

FLAP MACROSTRIAE WITH PROGRESSIVE EPITHELIAL INGROWTH

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ABSTRACT

BACKGROUND

A23-year-old patient developed flap macrostriae after accidental buttonhole during routine microkeratome LASIK. Classic features are demonstrated through slit lamp images and serial anterior segment OCT images. Management is extremely challenging and novel options with a review of literature are discussed.

KEYWORDS

Flap Macrostriae, Epithelial Ingrowth, Microkeratome LASIK.

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BACKGROUND

LASIK has established itself for treatment of refractive errors over the past 2 decades. Although, the safety and efficacy are now far more predictable and standardised, complications may still occur. Flap striae may lead to issues ranging from poor quality of vision to non-achievement of 20/20 even after best correction and are seen with fair consistency in the average practice. Management is straightforward in cases unassociated with other complications and involves relifting with stretching of the flap as soon as diagnosed.¹ Epithelial ingrowth post LASIK is seen in cases where a buttonhole has occurred during the procedure. Management options include interface wash, with or without alcohol, YAG laser at interface, suturing of flap edges all associated with recurrence of the ingrowth. Occurrence of both together poses a greater challenge than either alone.

CASE REPORT

A 23-year-old male with axial myopia (OD-6.75DS, OS-6.5DS) underwent microkeratome (Carriazo pendular) assisted LASIK in both eyes. Procedure was uneventful in the right eye. In case of left eye after uneventful completion of ablation during flap reposition, there was misalignment of flap for which flap was relifted. During this, there was buttonholing of the flap at 6 o'clock. Repositioning was attempted; however, large macrostriae

were noted on postop day 1. Ironing of the striae was performed immediately, but with limited success. Subsequently, he developed epithelial ingrowth from the buttonhole with progressive deterioration of uncorrected and best corrected vision (OD UCVA 20/20, OS UCVA 20/200 and BCVA 20/40 with -0.50DS, -3.0D Cyl at 100°). Anterior segment OCT showed a 100 micron thin flap with island of epithelial cells entrapped in the interface. Subsequently, patient was advised surgical management; however, patient was reluctant for the same. Serial follow up for 4 months showed progression of the ingrowth along with persistence of the striae (Figure 1 and Figure 2).

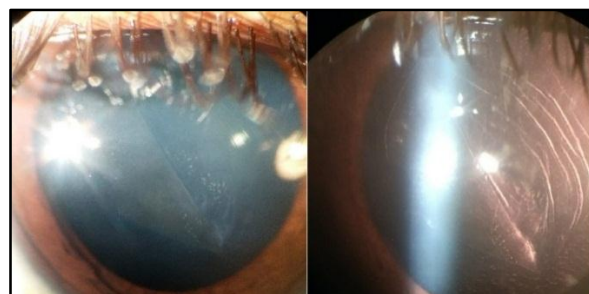


Figure 1. Flap Macrostriae Seen Running Across the Pupil-Best Appreciated in Retroillumination. Islands of Epithelial Ingrowth Seen at Interface

DISCUSSION

Flap striae alone possess a unique challenge for the refractive surgeon (Table 1). Best prevented, their incidence varies from 1.1% to 3.5% of cases.¹ Interestingly histopathological studies have shown that 2/3rd of corneal stromal collagen fibers as well as full thickness of the flap show irregularly undulating pattern as early as a month after surgery.² With time, there is also fibrosis of the flap with loss of elasticity leading to flattening. This makes early intervention necessary.¹ Our patient additionally had a thin flap and a buttonhole causing epithelial in growth (Table 2). A relift with stretching alone would not be sufficient to

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improve the vision. We initially planned to perform a flap relift with interface wash on base and undersurface of the flap, stretching of the macrostriae and repositioning along with application of fibrin glue to edges. However, a delay in the same necessitated modification of strategy. Currently, we plan to do a flap amputation along with subsequent photorefractive keratectomy after assessment of the residual stromal bed.



Figure 2. Entrapped Island of Epithelial Cells with Progressive Increase Seen In Serial Anterior Segment OCT

Causes/Risk factors³
• Desiccation and contraction during ablation.
• Flap tenting post ablation due to disparity in the two surfaces.
• Too thin or too thick flaps.
• Irregular flaps/free caps.
• Nasal hinge/inexperienced surgeon.
• Epithelial defects.
• Movement during removal of drape or speculum.
• Eye rubbing post procedure.
Management Options
DICTUM- Intervene as soon as detected ¹
A. Early postop- relift, refloat and reposition.
B. > 24 hours.
• Relifting flap, hydration with balanced salt solution, stretching of striae perpendicular to direction.
• Stretching and suturing of flap.

C. > 3 months.
• Flap amputation and secondary PRK depending on residual bed thickness.
Table 1. Flap Striae

Management Options
DICTUM-Recurrence is a rule. ⁴
A. Flap lift, scraping of under surface of flap and base. ⁵
• With/without alcohol.
• With/without fibrin glue sealing flap edge.
• With/without flap suturing.
B. YAG Laser ablation. ⁶
• Can combine with creation of epithelial defect beyond margin of flap.
C. Astigmatic PRK indicated. ⁵
• BCVA 20/20 and patient happy with it.
• Ingrowth is peripheral and can be left alone.
Table 2. Flap Epithelial Ingrowth

CONCLUSION

Flap macrostriae along with epithelial ingrowth due to buttonhole during LASIK may require measures such as flap amputation followed by secondary surface ablation due to high risk of recurrence of the ingrowth and chronic changes in the stroma due to the striae. We admit that the management of this case is incomplete as patient has not undergone surgical management. This would have certainly shed further light on appropriateness of our management strategy. However, the aim of presenting this case is to provide a concise review of the options for such a situation. We, in the course of our literature search for this case were unable to find the same in any single case report.

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