

WHEN TUBE SHUNTS FAIL



Exploring subsequent surgical options for refractory glaucoma.

BY ATHANASIOS MARNIERIS, DO; AND EIYASS ALBEIRUTI, MD

THE SAFETY AND EFFICACY OF SUPRACILIARY STENTING FOLLOWING FAILED GLAUCOMA SURGERY

Kerr NM, Wang J, Perucho L, Barton K¹

ABSTRACT SUMMARY

In a single-center, retrospective, interventional case series of consecutive patients, investigators evaluated the outcomes and complications of ab interno placement of a supraciliary microstent (CyPass Micro-Stent, Alcon; no longer

available) in patients with glaucoma refractory to prior glaucoma surgery. Twenty eyes of 20 patients were treated with a supraciliary stent, either alone (70%) or in combination with cataract surgery (30%). Some cases included OVD expansion of the supraciliary space. Of note, prior glaucoma surgery (mostly tube shunts or trabeculectomies) had failed in all eyes, and half of all eyes had a history of uveitic glaucoma.

Twelve months after surgery, mean IOP was 14.9 ± 4.3 mm Hg ($P = .1$), a 33.7% reduction, and mean medication use had decreased by 56% to 1.2 ± 1.5 ($P = .1$). Two patients (10%) required subsequent tube shunt insertion. The investigators observed no major adverse events. The most common complications were transient hyphema (15%), transient IOP elevation above 30 mm Hg (20%), and transient hypotony (< 6 mm Hg; 20%). One patient (5%) had persistent hypotony requiring intervention. No patient lost more than 1 line of BCVA.

The investigators concluded that supraciliary stenting was a safe and effective method, at least in the short term, of controlling IOP and reducing medication burden in eyes with previously failed glaucoma surgery. (*Editor's note: In August 2018, Alcon voluntarily withdrew the CyPass from the global market based on 5-year data from the COMPASS-Xt long-term safety study.*)

DISCUSSION

Why consider supraciliary stenting as the next step?

Supraciliary stenting is considered a minimally invasive procedure that

can be performed with relative ease. This option provides an alternative for patients with significantly compromised conjunctiva and for those at increased risk of complications associated with traditional glaucoma procedures such as filtration surgery, tube shunt implantation, and cyclodestructive procedures. Importantly, if supraciliary stenting fails, it does not limit the options for subsequent glaucoma surgery. It should be noted that, in the United States, this use of the stent would have been considered off-label.

What complications were related to supraciliary stenting?

Intraoperative and postoperative complications were mostly mild, transient, or self-limited. They included hyphema, IOP spike, and hypotony. None of the patients with an IOP above 30 mm Hg required surgical intervention or experienced vision loss. Only one patient had hypotony that persisted for more than 1 month and required ab interno occlusion of the CyPass Micro-Stent. Two patients with a history of uveitis had inflammation beyond 1 month (one of whom developed cystoid macular edema). One patient had cataract progression requiring cataract extraction.

Should supraciliary stenting be preferred over other modalities?

The investigators did not advocate for supraciliary stenting as the preferred next step in treating refractory glaucoma. They acknowledged

STUDY IN BRIEF

► A retrospective interventional case series demonstrated that supraciliary stenting was a potentially safe and effective option for controlling IOP and lowering medication burden in patients with previously failed glaucoma surgery.

WHY IT MATTERS

► In patients with a prior failed tube shunt (which constitutes a significant portion of this study population), the main conventional approaches have historically been either to place another tube shunt or to perform cyclodestruction. These procedures may not be feasible, however, or they may be too risky in some patients. This study explored a surgical intervention that may be less invasive and uses a mechanism (uveoscleral outflow) different from those of current prevailing modalities. Although a device for supraciliary stenting is not currently available, this treatment approach may be an option again in the future.

that further studies are needed to establish long-term efficacy. The researchers did, however, discuss supraciliary stenting in light of other options. They noted that second tube shunts are often placed inferiorly, increasing the risks of tube exposure,

endophthalmitis, and undesirable cosmesis. Cyclodestruction poses the risks of hypotony, vision loss, and sympathetic ophthalmia. As for angle-based procedures, supraciliary stenting can provide an alternative outflow pathway, even when the conventional

outflow pathway is felt to be compromised. Although the CyPass Micro-Stent is not currently available, this study demonstrated a role for supraciliary stenting in glaucoma treatment, and it may well become an option again in the future.

LONG-TERM OUTCOME OF SECOND AHMED VALVES IN ADULT GLAUCOMA

Fatehi N, Morales E, Parivisutt N, et al²

ABSTRACT SUMMARY

For this retrospective interventional case series, investigators evaluated patients who underwent sequential implantation of an Ahmed Glaucoma Valve (AGV; New World Medical) between 1994 and 2016. The aim of the research was to determine long-term outcomes of a second AGV after the first one had failed. The study included 110 eyes of 104 patients, and the mean follow-up period was 5 years.

Investigators defined success according to three criteria: (1) IOP of 21 mm Hg or lower and IOP reduction of 20%; (2) IOP of 18 mm Hg or lower and IOP reduction of 25%; and (3) IOP of 15 mm Hg or lower and IOP reduction of 30%. The primary outcome was the 5-year survival rate for each criterion using Kaplan-Meier analysis. Failure was defined as not meeting success criteria at two consecutive visits at least 3 months after surgery, loss of light perception, development of hypotony maculopathy, need for additional glaucoma surgery, or occurrence of a serious complication (endophthalmitis, aqueous misdirection, suprachoroidal hemorrhage). The 5-year survival rates were 57%, 51%, and 30% for criteria 1, 2, and 3, respectively.

DISCUSSION

How widely applicable are the findings?

This study reported the long-term results of second AGV implants after

a previously failed AGV in various types of glaucoma. Both FP7 and S2 models of AGV were used in equal proportions; the former showed a statistically significant advantage, suggesting that the overall success rate would have been higher had the FP7 been used exclusively. Surgical technique was fairly standard, and antifibrotic agents were not used intraoperatively. Locations of the second AGV included all quadrants: superonasal (65%), superotemporal (14%), inferotemporal (13%), and inferonasal (8%). Using three different criteria for success, it was easier for the investigators to compare their results with those of other published studies. Notably, they found that success rates were comparable to those of primary AGV implantation in the Ahmed Versus Baerveldt study.

What were the reasons for second AGV failure?

The most common cause of failure for all criteria was high IOP: 72.9%, 84.7%, and 90.8% for criteria 1, 2, and 3, respectively. Eight eyes lost light perception after the second AGV surgery. The device failed in four eyes because of serious complications: two cases of endophthalmitis, one retinal detachment, and one intraoperative suprachoroidal hemorrhage. Seven eyes required tube revision, three because of tube exposure and four because of encapsulation. ■

1. Kerr NM, Wang J, Peruchio L, Barton K. The safety and efficacy of supraciliary stenting following failed glaucoma surgery. *Am J Ophthalmol*. 2018;190:191-196.

2. Fatehi N, Morales E, Parivisutt N, et al. Long-term outcome of second Ahmed valves in adult glaucoma. *Am J Ophthalmol*. 2018;186:96-103.

STUDY IN BRIEF

- A retrospective interventional case series reported on the 5-year survival rate of a second Ahmed Glaucoma Valve (AGV) after a previously failed AGV.

WHY IT MATTERS

- When a glaucoma drainage device fails, the choice of subsequent surgery presents a dilemma. Few studies have reported the success rate of second AGVs. This study may be the largest to date to explore this issue, and it reported long-term results. The investigators concluded that a second AGV is a viable option after a failed first AGV.

JAMES C. TSAI, MD, MBA | SECTION EDITOR

- President, New York Eye and Ear Infirmary of Mount Sinai, and System Chair of Ophthalmology, Mount Sinai Health System, New York, New York
- Member, *Glaucoma Today* Editorial Advisory Board
- jtsai@nyee.edu
- Financial disclosure: Advisory board member (Eyenovia, Nektar, Shire); Consultant (Eyenovia, Nektar, Shire)

EIYASS ALBEIRUTI, MD

- Cataract and Glaucoma Surgeon, Eye Center of Grand Rapids, Grand Rapids, Michigan
- dr.albeiruti@gmail.com
- Financial disclosure: None

ATHANASIOS MARNERIS, DO

- Resident, Michigan State University Ophthalmology, Metro Health Hospital, Grand Rapids, Michigan
- nasimarnaris@gmail.com
- Financial disclosure: None