

Phacoemulsification in the Presence of PXF

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Every day I operate, I perform surgery on at least one patient with pseudoexfoliation (PXF). As ophthalmologists, we all are familiar with the risks posed by poor pupillary dilation and weak zonules, but these cases are uneventful more often than not. I asked several experts how they evaluate PXF eyes to enhance the surgical outcome, and I was surprised at how critical pupillary dilation is to a successful outcome in their estimation. Additionally, these surgeons use a capsular tension ring (CTR) without hesitation. To prevent progressive post-operative zonular dialysis, they implant acrylic IOLs to avert anterior capsular phimosis, and they perform early laser lysis of the anterior capsular rim when phimosis occurs.

— William J. Fishkind, MD, Section Editor

PAUL H. ERNEST, MD

If the patient has marginal pupillary dilation because of adherence between the iris and the material on the anterior lens capsule, then it is necessary to stretch the pupil. The surgeon may use a Beehler pupil dilator (Moria, Antony, France) or another instrument that can create microcuts on the sphincter's border with stretching.

Regarding zonular integrity, the key step is to decrease one's manipulation of the lens within the capsule, which lessens the stress on the zonules. Hydrocortical cleavage and an assurance that the nucleus is freely mobile within the capsular bag are also important. If the nucleus ranges from dense to brunescient, making a large capsulorhexis will facilitate its removal.

After nuclear removal, the surgeon must assess the extent of any zonular weakness before proceeding. If it is minimal (1 to 2 clock hours), one can safely remove the cortical material, preferably with a bimanual I/A system or a silicone tip to prevent the aspiration of the capsule and stress on the zonules. The surgeon should start away from the areas of zonular weakness, remove all of the cortical material, and then approach the area of zonular instability last. For significant weakness (greater than 2 clock hours), it would be advisable to insert a CTR prior to removing any cortical material in the areas of zonular instability.

Postoperatively, one must follow up with patients who have PXF in order to look for possible contraction

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—Larry E. Patterson, MD

of the anterior capsule (early phimosis). In such cases, it is important to use an Nd:YAG laser to perform radial cuts through the anterior capsule at its edge and to prevent future stresses on the peripheral zonules.

In patients with PXF syndrome and previous surgery in whom zonular weakness extends for a significant number of clock hours, one could consider passing sutures through the IOL's haptics within the capsular bag and then through the ciliary sulcus, thus increasing the stability of the lens.

LARRY E. PATTERSON, MD

Treating a patient who has PXF begins in the office with a careful evaluation of the anterior segment. I routinely note in all cataract surgery patients' charts how well their pupils dilate, and I look carefully for signs of phacodonesis. If there is any indication that the lens is unstable, I plan to use a CTR. Although some surgeons have advocated the device's routine use with PXF, I see no definite benefit to that approach at this time.

Intraoperatively, I make the capsulorhexis slightly larger than normal, because the capsules in PXF have a tendency to contract to a greater degree than in normal eyes, and this shrinkage sometimes causes a visually significant anterior capsular phimosis. I follow cases of contraction closely and, if it worsens, consider performing an Nd:YAG laser disruption of the anterior capsular edge in several spots to relieve the tension and stop the progression. I have had success with both silicone and hydrophobic acrylic IOLs, and I am interested in hearing about other ophthalmologists' experiences with the newer versions of the hydrophilic acrylic lenses. Those of us surgeons routinely performing endoscopic cyclophotocoagulation on our cataract-glaucoma patients often see atrophic, white ciliary processes and zonules that have a thick, white, dusty appearance. In my experience, endoscopic cyclophotocoagulation is not quite as effective at lowering IOP in eyes with PXF as in routine cases.

“Careful preoperative planning and a few changes in surgical technique can help avoid ... complications.”

—Geoffrey Tabin, MD

GEOFFREY TABIN, MD

When I have a patient with PXF syndrome who needs cataract surgery, I find that careful preoperative planning and a few changes in surgical technique can help avoid the complications caused by poor dilation and loose zonules. I first carefully review the results of the preoperative examination with special attention to IOP, the size of the dilated pupil, the depth of the anterior chamber, and the presence or absence of phacodonesis. I make certain that a CTR is available for surgery and that the patient's IOP is as well controlled as possible preoperatively.

If the pupil is not at least 6 mm wide when I check it at the start of surgery, I will stretch it with either a three-pronged Beehler pupil dilator or two instruments. After instilling a cohesive viscoelastic to further dilate the pupil, I start my capsular opening with a cystotome needle. I make the tear larger (at least 6 mm) than my usual before proceeding with a gentle and slow cortical cleaving hydrodissection during which I am careful not to press down on the nucleus.

If I observe any zonular weakness during the capsulorhexis, I place a CTR in the capsular bag prior to

removing the lens. I prechop the nucleus, gently bring the nuclear fragments out of the capsular bag, and proceed with phacoemulsification in the pupillary plane. I avoid manipulating the nucleus in the capsular bag.

If the capsule feels unstable during cortical aspiration, I stop and place a CTR before completing cortical cleanup. I then place my standard IOL in the capsular bag.

Postoperatively, I prescribe both steroidal and non-steroidal anti-inflammatory drops.

LYNN POLONSKI, MD

The identification of the condition, preparation, and a clear explanation to the patient of the possible surgical complications are the keys to the successful treatment of an eye with a cataract and PXF. The amount of exfoliative material does not always correspond to the degree of zonular weakness or glaucoma. In patients who are usually resistant to medical therapy (eg, those with increased pigmentation at Schwalbe's line), removing the lens usually produces a sustained reduction in IOP. I also feel that the extent of pupillary dilation preoperatively may indicate the presence of dense deposits of granular material at the peripheral zone. This finding corresponds to zonular weakness due to chronic inflammation, and the instability may lead to a subluxated lens or zonular dialysis during cataract surgery.

The choice of IOL is important in PXF eyes. In preparation for cataract extraction, surgeons should choose their acrylic lenses wisely from a one-piece IOL, a three-piece IOL for the bag, or a sulcus lens. IOLs with large optics like an AcrySof MA50BM (Alcon Laboratories, Inc., Fort Worth, TX) are excellent in cases of posterior capsular rupture or insufficient stability of the capsular bag due to zonular dehiscence. In challenging cases, an ACIOL may be an option if the bag is completely lost from zonular dialysis. I feel that acrylic lenses are preferable, because they will minimize phimosis of the anterior capsule. Early Nd:YAG capsulotomy may be beneficial if contraction of the anterior capsule becomes evident.

I generally use a dispersive viscoelastic during the capsulorhexis due to the anterior capsule's elasticity from chronic inflammation and because the agent improves pupillary dilation. Employing a Utrata forceps early helps to decrease the downward tension on the lens capsule and the loss of zonules. I always use iris retractors to improve my access to the lens in eyes with poorly dilating pupils. If the crystalline lens moves significantly during the capsulorhexis, I will place the iris retractors in the anterior capsule after I complete a 5- to 6-mm tear in order to support the bag. The size of the capsulorhexis is important for easier chopping of the lens and purchase to limit nuclear rotation. It is also a factor in reducing

tension on the capsular bag and zonular dehiscence that can lead to the IOL's subluxation. Whether placed early in the course of phacoemulsification or at the end of cortical cleanup, a CTR redistributes capsular forces to the intact zonules to allow the IOL's implantation in the bag.

I am always on guard for an IOP spike on the first postoperative day in patients with PXF. In such instances, I prescribe a beta blocker, alpha-agonist, or oral carbonic anhydrase inhibitor. ■

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