

## LETTERS TO THE EDITOR

## Ultrathin Grafts for DSAEK With a Single Microkeratome Pass

### To the Editor:

We read with interest the article by Choulakian et al<sup>1</sup> regarding the predictability and reproducibility of stromal bed thickness using a single-pass ML7 Microkeratome Donor Cornea system (Medlogics Inc, Athens, TX) to achieve ultrathin pre-cut Descemet stripping automated endothelial keratoplasty (DSAEK) donor tissue. The authors have highlighted the advantages of a single-pass technique, reporting a retrospective analysis of 256 consecutive corneal tissue preparations. They conclude that ultrathin DSAEK grafts can be prepared with a single pass, which can be achieved most reliably when aiming for a graft thickness between 90 and 120  $\mu\text{m}$ . We agree on the efficacy and advantages of single pass to obtain ultrathin DSAEK. The authors mention the use of variable cutting heads and predetermined pressure within the artificial anterior chamber to achieve a targeted donor button thickness. There is, however, no mention or discussion of artificial anterior chamber pressure and the normogram used, which are important parameters in this setting to allow the application of the presented results by clinicians. In our experience, artificial anterior chamber pressure can vary dramatically depending on the chosen settings and plays a crucial role in the preparation of an ultrathin DSAEK graft.<sup>2,3</sup> Additionally, the selection of the right cutting head

is only 1 of 2 established steps when trying to achieve a thin graft: Thinning of the donor cornea to a certain pre-cut target thickness is equally important along with graft size. Various techniques and nomograms have been proposed and used for this purpose.

The authors chose 3 graft thickness groups including a cut-off of  $<91 \mu\text{m}$  for the thinnest targeted stromal bed thickness. The rationale for these 3 specific categories although reasonable, should be specified. As reported in the literature, ultrathin grafts are associated with faster visual recovery and a postoperative visual acuity comparable with Descemet membrane endothelial keratoplasty over time.<sup>4,5</sup> An inverse association between the quantity of transplanted stromal tissue and visual outcome has also been reported in pre-Descemetic deep anterior lamellar keratoplasty.<sup>6-8</sup> In addition, we have observed a decreased rate of intra- and perioperative (unpublished data) complications when using ultrathin large-diameter DSAEK grafts. Graft diameter is an important variable associated with increased graft survival,<sup>3</sup> and the techniques used to produce an ultrathin DSAEK need to ensure that they are also applicable to producing 9.5-mm graft diameters.

**Financial disclosures/conflicts of interest:**  
None reported.

Vito Romano, MD\*  
Bernhard Steger, MD†  
Matthias Brunner, MD\*  
Stephen B. Kaye, MD, FRCS,  
FRCOphth\*‡

\*Department of Corneal and External Eye Diseases, St Paul's Eye Unit, Royal Liverpool University Hospital, Liverpool, United Kingdom  
†Department of Ophthalmology, Medical University of Innsbruck, Innsbruck, Austria  
‡Department of Eye and Vision Science, University of Liverpool, Liverpool, United Kingdom

### REFERENCES

1. Choulakian MY, Li JY, Ramos S, et al. Single-pass microkeratome system for eye bank DSAEK tissue preparation: Is stromal bed thickness predictable and reproducible? *Cornea* 2016;35:95-99.
2. Romano V, Steger B, Chen JY, et al. Reliability of the effect of artificial anterior chamber pressure and corneal drying on corneal graft thickness. *Cornea*. 2015;34:866-869.
3. Romano V, Tey A, Hill NM, et al. Influence of graft size on graft survival following Descemet stripping automated endothelial keratoplasty. *Br J Ophthalmol*. 2015;99:784-788.
4. Busin M, Madi S, Santorum P, et al. Ultrathin Descemet's stripping automated endothelial keratoplasty with the microkeratome double-pass technique: two-year outcomes. *Ophthalmology*. 2013;120:1186-1194.
5. Wacker K, Baratz KH, Maguire LJ, et al. Descemet stripping endothelial keratoplasty for Fuchs' endothelial corneal dystrophy: Five-year results of a prospective study. *Ophthalmology* 2016;123:154-160.
6. Ardjomand N, Hau S, McAlister JC, et al. Quality of vision and graft thickness in deep anterior lamellar and penetrating corneal allografts. *Am J Ophthalmol*. 2007;143:228-235.
7. Bhatt UK, Fares U, Rahman I, et al. Outcomes of deep anterior lamellar keratoplasty following successful and failed 'big bubble'. *Br J Ophthalmol*. 2012;96:564-569.
8. Romano V, Iovieno A, Parente G, et al. Long-term clinical outcomes of deep anterior lamellar keratoplasty in patients with keratoconus. *Am J Ophthalmol*. 2015;159:505-511.