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BUSINESS of REFRACTIVE CATARACT SURGERY

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Refractive Lens Exchange

William F. Wiley, MD
Medical Director
Cleveland Eye Clinic
Thank you. Vance Thompson, MD

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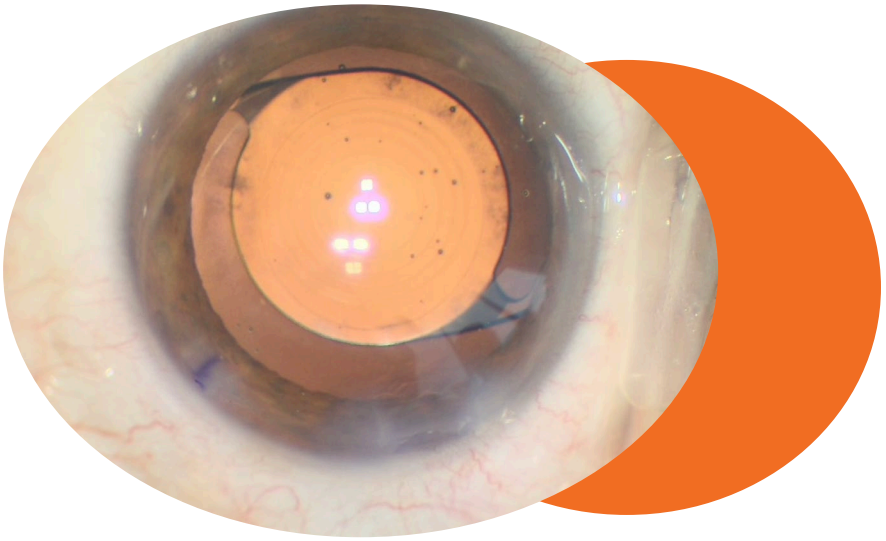

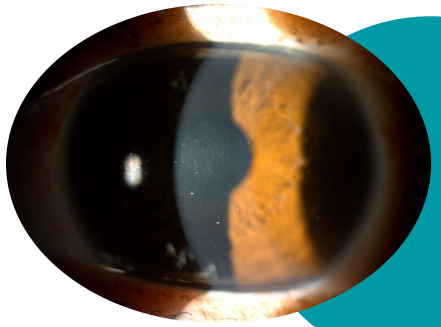

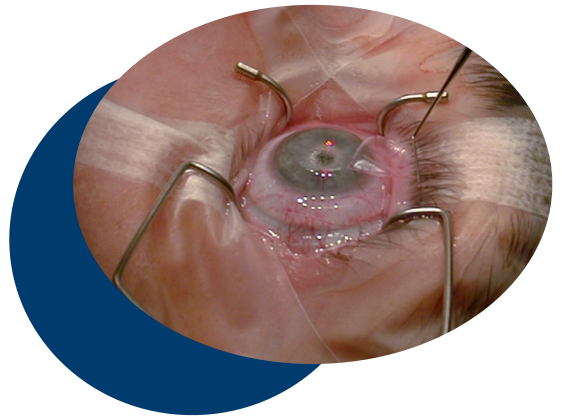

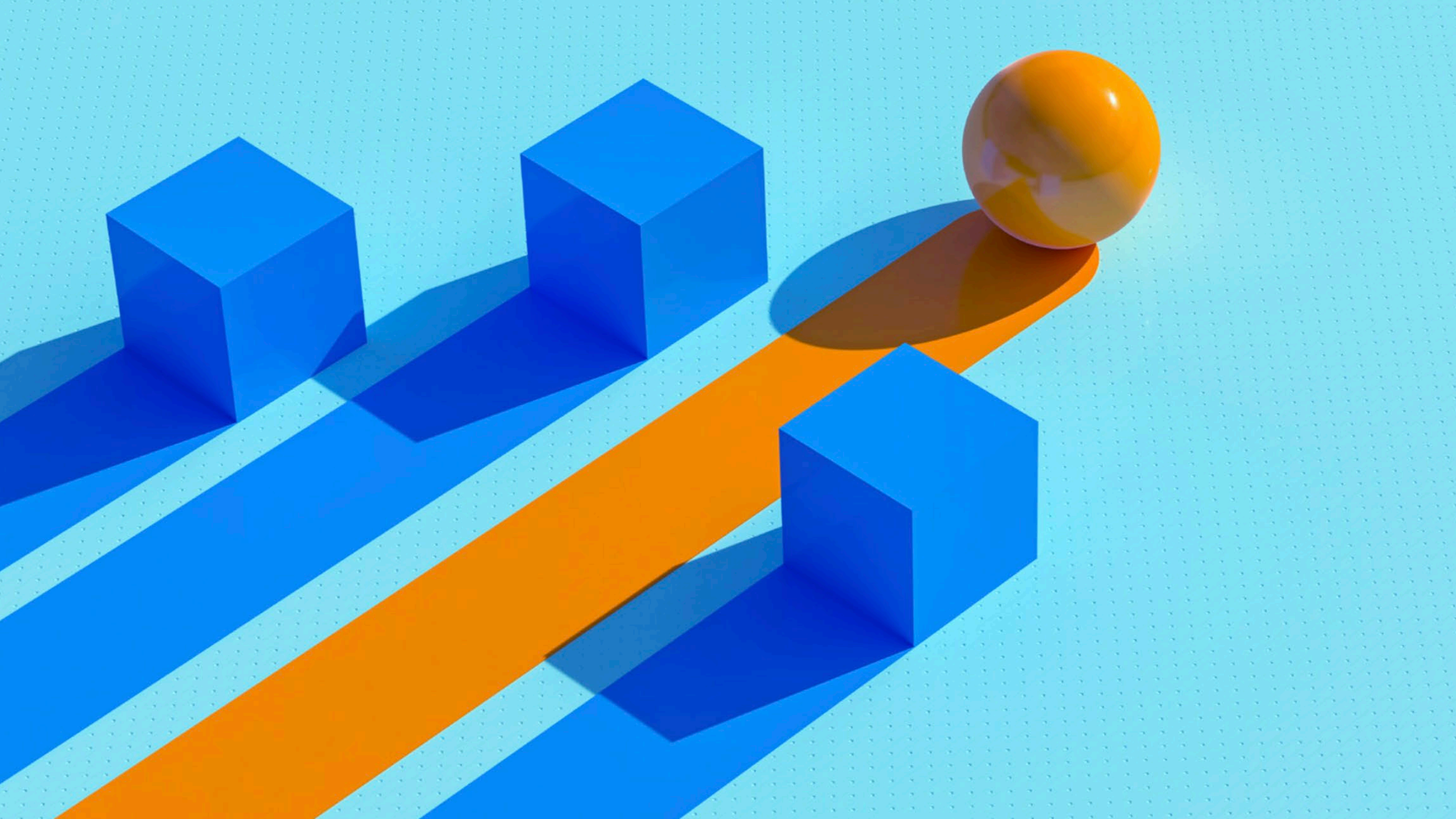

Refractive Lens Exchange is Growing

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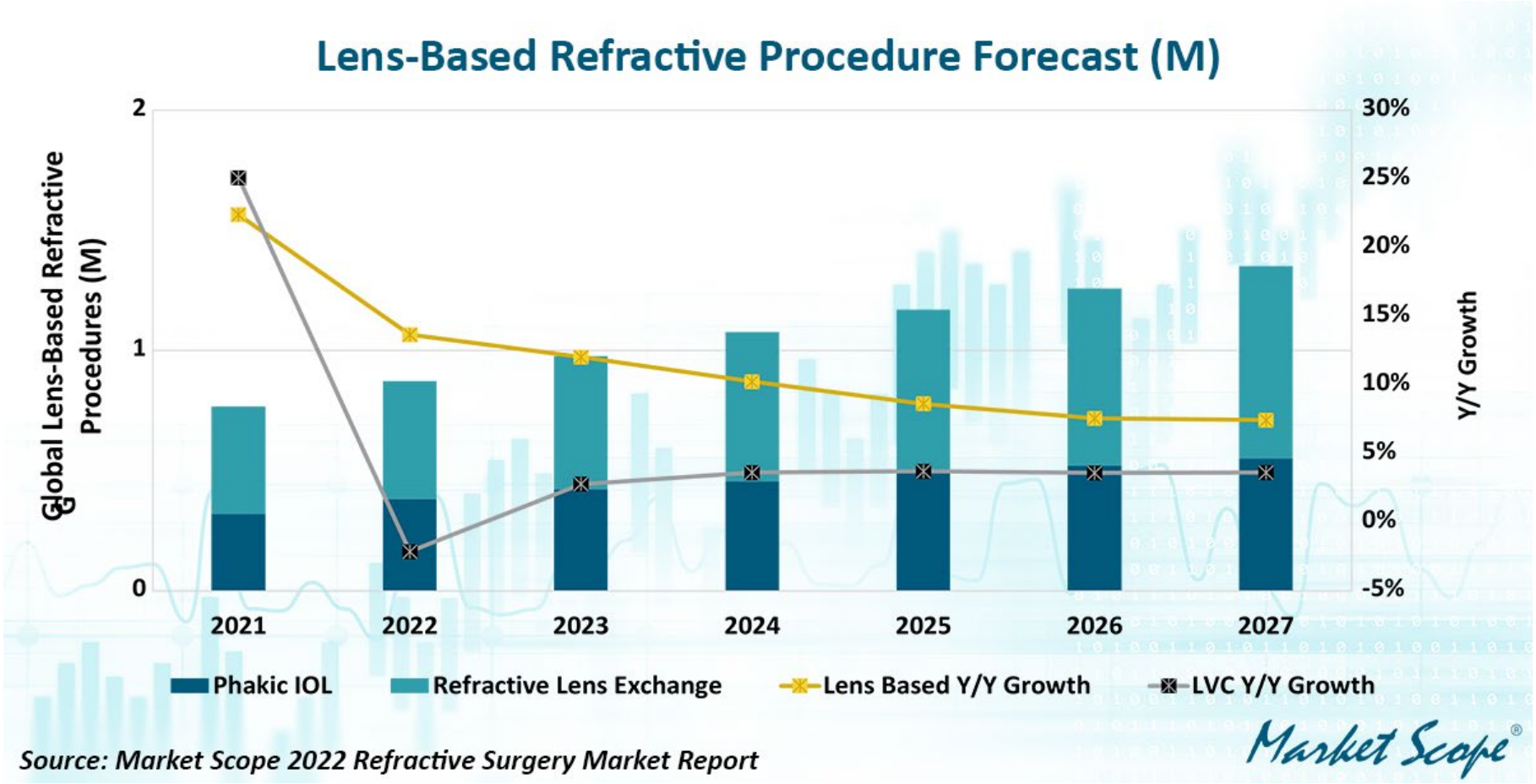
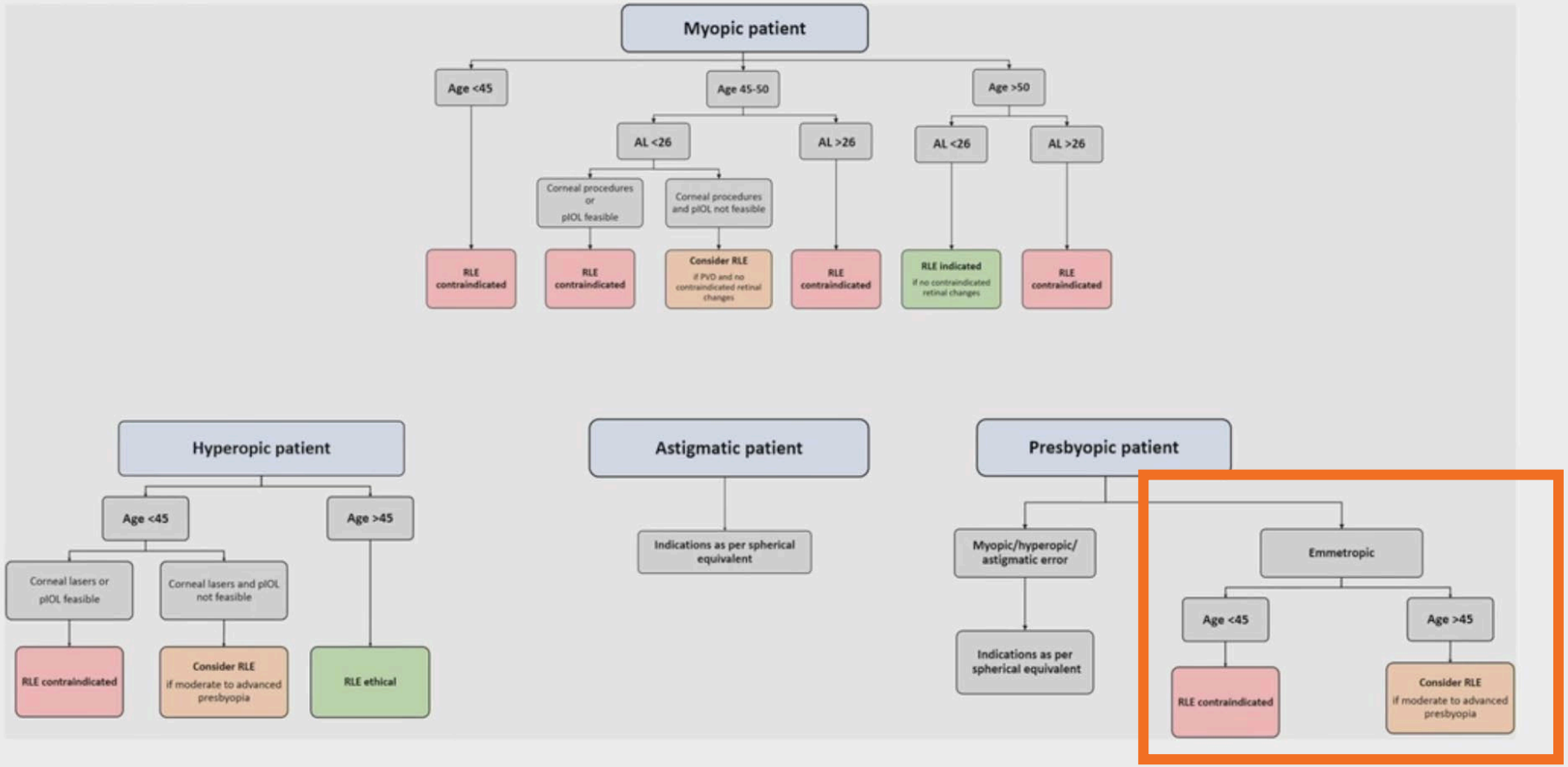


Alio, J. et. al: Proposed algorithm for ethical indications in refractive lens exchange (RLE). AL: axial length; pIOL: phakic intraocular lens; PVD: posterior vitreous detachment.



45 yrs

Alio JL, Pederzolli M, Grzybowski A. Refractive lens exchange: What are the red lines? Eur J Ophthalmol. 2024 Mar;34(2):317-322. doi: 10.1177/11206721231218909. Epub 2023 Dec 7. PMID: 38062638.

Rule of three

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Presbyopic IOL can solve 3 problems:

- **Distance vision**
- **Near vision**
- **Lens opacity**

Rule of three

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70-year-old +3.00 Hyperope with Presbyopia and cataract

- **+ Distance**
- **+ Near**
- **+ Lens opacity**
- **3 = Happy with any IOL**

Rule of three

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50-year-old +3.00, presbyopia and clear lens

- **+ Distance**
- **+ Near**
- **0 Lens opacity**
- **2 = most likely happy**

Rule of three

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45-year-old plano, early presbyopia and clear lens

- **0 Distance**
- **+ Near**
- **0 Lens opacity**
- **1 = Doable, but a more challenging offering**

Why the shift from Laser to Lens?

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- More physiologic
- Modern day lens options
- Recognition as the lens causing other problems-image

Case 1

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- 48 year old attorney presents for vision correction consult
- History of high myopia long-standing RGP wear. Becoming intolerant to contact lenses and can't wear them more than 8 hours. Currently not wearing readers when contacts are in
- BCVA 20/20 OD -11.00 + 3.00 x90. 20/20 OS -12.00 + 3.25 x85
- Corneal topo matches refractive cylinder
- Normal eye exam

Case 2

- 52 year old commercial pilot presents for a refractive evaluation
- Struggles with glasses and can't function without. Wants to get rid of them as much as possible
- BCVA 20/20 OD +2.25 +1.00 x 75. 20/20 OS +2.50 +1.00 x135
- Unremarkable eye exam

Case 3

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- 38 year old hair stylist presents for refractive evaluation
- Pathologic myopia, cannot tolerate contacts , can't function well in glasses. Desperate to fix her eyes. Says OS has never seen well
- BCVA 20/25 OD -15.00 +3.50 x 70 20/50 OS -19.00 + 4.00 x 81
- Slightly irregular corneal cylinder
- Myopic Degeneration OS>OD

Case 4

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- 56 year old cataract surgeon presents for refractive evaluation
- History of successful soft contact lens wear since childhood , now doing monovision. Getting dry eye and less able to wear CLs
- BCVA 20/20 OD -7.00 +.50 x 88 20/20 OS -7.50 + .75 x 100
- Mild dry eye

Case 5

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- 53 year old architect presents for a refractive evaluation
- Has enjoyed great vision without glasses since myopic LASIK in 2003 but now needs OTC readers for work, reading, computer, etc.
- Hates the readers
- UCVA 20/20+ OU . Plano OU
- Normal eye exam

Good

Poor

Unique Needs of Presbyopic Patients

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- Personality
- Goals/Expectations
- Occupation
- How their optical system/ brand is "wired"
- Stage of Lens Dysfunction

3 Stages of Lens Dysfunction

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- **Age**
- **Symptoms**
- **Slit Lamp Exam**
- **Diagnostics**

3 Stages of Lens Dysfunction

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- Age
- Symptoms
- Slit Lamp Exam
- Diagnostics

3 Stages of Lens Dysfunction

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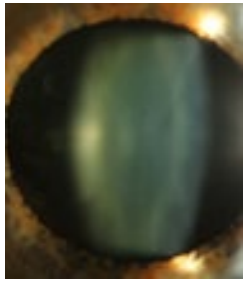
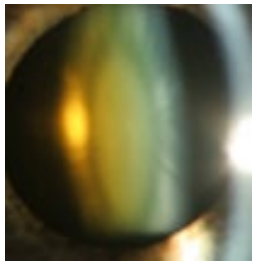
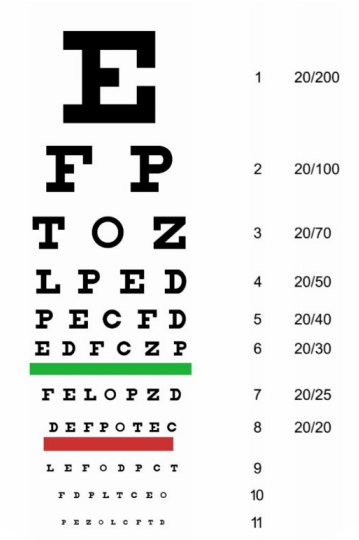
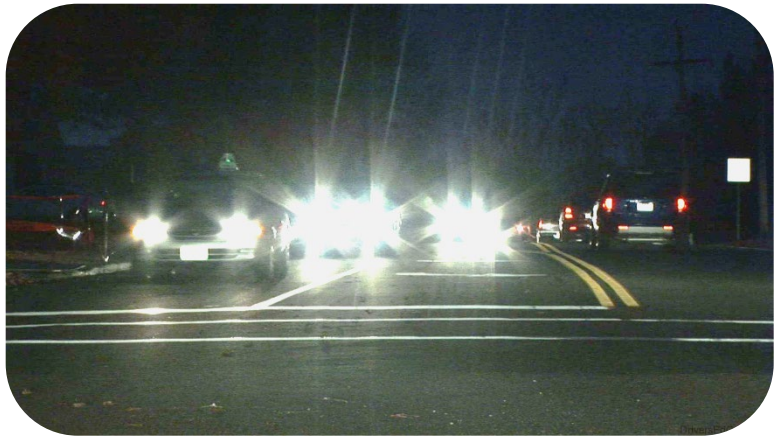
- **Stage 1: Presbyopia**
- **Stage 2: Lens yellowing and haze**
- **Stage 3: Cataract**





3 Stages of Lens Dysfunction



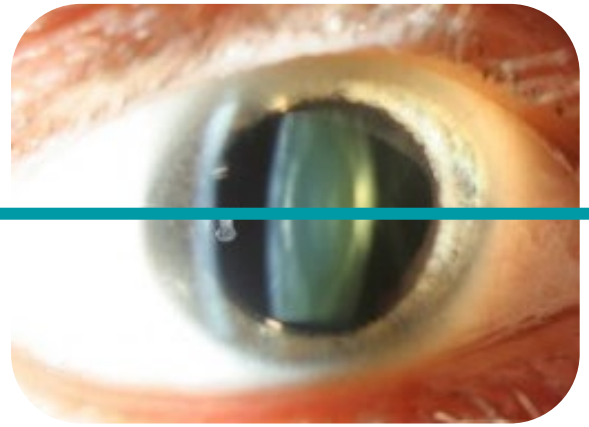


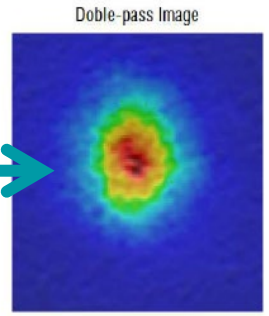
Stage 2: Lens yellowing and haze

Quantify

Quality 20/20
Or
Not Quality 20/20

HD Analyser





OSI: 3.5

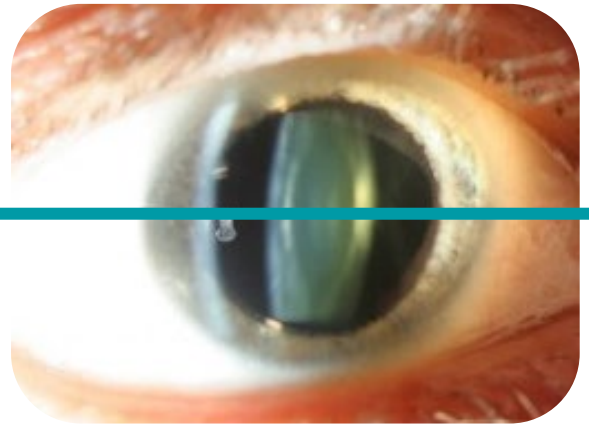
0 1 2 3 4 5 >6

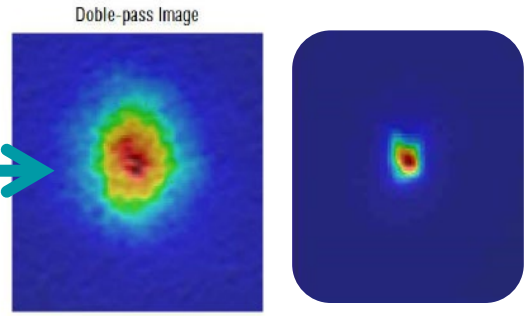
Predicted VA:

Decimal	Snellen
0.4	20/50

OSI (Objective Scatter Index), indicates the degradation of the retinal image.

HD Analyser





OSI: 0.5

OSI: 3.5

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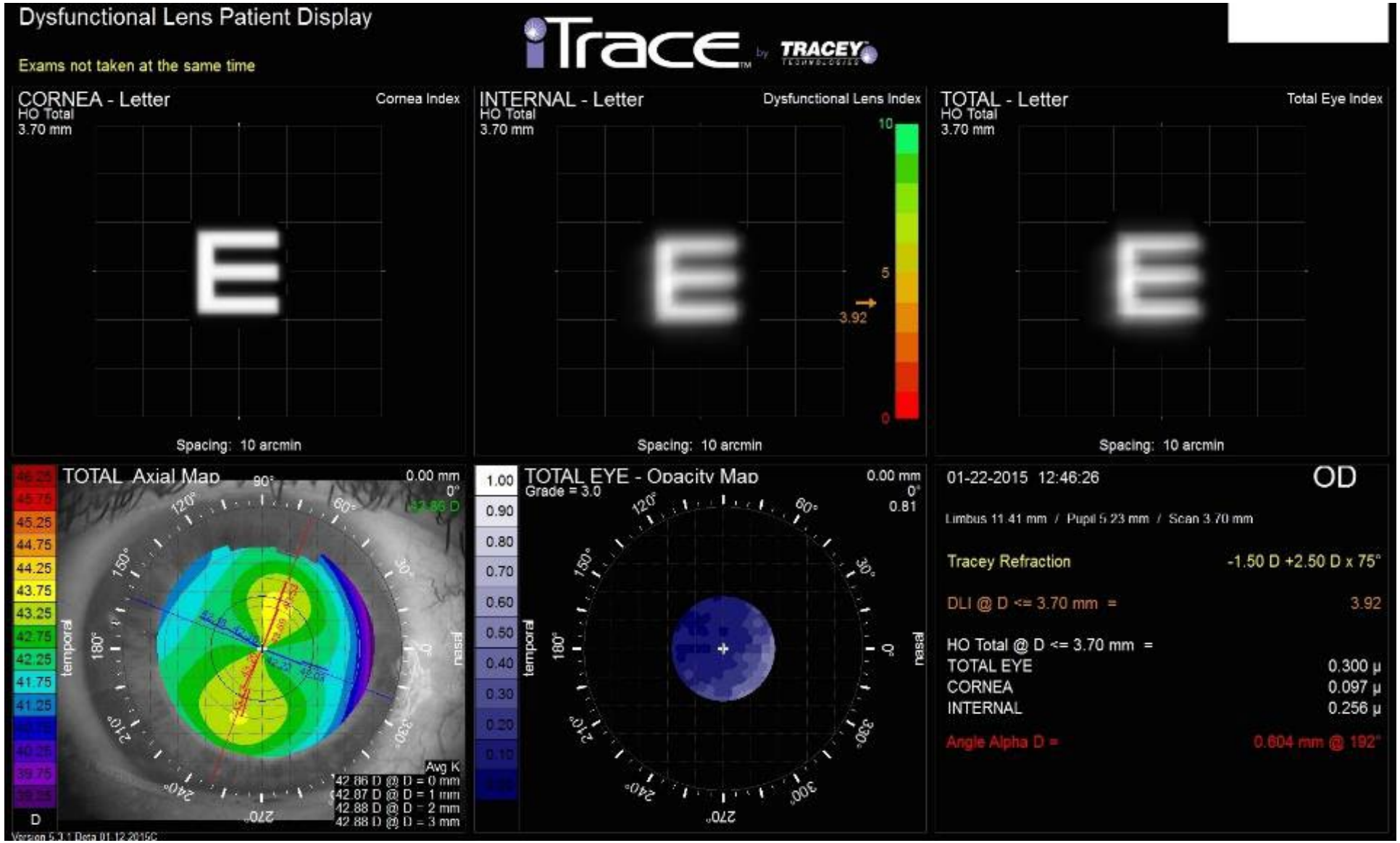
Dysfunctional Lens Patient Display
Exams not taken at the same time
iTrace by TRACEY
CORNEA - Letter
Cornea Index
HO Total
3.70 mm
Spacing: 10 arcmin
INTERNAL - Letter
Dysfunctional Lens Index
HO Total
3.70 mm
10
5
3.92
0
Spacing: 10 arcmin
TOTAL - Letter
Total Eye Index
HO Total
3.70 mm
Spacing: 10 arcmin
TOTAL Axial Map
0.00 mm
0°
42.86 D
temporal
nasal
Avg K
42.86 D @ D = 0 mm
42.87 D @ D = 1 mm
42.88 D @ D = 2 mm
42.88 D @ D = 3 mm
D
TOTAL EYE - Opacity Map
Grade = 3.0
0.00 mm
0°
0.81
1.00
0.90
0.80
0.70
0.60
0.50
0.40
0.30
0.20
0.10
01-22-2015 12:46:26
OD
Limbus 11.41 mm / Pupil 5.23 mm / Scan 3.70 mm
Tracey Refraction
-1.50 D +2.50 D x 75°
DLI @ D <= 3.70 mm =
3.92
HO Total @ D <= 3.70 mm =
TOTAL EYE
0.300 µ
CORNEA
0.097 µ
INTERNAL
0.256 µ
Angle Alpha D =
0.604 mm @ 192°

Lens Density Measurement

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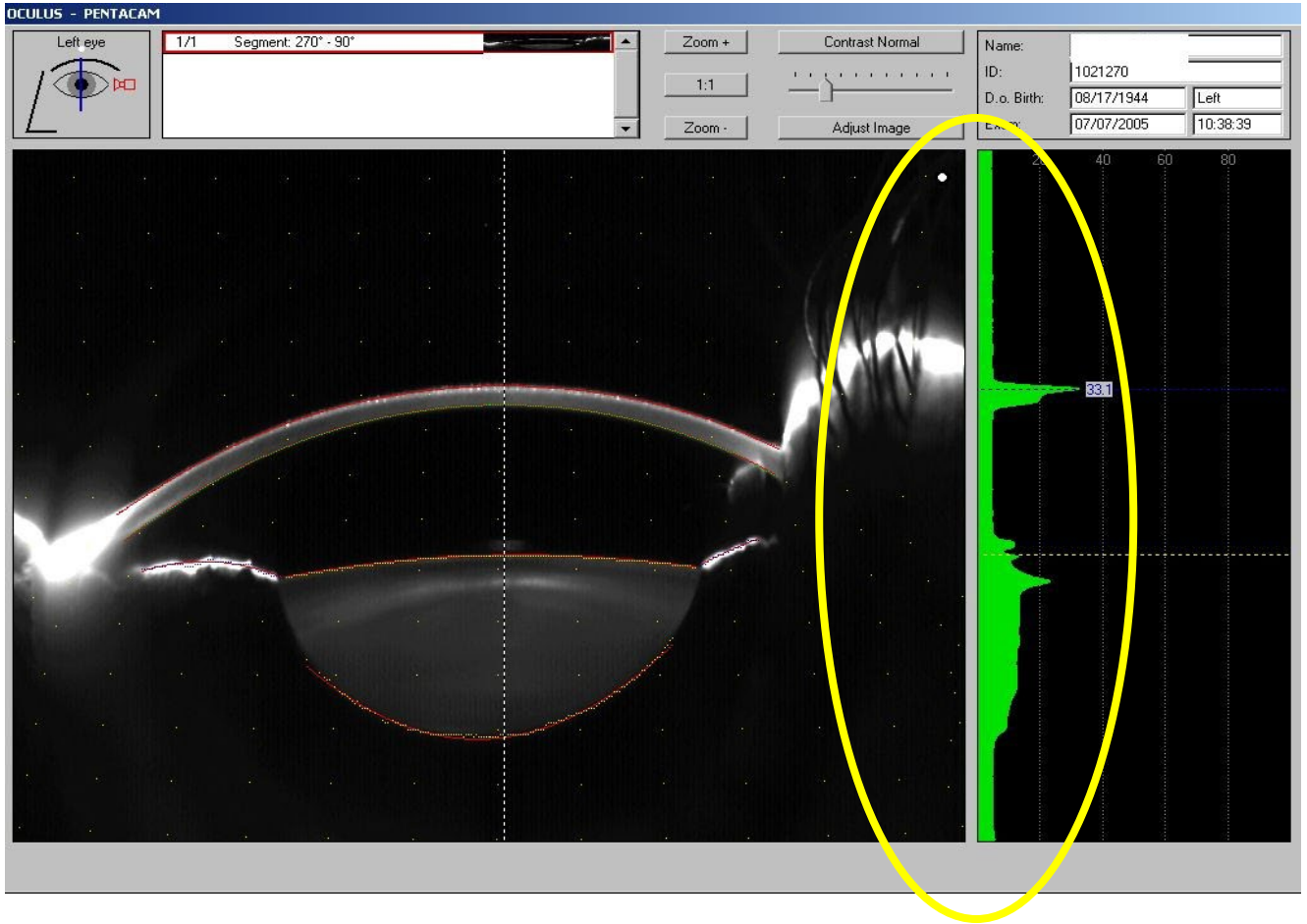

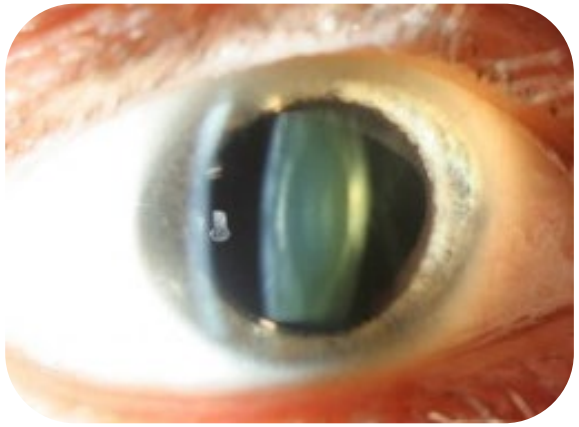

Lens Density Measurement

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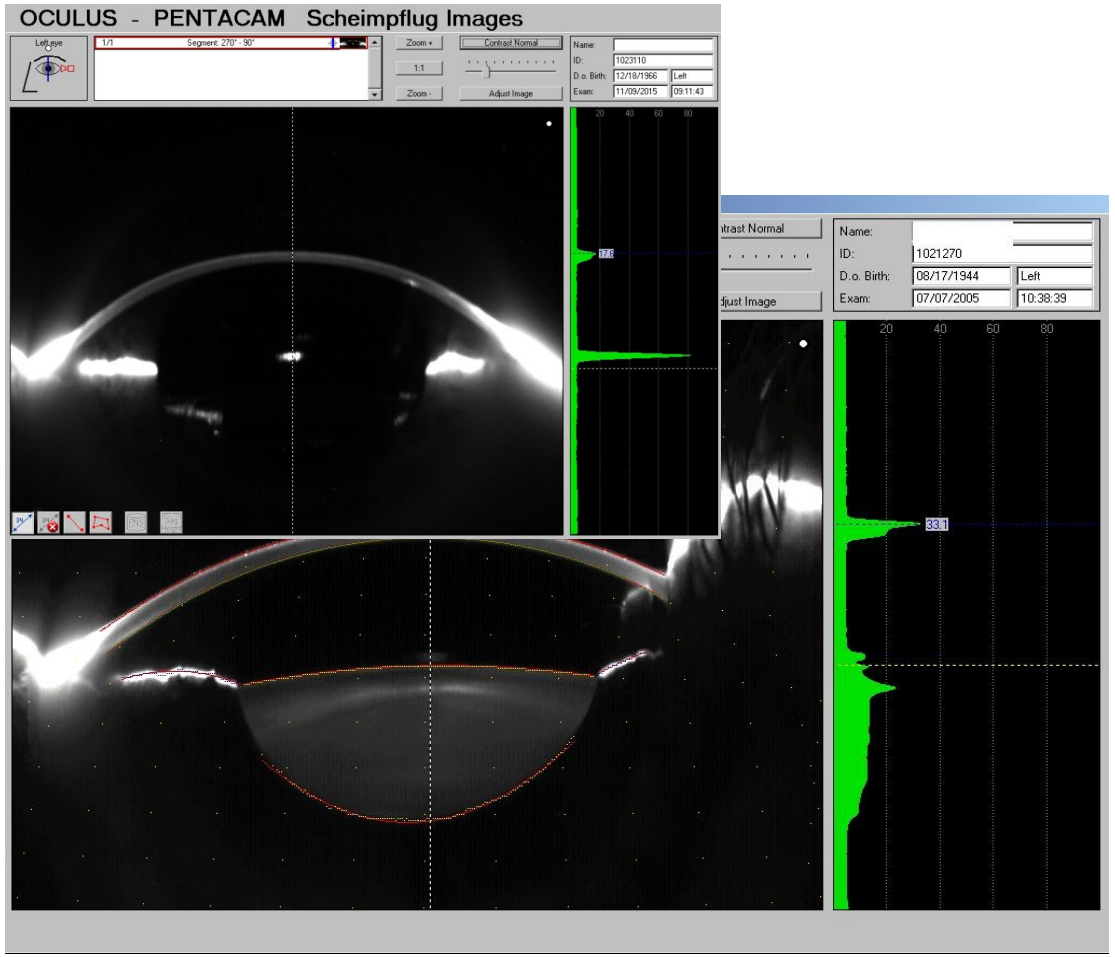

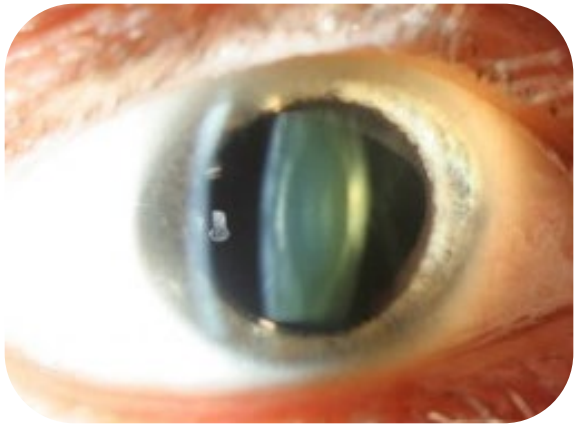

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Refractive Lens Exchange:

What Is the Real Risk of Retinal Detachment?

Lens Density Measurement

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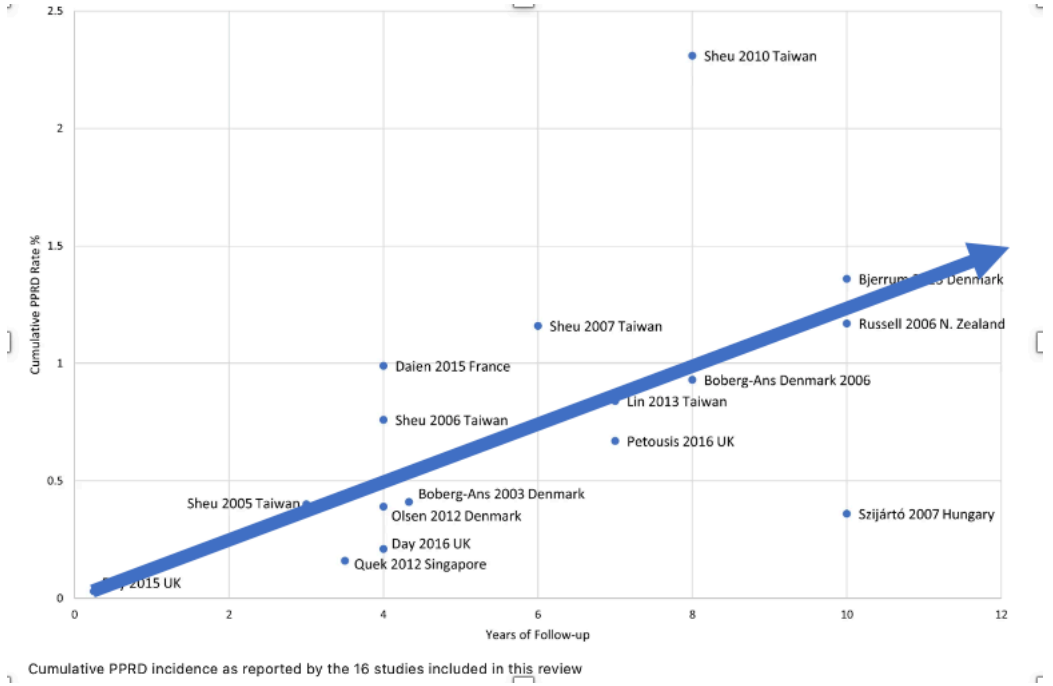
- Post-surgical incidence of RD vary greatly in the literature ranging from **0.2% to 3.6%**
- The 10-year PRD incidence after phacoemulsification was identified as being between 0.36 and 2.9%.
- This decreases over time to 0.1–0.2% annually but remains above the general population.



Javitt JC, Vitale S, Canner JK, Krakauer H, McBean AM, Sommer A. National outcomes of cataract extraction. I. Retinal detachment after inpatient surgery. *Ophthalmology.* 1991;98:895–902.
Javitt JC, Street DA, Tielsch JM, et al. National outcomes of cataract extraction. Retinal detachment and endophthalmitis after outpatient cataract surgery. Cataract Patient Outcomes Research Team. Ophthalmology. 1994;101:100–5.
Clark A, Moriet N, Ng J, Preen D, Semmens J. Risk for retinal detachment after phacoemulsification: a whole-population study of cataract surgery outcomes. Arch Ophthalmol. 2012;130(7):882–8.
Tuft SJ, Minassian D, Sullivan P. Risk factors for retinal detachment after cataract surgery: a case-control study. Ophthalmology. 2006;113:650–6
Tielsch JM, Legro MW, Cassard SD, et al. Risk factors for retinal detachment after cataract surgery: a population-based case-control study. Ophthalmology. 1996;103:1537–45

Considering Refractive Lens Exchange?

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Recommendations:

- **Perform preoperative assessment and consider retina specialist consult**
- **PVD is good**
- **Lattice is not good**
- **Consider prophylactic treatment to retinal lesions that matter**

Presbyopic Emmetrope-Surgical Comparison

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	Corneal Refractive Surgery	Refractive Lens Exchange
Risks	Corneal	Intraocular
Reading	One Eye	Both Eyes
Stereopsis	Reduced	Preserved
Cornea	Steepened	Untouched or low corr.
Cornea epithelium	Variable thickness	Uniform thickness
HOAs	Variable	Precise
Dry Eye	More	Less
Cataract Surg IOL	Less Options	All Current Options
Optical System	Changing	Stable
Correction	Temporary	Permanent

Trifocal/Full Range Lens Experience-Vance

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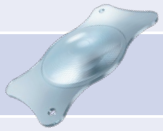
		US FDA Approved
	Alcon: PanOptix and PanOptix Toric	X
	JnJ: Synergy and Synergy Toric	X
	JnJ: Odyssey and Odyssey Toric	X
	Lenstec: ClearView 3	X
	BVI: FINEVISION HP and FINEVISION HP Toric	
	B&L Envista Trifocal and Evista and Triocal Toric	
	Zeiss: AT LISA TRI and AT LISA TRI Toric	
	Rayner: RayOne Trifocal and Trifocal Toric	

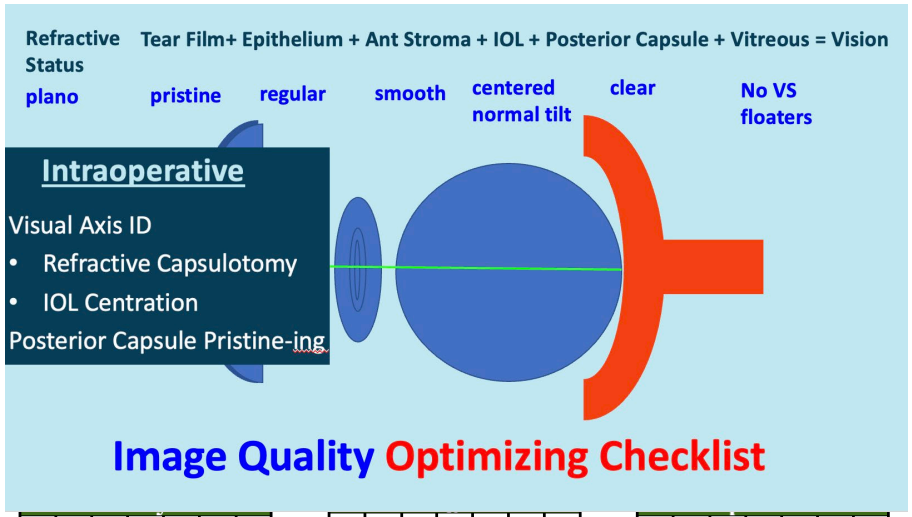
1st
6 months

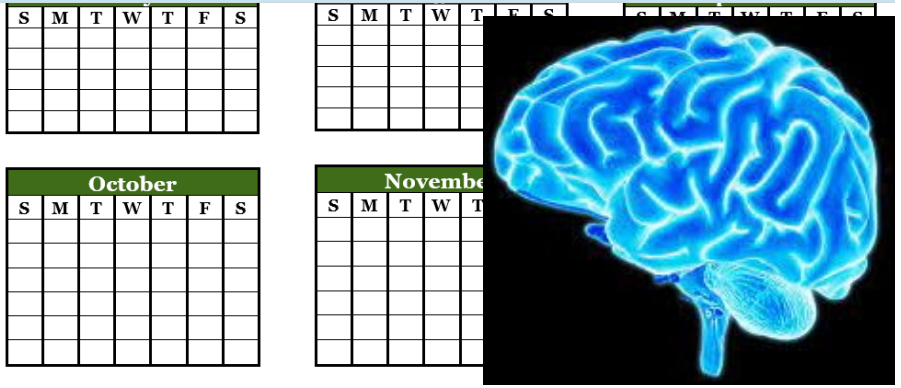
2nd
6 months

One Year Journey

1st 6 months

2nd 6 months





Refractive Lens Exchange for the Presbyopic Emmetrope

Thank You

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Refractive Lens Exchange for the Presbyopic Emmetrope

Thank You

Vance Thompson, MD

Founder and Director of Refractive Surgery

Vance Thompson Vision

Professor of Ophthalmology, Sanford School of Medicine

University of South Dakota

Sioux Falls, South Dakota