ORAL MUCOSAL AUTOGRAFT FOR SYMBLEPHARON RECONSTRUCTION IN SEVERE OCULAR BURN

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Introduction

Ocular chemical injury can be a devastating condition leading to irreversible ocular damage. It is a crucial emergency requiring acute management to avoid long term complications.

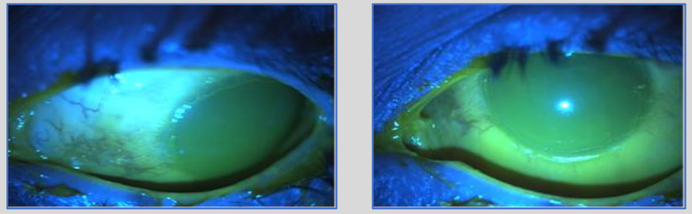
Ocular chemical burns comprise up to 22% of all ocular injuries. The incidence of chemical burn is higher in men, though women are affected at an earlier age.

Approximately 1/3 of ocular chemical injuries result from acids. While the most common agent is sulfuric acid, hydrofluoric acid, used in glass etching and cleaning, tends to rapidly penetrate the ocular tissues.

The most popular classification systems are the Ropper-Hall classification and the Dua classification. These two are used to grade the severity of the chemical burn. The latter takes into consideration the injury of the adjacent conjuctiva, thus it should be preferably used in the management of the chemical burn. For that reason, the injury of the eyelid fornices should always be addressed and treated.

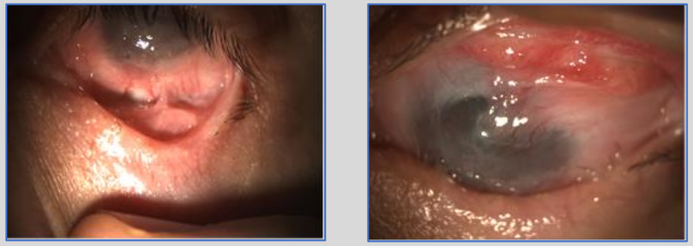
I. Case presentation

- A 25-year-old female suffered from acidic ocular chemical burn, caused by an industrial cleanser, which fell into her left eye while she was working.
- The patient presented visual acuity of 8/10 on the decimal score. Also, she had inferior and superior limbal ischemia (more than half of the limbus) and at the same time more than 50% of the adjacent conjunctiva was affected.
- Furthermore, the patient had total corneal epithelial defect with Descemet's folds but visible iris and anterior chamber.
- The ocular burn was classified as grade III according to Roper-Hall classification system. On the other hand, her burn was graded as IV to V according to Dua classification, due to the extensive involvement of the conjunctiva.



1. Fluoroscein stain

2. Amniotic membrane transplantation & conformer placement



3. Lower and upper eyelid symblepharon

4. Reconstruction of lower eyelid symblepharon

II. Management

Initial Management

- Copious irrigation of sodium chloride was administered for 30 minutes. This was followed by the administration of preservative-free topical moxifloxacin, dexamethasone, hyaluronic acid, atropine sulfate, autologous serum 50%, and oral acetazolamide 250mg, doxycycline 100mg and vitamin C 1000mg.
- Ten days after the initiation of the treatment, there was no epithelialization of the corneal defect. For that reason, the first amniotic membrane was transplanted in order to cover the entire ocular surface, including the fornices, with an additional conformer.

Follow-up #1 (after 8 weeks)

Although there was an improvement in the epithelialization of the corneal defect, there was still a central corneal defect, therefore a second amniotic membrane was implanted. The patient was dismissed and given topical medication, while monitored on a monthly basis.

Follow-up #2 (after 2 months)

- The cornea became opacified and a symblepharon was formed in the inferior and superior fornices, causing cicatricial entropion. There was deficiency of corneal stem cells with simultaneous conjuctivalization of the limbus, causing recurrent corneal epithelial defects. The next approach was to reconstruct the fornices in order to treat the cicatricial entropion and trichiasis, before proceeding with the corneal stem cells transplantation.
- The operation consisted of the release of the inferior and superior symblepharon deep to the tarsus, the defects were covered with the largest oral mucosal autograft (3x1,5 cm) harvested from the lower lip. The autograft was distributed appropriately across the two fornices and sutured in place with continuous 7,0 polyglycolic sutures.

Follow-up #3 (after 10 days)

- There was complete epithelialization of the corneal defect with conjuctivalization of the limbus and the cornea. In addition, the ocular inflammation was improved but the visual acuity was light perception.

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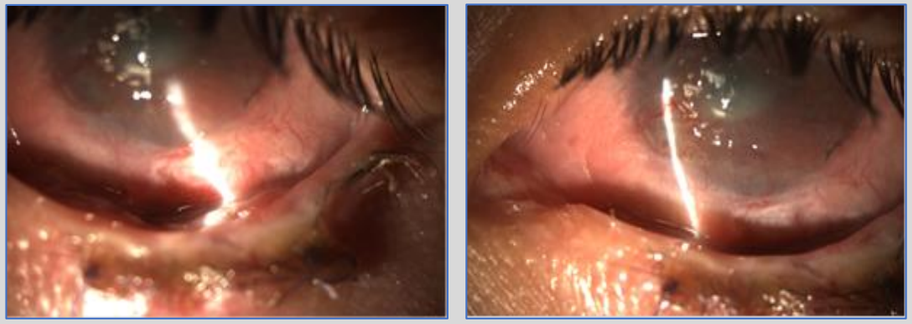
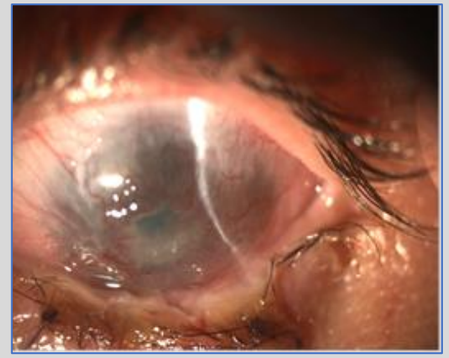
III. Case Discussion

- The dual transplantation of amniotic membrane failed to promote conjuctival and limbal healing
- The limbal stem cell deficiency caused recurrent corneal defects necessitating other surgical procedures in order to preserve the globe
- The direct transplantation of the oral mucosal autograft at the fornices facilitates the treatment of symblepharon
- Oral mucosal autograft is well known for its healing and anti-inflammatory properties in the ocular surface



4. Epithelialization of the limbus



5. Epithelialization of the cornea

IV. Conclusion

- **Oral mucosal autograft is a valuable surgical technique towards the healing of severe ocular burns even if it is being implanted in the eyelid fornices.**
- The direct transplantation of oral epithelial stem cells in the eyelid conjunctiva provides rapid epithelialization of the ocular surface in total, including the cornea.
- It also reduces the ocular inflammation and stabilizes the ocular surface.
- This could be an efficient and safe approach for severe chemical burns with poor prognosis as a prior step to future corneal surgeries for visual acuity restoration.

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