ISSN: 2754-4990

Journal of Ophthalmology Research Reviews & Reports

SCIENTIFIC Research and Community

Case Report

Open Access

Managing and Preventing Neurotrophic Keratopathy after Laser Vision Correction

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Received: December 01, 2025; **Accepted:** December 05, 2025; **Published:** December 15, 2025

Case report

A 45-year-old male presents for a refractive surgery consult with past medical history of a nasal tumor removal from the right sinus. His current regimen consists of icosapent ethyl (2g by mouth twice daily) for treatment of hypertriglyceridemia and lisinopril (10mg by mouth once daily) for treatment of hypertension. Patient's BCVA is 20/20 OU with a manifest refraction of -4.25 +1.00 x 157º OD and -3.00 +0.25 x 035º OS. He wore contact lenses with a defocus of -0.50 D OD for near and a full correction OS for distance. Schirmer 1 test (anesthetized) shows 14 mm OD and 12 mm OS [1]. Corneal sensation OD was depressed while the OS was normal, and the patient did not report history of dry eye disease (Figure 1).

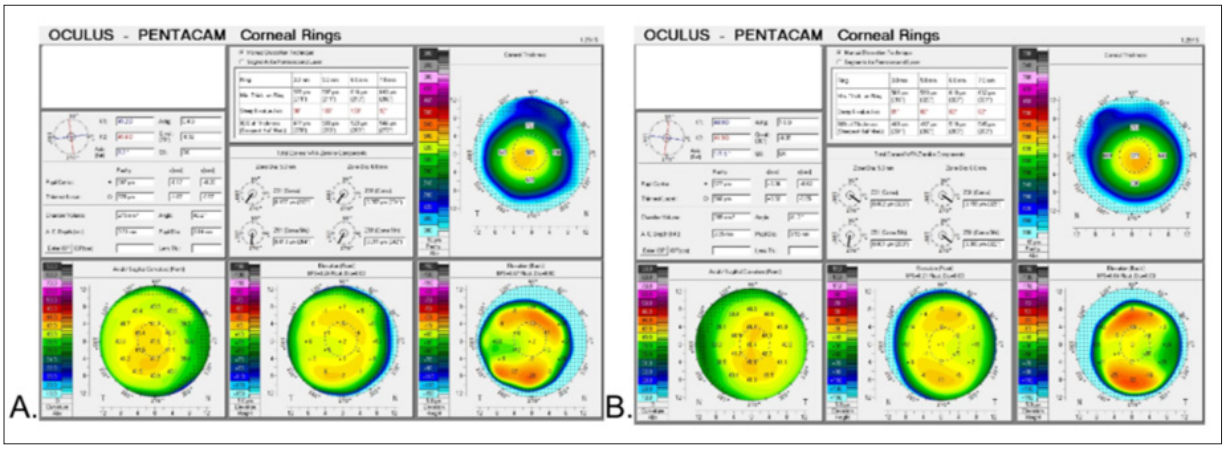

Figure 1: The Preoperative Corneal Displays for the OD (A) and OS (B) have a Normal Appearance

The patient elected to undergo bilateral Laser Vision Correction (LVC) with an under correction of -0.50 D OD and full correction OS. LASIK surgery using the Wavelight EX500 with Contoura Vision (Alcon) was performed without complications. The flaps were created with the Wavelight FS200 femtosecond laser (Alcon). On postoperative day one, the patient presented with UCVA 20/400 OD and 20/25 OS. A manifest reaction did not improve vision OS, and grade +4 and +1 superficial keratopathy was detected OD and OS, respectively. The LASIK flap OD was misplaced and significant macrostraie in the flap was observed. The flap OD was relifted and refloated without incident, and a bandage contact lens was placed. Lower punctal occlusion with silicone plugs was performed OU.

The bandage contact lens was removed on postoperative day 2, and the patient's UCVA was 20/40 OD, 20/40 OS, and 20/20+1 OU. Photobiomodulation with low-level light therapy (Espansione Red 633 nm, EssilorLuxottica) was performed. Perfluorohexyloctane ophthalmic solution (Miebo, Bausch + Lomb) administered bilaterally three times per day was added to his drug regimen of difluprednate ophthalmic emulsion 0.05% (Durezol, Alcon) and gatifloxacin ophthalmic solution 0.3% (Zymar, AbbVie), both administered three times per day OU. On postoperative day four, grade +3-4 and grade +1-2 lissamine green staining was observed OD and OS, respectively. The patient's UCVA was 20/60 OD, 20/30 OS, and 20/30 OU, no improvement with manifest refraction was seen.

Seven days after LASIK surgery, the patient's UCVA is 20/400 OD and 20/20-2 OS, with no improvement on manifest refraction. He reports blurred vision OD>OS, a burning sensation OU, and pain OD. Confluent Superficial Punctate Keratitis (SPK) was observed

OD, and grade +1 to +2 SPK was seen OS. The tear breakup time without anesthesia is 1 second OD and 7 seconds OS.

Discussion

We present a case that appeared as a candidate for LVC that post-surgery exhibited poor visual results and flap displacement post-operative day one with additional symptoms of blurred vision, burning, and pain OD. Despite the corneal displays of both eyes having normal appearance, the post-operative results show increased dry eye symptoms more intense than what was anticipated after LASIK (Figure 1).

We treated the symptoms 5 days after surgery by occlusion of the upper and lower puncta with silicone plugs OD and lower puncta only OS. and repeated treatments with low- level light photobiomodulation. Treatment for neurotrophic keratopathy (NK) Mackie Classification Stage 1 was initiated with cenegermin-bkbj ophthalmic solution 0.002% (Oxervate, Dompé) OU six times per day considering the lack of response to conventional measures [2-4].

Along with treatment, operative notes from the patient's tumor removal were obtained for a comprehensive understanding of the atypical results after LASIK. The operative notes from the procedure showed he had a rare NUT-gene midline nasal carcinoma (NMC) involving the right nasolacrimal system which required removal with radiation treatment starting 6 weeks after surgery and was delivered (undetermined dose) 2/day five days per week divide over a six month period. He also received as treatment of the NMC chemotherapy once per week in divided doses over six months. The irradiation and chemotherapy correlates to the dry eye findings but does not correlate with the Schirmer 1 test (anesthetized) obtained prior to surgery.

A month after surgery, the patient's UCVA was 20/25-1 OD and 20/20 OS. His BCVA was 20/20-2 OD with a manifest refraction of +0.25 +0.25 x 120º and 20/20+1 OS with a plano refraction. The tear breakup time recorded was 5 and 7 seconds in the OD and OS, respectively. The patient showed resolution of his issues and continued to do well for 6 months after surgery with a UCVA 20/25 OD and 20/20 OS with BCVA 20/20 OU. His dry eye treatment is currently perfluorohexyloctane ophthalmic solution (Miebo, Bausch + Lomb) administered bilaterally three times per day as needed [5].

Conclusion

The case report presents a patient with depressed corneal sensation with a normal Shirmer 1 test which appears to have resulted by a previous operation for a right nasal tumor that was removed and treated with irradiation and chemotherapy. His compromised corneal nerves with a normal Shirmer 1 testing confounded his preoperative findings. Corneal sensation evaluation before laser vision correction is not standard of care, but this case report shows its benefit to help determine good candidates for LVC. As seen in this patient, the use of cenegermin-bkbj ophthalmic solution 0.002% (Oxervate, Dompé) is an effective option for treating NK Stage 1 postoperatively following laser vision correction with dry eye complications.

References

1. Li N, Deng XG, He MF (2012) Comparison of the Schirmer I test with and without topical anesthesia for diagnosing dry eye. Int J Ophthalmol 5: 478-481.
2. Mackie I, Fraunfelder F (1995) fourth ed. WB Saunders; Philadelphia, PA: 1995. Current Ocular Therapy. Current Ocular Therapy 506-508.
3. Balbuena-Pareja A, Bogen CS, Cox SM, Hamrah P (2023) Effect of recombinant human nerve growth factor treatment on corneal nerve regeneration in patients with neurotrophic keratopathy. Frontiers in Neuroscience 17: 1210179.
4. Mastropasqua L, Lanzini M, Dua HS, D Uffizi A, Di Nicola M, et al. (2020) In Vivo Evaluation of Corneal Nerves and Epithelial Healing After Treatment with Recombinant Nerve Growth Factor for Neurotrophic Keratopathy. American Journal of Ophthalmology 217: 278-286.
5. Shtein RM (2011) Post-LASIK dry eye. Expert Review of Ophthalmology 6: 575-582.