

# UNEXPECTED IFIS



Five tips for managing intraoperative floppy iris syndrome when your usual strategies aren't enough.

BY ALISON D. EARLY, MD

*A poorly behaved iris can turn an otherwise routine surgery into a stressful experience for both the surgeon and the patient. This is especially true for eyes with intraoperative floppy iris syndrome (IFIS). In these cases, recognizing the problem and taking steps to mitigate its effects are critical to lowering the risk of subsequent complications. This month, I am pleased to have my partner at the Cincinnati Eye Institute, Alison D. Early, MD, share her pearls for anticipating and managing IFIS, which can be a vexing problem even for seasoned cataract surgeons.*

—Kavitha Sivaraman, MD

IFIS was first described by Chang and Campbell<sup>1</sup> in 2005. By now, cataract surgeons are aware of factors that predispose certain eyes to exhibit IFIS. The most well-understood risk factor for IFIS is a history of tamsulosin use. Tamsulosin is a selective alpha-1 receptor antagonist (ARA) frequently prescribed for benign prostatic hyperplasia, which is an age-related condition. Several other medications have also been associated with IFIS, but some cases are otherwise idiopathic.

Unfortunately, the clinical triad of iris billowing, iris prolapse, and progressive pupillary constriction (or poor pupillary dilation) associated with IFIS sometimes surprises even seasoned surgeons, increasing the risk of complications.<sup>2</sup>

## FUNDAMENTAL PREVALENCE

**1** Rates of IFIS have increased since it was first described, likely owing to a greater prevalence of ARA use and a better understanding of the entity among

physicians.<sup>3</sup> Despite some conflicting evidence,<sup>1</sup> it is generally thought that halting ARA therapy before cataract surgery does not prevent or reverse the pathophysiology of IFIS.<sup>4,5</sup>

As the prevalence of ARA use rises, it becomes increasingly important for ophthalmologists to be well versed in managing IFIS.<sup>6,7</sup> The growing prevalence of ARA medications can be attributed in large part to the aging of the US population. A higher prevalence of IFIS has been documented in men. Recent studies have suggested, however, that the condition may be more severe and associated with higher complication rates in women.<sup>8</sup>

## FUNDAMENTAL RISK FACTORS

**2** One of the best ways to anticipate potential IFIS is to conduct a detailed review of the patient's medical history and medication list as well as a thorough preoperative examination. Additional risk factors such as advanced age and poor pupillary dilation should also be noted. Some patients with no apparent predisposing risk factors, however, will exhibit IFIS during surgery.

## FUNDAMENTAL COMPLICATIONS

**3** The risk of complications is greater in eyes with IFIS.<sup>4</sup> Associated intraoperative complications include iris damage, hyphema, posterior capsular rupture, dropped nuclear fragments, and vitreous loss. Patients whose cataract surgery is complicated by IFIS are at greater risk of having an irregularly shaped pupil postoperatively, which can

lead to glare or photophobia,<sup>5</sup> and of experiencing uveitis, cystoid macular edema, and secondary retinal detachment after surgery.

## FUNDAMENTAL INTRAOPERATIVE TOOLS

**4** Many surgeons use devices such as the Malyugin Ring (MicroSurgical Technology), I-Ring Pupil Expander (BVI Medical), and flexible iris retractor hooks to manage IFIS. Iris hooks can be placed safely at almost any stage of surgery, but pupillary expansion rings are, in general, more safely deployed early. Attempting to place a pupillary expansion ring later in the case can damage tissues such as the anterior capsule.

The use of epinephrine or phenylephrine, phenylephrine and ketorolac intraocular solution 1%/0.3% (Omidria, Rayner), epi-Shugarcaine (a combination of saline solution, lidocaine, and epinephrine), or similar independently compounded solutions can stiffen the iris by reversing the ARA blockade as alpha-1 receptor agonists. Mydriatics may be administered in the early or late stages of cataract surgery, but additional measures may be necessary. (See the accompanying sidebar for additional intraoperative strategies for managing IFIS.)

## FUNDAMENTAL THE ROLE OF FLUIDICS

**5** A thorough understanding of pressure differentials between the compartments of the eye relative to one another and the atmosphere is especially important for the management of IFIS. Several of the strategies presented in this article aim

## ADDITIONAL INTRAOPERATIVE STRATEGIES

Despite adequate planning and preparation, an unexpectedly floppy iris can make cataract surgery challenging. Following are five strategies for managing a surprisingly unruly iris.

- **Position clear corneal incisions slightly anterior to the limbus.** This creates a longer distance between the iris and the internal opening of the incision and thus a longer distance for wayward tissue to travel. Also consider slightly elongating the tunnel to further separate the incisions from the iris and reduce the chance of a leaky incision.
- **Avoid overfilling the anterior chamber with an OVD.** Viscomydriasis may manage mild intraoperative floppy iris syndrome; however, iris prolapse often occurs when there is a high pressure differential between the anterior chamber and atmosphere. Overfilling the chamber sets the stage for the iris to exit via the path of least resistance, which is the incision.
- **Perform gentle hydrodissection and hydrodelineation.** Aggressive fluid delivery can abruptly increase IOP, which increases the pressure gradient between the anterior chamber and the atmosphere and may lead to iris prolapse. Perform a slower, more controlled injection and burp the lens to prevent a pressure buildup or use a series of smaller fluid bursts and decompress the chamber in between each injection.
- **Place an iris hook posterior to the main corneal incision.** A single iris hook placed posterior to the main incision can corral the subincisional iris tissue and allow surgery to proceed smoothly. This technique can be used either on its own or in conjunction with the placement of another pupillary expansion device if the latter is not completely preventing iris prolapse from a particular incision.
- **Allow intracameral and atmospheric pressures to equalize passively.** Before removing the phaco or I/A handpieces from the eye, turn off continuous irrigation and pause for a long moment to allow pressure to equalize. Because the iris generally follows the high-to-low pressure gradient, allowing the intracameral and atmospheric pressures to equalize passively reduces the likelihood that iris tissue will follow an instrument out of the eye.

to minimize or neutralize the relative pressure gradient between the anterior chamber and the atmosphere. This can help prevent iris prolapse and reposit iris tissue that has prolapsed into the incision. The posterior lip of another incision can be gently depressed to neutralize the pressure gradient, and

a blunt instrument can be used to gently sweep the iris out of the incision. Neutralizing the pressure gradient should encourage the iris to stay inside the eye. Placing a single subincisional iris hook can ensure that this area of iris, which is already prone to prolapse, stays away from the incision.

Floppy iris tissue has a penchant for following instruments out of the eye. Turning off continuous irrigation can allow pressure to equalize before an instrument is removed from the eye. This strategy can also reduce patient discomfort by avoiding abrupt shifts in fluid pressure inside the eye.

### CONCLUSION

Unexpected IFIS increases the risk of cataract surgery complications. The strategies described in this article can facilitate a safe, successful procedure. ■

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- Financial disclosure: None