

Management of pseudophakic bullous keratopathy with ultrathin Descemet stripping automated endothelial keratoplasty and modified Yamanes' technique of scleral fixation

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Key words: Pseudophakic bullous keratopathy, ultrathin dsek, scleral fixated IOL

A 66-year-old pseudophakic female was presented with visual acuity of counting fingers close to face in the right eye following blunt trauma with ball two months back. Slit lamp examination revealed bullous keratopathy (BK) with moderate subluxation of intraocular lens temporally in the right eye. Status of the capsular bag could not be assessed because of corneal haze [Fig. 1]. B-scan ultrasonography showed a normal posterior segment. Ultrathin Descemet Stripping Automated Endothelial Keratoplasty (UT-DSAEK) with removal of the subluxated lens with sutureless 27-gauge needle-assisted flanged intrascleral intraocular lens (IOL) fixation was performed [Fig. 2].

Sutureless 27-gauge needle-assisted flanged IOL fixation

Using peribulbar anesthesia of 5-mL lignocaine hydrochloride 2.0% and 5-mL bupivacaine hydrochloride 0.5%, conjunctival entry spots were marked 180° apart with a marker at 3'o clock and 9'o clock meridians, 2 mm from the limbus. Superior conjunctiva was dissected and a 4-mm sclerocorneal tunnel was made. Corneal epithelium was removed mechanically using 15 number blade to improve visualization. Following adequate triamcinolone-assisted anterior vitrectomy and removal of the dysfunctional IOL, a three-piece IOL Sensor AR40e [Abbott Medical Optics, Santa Ana, CA] was inserted into the anterior chamber. Using the previous marking, a transconjunctival angled sclerotomy was made with a 27-gauge needle, 2 mm from the limbus, keeping it tangential with the iris plane to

avoid ciliary body injury. A 25G end gripping forceps was introduced from a paracentesis to insert the tip of the leading haptic into the lumen of the 27-gauge needle. The haptics were externalized and the tip was heated with a thermal cautery to create a flange, which was subsequently pushed back through the conjunctiva and fixed intrasclerally. The same technique was repeated 180° opposite to flange and fix the trailing haptic.

UT DSAEK technique

The UT-DSAEK donor graft was prepared by double pass technique using microkeratome (Moria) as per normogram developed by Busin *et al.* Thickness of lenticule achieved was 100 microns.

Pilocarpine Nitrate 0.5% injection (InjCarpinol 0.5%, Sunways India Pvt., Ltd.) was injected intracamerally to achieve miosis. Host corneal marking with blunt trephine was done on epithelial side to guide Descemet membrane scoring 2 mm less than the horizontal white-to-white diameter. Descemet membrane was stripped from the host using a reverse Sinsky hook after insertion of ophthalmic viscoelastic device (OVD) (Healon; Advanced Medical Optics, Co). A small peripheral iridectomy made using automated vitrectomy cutter to avoid pupillary block by full chamber air. The OVD was completely removed before insertion of donor lenticule by irrigation and aspiration. The graft was then delivered into the anterior chamber via the needle push technique through sclerocorneal wound. The wound was closed with a 10-0 nylon suture. The anterior chamber was filled with air injected via a 30-gauge cannula and final graft position was ensured by stroking the cornea with an iris reposer. Donor lenticule stability was confirmed after 10 min. The IOP was digitally checked and the eye was then patched. Patient remained supine for 1 h.

The anterior segment optical coherence tomography (ASOCT) done post operatively, showed a well apposed endothelial disc and positioning of the haptics flanges within the sclera [Fig. 3]. Uncorrected visual acuity improved from 1.48 logMAR units at baseline to 0.6 logMAR at 6 weeks, which was maintained at six months. BCVA at last follow-up of 11 months was 0.5 logMAR units. The endothelial cell loss was 20%.

Discussion

In majority of the cases of BK, the causative factor is either aphakia or dysfunctional IOL, which may require consecutive

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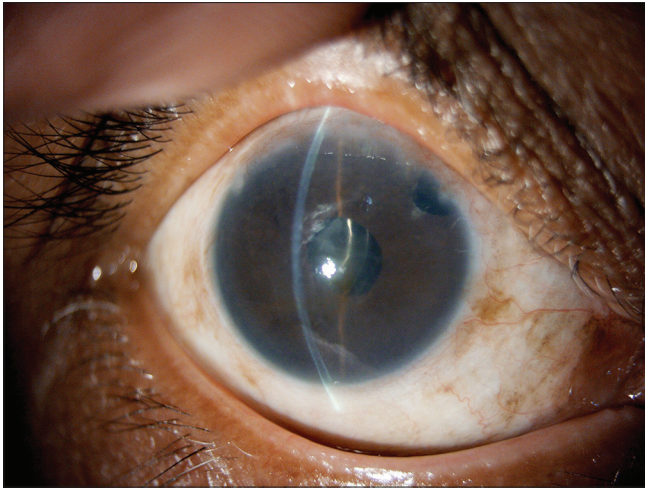


Figure 1: Slit lamp examination showing BK with subluxated IOL in the right eye

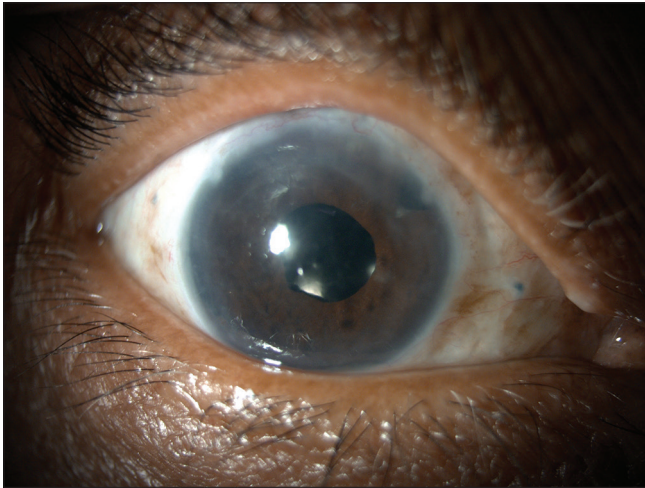


Figure 2: UT-DSAEK with sutureless 27-gauge needle-assisted flanged intrascleral IOL fixation

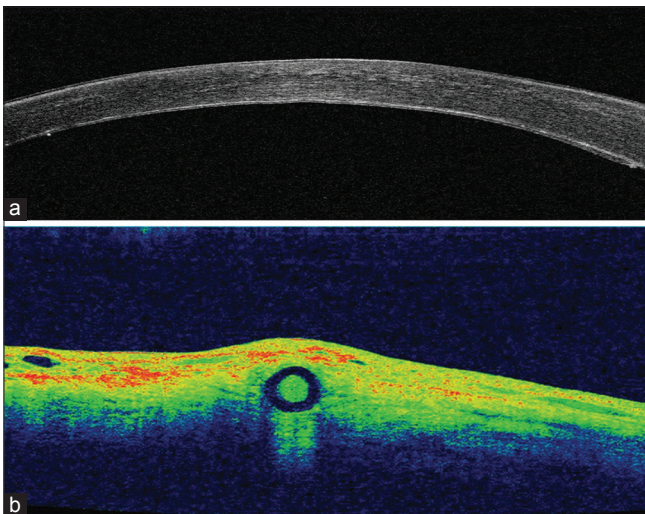


Figure 3: (a) Anterior segment optical coherence tomography (ASOCT) done post operatively, showed a well-apposed endothelial disc. (b) The ASOCT done shows positioning of the haptics flanges within the sclera post operatively

removal and replacement along with posterior lamellar keratoplasty.

UT-DSAEK is easier to perform even in eyes with complicated anatomy or poor anterior chamber visualization.

The ideal IOL option in this scenario is a transscleral fixated IOL or iris retrofixated lens, the rationale being to maintain maximum distance between the IOL and the donor endothelium thereby minimizing damage to anterior chamber angle structures. Yamanes' technique offers ease of performance, shorter learning curve, good lens centration, and transconjunctival approach.

We modified Yamanes' technique of exteriorizing both haptics simultaneously and exteriorized and fixed the leading haptic entirely before manipulating the lagging haptic, thus obviating risk of peripheral retinal injury and haptic slippage.^[1,2] The SFIOL was very stable during all maneuvers of UTDSAEK, even during the air tamponade. There were no intraoperative and postoperative complications noted. Our results are comparable to the previously done studies on combined technique of DSAEK with SFIOL.^[3-5] and it is a very unique and effective in management of aphakic and pseudophakic BK.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Nil.

Conflicts of interest

There are no conflicts of interest.

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