

Multifocal conjunctival leaks due to the use of mitomycin C mimicking the normal drainage of the tear from the lacrimal excretory ducts

Burak Turgut¹
Murat Kaya¹
Tamer Demir¹
Orhan Aydemir¹
Bengü Çobanoğlu²

¹Firat University School of Medicine, Department of Ophthalmology, Elazig, Turkey; ²Firat University School of Medicine, Department of Pathology, Elazig, Turkey

Abstract: A 20-year-old male patient underwent trabeculectomy with mitomycin C (MMC) because of glaucoma secondary to the use of corticosteroid drops. There were three conjunctival holes, which had a positive Seidel test, near the superior fornix three weeks after surgery. Because of hypotony and choroidal effusion in the operated eye, the patient was hospitalized and medical treatment carried out. Despite medical treatment, the leak continued for ten days. The conjunctiva was then partially excised and the tissue was subjected to histopathological evaluation. The conjunctiva and Tenon's capsule were sutured and the Seidel test was negative, intraoperatively. The histopathological examination of the tissue showed necrosis due to MMC. The excising of conjunctival necrotic tissue provided successful control of intraocular pressure and the patient became asymptomatic at six months follow-up. It should be considered that a leak from superotemporal conjunctiva near the fornix after trabeculectomy with MMC may be confused with orifices of the lacrimal gland ducts.

Keywords: trabeculectomy with MMC, conjunctival necrosis, leak

Introduction

Mitomycin C (MMC) is an antimetabolite-antibiotic agent isolated from *Streptomyces caespitosus* that decreases fibroblast proliferation in both subconjunctival space and Tenon's capsule. Chen et al introduced the use of MMC as adjunctive therapy during trabeculectomy in 1981.² MMC is used in trabeculectomy to prevent excessive post-operative scarring in the filtration area and thus reduces the risk of failure because of its antiangiogenic properties.^{1,2} The ocular complications of topically applied MMC are tissue injury and necrosis in the cornea and conjunctiva due to contact during an operation, hypotony due to toxicity to ciliary body, scleral thinning/perforation, and leaking bleb complications such as hypotony, shallow anterior chamber, hypotony maculopathy, choroidal detachment, cataract formation, epithelial down growth, chronic inflammation, filtration bleb failure, and endophthalmitis. Early postoperative bleb leaks often resolve spontaneously or respond to conservative management, whereas late bleb leaks may require surgical intervention.²⁻⁷

We report a case where a patient who underwent trabeculectomy with MMC had multifocal conjunctival leaks mimicking normal drainage of tears from lacrimal excretory ducts.

Case report

A 20-year-old male patient was referred to the hospital of our university with a diagnosis of glaucoma secondary to steroid drops for vernal conjunctivitis. On initial

Correspondence: Burak Turgut
Firat University School of Medicine,
Department of Ophthalmology, Elazig,
Turkey
Tel +904242333555
Fax +904242388096
Email drburakturgut@gmail.com

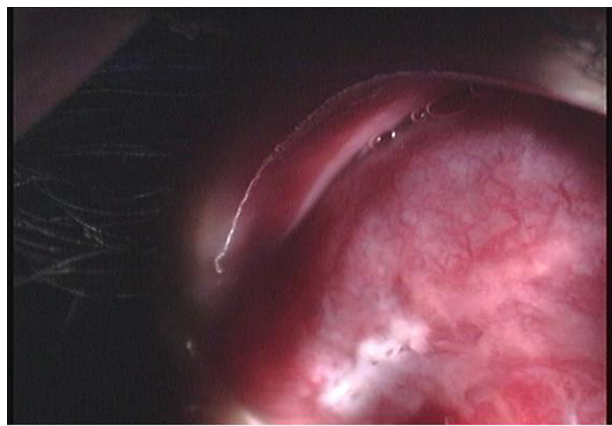


Figure 1 Three conjunctival holes at the upper part of superior fornix, three weeks after surgery.

examination, his best-corrected visual acuity (BVCA) was right eye 20/30 and left eye 20/20. The intraocular pressures (IOPs) were 30 mmHg in the right eye and 20 mmHg in the left eye. Cup to disc ratios were 7/10 in the right eye and 3/10 in the left. First, bilateral antiglaucomatous treatment consisting of timolol maleate and brinzolamide fix combination was started. At the one-month examination, latanoprost was added to the initial treatment because target IOPs had not been obtained. The two-month examination revealed that despite antiglaucomatous treatment, the IOPs were right eye 35 mmHg and left eye 40 mmHg. Thus, a trabeculectomy was recommended for the right eye. Considering the age of the patient, advanced glaucomatous cupping, and a high possibility of failure, a trabeculectomy with MMC (0.2 mg/mL for two minutes) followed by a limbal-based conjunctival incision was performed on the right eye. A square shaped scleral flap was sutured with 10-0 nylon suture. Following this, 8-0 vicryl and 8-0 silk sutures were used for the closure of the incisions in the Tenon's capsule and conjunctiva, respectively.

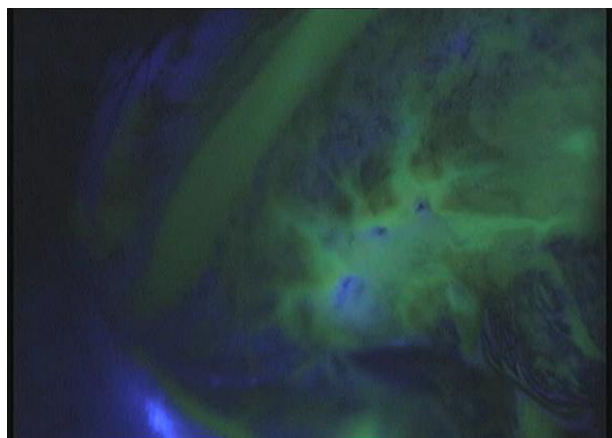


Figure 2 A positive Seidel test reveals aqueous leaking from three conjunctival holes.

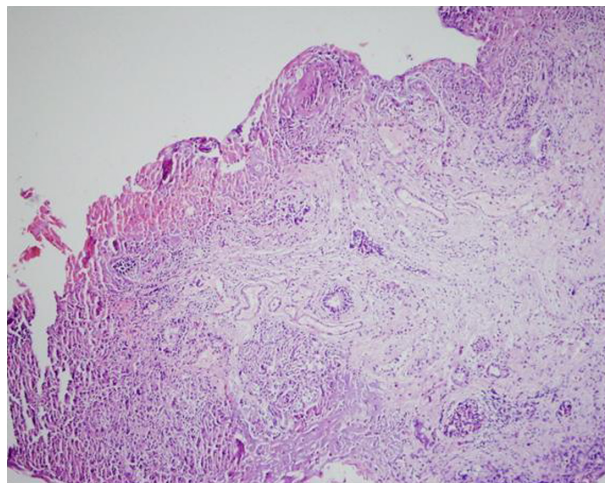


Figure 3 Histopathological micrograph demonstrates eosinophily, fibrine, and necrosis in conjunctival superficial layers.

Note: Hematoxylin and eosin stain magnification X100.

The Tenon was closed using three separate sutures while the conjunctiva was closed using a running suture.

Subconjunctival injection of 20 mg gentamycin and 2.5 mg dexamethasone was used at the end of the procedure. Postoperative management included the use of topical cycloplegics for one month and 0.3% tobramycin and 0.1% dexamethasone eye drops three times daily for two weeks, tapered down to twice daily for two weeks and then once daily for two weeks. Antiglaucomatous medications were discontinued immediately after surgery and then adjusted according to postoperative IOPs.

No intraoperative complications occurred. On the first post-operative day, IOP in the operated eye was 8 mmHg without antiglaucomatous medication, while that in the unoperated eye was 12 mmHg with medication. BVCA was right eye 20/100 and left eye 20/20. Slit-lamb examination of the right eye revealed a raised conjunctival bleb and a mild shallow anterior chamber, but

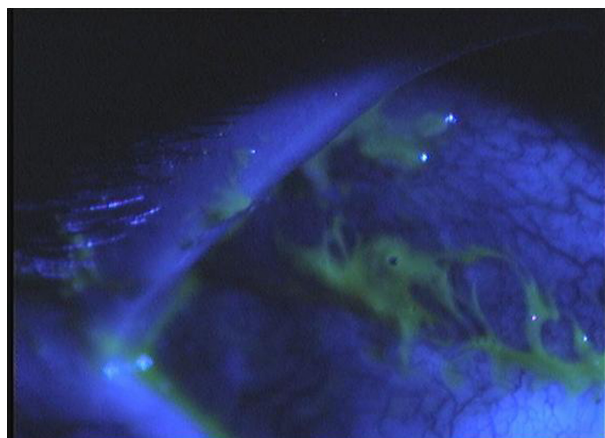


Figure 4 Image demonstrates a negative Seidel test.

the Seidel test revealed no bleb leak. During the postoperative period of two weeks, IOPs ranged between 8–10 mmHg and no complications were observed. However, there were three conjunctival holes at the upper part of superior fornix far away from conjunctival incision site, three weeks after surgery and the Seidel test was positive at this region (Figures 1 and 2). IOP was 4 mmHg and, because of choroidal effusion, the patient was hospitalized and the topical steroid was discontinued. Treatment, including tight ocular bandage, atropine, and autologous serum drops, was carried out. Despite medical treatment the Seidel test positivity continued for ten days. It was considered that the leaks in the superotemporal conjunctiva could be due to the normal drainage of tears from the lacrimal excretory ducts. Additionally, the areas in which there were three conjunctival holes were in the superotemporal fornical area where lacrimal excretory ducts are opened to the conjunctival surface. However, because the IOP was very low, it was also considered that the cause of the leaks could be conjunctival necrosis caused by MMC and the risk of endophthalmitis was taken into account.

At this point, surgical excision of the area of the leaking conjunctiva was performed and the tissue was subjected to histopathological evaluation. The conjunctiva and Tenon were sutured and the Seidel test was negative intraoperatively. The histopathological examination of the tissue showed eosinophily due to vernal conjunctivitis and necrosis, possibly due to the use of MMC, and some glandular structures consistent with an accessory lacrimal gland (ie, Krause), but no findings concerning the architecture of the excretory ducts or duct orifices of the main lacrimal gland (Figure 3).

The excising of conjunctival necrotic tissue worked to successfully control IOP and the leaks disappeared. In the early postoperative period, conjunctival leak and choroidal effusion were not observed and the IOP was 10 mmHg. At the six-month follow-up examination, no leak was detected (Figure 4).

Discussion

Topically applied MMC may cause conjunctival necrosis and bleb leak or even endophthalmitis due to contact during an

operation.^{6,7} In our case, conjunctival necrosis due to MMC was confirmed histopathologically and necrosis and leaking were observed in an uninterested area with a bleb, near the fornix. Because of the normal anatomical localization of the orifices of the excretory ducts of the lacrimal gland, it was suspected that the leak was a result of the normal drainage of tears.

The leaks occurring near the bleb may be mistakenly evaluated as normal lacrimal drainage; this observation may predisposed to develop endophthalmitis. Patients undergoing a trabeculectomy with MMC should be monitored closely after the operation and physicians should be wary of complications, especially four weeks postoperatively. It should be considered that leaks occurring from a bleb, especially in the superotemporal conjunctiva near the fornix, may be confused with the orifices of the lacrimal gland ducts.

Disclosures

The authors indicate no financial support or financial conflict of proprietary interest.

References

1. Lee DA, Lee TC, Cortes AE, Kitada S. Effects of mithramycin, mitomycin C, daunorubicin, and bleomycin on human subconjunctival fibroblast attachment and proliferation. *Invest Ophthalmol Vis Sci.* 1990;31:2136–2144.
2. Chen CW. Enhanced intraocular pressure controlling effectiveness of trabeculectomy by local application of mitomycin-C. *Trans Asia-Pacif Acad Ophthalmol.* 1983;9:172.
3. Reder JE, Parrish RK. Update of adjunctive antimetabolites in glaucoma surgery. *Ophthalmol Clin North Am.* 1991;4:861–888.
4. Jampel HD. Antifibrosis drugs in filtration surgery. In: *Glaucoma: Decision Making in Therapy.* MG Bucci, editors. Springer-Verlag, Milano, 1996. pp. 233–237.
5. Skuta GL, Beeson CC, Higginbotham EJ. Intraoperative mitomycin versus postoperative 5-fluorouracil in high-risk glaucoma filtering surgery. *Ophthalmology.* 1992;99:438–445.
6. Turaçlı ME, Gündüz K, Aktan G, Sencer H. Trabeculectomy with mitomycin C: An electron microscopic and clinical study. *Int Ophthalmol.* 1996;19:337–346.
7. Higginbotham EJ, Stevens RK, Musch DC, Karp KO, Lichter PR, Bergstrom TJ, et al. Bleb-related endophthalmitis after trabeculectomy with mitomycin C. *Ophthalmology.* 1996;103:650–656.

Clinical Optometry

Publish your work in this journal

Clinical Optometry is an international, peer-reviewed, open access journal publishing original research, basic science, clinical and epidemiological studies, reviews and evaluations on clinical optometry. All aspects of patient care are addressed within the journal as well as the practice of optometry including economic and business analyses. Basic and clinical

Submit your manuscript here: <http://www.dovepress.com/clinical-optometry-journal>

Dovepress

research papers are published that cover all aspects of optics, refraction and its application to the theory and practice of optometry. The manuscript management system is completely online and includes a very quick and fair peer-review system, which is all easy to use. Visit <http://www.dovepress.com/testimonials.php> to read real quotes from published authors.