Phakic toric intraocular lens implantation after flap decentration in laser in situ keratomileusis

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We describe a patient with flap decentration after laser in situ keratomileusis (LASIK) and subsequent phakic toric intraocular lens (IOL) implantation. A 19-year-old man with mixed astigmatism had LASIK in the left eye complicated by flap decentration. Laser ablation was abandoned and implantation of a phakic toric IOL was done. Ten months after IOL implantation, the uncorrected visual acuity in the left eye was 20/25 and best corrected visual acuity was 20/20 with +0.25 –0.50 × 90. Simulated keratometry values were 44.30@150 and 42.00@60 before LASIK and 45.00@150 and 41.90@60 after IOL implantation. Phakic toric IOL implantation may be adequate treatment for flap decentration after LASIK in cases of mixed astigmatism.

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The intraoperative complication rate in laser in situ keratomileusis (LASIK) varies from 0.68% to 2.20%. Serious visual deterioration may result from laser treatment after an intraoperative flap complication; however, if an ablation is not performed, flap complications rarely cause visual loss.[2,3] It is advised to repeat LASIK 3 or 6 months after a flap complication, but a 12.5% complication rate in repeat LASIK after an initial keratectomy problem has been reported.[3] We report a case of LASIK flap decentration that was treated with implantation of a phakic toric intraocular lens (IOL). Flap decentration in LASIK can occur in highly astigmatic corneas.[1]

Case Report

A 19-year-old man with mixed astigmatism was scheduled for LASIK. The uncorrected visual acuity (UCVA) and best corrected visual acuity (BCVA) in the left eye were 20/80 and 20/25, respectively. The left eye refraction was +3.00 −3.50 × 70. Topographic keratometry (EyeMap, Alcon) values in the left eye were 44.30@150 and 42.00@60. The patient was scheduled for LASIK with a small spot scanning excimer laser with a 9.50 mm suction ring and a 180 μm base plate. During the procedure, decentration of the suction ring to the nasal inferior direction occurred and suction was immediately turned off. After 10 minutes, the microkeratome ring was intentionally decentered in the opposite direction and the procedure was restarted. Despite this precaution, decentration of the suction ring occurred and the flap was decentered. No laser ablation was attempted. Three months later, topographic keratometry in the left eye was 44.80@160 and 42.40@60.

Ten months after the initial flap cut, the refraction was +3.50 –3.50 × 65 and an Artisan phakic toric IOL (Ophtec) with a dioptric power of +5.00 −4.50 × 90 was implanted. The IOL was inserted through a 5.3 mm corneoscleral incision centered at 70 degrees and fixated at the iris in the 155-degree axis (Figure 1, *left*). The axis of the cylinder identified by subjective refraction was used to determine the axis of surgical enclavation. The Artisan toric IOL is available in powers of –3.00 to –20.50 diopters (D) and +2.00 D to +12.00 D and in cylindrical powers of 2.00 D to 7.50 D. The cylinder is in line with the haptics or at an angle of 90 degrees from the haptics. Since the steep axis was at 155 degrees in the left eye, a toric IOL with the cylinder at an angle of 90 degrees from the haptics was chosen and implanted in the flat axis of 65 degrees for technical reasons.

One month later, an Artisan phakic toric IOL with a power of +7.00 −7.00 × 90 was implanted in the right eye (right eye refraction +4.25 −6.50 × 105) and fixated in

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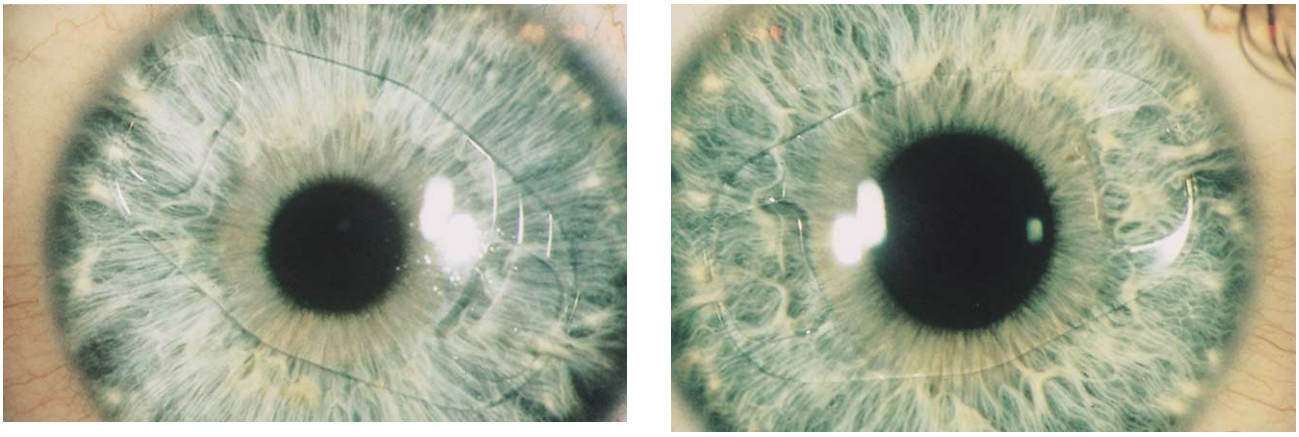

Figure 1. (Nuijts) Artisan phakic toric IOL implantation in the left eye (*left*) and the right eye (*right*).

the 15-degree axis (Figure 1, *right*). Although the IOL in the left eye was slightly decentered to the superotemporal position, the patient had no complaints of glare or halos. There were no postoperative complications in either eye.

Eight months after IOL implantation, the UCVA in both eyes was 20/25. The BCVA in the right eye was 20/20 with +0.25 −0.25 × 75 and in the left eye, 20/20 with +0.25 −0.50 × 90. The topographic keratometry in the left eye was 45.00@150 and 41.90@60 (Figure 2).

Discussion

The implantation of Artisan phakic IOLs for the correction of high myopia and hyperopia is safe, effective, and predictable.[4] Recently, toric Artisan IOLs for the correction of astigmatism became available.[5] In a multicenter study of 70 eyes with combined myopia or hyperopia and astigmatism, the efficacy index was 103.30% and 100.00% respectively, and 73.00% of eyes were within ±1.00 D and ±0.50 D of the predicted correction, respectively. The preoperative cylinder was reduced from 3.70 to 0.70 D. The excellent refractive outcome in this patient suggests that phakic toric IOLs are a good alternative to repeat LASIK after initial flap complications in corneas with high regular astigmatism.

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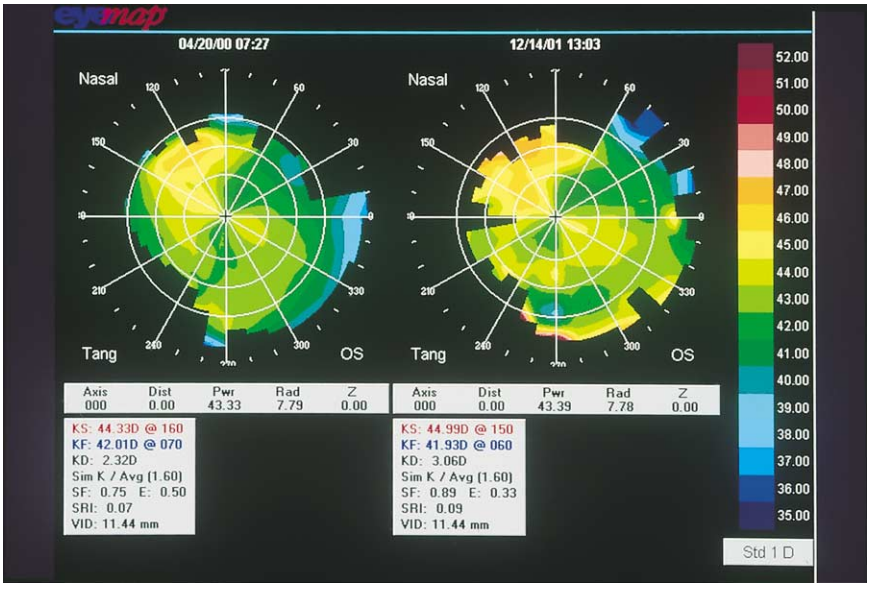

Figure 2. (Nuijts) Corneal topography in the left eye before LASIK (*left*) and 8 months after Artisan phakic toric IOL implantation (*right*).

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