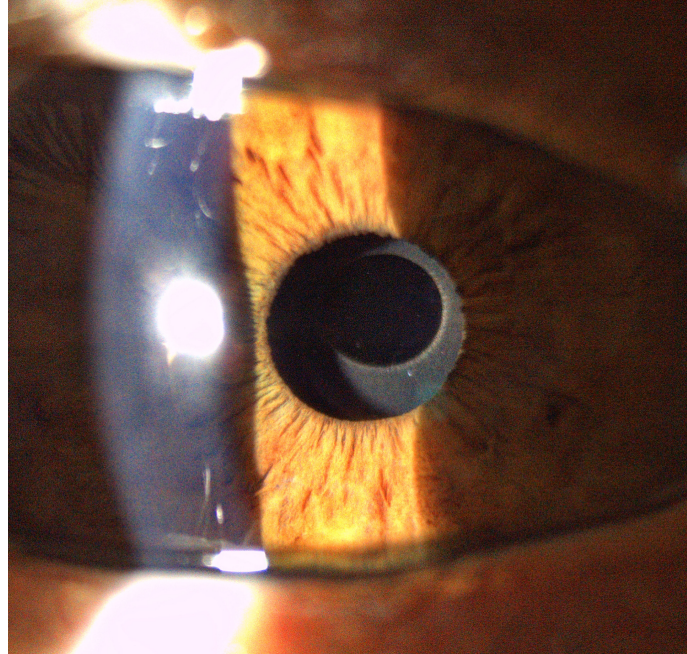
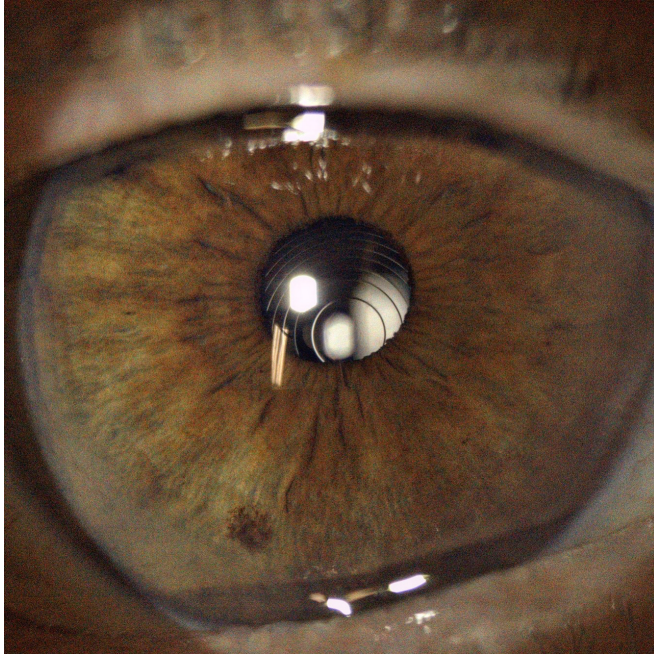


Cataract Surgery Best Outcomes for Patients



Dr Ben LaHood
MBChB (dist.) PGDipOph (dist.)
PhD FRANZCO
Ophthalmologist
Refractive Cataract and Laser Surgeon
Adelaide, Australia



Things to Discuss

- Discussing IOL options with your patients
- New technologies to improve outcomes
- Optimising ocular surface for biometry
- Managing poor refractive outcomes
- Post-op drop regimes and rationale
- Lots of time for discussion

Section #1

Discussing IOL Options

- Key Points
 - Visual goals
 - Acceptable trade offs
 - Tolerance of night time symptoms
 - Individual factors

Visual Goals

- Degree of glasses independence
 - Complete glasses independence?
 - Can't PROMISE
 - Reading in dim light
 - Many options to discuss
 - Reading glasses acceptable?
 - EDOF option from distance to intermediate may be great
 - Need to know about acceptable compromise
 - Want to continue to wear glasses
 - Fantastic!
 - Monofocal

Trade off discussion

What is Acceptable Trade Off

- Trifocal
 - Pro: Great range of vision
 - Trade Off: Halos at night and small drop in quality
- EDOF
 - Pro: Some range with minimal side effect profile
 - Trade Off: Reading glasses and some drop in quality
- Monofocal monovision
 - Pro: Excellent quality of vision
 - Trade Off: Intermediate poor and some loss of depth perception

What needs to be emphasised

- Intended overall goal for both eyes
 - When one eye done you may not be entirely happy yet.
- Time
 - Big change for your brain
 - Adjustment and adaptation. Try to be patient
- Halos
 - Will fade from awareness but will NOT go away
 - Night driving will be an issue
- Glasses independence
 - Likely still want magnifiers for reading in dim conditions with all options

Show patients all options

- Explain why an option is not suitable
 - Don't hide it
 - “You are a very observant person”

Right	Left
Distance only	Distance only
Distance only	Reading only
EDOF (distance/intermediate)	EDOF (distance/intermediate)
EDOF (distance/intermediate)	EDOF (intermediate/near)
Trifocal	Trifocal

The Reality of Halo with Trifocal IOLs

- 90% of my trifocal patients notice halo
 - At night
 - Darker surroundings and brighter light source worst
- One month post-op
 - 90% no longer noticing significant halo
- Past seven years of implanting trifocal IOLs
 - 50% of lenses I implant
 - Explanted one due to poor quality of vision



Tolerance of Night Time Symptoms

- A lot of night driving
 - Truck drivers
- Work in dark conditions
 - Nurses on night shift
 - Mining
- Astronomers



Individual Factors

- Mild-Moderate Glaucoma
 - No change to options
- Early dry ARMD
 - Discussion about level of risk they are happy with
 - Trifocal and moderate ARMD worse than with monofocal
- Amblyopia and strabismus
 - No monovision options
- Previous laser surgery
 - No impact on choices
- Previous radial keratotomies
 - Monofocal or small aperture options only

Section #2

New Technologies Improving Outcomes

- IOL designs
- Injectors
- Imaging
- Glaucoma Drainage Devices



Sulcus Multifocal IOL



Capsule Fixated IOL



Small Aperture IOLs



Bright Light!

- Operating Microscope at Tennyson Day Surgery
 - 3D microscope
 - Display light can be increased while keeping microscope light dim



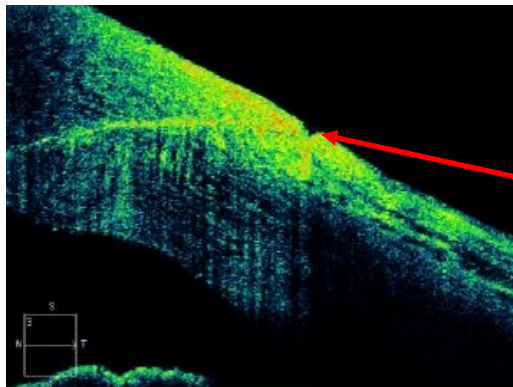
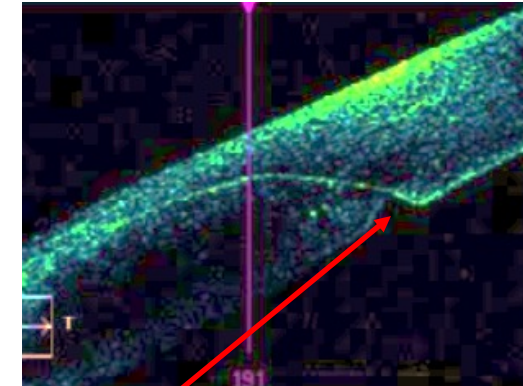
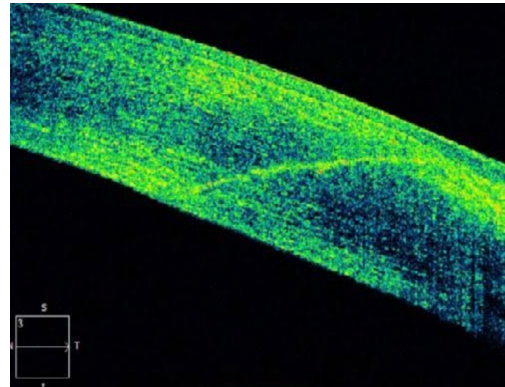
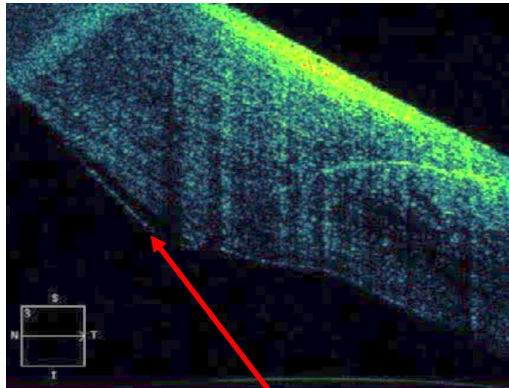
AutonoMe Option

- Gas Powered Injector
- Constant control
- Implant via 2.2mm incision
- Minimal Induced Astigmatism
- Wound Hydration minimised
- Incision Architecture maintained

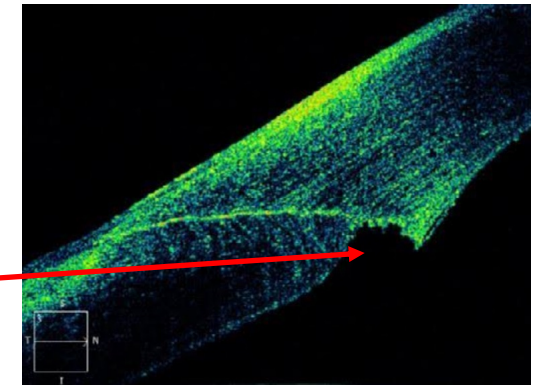


AutonoMe – Incision Architecture

Step 1: Create a Grading System for Wound Disruption

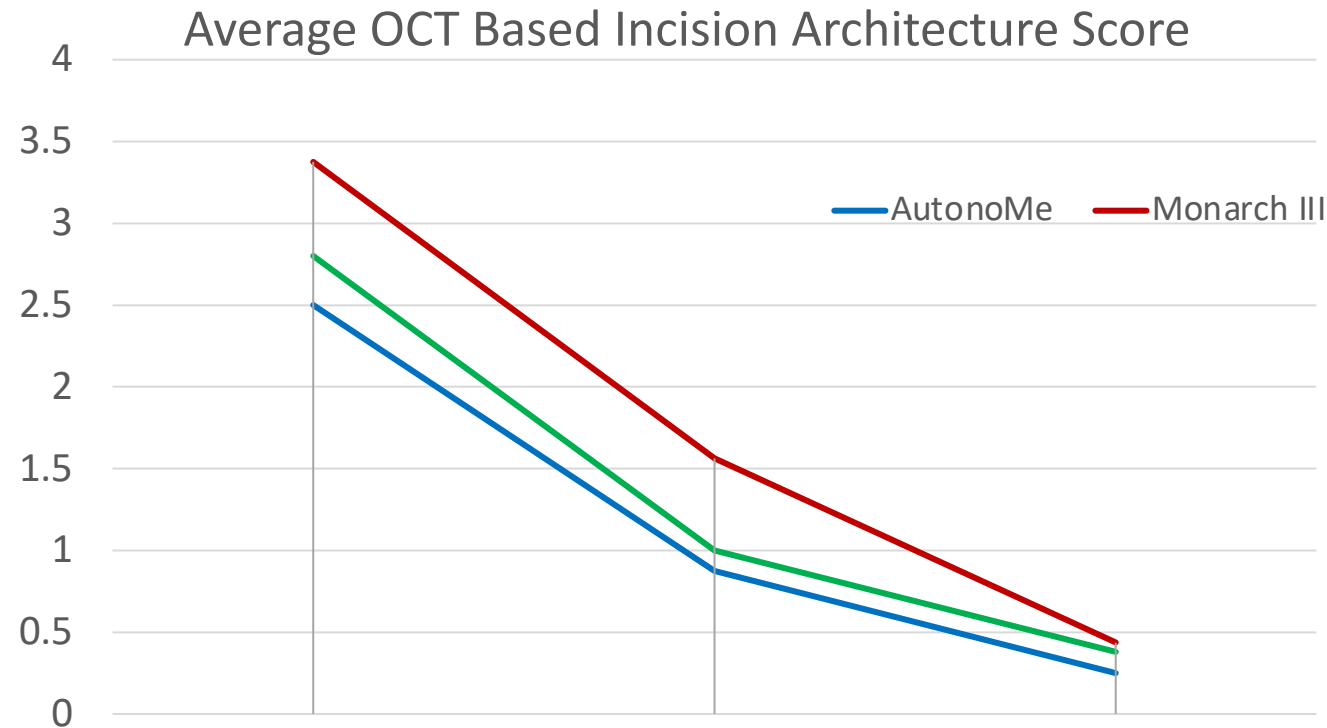


OCT BASED SCORING SYSTEM
ENDOTHELIAL GAPE = 1 POINT
ENDOTHELIAL DETACHMENT = 1 POINT
EPITHELIAL GAPE = 1 POINT
STROMAL BITE = 1 POINT
ABNORMAL THICKNESS = 1 POINT



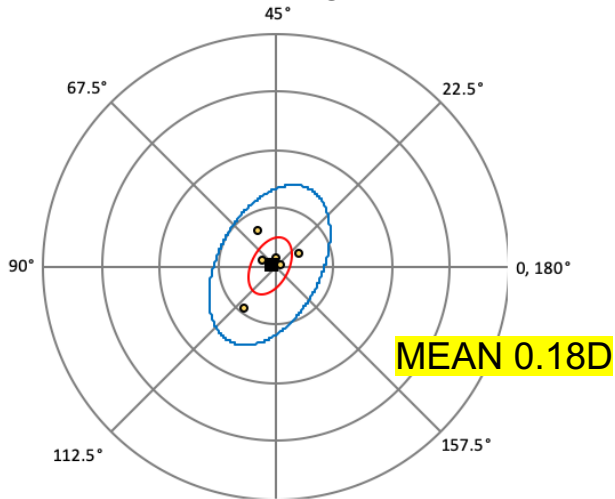
AutonoMe – Incision Architecture

Step 2: Compare Average Wound Score at 1 day, 1 week, 1 month



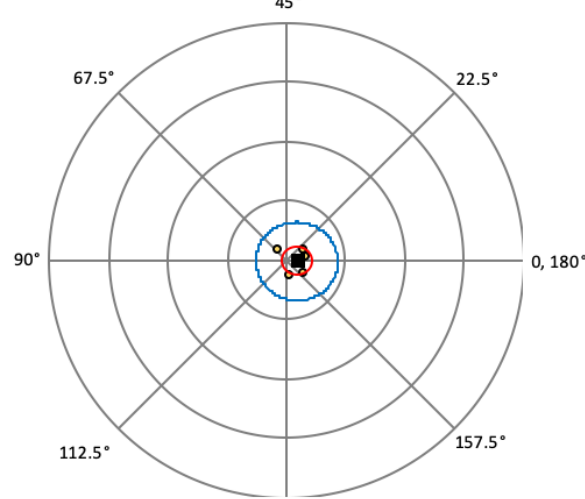
SIA

ANTERIOR



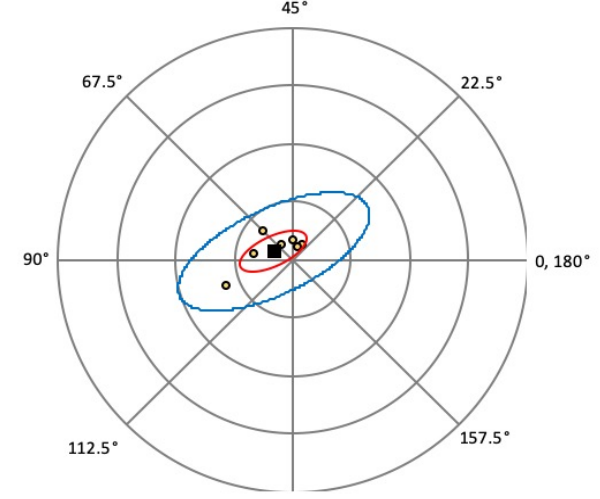
Centroid : $0.06D @ 84^\circ \pm 0.25D$
 Mean Absolute: $0.18D \pm 0.15D$

POSTERIOR



Centroid : $0.09D @ 176^\circ \pm 0.14D$
 Mean Absolute: $0.15D \pm 0.02D$

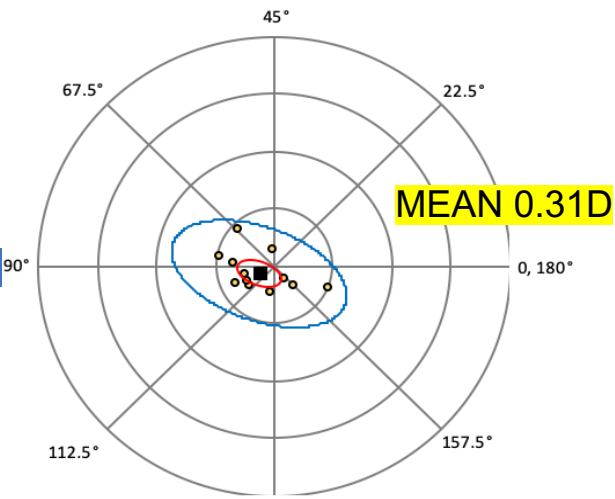
TOTAL



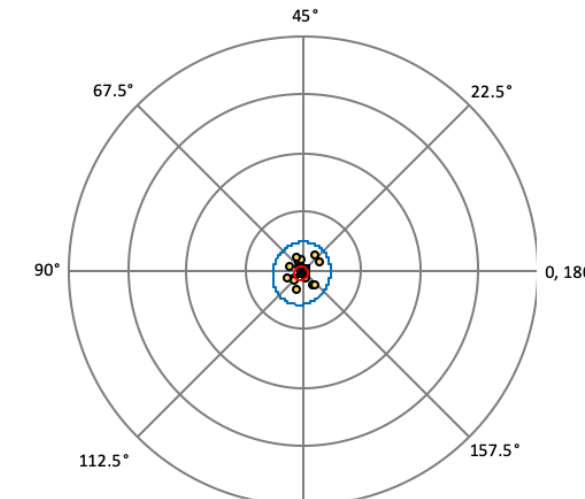
Centroid : $0.18D @ 78^\circ \pm 0.28D$
 Mean Absolute: $0.26D \pm 0.17D$

AUTONOME

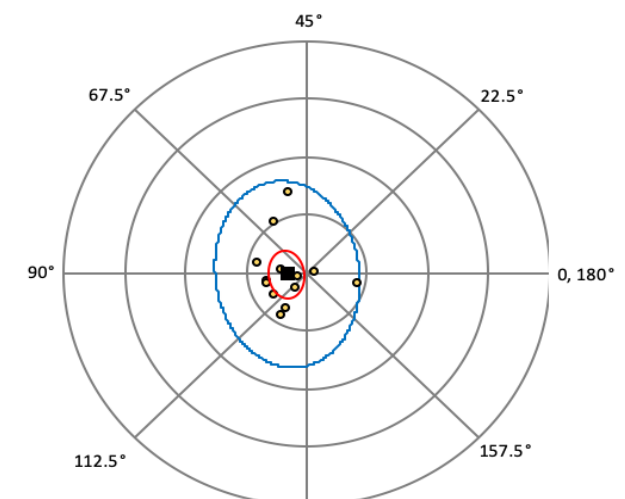
MONARCH III



Centroid : $0.14D @ 103^\circ \pm 0.31D$
 Mean Absolute: $0.31D \pm 0.11D$

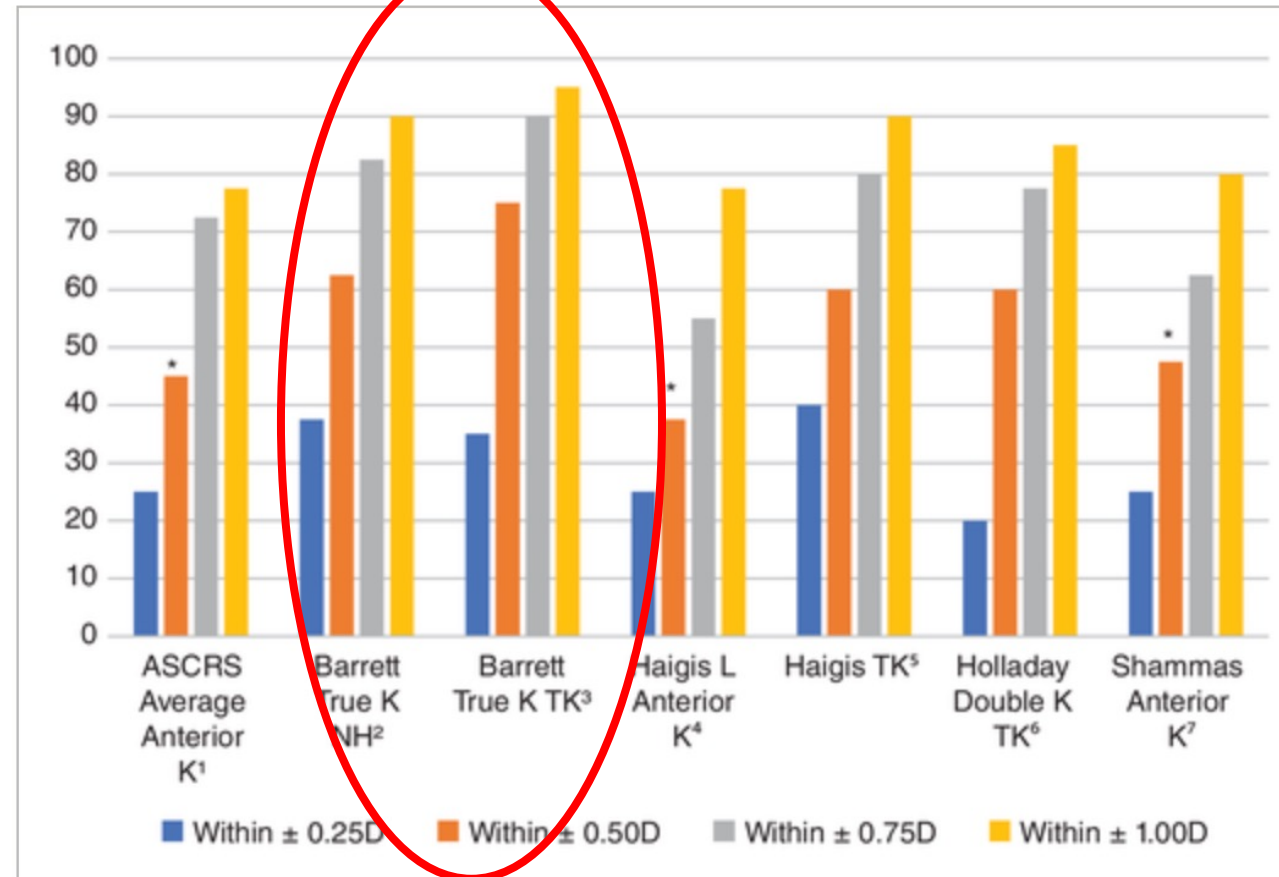


Centroid : $0.03D @ 118^\circ \pm 0.13D$
 Mean Absolute: $0.12D \pm 0.05D$

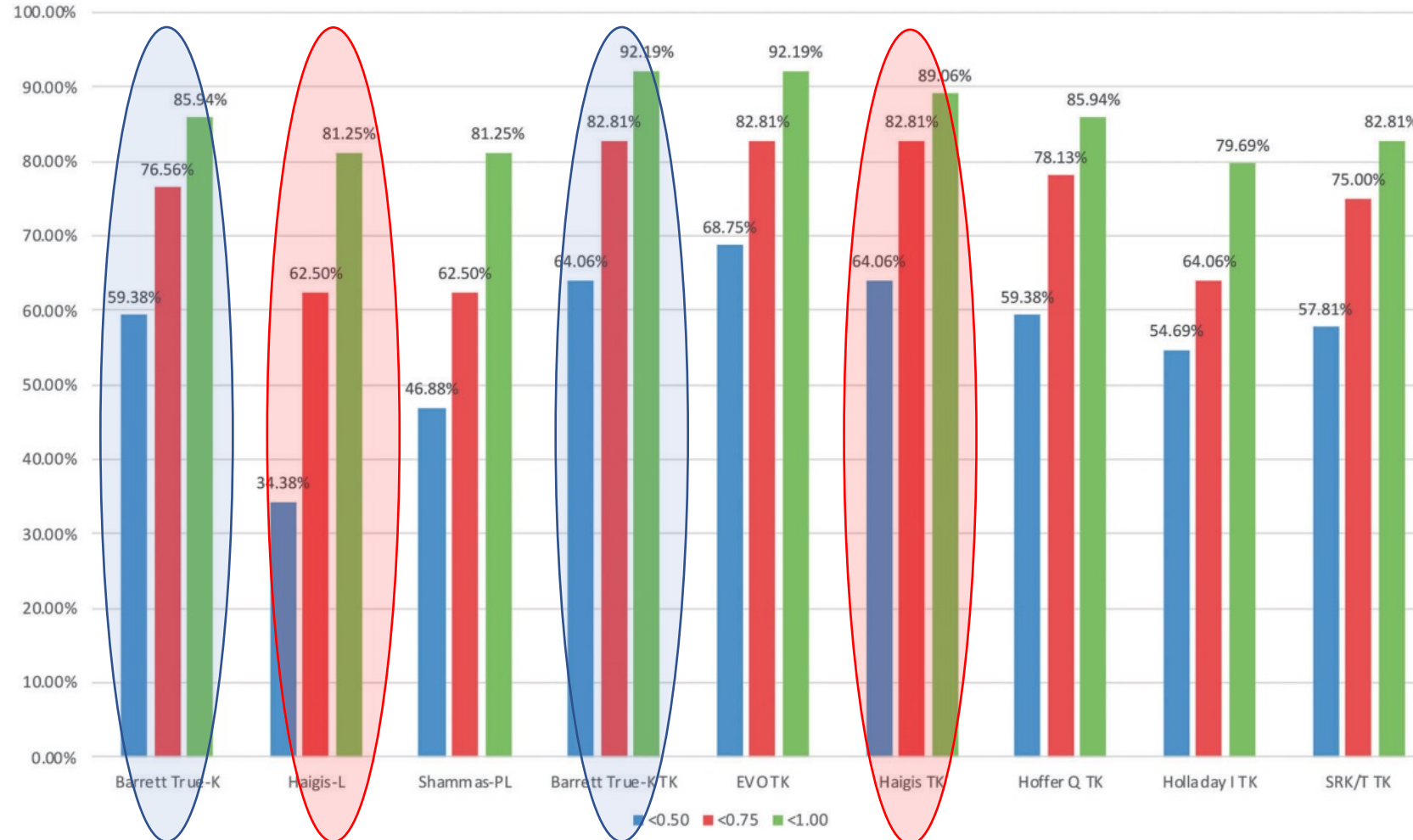


Centroid : $0.16D @ 92^\circ \pm 0.35D$
 Mean Absolute: $0.34D \pm 0.17D$

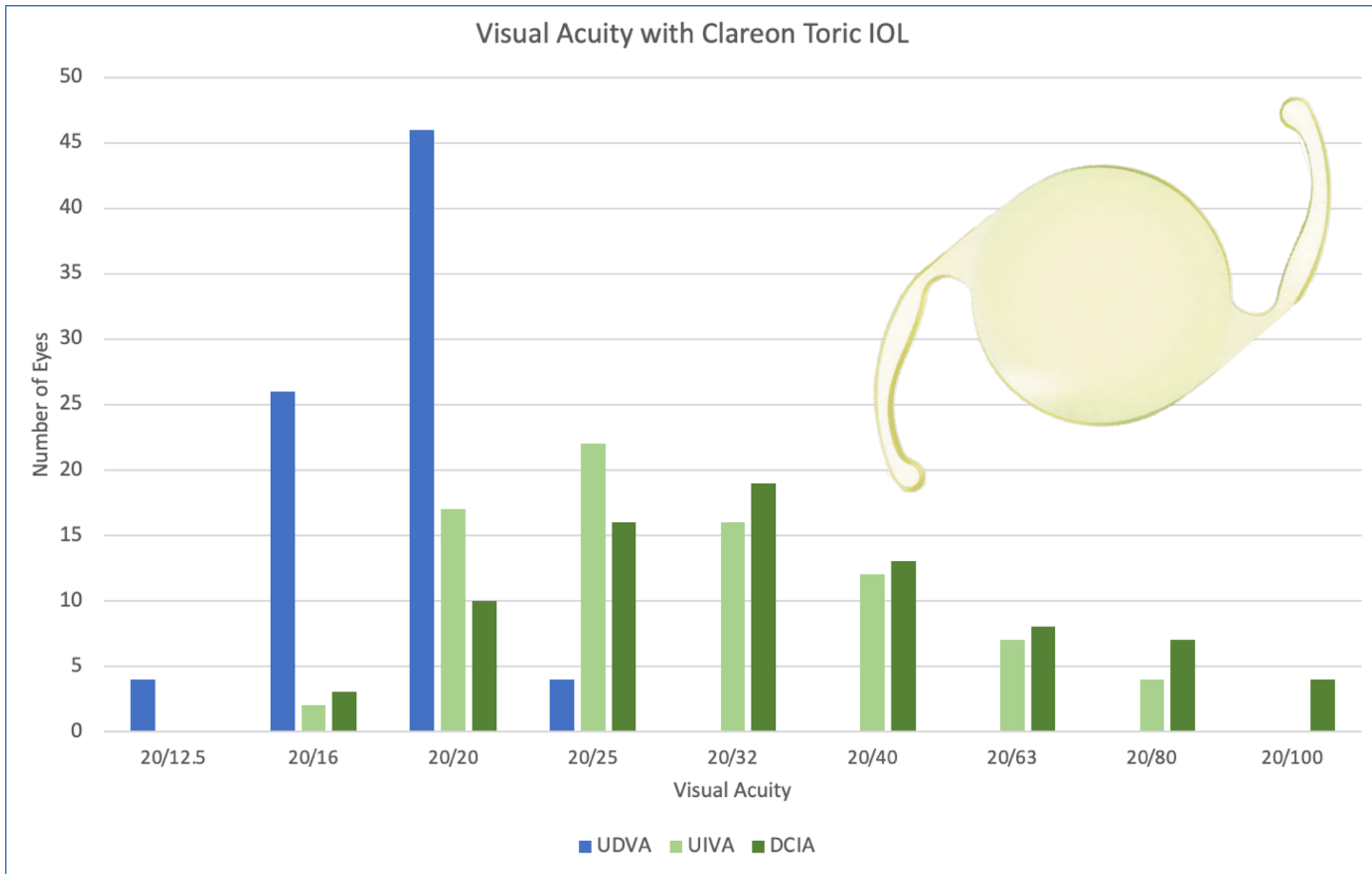
Routine Measurement of Total Keratometry (TK)



Evidence in post-myopic LVC eyes



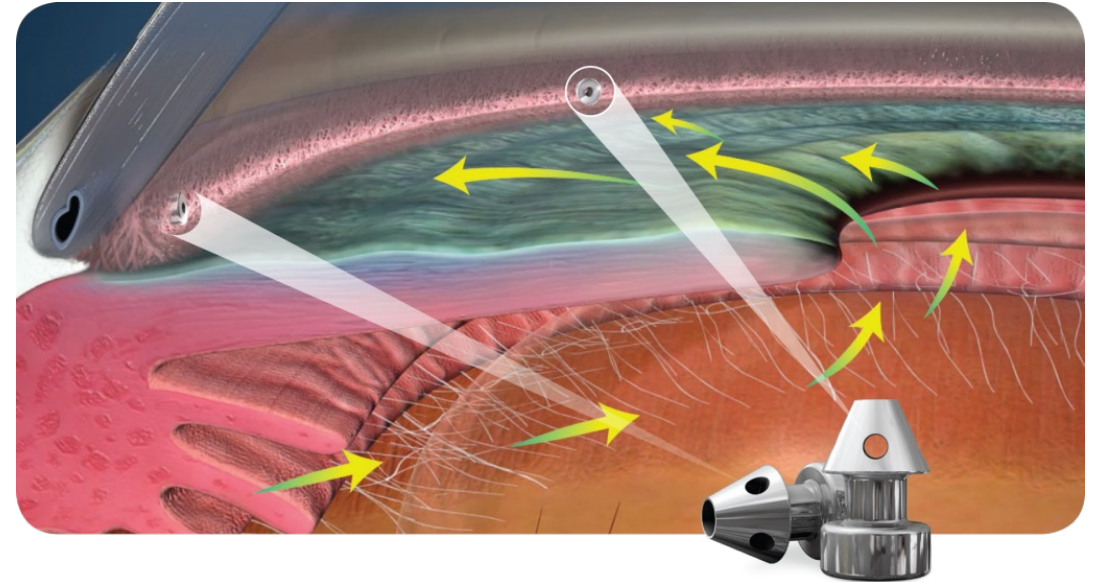
Yeo TK, Heng WJ, Pek D, Wong J, Fam HB. Accuracy of intraocular lens formulas using total keratometry in eyes with previous myopic laser refractive surgery. Eye. 2020 Aug 31:1-7.



Unpublished data from “Clareon-Go” poster, RANZCO 2022. Ben LaHood

Glaucoma Drainage Devices

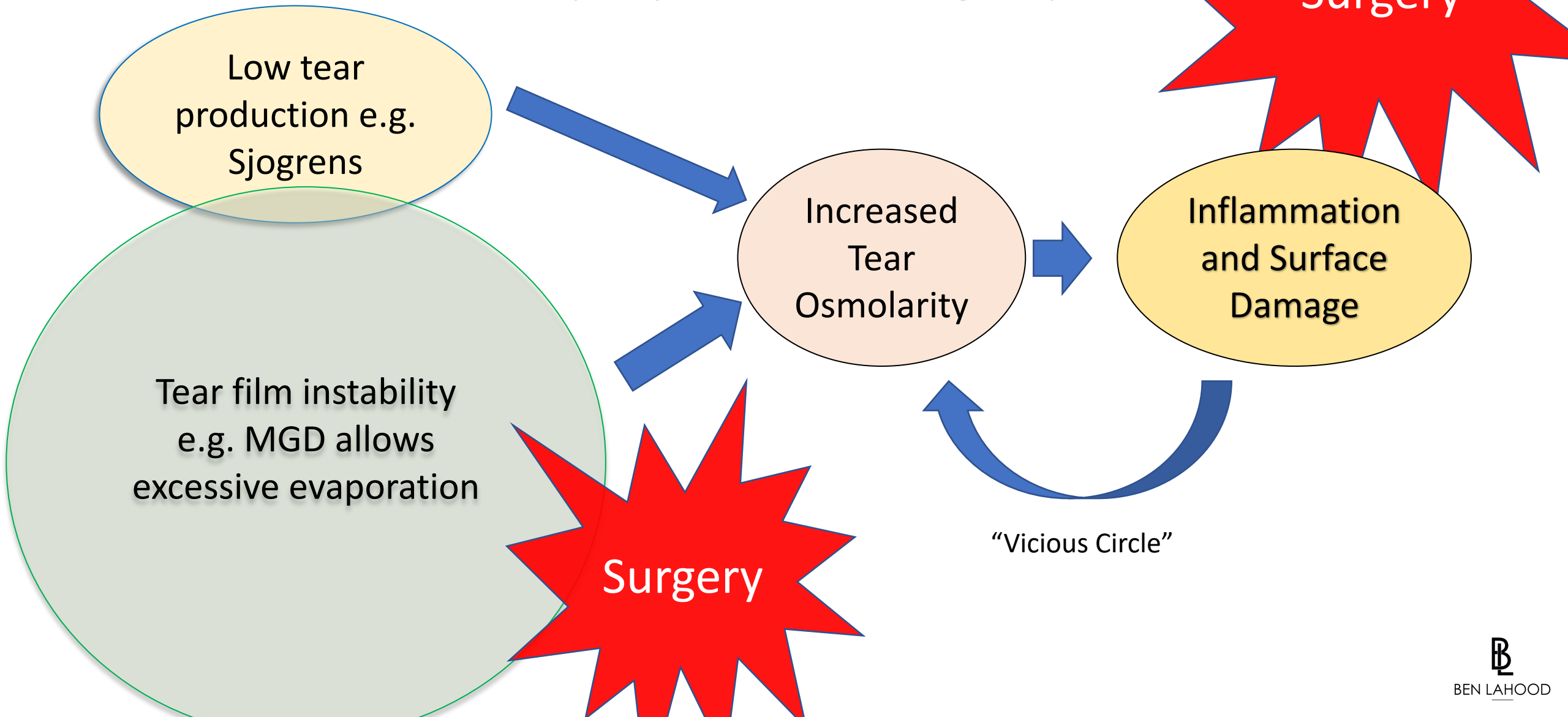
- Growing number of MIGS devices
- iStent my choice
 - Simple to implant
 - Good data to show efficacy
 - Low risk
- Aim to remove one topical medication



Ocular Surface

- For Every Patient
- For Dry Eye Patients

Dry Eye and Surgery



Refractive Options

- Monofocal aspheric IOLs
- Monofocal toric IOLs
- Extended Vision Monofocal IOLs
- Small Aperture IOLs
- Refractive EDOF IOLs
- Diffractive EDOF IOLs
- Refractive Multifocal IOLs
- Diffractive Multifocal IOLs



Any dryness limits choices

Worse signs or symptoms limits choices higher

Biometry Accuracy

- How to Help Average Patient as a Referrer for Cataract Surgery
 - Discuss importance of getting accurate measurements
 - Start basic treatments
 - Hot lid massages
 - Preservative free lubricant (preference for Hydration)
- If looking inflammatory and surgeon will be seeing within two weeks
 - FML twice daily

Refractive Options and Pre-Treatment

Flat K	Steep K	Axis
43.25	44.55	54
43.15	45.25	63
44.00	44.25	89
43.45	45.15	58
43.66	44.87	68
43.89	45.45	72
43.35	44.98	66

67 year old man
Moderate MGD
Fluctuating VA

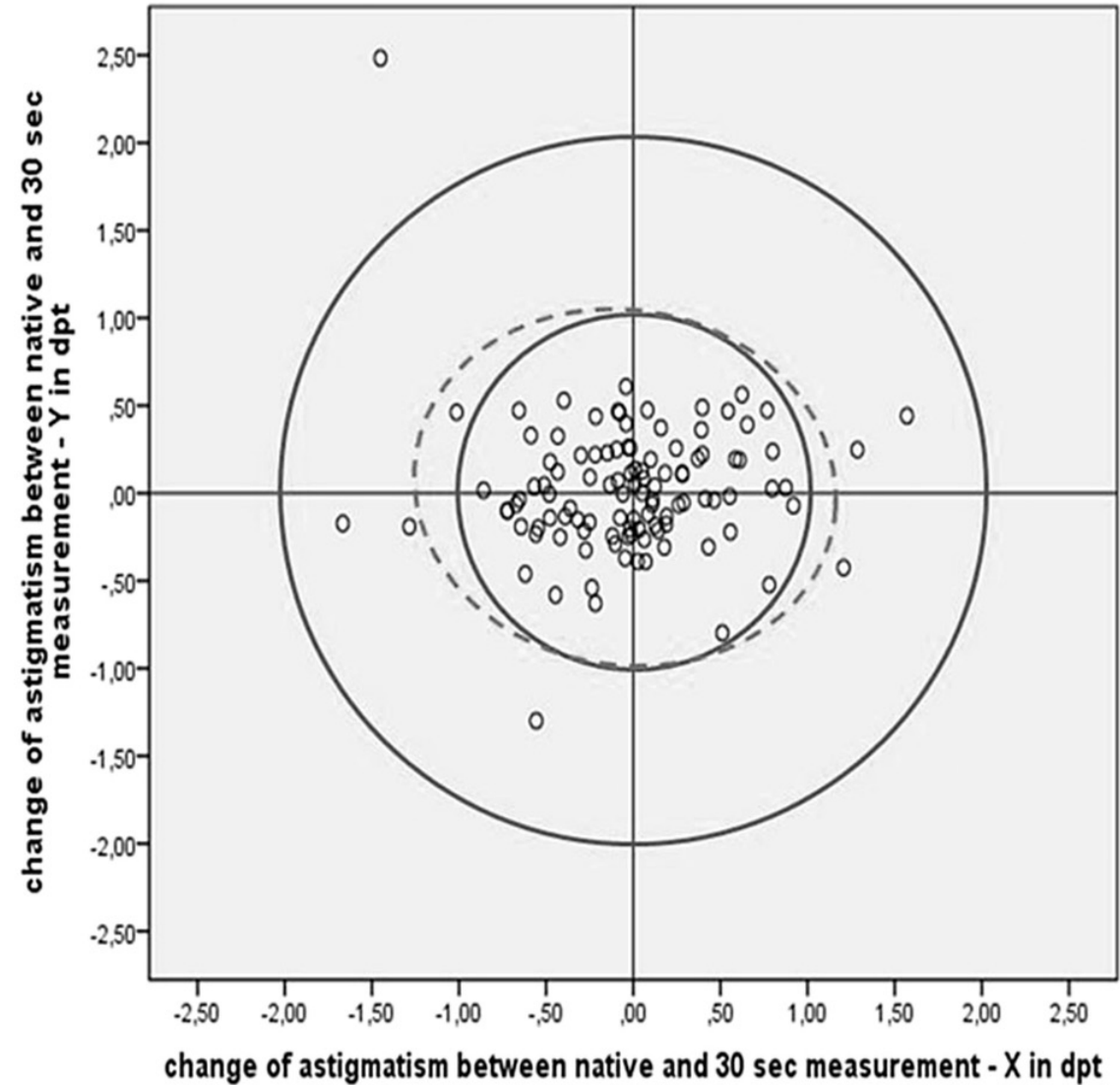
Pre-op plan massive
variation in IOL choice

Two weeks of treatment
and biometry very
consistent.

Flat K	Steep K	Axis
43.05	44.05	80
43.07	44.05	79
43.03	44.10	80
43.10	44.08	81
42.98	44.10	78
43.11	44.08	79
43.15	44.05	78

Biometry Accuracy

- Biological Tissue
 - Tear film
 - Reflection dependent
- Adding Water not the answer
- Change over 0.5D Astigmatism
 - 13% of “normal” eyes
 - 34% of “dry” eyes



Röggla V, Leydolt C, Schartmüller D, Schwarzenbacher L, Meyer E, Abela-Formanek C, Menapace R. Influence of Artificial Tears on Keratometric Measurements in Cataract Patients. American Journal of Ophthalmology. 2021 Jan 1;221:1-8.

Biometry Accuracy

Improve Health and Stability of Tear Film

- Not just cover up with a layer of water

My Routine

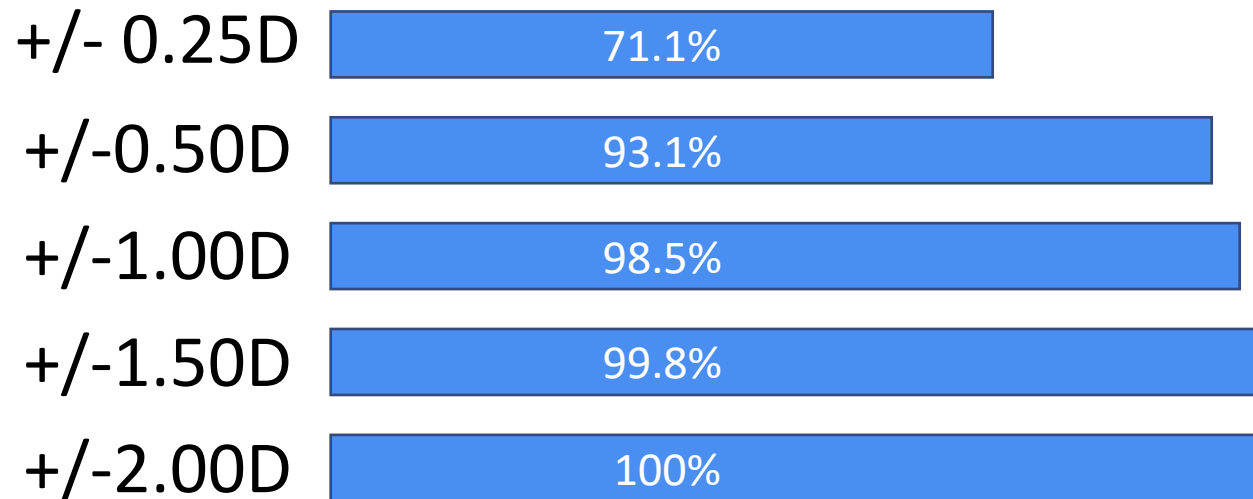
- Keratometry within 0.5D and Astigmatism within 10 degrees on 2 devices
- Any punctate staining, irregular tear film, poor reflections on measurement

2 weeks of Tear Film Restoration Treatment

- Hot Lid Massages
- Regular and frequent Systane Hydration preservative free
- FML twice daily if lid inflamed or in a hurry!
- If insufficient, Maxidex ointment and consider Lipiflow

Biometry Accuracy – Is It Worth It?

- Past 1000 eyes with Toric IOL implantation
- Refractive outcomes (Astigmatism accuracy)



Best currently published figures for astigmatism correction 85-88% within 0.5D

The Message

- Best if combined message from Optom and Ophthalm
 - Get tear film healthy for comfort and vision
 - Will improve accuracy of measurements
 - Gives more options for surgery
 - BUT will need maintenance
- Not all refractive options will suit all patients
 - Need to be realistic
 - Trifocal IOL may not suit

Residual Refractive Error

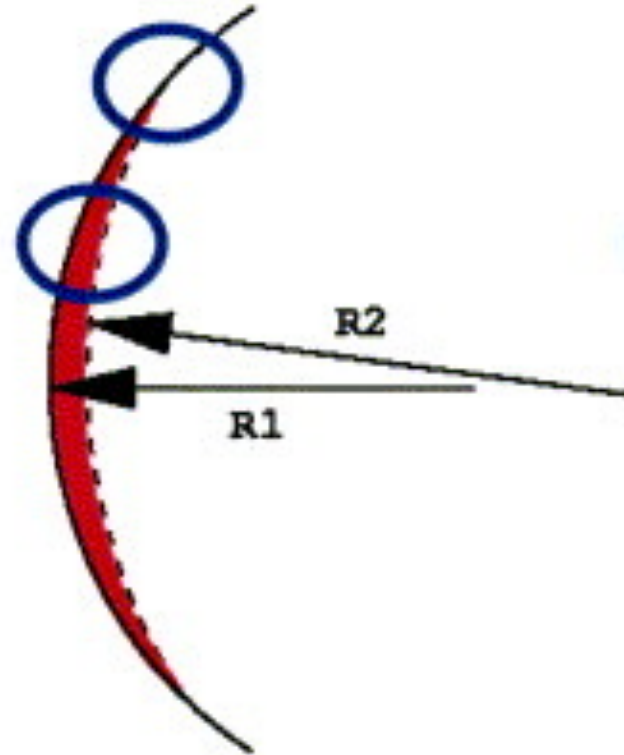
- Management Options
- Lenses
- Laser

Hyperopia

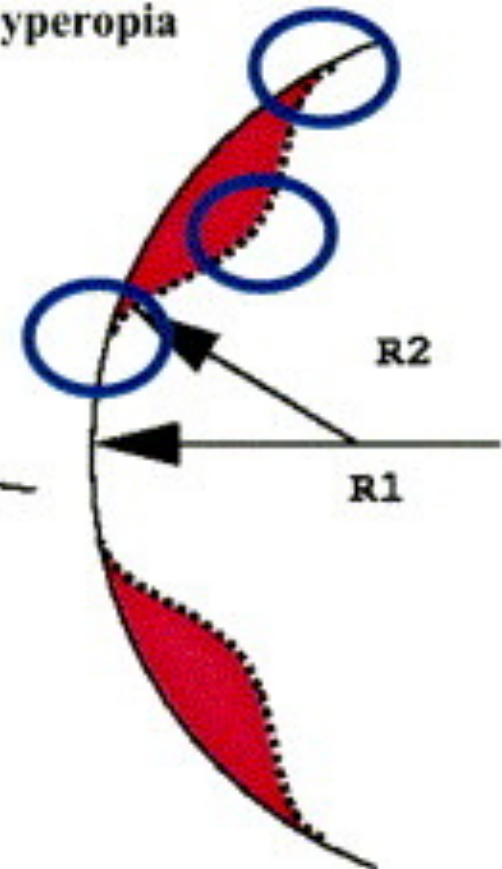
- Laser tends to regress more often
 - Body fills in the gap over time
- Sulcus Add-On lenses a good option
 - Prefer to IOL exchange if possible

Hyperopic Regression

Myopia



Hyperopia



Myopia

- LASIK
 - Good, fast, effective
 - Possibility of halo
- PRK
 - Good, fast, effective
 - Slower recovery
- SMILE
 - Not for such small errors

Astigmatism

- Not helpful
- Aberration and reduces vision
- If toric IOL
 - Check spherical equivalent of refraction
 - Close to zero could rotate toric
 - E.g. +0.50 -1.00 x50
- If non-toric IOL
 - Laser or sulcus lens options work well

www.toricpro.com for whether to rotate or exchange a toric IOL

Thresholds

- Happiness is all that matters
- If happy leave anything
- Otherwise, 0.5D limit for laser

Optical Side Effects

- Negative dysphotopsia
 - Usually just time
 - Plano sulcus IOL
- Halo, glare, quality issues
 - Explantation and exchange of IOL

Drop Regimes

- Necessity vs Standard Routine

Post-Op Drops and Toxicity

What Do We Know

- Patients are terrible at taking drops
- Patients are terrible at taking the correct drops
- Patients are terrible
- Drops Can Be Toxic

What Can We Do

- Use Drops Appropriately
- Minimise Anything Unnecessary

Drops and Toxicity

- What Does The Evidence Say
 - Post-Op Topical Steroid
 - Very beneficial in the immediate post-op period
 - Very beneficial for returning to normal osmolarity and helping dry eye
 - Post-Op NSAID (Voltaren and Acular)
 - Beneficial in preventing macula oedema in diabetics especially
 - Stings and is poorly tolerated
 - Antibiotics
 - Not helpful if using intracameral antibiotics
 - Glaucoma Drops
 - Often pro-inflammatory

Post Op Drops and Toxicity

- Do We Need Antibiotic Drops?

SURVEY OF OPHTHALMOLOGY 62 (2017) 659–669



Available online at www.sciencedirect.com

ScienceDirect

journal homepage: www.elsevier.com/locate/survophthal



Major review

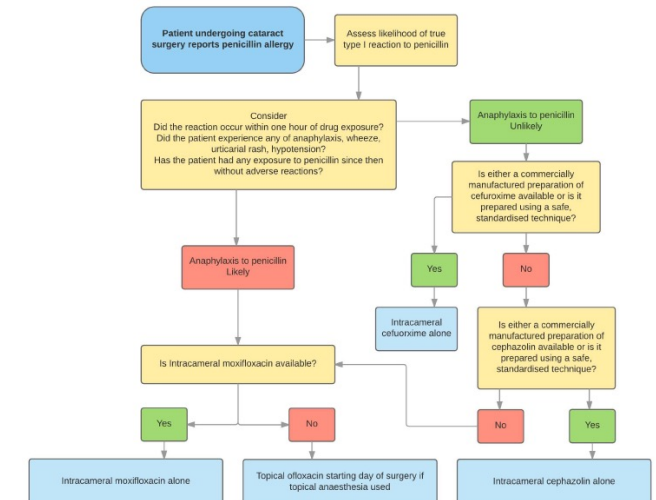
Antibiotic prophylaxis in cataract surgery in the setting of penicillin allergy: A decision-making algorithm

Benjamin R. LaHood, FRANZCO^{a,b,c,*}, Nicholas H. Andrew, MBBS^{a,b,c},
Michael Goggin, FRCSI (Ophth)^{a,b,c}

^aThe Queen Elizabeth Hospital, Adelaide, South Australia, Australia

^bSouth Australian Institute of Ophthalmology, Adelaide, South Australia, Australia

^cUniversity of Adelaide, Adelaide, South Australia, Australia



Post-Op Drop Regime

Evidence Based Including Dry Eye

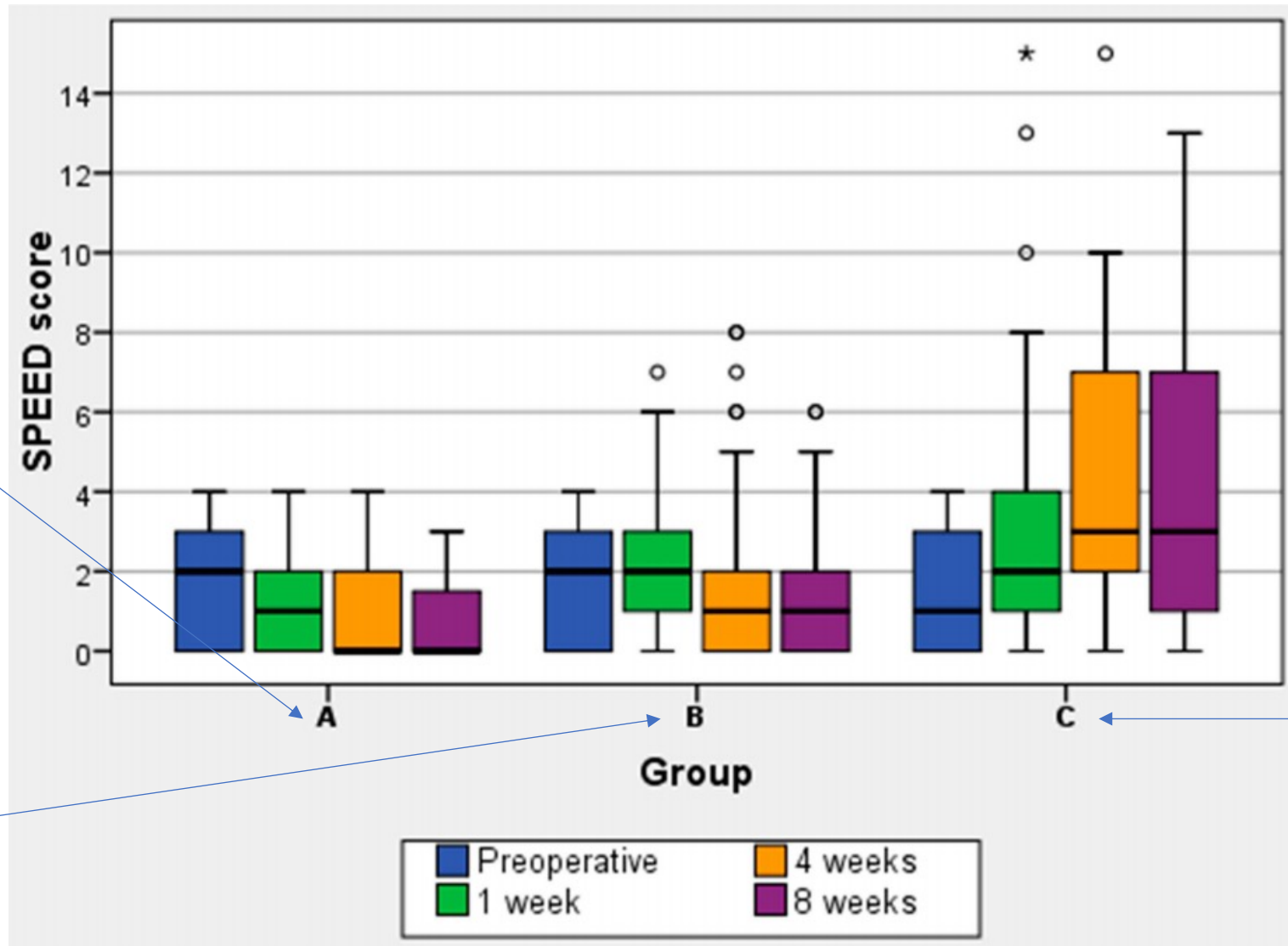
- Topical steroid (Maxidex for me)
 - Initially four times daily for the first week then twice daily
 - Personally I prescribe for a month
- Topical NSAID (Acular for me)
 - Twice daily for two weeks
 - Can be skipped if not diabetic or high risk
- What about lubricants?...

Post-Op Drops - Lubricants

- Make sense in some ways
 - Keep healing surface wet, smooth, comfortable
 - Dilute retained preservative of medicated drops
 - Better than rubbing eyes for discomfort
- Anecdotally
 - Improved vision quality and comfort
- Evidence
 - Recent article to share

Favuzza E, Cennamo M, Vicchio L, Giansanti F, Mencucci R. Protecting the Ocular Surface in Cataract Surgery: The Efficacy of the Perioperative Use of a Hydroxypropyl Guar and Hyaluronic Acid Ophthalmic Solution. Clinical Ophthalmology (Auckland, NZ). 2020;14:1769.

Post-Op Drops - Lubricants



Pre-op 2
weeks plus
post-op

Post-Op Only

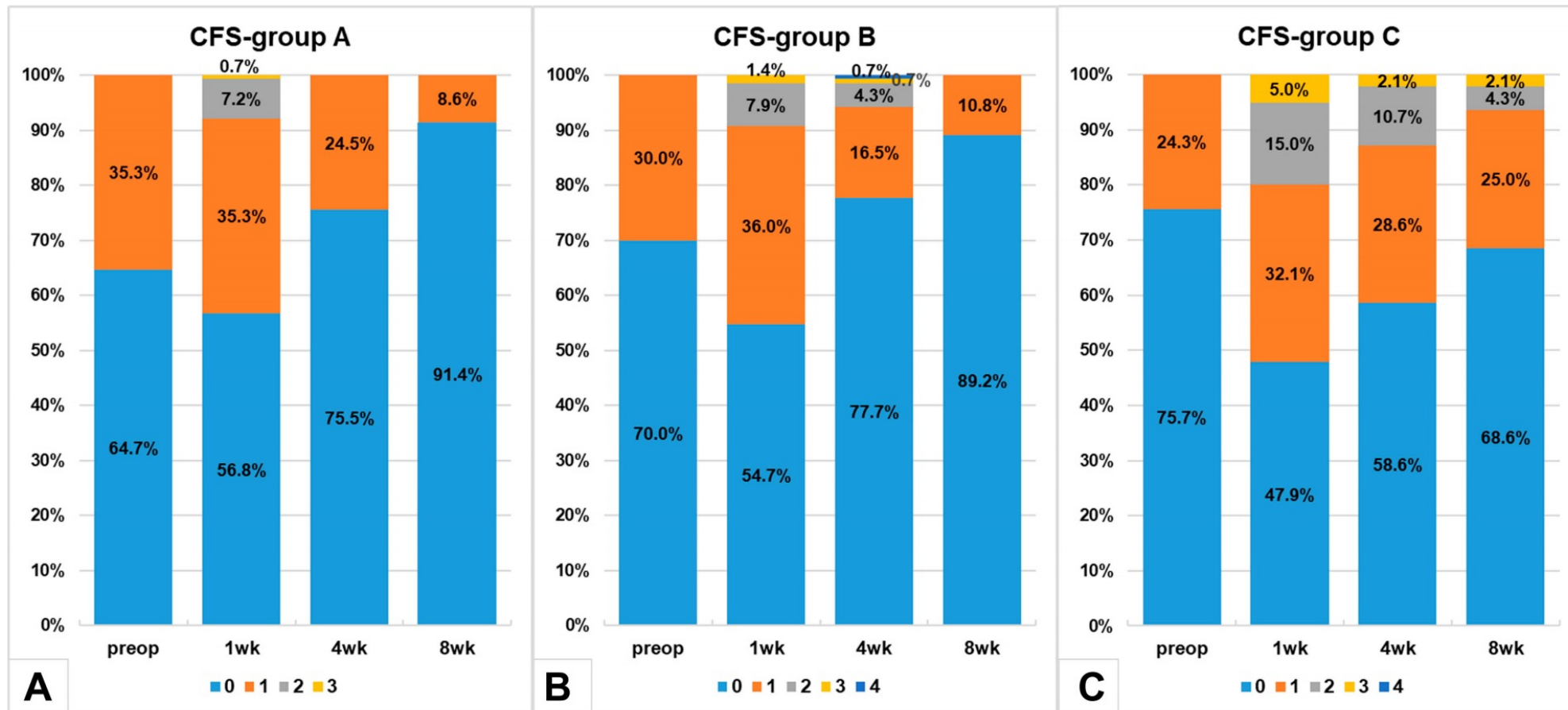
No Lubricants

Post-Op Drops - Lubricants

Pre-op 2 weeks plus post-op

Post-Op Only

No Lubricants



Ongoing Irritation

- Usually dryness
 - Any MGD: Systane Complete and hot lid massages
 - No signs: Preservative free Systane Hydration or Hylo-Fresh
- Inflamed
 - Exclude infection
 - Restart topical steroid and wean off over an extra two weeks