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MD, PhD

Contoura™ Vision Correction

Fernando Faria Correia, MD, PhD

Financial Disclosures: Alcon/Wavelight

Cairo (Egypt) – 26/01/2018

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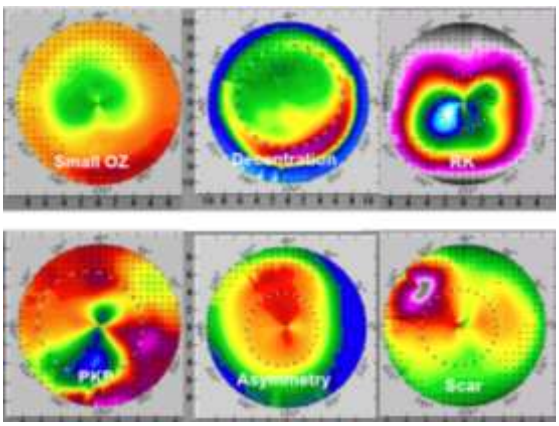
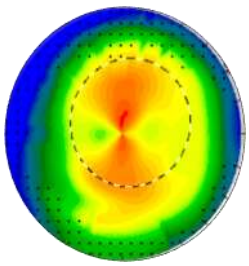
Topography-guided ablations

Topography guided ablations – Evolution from complicated eyes to primary eyes



Irregular Cornea



Regular Cornea

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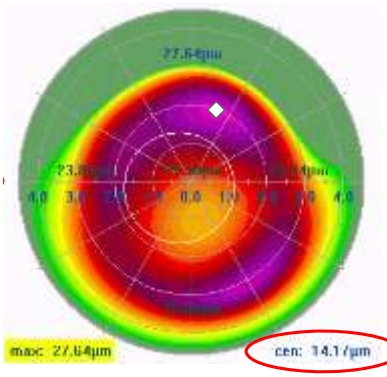
Don't forget!

High Order Aberration (HOA) Ablation Profile

Analyze the ablation profile and predict the spherical component induced by the HOA ablation:

1. Peripheral Ablations: hyperopic-like - induction of myopia

2. Central Ablations : myopic-like – induction of hyperopia



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Contoura FDA Trial

- Topography guided profile for primary ablations (-14.00 to +6,0 D, Astigmatism up to 6.0 D)
- FDA Results – the best ever for a LASIK treatment
- Results Overview

  - 30,9% gain 1 line BSCVA
  - 10,4 % gain 2 lines BSCVA

  - 34,4% achieve 20/12.5
  - 64,8 % achieve 20/16
  - 92,6% achieve 20/20

Improvement of symptoms related to Lasik surgery: light sensitivity, night driving, reading ability, glare

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ARTICLE

Results of topography-guided laser in situ keratomileusis custom ablation treatment with a refractive excimer laser

R. Doyle Stulting, MD, PhD, Barbara S. Fant, PharmD, the T-CAT Study Group

J Cataract Refract Surg 2016; 42:11–18

249 eyes
SE = -4,61 ± 2,63 D

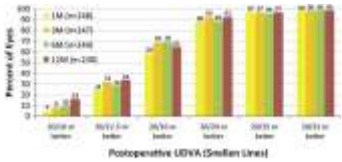

Figure 2. Cumulative postoperative UDVA (UDVA = uncorrected distance visual acuity).

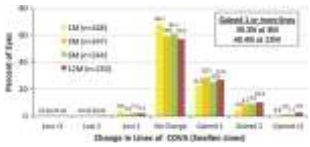

Figure 4. Postoperative CDVA compared with preoperative CDVA (change in Snellen lines) (CDVA = corrected distance visual acuity).

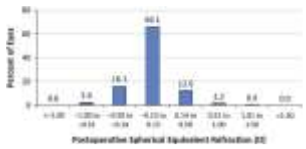

Figure 6. Accuracy of MRSE at 6 months.

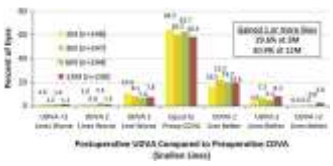

Figure 3. Postoperative UDVA compared with preoperative CDVA (change in Snellen lines) (CDVA = corrected distance visual acuity; UDVA = uncorrected distance visual acuity).

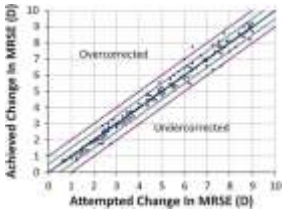

Figure 5. Attempted versus achieved change in MRSE at 6 months (MRSE = manifest refraction spherical equivalent).

Figure 7. Accuracy of cylinder correction at 6 months.

UCVA: 20/12 (30%), 20/16 (65-70%)
1% loss lines CDVA, 30% gain 1 line CDVA
94,8% ± 0,50 D

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Different Approaches for T-CAT

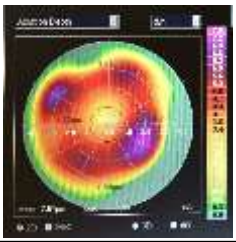
- **FDA Study**
- Topography-modified refraction (**TMR**)
  - Kanellopoulos (2016)
- **Hybrid**
  - Lyra Protocol (2017)

Contoura FDA-Approach

- HOA ablation max < 10 microns
- HOA profile similar to trefoil/quadrifoil correction
  - Be careful with coma

No compensation need

- Topo and Refractive axis coincident



Patient Data

- **Gender**: Male
- **Age**: 51 years
- **Job**: Police Officer
- **Hobby:** Hunter

- "Arrhythmogenic right ventricular dysplasia"
- No history of ocular trauma or surgery

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Patient Data

- **Pre-OP subjective Refraction**:
  - OD: -1.00 -0.50@90º
  - OS: -0.75@90º

"I want to improve my distance vision!"

- **BCVA:**
  - OD: 6/10 (10/10 pinhole)
  - OS: 10/10

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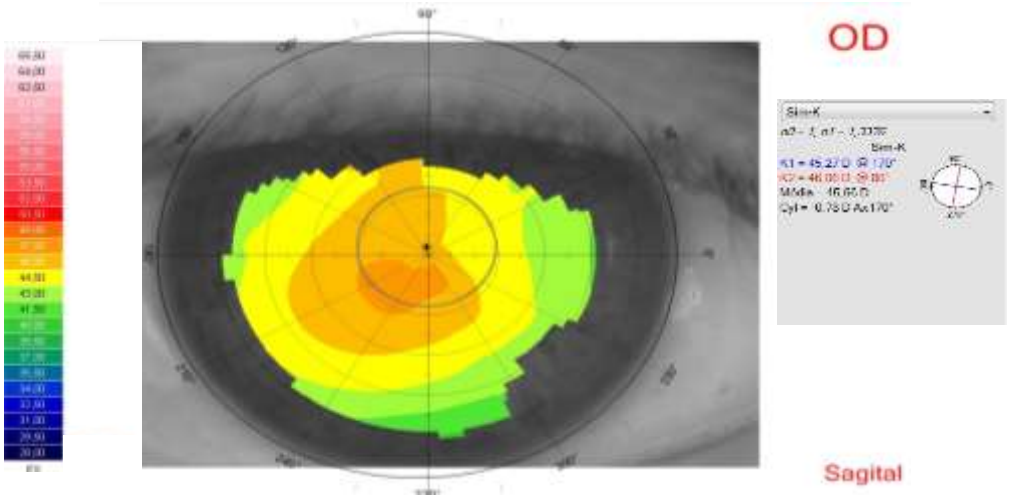
Corneal ToPography



Corneal ToMography

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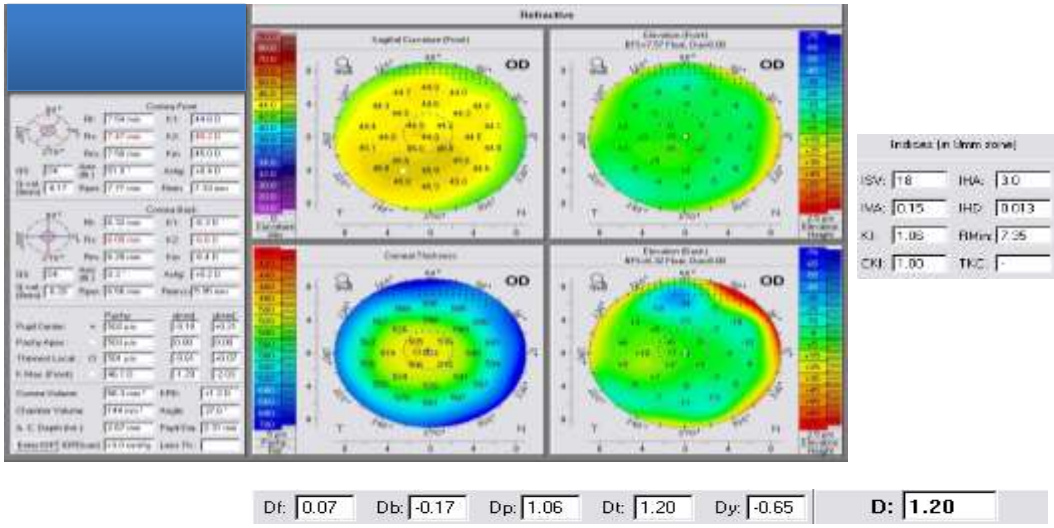

T-CAT ablation

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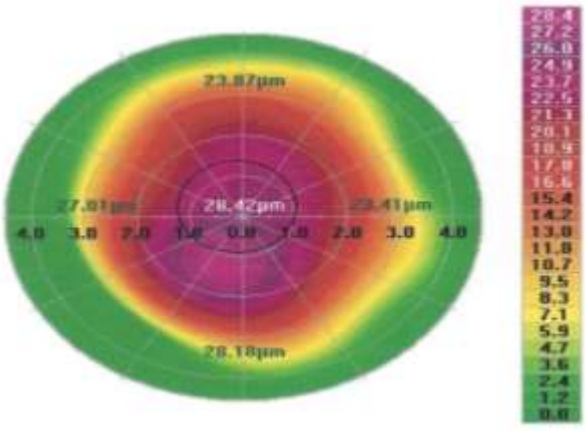
Correction:	***-0.99 D -0.49 D @ 90°***
Clinical:	-1.00 D ^ -0.50 D @ 90°
Topo:	-0.78 D ^ -0.30 D @ 180°
Optical Zone:	***6.50 mm***
Transition Zone:	1.25 mm
Ablation zone :	9.00 mm
Vertex Distance:	12.0 mm
K-reading (K1):	44.73 D @ 49°
K-reading (K2):	45.06 D @ 139°
Measurement:	1 2 3 4 5 6 7 8 Ocu01
Meas. Date:	26-05-2015
Asphericity:	-0.31
R fit:	7.55 mm
Pupil Diameter:	3.00 mm
Maximum Depth:	28.42 µm
Central Depth:	25.82 µm
Corneal Thickness:	505 µm
Device:	
Flap Thickness:	50 µm
Stroma:	426 µm



Laser used: Wavelight EX400

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6M Postoperative Data

- **Post-Op Subjective Refraction**: +0.25 -0.50 @ 180º
- **UCVA:** 10/10
- **BCVA:** 12/10
- **Slit lamp:** unremarkable findings

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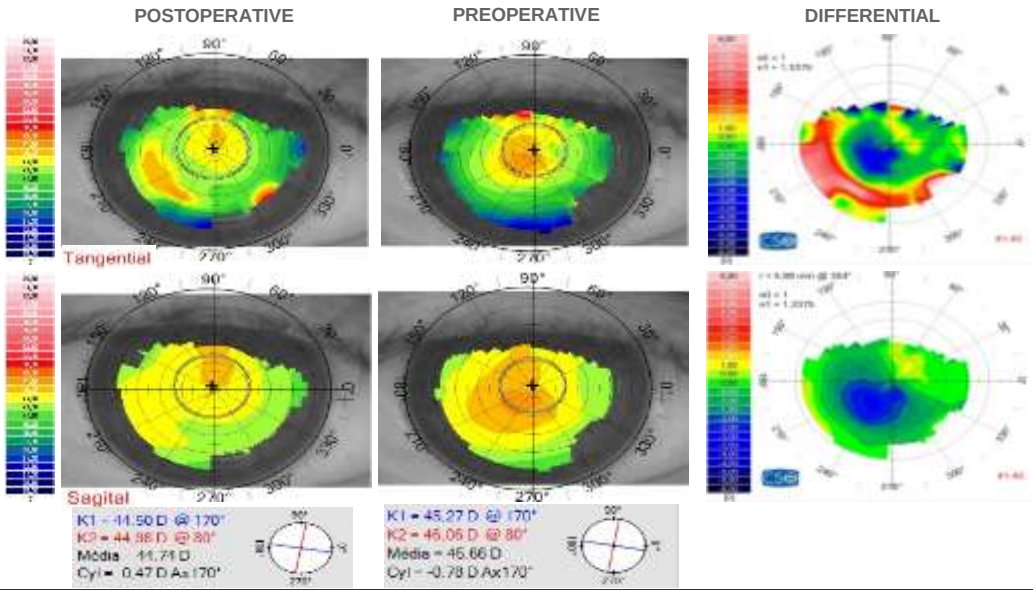
6M Postoperative Data



Contoura LASIK (110-flap)

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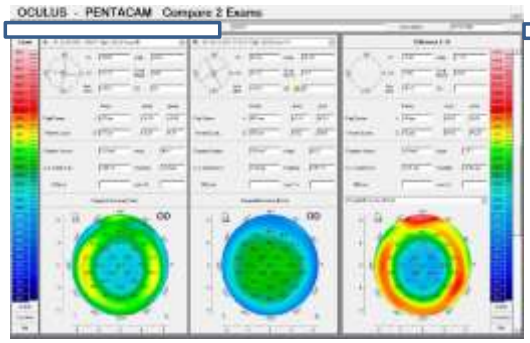
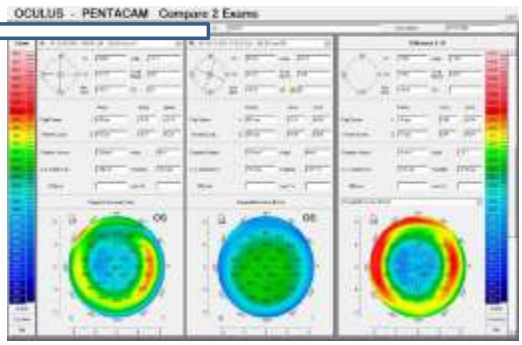


Contoura OD
Preop BCVA
1,0 (-4,25, -1,00 a 90º)
Postop UCVA
OD 13/10 (+0,00)



WFO OE
Preop BCVA
1,0 (-4,75, -1,00 a 90º)
Postop UCVA
OS 12/10 (+0,00)

Contoura LASIK

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22 eyes of 11 patients

Mean age: 34,0 ± 6,15

Sphere Preop: -2,00 ± 2,32 D (+3,00 a -5,25 D)

Astigmatism Preop: -0,50 ± 2,07 D (+ 0,0 a -4,25 D)

Surgical Technique

Femto-Lasik (FS 200, Alcon WaveLight),

Flap 110 um, diameter 9,00 mm

Ablation Laser Excimer EX400 (Alcon WaveLight)

T-CAT Contoura

Contoura LASIK

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N=22	Sphere	Cylinder	Spherical Equivalent
Preop	-2,00 ± 2,32 D (+3,00 a -5,25 D)	-0,50 ± 2,07 D (+ 0,0 a -4,25 D)	-2.75 ± 1.87 D (+0.875 a -5.25)
Postop	+0.00 ± 0.19 D (+0.50 a -0.25 D)	-0.25 ± 0.33 D (+0.00 a -0.50 D)	+0.00 ± -0.18 D (+0.375 a -0.375 D)

6 months

Contoura LASIK

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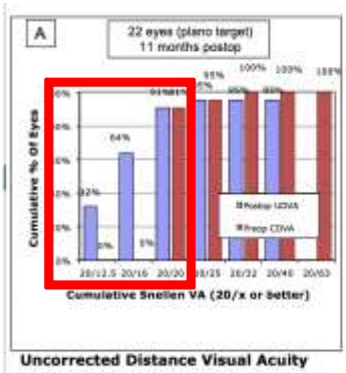
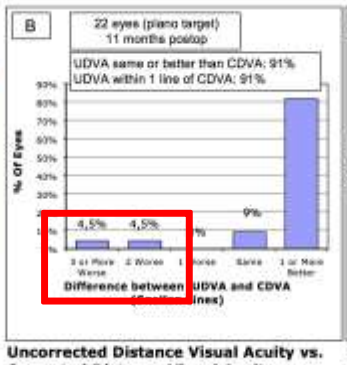
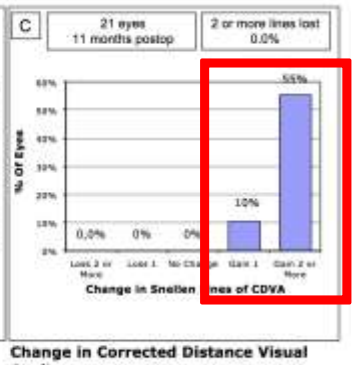


Uncorrected Distance Visual Acuity



Uncorrected Distance Visual Acuity vs. Corrected Distance Visual Acuity



Change in Corrected Distance Visual Acuity

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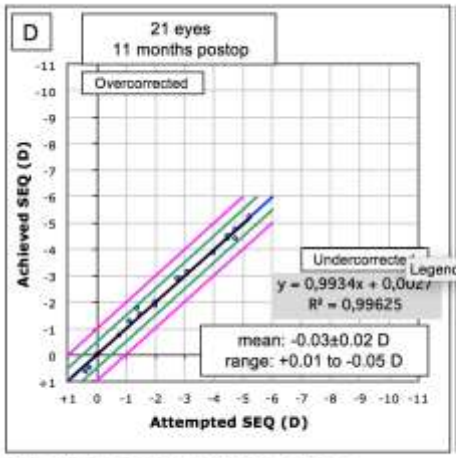
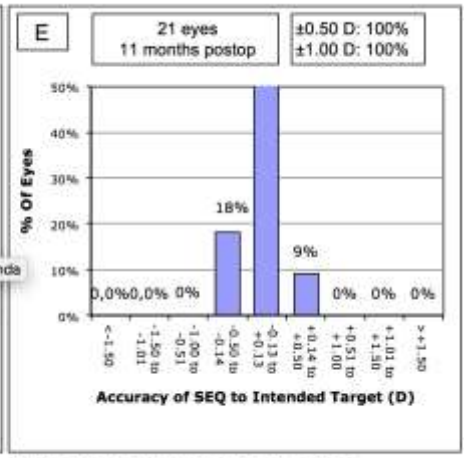


Spherical Equivalent Refraction
Attempted vs Achieved



Spherical Equivalent Refraction
Accuracy

Contoura PRK

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N=40	Sphere	Cylinder	Spherical Equivalent
Preop	-2,32 ± 1,04 D	-0,54 ± 0,44 D	-2.63 ± 0.21 D
Postop	+0.05 ± 0.17 D	-0.01 ± 0.25 D	-0.10 ± -0.33 D

6 months

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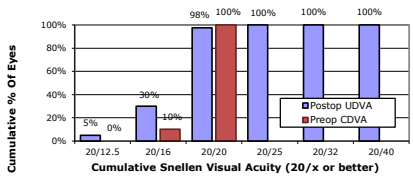
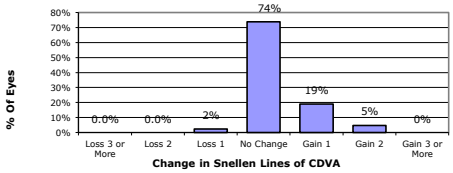
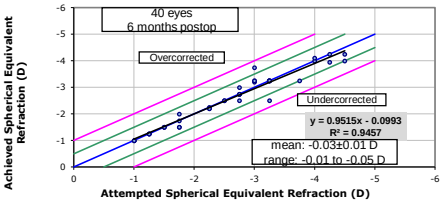


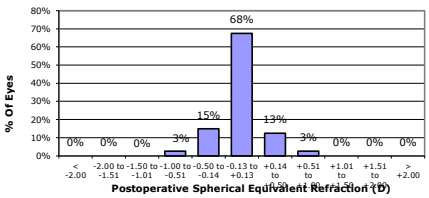
Uncorrected Distance Visual Acuity



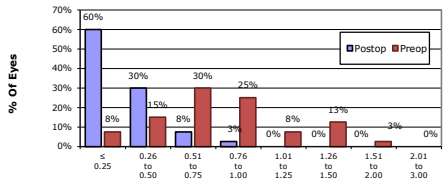
Change in Corrected Distance Visual Acuity



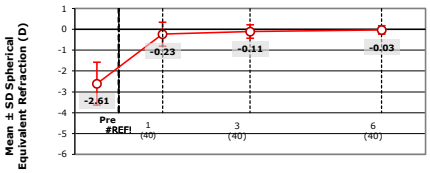
Spherical Equivalent Attempted vs Achieved



Spherical Equivalent Refractive Accuracy



Refractive Astigmatism



Stability of Spherical Equivalent Refraction

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Take-Home Messages

- Topography guided ablation for primary ablations
  - Safe
  - Efficient
- FDA Trial – the best outocomes ever for a LASIK treatment
- Be careful and conscious in patient selection
  - Topography scans quality (tear film)
  - See HOAs profile
  - Remember: there is a WFO profile....

Take-Home Messages

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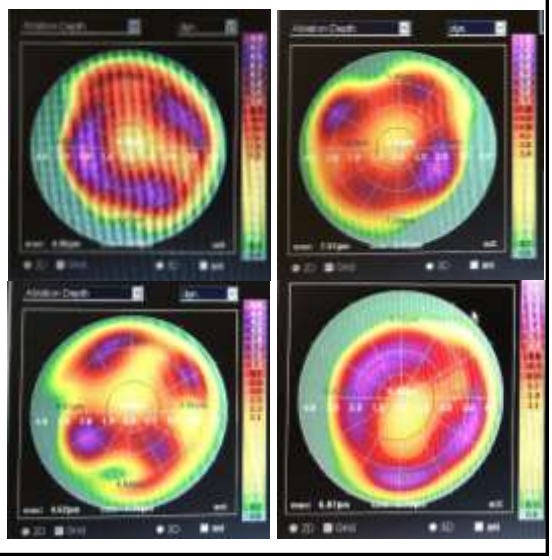
Refractive Adjustment – Sphere

HOA Map: Trefoil / Tetrafoil / Coma pattern

Maximum ablation < 10,0 µm – No refractive adjustment

Maximum ablation > 10-15 µm – Do a Refractive adjustment

Maximum ablation > 16 µm – WFO



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Thank you for your attention

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