedly into the phaco tip. Early recognition and proper management of posterior capsule rupture are important as they limit the size of the capsule tear, minimize vitreous loss, and avert the disaster of a dropped nucleus. A well-managed posterior capsule rupture can result in a good outcome.⁹ However, improper management of vitreous may lead to complications such as cystoid macular edema,¹¹ herniation of vitreous into the

Submitted: January 9, 2012.

Final revision submitted: February 15, 2012.

Accepted: February 18, 2012.

From the Singapore National Eye Centre, the Department of Ophthalmology, Yong Loo Lin School of Medicine, National University of Singapore, and the Singapore Eye Research Institute, Singapore.

Corresponding author: Soon-Phaik Chee, FRCOphth, Singapore National Eye Centre, 11 Third Hospital Avenue, Singapore 168751. E-mail: chee.soon.phaik@sneec.com.sg.



Figure 1. Cross-section view of eye. Once a posterior capsule rupture has occurred, the anterior chamber is filled with dispersive OVD and the phacoemulsification needle is removed.



Figure 2. Cross-section view of eye. The nuclear fragment is disengaged from the vitreous and levitated into the anterior chamber, away from the pupillary space, where it is trapped by dispersive OVD.

anterior chamber with endothelial touch, postoperative endophthalmitis,¹² and retinal detachment.¹³

Various methods of managing posterior capsule rupture have been described. In general, the technique used depends on the extent of the tear, size, and position of the residual nuclear fragment, the presence or absence of vitreous presentation, and the skill and experience of the surgeon. Managing the large residual nucleus after posterior capsule rupture has occurred early in the procedure is most challenging. Manual methods, which involve wound enlargement and removal of the entire nuclear fragment, require less surgical skill than automated techniques, which fragment the residual nucleus over an open posterior capsule. However, the latter has the advantage of maintaining a small incision. An alternative technique that uses the intraocular lens (IOL) to function as a pseudo anterior capsule is described. This barrier platform allows the surgeon to manage nuclear fragments safely and effectively partition off the vitreous while preserving the incision size.

SURGICAL TECHNIQUE

When a posterior chamber tear is recognized, surgery is immediately halted. The anterior chamber space is maintained by injecting an adequate dispersive oph-

thalmic viscosurgical device (OVD) through the side-port incision over the posterior chamber defect to tamponade the vitreous and to fill the anterior chamber before the phaco needle is removed (Figure 1). If vitreous prolapse cannot be managed with this maneuver, a 20-gauge or 23-gauge anterior vitrectomy with dissociated irrigation is prepared. More dispersive OVD is used to viscodissect and displace the cortex and nuclear fragments out of the capsular bag into the anterior chamber, taking care not to over-pressurize the eye. Bimanually maneuvering the fragments using a Barrett mushroom nucleus rotator/manipulator (Bausch & Lomb Storz Ophthalmics) to hook the nucleus out of the capsular bag and a Sinsky hook in the other hand introduced via the side port to simultaneously “grasp” the fragment and maneuver it to the safe haven of the anterior chamber is effective for manipulating large fragments.¹⁴ The fragments are displaced from the pupillary space as necessary to enable visualization of the subsequent steps (Figure 2).

Where possible, the posterior capsule rupture is converted into a posterior continuous curvilinear capsulorhexis (PCCC)² to prevent further extension (Figure 3). A microcapsulorhexis forceps is helpful for this procedure as corneal striae and opening of the incision are minimized when the instrument tips are angled



Figure 3. Cross-section view of eye. Where possible, the posterior capsule tear is converted into a PCCC using a microcapsulorhexis forceps.

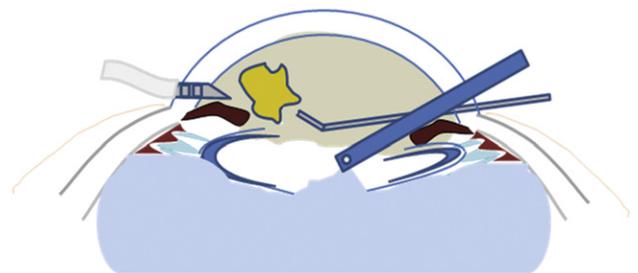


Figure 4. Cross-section view of eye. Anterior vitrectomy with an anterior chamber maintainer is performed to remove vitreous and small nuclear fragments while the large nuclear fragment is intermittently nudged into the anterior chamber.

Download English Version:

<https://daneshyari.com/en/article/4017692>

Download Persian Version:

<https://daneshyari.com/article/4017692>

[Daneshyari.com](https://daneshyari.com)