

LIFELINE FOR AN AQUEOUS SHUNT



Antifibrotic medicines may improve success rates with the Ahmed Glaucoma Valve.

BY ARASH DAVANIAN, DO, AND RACHEL W. KUCHEY, MD, PHD

SUBCONJUNCTIVAL INJECTIONS OF MITOMYCIN C ARE ASSOCIATED WITH A LOWER INCIDENCE OF HYPERTENSIVE PHASE IN EYES WITH AHMED GLAUCOMA VALVE

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Industry support: None

ABSTRACT SUMMARY

A retrospective comparative study evaluated the use of intra- and postoperative injections of mitomycin C (MMC) to reduce the incidence of a hypertensive phase after the implantation of an Ahmed Glaucoma Valve (AGV; New World Medical). Consecutive cases performed without the use of MMC from 2015 to 2017 (n = 17) were compared with consecutive cases performed from 2018 to 2019 (n = 20) in which patients received MMC according to a standard protocol. In the MMC group, 0.1 mL of 0.25 mg/mL MMC was injected subconjunctivally over the plate at the conclusion of surgery. The injection was repeated at 1 and 4 weeks after surgery. The main outcome measures were the incidence of a hypertensive phase, IOP, number of IOP-lowering medications, and complications during a 6-month period.

There were no statistically significant differences in baseline characteristics between the two groups. A lower incidence of a

STUDY IN BRIEF

- A retrospective comparative study introduced a protocol-based use of subconjunctival injections of mitomycin C during and after the implantation of an Ahmed Glaucoma Valve (AGV; New World Medical). The intervention reduced the incidence of a hypertensive phase after surgery and the mean number of postoperative IOP-lowering medications required.

WHY IT MATTERS

AGV implantation is a common procedure for reducing IOP, but many patients experience a hypertensive phase for a short time postoperatively. Long-term surgical success is often hampered by tissue fibrosis. The results of this study suggest that intra- and postoperative injections of mitomycin C can improve the AGV's success rate by reducing fibrosis.

hypertensive phase was observed in the MMC group (n = 3) compared to the no-MMC group (n = 11; 17.6% vs 55%, $P = .04$). The mean number of medications was lower at months 2, 3, and 6 in the MMC group. Complications were similar between the two groups and included choroidal detachment, a flat anterior chamber, transient hyphema, and transient hypotony. Complications related to MMC included punctate keratitis, which resolved after treatment with artificial tears, and lid swelling, which resolved after treatment with cool compresses.

DISCUSSION

How did the study differ from earlier evaluations of the use of MMC in eyes that receive an AGV?

Most published studies have evaluated only a single injection of

MMC at the time of surgery. Alvarado et al evaluated the intraoperative administration of MMC and the postoperative application of 5-fluorouracil and found a high success rate, but the study lacked a control group.² The standard protocol employed by Perez et al included intra- and postoperative MMC injections¹ and is currently being evaluated in a prospective clinical trial. The study by Perez et al also had a control group.

What is the significance of a hypertensive phase?

Eyes that experience a hypertensive phase have a higher rate of tube failure. Modalities that decrease the hypertensive phase associated with AGV implantation could lower IOP and reduce the medication burden, as shown in this study¹ and prior research.³

EFFICACY AND SAFETY OF ADJUNCTIVE MITOMYCIN C DURING AHMED GLAUCOMA VALVE IMPLANTATION: A PROSPECTIVE RANDOMIZED CLINICAL TRIAL

Costa VP, Azuara-Blanco A, Netland PA, Lesk MR, Arcieri ES⁴

Industry support: None

ABSTRACT SUMMARY

A prospective randomized controlled trial evaluated the safety and efficacy of intraoperative MMC in eyes with refractory glaucoma undergoing AGV implantation. Patients were randomly assigned to receive intraoperative MMC (n = 34) or balanced salt solution (n = 26). MMC 0.5 mg/mL was applied with a Weck-Cel sponge (BVI Medical) over the episclera and under the conjunctiva and Tenon capsule for 5 minutes.

Patients were observed for 18 months. Main outcome measures were postoperative IOP, number of IOP-lowering medications, and complications. There were no statistically significant differences in baseline data between the two groups. The postoperative IOP was lower at 7 and 15 days after surgery in the MMC group, delaying the hypertensive phase, but no difference between the groups was observed at other time

intervals. No difference in the number of medications, survival rate, or complications was found. The investigators concluded that there was no benefit to the adjunctive use of MMC during AGV implantation.

DISCUSSION

Does MMC use lead to a higher complication rate?

In 2004, when the study by Costa et al was conducted,⁴ the adjunctive use of MMC during glaucoma procedures was less common than it is today. No differences in complication rates were observed between the two groups. The follow-up period was 18 months, which may be limited for catching late complications such as tube erosion. In contrast, a higher incidence of bleb leaks was found when MMC was administered during trabeculectomy,⁵ and a higher incidence of hypotony was reported when MMC was applied during Molteno implant (Nova Eye Medical) surgery.⁶ Perhaps the valved mechanism of the AGV helps to prevent complications related to the antifibrotic.

What were the main differences between the 2021 study by Perez et al¹ and the 2004 study by Costa et al?⁴

The former analyzed retrospective data over a 6-month period, whereas

the latter prospective randomized controlled trial was conducted over an 18-month period. MMC was injected at the conclusion of surgery in the study by Perez et al but applied with a sponge before the placement of the AGV in the study by Costa et al. A key difference between the studies is that MMC was also injected at 1 and 4 weeks postoperatively in the study by Perez et al. In addition, the tube was partially occluded to prevent early hypotony in the study by Perez et al.

Patients' baseline characteristics were similar in both studies. Neither found increased complication rates when MMC was used. ■

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STUDY IN BRIEF

- A randomized controlled clinical trial compared the safety and efficacy of a single dose of mitomycin C (MMC) during the implantation of an Ahmed Glaucoma Valve (AGV; New World Medical). Use of the antifibrotic agent did not increase success rates in the short or intermediate term.

WHY IT MATTERS

The adjunctive application of MMC has been shown to increase the success rate of trabeculectomy.⁵ The study by Costa et al tested the hypothesis that MMC would also improve success rates with AGV implantation.⁴ Though conducted almost 2 decades ago, it was the first prospective randomized controlled trial to compare the safety and efficacy of a single intraoperative dose of MMC during AGV surgery.

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