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Flap amputation with phototherapeutic keratectomy (PTK) and adjuvant mitomycin C for severe post-LASIK epithelial ingrowth

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PURPOSE. *To report a patient with severe post–laser in situ keratomileusis (LASIK) epithelial ingrowth and keratolysis treated with flap amputation and phototherapeutic keratectomy (PTK) with adjuvant intraoperative mitomycin C (MMC).*

METHODS. *Case report.*

RESULTS. *A 55-year-old woman was referred to our department due to severe post-LASIK epithelial ingrowth with corneal melting 2 years after primary LASIK. The patient had had two previous attempts for epithelial ingrowth treatment (flap lift and epithelial ingrowth manual removal) that were unsuccessful. Slit lamp biomicroscopy and anterior segment optical coherence tomography showed extensive epithelial ingrowth and keratolysis (thinning of the LASIK flap) while the patient had photophobia and could not tolerate contact lenses. Flap amputation with subsequent PTK (in order to smooth out the corneal irregularities caused by the keratolysis and/or variations in flap thickness) and adjuvant intraoperative MMC application for 2 minutes was performed. There were no intra- or postoperative adverse events seen during the follow-up period. Six months after the procedure, uncorrected visual acuity improved to 20/40 compared with 20/50 preoperatively, while best spectacle-corrected visual acuity improved from 20/40 to 20/32. The topographic astigmatism was decreased from 3.24 diopters (D) to 1.00 D.*

CONCLUSIONS. *Flap amputation with PTK and adjuvant intraoperative MMC is an option for the management of severe post-LASIK epithelial ingrowth with keratolysis. (Eur J Ophthalmol 2009; 19: 301-3)*

KEY WORDS. *Flap amputation, Mitomycin C, Laser in situ keratomileusis epithelial ingrowth*

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INTRODUCTION

The incidence of post–laser in situ keratomileusis (LASIK) epithelial ingrowth varies in different studies (1-4). Generally it is a self-limited complication. Especially in cases with isolated epithelial cells outside the visual axis, no surgical intervention is needed other than observation. Treatment should be considered in patients with progressive epithelial ingrowth that involves the visual axis. In most of these cases, lifting the flap and carefully scraping the posterior surface of the flap and the stromal bed is adequate. Other treatment options such as flap suturing, flap removal, ethanol use, or adjuvant phototherapeutic keratectomies have been also proposed (5-7).

In this case report, we present a patient with severe post-LASIK epithelial ingrowth and corneal melting, treated with combined flap amputation and phototherapeutic keratectomy (PTK) with adjuvant intraoperative mitomycin C (MMC).

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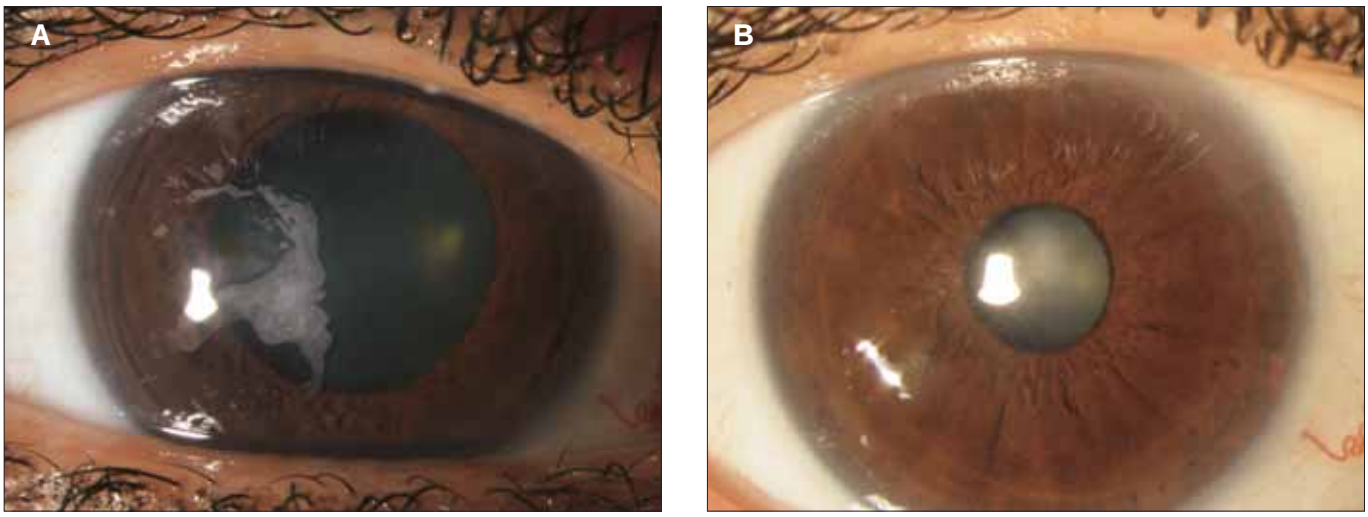

Fig. 1 - *Preoperative* **(A)** *slit lamp biomicroscopy shows the extension of recurrent epithelial ingrowth with corneal melting-thinning (keratolysis) and iron line. After 6 months, slit lamp biomicroscopy showed an overall improvement in corneal findings without any evidence of corneal haze* **(B)**.

Case report

A 55-year-old woman was referred to our department due to severe post-LASIK epithelial ingrowth with keratolysis in her right eye 2 years after primary LASIK. The patient had had two previous attempts for epithelial ingrowth treatment (flap lift and epithelial ingrowth removal) that were unsuccessful. She had photophobia and contact lens intolerance. Uncorrected visual acuity was 20/50 in the affected eye and manifest refraction was –1.50 +3.00 × 075°, while best-corrected visual acuity was 20/40. Slit-lamp examination revealed recurrent epithelial ingrowth involving 30% of the flap area extending to the visual axis with flap corneal melting and iron line (Fig. 1A). Anterior segment OCT (Fig. 2) and corneal topography revealed stromal melting with irregular astigmatism.

After providing informed consent, flap amputation was decided. The surgical procedure was conducted under topical anesthesia (proparacaine hydrochloride 0.5%). The flap was lifted and amputated along the hinge area with a beaver blade. The anterior stromal surface was debrided followed by PTK (36 µm with balanced saline solution as a masking agent) and MMC 0.2 mg/mL for 2 minutes.

A drop of antibiotic/steroid and a bandage contact lens were placed. The patient was then placed on topical antibiotic and steroid for 2 weeks. The bandage contact lens was removed on the third postoperative day when the epithelial defect had healed completely. There were no intra- or postoperative adverse events seen by the 6-month follow-up. Microscopic evaluation of the excised flap revealed that the corneal stroma was thinned in the temporal half of the corneal specimen. Epithelium was present on the posterior aspect of the corneal stroma over approximately 50% of the specimen.

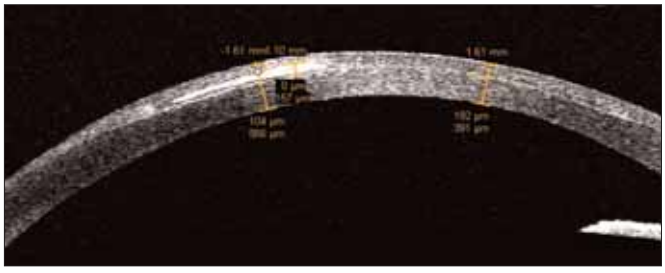

Fig. 2 - *Anterior segment optical coherence tomography reveals the corneal melting and variations in corneal flap thickness.*

Six months after the procedure, uncorrected visual acuity improved to 20/40 compared with 20/50 preoperatively, while best spectacle-corrected visual acuity improved from 20/40 to 20/32 with a manifest refraction of +1.00 +0.50 × 125. The patient does not report any of the preoperative subjective symptoms (like photophobia). Slit lamp examination showed an overall improvement in corneal findings without any evidence of haze formation (Fig. 1B). The mean topographic astigmatism decreased from 3.24 diopters (D) to 1.00 D.

DISCUSSION

Several treatment options have already been described in the literature for post-LASIK epithelial ingrowth. In cases with nonprogressive isolated epithelial cells, observation is recommended while in progressive cases a surgical intervention is required.

Usually flap lifting and epithelium scraping is adequate for epithelial ingrowth removal. In more severe cases, additional treatment options such as phototherapeutic keratectomy, flap suturing, ethanol application, and flap amputation have been reported (1-9). McLeod et al (7) reported two cases of flap amputation without any additional surgical intervention for epithelial ingrowth.

Flap amputation could improve corneal irregularities (caused by stromal melting) and treat epithelial ingrowth recurrence. However, induced stromal bed irregularities caused by flap nonuniformity and post-amputation haze formation make this approach the last option for epithelial ingrowth treatment (7). In this case report, we present a patient with severe post-LASIK epithelial ingrowth and keratolysis treated with flap amputation. In addition to flap amputation, PTK was performed in order to smooth out the corneal irregularities caused by the keratolysis and/or variations in corneal thickness along the flap and the bed thickness that could affect the final refractive outcome while the adjuvant MMC was applied in order to eliminate haze formation (typically seen after flap amputation). There were no intra- or postoperative adverse events seen during the follow-up period while an overall improvement in patient's subjective symptoms, visual acuity, and topographic findings were observed.

In conclusion, flap amputation with PTK and adjuvant intraoperative MMC is simple and efficient for the management of severe post-LASIK epithelial ingrowth with keratolysis.

The authors have no financial or proprietary interest in any materials or methods described herein.

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