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Close Sequential Bilateral Cataract Surgery: Retrospective Analysis of Postoperative Outcomes of Cataract Surgeries on Back-to-Back Days

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Financial Disclosure

Glaukos: Speaker, Investigator

Equinox: Consultant

SightSciences: Consultant, Speaker, Investigator

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Trefoil Therapeutics: Investigator

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Cataract is overwhelmingly bilateral, synchronous disease

Modern approaches to cataract surgery reduce
- refractive error[1]
- risk of post operative infection[2]

This could allow for reduction in inter-eye wait time

Performing eye surgeries closer together prioritizes patient convenience

Study

- Retrospective chart review of consecutive patients having undergone cataract surgeries on back-to-back days
- Location:
  - VTV Nebraska
  - VTV Montana
  - VTV North Dakota
- August and September, 2020.

- Outcomes
  - Primary: visual acuity (uncorrected and corrected) compared to baseline of first and second eyes
  - Secondary: safety metrics including intraoperative and post-operative complications and refractive accuracy

- Inclusions
  - All patients having undergone back-to-back cataract surgery during study period

- Exclusions
  - Patients with missing data precluding analysis of primary or secondary outcomes in preoperative or post-operative chart notes
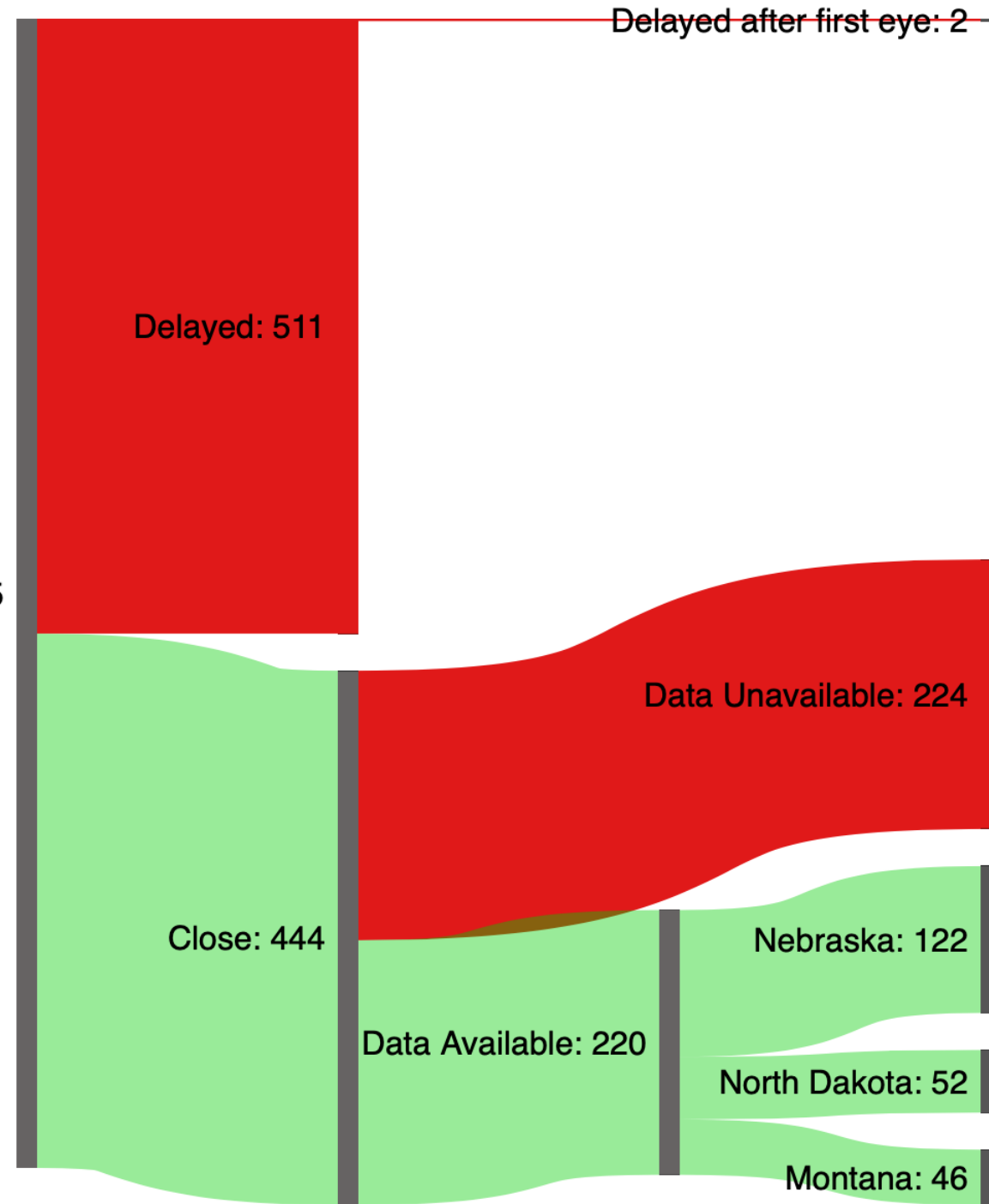
Results

Full review:

Close sequential
cataracts only

220 eyes of 110
patients available

Delayed after first eye: 2

Delayed: 511

Cataract: 955

Data Unavailable: 224

Close: 444

Data Available: 220

Nebraska: 122

North Dakota: 52

Montana: 46

Demographics

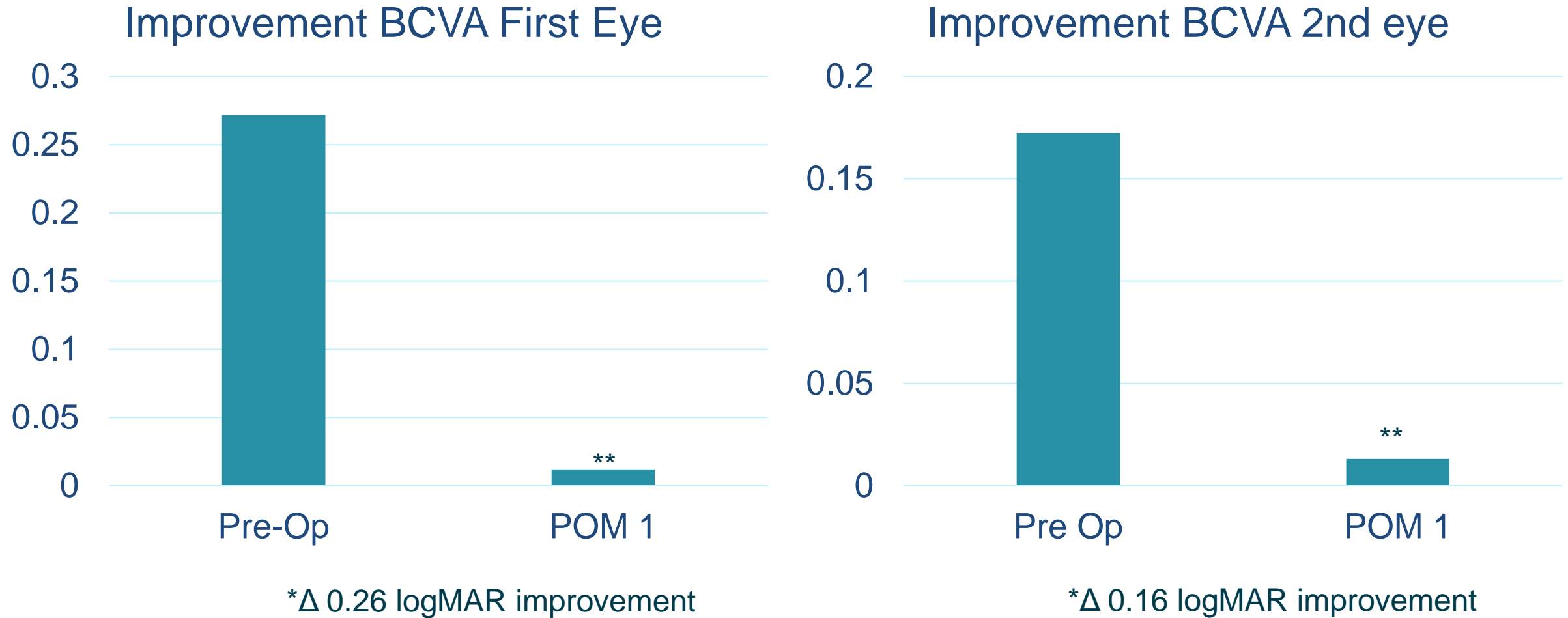| Patient	
Age (mean, range)	68.7 years, range 38-86
Female (percent)	57.3%
Distance traveled (mean, range)	75 mi, range 1-1150
Previous refractive surgery (percent)	20 (18.2%)
Right eye first (percent)	69 (62.7%)
Follow up (mean)	0.91 months

Preoperative Data by Eye

	First eye	Second eye	p value
BCVA (logMAR)	0.272	0.172	**0.0005**
SE (D)	-1.03 ± 3.31	-0.668 ± 3.24	0.410
IOP (mmHg)	16.1 ± 4.41	15.9 ± 4.46	0.770
Lens implant			
Monofocal	73	73	
Toric	3	3	
Multifocal	8	7	
LAL	26	27	
Combo surgery (MIGS)*	15 (13.6%)	13 (11.8%)	

* iStent inject, OMNI, KDB, Hydrus

Primary Outcome - BCVA

Improvement BCVA First Eye

Pre-Op, POM 1 **

*Δ 0.26 logMAR improvement

Improvement BCVA 2nd eye

Pre Op, POM 1 **

*Δ 0.16 logMAR improvement

**No statistical difference in 1st vs 2nd eye BCVA at POM 1

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Summary – Plano target

1. **Synchronous healing**
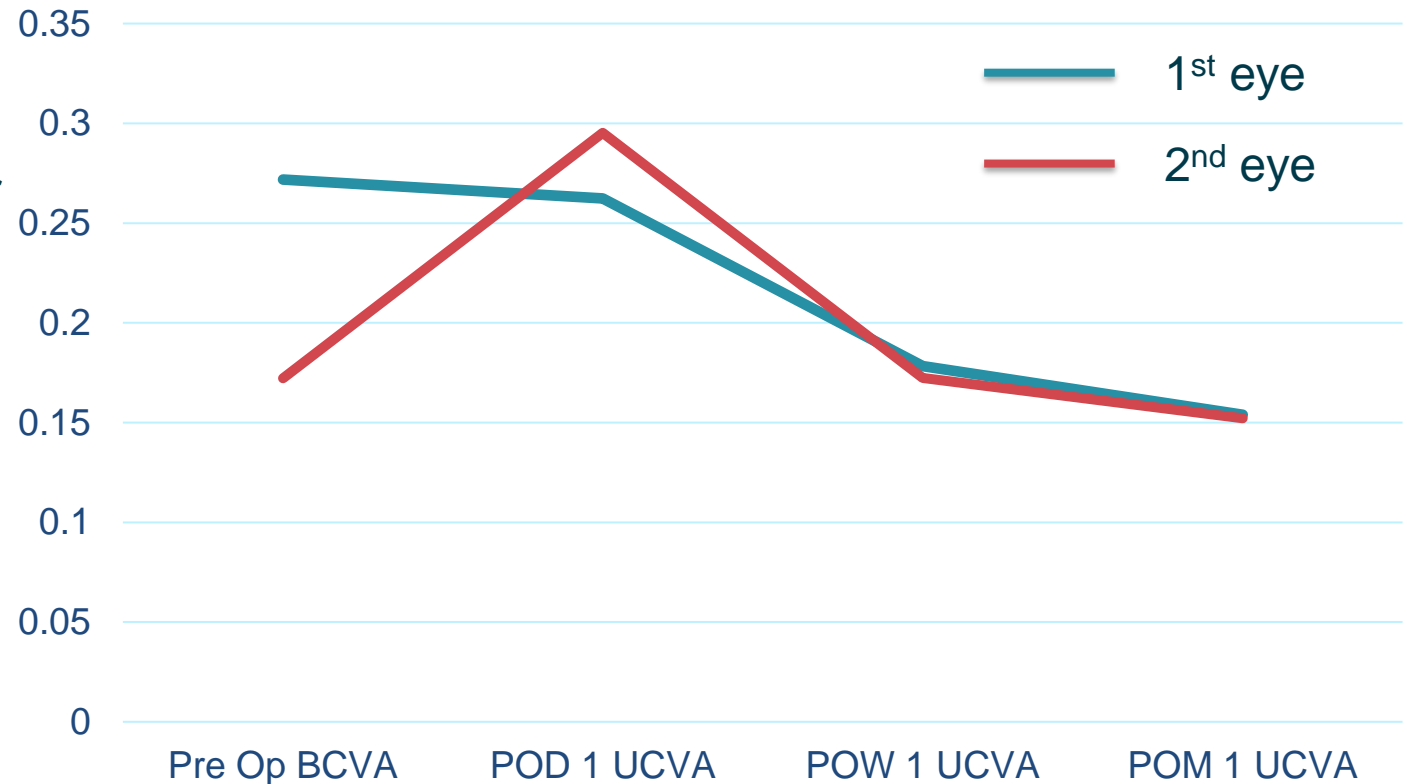- No difference in average UCVA of first and second eyes at POD 1, POW 1, or POM 1
2. **Second eyes experience brief drop**
- Second eyes had worse average UCVA on POD 1 compared to pre-op BCVA, but recovered by POW 1
3. **First eyes heal fast**
- POD 1: 75.1% of first eyes were **within 2 lines** of final UCVA

BCVA (Pre) and UCVA (Post) Plano Target Only

Legend: 1st eye, 2nd eye

X-axis: Pre Op BCVA, POD 1 UCVA, POW 1 UCVA, POM 1 UCVA
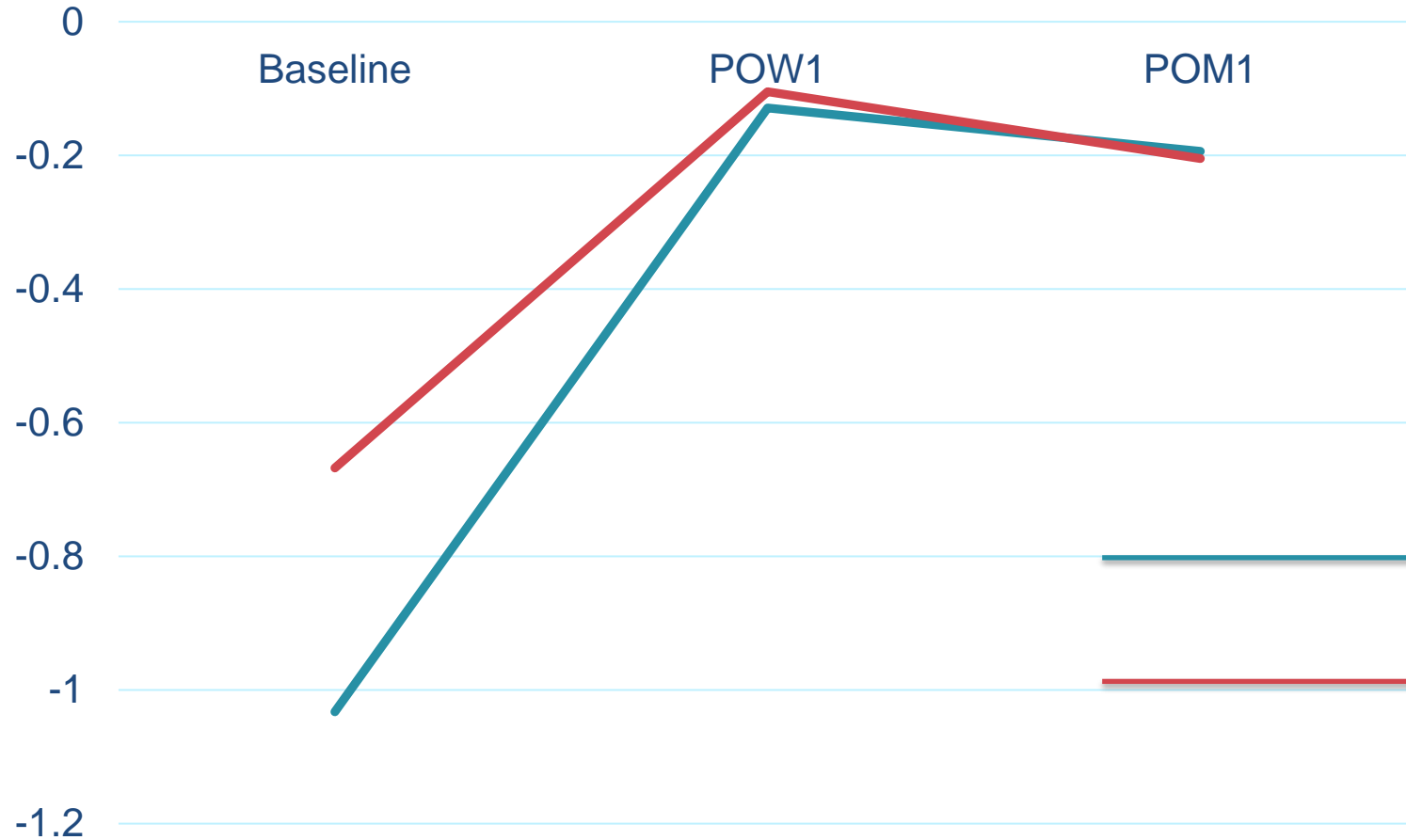Y-axis: 0, 0.05, 0.1, 0.15, 0.2, 0.25, 0.3, 0.35

- ## Intraoperative complications
  - None reported

- ## Post-operative complications
  - IOP spike on POD 1 (>/= 10 mmHg above baseline)
    - More frequently encountered in **first eye 6.4%** vs **second eye 2.9%** (p=0.228)
  - VA limiting corneal edema
    - 5 of first eyes VA 20/200 or worse
    - 3 of second eyes VA 20/200 or worse

Refractive Outcomes

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Average SE (D)

	± 0.5D	± 1.0D
1st Eye	70.4%	91.8%
2nd Eye	71.6%	91.0%

- When planning for bilateral cataract management, 24h inter-eye wait time
  - Is effective at improving BCVA with no difference in first and second eye result

  - Is safe, with no significant difference in complication rate

  - Allows for synchronous healing and lessens burden of anisometropia

References

1. Roberts TV, Hodge C, Sutton G, Lawless M. Comparison of Hill-radial basis && function, Barrett Universal and current third generation formulas for the calculation of intraocular lens power during cataract surgery. Clin Exp Ophthalmol 2018; 46:240 – 246.

2. Bowen RC, Zhou AX, Bondalapati S, Lawyer TW, Snow KB, Evans PR, Bardsley T, McFarland M, Kliethermes M, Shi D, Mamalis CA, Greene T, Rudnisky CJ, Ambati BK. Comparative analysis of the safety and efficacy of intracameral cefuroxime, moxifloxacin and vancomycin at the end of cataract surgery: a meta-analysis. Br J Ophthalmol. 2018 Sep;102(9):1268-1276.

3. Melles RB, Holladay JT, Chang WJ. Accuracy of Intraocular Lens Calculation Formulas. Ophthalmology. 2018 Feb;125(2):169-178. doi: 10.1016/j.ophtha.2017.08.027. Epub 2017 Sep 23. PMID: 28951074.

Thank you

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