

Commentary: Intraoperative optical coherence tomography-guided management of post-laser-assisted *in situ* keratomileusis epithelial ingrowth

Post-LASIK epithelial ingrowth (PLEI)- is uncommon but visually threatening complication of LASIK, with incidence ranging from 0%–3.9% in primary treatment cases to 10%–20% in retreatment cases.^[1] However, clinically significant PLEI requiring removal was noted in only 0.92%–3.2%.^[1] Epithelial ingrowth occurs due to the implantation of basal epithelial cells under the flap, which is mechanically dragged during keratectomy by the microkeratome blade. It has also been stated that poor adherence of flap to the underlying stroma can cause epithelial cell migration.^[2] Risk factors include trauma, intraocular surgeries, excessive instrumentation and interface manipulation, hyperopia, and increased patient age. Based on the location, clinical features, and severity, PLEI can be categorized into four grades using the Probst/Machat classification.^[3] This classification serves as a useful aid for consistent and standardized grading/assessment and provides guidance on the treatment strategies. Early diagnosis and proper management are necessary to prevent visually threatening complications. The most common treatment is flap lifting and scraping of epithelium from the stromal bed and underside of the flap. However, a high recurrence rate of 44% was observed with this technique.^[4] Thus, many adjunct techniques were used to prevent recurrence, such as the use of alcohol, mitomycin C, fibrin glue, phototherapeutic keratectomy, flap suturing, and amniotic membrane graft. In more severe cases, flap amputation and transepithelial topography-guided ablation have been described. In less severe cases, Nd:YAG lasers have been used in an attempt to bypass a surgical approach. Lifting the flap has the disadvantage of nonuniform trauma to the flap edge, which can be sufficient to introduce

epithelial cells beneath the flap or increase edema at the edge, coinciding with a higher incidence of epithelial ingrowth after enhancement compared to after initial LASIK. The disruption of ingrown epithelium via Nd:YAG laser using low energy (0.6 mJ on average) offers a safe and effective alternative to other treatments for epithelial ingrowth after LASIK treatment and enhancement.^[5]

Swept-source AS-OCT is useful for diagnosis and management of eyes with LASIK flap-related complications by allowing noninvasive, noncontact, and real-time acquisition of cross-sectional AS images.^[6] It is one of the diagnostic modalities in epithelial ingrowth. It shows hyperreflectivity in the LASIK interface flap in this region with a darkened shadow below it. However, this diagnostic modality has not been used intraoperatively in the management of epithelial ingrowth. Theoretically, it should improve surgeons' ease and enable less manipulation of flaps, thereby decreasing the recurrence.

The review article is a novel initiative to use the concept of real-time acquisition in the management of PLEI. They concluded that iOCT guided management of post-LASIK epithelial ingrowth enables real-time dynamic monitoring of intraoperative surgical steps, aids in decision making regarding completion of ingrowth removal, and allows precise surgical dissection with minimal intraoperative manipulations.

The study results had good immediate visual recovery unlike with other adjuvant modalities such as flap suturing.

Mechanical debridement of epithelial ingrowth with additional application of alcohol 70.0% and MMC 0.02% along with tissue glue use for flap closure appears to be a safe and effective treatment for recalcitrant cases of clinically significant epithelial ingrowth.^[7] It cannot be concluded that minimal tissue handling while flap lifting using iOCT is alone sufficient to reduce the risk of recurrence while other factors such as mitomycin come into play in the above study. Thus, the use of mitomycin in this study is a confounding factor.

Availability of IOCT is one of the limiting factors when cost-benefit is taken into consideration.

This technique of using real-time acquisition in flap lifting and scraping may reduce the recurrence; however, large sample size and considering control group will be more reliable to extrapolate this new initiative in the management of post-LASIK epithelial ingrowth and can pave the way for future studies on this matter.^[8]

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