

Bacterial Keratitis Following Lasik Procedure for Hyperopia

Moemen Al-Reefy, FRCS, FRC.Oph*

A 42 year old Bahraini man had uneventful laser in situ keratomileusis (lasik) for hyperopia (RE + 3.00/+0.75 x 155, LE + 2.00/+0.50 x 155) by Chiron Automated Microkeratome with Chiron Technolas 116 Excimer laser machine, three weeks later he presented with right localised keratitis at the flap margin with stromal oedema.

Unaided right V A was 6/24 with no improvement with pinhole, and left unaided vision was 6/6. Corneal smear culture showed a positive growth of Staphylococcus aureus.

He was immediately treated with sub-conjunctival Gentamycin and intensive topical Ofloxacin 0.3% with systemic Cephalosporin.

Patient recovered from keratitis within two weeks and unaided right V A improved to 6/6.

Keratitis after lasik should be treated promptly so it may not lead to permanent reduction in V A.

Bahrain Med Bull 1998; 20 (4): 155-6

Laser in situ keratomileusis (LASIK) was developed by Leuz Ruiz¹ to correct wide range of refractive errors (myopia, Hypermyopia and Astigmatism) and practiced world wide².

Despite being an extra ocular procedure, it can be associated with severe sight threatening complications³.

There are three reported cases of severe infection after PRK⁴ and one endophthalmitis after lasik for myopia and astigmatism⁵, besides few more cases of mild keratitis following Lasik procedure were recently reported world wide⁶. We report the first infective keratitis following lasik for hyperopia in Bahrain.

THE CASE

A 42 year old Bahraini man with uncorrected visual acuity (UCVA) 6/60 in the right eye and 6/36 in the left eye, with best-corrected visual acuity (BCVA) was 6/6 in each eye, his refraction was right eye (+ 3.00/+0.75 x 155) and left eye (+ 2.00/+0.50 x 155).

Lasik procedure was carried out to treat or reduce his hyperopia as follows:

Topical antibiotics (Gt. Chloromycetin) and Topical

anesthesia (Gt. Amithocain) every 15 minutes for one hour prior to surgery, the operated eye was scrubbed with Betadin on the table then mobbed with Balance Salt Solution (BSS), Sterile drape was placed over the patient face.

Eye speculum was inserted and suction ring affixed to the globe, with extra care taken to prevent contact of eyelashes to suction ring or microkeratome.

Chiron Automated Microkeratome was placed on the track and 160 microns flap was cut, the flap was reflected nasally and ablation carried out under dry technique with disposable dry sponges using Chiron Technolas 116 Excimer laser with 120 mj/cm fluence and 10 Hz.rate.

At the end of photoablation, the flap was hydrated with BSS and repositioned on the corneal stroma, the interface was washed out thoroughly with BSS too. At the end of the procedure, topical chloromycetin was instilled and the patient was instructed to instill Speradexolin TID for two weeks and not to rub his eyes. Both eyes were done at the same surgical session with the same techniques and instruments³.

On the first postoperative week, UCVA was 6/6 in each eye, both flaps were in situ and clear.

The patient presented on day 22nd post-operatively with

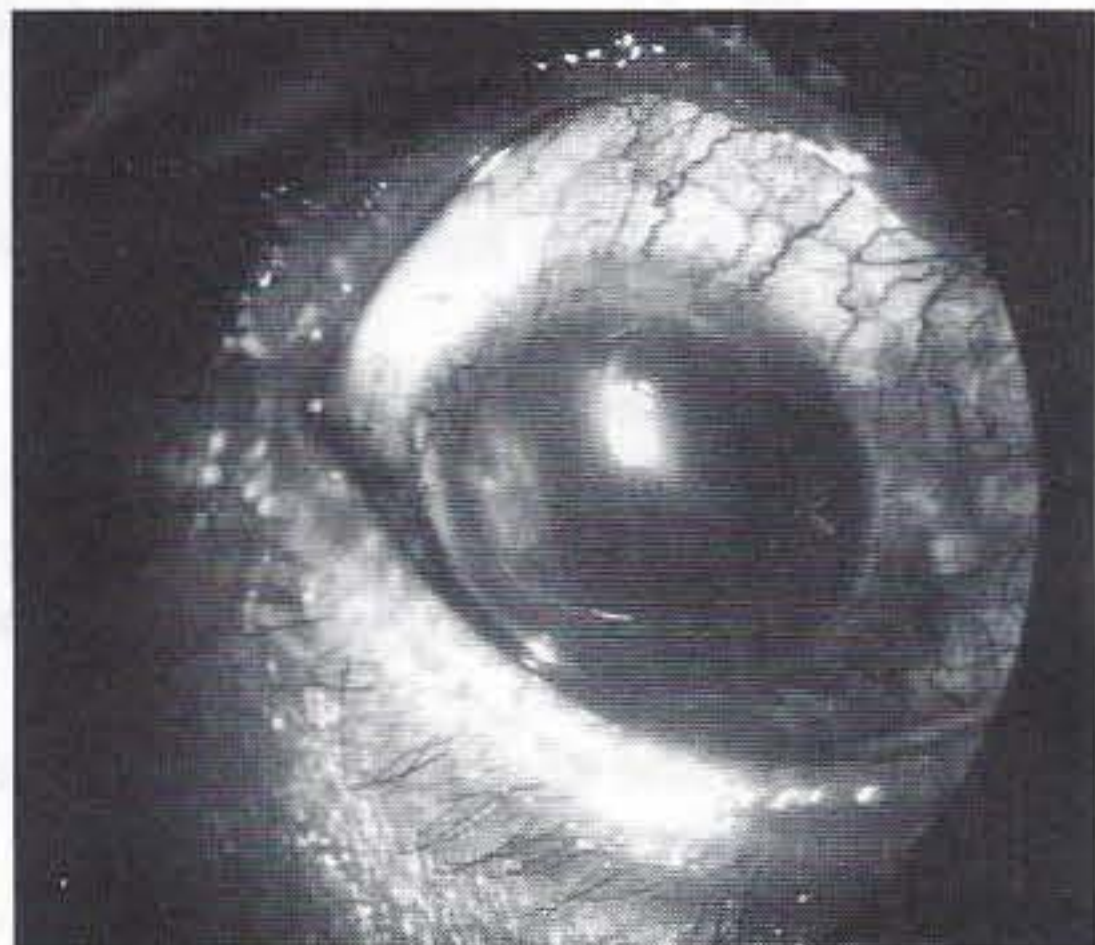


Figure 1: Right eye with keratitis after Lasik.



Figure 2: Three weeks after lasik surgery to both eyes showing right bacterial keratitis

* Chairman of Eye and Laser Centre
Bahrain Defence Force Hospital
State of Bahrain

red and painful right eye associated with deterioration of vision.

On examination, right UCVA 6/24, which could not be improved with pinhole test. There was a localised focus of keratitis of 3 mm in diameter at the temporal margin of the flap surrounded by diffuse stromal oedema with injected and watery right eye, A/C shows some flare and cells. Fundus and intraocular pressure were normal. The condition of the left eye was very satisfactory with UCVA of 6/6.

Patient was admitted to Military Hospital immediately where conjunctival swabs and corneal scraping were taken and sent for culture and sensitivity test. Subconjunctival Getamycin (40 mg) was given, oral Cephalosporine 500 mg TID for 5 days and intensive Oflox (Ofloxacin) eye drops every hour was instilled in the right eye. Within three days the right UCVA was improved to 6/12.

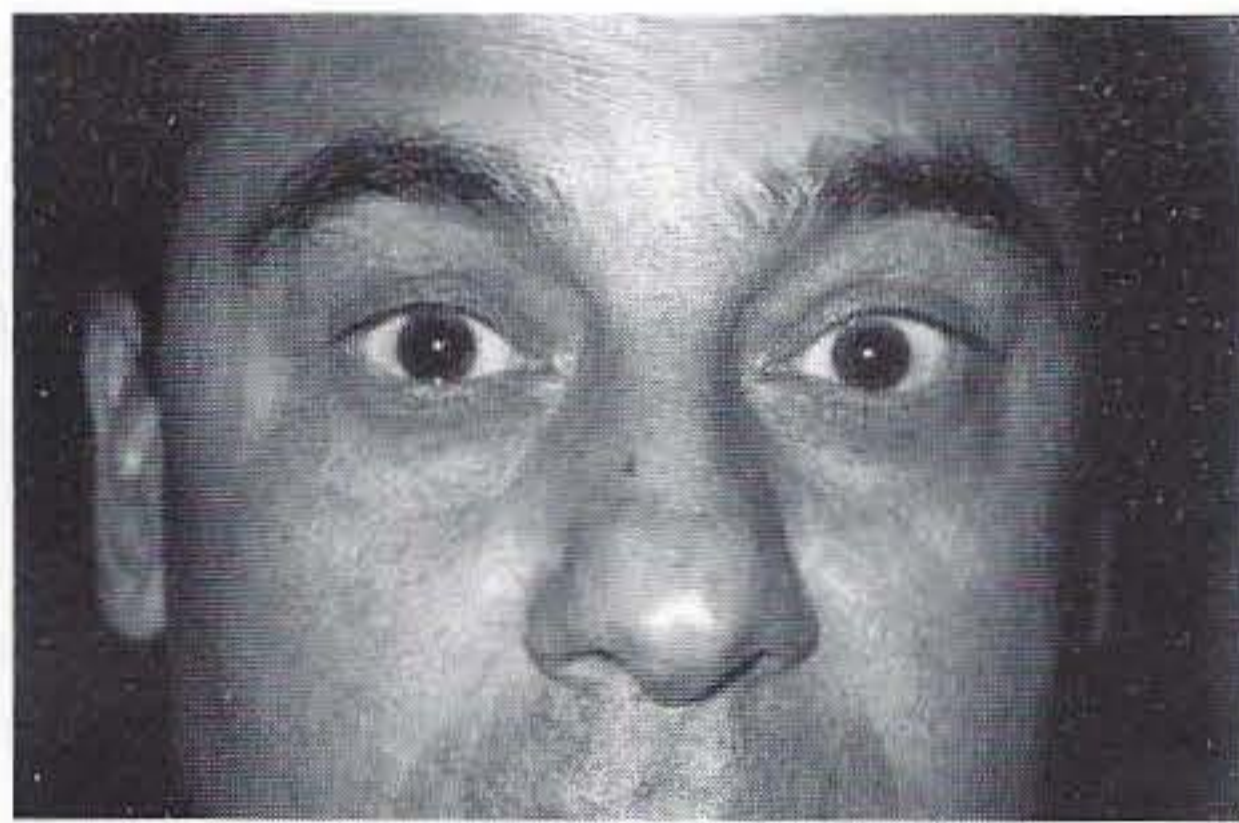


Figure 3: Picture of both eyes after treatment for post lasik keratitis

Staphylococcus Aureus was isolated from the culture, with positive sensitivity to Ofloxacin and Cephalosporin.

The patient was discharged on 5th post admission day with right UCVA 6/12, minimal corneal stromal reaction and reepithelialised flap.

Two weeks later, right UCVA improved to 6/6, with small rounded corneal opacity (1 mm) as a residue of the previous keratitis, quite anterior chamber and normal intraocular pressure. The patient was completely asymptomatic.

DISCUSSION

Infection after lasik procedure is a rare event. In the latest American Academy meeting at San Francisco (26-31 October 1997) only 10 cases of infection after lasik procedures carried out world wide by over 1000 Refractive Surgeons were reported⁶.

Although the risk of infection is more common after photorefractive keratotomy (PRK), due to the presence of corneal epithelial defect⁷. Laser in situ keratomileusis (Lasik) also carries a significant risk of infection, due to the fact that corneal stroma can be exposed to infective agents during lamellar surgery.

Eyelashes, conjunctiva, draps, speculum, microkeratome and the surrounding atmosphere could carry the sources of infection.

Staphylococci are common agents for hospital infection and usual source for chronic blepharitis, conjunctivitis and keratitis. The organism isolated in this case was Staphylococcus aureus which was highly sensitive to

Ofloxacin and cephalosporin.

Some advise the use of bandage contact lenses after lasik to promote re-epithelialisation, but this increases the risk of keratitis and corneal infiltrates⁹.

The use of steroid or non steroidal anti-inflammatory drugs (NSAID) makes the eye more susceptible to infection.

In Bahrain, Trachoma is an endemic disease where many patients are suffering from residual complications of trachoma such as blepharitis¹⁰, dry eyes and decrease corneal sensitivity¹¹ which are risk factors for keratitis and should be treated before lasik.

It is a common practice to carry out Lasik surgery on both eyes in the same session as it has been going on in a number of well known eye centers world wide^{2,3} (Houston Laser Center - Houston/USA, Al Maghraby Eye Hospital, King Khalid Eye Specialist Hospital - Kingdom of Saudi Arabia). However, in view of increasing number of reported cases of infections following Lasik procedures, it would be safer to change to one eye surgery at a time.

CONCLUSIONS

The risk of infection after lasik procedure is valid. It is mandatory to take all the precautions to avoid this vision threatening complication.

Epithelial defects, exogenous and endogenous sources of infection, dry eye and prolonged use of steroid post operatively are vital risk factors.

Proper selection of eyes without risk factors, adequate precautions and short period of post-operative use of NSAID will certainly decrease the risk of keratitis after lasik.

REFERENCES

1. Ruiz LA, Rowsey J. In situ keratomileusis invest. Ophthalmol Vis Sci 1988;29[suppl]:392.
2. Salah T, Waring GO III, El-Maghraby A. Excimer laser keratomileusis in the corved bed under a hinged flap; Results in Saudi Arabia at the El-Maghraby Eye Hospital. In: Salz J, ed. Coned laser surgery. St Louis Mosby, 1995:187-95.
3. Aras C, et al. Corneal interface abscess after Excimer Laser in situ Keratomileusis. J Ref Surg 1998;14:156.
4. Faschinger C, Faulborn J, Ganser K. Infektiöse Hornhautgeschwure - einmal mit Endophthalmitis- nach PRK mit Einmalkontaktlinse. Klin Monatsble Augenheilkd 1995;206:96-102.
5. Mulhern MG. Endophthalmitis after Astigmatic myopic laser in situ keratomileusis. J Cataract Refractive Surgery 1997;23:48-59.
6. Edminston D. E-mail (original@calweb.com).
7. Sampath R, Ridgway AEA, Leatherbarrow B. Bacterial Keratitis following PRK. Eye 1994;8:481-2.
8. Newell FW. Ophthalmology principles and concepts. 7th edn. 1991:430.
9. Sher NA, Krneger RR. Role of topical corticosteroids and non-steroidal anti-inflammatory drugs in the etiology of stromal infiltrates after excimer photorefractive keratectomy. J Ref Corneal Surg 1994;10:587-8.
10. Ahmed AA, Selvyn D. Causes of low vision and blindness in Bahrain. Bahrain Med Bull 1988;10:142-4.
11. Kanellopoulos AJ, Pallikaris IG. Comparison of corneal sensation following PRK and lasik. J Cataract Refractive Surgery 1997;23:34-8.