

Managing Intraoperative Floppy Iris Syndrome

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Flomax (tamsulosin) is one of the most popular drugs prescribed for the relief of symptoms of benign prostatic hyperplasia (BPH). It is ironic then that while relieving the symptoms of one common geriatric condition, it increases the risk of complications associated with the treatment of another: cataracts. For a condition that was not even recognized until four years ago, intraoperative floppy iris syndrome (IFIS) has quickly gained notoriety for being an irksome and, on occasion, unmanageable condition among Flomax users. IFIS is described as progressive intraoperative miosis, iris prolapse or billowing iris during any stage of cataract surgery. Several studies have reported the incidence of this syndrome among alpha-blocker users as ranging from 33 percent to as high as 78 percent. The most commonly seen complications are iris trauma, posterior capsular tears and vitreous loss.

Why Flomax? The reason why Flomax can cause IFIS is the same as the reason for its mechanism of action for treating BPH: Flomax relaxes the smooth muscle of the bladder neck—and, inadvertently, the iris dilator as well—by specifically targeting the α_{1A} receptors. Its specificity significantly reduces the postural hypotension that is common to non-selective alpha blockers used to treat BPH. The blockade of this receptor subtype, however, renders ineffective the conventional dilator drops used in

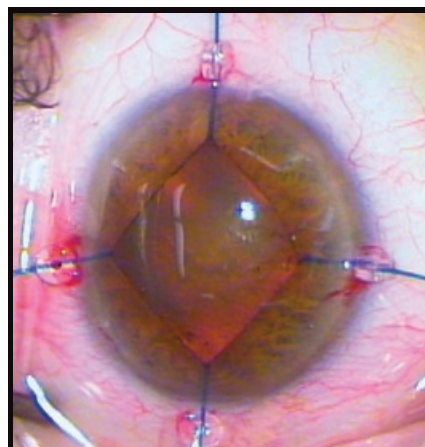
cataract surgery. There have been cases in which a mere two weeks of Flomax therapy led to IFIS. While Flomax is not the only drug implicated, it is by far the most common. But many studies have shown a statistically increased risk of IFIS among users of other α_1 blockers, such as terazosin (Hytrin) and alfuzosin (Uroxatral), which are used to relieve symptoms of BPH. Doxazosin (Cardura), used to treat systemic hypertension as well as BPH, also falls in this category.

Management

It is important to ask patients about past or present use of any α_1 blocker before planning cataract extraction. This one simple question may make the difference between an uneventful surgery and one associated with significant morbidity and expense.

One retrospective study performed before IFIS was described in 2005 showed that Flomax patients had significantly greater complication rates than controls. Vitreous loss rates as high as 70 percent were reported. In contrast, a landmark multicenter study by The Tamsulosin Study Group in 2007 established that prior knowledge of the patient's drug history significantly reduced the risk of complications by allowing the surgeon to intervene at the appropriate time.

Women are commonly overlooked as a group at risk for IFIS. But Flomax, as well as other α_1 blockers like Hytrin, Uroxatral and Cardura, are used to treat bladder problems and hy-



IFIS. Don't overlook women for floppy iris syndrome, as Flomax, Cardura, Hytrin and Uroxatral may be prescribed for bladder problems and hypertension.

pertension in women.

Will stopping Flomax help? Even though Flomax does not cause anatomical changes to the iris muscle architecture, its effects can linger for years after the drug is discontinued. Some surgeons have had moderate success in avoiding IFIS by instructing patients to suspend Flomax up to eight weeks prior to surgery. However, Flomax cannot be discontinued in many patients, and it is not yet possible to predict the outcome based on the duration of usage or discontinuation. Thus this strategy is not recommended, especially since more reliable techniques can be used without inconvenience to the patient.

Predicting risk in a Flomax patient. Other than a history of use of

Flomax or other alpha₁ blockers, there are few predictors for the risk of IFIS. Our research group has found (with a sensitivity of 63 percent) that postmydriatic pupil dilation of less than 6 mm is associated with the development of severe IFIS. Therefore, the lack of adequate dilation after instillation of mydriatics should serve as a red flag for the surgeon. Clinical observation also shows that it is likely that a patient who has exhibited IFIS in one eye can be expected to have IFIS in the fellow eye as well.

Preoperative Prophylaxis

The ophthalmologist can take a few steps in advance of surgery to improve the chance of successful outcomes.

Atropine. The use of atropine drops—1 percent three times a day starting one to three days before surgery—has met with limited success. For instance, the Tamsulosin Study Group reported that more than half its study patients needed another form of intervention after atropine usage. Atropine provides excellent preoperative pupil dilation but is not as good at controlling pupil size during phacoemulsification. Cases of urinary retention following topical atropine use have also been reported.

Epinephrine. Off-label use of intracameral epinephrine—a dilution of 1:1,000 sulfite-free and preservative-free epinephrine further diluted 1:3 with BSS to yield a concentration of 1:4,000—to improve iris tone has been used with great success. And the potential for endothelial toxicity has been greatly reduced in recent years by the elimination of preservatives in selected formulations of epinephrine. It is one of the most popular practices used by surgeons today for the management of IFIS. Joel K. Shugar, MD, MSC, reported his use of the same solution but using BSS Plus instead and then mixing that dilution further with one part unpreserved 4 percent lidocaine. Some surgeons have reported not needing an adjunct method for maintaining iris dilation with the use of Dr. Shugar's solution, not even atropine drops. And its 6.9 pH avoids the conjunctival

irritation that can be seen with epinephrine without lidocaine. We recommend the use of this method, along with adjunctive measures if needed, to minimize the complications.

Intraoperative Techniques

Several intraoperative strategies may aid in delivering optimal results.

Well-constructed corneal incisions.

It is essential, in potential IFIS cases, to create a triplanar, self-sealing corneal incision. A well-constructed incision may prevent iris prolapse through the wound. Incisions that are too short or are biplanar are more likely to have the iris prolapsed toward them. Some surgeons also report creating a slightly longer incision within the clear cornea plane for this reason.

Trypan blue. Some surgeons use trypan blue to stain the anterior capsule in Flomax cases. Trypan blue helps the surgeon view and stay clear of the rim of the capsulorhexis if the pupil becomes miotic or other signs of IFIS occur during phacoemulsification. Trypan blue also helps the surgeon view areas of the capsule not well exposed by iris hooks. More recently, it has been suggested that the use of trypan blue, and its subsequent exposure to light for one minute, actually makes the capsule tougher and, hence, less susceptible to tearing. Most surgeons in our institution, however, have not experienced a difference.

Low fluidics. The use of less aggressive irrigation and aspiration is a logical step in managing a billowing iris. Surgeons have reported greatest success with simply reducing the fluidics parameters on the phaco machines by 10 to 15 percent (e.g., lowering bottle height from 95 cm to 84 cm). Newer phaco machines feature automated settings for use in IFIS patients. James P. Gills, MD, recently developed a single-port phaco tip that is expected to reduce turbulence in the anterior chamber. Up to 95 percent of IFIS cases have been reported as successfully managed when low fluidics were used in combination with a viscoadaptive ophthalmic viscosurgical device such as Healon 5. A note of caution about

Healon 5: It may cause postoperative pressure spikes if not removed completely.

Iris retractors. Until recently, iris retractors were very popular in the management of IFIS. But at least two extra incisions are needed for retractors, and their placement after the capsulorhexis can be tricky; they also tend to increase the surgical time. These drawbacks, and the intervening success of methods like intracameral epinephrine and low fluidics, have made the use of iris retractors less attractive to some surgeons. However, since there is no risk of midprocedure pupil constriction with iris retractors, they are appropriate in patients who have already demonstrated poor dilation in the clinic or before surgery. When used, the retractors may be arranged in a diamond configuration for greatest effectiveness.

Retractor rings. Some surgeons swear by iris retractor rings, but they have not been widely popular. Part of the reason is that the surgeon must be trained to use the rings, and their successful placement requires a narrow range of pupil size (between 4 and 7 mm). They are also difficult to place if the anterior chamber is shallow, or after the capsulotomy or hydrodissection has been performed. However, when used correctly in carefully selected patients, iris rings have been shown to have success rates comparable with those of iris retractors.

Surgeon opinions vary quite widely on some of the above-mentioned methods. The use of intracameral epinephrine is perhaps the only intervention that is universally accepted as effective and convenient. With the variety of safe and effective options available to surgeons, the management of IFIS is fast becoming a matter of personal preference.

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