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FLAP THICKNESS REPRODUCIBILITY USING THE MICROKERATOME CARRIAZO PENDULAR-HEAD 130

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Introduction

- High variability in flap creation between different microkeratomes
- Deviation in flap thickness with the same device among different patients

(Solomon et al 2004, Miranda et al 2003, Kezirian et al 2003, Cheng et al 2001, Yildirim et al 2000)

Microkeratome Manufacturing Factors

- Oscillation speed
- Ring type
- Suction power
- Translation speed
- Different head serial number



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Introduction

Individual Factors


- Age, Sex
- Keratometric features
- Spherical equivalent pre-op
- Pachymetry pre-op
- First vs second eye (cut)
- IOP pre-op
- State of corneal hydration pre/intra operatively



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Purpose

- To compare flap thickness measurements after Laser in situ Keratomileusis (LASIK) using Carriazo Pendular Microkeratome - Head 130.


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Material and Methods

- 200 eyes of 106 patients
- Men/Women: 57/49
- Mean age: 30 years

Eyes were comparable for:

- preoperative central corneal thickness
- preoperative spherical equivalent
- preoperative keratometry
- preoperative suction ring used



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Material and Methods

Preoperative examination protocol:

- Visual acuity (UVA and BCVA)
- Slit-lamp examination
- Biomicroscopy
- Topography (Topolyzer Wavelight)
- Pupillometry (Colvard Pupillometer)
- Stereoscopic test
- Tear film break-up time
- Schirmer's test
- Applanation tonometry (Goldmann)
- Ultrasound pachymetry (Optikon pachymeter)

Preoperatively

| Preoperative measurements | Mean ± SD | P value |
|---------------------------------|----------------|---------|
| Central Corneal Thickness (CCT) | 547 ± 29 μm | 0.124 |
| K average | 43.03 ± 1.48 D | 0.794 |
| Spherical equivalent (SE) | -3.25 ± 3.80 D | 0.529 |
| Flap thickness | 119 ± 23 μm | 0.789 |

Results

Mean Flap thickness with different ring sizes

| | CCT | Mean | SD | Range |
|--------------------------------|-----------------------------|------|-----|-----------------|
| Ring 9 n=117 Mean K > 43 | Pre-op CCT (μm) | 555 | ±30 | From 495 to 622 |
| | Corneal flap thickness (μm) | 120 | ±24 | From 70 to 187 |
| Ring 10 n=83 Mean K < 41 | Pre-op CCT (μm) | 542 | ±29 | From 468 to 622 |
| | Corneal flap thickness (μm) | 115 | ±21 | From 65 to 166 |

Results

- Strong correlation between flap thickness and central corneal thickness
- r=0.246

Results

- Ring 10: correlation to the CCT r=0.107
- while
- Ring 9: correlation to the CCT r=0.304

Results

Low correlation between:

- flap thickness and SE r= -0.024
- flap thickness and K-readings r=0.066

Conclusions

- Very good reproducibility
- Flap thickness influenced by the ring size used and the central corneal thickness
- No such effect was found for the spherical equivalent and K-readings
- Customized treatments



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Thank you!



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