

A case of endophthalmitis associated with limbal relaxing incision

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Limbal relaxing incisions (LRIs) are considered a relatively safe procedure with rapid stabilization and absence of infectious complications. Do we need to readdress this last impression? We report a case of nocardia endophthalmitis associated with an exudate at the site of an LRI in a patient who underwent routine cataract surgery. This case, to the best of our knowledge, is the first report of its kind, stressing the need for a cautious approach to the adoption of this method of astigmatic correction.

Key words: Endophthalmitis, limbal relaxing incision, nocardia

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Limbal relaxing incisions (LRIs) have stood the test of time as a minimally invasive, safe and reliable method of keratolenticuloplasty.^[1-3] LRIs are used to treat low-to-moderate degrees of astigmatism and are either performed at the time of cataract extraction or as an independent procedure. Planning incisions precisely on axis is not critical since it produces lesser effect than corneal incisions and significant over corrections are rare.

Case Report

A 60-year-old gentleman presented to our institution with pain and dimness of vision in both eyes. On evaluation, his best corrected visual acuity (BCVA) was 20/80 in right eye (RE) and 20/120 in left eye (LE). His intraocular pressures were 14 mmHg RE and 16 mmHg LE. Slit-lamp examination revealed 3+ nuclear sclerotic cataracts bilaterally. Gonioscopy revealed the angle open bilaterally. His cup-to-disc ratio was 0.6 RE and 0.85 LE with loss of the neural rim. He was prescribed betaxolol 0.5% in both eyes (BE) and recommended elective cataract extraction for the LE.

Keratometry measurements were 43.75 diopter (D) \times 180° and 40.00 \times 90° OS with 3.75 D of against the rule astigmatism. The calculated intraocular lens (IOL) power was 23.50 D. The patient had used topical ofloxacin 3 mg/ml six times, 1 day prior to surgery, and thrice on the day of surgery at 1-hour intervals. Povidone iodine 5% was used half an hour before surgery and just before the commencement of surgery. Ocular adnexa was cleaned using 10% povidone iodine, the patient was draped and speculum was applied. A manual sutureless cataract extraction (MSCS) with LRI was planned for the LE. Through a 6-mm temporal sclerocorneal tunnel, a 7-mm capsulorhexis was performed. The nucleus was hydroprolapsed into the anterior chamber and extracted using an irrigating vectis. A rigid 6-mm IOL was placed in the bag. Later, the wound was checked to be watertight and left unsutured. A nasal 6-mm LRI was performed using a 550-m steel knife prior to wound construction.

On the first postoperative day, his BCVA LE was 20/60, and the anterior segment was unremarkable except for mild iritis. He was discharged on topical steroids, antibiotics, and betaxolol drops.

On the 15th postoperative day, he presented emergently with pain and redness in the operated eye. On examination, his vision was 20/2000 with no improvement with pinhole. Anterior segment examination revealed circumcorneal congestion, iris nodule, a 1.5-mm hypopyon, and a corneal exudate at the site of the prior LRI [Fig. 1]. Red reflex was not appreciated. B-scan ultrasonography revealed minimal vitreous exudates.

Vitreous was aspirated and sent for analysis. Intravitreal vancomycin 1 mg/ml and amikacin 400 μ g/0.1ml were administered. Based on the clinical picture of corneal exudate, iris nodules, and hypopyon with minimal posterior segment involvement, a clinical diagnosis of nocardial endophthalmitis was made.^[4,5] The patient was treated with topical gatifloxacin and amikacin hourly, prednisolone acetate every 6 hours, and oral gatifloxacin. Cultures of the vitreous aspirate grew *Nocardia asteroides* on two plates at 48 hours. The isolate was sensitive to amikacin, gatifloxacin, moxifloxacin, ciprofloxacin, ofloxacin, and chloramphenicol. The inflammation worsened, exudates from the iris extended into the capsular bag and

fresh exudates appeared at the sclerocorneal wound site. A subsequent ultrasound revealed increased vitreous opacities. On the 18th postoperative day, the patient underwent core vitrectomy with anterior chamber washout and capsular bag removal with IOL explantation. He was treated with intravitreal ceftazidime at this time. Following this treatment, his symptoms improved, iris and endothelial nodules resolved, hypopyon decreased and exudate at the LRI site resolved [Fig. 2]. He was discharged after a 1-week course on a regimen of oral gatifloxacin and topical amikacin, ciprofloxacin, and a cycloplegic. Four weeks later, the patient's vision was 20/2000 and his examination revealed 2+ white blood cells (WBCs) in the anterior chamber, no hypopyon, and vitreous opacities.

Discussion

LRI preserves the perfect optical qualities of the cornea and is an excellent option for low-to-moderate degrees of astigmatism in a planned single bioptic procedure. The forgiving nature of LRI is due to placement and length of the incision. LRI produces lesser effect than corneal relaxing incision (CRI), thus precise alignment of the axis is not as critical.^[6] Carvalho *et al.* have shown that LRI performed during phacoemulsification surgery is a safe, effective, and stable procedure to reduce pre-existing corneal astigmatism.^[7] We are unaware of any prior report of a postoperative endophthalmitis associated with an LRI performed at the time of cataract surgery. In this patient, as the LRI was of partial thickness and cornea was not perforated, it appears that bacteria may be able to penetrate the cornea at the site of the LRI. This patient presented with iris nodules and hypopyon, a classic presentation of nocardial endophthalmitis.^[4] The endothelial exudates were at the LRI site while the wound was clear, thereby indicating the LRI as the probable site of entry for the organism. *Nocardia* is ubiquitous in the environment and found in the soil. Farmers are thereby more exposed to this infection. The rate of postoperative endophthalmitis after cataract surgery in this population is 0.064% and nocardial infections account for 16.4% of these cases.^[4] *Nocardia* endophthalmitis is more evident in emaciated and immunocompromised individuals and associated with poor prognosis.

MSCS is practiced widely in India and constitutes about

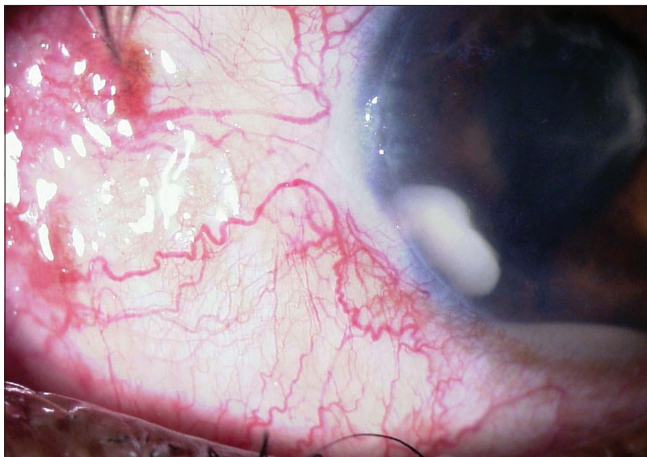


Figure 1: On presentation at 15th post-op day with endothelial nodule at the site of limbal relaxing incision, hypopyon and iris nodule

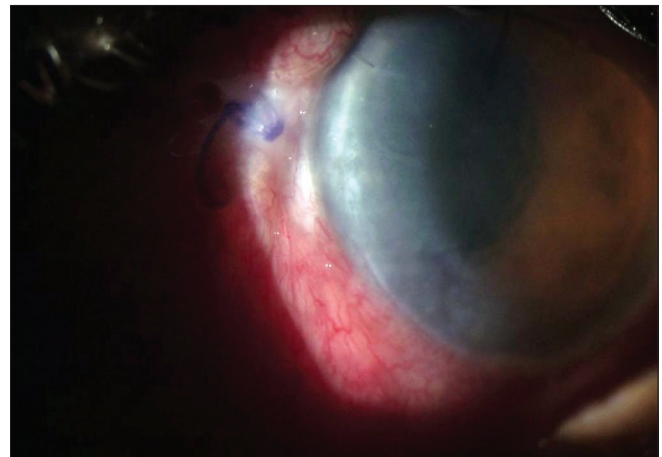


Figure 2: Third post-op day following core vitrectomy and AC wash

62% of the total 69,479 cataract procedures done at our institute in 2008. The endophthalmitis rate with the MSCS group was 0.03% and was lesser than the 0.05% infection rate with the phacoemulsification group (unpublished data). Belazzougui *et al.* have proved that poorly constructed wounds with a short corneal valve have a higher risk of developing endophthalmitis.^[8] In this patient, the scleral and corneal valves were 2 mm and 1.5 mm, respectively. In spite of making a larger incision in the MSCS group, the infection rates are probably comparable due to the wider sclerocorneal tunnel covered well with conjunctiva at the end of surgery. Lalitha *et al.* from the same population reported nil endophthalmitis in the 4275 cases who underwent MSCS technique in the total group of 36,072 cataract procedures where the overall endophthalmitis rate was 0.05%.^[9] In our experience, the MSCS technique *per se* has not been found to be a significant risk factor for endophthalmitis compared to phacoemulsification.

In summary, LRI should be used with caution in patients undergoing cataract surgery.

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