

How to Manage Pseudoexfoliation Syndrome in Cataract Surgery

With a controlled surgical technique and the help of capsular support devices when needed, phacoemulsification is safe and beneficial in eyes with this condition.

BY BRADFORD J. SHINGLETON, MD

Several studies have demonstrated the beneficial effect of phacoemulsification on IOP in eyes with open-angle glaucoma.^{1,2} This favorable effect also extends to eyes with pseudoexfoliation (PXF) syndrome.³ When eyes with PXF with and without glaucoma were compared, the reduction in IOP after phacoemulsification was proportional to the preoperative IOP; a higher preoperative IOP was associated with a greater reduction in IOP.³

Despite the beneficial long-term effects of phacoemulsification on IOP, the pressure may be elevated in eyes with PXF on the first postoperative day, with spikes higher than 30 mm Hg.³ The risk for significant spikes in IOP must be taken into consideration in eyes undergoing cataract surgery alone with marked optic nerve cupping and visual field loss.

COMMON RISK FACTORS

There are certain intra- and postoperative issues that are more common in patients with PXF.⁴ Intraoperative complications include a small pupil, a shallow anterior chamber,⁵ a hyper-deep anterior chamber, positive pressure, vitreous prolapse, zonular dialysis, capsular fragility, a posterior capsular tear, and a dropped nucleus. Postoperative problems comprise IOP spikes,

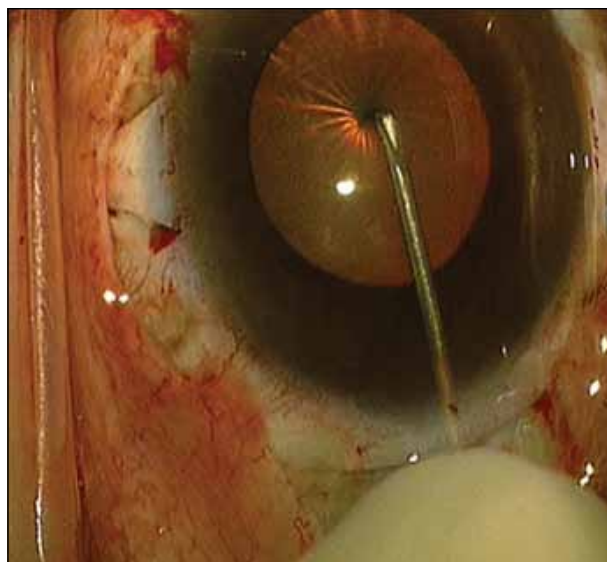


Figure 1. Radiating capsular striae heralding zonular weakness during the creation of the anterior capsulotomy.

corneal edema, aqueous flare, IOL deposits, posterior synechiae, cystoid macular edema, anterior capsular contraction, posterior capsular opacification, IOL subluxation/dislocation, and glaucoma.



Figure 2. Anterior capsular phimosis in an eye with pseudoexfoliation.

SURGICAL TECHNIQUES FOR PXF

Capsulorhexis

A well-centered and properly sized continuous curvilinear capsulorhexis works well in eyes with PXF. In my experience, a 5.5-mm capsulorhexis is ideal, because it provides anterior capsular overlap of the IOL postoperatively. This size capsulorhexis also gives the surgeon satisfactory access to the lens during the procedure. If striae are present during puncture of the anterior capsule, zonular weakness may be a problem (Figure 1).



Hydrodissection

Hydrodissection is critical to maximize nuclear rotation and minimize the transmission of forces to the zonules during phacoemulsification. Free and complete rotation of the nucleus should be achieved before the surgeon commences phacoemulsification.

Phacoemulsification Technique

In my experience, using a controlled technique and working in the safe, central zone of the anterior chamber aids in the completion of a safe phacoemulsification procedure. Using two instruments to rotate the nucleus may minimize zonular stress, and bimanual techniques may also enhance phacoemulsification when dealing with a small pupil.

Removal of Cortical Material

During the removal of cortical material, zonular insta-

“If there is an intact capsule and no significant zonular weakness, I favor a three-piece acrylic or silicone IOL placed within the capsular bag.”

bility can often manifest as folds in the peripheral posterior capsule, collapse of the capsular equator, or frank visualization of the peripheral capsular fornix in eyes with PXF. Tangential stripping of the cortex during irrigation and aspiration may facilitate the removal of cortical material.

Adjunctive Devices for Zonular Weakness

Capsular retractors help to support the capsular bag in the anterior-posterior direction and facilitate hydrodissection and mobilization of the nucleus. They can be placed before or after the capsulorhexis is fully completed. The Ahmed Capsular Tension Segments (Morcher GmbH; distributed in the United States by FCI Ophthalmics, Inc.), which provide support in a fashion similar to that of capsular retractors, offers full-quadrant (90°) support and can be held in place with an iris retractor or suture. Capsular tension rings (CTRs) are designed for placement within the capsular bag. This device expands the capsular fornix, buttressing areas of zonular weakness, and equalizes zonular tension around the capsule. A CTR can recenter a mildly subluxated capsular bag. A standard CTR can be used in cases of mild zonulopathy, but progressive post-operative zonulysis and IOL dislocation can still occur, even with the CTR in place. In cases of more advanced zonulopathy, I favor a modified CTR such as the Cionni Ring (Morcher GmbH; distributed in the United States by FCI Ophthalmics, Inc.).⁶ Either a single eyelet or double-eyelet CTR can be sutured to the sclera via the ciliary sulcus.

IOL Selection and Fixation Techniques

A PCIOL is preferentially placed within an intact capsular bag. If there is an intact capsule and no significant zonular weakness, I favor a three-piece acrylic or silicone IOL placed within the capsular bag. In the case of mild to moderate zonular instability, I use a modified CTR with placement of an IOL in the capsular bag, or I may use IOL capture with the optic in the capsular bag and the haptics positioned in the sulcus. If there is grossly inadequate capsular support, I favor a PCIOL sutured either to the iris or via the ciliary sulcus. Current-generation ACIOLs are acceptable in eyes with PXF if there is no gross angle abnormality. All current-

generation IOL materials (acrylic, silicone, or hydrogel) can be used. Plate-haptic IOLs are relatively contraindicated.

POSTOPERATIVE ISSUES

Early IOP elevation can be effectively treated by sterile release of aqueous from the paracentesis coupled with supplemental medical therapy as needed. Anterior capsular phimosis is common (Figure 2). At the earliest sign of anterior capsular contraction, it is best to perform Nd:YAG laser relaxing incisions in the phimotic area of the capsule. This treatment will relax contracting forces and minimize the IOL's decentration.

The incidence of late postoperative pseudophakodonesis and subluxation or dislocation of an IOL is low in eyes without PXF, but it is higher in eyes with PXF compared with eyes without the syndrome.⁴ The typical time frame for IOL displacement in patients with PXF requiring surgery is 8.5 years after the initial procedure.⁴ Significant IOL displacement is managed by repositioning or exchanging the IOL. Many different techniques are available to the ophthalmologist to correct this problem.

CONCLUSION

Surgery in eyes with PXF is potentially more complicated due to IOP spikes and zonular and capsular

issues. With careful preoperative assessment to identify high-risk eyes and with special attention to operative techniques to minimize zonular stress, however, I have been able to achieve excellent results in my PXF patients. ■

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