To the Editor:

Flap creation is the most crucial step of LASIK and the introduction of the femtosecond laser led to the production of uniform flaps enhancing the accuracy and reproducibility of LASIK.\(^1,2\) However, intra-stromal corneal opacity (such as scar and haze) raised controversies regarding the efficacy of the technique in such cases because it can interfere with laser tissue disruption, causing gas breakthrough and/or irregular flaps in some cases.\(^3,4\) In our case, a patient with corneal stromal haze underwent uneventful femtosecond laser-assisted flap creation during LASIK.

A 31-year-old man who had undergone photorefractive keratectomy with mitomycin C in his right eye 6 years earlier presented to our institute for consultation because of hyperopic astigmatism regression. Ocular history revealed amblyopia of the right eye, whereas his medical history was unremarkable.

At presentation, uncorrected distance visual acuity was 20/125 in the right eye and 20/20 in the left eye, whereas corrected distance visual acuity was 20/25 (manifest refraction: +5.25 -5.25 \(\times\) 3) and 20/20 (manifest refraction: +0.75 -0.50 \(\times\) 5), respectively. Slit-lamp examination revealed a peripheral ring of stromal haze formed in a denser temporal semi-arcus (Figure 1A). Corneal haze was extended within a maximum depth of 116 \(\mu\)m as estimated using anterior segment optical coherence tomography (Visante OCT 3.0; Carl Zeiss Meditec, Inc., Jena, Germany) (Figure 1B). Central corneal thickness was 541 and 542 \(\mu\)m for the right and left eye, respectively.

LASIK was proposed as an enhancement treatment because photorefractive keratectomy led to significant regression of the initial refractive error and haze.

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**Figure 1.** (A) Slit-lamp image of the right eye preoperatively, showing corneal stromal haze formation in a denser temporal semi-arcus. (B) High-resolution anterior segment optical coherence tomography (AS-OCT) scan of the corneal subepithelial stromal haze, demonstrating a maximum depth of 116 \(\mu\)m. (C) Slit-lamp image of the right eye 1 month postoperatively, showing a uniform flap and residual corneal stromal haze. (D) High-resolution AS-OCT scan of the cornea, demonstrating an uneventful corneal flap with a central depth of 124 \(\mu\)m and residual corneal stromal haze.
formation. The patient provided informed consent according to the institutional guidelines and in compliance with the tenets of the Declaration of Helsinki.

The corneal flap was uneventfully created using the IntraLase femtosecond laser (Abbott Medical Optics, Santa Ana, CA) with a thickness of 120 µm and 8.0-mm diameter. The flap was easily lifted with a spatula and the refractive treatment was performed using the Allegretto Wave Eye-Q 400-Hz excimer laser (WaveLight GmbH, Erlangen, Germany). No intraoperative complications occurred.

One month postoperatively, uncorrected distance visual acuity was 20/32 and corrected distance visual acuity was 20/25 (manifest refraction: +1.25 -1.00 ×20) in the right eye. Slit-lamp examination showed a well-positioned flap with clear interface, despite the residual stromal haze (Figure 1C). Anterior segment optical coherence tomography scan depicted a uniform flap at a corneal depth of 124 µm, revealing a successful femtosecond laser beam penetration as photodisruption pattern performed in a deeper corneal plane, under the zone of haze ring (Figure 1D). Haze formation seems not to have as intense an impact in photodisruption as other opacities such as scarring.

This case showed uneventful flap creation achieved with a femtosecond laser in a patient with corneal stromal haze. Although corneal stromal opacities constitute an obstacle for stromal photodisruption, corneal stromal haze may have a minimal impact in femtosecond laser-assisted LASIK, permitting an uneventful flap creation. Although corneal haze has a variance in clinical manifestation, classified in scaled level of density formation, mild to moderate corneal haze seems to permit a uniform stromal photodisruption. Because femtosecond laser technology has extended its applicability (eg, cataract operations), controversies such as the permeability of the laser beam through corneal stromal opacities should be clarified for a safe approach to patients after refractive surgery with potential persistent haze formation.

REFERENCES


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