

Secondary glaucoma and vitreoretinal surgeries

Furqan Ahmed Khan FCPS

It may well be that your closest colleague in the hospital whom you enjoy having your 'daalmaash' (fried pulse) with or your tea break with, just happens to be a glaucoma specialist. As a Vitreoretina surgeon it is important to have a sound relationship with a glaucoma specialist and vice versa. The older population we deal with often presents with various ocular comorbidities, hence our patients frequently overlap.

Occasionally things don't go according to plan, and that is something we all learn as surgeons. In a particular case per op everything went admirably and yet a week later you're looking at a beautifully attached retina but somehow the IOP is way above the comfort zone. Just as medical students we were thought to examine and consider the patient as a whole, similarly one should treat the eye as a whole taking all aspects in consideration when proceeding with various treatment modalities. An inadvertent posterior subtenon injection or an enthusiastic per op overfill of silicone oil could create obvious problems but the dilemma arises when the post op IOP behaves unpredictably.

Secondary glaucoma may potentially complicate any retinal detachment surgery. Hence the proper approach is treating the elevated pressure based on the mechanism responsible, which may vary—even for one particular retinal procedure. For example, mechanisms may be closed- or open-angle. Intraocular pressure (IOP) elevation has been described after scleral buckling procedures and vitrectomy with intravitreal injection of gas or silicone oil.

Postoperative narrowing of the angle has been found in 14.4 percent of patients after the use of a scleral buckle.¹ Risk factors for increased IOP after scleral buckle placement include: anterior placement of

the buckle causing narrowing of the angle; older age; myopia; the duration of retinal detachment; and a history of previous narrow angles or choroidal detachments.² In the presence of elevated IOP secondary to a closed-angle mechanism without pupillary block, the usual etiology is congestion of the ciliary body as a result of the buckle impeding venous outflow, causing engorgement of the ciliary body. The engorgement can cause the ciliary body to rotate forward and narrow the angle. Frequently, the angle closure spontaneously resolves in the weeks after surgery as the choroidal effusions and ciliary body edema resolve. Medical management with cycloplegics helps to relax the ciliary body muscle, allowing a shift in the lens-iris diaphragm posteriorly, alleviating obstruction of the angle. There's no pupillary block involved in this mechanism, so laser peripheral iridotomy is not an effective option. When we encounter a patient with a scleral buckle who doesn't respond to medical or laser therapy, our surgical options are often limited to glaucoma drainage devices. Because these eyes have a history of prior ocular surgery, the conjunctiva is usually scarred enough to preclude the possibility of a trabeculectomy even with antimetabolites.

Glaucoma also can develop after intravitreal injection of silicone oil secondary to pupillary block, inflammation, synechial angle closure, rubeosis iridis, or migration of emulsified or non emulsified silicone oil into the anterior chamber or simple idiopathic open-angle glaucoma.³ Risk factors for developing high pressure after silicone oil include: silicone oil in the anterior chamber; preexisting glaucoma; aphakia; early postop pressure spike; trauma; diabetes; and postop neovascularization of

the iris. A prophylactic inferior iridectomy at the time of surgery serves to prevent pupillary block. Patients with medically uncontrolled glaucoma after silicone oil injection may require oil removal with or without concurrent glaucoma surgery.⁴

Intravitreal injection of expansile gases like sulfur hexafluoride (SF₆) and perfluoropropene (C₃F₈) may produce secondary angle-closure glaucoma with or without pupillary block. Aspiration of a portion of the intraocular gas may be needed, especially if IOP is elevated to a level that may compromise ocular perfusion.⁵

Fortunately, in general medical management can help address these postoperative pressure elevations and surgical intervention is infrequently required. Our current volume carries some valuable insights in the matter.