

# Descemet's Stripping And Endothelial Keratoplasty For Pseudophakic Bullous Keratopathy: Simplified Manual Donor Dissection Without An Artificial Anterior Chamber

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## Abstract

Endothelial replacement surgery is an established procedure for aphakic and pseudophakic corneal edema and fuch's endothelial dystrophy. This procedure includes transplantation of posterior stromal lamellar disc in an eye denuded of posterior lamellar disc along with descemet's membrane (Deep Lamellar Endothelial Keratoplasty, DLEK) 1 or of only descemet's membrane (Descemet's Stripping and Endothelial Keratoplasty, DSEK)<sup>2</sup>. DSEK has been described to have an edge over DLEK in that it is less technically demanding.<sup>2</sup> Here, we report a case in which DSEK was done for Pseudophakic bullous keratopathy.

## CASE REPORT

A 32 year old gentleman presented to us with pain, redness and watering in right eye. He had undergone cataract surgery 3 years back. Since then he had recurrent episodes of anterior chamber inflammation, which had been treated with topical steroids. On examination his visual acuity was 20/400 improving to 20/125p. There was corneal stromal and epithelial edema with a few bullae. Peripheral anterior synechiae and stromal vascularisation was present in one quadrant. Pupil was irregular and fixed and PCIOL was in place. Left eye was essentially within normal limits. Intraocular pressure by applanation was 16 mmHg in both eyes. The fundus was not visible in right eye but the B-Scan ultrasonography was within normal limits in right eye. Patient underwent Descemet's stripping with endothelial keratoplasty in right eye.

Postoperatively, on 1<sup>st</sup> postoperative day, there was double anterior chamber. The posterior lamellar disc was adhered to host stroma irregularly leading to the double anterior chamber. On the next day, 0.1 ml of isoexpansile C3F8 was injected into anterior chamber. The following day, the posterior lamellar disc was adhered to host stroma and anterior chamber was half filled with gas. He was kept on topical Prednisolone eye drops 8 times per day and ciprofloxacin 0.3% eye drop 6 times per day. 10 days

postoperatively, corneal edema had decreased drastically in the area of posterior lamellar disc and symptoms had decreased significantly. The posterior lamellar disc was adhered to host stroma all over (Figure 1b). Visual acuity was 20/160 improving to 20/100. Ultrasound pachymetry showed average value of 567 microns at the centre. Anterior segment OCT (Visante<sup>TM</sup>) showed a thickness of 74 microns to 110 microns of posterior lamellar disc (Figure 1c). Topical steroids were tapered. At 2 months follow up, the patient had a best corrected visual acuity of 20/50 with -2.5 dioptre cylinder at 140 and the endothelial cell count was 2254 with confocal microscopy. Posterior lamellar disc was adhered to host stroma all over which was clear (Figure 1d)

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## TECHNIQUE

Recipient: Peritomy was done at 12 o'clock. 3.5 mm scleral tunnel was made with a keratome. Sinski's hook was used to scrape off the descemet's membrane from periphery 360 degree in the 9 mm zone after marking the same on the epithelium. An anterior chamber maintainer was used to

during descemet's stripping. Using a bent pediatric rhexis forceps from the side port descemet's membrane was peeled off completely from within the area scored with the blunt Sinskey hook. Donor: Donor tissue (endothelial cell count of 2438) was dissected using crescent knife (free hand dissection). After punching 8.5mm sized donor disc from the endothelial side using a 8.5mm manual trephine the assistant holds the graft at two points (epithelial side making sure endothelial side is not touched) with help of toothed forceps and surgeon holds the graft from endothelial side and with the help of crescent knife a plane is made in posterior stroma approximately at the junction of anterior 3/4<sup>th</sup> and posterior 1/4<sup>th</sup>. Posterior stroma being loose peels off easily assisted by crescent knife where required. This makes the dissection very smooth.

### **TRANSPLANT OF DONOR TISSUE**

The posterior lamellar disc was folded on endothelial side after putting a drop of viscoelastic material (Hydroxy propyl methyl cellulose) over endothelial surface. The disc was held with the help of McPherson forceps and inserted in Anterior chamber. Saline cannula was used to push some balance salt solution in anterior chamber with direction of cannula in the groove of folded posterior lamellar disc, which makes it unfolded. After making sure the positioning of disc, air bubble was injected into the anterior chamber. Scleral wound was secured with 10-0 nylon sutures. Subconjunctival injection dexamethasone and gentamicin was given.

### **DISCUSSION**

To the best of our knowledge there is only one case series on DSEK. This is the first successful case of endothelial keratoplasty where dissection of a corneoscleral rim was done manually without an artificial anterior chamber. There was some difference in the technique of Price et al<sup>2</sup> and ours. We didn't use artificial anterior chamber which highlights

the fact that posterior lamellar disc can be dissected manually without help of artificial anterior chamber. Because posterior stromal fibers are loose, even with manual dissection, one can have smooth surface. Postoperative endothelial counts could be measured and the graft was functioning well as evidenced by clarity of cornea in the area of disc. As pointed out by Price et al, DSEK has an edge over DLEK in simpler recipient dissection. In DLEK, the dissection of host cornea is technically demanding and is more instrument dependent. In DSEK, one does not require specialized instruments and the learning curve of descemet's stripping is short. Being advantageous over PK and DLEK, DSEK might be a future management protocol for endothelial dysfunction. Donor dissection with our simple technique can be adopted by surgeons without access to costly instruments. However we are monitoring and evaluating this technique under a protocol to see the long term results

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### **References**

1. Terry MA, Ousley PJ Deep lamellar endothelial keratoplasty visual acuity, astigmatism, and endothelial survival in a large prospective series. *Ophthalmology*. 2005;112:1541-8.
2. Price FW Jr, Price MO Descemet's stripping with endothelial keratoplasty in 50 eyes: a refractive neutral corneal transplant. *J Refract Surg*. 2005;21: 339-45.

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