Persistent Stromal Scar After PRK and CXL: Different Preoperative Findings, Similar Complication

To the Editor:

We read with interest the study by Güell et al. on late-onset persistent haze after combined photorefractive keratectomy (PRK) and corneal collagen cross-linking (CXL) published in the April 2014 issue.¹ We recently saw a similar case; however, our patient had certain differences and thus may increase the evidence base for this rare complication.

A 44-year-old man presented with persistent blurring of vision for the past 11 months. His discharge records from another hospital showed that he had undergone PRK and CXL in both eyes. The preoperative corrected distance visual acuity was 20/30 in the right eye with -0.50/-3.50 diopter cylinder@10 and 20/20 in the left eye with -0.25 diopter sphere/-3.50@10. The preoperative topography scans showed 43.5@16.8°/46.2@106.8° in the right eye and 43.9@118.1°/44.8@28.1° in the left eye (Figure A, available in the online version of this article). The central corneal thickness was 593 µm in the right eye and 584 µm in the left eye. As per the history, the decision to perform combined PRK and CXL was based on the “suspicious topography.” The details of the excimer laser and cross-linking devices were not available; however, the patient’s ultraviolet radiation took more than 30 minutes, suggesting a conventional CXL procedure. The postoperative course was uneventful, with reportedly good vision for the next 3 months. However, the patient noticed progressive blurring of vision in both eyes and started a tapering regimen of flourometholone drops.

The patient came to us for a second opinion at 15 months postoperatively. His uncorrected distance visual acuity was 20/60 in the right eye improving to 20/30 with +1.25 diopter sphere/-1.0 diopter cylinder@5 and 20/40 in the left eye improving to 20/25 with +1.50/-1.50@95. Both eyes showed deep scars involving the anterior half of the corneal stroma; however, the density of the scar was greater in the right eye (Figure B, available in the online version of this article). Optical coherence tomography confirmed the clinical findings with corneal haze extending up to the mid stroma in both eyes (Figure C, available in the online version of this article). Scheimpflug corneal topography showed irregular corneal surface in both eyes (Figure D, available in the online version of this article). The patient was a glaucoma suspect and therefore another cycle of steroid drops was deferred. He was administered topical cyclosporine 0.05% two times a day, preservative-free lubricants four times a day, and oral ascorbate 500 mg two times a day, and was advised to wear ultraviolet protective glasses when outdoors. He remained stable at the 2-month follow-up visit.

This case has certain unique differences from the study by Güell et al.¹ Our patient was much older compared to their 22-year-old patient. The preoperative central corneal thickness was in the normal range in our case compared to the low thickness in their case (right eye: 492 µm, left eye: 501 µm). Finally, the refractive error corrected was higher in our case, and thus resulted in more ablation. Therefore, our case had a different preoperative profile, but a similar complication.

Recently, combined PRK and CXL has shown satisfactory results and patient satisfaction levels are good.²⁻⁵ However, as stated by Güell et al., there are few data on complications after PRK and CXL in the literature. We hope that these two cases can help shed more knowledge on the risk factors, possible complications, and limitations of this otherwise promising procedure.

REFERENCES


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Reply:

We would like to thank Prakash et al. for their comments and congratulate them for presenting...
such an interesting case. Both corneal collagen cross-linking alone and corneal collagen cross-linking and photorefractive keratectomy are excellent strategies when properly and carefully indicated, and are significantly helping an important number of our patients worldwide. We should not forget the infrequent but potential complications, those already described and those that may potentially happen, such as those described in these reports.

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Figure A. Preoperative topography scans (Allegro Oculyzer; WaveLight, Alcon Laboratories, Inc., Fort Worth, TX) of the (1) right and (2) left eye.
Figure B. Slit-lamp clinical photographs of the two eyes. (1) Diffuse illumination (original magnification $\times 16$) of the right eye (note the dense scar). (2) Diffuse illumination (original magnification $\times 16$) of the left eye (note the fainter scar). (3) Higher magnification (original magnification $\times 40$) of the left eye showing the haze. (4) Slit image of the left eye at high magnification (original magnification $\times 40$) to show the anterior to mid-stromal involvement of the haze.
Figure C. Optical coherence tomography (Spectralis; Heidelberg Engineering GmbH, Heidelberg, Germany) of both eyes. (1) High reflectivity in the anterior to middle stroma of the right eye with areas of increased linear demarcaion suggestive of the pathology being limited to the “demarcation lines” in those areas. (2) Lesser but evidently higher than normal reflectivity in the left eye.
Figure D. Postoperative Scheimpflug scans (Sirius; Costrozione Strumenti Oftalmici, Scandicci FI, Italy) at 15 months. (1 and 2) Both eyes scans show irregularities in the tangential anterior, posterior corneal, and corneal thickness profiles.