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Traditional DSAEK procedure

Too thick of tissue will lead to poor pump function

Host (recipient) 550 (range:480-650) µ
Lenticule (donor) + 150 (50-250)
Cornea after traditional DASEK = 700 (530-900) µ

Purpose

To present analysis of clinical characteristics, placement and early postoperative results of the ultra-thin DSAEK grafts prepared with a new single pass microkeratome cut in the eye bank.

Financial Disclosure

None of the authors have any financial interest in any of the techniques or products discussed.
NEW Backlight Microscopy

55 - donor corneas suitable for EK
19-79 yrs - donors age
3137 (aver) - endothelial cells density prior to pre-cut
485µ (aver) - central corneal thickness
5.5 days (aver) - Death to pre-cut

New Back Light Microscopy
Distant or Artificial "Red Reflex"
FOLDS
NEW Back Light Microscopy (Direct)
Endothelial Stress Striae

NEW Back Light Microscopy - Artificial "Red Reflex"
Surgical Scars (cataract surgery)

Materials and Methods
preservation media and stromal thickness

Materials and Methods
ISO 5 Class Sterile Room with Ophthalmic Microscope
Materials and Methods
Corneal Pachymetry
(Pachymeter- MMD AP2000)

Measuring Range:
45µ and up

Materials and Methods
Standard Moria Equipment

- microkeratome with Evolution 3E control unit, reusable artificial chambers, cap cover, heads 110, 250, 300, 350

Single Pass Ultra-Thin Graft Preparation

Stromal resistance increased by raised pressure in the anterior chamber

- Standard pressure up to 90 mmHg
- Our approach: pressure > 90 mmHg up to 10 seconds

Graft Preparation
Cut Slowly – 6 seconds pass
Physiology of the cut

Post Procedure Specular Microscopy

RESULTS

55 donor corneas were prepared using pressurized single pass cut

*No complication (perforations) were observed

78.7µ - Average central stromal thickness (thinnest graft was 50 and thickest 100 microns)

3132/mm² - Average endothelial cell density

9.7 mm - Cap size

Stromal Thickness after-Pre-Cut >100µ (previous research)
Results

54 corneas transplanted

- Column1, 0, 0%
- Column2, 0, 0%
- Abroad-28, 52%
- US-26, 48%

Complications

- Graft Failure - 1
- Interface Haze - 3
- Surgical Difficulties - 3

Conclusion

- Our method for single pass microkeratome ultra-thin graft preparation is a safe technique and can be performed in the eye-banks with no increased risk of perforation.
- Cost efficient - Utilized standard Moria equipment.
- Prepared ultra-thin graft survives long distance international shipping. Foreign patients can also benefit from this advanced procedure.

Thank you !!!