LIMBAL STEM CELL DEFICIENCY FOLLOWING ALKALI INJURY: A CASE REPORT

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CONFLICT OF INTEREST

- There are no conflicts of interest
- There are no financial support
- Ethics committee approval has been taken

INTRODUCTION

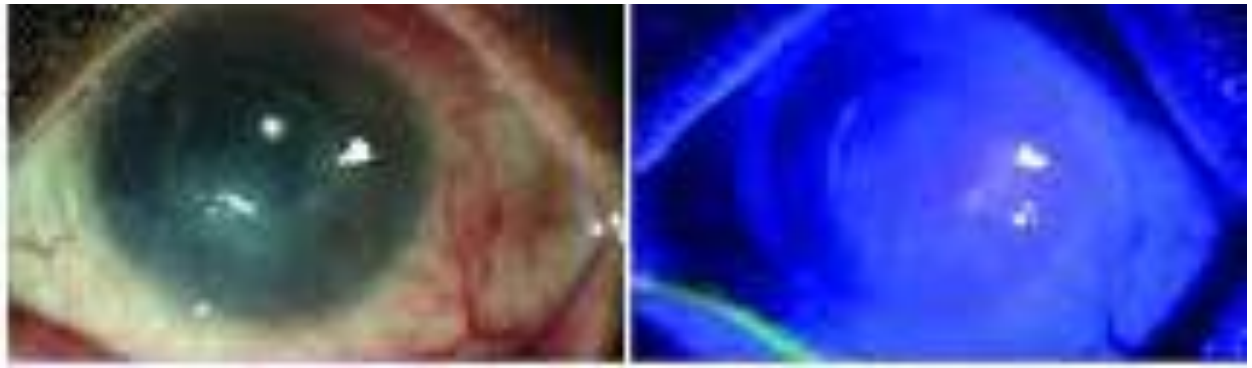
- Limbal stem cell deficiency (LSCD) occurs with the destruction of LSCs through either injury or congenital abnormality. Common causes of LSCD include chemical injuries, severe dry eyes, contact lens wear, Stevens–Johnson syndrome (SJS), multiple surgeries, and severe infectious keratitis.
- The hallmark of clinical picture of LSCD is an invasion of conjunctival epithelium onto the cornea. Common symptoms and clinical findings include pain, superficial neovascularization, and recurrent or persistent epithelial defects.
- The diagnosis of LSCD is largely based on careful clinical examination using fluorescein staining to detect the abnormal conjunctival epithelium on the cornea.
- OCT is a practicable and reliable instrument for non invasive measuring corneal epithelial thickness (CET) and detects various abnormalities in corneal stroma *in vivo* in cases of LSCD. Anterior segment-OCT (AS-OCT) imaging is versatile, nontraumatic, non touch technique, easy to use, without any stain, and subsequent images may be compared easily.

MATERIAL AND METHODS

- 24 yr old male had accidental lime exposure to his left eye 2 years back following which he took treatment in private hospital.
- Patient complained of diminision of vision in LE 2 years later came for further management
- Routine eye examination done, vision was HM+, slit lamp examination, ASOCT, fluoroscein staining done

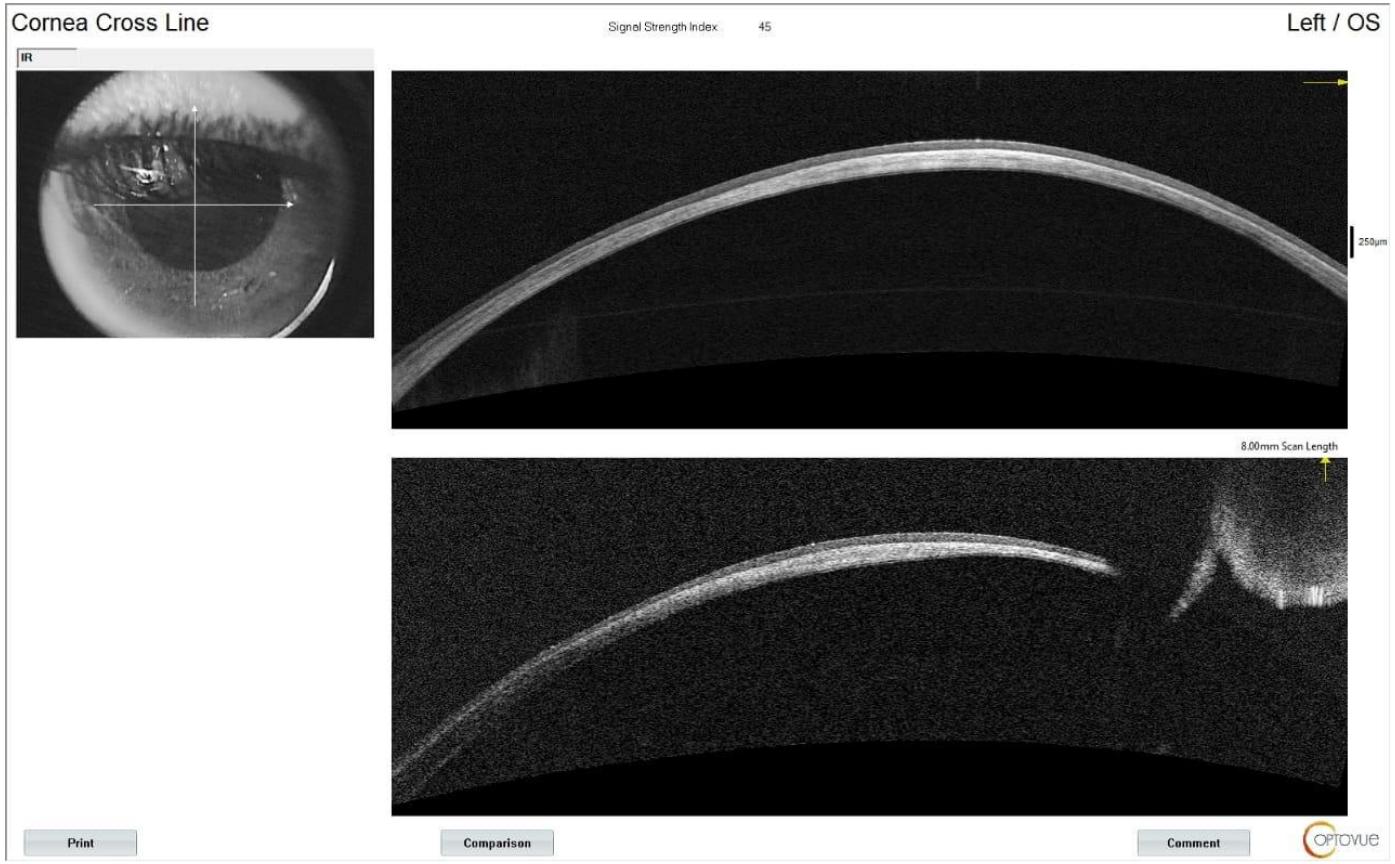
Slit lamp examination and fluorescein staining

- Slit lamp image of left eye with LSCD characterised clinically by loss of corneal clarity, corneal vascularisation, and scarring
- positive fluorescein staining found



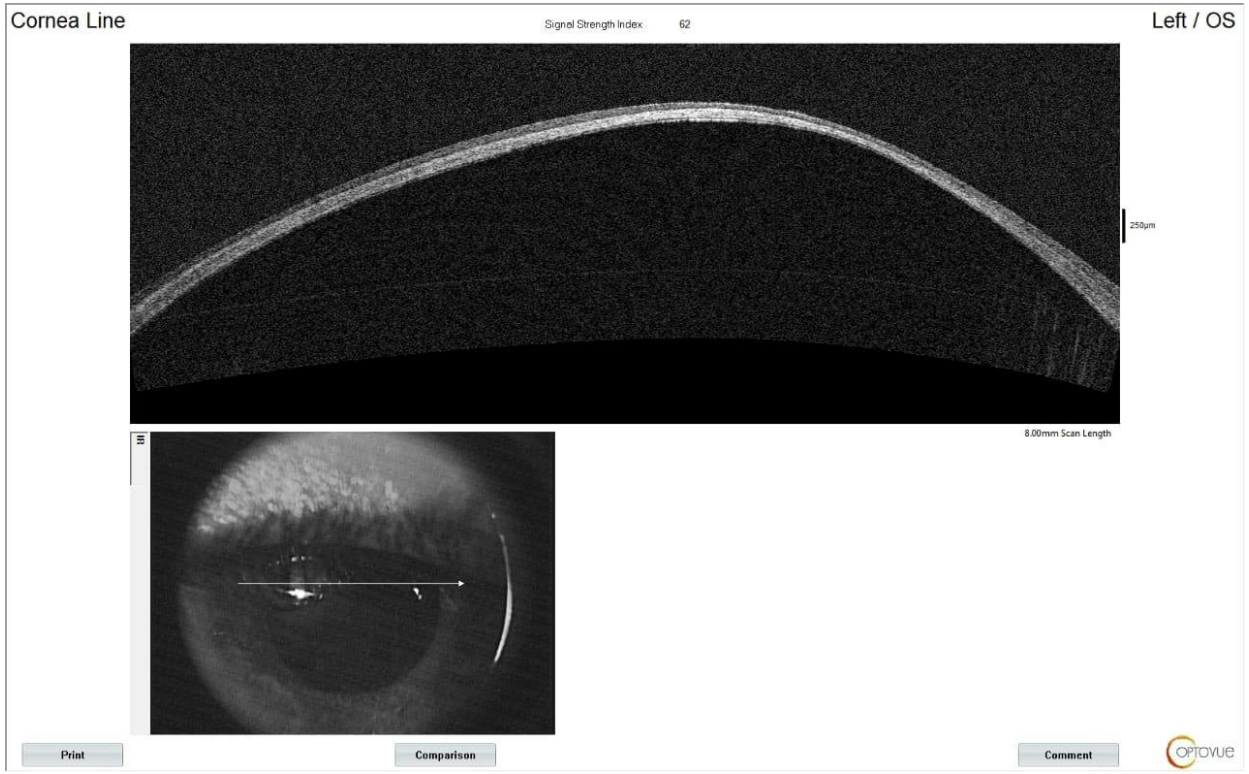
LEFT EYE ASOCT

- The area with reduced epithelial thickness found in AS-OCT is corresponding to the affected area shown in image, the cross sectional images of limbus show that the thickness of limbal epithelium decreased at the affected area



LEFT EYE ASOCT

- Replacement of the dark hyporeflective corneal epithelial phenotype with bright and thick conjunctival phenotype on optical coherence tomography.

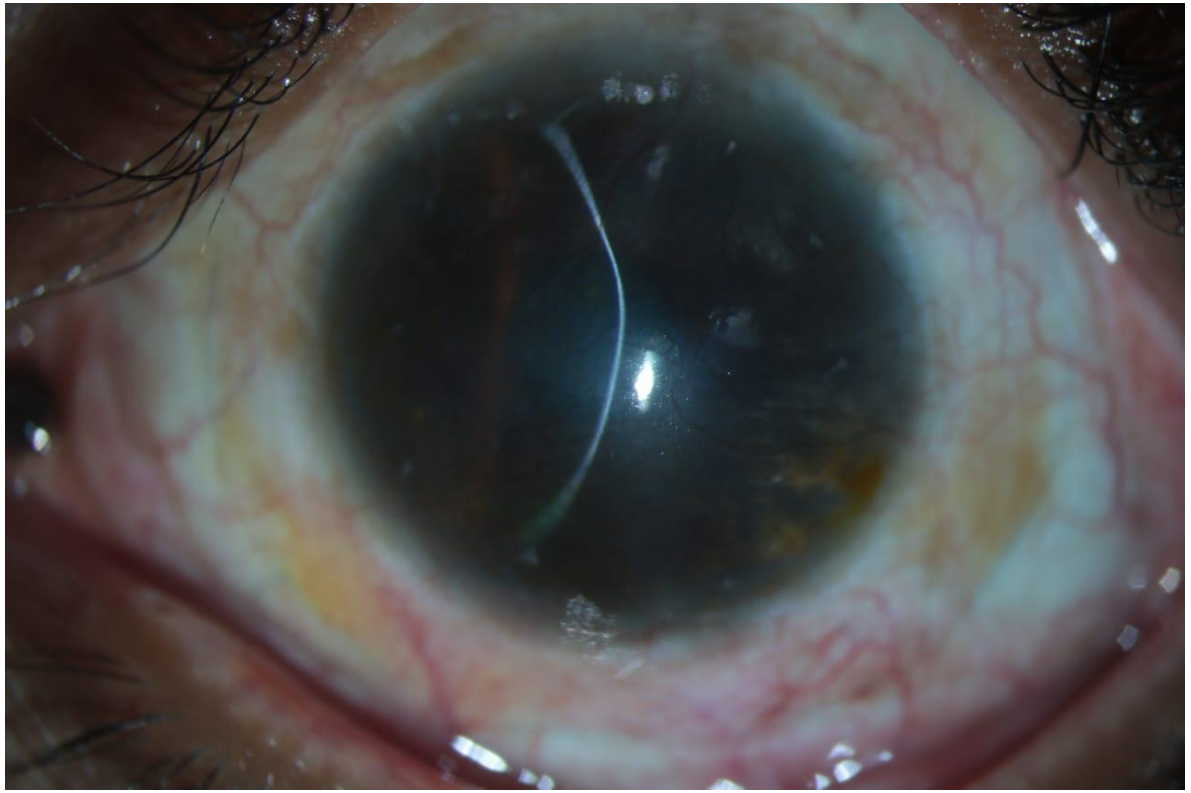


RESULTS

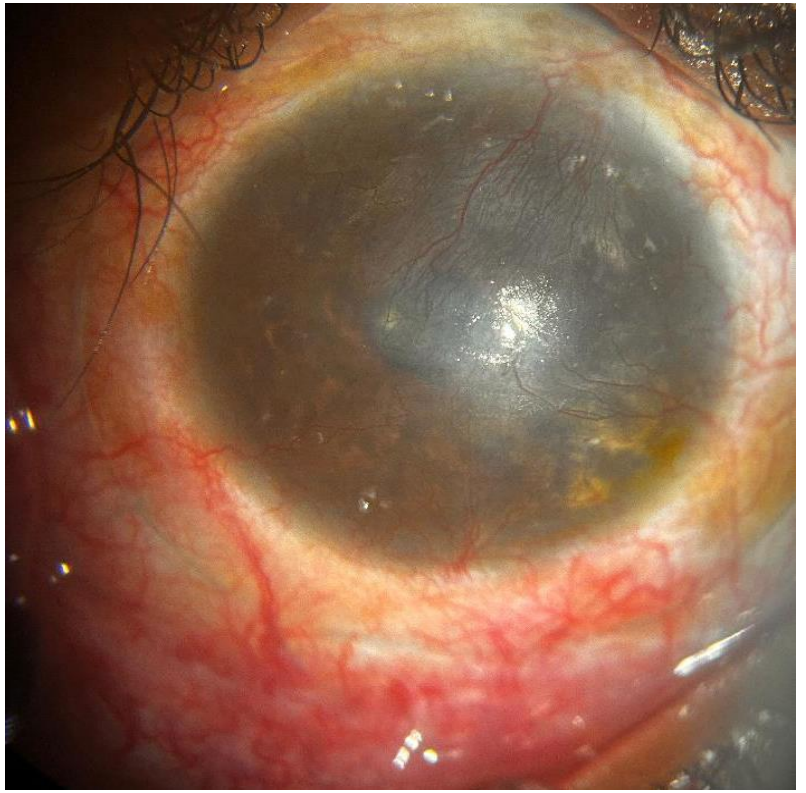
- Slit lamp examination , fluorescein staining and ASOCT confirmed the diagnosis of LSCD in left eye of patient with complete conjunctivalization and HM+ vision.
- In management of left eye a simple limbal epithelial transplant and AMG and CAG, graft acquired from right eye of patient (after limbal biopsy) under nil vision prognosis for sole cosmetic purpose as per patient.
- BCL kept insitu and topical medications tapered with vision at 1 month post op being finger counting close to face

POST OP DAY 1 AND 1 MONTH WITH CAG and AMG

- VISION ATPOST OP DAY 1- HAND MOVEMENT



- VISION AT POST OP 1 MONTH- FCCF



DISCUSSION

- Early and expert intervention with meticulous follow up following acid and alkali injury is crucial for preventing LSCD and preventing loss of vision associated with it
- The management of chemical injuries depends on the stage of presentation. In this acute stage, goals of treatment included re-epithelialisation, control of inflammation, and maintenance of a normal intraocular pressure. Failure of epithelialisation can lead to stromal scarring, stromal melt, corneal perforation, corneal infections, and ultimately visual impairment. AMG is most often employed in conjunction with medical therapy in acute injuries to reduce inflammation and induce epithelialisation, but without inferring any long-term benefits, especially in terms of improving visual acuity.

CONCLUSION

- Limbal stem cell deficiency is long lasting and difficult to treat in a short period, thus requires careful medical attention.
- We evaluated the role of AS-OCT in diagnosis and evaluation of patients with LSCD and since we found that there was a significant decrease in the mean epithelial thickness in patients with mild-to-moderate LSCD. We conclude that AS-OCT being a non invasive modality of evaluation, having higher magnification, repeatability of results, hence has an imperative role in the clinical evaluation of patients with LSCD.

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