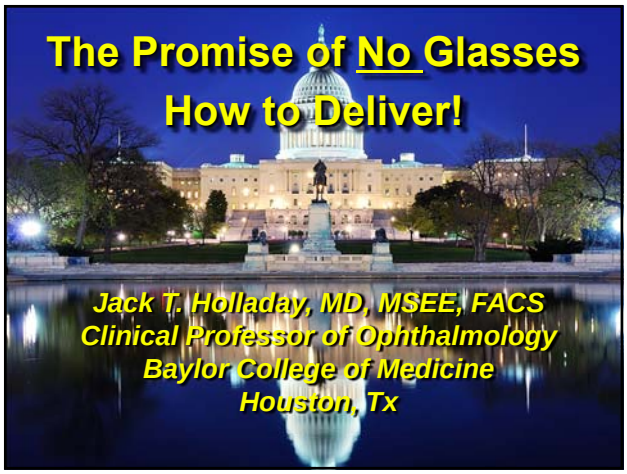

Financial Disclosure

- I have the following financial interests or relationships to disclose:
  - Abbott Medical Optics: C;
  - AcuFocus, Inc.: C,O;
  - Alcon Laboratories, Inc.: C;
  - ArcScan: C,O;
  - Zeiss Inc: C;
  - Elenza: C,O;
  - M & S Technologies: C;
  - Oculus, Inc.: C;
  - Visiometrics: C,O;

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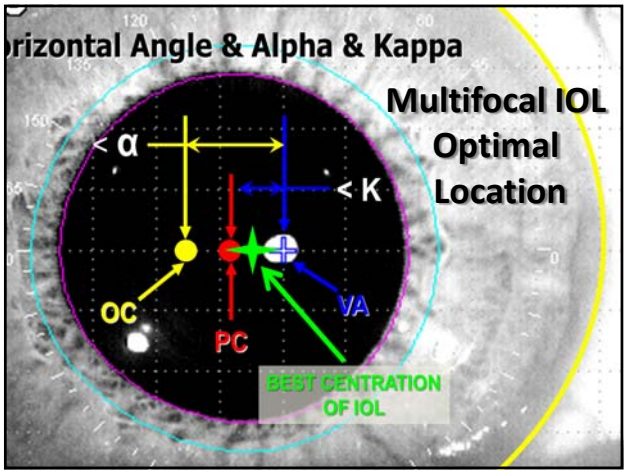
Total BLUR must be < 0.50 D

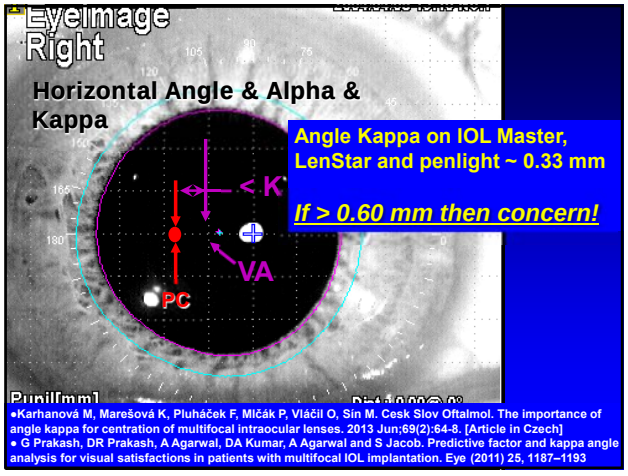
- SEQ + CYL < 0.50 D
- 0.25 + 0.25 = 0.50 D
- 0.50 + 0.00 = 0.50 D
- 0.00 + 0.50 = 0.50 D

3/26/2018 JTH 4

Requirements

1. Centration
2. Accurate Biometry – Optical (IOL Master or LenStar, …)
3. Accurate K's- Repeatable
4. Data Screening
5. 4th Generation Formula (WTW)
6. Personalized Lens Constant
7. Eliminate Corneal Astigmatism





LENSTAR – HAAG-STREIT

White to White	WTW	11.78 mm	±0.083 mm	11.58 mm	±0.054 mm
Iris barycenter	ICX	-0.43 mm	±0.147 mm	0.21 mm	±0.109 mm
	ICY	-0.19 mm	±0.155 mm	-0.22 mm	±0.058 mm
Pupil diameter	PD	3.70 mm	±0.208 mm	3.84 mm	±0.193 mm
Pupil barycenter	PCX	-0.31 mm	±0.032 mm	0.20 mm	±0.029 mm
	PCY	-0.25 mm	±0.039 mm	-0.21 mm	±0.021 mm

Ignore Sign … ADD PCX & PCY MAGNITUDES < 0.6 mm

LENSTAR — EyeSuite™ Biometry, V2.1.1 LS 900, SN 2470, V 2.1.0 — HAAG-STREIT DIAGNOSTICS

IOL MASTER 500 – ZEISS Version ≥ 7.1

Anterior chamber depth values

ACD: 3.13 mm					ACD: 3.24 mm				
3.13 mm	3.13 mm	3.13 mm	3.13 mm	3.13 mm	3.24 mm	3.24 mm	3.26 mm	3.24 mm	3.24 mm

White-to-white values

WTW : 12.3 mm Ix:+0.6mm Iy:+0.4mm	Pup: 3.6 mm Px:+0.4mm Py:+0.2mm	WTW : 12.3 mm Ix:-0.8mm Iy:+0.4mm	Pup: 3.9 mm Px:-0.5mm Py:+0.1mm

Ignore Sign … ADD Px & Py MAGNITUDES < 0.6 mm

Reference image capture

No image	No image

(* = value has been edited, ! = borderline value)

Requirements

1. Centration
2. Accurate Biometry – Optical (IOL Master or LenStar, …)
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3/26/2018 JTH 11

If SD for K's > ± 0.20 D (0.030 mm = 30 µm)

↓

Test for Dry Eye

↓

ToPography/ToMography

3/26/2018 JTH 11

IOL Master

Keratometer values

MV: 40.54/42.35 D	SD: 0.00 mm		MV: 40.69/42.56 D	SD: 0.00 mm	
K1: 40.54 D x 179° K2: 42.35 D x 89° ΔK: -1.81 D x 179°	8.19 mm 7.84 mm		K1: 40.64 D x 178° K2: 42.56 D x 88° ΔK: -1.92 D x 178°	8.17 mm 7.80 mm	
K1: 40.54 D x 179° K2: 42.29 D x 89° ΔK: -1.75 D x 179°	8.19 mm 7.85 mm		K1: 40.69 D x 177° K2: 42.51 D x 87° ΔK: -1.82 D x 177°	8.16 mm 7.81 mm	
K1: 40.54 D x 178° K2: 42.35 D x 88° ΔK: -1.81 D x 178°	8.19 mm 7.84 mm		K1: 40.69 D x 177° K2: 42.56 D x 87° ΔK: -1.87 D x 177°	8.16 mm 7.80 mm	

Anterior chamber depth values

ACD: 3.13 mm					ACD: 3.24 mm				
3.13 mm	3.13 mm	3.13 mm	3.13 mm	3.13 mm	3.24 mm	3.24 mm	3.26 mm	3.24 mm	3.24 mm

White-to-white values

WTW : 12.3 mm Ix:+0.6mm Iy:+0.4mm	Pup: 3.6 mm Px:+0.4mm Py:+0.2mm	WTW : 12.3 mm Ix:-0.8mm Iy:+0.4mm	Pup: 3.9 mm Px:-0.5mm Py:+0.1mm

3/26/2018 JTH 12

OD right — LenStar Analysis

Measured values

AL:	22.30 mm	(SD = 4 µm)
ACD:	2.99 mm	(SD = 5 µm)
LT:	3.96 mm	(SD = 23 µm)

Central corneal thickness

CCT:	542 µm	(SD = 3 µm)

Keratometry values

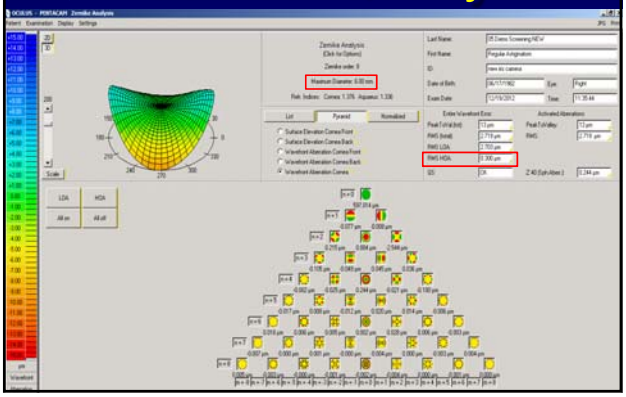
n: 1.3375

R:	7.76 mm	(SD = 6 µm)
R1:	7.83 mm @ 156°	(SD = 13 µm)
R2:	7.69 mm @ 66°	(SD = 3 µm)
Δ D:	-0.75 dpt @ 156°	

White-to-white values

WTW:	11.9 mm	Ix: +0.4 mm	Iy: +0.2 mm
P:	4.7 mm	Px: +0.4 mm	Py: +0.2 mm

Corneal Quality



Corneal Quality

HO RMS CORNEAL wavefront error over a 6 mm zone < **0.50** µm

- Normal = **0.38** ± 0.14 µm
- PO Lasik Happy = **0.58** ± 0.21µm
- PO Lasik Unhappy = **1.31** ± 0.58 µm

McCormick GJ, Porter J, Cox IG, MacRae S. Higher-order aberrations in eyes with irregular corneas after laser refractive surgery. Ophthalmology. 2005 Oct;112(10):1699-709

Requirements

1. Centration
2. Accurate Biometry – Optical (IOL Master or LenStar, …)
3. Accurate K's- Repeatable
4. Data Screening
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6. Personalized Lens Constant
7. Eliminate Corneal Astigmatism

Data Screening *Identifies* Measurement Error - *Repeat*

- Binocular
  - AL difference > 0.3 mm
  - K difference > 1.0 D
  - IOL power difference > 1.0 D
- Monocular
  - AL Signal/Noise (S/N) Ratio < 2.0
  - K Std Dev (σ) > 0.20 D

Requirements

1. Centration
2. Accurate Biometry – Optical (IOL Master or LenStar, …)
3. Accurate K's- Repeatable
4. Data Screening
5. 4th Generation Formula (WTW)
6. Personalized Lens Constant
7. Eliminate Corneal Astigmatism

Measurements taken for Predictors of ELP Holladay 2+NReg*, Olsen 2, Barrett 2

1. Axial Length*
2. Average K (Pre R S)
3. Horizontal WTW
4. ACD
5. LT
6. Pre-op Ref (Adult before Cat)
7. Age

* Use Non-Linear Regression for Long Eyes

3/26/2018 JTH 19

Requirements

1. Centration
2. Accurate Biometry – Optical (IOL Master or LenStar, …)
3. Accurate K's- Repeatable
4. Data Screening
5. 4th Generation Formula (WTW)
6. Personalized Lens Constant
7. Eliminate Corneal Astigmatism

Personalized Lens Constant

- Never use Manufacturer's Constant except to start
- 20 to 40 cases and continue
- Factors
  - IOL Style
  - Lens placement, OVDs
  - Post op medications
  - Biometer, keratometer, …

3/26/2018 JTH 21

Requirements

1. Centration
2. Accurate Biometry – Optical (IOL Master or LenStar, …)
3. Accurate K's- Repeatable
4. Data Screening
5. 4th Generation Formula (WTW)
6. Personalized Lens Constant
7. Eliminate Corneal Astigmatism

Ideal Toric IOL Calcs

- Accurate corneal power and astigmatism … repeat is SD > 0.20 D (0.030 mm = 30 µm)
- Exact Toric Calculator (not a constant ratio of corneal astigmatism to toricity 1.46)
- Proper Surgically Induced Astigmatism (SIA) for incision location and magnitude and axis of PreOp astigmatism … must account for ATR over 3 to 6 months PostOp
- Results will be greater than 80% within 0.50 D of residual astigmatism

3/26/2018 JTH 23

Requirements

1. Centration
2. Accurate Biometry – Optical (IOL Master or LenStar, …)
3. Accurate K's- Repeatable
4. Data Screening
5. 4th Gen Formula (WTW/ACD/LT)
6. Personalized Lens Constant
7. Eliminate Corneal Astigmatism