

Commentary: Early changes in host and donor lenticule thickness after Descemet stripping endothelial keratoplasty

We read with great interest the article titled "Early Changes in Host and Donor Lenticule Thickness After Descemet's Stripping Endothelial Keratoplasty (DSEK)."^[1] In recent past, there has been a lot of discussion on factors determining the postoperative outcome in cases undergoing DSEK. Among

other factors, the preoperative host corneal thickness and donor lenticule thickness have been most debated and evaluated in detail by various researchers.^[2,3] The results of few studies suggest better visual outcome with thinner donor graft lenticule.^[4,5] This led to the concept of ultrathin DSEK, which is now being preferred by many surgeons over routine DSEK.

The authors in the current study evaluated the progressive changes in host and donor lenticule thickness and BCVA over 3 months of follow-up after DSEK. The results suggested stabilization of the corneal thickness 1 month after surgery with a progressive improvement in BCVA. A subgroup comparison between thick and thin host bed and donor

lenticule was done, and results suggested early stabilization of thinner host bed and donor lenticule. However, no correlation was observed between BCVA and central donor lenticule thickness in this study. Although the study has several lacunas such as heterogeneity of cases, multiple surgeons, and an arbitrary cut-off to differentiate between thin and thick graft, it reiterates the common belief by many corneal surgeons that is a thinner cornea stabilizes earlier compared to a thick cornea.

In the current study, the authors could not find any significant correlation between visual acuity and host and lenticule thickness, similar to those reported by many. However, in our experience, the donor lenticule thickness does have an impact on final visual acuity. In a few of our previously published series on thin lenticule DSAEK, although we did not correlate the graft thickness with final visual acuity, we could observe a clear trend toward a better visual acuity as the thickness of the graft decreases.^[6] In particular, the difference was apparent in cases with a very thick graft (>200 microns). Cases with very thick graft usually take a longer time for visual acuity stabilization. This could be related to several factors such as increased aberration associated with a thicker graft and a longer time taken by the donor endothelium to clear out the edema. Moreover, DSAEK is a tissue additive procedure, and the impact of a thick graft on the aqueous current and the nutrition or metabolic function of the donor endothelium exposed to an alien microenvironment has not been explored yet. It is known that DSAEK lenticule leads to a hyperopic shift, and the shape of the graft has been proposed to be a factor for the refractive shift. The simple rule of optics suggests that the power of a lens increases as its thickness increases. Thus, it is expected that a thicker graft would lead to a greater refractive shift and hence a delayed stabilization of the visual acuity. However, we must clarify here that we have not specifically investigated these observations and these concepts are derived from the basic principles of optics only.

Lastly, in lamellar keratoplasty, it is known that the thickness of the residual host bed does affect the quality of vision. Ardjomand *et al.*^[7] found that the contrast sensitivity and final visual acuity decrease significantly if the residual stromal thickness goes beyond 80 microns. It is difficult to believe that the same principle would not be working in cases of DSAEK. In addition, the early rehabilitation of visual acuity and a higher proportion of cases achieving 20/20 vision following DMEK in comparison to DSAEK further emphasizes the impact of stromal thickness on visual outcome.^[8] The only difference between a DMEK and DSAEK graft is the stromal component. When the lack of stroma tissue has such a huge impact on visual outcome, the impact of stromal thickness on visual outcome following DSEAK cannot be ignored.

Thus, we believe that the thickness of the graft does have an impact on the visual outcome following DSAEK. The final visual acuity achieved after a long follow-up may not be affected by the donor thickness but the immediate visual acuity, the speed of visual recovery, and the complete spectrum of visual function, including higher-order aberration, glare, and contrast, are definitely affected by the donor thickness.

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Access this article online	
Quick Response Code:	Website: www.ijo.in
	DOI: 10.4103/ijo.IJO_2707_21

Cite this article as: Maharana PK, Sahay P. Commentary: Early changes in host and donor lenticule thickness after Descemet stripping endothelial keratoplasty. *Indian J Ophthalmol* 2022;70:354-5.