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Commentary

The Ongoing Debate: Descemet Membrane Endothelial Keratoplasty Versus Ultrathin Descemet Stripping Automated Endothelial Keratoplasty

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The success and popularity of Descemet membrane endothelial keratoplasty (DMEK) is related to its rapid speed of visual recovery and excellent visual acuity, as reported in several studies.[1–3] In our clinical practice, the best candidates for DMEK include eyes with normal ocular anatomy and good visual potential. Although trifolded endothelium-in DMEK can also be successfully performed in complicated cases,[1] we prefer ultrathin Descemet stripping automated endothelial keratoplasty (DSAEK) for eyes with poor surgical view, complex ocular anatomy, and lower visual potential, especially when performed by our fellows-in-training.

In this issue, the randomized controlled trial by Dunker et al[2] (see page 1152) compares the 12-month outcomes of DMEK and ultrathin DSAEK. By generating a strong level of evidence, this study offers valuable insight into the debate over these interventions. Moreover, discordance with results from the recent clinical trial by Chamberlain et al[3] presents a unique opportunity to critically assess the current literature.

The investigators have developed a more stringent eligibility criterion that solely includes pseudophakic eyes.[2] Isolating the effect of keratoplasty alone on visual outcomes certainly strengthens the internal validity of this study. Although some may argue that the study population may not truly reflect the heterogeneity of indications for endothelial keratoplasty in routine practice, the defined recruitment protocol allows the detection of differences in treatment effect and provides greater confidence that the observed outcomes are largely attributable to the interventions alone.

Unlike the DETECT study,[3] Dunker et al[2] found no significant differences in visual acuity between DMEK and ultrathin DSAEK as early as 3 months and up to 1 year after surgery. Insofar as proper graft preparation is critical for visual rehabilitation, the difference in their conclusions may also have been influenced by unmeasured confounding factors relating to the preoperative graft status.[2,3] Aside from graft thickness and endothelial cell density, graft regularity is also an important parameter in determining the quality of ultrathin DSAEK grafts.[4] Hence, even with eye bank–prepared tissues, the lack of ascertainment of graft regularity may contribute to the variability in the initial visual outcomes from both studies.[2,3]

It is noteworthy that both studies report markedly similar rates of graft detachment (24% in DMEK vs. 4% in ultrathin DSAEK).[2,3] Considering their absolute differences, the rate of complications after DMEK is appreciably higher than after ultrathin DSAEK. Consequently, the reported lack of evidence of statistical difference in complication rates from the DETECT trial must be cautiously interpreted with respect to actual clinical implications.[3] We look forward to the long-term results of both trials[2,3] and we encourage the Nuijts group[2] to report their findings on the vision-related quality-of-life outcomes and cost-effectiveness analysis.

The authors also raise an important issue on the lack of a standardized method for reporting of endothelial keratoplasty outcomes. As the amount of published data continues to grow, setting minimum standards of reporting through a consensus-based approach could invaluably improve future research and facilitate robust analysis.

Currently, the ability to perform DMEK is widely perceived as the hallmark of superior technical prowess in the field of corneal surgery, thereby unduly driving many novice surgeons to solely perform DMEK. Beyond the analysis of empirical evidence from published data, surgical decision-making must be informed by pragmatic and prudent determination of the right procedure for the right patient by the right surgeon. Ultimately, both DMEK and ultrathin DSAEK represent valuable tools in the surgical armamentarium of any corneal specialist.

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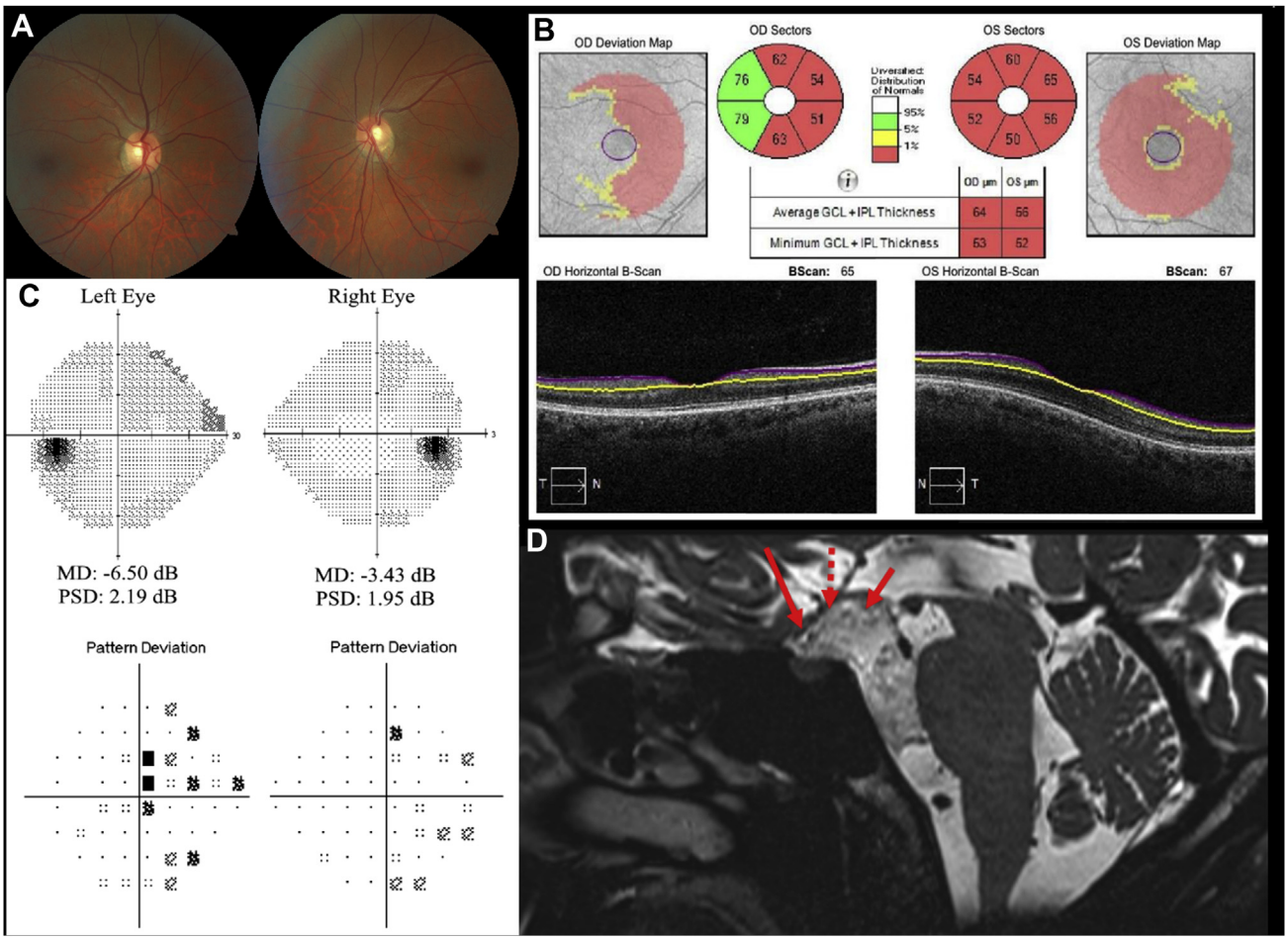
Pictures & Perspectives



Visual Fields and Ganglion Cell Analysis Predict Location of Intracranial Lesion

A 44-year-old woman noticed blurry vision in her left eye. Vision was 20/20 and 20/30 with minimal left relative afferent pupillary defect and minimal pallor of left optic nerve head (Fig **A**). There was an incongruous right homonymous hemianopic defect on visual field testing (Humphrey 24-2 algorithm, Fig **B**). Ganglion cell analysis demonstrated generalized thinning on the left and thinning of nasal retina on the right, consistent with junctional scotoma (Fig **C**). These findings enabled exquisite localization of lesion to left pre-chiasmatic optic nerve and left optic tract. Magnetic resonance imaging demonstrated a lesion compressing these structures, consistent with epidermoid cyst (Fig **D**, sagittal T2/FIESTA demonstrating cystic mass resulting in mass effect on pre-chiasmetic segment of left optic nerve (*long arrow*), optic chiasm (*dashed arrow*) and left optic tract (*short arrow*). (Magnified version of Fig **A**-**D** is available online at www.aaojournal.org).

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