

Goniosynechialysis and Chronic Angle-Closure Glaucoma

A safer option for patients with a cataract and uncontrolled glaucoma.

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The glaucoma surgeon will likely encounter a patient with both a visually significant cataract and angle-closure glaucoma (ACG) multiple times throughout his or her career, and there are many surgical options. Performing cataract surgery alone may not adequately lower the IOP. Performing cataract surgery in conjunction with a trabeculectomy or a tube shunt may bring excellent IOP control but with more postoperative complications than are necessary. Cataract surgery combined with goniosynechialysis (GSL) may provide the middle ground between the two for the patient with mild to moderate chronic angle-closure glaucoma (CACG).

WHAT IS GONIOSYNECHIALYSIS?

GSL was first described in conjunction with cataract surgery in 1984 by Campbell and Vella.¹ This procedure physically separates peripheral anterior synechiae (PAS) from the trabecular meshwork using a spatula or microforceps under direct visualization with a gonio-lens (Figures 1 and 2). GSL was initially suggested as an alternative to trabeculectomy in patients with cataract and primary angle-closure glaucoma (PACG).

By performing this procedure in combination with cataract surgery, GSL addresses the root of the problem in PACG—the crowded anterior chamber due to the lens and also iridotrabecular meshwork contact from the PAS. With GSL, the conjunctiva is not incised, allowing for the possibility of a subsequent trabeculectomy if necessary.

Phacoemulsification-GSL (phaco-GSL) is associated with fewer devastating complications such as hypotony and bleb-related infections.¹ The most commonly reported complications with GSL include fibrinous uveitis and hyphema.^{2,3} Intraoperative bleeding usually



Figure 1. Microforceps grabbing onto peripheral iris adjacent to a previously placed iridotomy. The angle is closed with high PAS.

occurs during irrigation and aspiration or when the chamber depth is not maintained during surgery. The bleeding can be stopped by raising the IOP with a dense cohesive viscoelastic.

One of the more devastating complications associated with GSL is the possibility of an iridodialysis or cyclo-dialysis, which can lead to hypotony.⁴ In our experience, this is a very uncommon occurrence as long as the surgeon takes care to maneuver the spatula or forceps in a gentle up-and-down motion along the peripheral iris. The iris should never be pulled in toward the pupil.

There are a few variations of this technique recently reported. Instead of using a spatula or microforceps, some studies have demonstrated a good IOP-lowering effect using viscoelastic to dissect the PAS away from the trabecular meshwork.² It is thought that this may

cause less trauma to the iris and may be safer. A few studies have also used an endoscope instead of a gonio-lens for visualizing the angle.³

WHO IS A GOOD CANDIDATE?

Typically, a phakic patient with primary angle closure, PACG, or CACG with elevated IOP and at least 50% of the angle sealed with PAS is a good candidate for phaco-GSL. The amount of PAS necessary is debatable. If there is only a small amount of PAS, however, the IOP-lowering effect of GSL is likely to be negligible.

In early studies, GSL was initially performed on patients with PACG who had synechiae formation within the past 6 to 12 months.^{3,5} In 1999, Teekhasaenee and Ritch showed that phaco-GSL significantly lowered IOP from 29.7 ± 7.9 mm Hg to 13.2 ± 2.9 mm Hg in 52 eyes with PACG when performed within 6 months of the acute angle-closure attack.⁴

It is generally accepted that GSL is less effective in eyes with CACG. Eyes with CACG that have had PAS for a long period of time likely have greater underlying trabecular dysfunction than eyes with “fresh” PAS from a recent acute angle-closure attack. The eyes with chronic IOP elevation are likely to have more advanced optic nerve damage as well and may not tolerate the postoperative IOP spike that can accompany phaco-GSL.

In a recent study, Campbell et al demonstrated that phaco-GSL lowered IOP effectively from 19.8 ± 4.4 mm Hg to 14.4 ± 2.1 mm Hg in 34 eyes with CACG. The 17 eyes with recent PAS showed a more significant IOP-lowering effect from 30.4 ± 2 mm Hg to 12.1 ± 2.3 mm Hg.⁵ Both the CACG and acute AC groups demonstrated a similar decrease in postoperative glaucoma medications.

GSL is traditionally performed concurrently with phacoemulsification. As cataract surgery itself can lower IOP, it is difficult to determine how much IOP is lowered by the cataract surgery and how much is lowered by GSL. Qing et al confirmed GSL to be effective alone in the treatment of CACG without concurrent cataract surgery. In 30 eyes, 180° of GSL was performed using a 26-gauge needle, and the IOP decreased from 47.1 ± 6.7 mm Hg to 17.4 ± 2.2 mm Hg after an average follow-up of 36.6 ± 1.1 months.⁶

WHO IS NOT A GOOD CANDIDATE?

We believe that phaco-GSL is not the best choice for eyes with significant cupping or field loss due to the risk of IOP spikes after the procedure. These eyes may be better suited for a phaco-trabeculectomy. Furthermore, this procedure should be used with caution in patients



Figure 2. The angle is open, and the trabecular meshwork is clearly visible after the synechiae have been pulled away.

who are on anticoagulants due to the increased risk of uncontrolled bleeding and hyphema with GSL.

CONCLUSION

GSL has traditionally been used for the treatment of eyes with recent PAS from an acute angle-closure attack. GSL performed with or without cataract surgery is still an effective tool in the glaucoma surgeon's armamentarium to treat mild to moderate CACG. Although the IOP-lowering effect may not be as significant when used for long-standing PAS, it is a safer way to treat glaucoma than a trabeculectomy. The conjunctiva is still spared, giving the option for a filtering procedure if necessary in the future. ■

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