HOW TO MASTER POST-SURGICAL COMPLICATIONS

A rundown of common potential side effects and how to handle them.

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With more optometrists becoming involved in the shared care of ophthalmic surgery patients, we are responsible for recognizing and managing a wide range of complications in the postoperative period. Part of that responsibility includes accurately and effectively communicating with both the patient and the surgeon and taking into consideration the expectations of both parties to ensure that all needs are met. Once this is established, it is much easier to navigate through most of the postoperative complications we encounter.

This article offers a brief overview of some of these complications, along with tips on how to handle them.

COMPLICATIONS OF CATARACT SURGERY

When comanaging patients undergoing cataract surgery, there's quite a variety of postoperative complications to be on the lookout for. Some can be treated or monitored by an optometrist while others need the immediate attention of a specialist.

Posterior Capsular Opacification

Posterior capsular opacification (PCO) is the most common complication of cataract surgery, occurring in approximately 50% of patients.[1] Increased prevalence is seen in younger patients, eyes with mature cataracts, and those with a history of inflammation. PCO forms as a result of a proliferation of epithelial cells and can present in many different ways. Management is straightforward, as PCO can be eliminated with Nd:YAG laser capsulotomy.

With the expanding scope of practice around the country, many optometrists can address this complication themselves, rather than refer patients out to another provider for treatment. Potential complications with Nd:YAG laser capsulotomy include inflammation and chance of retinal complications such as a hole, tear, or detachment.[2] Patients with a history of either of these should be monitored closely after a Nd:YAG laser capsulotomy for recurrence of these conditions.

Elevated IOP

One of the most common causes of elevated IOP after cataract surgery is retained viscoelastic in the eye. The material obstructs the trabecular meshwork, preventing the outflow of aqueous, which then results in a significant spike in eye pressure. It is best to establish an IOP threshold with your surgeon, but typically, when the IOP nears 30 mm Hg or more, "burping" the eye is warranted to quickly release the aqueous and the pressure. For patients with glaucoma, the IOP threshold may be lower, depending on the stage of the disease.

Because the patient may be unpredictable and move during the burping process, a blunt tool, such as jeweler forceps or a punctal dilator, is preferred to avoid damaging the sclera or cornea. The tool should be held parallel to the eye and pressed

adjacent to the side port incision for a few seconds to lower the pressure. The paracentesis can be located 2 to 3 clock hours from the main corneal incision. After pressing on the eye, you should see a release of aqueous, and sometimes even viscoelastic, through the paracentesis. Fluorescein dye may be used for easier visualization of both the aqueous and paracentesis. Topical antibiotics should be instilled prior to and after performing the procedure and the pressure should also be rechecked to decide if another burp is needed.[3] Once the pressure is lowered to an acceptable level, which may vary depending on the patient, most patients can be monitored with topical therapy.

About 1 week after surgery, the most common cause for elevated IOP is usually steroid response. In these cases, you may consider tapering or discontinuing the use of steroids and continuing with only nonsteroidal antiinflammatory drugs (NSAIDs) or proceeding with steroid use and adding an IOP-lowering drop.

Cystoid Macular Edema

Postoperative cystoid macular edema (CME), also known as Irvine-Gass syndrome, most commonly occurs about 6 weeks after surgery and has an incidence of up to 2%.[4] Most cases of CME are self-resolving and can be simply observed, but should treatment be initiated, the use of off-label topical NSAIDs, in combination with topical steroids, is highly effective. Patients should be monitored monthly using OCT to check for resolution. Persistent cases may need to be sent to a retina specialist for sub-Tenon or retrobulbar administration of steroids.[5]

Dislocated Intraocular Lens

Although rare, you may encounter a patient months or years after cataract surgery with a dislocated intraocular lens (IOL). Common causes include trauma or weak zonules, but dislocation can happen spontaneously as well. The lens will usually settle in the vitreous; however, a fully dilated fundoscopic examination should be performed to ensure there are no breaks in the retina. Although a dislocated IOL can be perfectly safe and does not need to be operated on right away, the cataract surgeon and a retina specialist should be informed immediately, as the patient may require multiple surgeries.

In some cases, the retina surgeon may need to first retrieve the lens from the vitreous in a separate procedure before the cataract surgeon can reposition the IOL. A posterior capsule IOL is usually no longer an option, but more viable alternatives include an anterior chamber IOL, sulcus IOL, or iris or scleral sutured IOL.[6]

Retained Lens Fragment

Retained lens fragments can be an insidious issue, as oftentimes they are small and hard to detect, but will cause seemingly normal postoperative findings, such as corneal edema and inflammation. In cases in which these clinical findings are persistent, it's always a good idea to make sure there is not a small lens fragment lingering around where it doesn't belong.

For example, a fragment in the anterior chamber can lead to persistent corneal edema as well as corneal decompensation, while a fragment in the posterior chamber can lead to retinal breaks and CME. Gonioscopy should always be performed to locate any fragments lodged inside the angle. Small fragments can often be left in the anterior chamber and the eye can be treated with a topical steroid. Large fragments in the posterior chamber usually need to be removed with a pars plana vitrectomy. Whatever the size of the fragment, the surgeon should be alerted in the event that surgical intervention is needed.[7]

Endophthalmitis

A fairly rare, but serious complication after cataract surgery is endophthalmitis, which is caused by outside organisms entering the eye. Therefore, the eye should be thoroughly evaluated for any wound leaks. The incidence is less than 1%, and patients who are at higher risk include those with secondary IOLs, posterior capsule rupture, and those who are of older age, with those 85 years of age and older being at the highest risk.[8,9] Onset is

AT A GLANCE

- Posterior capsular opacification is the most common complication of cataract surgery and can be eliminated with Nd:YAG laser capsulotomy.
- The surgeon and a retina specialist should be informed immediately in cases of suspected endophthalmitis, which is a rare, but serious complication after cataract surgery.
- The most common complication to encounter with a LASIK patient is wrinkling of the flap.
- When working in a comanagement situation, it's important to accurately and effectively communicate with both the patient and the surgeon and to consider the expectations of both parties to ensure that all needs are met.

typically within 1 to 2 weeks after surgery, and clinical signs include decrease in vision, orbital edema or corneal edema, erythema, increased anterior chamber reaction, fibrin in the anterior chamber, vitritis, retinitis, or a combination of any of the above. Treatment generally includes an intravitreal antibiotic injection and possibly a vitreous tap and vitrectomy.[10] For this reason, the surgeon and a retina specialist should be informed immediately in cases of suspected endophthalmitis.

Toxic Anterior Segment Syndrome

Toxic anterior segment syndrome (TASS) is another rare, but serious complication that can occur typically in the first few days after surgery. Etiology and clinical signs are similar to those of endophthalmitis, with the main difference being the time of onset and inflammation isolated to the anterior chamber.[11]

Most cases respond adequately to aggressive use of topical steroids; however, patients with TASS should be monitored daily to check for resolution and to monitor pressure. Nonresolving cases may require an anterior chamber washout, vitreous tap, and/or vitrectomy. For these reasons, all cases of TASS should be immediately brought to the surgeon's attention.[11]

COMPLICATIONS OF LASIK

There are fewer complications to be mindful of in post LASIK patients, but it's just as important to be able to pick up on these complications and know how to react when they do arise.

Ocular Surface Disease

Dry eye is not only a postoperative issue, but also a condition that needs to be addressed before surgery, especially in situations of refractive surgery, where the patient has specific expectations for their postoperative vision. It is important that patients have a stable ocular surface preoperatively to ensure that a reliable refraction has been obtained before determining a surgical goal. It is also critical that we communicate this to the patient. Postoperatively, it is our job to effectively communicate to the patient the effect that ocular surface disease (OSD) has on vision and that their end visual outcome is not determined until their ocular surface is stable.

> DRY EYE IS NOT ONLY A POSTOPERATIVE ISSUE, BUT ALSO A CONDITION THAT NEEDS TO BE ADDRESSED BEFORE SURGERY.

Additionally, the sensations of pain and discomfort caused by OSD are foreign to patients with otherwise healthy eyes and can be a source of worry and panic during the healing process. In such cases, if a combination of lubricating drops and postoperative drops do not result in improvement to the ocular surface, it may be worthwhile to discontinue NSAIDs if the patient's inflammation is resolving at expected levels, as NSAIDs are prone to cause corneal toxicity.

Striae

The most common complication to encounter with a LASIK patient is wrinkling of the flap. *Microstriae* can be more easily visualized with retroillumination, while *macrostriae* can be seen as negative staining with fluorescein.

Microstriae are more common and are a result of folds isolated to the epithelium.[12] Most microstriae are not visually significant and will resolve on their own within a few months.

Conversely, macrostriae, which is a wrinkling of the entire flap, almost always tend to be visually significant and typically requires the surgeon to lift and smooth the flap. In some cases, peripheral macrostriae may not be visually significant and therefore can be monitored for self-resolution; however, it is still best to inform the surgeon before electing to monitor macrostriae.

Diffuse Lamellar Keratitis

Diffuse lamellar keratitis (DLK) is a sterile inflammatory reaction at the LASIK flap interface that typically occurs within the first few days after surgery. DLK starts at the edge of the flap and moves toward the center. The exact etiology is unknown, but some sources may include improperly sterilized instruments, meibomian gland secretions, and sponge fibers under the flap.[13] Often referred to as "sands of the Sahara," the white inflammatory cells proliferating under the flap give DLK a grainy, sand-like appearance. In subtle cases, fluorescein can be used to differentiate between punctate staining above the flap versus DLK under the flap. DLK can be managed with the use of aggressive topical steroids, but in persistent cases, the surgeon may need to lift the flap for a washout. For this reason, the surgeon should be alerted to cases of DLK.

Epithelial Ingrowth

Epithelial ingrowth has become increasingly rare with the use of femtosecond lasers, but some risk factors for occurrence include abrasions at the edge of the flap, re-lifting of the flap, and poor

adhesion of the flap edges.[2]

Similar to DLK, epithelial ingrowth starts at the edge and progresses towards the visual axis. As long as the ingrowth remains in the periphery, it is not visually significant and can be monitored. When ingrowth reaches the visual axis and becomes symptomatic, it is likely necessary for the surgeon to re-lift and debride the inside of the flap.[2]

FACE COMPLICATIONS WITH CONFIDENCE

Although the possibility of encountering postoperative complications may be daunting, we as optometrists have the proper tools to not only recognize when these complications may occur, but also to properly treat and manage patients to ensure a good outcome. Additionally, having open communication and a good understanding of your surgical team can be an important resource. ■

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- Financial disclosure: None