

Intraocular Graft Unfolding Techniques in Descemet membrane endothelial keratoplasty (DMEK)

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Purpose

To define and evaluate various Descemet membrane graft unfolding techniques in DMEK

Materials & Methods

Retrospective video analysis of 100 consecutive DMEK cases

Outcome measures:

Best Corrected Visual Acuity (BCVA), Endothelial Cell Density (ECD), Complications ≥ 6 months

Unfolding methods were categorized into four basic techniques (Technique I, II, III, IV)

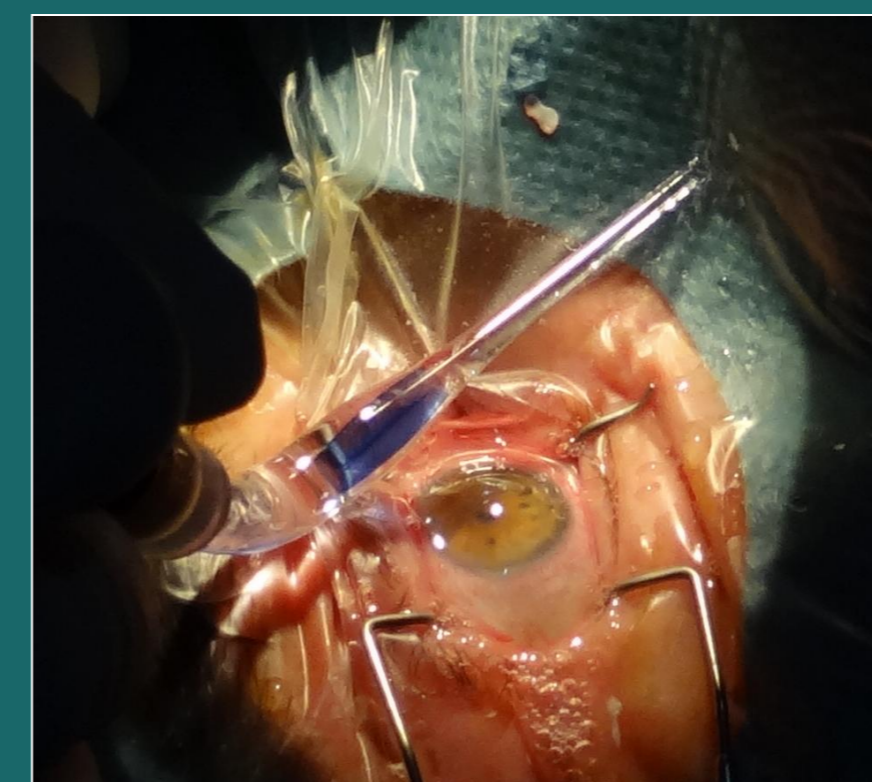
Statistical regression analysis

DMEK steps before graft unfolding

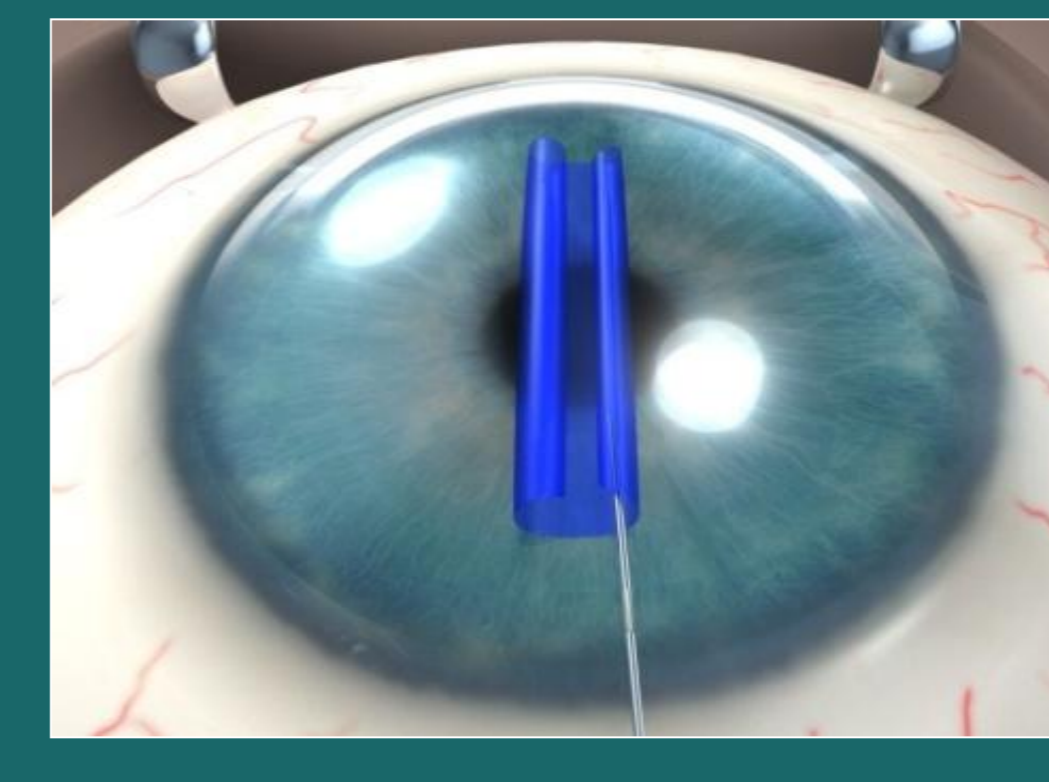
1. Graft **preparation**
2. Graft **implantation**
3. Check graft **orientation**



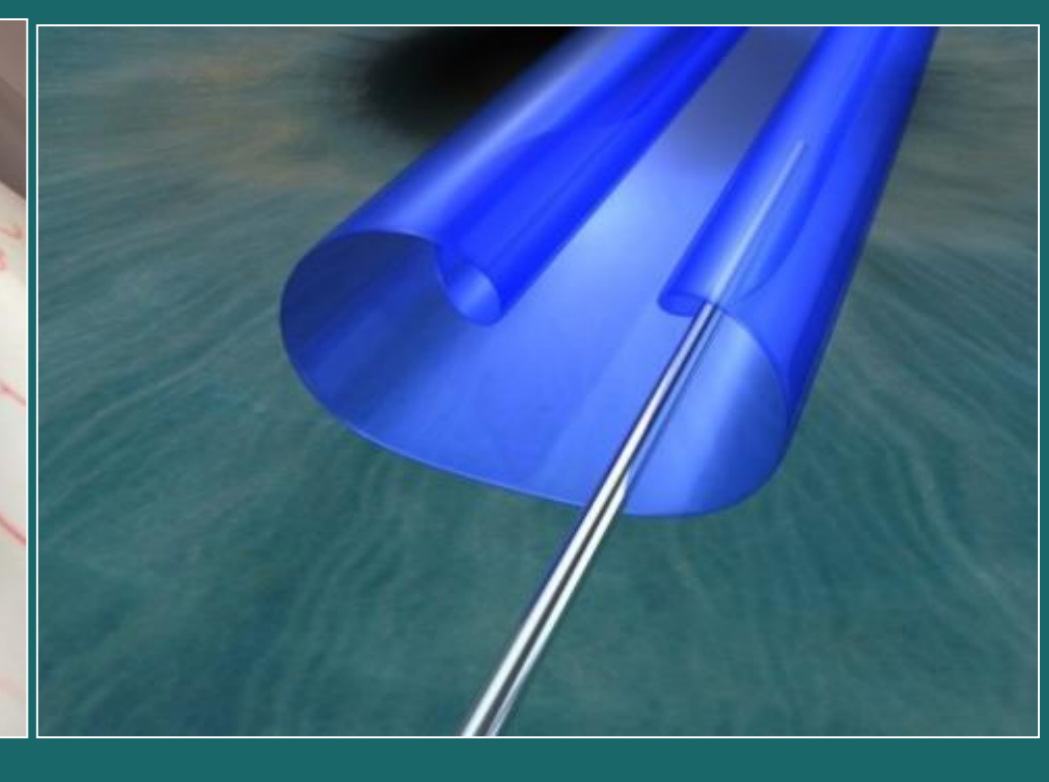
✓ Try to achieve a 'double roll'



✓ Try to inject already correctly oriented



✓ Correct orientation with endothelium on the outside: graft curls are facing up, tip of cannula turns blue



Unfolding Techniques I-IV

'Double roll'

'Single roll' (partly unfolded)

'Roll with average tightness'

'Tight roll'

'Loose roll'

Technique I

Standardized no-touch technique

Technique II

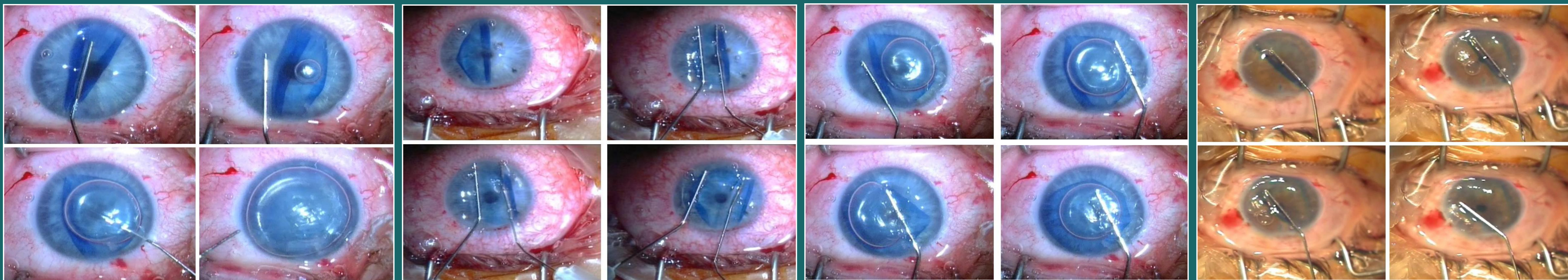
'Dirisamer technique'

Technique III

'Dapena maneuver'

Technique IV

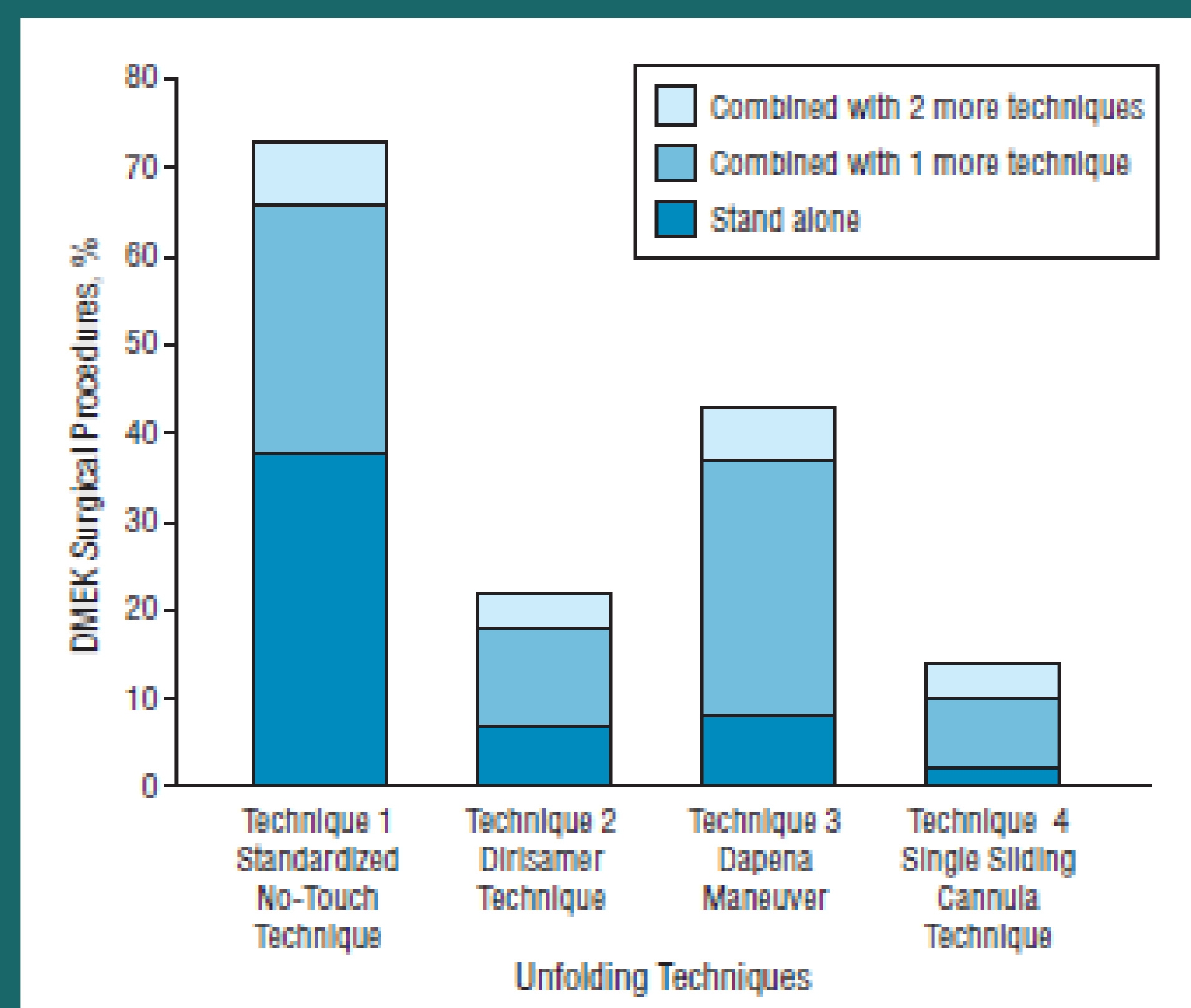
'Single sliding cannula maneuver'



Each technique used either as stand-alone or in combination with one or more techniques

Results

- ✓ Technique I was used in 73% of surgeries either as stand-alone or in combination with one or more techniques
- ✓ Combination of techniques were used in 44%
- ✓ Auxiliary techniques were used in 62%
- ✓ None of techniques I-IV correlated with BCVA, ECD or postoperative complication rate ($P > 0.1$)



Auxiliary techniques

1. Flushing the graft to turn it from 'upside down' orientation
2. Manual centration of the graft with a cannula
3. 'Bubble bumping' to unfold inward folds after graft lifting



Conclusion

- ✓ DMEK may be facilitated by using controlled techniques for unfolding the Descemet membrane graft, either as a **stand-alone technique** or in **various combinations**
- ✓ Choosing the most 'suitable' technique will make DMEK **safer** and **easier**
- ✓ Without compromising the result or affecting the final outcome

Watch the videos on the unfolding techniques here →
or on
www.youtube.com
(keywords: NIIOS, DMEK)

