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Lasik in Hyperopic Eyes with Congenital Nystagmus: A Case Report

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Patients with nystagmus are considered to be poor candidates for laser in situ keratomileusis (LASIK), because they are unable to fixate. This case report presents the first reported use of LASIK surgery with a solid-state laser in hypermetropia and congenital nystagmus. A 23 year old woman with congenital nystagmus had LASIK surgery to correct a refractive error of +2.25/+1.75 90° in the right eye and + 2.00 / +1.75 90° in the left one. Baseline uncorrected visual acuity (UCVA) was 20/200 in both eyes, and best spectacle corrected visual acuity was 20/40 in both the eyes. The procedure was performed using the Nidek MK-2000 microkeratome and a CustomVis solid state laser system. Twenty four hours postoperatively, the patient had a UCVA of 20/50 in each eye which remained unchanged at 1 week and 8 weeks.

Conclusion: LASIK surgery using solid state laser was effective in this case of congenital nystagmus. However, more cases should be examined before conclusions can be drawn.

Laser in situ keratomileusis (LASIK) is an accepted surgical method for the correction of myopia, hyperopia and astigmatism.^{1,2} In this surgery, stabilization of the globe is essential both for flap formation and fixating the globe during laser ablation because movements during this procedure can result in complications, such as free caps, irregular flaps, or eccentric ablations which can result in glare and halos, especially at night.³⁻⁵

In 1998, Siganos and colleagues⁶ described two myopic eyes with congenital nystagmus that had photorefractive keratectomy with good long term visual outcome. In a subsequent case report, Soloway et al⁷ reported using the lasik procedure in a patient with nystagmus and myopia with no loss of best spectacle corrected visual acuity (BSCVA) over 1 year in both the eyes. Mahler et al⁸ described the use of LASIK procedure using excimer laser in 16 eyes with myopia and congenital nystagmus, with no loss of greater than 1 line in BSCVA postoperatively. All these studies were done in myopic patients using excimer laser. This report aims to present a case of LASIK surgery in a 23 - year - old hypermetropic

female with congenital nystagmus. To the best of our knowledge, this is the first reported use of LASIK surgery with solid-state laser in hypermetropia and congenital nystagmus internationally.

CASE PRESENTATION

A 23-year-old lady with congenital nystagmus underwent LASIK surgery for hypermetropic correction after informed consent. She had a refractive error of +2.25/+1.75 90° in the right eye and a + 2.00 / +1.75 90° in the left one. Baseline uncorrected visual acuity was 20/200 in both eyes, and best spectacle-corrected visual acuity was 20/40 in each eye. The central corneal thickness in both the eyes was 610 microns, using Sonomed pachymeter. The patient demonstrated horizontal jerky nystagmus; the mean number of oscillations per second were approximately three, and the frequency of nystagmus increased with attempted fixation. There was no well-defined null zone or anomalous head movement or position.

Both eyes were operated by a single surgeon in a single setting. Patient was given oral diclofenac

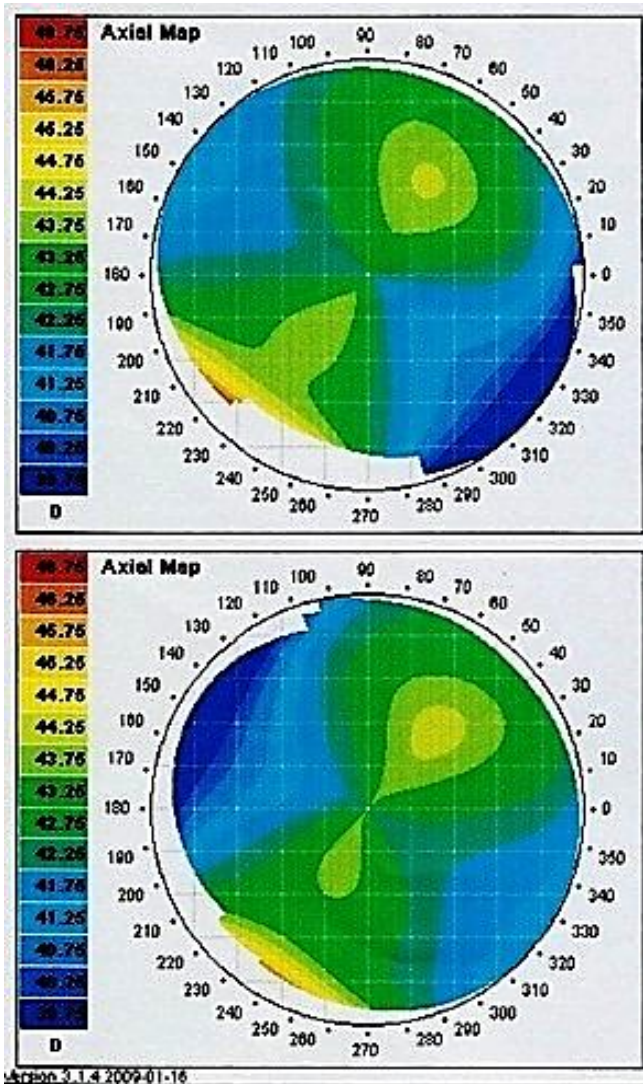


Fig. 1: Pre-op corneal topographies right and left eyes

sodium 50 mg and alprazolam 1 mg half an hour before surgery. Both eyes were anesthetized 20 minutes prior to surgery, using topical anaesthesia: 1 drop of 0.5% proparacaine hydrochloride instilled in each eye 3 times every 5 minutes. After the laser system was calibrated, the patient was placed in the supine position and draped. A drop of povidone-iodine 10% ophthalmic solution was instilled in the conjunctival sac and irrigated with saline solution. The eyeball was held with conjunctival forceps. Corneal marker was applied. A corneal flap of 8.5 mm diameter and thickness of 160 microns, with a nasal hinge was prepared with the Nidek MK-2000 microkeratome. After the flap was lifted, the eye was refocused while the surgeon stabilized the eye with conjunctival forceps. A scanning laser system

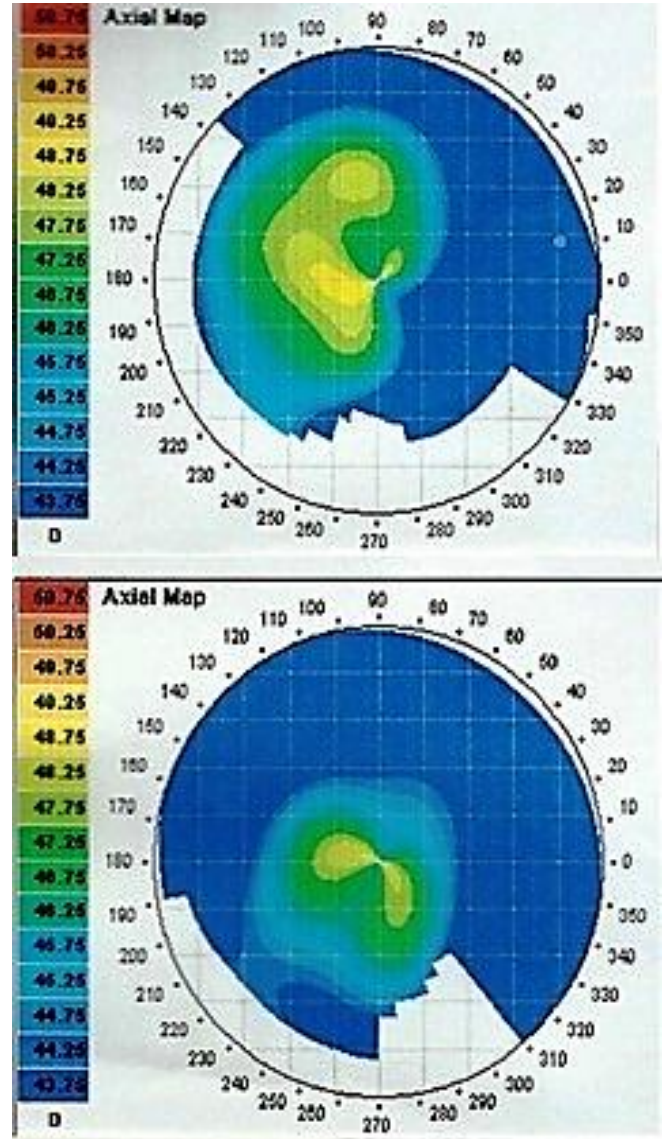


Fig. 2: Corneal topographies right and left eyes one week post-LASIK

(CustomVis, Australia) was used with a frequency of 300 Hz and wavelength of 213 nm; the optical zone was 6 mm. The time for exposure was 42 seconds for the right eye and 39 seconds for the left one. Oscillations of the globe during surgery were controlled by holding the globe with the conjunctival forceps. A peripheral ablation was performed. Repeat refocusing during the procedure was done.

Postoperatively, eye lubricants (artificial tears), corticosteroid eye drops (fluorometholone 0.1%) and topical antibiotic (moxifloxacin 0.5%) were advised as per protocol. 24 hours post-operatively, UCVA was 20/50 in each eye; there was no improvement with

spectacle correction and the binocular visual acuity was 20/50 without glare or halos. The vision remained unchanged when assessed at 1 week and 8 weeks. The pre and post-operative corneal topographies are shown in Figures 1 and 2

DISCUSSION

Congenital nystagmus appears in the first 6 months of life as repetitive, involuntary, side-to-side oscillations which can persist throughout life. These movements are usually jerky and horizontal in nature which can dampen with convergence. This condition is commonly associated with visual impairment and abnormal head movements.⁹ In the case of congenital nystagmus we operated, no well-defined null zone, abnormal head movement or position were noticed.

Nystagmus patients are poor candidates for LASIK surgery as these patients are unable to fixate, resulting in difficulty in obtaining reliable topography and centration of the ablation zone^{4,5}. Therefore, there is a high risk of decentered ablation. There has been very limited published literature on the use of LASIK in nystagmus patients. Most of published cases have focused on the use of LASIK in myopic patients with nystagmus, using excimer laser^{6,7}. Our case is unique in that the patient was hyperopic and a solid state laser was used^{10,11}. Currently, several devices are used to stabilize the globe, including forceps, and circular and semi-circular suction rings¹². We used conjunctival forceps to stabilize the eyeball during corneal ablation. This did result in a small sub-conjunctival haemorrhage, which resolved over 2 weeks.

Although individuals with nystagmus are unable to fixate during LASIK surgery, the procedure may still be performed in nystagmus with hyperopia after stabilization of the globe. Iris tracking should be utilised to prevent eccentric ablation. The use of solid-state laser has been shown to be safe in routine LASIK procedures¹³. We also used a solid-state laser with iris tracking and had good postoperative result.

CONCLUSION

This case report illustrates that LASIK surgery was effectively performed to correct hypermetropia in our patient with congenital nystagmus using a solid – state laser. However, more cases and long-term follow-up are necessary before conclusions can be drawn. However, our day 1, week 1 and week 8 results are

satisfactory having lost only 1 line of BCVA at this very early juncture.

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