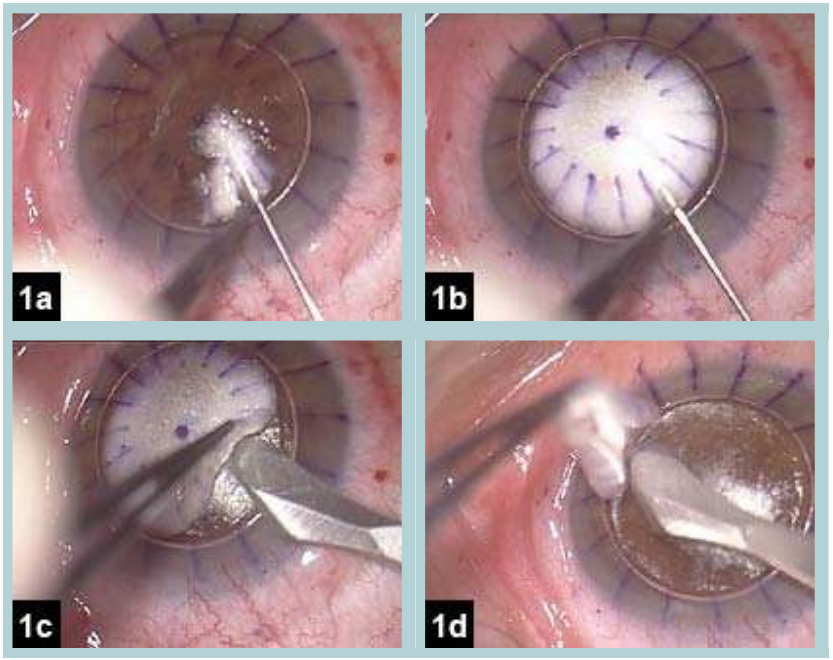
SILK VISION AND SURGICAL CENTER

Penetrating Keratoplasty has been the gold standard for the surgical treatment of corneal diseases with over 40,000 cases performed annually in the U.S. However, with the improvement of surgical equipment and techniques, lamellar keratoplasty has quickly been adopted as the first treatment option for localized corneal disease. As DSAEK (i.e. Endothelial Keratoplasty) has revolutionized the way we treat endothelial disease so has a new procedure called Deep Anterior Lamellar Keratoplasty (DALK). In this newsletter we would like to highlight DALK as a treatment option for anterior corneal stromal pathology such as scarring, keratoconus and corneal dystrophies.

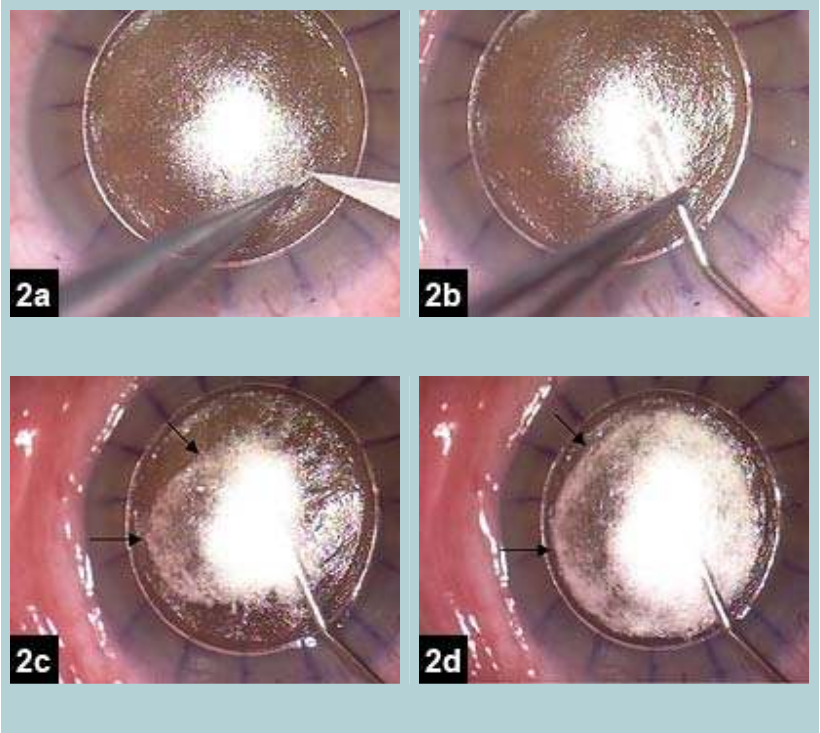
DALK is a surgical technique in which the diseased anterior cornea stroma is removed leaving the patient's descemet's membrane and endothelium intact. The advantage to this technique is that it is a non-penetrating surgery which eliminates the risk of expulsive choroidal hemorrhage and endophthalmitis. Wound healing and visual recovery times are also decreased for these patients. Lastly the risk for graft rejection is also significantly decreased because the patient keeps their own endothelium and therefore the amount of tissue transplanted is less.

DALK has quickly gained popularity with the recent advent of Anwar Big Bubble Technique in which air is injected into the corneal stromal to help separate the corneal layers and to facilitate dissection to Descemet's membrane. The surgical steps are highlighted below.

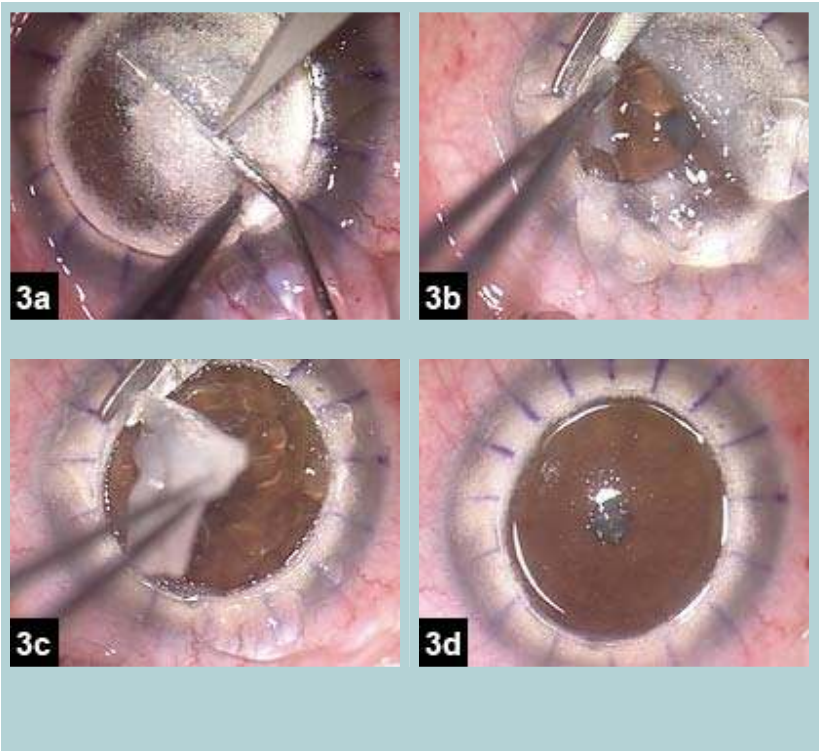
After trephination to 80% depth of the cornea air is injected into the corneal stroma (Fig. 1a). Notice the corneal emphysema. The anterior stromal is then dissected leaving the posterior corneal stroma intact (Fig. 1c and d).



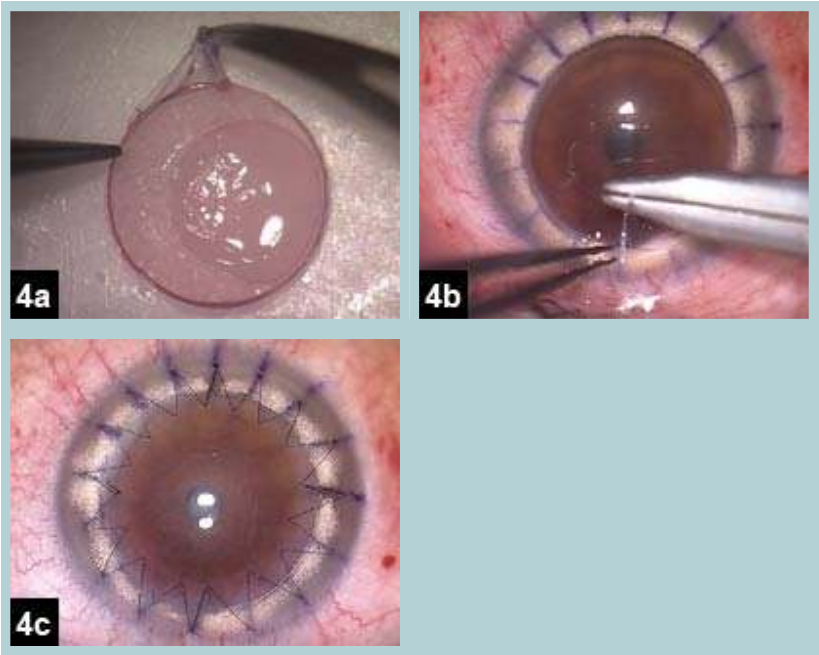
Next a superficial nonpenetrating stromal corneal nick is placed (2a) inside the trephinated area. Using a blunt cannula air is again injected creating a "big bubble" (arrows) which separates the posterior corneal stroma from Descemet's membrane (2b-d).



Viscoelastic is then injected through the same incision to further separate the layers. The body of the cannula is inserted within the bubble and guides the cut of the overlying stroma (3a). The remaining stroma is then cut along the trephinated margin with curved microscissors (3b) and excised (3c). A smooth and uniform surface is obtained after washing out the viscoelastic (3d).



The corneal donor button is stripped of Descemet's membrane and endothelium with forceps (4a) and sutured in the recipient's corneal bed (4b and 4c).



Although DALK is a more time consuming and technically difficult procedure the advantages far outweigh the disadvantages. Since DALK is a nonpenetrating surgery there is little to no risk for choroidal expulsive hemorrhage and endophthalmitis. Also the rate of graft rejection is reduced tremendously since the patient maintains their own endothelium. Healing and visual recovery times are also significantly decreased.

We hope you enjoyed this newsletter and if we can be of any service to you or your patients please do not hesitate to ask. *Have a great summer!*

References:

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