This guest editorial is one of a series looking back at landmark articles published in the JCRS. This special series commemorates the 25th anniversary of the joint Journal of Cataract & Refractive Surgery. This issue: Intraoperative floppy iris syndrome associated with tamsulosin. Chang DF, Campbell JR. J Cataract Refract Surg 2005;31:664-673.1

Surgery usually advances by small incremental steps and a single study that leads to a profound change in practice and to a better and safer operation is a rare event. Anyone of my generation who went to a surgical complications management course in the early 2000s will remember that there was usually a case where the iris seemed to have a life of its own, oozing out of every incision, and I still have a vivid memory of a horror case when the iris disappeared up the surgeon’s phacoemulsification tip. When Chang and Campbell published their epoch-making article on what they named intraoperative floppy-iris syndrome (IFIS), it was a revelation.1 For the first time, we recognized why this was happening, and strategies were rapidly developed to cope with it, to the enormous advantage of our patients. They described a syndrome with the triad of billowing of the iris, a tendency to prolapse, and progressive constriction of the pupil during surgery, often preceded by a poor response to topical preoperative pupillary dilation. They studied 2 groups of patients: one was a retrospective series, and of these 2%, all men, had IFIS, and all were taking tamsulosin; 12% of these experienced a posterior capsule rupture. In their prospective series of 900 consecutive surgeries reported in the same article, 2.2% had IFIS, all were men, and 94% had a history of previous or concurrent tamsulosin treatment.

Tamsulosin (marketed as Flomax), is one of a family of α-adrenergic blockers used for the treatment of benign prostatic hypertrophy and hypertension by relaxing smooth muscle. There are at least 3 subtypes of α-receptors: α-1A, α-1B, and α-1D. Tamsulosin is selective for α-1A. The pathology of the condition is still not completely understood. An optical coherence tomography study showed reduced dilator muscle thickness in patients taking tamsulosin, suggesting dilator muscle atrophy (Figure 1).2 Another study confirmed the presence of α-1A receptors in human iris biopsies taken at trabeculectomy, in both the dilator muscle and the iris arterioles, but did not demonstrate differentiating histological changes between the tamsulosin eye or control: the authors postulated that loss of iris arteriole contractility may be a significant part of the pathophysiology.3 Many other α-blockers, such as alfuzosin used for benign prostatic hypertrophy or doxazosin used for the treatment of hypertension can cause IFIS, but tamsulosin is the most potent cause; anecdotally, a variety of other drugs, such as antipsychotics or even herbal medications have been associated with IFIS.4 There is considerable variability in the degree of IFIS seen in patients, which presumably is due to variability in the expression of the α-1A receptor in the iris. IFIS severity does not seem to be correlated with the dosage or duration of treatment: a case has been reported after just 2 weeks treatment, and it is well recognized that when it comes to surgery, 1 eye can be more affected than the other; neither does age or iris color seem to make a difference.5 IFIS occurs less commonly in women and is associated with a higher risk for complications, possibly because it is less anticipated.6

Stopping tamsulosin prior to surgery is controversial as it is well recognized that iris changes can persist after cessation of treatment.5,7 In their original report, Chang and Campbell had 2 patients who had ceased treatment, 1 year and 3 years prior to surgery, but still had IFIS. Takmaz and Can reported a patient who had treatment with tamsulosin for 4 months, ceased treatment for a year, and then had surgery on both eyes; 1 had IFIS and the other not, illustrating both the variation between eyes and the persistence of iris damage.8 Cessation of treatment carries a risk of precipitating urinary retention, and therefore, many surgeons prefer to continue treatment and take the necessary precautions. Last year, I gave expert evidence at an inquest in which a 56-year-old man with diabetic and cardiac problems had surgery complicated with capsular rupture. Tamsulosin treatment had been stopped 3 weeks prior to surgery. He was given prophylactic Diamox, went into urinary retention, and died 3 days later from multiorgan failure. The coroner’s verdict was that urinary retention was a contributing factor to his demise, a tragic and salutary lesson.

Approximately 2% of men of cataract surgical age in the United Kingdom take tamsulosin, and in the UK it can be bought over the counter without prescription in a pharmacy. It is, therefore, mandatory to ask all men if they are taking Flomax. Because of the increased risk for complications, surgery is best performed on these patients by an experienced surgeon. Management can be divided into pharmacological or surgical strategies. Gurbaxani and Packard suggested using an off-label intracameral injection of a dilute solution of unpreserved phenylephrine (an α-agonist) to...
obtain maximal pupillary dilation and tense the remaining dilator muscle fibers, and many surgeons find this helpful. This has now been superseded in Europe by Mydrane (tropicamide, phenylephrine, and lidocaine), which has a product licence for intracameral use. Dispersive ophthalmic viscosurgical devices or a soft-shell technique help to maintain anterior chamber volume, which is particularly useful in eyes with shallow anterior chambers. Many surgeons choose to use low flow and vacuum parameters. Matching the incision size to the instrument diameter prevents wound leakage and iris prolapse; for example, using a “fat boy chopper” and bimanual irrigation/aspiration has the enormous advantage that if the irrigation is superior to the iris, it is prevented from washout by the flow. Small or constricting pupils can be managed by a ring device, such as a Malyugin ring or iris hooks are safer after the rhexis has been completed because there is less risk of catching and tearing the rhexis margin.

There has been great progress over the past 16 years. We have a better and safer operation for which we must congratulate Chang and Campbell on their ability to think outside the box (and the eye!).

REFERENCES


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Figure 1. Slitlamp OCT images demonstrating iris thinning at the DMR in a patient on tamsulosin (A) when compared with an age-matched control (B). Reproduced with permission from Prata TS, Palmiero PM, Angelilli A, Sbeity Z, De Moraes CGV, Liebmann JM, Ritch R. Iris morphologic changes related to α1-adrenergic receptor antagonists: implications for intraoperative floppy-iris syndrome. Ophthalmology 2009;116:877-881. DMR = dilatory muscle region; PM = pupillary margin; SMR = sphincter muscle region; SS = scleral spur

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