Herpetic viral keratitis after unplanned bioptics
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We report a case of viral keratitis occurring after unplanned bioptics in a young patient who had had cataract surgery with posterior chamber intraocular lens (PC IOL) implantation for traumatic cataract 11 years earlier following blunt trauma. The patient had diplopia with spectacles. The refractive error was $-6.0 - 1.0 \times 170$, which improved to 20/30 after laser in situ keratomileusis (LASIK) was performed using the Intralase femtosecond laser. Viral keratitis developed 18 months after LASIK, although the patient had no history or clinical findings suggestive of past viral keratitis. Oral acyclovir 400 mg was prescribed 5 times a day, and topical steroids were prescribed every 2 hours and tapered over the subsequent 3 months. After 12 weeks of treatment, the uncorrected distance visual acuity was 20/30. This case indicates that viral keratitis may occur many years after LASIK. Timely diagnosis and management are crucial to attain a good visual outcome.

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Laser in situ keratomileusis (LASIK) remains the most commonly performed refractive surgery. Although introduction of the femtosecond laser has eliminated the microkeratome-related complications, refractive surgeons are still concerned about the reactivation of latent herpes virus after LASIK. Various potential triggers have been described; the excimer laser is one trigger that has been reported in animal models and humans. To our knowledge, there is no report of reactivation of viral keratitis in the literature after planned or unplanned bioptics. We report an unusual case of a young patient who developed viral keratitis 18 months after unplanned bioptics.

CASE REPORT
A 29-year-old man presented with complaints of diplopia with spectacles. The refractive error was $-6.0 - 1.0 \times 170$ in the right eye, improving to a corrected distance visual acuity of 20/20, and plano in the left eye, improving to 20/20. A traumatic cataract had developed following blunt trauma to the right eye 11 years earlier, and cataract surgery with posterior chamber intraocular lens (PC IOL) implantation had been performed elsewhere. Slitlamp examination revealed a clear cornea with a well-centered PC IOL and a normal posterior segment in the right eye; the left eye was essentially normal. After a careful history was taken and various options and consequences were discussed with the patient, LASIK was chosen to correct the refractive error. The pachymetry reading was 550 μm in the right eye, and corneal topography (Pentacam, Oculus Optikgeräte GmbH) showed regular maps with simulated keratometry readings of 44.2/45.0 @ 168 in the right eye.

Laser in situ keratomileusis was performed in the right eye after a superiorly hinged 110 μm corneal flap had been created with a femtosecond laser (Intralase FS, Intralase Corp.), and the stroma was ablated with an excimer laser (MEL 80, Carl Zeiss Meditec AG). The laser procedure was uneventful.

One day postoperatively, the uncorrected distance visual acuity (UDVA) was 20/30 in the right eye. The cornea was clear, and the remaining anterior segment examination was normal. Topical antibiotics and steroids were started and tapered over 1 month. For 18 months after LASIK, the patient was followed at regular intervals and no complications occurred. The patient then presented with complaints of decreased vision, pain, and redness in the right eye for a week, and the UDVA dropped to counting fingers at 1 meter. Slitlamp examination showed conjunctival congestion and diffuse stromal edema with numerous Descemet membrane folds (Figure 1, A). There was no fluorescein staining, and the anterior chamber was quiet with the flap in place. The intraocular pressure with Goldmann applanation tonometry and pneumatic tonometry was normal. Anterior segment optical coherence tomography (AS-OCT) showed...
a central corneal thickness (CCT) of 663 μm with fluid under the flap (Figure 1, B). A clinical diagnosis of herpetic viral keratitis was made, although the patient had no history or clinical findings suggestive of past viral keratitis. Oral acyclovir 400 mg 5 times a day was prescribed with 1 drop of topical prednisone acetate 1.0% every 2 hours.

One week later, the UDVA improved to 20/70. The corneal edema reduced significantly and after 3 weeks, the oral antiviral was tapered to twice daily and the topical steroids to 4 times a day. After 12 weeks of treatment, the patient regained a UDVA of 20/30 and had a clear cornea (Figure 1, C); AS-OCT showed a CCT of 407 μm with the flap well apposed (Figure 1, D). At the last follow-up after 6 months, the patient was not on any treatment and had not had a recurrence of the keratitis.

**DISCUSSION**

The LASIK procedure is gaining popularity in developing countries, but careful patient selection is a key factor for a satisfactory result. Recurrence of herpetic keratitis is an unusual complication after a LASIK procedure. Very few cases have been reported, which may be due to underreporting or to use of topical steroids that can mask the presentations. Herpes viral reactivation can occur several years after LASIK whether or not patients have histories of viral keratitis.

Our case is unique as our patient had exposure to a triggering factor twice before the reactivation. First, there was a history of cataract surgery before LASIK surgery, which is also an independent risk factor for viral recurrence. However, there was no reactivation of the keratitis until LASIK was performed. This may be due to more trauma to the corneal stroma during the laser procedure than during the cataract surgery. Involvement of stroma and the response to antiviral treatment confirm viral keratitis, although primary stromal involvement is unusual so it is most likely reactivation of viral keratitis. This is also shown in a study by Darougar et al. At the first presentation of ocular herpes simplex virus (which may or may not represent primary infection by the virus), 84% of patients had moderate to severe conjunctivitis, 38% had moderate to severe blepharitis, 15% had dendritic ulcers, and 2% presented with disciform keratitis.

To our knowledge, no case of viral keratitis presenting as diffuse corneal edema with Descemet folds has been reported after unplanned biopsies. It is not known whether the femtosecond laser or the excimer laser caused the viral reactivation in our case. Anterior segment optical coherence tomography was used in our case, which has not been reported previously, and supports our clinical findings. Only 1 reported case had a long interval between the procedure and reactivation, similar to that in our case. These occurrences emphasize the importance of long-term follow-up. Inactive herpes infection is not a contraindication, but oral antiviral prophylaxis has been advocated in patients with a history of viral keratitis having LASIK. However, our patient did not have a history of viral keratitis so we did not use antiviral prophylaxis.

This case highlights that viral keratitis can occur many years after LASIK or unplanned biopsies. The cause of viral reactivation is still a mystery. Timely clinical diagnosis with ancillary investigations such
as AS-OCT are helpful in the management of such cases and for further follow-up.

REFERENCES

1. Dhaliwal DK, Romanowski EG, Yates KA, Hu D, Goldstein M, Gordon YJ. Experimental laser-assisted in situ keratomileusis induces the reactivation of latent herpes simplex virus. Am J Ophthalmol 2001; 131:506–507
2. Lu C-K, Chen K-H, Lee S-M, Hsu W-M, Lai J-Y, Li Y-S. Herpes simplex keratitis following excimer laser application. J Refract Surg 2006; 22:509–511
3. Perry HD, Doshi SJ, Donnenfeld ED, Levinson DH, Cameron CD. Herpes simplex reactivation following laser in situ keratomileusis and subsequent corneal perforation. CLAO J 2002; 28:69–71
4. Moshirfar M, Welling JD, Feiz V, Holz H, Clinch TE. Infectious and noninfectious keratitis after laser in situ keratomileusis; occurrence, management, and visual outcomes. J Cataract Refract Surg 2007; 33:474–483
5. Davidorf JM. Herpes simplex keratitis after LASK [letter]. J Refract Surg 1998; 14:667
6. Levy J, Lapid-Gortzak R, Klemperer I, Lifshitz T. Herpes simplex virus keratitis after laser in situ keratomileusis. J Refract Surg 2005; 21:400–402
7. Darougar S, Wishart MS, Viswalingam ND. Epidemiological and clinical features of primary herpes simplex virus ocular infection. Br J Ophthalmol 1985; 69:2–6. Available at: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1040512/pdf/brjopthal00133-0004.pdf. Accessed January 30, 2015
8. de Rojas Silva MV, Diez-Feijoo E, Javaloy J, Sanchez-Salorio M. Prophylactic perioperative antiviral therapy for LASIK in patients with inactive herpetic keratitis. J Refract Surg 2006; 22:404–406

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