

## Double decker endothelial keratoplasty

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Access this article online	
Quick Response Code:	Website: www.ijo.in
	DOI: 10.4103/ijo.IJO_1758_18

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Manuscript received: 23.10.18; Revision accepted: 08.01.19

**Key words:** Descemet's membrane endothelial keratoplasty, descemet's stripping endothelial keratoplasty, graft failure

### Case Report

A 54-year-old female presented with a history of undergoing Descemet's stripping endothelial keratoplasty (DSEK) in the right eye for pseudophakic bullous keratopathy elsewhere 5 years back. On presentation, she gave a history of gradual decrease in vision since 1 year and had a visual acuity of counting fingers close to face. On slit lamp examination, she had

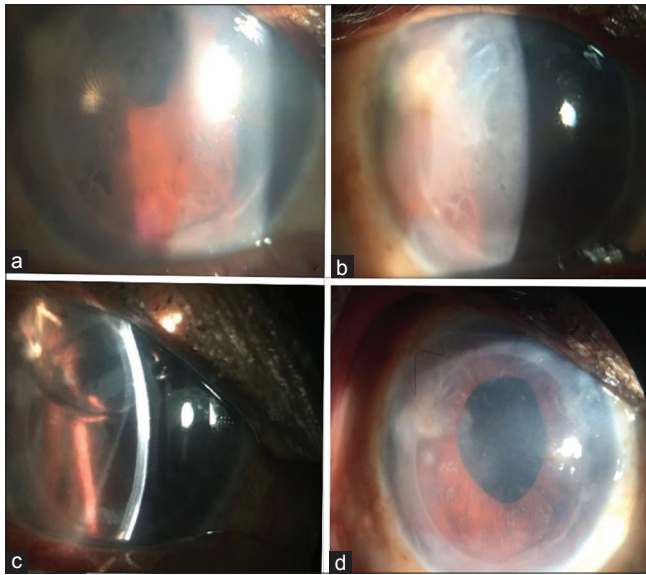
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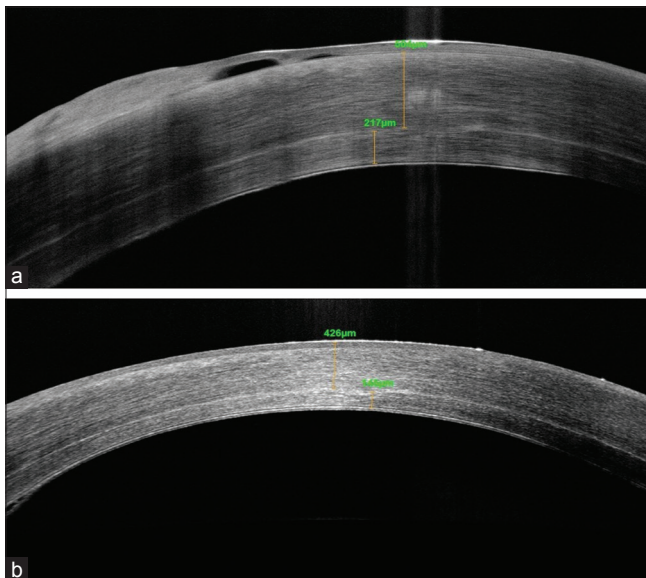
**Cite this article as:** Srirampur A, Katta KR, Vemuganti S, Kalwad A. Double decker endothelial keratoplasty. Indian J Ophthalmol 2019;67:686-8.

numerous subepithelial bullae, diffuse corneal edema along with an underlying well-centered and attached edematous DSEK graft [Figs. 1a,b and 2]. This was confirmed on anterior segment optical coherence tomography [Fig. 3a and 4]. There was large peripheral anterior synechia (PAS) at 1'O clock position attached to the edge of the DSEK graft. The rest of the anterior chamber was well formed with normal intraocular pressure. She was diagnosed to have DSEK graft failure and

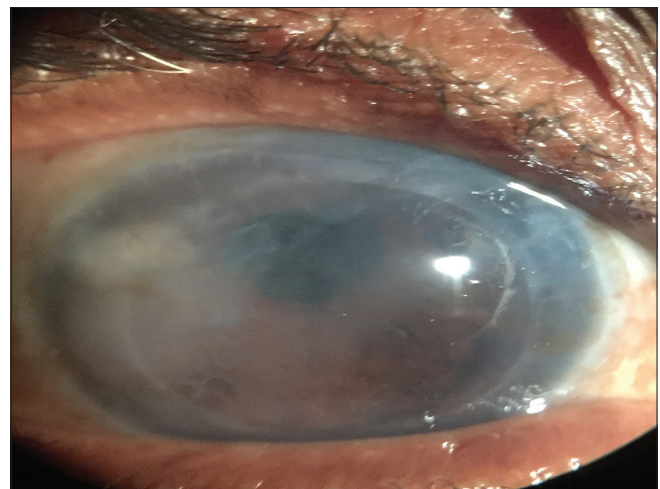
hence planned for a repeat endothelial transplant. As there was an attached PAS to the edge of the DSEK graft removal of this graft would have caused more trauma and hyphema, which would subsequently damage the graft. Hence, a Descemet's membrane endothelial keratoplasty (DMEK) was planned under the previous DSEK graft without removing the failed DSEK graft. A clear corneal 2.8 mm incision was made and neither DM of the DSEK graft nor the graft *in toto* was removed. DM roll was prepared manually from the donor corneoscleral rim procured from eyebank, and it was injected into the anterior chamber with an injector. The DMEK graft was sized 0.5 mm lesser than the previous DSEK graft. After confirming the correct orientation of the DM roll in the anterior chamber, it was floated up to attach to the overlying DSEK graft with help of an air tamponade. On postoperative day 1 [Fig. 1c] graft was well attached with clearing of the corneal edema. The vision improved to 6/24. The graft attachment was confirmed on optical coherence tomography [Fig. 3b]. At 3-month follow-up, the visual acuity was 6/18 with a normal intraocular pressure. There was clearing of the corneal edema along with DSEK graft edema and a well-attached DMEK graft to the overlying DSEK [Fig. 1d]. Patient also had a central thick posterior capsular opacification, for which a YAG capsulotomy was planned.



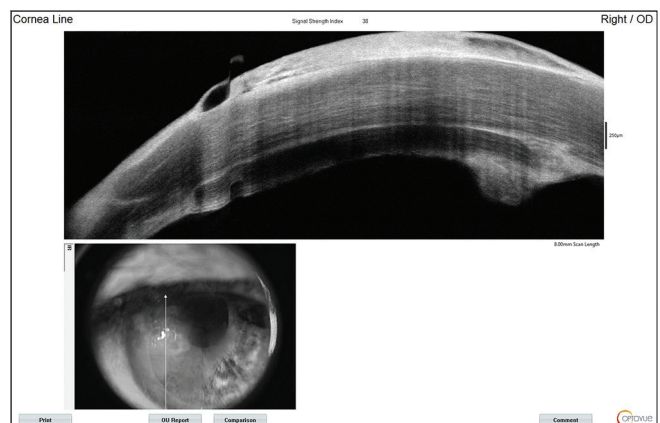
**Figure 1:** (a) Preoperative slitlamp image showing a failed DSEK graft with overlying corneal edema. (b) Preoperative slitlamp image showing a failed DSEK graft with overlying corneal edema with subepithelial bullae and scarring. (c) Slit section after DMEK on post operative day 1 showing clear cornea with air bubble in the anterior chamber. (d) Post operative slitlamp image (diffuse illumination) at 1 month showing clear cornea



**Figure 3:** (a) Preoperative optical coherence tomography showing corneal edema with a failed edematous DSEK graft. (b) Postoperative optical coherence tomography showing two interfaces of DSEK and DMEK and resolution of corneal edema and DSEK graft edema



**Figure 2:** Preoperative Slitlamp photo in diffuse illumination showing dense corneal edema



**Figure 4:** Preoperative ASOCT showing the DSEK Graft Host Junction

## Discussion

DSEK and DMEK are considered the procedures of choice in cases of endothelial dysfunctions.<sup>[1]</sup> Both intraoperative and postoperative complications do occur in DSEK and one among them is graft failure.<sup>[2]</sup> The repeat DSEK procedure can be easily performed in most of the failed cases with satisfactory results. DMEK is also considered as a feasible choice in patients with graft failure after DSEK.<sup>[3]</sup> Few reports suggest that results after DMEK as a procedure to treat graft failure after DSEK were as good as in patients that underwent DMEK.<sup>[4]</sup> Goh *et al.* reported a similar case of repeat DSEK done on a failed DSEK without removing it.<sup>[5]</sup>

In our case, we treated the failed DSEK graft with a DMEK graft without removing it, and postoperatively the graft attached well with clearing of corneal edema and DSEK graft edema.

To our knowledge, this case is unique that a DMEK on a retained DSEK was performed without removing the failed DSEK. Here, we demonstrate a case where the above was performed with a successful visual and overall outcome indicating that this option can be clinically considered.

### 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.

### Financial support and sponsorship

Nil.

### Conflicts of interest

There are no conflicts of interest.

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