

Commentary: The role of amniotic membrane transplantation in the management of acute ocular chemical burns

Ocular chemical burns are true ophthalmic emergencies that require immediate and appropriate medical care. They are the most common cause of both unilateral and bilateral limbal stem cell deficiency in India,^[1] thus being important contributors to the burden of preventable corneal blindness.^[2] Unfortunately ocular burns tend to affect the younger productive population, mostly as a result of industrial accidents. The importance of urgent and adequate medical care of the acute phase, therefore, cannot be understated. First, we must clearly understand the goal of treatment, which is mainly to prevent disastrous consequences such as corneal melts and severe irreparable visual loss by hastening surface epithelization. Second, we must realize that there are multiple factors that can affect the outcome and visual prognosis in cases of ocular burns, some of which are beyond our control while others can be mitigated. These factors include the pH of the chemical (alkali or acid), the mode of impact and the depth of penetration of the chemical on the ocular surface, the interval between

first contact and irrigation, and the duration between burn and treatment for ocular complications. The initial clinical evaluation is critical to recognize and gauge the extent of de-epithelization of the ocular surface, discern subtle pockets of retained chemicals and identify the severity of limbal ischemia.^[3] Simple techniques like double eversion of upper eyelid and fluorescein staining of the ocular surface, remain the cornerstone of a good clinical evaluation.

Often underemphasized, the most important step in the treatment of chemical burns is irrigation of the ocular surface with a buffered solution.^[4] This removes the excess chemical and normalizes the pH, preventing further penetration and damage due to the chemical itself.^[4] The rest of the treatment is aimed at reducing the surface inflammation, preventing exposure and stimulating limbal recovery and epithelization. Potent topical corticosteroids like prednisolone acetate 1% eyedrops are the critical frontline agents and have proven efficacy in reducing the surface inflammation and promoting faster epithelization of the corneal surface.^[4] However, for severe chemical burns, surgical intervention in the form of amniotic membrane transplantation (AMT) can be very helpful.^[5] Although the exact threshold for performing AMT is unclear,^[5,6] most corneal specialists will agree that severe burns, particularly those that are responding slowly to intensive medical therapy or have not received immediate and adequate care would benefit from AMT. In the current issue of the

Indian Journal of Ophthalmology,^[7] outcomes of AMT when performed in eyes with \geq Grade 3 burns within two weeks of ocular burns were analyzed. Outcomes were analyzed in the form of rate of epithelization, corneal vascularization, symblepharon formation, and improvement in vision. When the outcomes were analyzed separately for grade 3-4 burns, and grade 5-6 burns, the visual outcomes were significantly better in the first group. It was also noted that the degree of corneal vascularization was lower in the first group. The cases which required a penetrating keratoplasty were eyes that had burns of higher grades, these failed to do well, which again highlights the importance of timely management in these cases. We agree with these observations and would like to recommend a lower threshold for AMT in children and those who are unlikely to return for regular and frequent follow-ups. Finally, to reiterate, AMT only works if the initial management in the form of ocular surface irrigation and removal of retained chemical deposits is performed with due diligence; and it should always be used in conjunction with medical therapy and not as an alternative.

In a country like India with a high incidence of ocular chemical burns contributing to irreversible corneal blindness, it is essential to explore and define the role of AMT in the overall management algorithm. It would be ideal if preferred practice guidelines based on existing evidence could be developed by the All India Ophthalmological Society and the same can be adopted and followed across the country. Additionally, if a registry of all cases henceforth being treated following this uniform management algorithm can be maintained it will help us gather continuous insights and the protocols can be modified and refined based on evolving evidence. In view of the extreme heterogeneity of the multiple factors or variables that influence the outcomes in cases of chemical burns, such a concerted effort could potentially involve thousands of cases across the nation and generate invaluable information that will ultimately help us treat our patients better.

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References

1. Vazirani J, Nair D, Shanbhag S, Wurity S, Ranjan A, Sangwan V. Limbal stem cell deficiency-demography and underlying causes. *Am J Ophthalmol* 2018;188:99-103.
2. Das AV, Basu S. Indications and prognosis for keratoplasty in eyes with severe visual impairment and blindness due to corneal disease in India [In Press]. *Br J Ophthalmol* 2020;bjophthalmol-2019-315361. doi: 10.1136/bjophthalmol-2019-315361.
3. Kam KW, Patel CN, Nikpoor N, Yu M, Basu S. Limbal ischemia: Reliability of clinical assessment and implications in the management of ocular burns. *Indian J Ophthalmol* 2019;67:32-6.
4. Wagoner MD. Chemical injuries of the eye: Current concepts in pathophysiology and therapy. *Surv Ophthalmol* 1997;41:275-313.
5. Clare G, Suleman H, Bunce C, Dua H. Amniotic membrane transplantation for acute ocular burns. *Cochrane Database Syst Rev* 2012;CD009379.
6. Eslani M, Baradaran-Rafii A, Cheung AY, Kurji KH, Hasani H, Djalilian AR, *et al.* Amniotic membrane transplantation in acute severe ocular chemical injury: A randomized clinical trial. *Am J Ophthalmol* 2019;199:209-15.
7. Parmar DP, Bhole PK, Patel PN, Jadeja JN. Amniotic membrane transplant in acute ocular surface burns in Western India: A tertiary eye care center study. *Indian J Ophthalmol* 2021;69:58-64.

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