

## Commentary: Simple limbal epithelial transplant – Current perspective

An interesting article in this issue of the Indian Journal of Ophthalmology (IJO) discusses a modification of simple limbal epithelial transplantation (SLET).<sup>[1]</sup> Stem cell transplantation has been the hot topic of research in the last few decades. Ophthalmology has also not been left out in this regard. At present, efforts are on to regenerate all layers of the cornea, retinal pigment epithelium, and even reconstruct layers of the retina in the laboratory.<sup>[2]</sup>

However, success in terms of “bench to bedside” has been achieved only for the corneal epithelium to a great extent. The location of stem cells primarily at the limbus has been well documented.<sup>[2]</sup> Harvesting these stem cells and growing them *in vitro* and transplanting them on to the cornea to restore the milieu was the norm till researchers like Dr. Sangwan and colleagues<sup>[3]</sup> devised a novel method to grow the harvested limbal epithelium *in vivo* and named the procedure “simple limbal epithelial transplant” or SLET.

This procedure, has now found worldwide acceptance due to the excellent results obtained. The original method<sup>[3]</sup> involved harvesting 2 mm of limbus from the other eye in case of unilateral stem-cell deficiencies and living relative or cadaver donor in case of bilateral limbal stem cell deficiency (LSCD) and placing 8–10 small bits of this tissue on the amniotic membrane (around but sparing the center of the cornea), which is glued on to the corneal surface after removal of pannus.

The indications for this procedure have expanded to include LSCD of nearly all etiology either primary or secondary.<sup>[4]</sup> Many modifications of this procedure have been tried successfully. The modifications are in the way the explants are cut, or how they are placed. The placement of limbal tissue may be<sup>[5]</sup>

- Superficial to the amniotic membrane graft (AMG) that is placed over the cornea (standard SLET),
- Between the AMG and the cornea (modified SLET), or
- Between the two layers of AMG that are placed over the cornea (sandwich technique in SLET).

Also, the number and placement of explants may vary. Limited SLET in pterygium excision,<sup>[6]</sup> “top-up SLET” in case of partial recovery from LSCD, and circularly placing the explants in the mid periphery of the cornea are variations of the procedure reported in the literature.<sup>[5]</sup>

This article in IJO<sup>[1]</sup> advocates placing the implants directly on the corneal surface denuded of pannus instead of on the amniotic membrane. Loss of explants may occur if the amniotic membrane peels off due to either poor adherence on the corneal surface or rubbing the eye which is more in the pediatric population. The AMG<sup>[7]</sup> and bandage contact lens on top of the explants may be more protective.

The advantages of SLET over cultivated limbal stem cell transplant<sup>[8]</sup> are not only monetary (i.e. no need for an expensive stem cell laboratory), but also include the ease of procedure, single stage (no need to harvest limbus, cultivate cells, and then transplant in the second stage) surgery, reproducibility, and excellent results in most case scenarios.<sup>[4]</sup>

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## References

1. Pannu A, Sati A, Mishra SK, Kumar S, Dhar S. Innovative technique of mini-simple limbal epithelial transplantation in pediatric patients. *Indian J Ophthalmol* 2021;69:2222-4.
2. Sivan PP, Syed S, Mok P-L, Higuchi A, Murugan K, Alarfaj AA, *et al.* Stem cell therapy for treatment of ocular disorders. *Stem Cells Int* 2016;2016:8304879.
3. Sangwan VS, Basu S, MacNeil S, Balasubramanian D. Simple limbal epithelial transplantation (SLET): A novel surgical technique for the treatment of unilateral limbal stem cell deficiency. *Br J Ophthalmol* 2012;96:931-4.
4. Shanbhag SS, Patel CN, Goyal R, Donthineni PR, Singh V, Basu S. Simple limbal epithelial transplantation (SLET): Review of indications, surgical technique, mechanism, outcomes, limitations, and impact. *Indian J Ophthalmol* 2019;67:1265-77.
5. Le Q, Deng SX. The application of human amniotic membrane in the surgical management of limbal stem cell deficiency. *Ocul Surf* 2019;17:221-9.
6. Hernández-Bogantes E, Amescua G, Navas A, Garfias Y, Ramirez-Miranda A, Lichtinger A, *et al.* Minor ipsilateral simple limbal epithelial transplantation (mini-SLET) for pterygium treatment. *Br J Ophthalmol* 2015;99:1598-600.
7. Sridhar U, Tripathy K. Amniotic membrane graft. In: *StatPearls*. Treasure Island (FL): StatPearls Publishing; 2021. Available from: <http://www.ncbi.nlm.nih.gov/books/NBK567771/>. [Last accessed on 2021 Jul 08].
8. Burman S, Sangwan V. Cultivated limbal stem cell transplantation for ocular surface reconstruction. *Clin Ophthalmol* 2008;2:489-502.

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