

# Eye Care Newsletter

Omni Eye Specialists • Madison Street Surgery Center  
Spivack Vision Center • MSFS, Inc. • Colorado Laser Surgeons

## Special points of interest:

- Acute Angle Closure Glaucoma
- Intraoperative Floppy Iris Syndrome (IFIS)
- Management of Red Eye

## Acute Angle Closure Glaucoma

Gary Belen, M.D.

Acute angle glaucoma (AACG) is an ocular emergency and receives distinction due to its acute presentation, need for immediate treatment, and well-established anatomic pathology. Rapid diagnosis, immediate intervention, and referral can have profound effects on patient outcome and morbidity. Immediate treatment is essential to prevent optic nerve damage and vision loss.

Acute angle closure occurs when intraocular pressure (IOP) rises rapidly as a result of sudden blockage of the trabecular meshwork by the iris. Angle closure may occur in two ways: (1) the iris may be pushed forward up against the trabecular meshwork or (2) the iris may be pulled up against the trabecular meshwork. In either case, the position of the iris causes the normally open anterior chamber angle to close. Aqueous humor that should normally drain out of the anterior chamber is trapped inside the eye, thereby increasing the IOP.

Symptoms include pain, blurred vision, rainbow-colored halos around lights, headache, nausea and vomiting. The systemic complaints may be so severe that patients can be misdiagnosed as having a neurologic or GI problem. Signs include elevated IOP, mid-dilated and fixed pupil, corneal epithelial edema, conjunctival injection, and shallow anterior chamber. The optic nerve is difficult to visualize due to corneal edema, and visual field testing is not done because of discomfort.

The frequency of AACG is between 1 and 40 times for every 1000 Americans

depending on their ethnicity. It occurs in 1 of 1000 Caucasians, about 1 in 100 Asians, and as many as 2-4 of 100 Eskimos. It is unusual in the African-American population where angle closure glaucoma is usually of a chronic type. AACG predominately affects hyperopic eyes females because of their shallower anterior chambers. Elderly patients in their sixth and seventh decades of life are at greatest risk.

Patients who develop angle closure glaucoma tend to have small anterior chamber segments, predisposing them to increased relative pupillary block. Relative pupillary block increases with age as the lens grows and the pupil becomes miotic. An angle closure attack is often precipitated by some minor event, such as pupillary dilation or emotional stress. The dilation to mid-position relaxes the peripheral iris so that it bows forward into contact with the trabecular meshwork; in this position lens-iris apposition is maximal, setting the stage for pupillary block.

Differential diagnosis of AACG includes other causes of acutely elevated IOP, but with an open angle:

- Glaucomatocyclopic Crisis
- Inflammatory open angle glaucoma
- Retrobulbar hemorrhage or inflammation
- Traumatic (hemolytic) glaucoma
- Pigmentary Glaucoma

Ophthalmologic consultation should be obtained as soon as possible because AACG is an ocular emergency.

Although the vast majority of eyes with pupillary block glaucoma are managed

surgically, it is desirable to first bring the glaucoma under medical control. In the case of an acute attack, this constitutes a medical emergency and should be approached in two stages: (1) reduce the IOP and (2) relieve the angle closure. The first-line of defense is to administer drugs that will promptly lower the IOP. These include topical, oral or intravenous carbonic anhydrase inhibitors, topical beta-blockers, topical alpha-adrenergic agonists, and topical prostaglandin analogs. Miotic agents are frequently ineffective when the IOP is high, presumably due to pressure-induced ischemia of the iris. Once the IOP has been lowered sufficiently, miotics may be used to open the angle and prepare for surgical therapy.

Laser peripheral iridotomy (LPI) is the treatment of choice for AACG. With LPI, a small opening is made in the peripheral iris to allow aqueous fluid trapped in the posterior chamber to flow into the anterior chamber. This results in an almost immediate drop in IOP. Once an iridotomy has been performed, pupillary block is relieved and the iris is no longer pushed forward into contact with the trabecular meshwork. In the rare event that LPI cannot be accomplished (usually due to corneal edema), a surgical iridectomy can be performed. LPI in the fellow eye should be performed if it is determined to also be at risk for occlusion.

# Intraoperative Floppy Iris Syndrome (IFIS) Associated with Systemic Alpha-1 Blockers

Jason Wang, M.D.

Intraoperative floppy iris syndrome (IFIS) is associated with the use of the systemic alpha-1 adrenergic antagonist, tamsulosin (Flomax®, Boehringer-Ingelheim Pharmaceuticals, Inc., Ridgefield, CT) [1-7], commonly prescribed for Benign Prostatic Hyperplasia (BPH). IFIS is characterized by poor pre-operative pupil dilation and progressive miosis during cataract surgery which may lead to complications during what would otherwise be routine procedures. Billowing of a “floppy” iris in some cases may be associated with frank prolapse of a sector of the iris out of the main corneal incision but more commonly leads to damage through inadvertent contact with the phacoemulsification probe. In one prospective study, 90% of 167 eyes from patients taking tamsulosin exhibited some degree of IFIS during cataract surgery [5]. Tamsulosin is currently the only systemic alpha-1 antagonist which is selective for the alpha-1A receptor subtype [8], the predominant alpha receptor subtype present within the iris dilator. IFIS has also been reported with non-subtype specific alpha-1 adrenergic antagonists, such as terazosin (Hytrin®; Abbott Laboratories, Inc., North Chicago, IL), doxazosin (Cardura®; Pfizer Inc, New York, NY), and alfuzosin (Uroxatral®;

Sanofi-Aventis, Paris, France). However, several prospective and retrospective studies suggest that IFIS is more likely to occur with tamsulosin than with the non-specific alpha-blockers [1-3, 6, 9]. Tamsulosin and alfuzosin are considered to be uroselective and are popular as they are less likely to cause postural hypotension [7].

A number of studies confirm that cataract surgical complications are increased when IFIS is not anticipated or recognized by the surgeon [1, 4, 5-7]. The same prospective study of 167 consecutive eyes from tamsulosin patients undergoing cataract surgery showed that when the surgeon was forewarned by a history of tamsulosin use, surgical risks were reduced by using a variety of alternative small pupil management strategies [5]. These strategies include the use of thicker than typical viscoelastic substances or placement of pupil expanders or iris hooks to stabilize the iris at the onset of surgery. Discontinuing tamsulosin prior to cataract surgery did not reduce the severity of IFIS in this prospective trial. Surprisingly, IFIS can occur up to several years after discontinuation of tamsulosin [1, 5].

According to a 2008 online survey sent to American Society of Cataract and Refractive Surgery (ASCRS) members, 95% of the nearly 1000 respondents believe that tamsulosin makes cataract surgery more difficult and 77% believe that it increases the risks of surgery [10]. Specifically, cataract surgeons reported an

increased rate of significant iris damage (52% of respondents) and an increased rate of posterior capsule rupture (23% of respondents) in eyes with IFIS during the past two years. Of those respondents with sufficient experience to judge, 90% believe that IFIS is more likely to occur with tamsulosin than with non-specific alpha blockers. Many ophthalmologists (59%) would recommend an ophthalmic evaluation for patients with a history of cataracts or decreased vision *prior to* initiating treatment with tamsulosin. Nearly two thirds of the respondents would either avoid taking tamsulosin if they themselves had cataracts (41%) or would have their cataract removed first (23%). The former sub-group includes 17% who would still defer cataract surgery, but would take a non-specific alpha-1 blocker instead of tamsulosin.

In a patient with a known diagnosis of cataract, prescribing physicians may wish to consider involving the patient's cataract surgeon prior to initiating non-emergent, chronic tamsulosin or alpha blocker treatment. Options might include an eye exam or having either the patient or the prescribing MD communicate with the cataract surgeon. Patients should also be encouraged to report any prior or current history of alpha-1 antagonist use to their ophthalmic surgeon prior to undergoing any eye surgery.

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## Ocular Medications for Management of the Common Red Eye

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When a patient presents with a red eye and we reach for the prescription pad, it's important to consider what the condition is, what is the best medication for the condition, or to consider no treatment at all.

**Bacterial conjunctivitis**- The eye can be very red with significant yellow/green sticky or purulent discharge (lids stuck together in the morning). Treat bacterial conjunctivitis with **Polytrim** qid, **Tobramycin** qid or a fluoroquinolone (**Zymar** qid or **Vigamox** tid). **Neomycin** and **Sulfacetamide** are often prescribed by PCP's but are the most common medications to cause an atopic allergic response and may make the patients symptoms worse rather than better. It is better to select from the above list medications to get effective relief without the common side effects. Due to the possibility of an infectious red eye being herpetic, avoid a steroid combination drop to prevent the condition from worsening. If the infection is chronic, non-resolving or recurring it could be Chlamydia, which resolves with a 1gm po **Azithromycin** or **Doxycycline** 100 mg po bid for 7 days. Of course, if this resolves the infection it is advised to consult the sexual partner as well. **Azasite** is a new eye drop form of Azithromycin with wide antibiotic coverage for bacterial conjunctivitis. It is used similar to the Zpak where it is used as one drop bid x 2d then qd for 5 more days. This dosing works well for compliance, especially with children (greater than 1yo). Some doctors are using it off-label for chronic blepharitis patients by using it 1 drop in the eye and also rubbing the drop along the lash line. Use once daily until the bottle is gone. It has been stated that it may hold the blepharitis symptoms at bay for up to three months.

As many of you know, with widespread resistance MRSA is becoming a growing concern among all health care professionals. Interestingly, **Polytrim** has been shown to be effective against MRSA in ocular infections due to the fact that it is not available in an oral form and therefore has minimal resistance. There is a 5<sup>th</sup> generation Fluoroquinolone coming in the near future called Besifloxacin.

**Allergic Conjunctivitis**: Usually an itchy, watery eye. The conjunctiva may be chemotic with a ballooning watery "watch glass" appearance. There can also be a stringy, ropey or even a mucus discharge. Both eyes are often involved. There will be **no** pre-auricular node. Treatment is usually, cold compresses, OTC oral antihistamine such as **Benadryl**, **Claritin** or **Zyrtec** and frequent artificial tears. Prescription combination drops of mast cell stabilizer and antihistamine such as **Patanol** (bid dose) **PataDay** (qd dose) and **Elestat** (bid dose) drops are also very effective to reduce lid edema, discharge and itching. These drops need to be used consistently with the proper dosing, not on a prn basis to have full effect. **Alrex** is a 0.2% steroid drop that offers good relief but, with use more than 2 weeks the patient can be at risk of increased IOP due to steroid response and can also cause cataracts with prolonged use. OTC vasoconstrictors such as Visine can offer short term relief but can cause chronic use due to the rebound effects once the vasoconstriction wears off leaving the eye more red that it was before using the drops. A decongestant antihistamine combo drop **Zaditor** became available OTC within the last few years that works well at q8h-12h dosing.

**Viral conjunctivitis** – red, watery "serous discharge" can also have an elevated pre-auricular node on the same side as the affected eye. By palpating for a pre-auricular node you can easily identify a viral infection. It can often occur with the common cold or URI. The eye can be 3+ to 4+ injected and appear to have a "glassy", watery appearance. Usually it is a self limiting condition that can take up to three weeks to resolve. It usually is worse during the second week and then starts resolving at three weeks. The treatment is typically palliative with artificial tears, cold compresses and frequent hand washing. The patient is very contagious until discharge is no longer present. If the patient becomes light sensitive they may have corneal infiltrates and will need to be monitored more closely by an eye doctor.

If the patients' eye condition isn't quieting with therapy they may have uveitis, corneal ulcer, herpes simplex keratitis, high IOP, etc. Often, the only way to identify the condition is with a good slit lamp microscope. If there is no improvement or minimal improvement in a patients' condition refer for an eye exam.

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