

DSEK inserter can help simplify donor delivery

Instrument does not require viscoelastic, an anterior chamber maintainer or extensive intraocular tissue manipulation.
by Michael W. Belin, MD, FACS

Descemet's stripping endothelial keratoplasty has rivaled full-thickness penetrating keratoplasty for endothelial replacement surgery.

The advantages of DSEK compared with PK are the retention of a more normal corneal topography, substantially less postoperative astigmatism, a more rapid visual and structural rehabilitation, greater corneal integrity and the avoidance of inherent risks associated with an open-sky procedure.

DSEK, however, has been associated with its own unique limitations, which at times have limited its adoption. DSEK is associated with greater initial endothelial cell loss, often attributed to donor folding and compression during insertion and to difficulty in delivering the tissue. The donor tissue, when folded, is often difficult to orient and will at times unfold upside down. Additionally, most inserters are not self-sealing and cause loss of the anterior chamber, necessitating the use of secondary irrigation (eg, anterior chamber maintainer) and intraocular donor tissue manipulation to unfold and orient the donor button.

The new Neusidl Corneal Inserter (NCI, Fischer Surgical) was designed to eliminate most of the limitations associated with other DSEK insertion techniques and instruments.

Features of the instrument

The NCI has a retractable, flexible plastic platform. The surgeon places the unfolded donor tissue directly on the dry platform (Figure 1), and the tissue and platform are then retracted into the barrel of the inserter. The tissue rolls without folding, overlap or compression.

The instrument can be used without any viscoelastics because there is no endothelial touch as the tissue is rolled (without overlap) and not folded.

The distal end of the NCI is oval, allowing easier placement through either a scleral tunnel incision or a clear corneal incision without the wound gaping, as is often seen with round instruments.



1 The donor cornea is placed endothelial side up on the extended platform.



2 The Neusidl Corneal Inserter is then turned over (endothelial side down) and inserted through either a scleral tunnel or clear corneal incision.

Images: Belin MW



3 The irrigation is turned on.



4 As the chamber deepens, the platform is extended and delivers the unrolled donor cornea into the anterior chamber.

The NCI is an irrigating inserter. The combination of surgeon-controllable irrigation and oval design makes for a self-sealing insertion and control of the anterior chamber depth without the need for additional anterior chamber maintainers.

Tissue delivery is accomplished by advancing the donor platform into the anterior chamber by means of a knob sliding on the barrel of the instrument. No additional movement of the device is needed. The tissue unfolds in the eye in the proper orientation because there is no tissue folding or overlap (Figures 2 to 4).

The donor tissue regularly dislodges from the platform just with deepening the chamber or by gently rocking the inserter. The platform is then retracted, and the instrument is removed from the wound.

Summary

The entire DSEK procedure can be performed without the use of viscoelastics, without an anterior chamber maintainer and without extensive intraocular tissue manipulation. Additionally, there are in vitro studies that suggest that rolling donor tissue without tissue overlap is associated with substantially less endothelial cell

damage than either folding or using other "pull through" techniques. In my practice, the NCI inserter has simplified DSEK, has lowered the dislocation rate and appears associated with a more rapid return of visual acuity.

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