

Digital ocular massage to the rescue of failing blebs after filtering surgery

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ABSTRACT

Modalities for the prevention and treatment of early bleb failure include augmentation with antimetabolites like mitomycin C, an intensive regimen of topical steroids, and various forms of bleb manipulation such as massage. Digital ocular massage involves application of gentle, controlled pressure with a finger on the eye through the upper eyelid to encourage aqueous flow through the bleb and prevent scarring. This article reports the outcomes of massage and other interventions in 3 patients after trabeculectomy.

All patients had mitomycin C (MMC) augmented trabeculectomy (0.4mg/ml MMC applied for 3 minutes); cases #1 and #2 underwent fixed sutures technique, while case #3 had releasable sutures technique. Patients were instructed to massage by applying gentle pressure to the globe using the thumb through the upper eyelid.

Case # 1 was a 6-year-old female noticed to have intraocular pressure (IOP) elevated to 22 mmHg 4 weeks post-operatively; and IOP reduced to 5 mmHg by the 9th post-operative week. Case #2 was a 10-year-old male noticed to have an IOP of 40 mmHg 6 weeks after surgery; he received 5-fluorouracil (5 FU) injections in addition to the massage, and IOP reduced to 13 mmHg by the 8th week after surgery. Case #3 was a 24-year-old male whose IOP increased to 23 mmHg 3 weeks after surgery. The patient had 5FU injections, needling and with ocular massage IOP reduced to 6 mmHg. Bleb fibrosis can be managed in the early post-operative period with ocular massage along with other interventions to improve bleb function.

BACKGROUND

Scarring leading to early bleb failure is the commonest known complication of trabeculectomy.¹ Intraoperative modalities for the prevention of scarring include creating a large scleral flap not cut to the limbus, placement of releasable sutures, very wide and posterior conjunctival flap dissection to create a large treatment area with anti-fibrotics such as mitomycin C (MMC). These surgical modifications, combined with meticulous tissue handling, are meant to reduce the severity of wound healing; however, these measures are often insufficient, especially in those with high-risk criteria.²

Postoperatively, modalities for the prevention and treatment of early bleb failure include an intensive regimen of topical steroids, subconjunctival 5-fluorouracil injections and various forms of bleb manipulation such as massage and needling.³ Ocular massage has long been recognized as a therapeutic intervention in the management of failing blebs.⁴ It has also been found to have a useful role in the management of the hypertensive phase after Ahmed glaucoma drainage device surgery. A case series of patients undergoing Ahmed valve surgery documented 50% of patients achieving a 20% drop in intraocular pressure (IOP) with massage.⁴ Digital ocular massage as described in this report involves application of gentle controlled pressure with a finger on the eye through the upper eyelid to encourage aqueous flow through the bleb, improve bleb function and prevent scarring, with the technique applied by the clinician and taught to the patient. This article reports the outcomes of massage and other interventions in 3 patients following trabeculectomy.

CASE PRESENTATION

All patients had MMC augmented Moorfields safer surgery system trabeculectomy (0.4mg/ml MMC applied for 3 minutes). All cases were performed by a single surgeon; cases #1 and #2 had fixed sutures technique while case #3 had releasable sutures technique. Patients were instructed to massage by applying gentle pressure to the globe using the thumb through the upper eyelid; massage was applied 3 times a day, and each time, the pressure was applied 10 times. Two of the patients had 5 fluorouracil injections, and 1 patient had bleb needling. Informed consent for publication was obtained from the adult patient and from the parents/legal guardians of the children included in this report.

Case # 1 was a 6-year-old female operated in the left eye 13 weeks prior to this report; IOP was 8 mmHg on the 1st post-operative day (POD 1), 2 mmHg at 1 week, and 3 mmHg at 2 weeks. IOP rose to 10 mmHg at 3 weeks, and by 4 weeks it was 22 mmHg. Massage done in the clinic reduced the IOP to 18 mmHg. The parents were taught to massage at home, and by the 6th post-operative week, IOP had reduced to 8 mmHg and 5 mmHg by the 9th week (Figure 1).

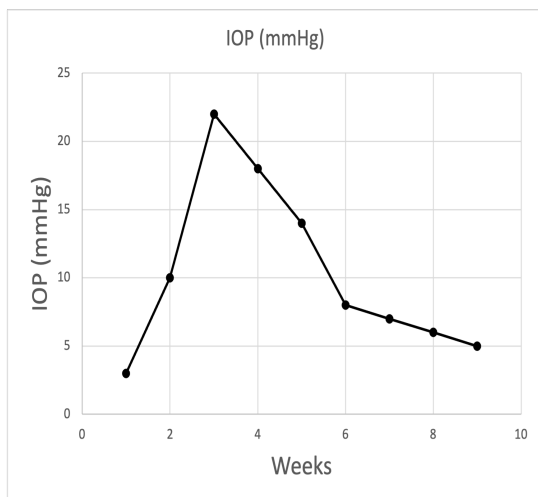


Figure 1: Time course of IOP changes in case #1

Case #2 was a 10-year-old male operated in the left eye 9 weeks prior to this report; IOP was 3 mmHg on POD 1, and it remained at 2 mmHg through the first 3 post-operative

weeks. The IOP increased to 40 mmHg at 6 weeks, at which point he was noted to have a localized bleb and was started on alternate-day 5FU injections. A total of 7 injections, each 0.1 mL of a 50 mg/mL solution, were given over a 2-week period. The parents were instructed on how to massage after the second dose of 5FU. The IOP was observed to reduce to 13 mmHg by 8 weeks PO and was 8 mmHg at 9 weeks (Figure 2).

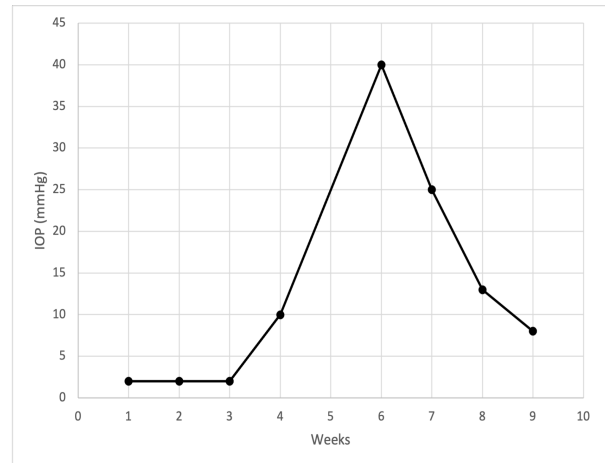


Figure 2: Time Course of IOP changes in case #2

Case #3 was a 24-year-old male who was operated 7 weeks prior to this report. Surgery was done in the left eye; IOP was 8 mmHg on POD 1, 4 mmHg at 1 week, rose to 7 mmHg at 2 weeks, at which point 1 releasable suture was removed, with IOP reduction to 6 mmHg after suture removal. The IOP at the 3rd postoperative week was 16 mmHg, at which point the second releasable suture was removed, with IOP paradoxically rising to 23 mmHg after suture removal. The patient was started on alternate-day 5FU injections, each 0.1 ml of a 50mg/ml solution, and had a total of 7 doses. He also had bleb needling done 4 weeks PO, while 5FU injections were ongoing. Intraocular pressure on the first day after needling was 11 mmHg, which rose to 18 mmHg 6 days after needling. Ocular massage was started at 5 weeks postoperatively, which led to a progressive reduction in IOP to 9 mmHg at 6 weeks, and 6 mmHg by the 7th postoperative week (Figure 3).

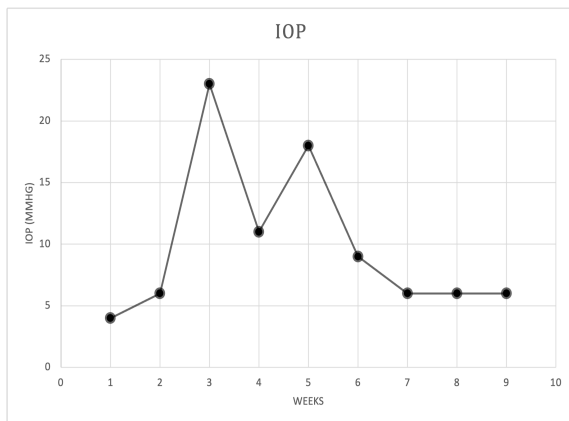


Figure 3: Time course of IOP changes in case No. 3

DISCUSSION

In the weeks following a trabeculectomy, scar tissue forms and causes resistance to outflow. Continuous aqueous production by the eye fills the limited bleb, backs up into the eye and causes raised IOP. It has been documented that a natural peak of resistance to outflow usually occurs in the weeks immediately after a trabeculectomy, which then resolves with remodelling. This peak is said to occur between 3 to 6 weeks post-surgery in African patients.³ Close follow-up of patients in this period is critical, when interventions like massage are most likely to be effective. During this period of active bleb management, especially within the first 3 months, elevation of IOP to the mid-teens may be a warning sign of early failure. This is based on personal observation. Urgent mechanical re-establishment of flow is critical to success, using a combination of different modalities such as massage, removal of releasable sutures, cutting of fixed sutures and bleb needling. The cases presented in this report showed the value of including ocular massage along with other modalities for treating scarring in the early post-operative period. Different techniques of massage have been described, with some practitioners advocating massage through the lower eyelid. A study comparing finger massage with a novel ocular massage device showed that there was greater ease of use and lower pain scores with the massage device.⁵ It has also been shown that health education videos help patients perform massage better.⁶

A few reports of potential complications exist in the literature, such as corneal abrasions, hypotony, flat anterior chamber, hyphema, and iris incarceration into the sclerostomy.⁷ Massage must therefore be used judiciously, and patients must be carefully instructed and closely followed up.

In conclusion, bleb fibrosis and failure can be successfully managed in the early post-operative period with ocular massage along with other interventions to prevent scarring and improve bleb function.

Conflict of Interest: The authors have no conflict of interest

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