Keratectatic Reversion After Cessation of Contact Lens Treatment of Iatrogenic Keratectasia Following LASIK

To the Editor:

We present a case demonstrating the biomechanical influence of a rigid lens on iatrogenic keratectasia in a right eye following bilateral LASIK.

A 33 year-old Asian man in good health presented for LASIK. Examination was unremarkable except for high astigmatism in the right eye. Preoperative refraction was −5.25 −2.50 × 042 in the right eye and −5.50 −0.75 × 175 in the left eye. Uncorrected visual acuity (UCVA) was 20/20. Keratometry was 43.50@032/45.75@122 and 43.25@170/44.25@080 in the right and left eyes, respectively. Orbscan II pachymetry was 568 µm in the right eye (Fig 1) and 562 µm in the left eye.

Bilateral LASIK surgery was performed with the Moria M2 microkeratome (Antony, France) and the VISX Star S4 excimer laser (Santa Clara, Calif). At 1-week and 1-month postoperative follow-up, UCVA was 20/20 in both eyes.

At 19-week postoperative follow-up, the patient returned with significantly reduced vision in his right eye; acuity was 20/200 unaided, 20/40 pinholed, and keratometry was 42.75@044/44.50@134. A Dicon to-

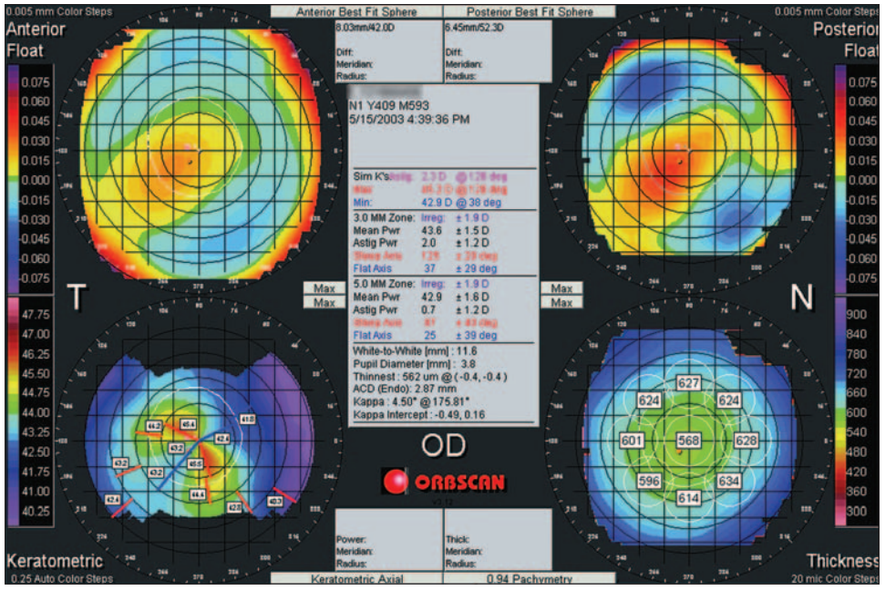

Figure 1. Orbscan II preoperative topography and thickness map.

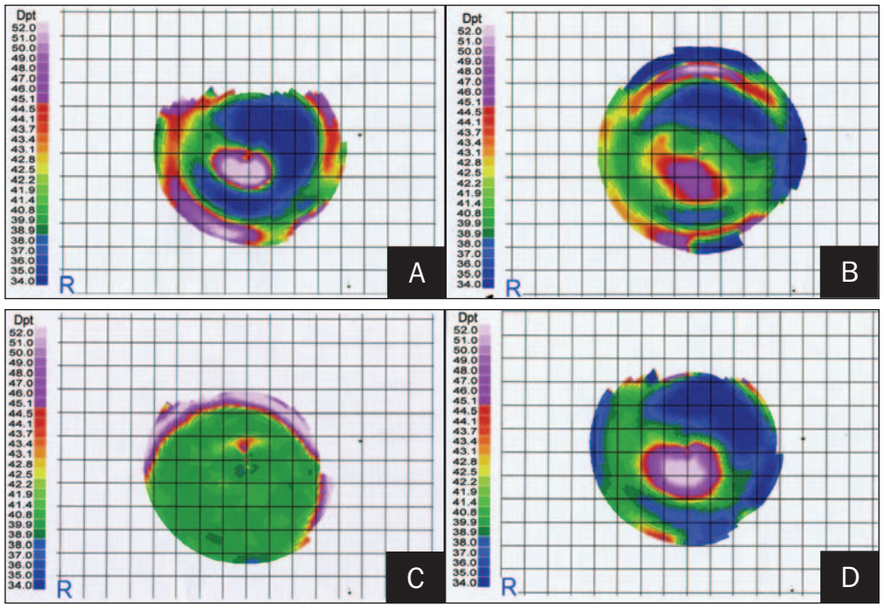

Figure 2. A) Dicon topography 5 months after LASIK surgery and prior to rigid lens treatment demonstrates corneal ectasia. **B)** Approximately 5.5 months after rigid lens therapy ectasia was reduced. **C)** Eleven months after rigid lens therapy no keratectasia remained. **D)** Nine days after rigid lens removal a well-demarcated keratectatic region is seen.

pography was performed and corneal ectasia was diagnosed (Fig 2A). Several rigid lens trials were performed, and a lens with parameters 7.75/9.6/−4.00 was eventually given for daily daytime wear.

Eleven days later, an over-refraction of −0 .75 diopters (D) resulted in an acuity of 20/30, and keratometry was 43.00@005/43.50@095. Topography, as well as keratometry, showed the cornea to be less ectatic than on previous follow-up. The patient continued daytime wear of the lens.

Approximately 4.5 months later, keratometry was 43.25@165/44.00@075, and visual acuity was 20/25. Topography continued to show reduced ectasia (Fig 2B).

Five months later (11 months after initial rigid lens treatment, and 16 months postoperatively), keratometry was 44.00@170/44.75@080, over-refraction was +0.25D, and visual acuity was 20/20−. Manifest refraction was −3.75 −1.25 × 127, resulting in an acuity of 20/30. Topography showed no remaining trace of keratectasia (Fig 2C). As a test of corneal stability, the patient was instructed to temporarily cease wear of the lens.

Nine days later, keratometry was 46.75@010/47.75@100 and manifest refraction was −7.75 −2.50 × 065, re-

sulting in visual acuity of 20/40. Topography showed a well-demarcated keratectatic region in the area where the ectasia had previously presented (Fig 2D). Given the return of the ectasia, the corneal curvature was deemed unstable and the patient instructed to resume lens wear.

The events occurring in our case suggest the rigid lens played a significant role in the biomechanical behavior of the patient's cornea. In the 11 months of lens wear, the keratectatic protrusion gradually diminished until it was undetectable topographically (see Fig 2C). Cessation of wear for 9 days led to the reemergence of the protrusion in a clearly demarcated fashion (see Fig 2D).

Given the change in corneal curvature seen in our patient upon wear and cessation of wear of the rigid lens, we postulate the presence of a rigid lens may help reverse or delay the corneal protrusion characterizing iatrogenic keratectasia following LASIK surgery. Removal of such a lens may result in a rehabilitated corneal surface reverting back to its ectatic form.

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