Post photorefractive keratectomy corneal ectasia

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Dear Editor,

We write to describe two cases of corneal ectasia occurred after photorefractive keratectomy. Due to the wide diffusion of refractive surgery, many ophthalmologists attempted to identify the risk factors and prevention methods to avoid such severe complication of this technique. Since post-LASIK ectasia occurs with higher prevalence when compared to photorefractive keratectomy (PRK), the less invasive surface ablation is generally considered as a safer approach that could constitute a potential risk factor for ectasia development. Several ectasia cases have had abnormal preoperative topographies, the patients were significantly younger, with higher myopia, they exhibited thinner corneas before surgery and enhancements were reported in a majority of cases. Our first case report developed ectasia after retreatment. Thus, it might confirm that any retreatment, even in total absence of profile and CCT alterations in young subjects could constitute a potential risk factor for ectasia development after PRK. This case highlights the need for caution and treatment.

**Patient 1** A 23-year-old man underwent refractive surgery for myopia in October 2005 in both eyes. His preoperative refraction was sphere -6.25 diopters in the right eye and sphere -6.00 diopters in the left eye. The best-corrected visual acuity (BCVA) was 20/20 in both eyes. Central keratometry was 44.08/44.95 diopters in the right eye, and 43.25/44.25 diopters in the left eye, with the CCT of 508 μm in the left eye. Central keratometry was 41.75/42.75 in the right eye, and 39.28/39.74 in the left eye, with CCT of 601 μm in the right eye and 550 μm in the left eye. Corneal topography showed a regular and symmetric oblate pattern resulting from the previous refractive procedure. On February 2015, the patient complained a decreased visual acuity in the left eye lasting from about 3mo. His UCVA was 20/25 in the left eye. The BCVA was 20/20 with cylinder -1.25 axis 100 in the left eye. Central keratometry was 39.1/41.2 in the left eye, with CCT of 508 μm in the left eye. Corneal topography showed central corneal ectasia in the left eye confirmed by Belin-Ambrosio analysis (Figures 4, 5). The patient reported an important weight loss about 22 kg following a bariatric surgery, immediately before the visual disturbance onset.

**DISCUSSION**

Proper screening for cases at high risk and susceptibility for biomechanical failure and ectasia development after excimer laser surgery still represents a challenge for refractive surgeons. In the international literature related to the post PRK keratectasia, its incidence is rather low, and it may run from some months to several years after the treatment, in relation to the procedure. Several ectasia cases have had abnormal preoperative topographies, the patients were significantly younger, with higher myopia, they exhibited thinner corneas before surgery and enhancements were reported in a majority of cases. Our first case report developed ectasia after retreatment. Thus, it might confirm that any retreatment, even in total absence of profile and CCT alterations in young subjects could constitute a potential risk factor for ectasia development after PRK. This case highlights the need for caution and treatment.
appropriate informed consent for any patient undergoing corneal refractive surgery retreatment.

The potential role of the metabolic condition and the onset of corneal ectasia were not investigated until now. We think that metabolic changes could be considered as an additional factor in some cases, as suggested by case 2, that was stable for almost 20y after PRK, and developed ectasia together to a significant weight loss followed the bariatric surgery and changes in his metabolic condition. It could be suggestive for the corneal biomechanical changes resulting from metabolic stress, but such hypothesis needs further investigation. In this report, we wish to highlight the observed coincidence, and invite the refractive surgeons to investigate metabolic status of the patients who develop post-refractive surgery corneal ectasia. Therefore, further studies are necessary to standardize the risk of developing ectasia and select more accurately patients who can safely undergo a PRK.
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REFERENCES