

INTRODUCTION

Glaucoma

- Leading cause of irreversible blindness worldwide; a chronic, progressive optic neuropathy with loss of retinal ganglion cells, projected to rise as the population ages¹
- Elevated intraocular pressure (IOP) is a significant modifiable factor²⁻⁴

Glaucoma Treatment

- IOP-lowering eye drops have traditionally been first-line for POAG, but side effects drive poor compliance — accounting for ~50% of treatment failures^{1, 5-9}
- Selective Laser Trabeculoplasty (SLT) lowers IOP in POAG and ocular hypertension (OHT) without the side effects of eyedrop therapy^{10, 12}
- SLT may reduce the lifelong burden of drop therapy and slow disease progression
- The LiGHT trial established SLT as a safe and effective first-line treatment for POAG and OHT¹³

OBJECTIVES

- Evaluate effectiveness of SLT in reducing IOP in treatment-naïve patients at a single community ophthalmology practice
- Findings may provide:**
 - Real-world evidence of SLT's effectiveness
 - Region-specific data to guide treatment recommendations and practice patterns for glaucoma patients in Saskatchewan

MATERIALS & METHODS

- Retrospective chart study on 411 treatment-naïve eyes from 07/01/2020 – 07/01/2023
- All data collected in a single community clinic of an ophthalmologist
- Eligible patients had a new diagnosis of untreated: POAG, OHT, glaucoma suspect, pseudoexfoliation syndrome (PXF), pseudoexfoliation glaucoma (PXG), pigment dispersion syndrome (PDS), low tension glaucoma, *primary angle closure, and secondary glaucoma
- Patients were 18 years or older, able to read and understand English, and had no previous surgery to treat glaucoma
- Patients were excluded if they had prior IOP-lowering therapy or procedures to treat glaucoma
- Baseline IOP prior to SLT was recorded for each patient
- IOP was recorded at each subsequent follow-up following SLT treatment
- Patients were permitted 2 rounds of 180-degrees of SLT treatment to achieve full therapeutic effect
- Ethical approval was granted by the local research ethics board (REB) through the University of Saskatchewan

*These patients would have had YAG peripheral laser iridotomy prior to SLT

DISEASE DEFINITION & TARGETS

- Disease definition and glaucoma severity classified per the Canadian Ophthalmological Society evidence-based clinical practice guidelines for the management of glaucoma in the adult eye¹⁴
- Primary target:** Number of patients achieving target IOP reductions based on glaucoma severity
- Secondary target:** Identify patient characteristics that predict treatment success and failure

RESULTS

Figure 1: SLT Treatment Outcomes

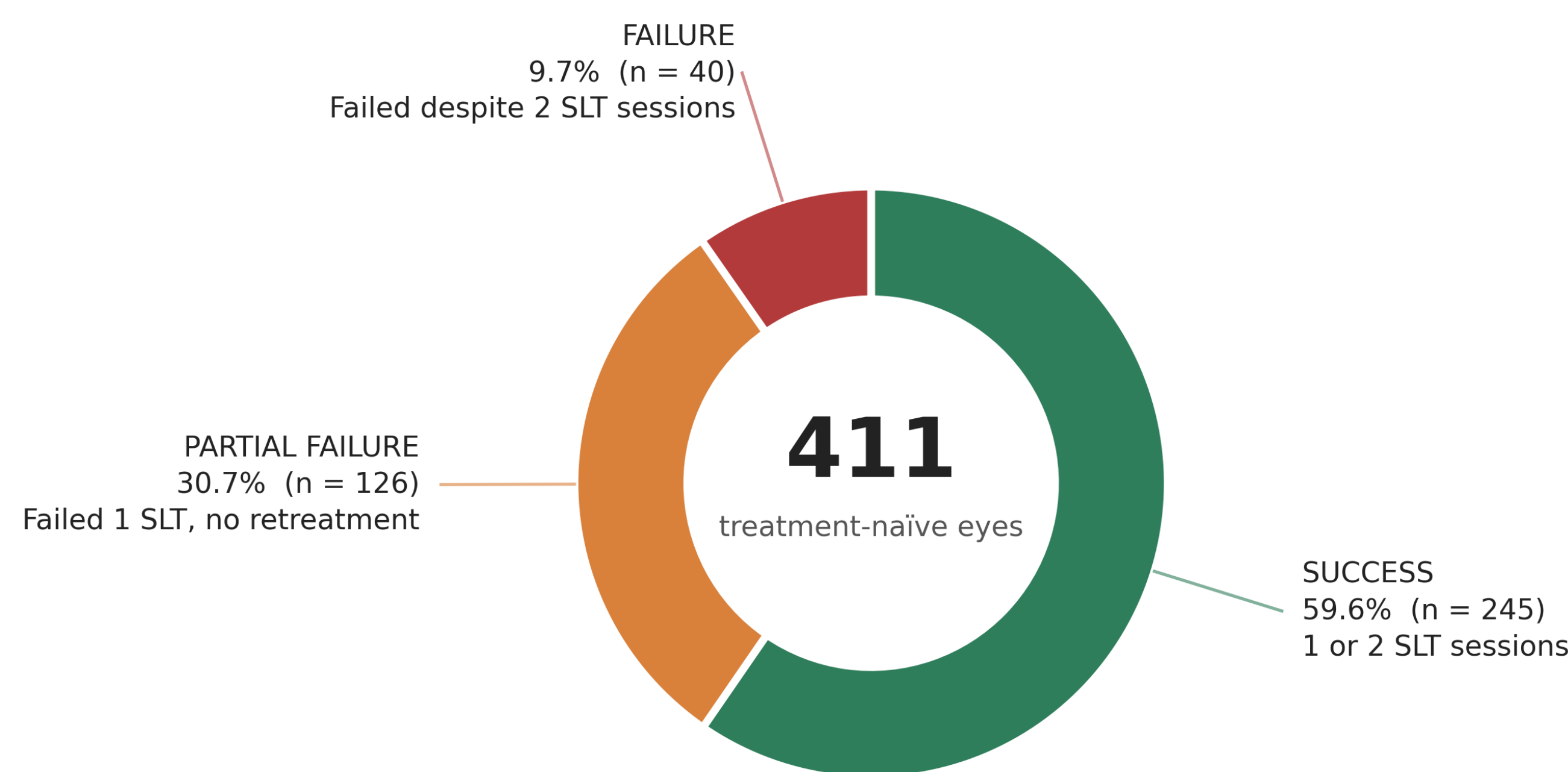


Figure 2: Baseline IOP by SLT Outcome

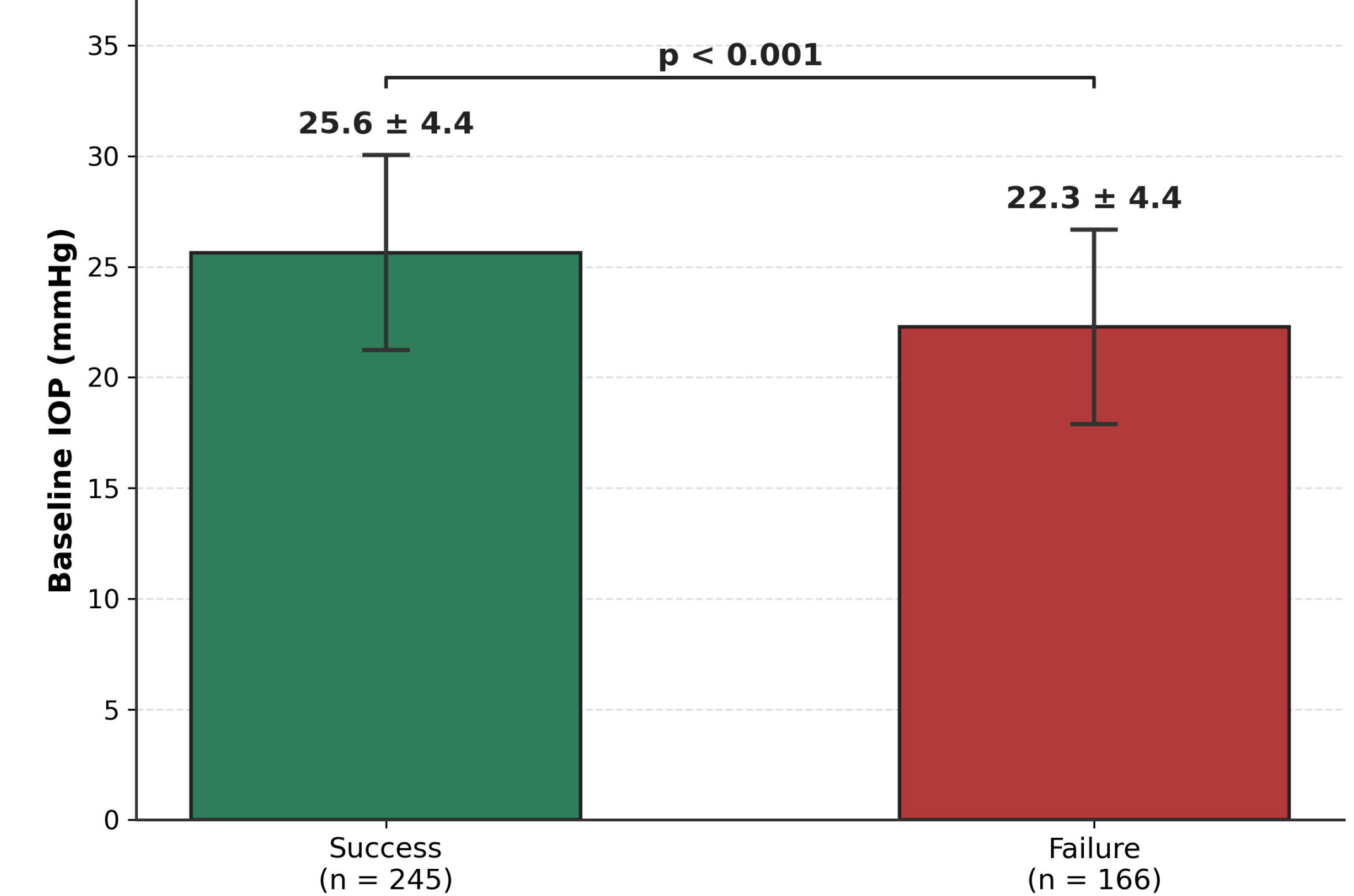


Figure 3: Disease Severity by SLT Outcome

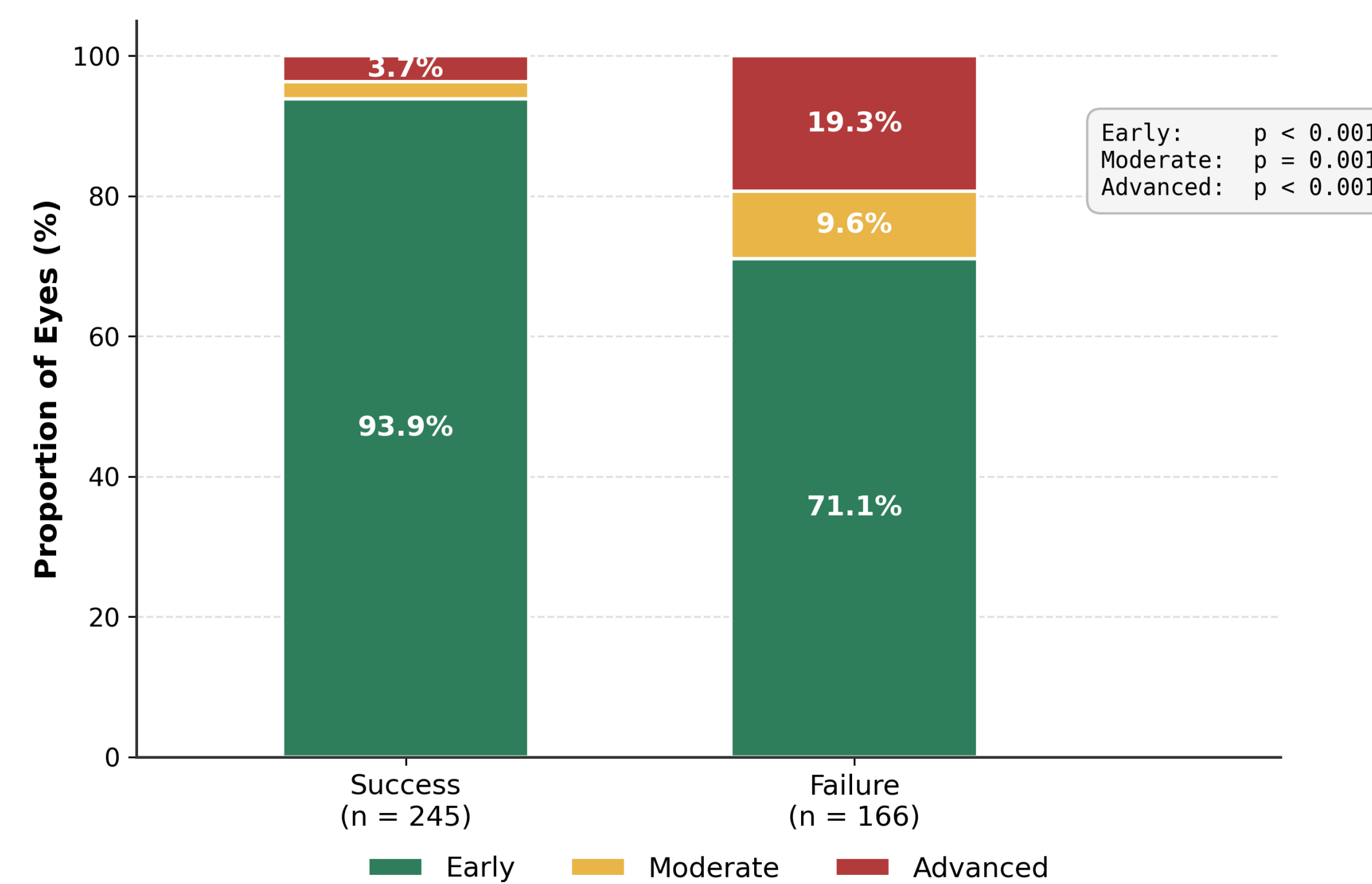
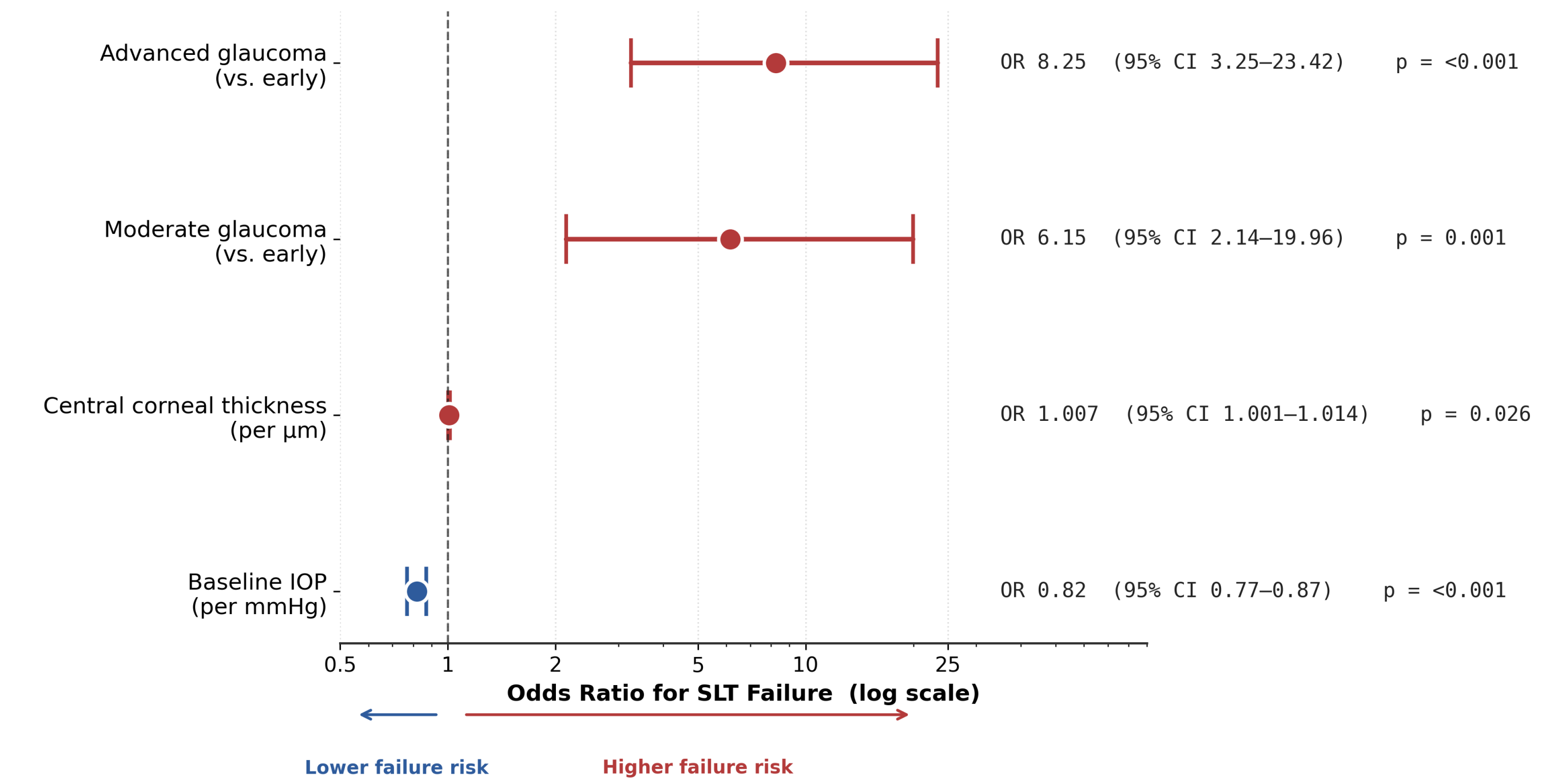


Figure 4: Independent Predictors of SLT Failure



CONCLUSION

- SLT is an effective primary therapy for treatment-naïve glaucoma patients in a community ophthalmology setting, with ~60% of eyes reaching target IOP after 1 or 2 sessions (Fig 1)
- Patients most likely to succeed have OHT, early-stage disease, higher baseline IOP, and younger age (Fig 2-3)
- Advanced disease severity is the strongest predictor of SLT failure (~8× increased odds vs. early disease) (Fig 4)
- Lower baseline IOP and greater central corneal thickness independently increase the odds of failure (Fig 4)
- Findings support LiGHT trial conclusions in a real-world Canadian community setting and provide region-specific evidence to guide first-line glaucoma management in Saskatchewan
- Limitation of the study: reasons for not pursuing 2nd SLT were not systematically captured

Clinical Relevance & Future Direction

- Early treatment, especially in early disease and OHT, is most effective in targeted IOP reductions
- SLT is a safe and effective first-line treatment in reducing IOP in treatment-naïve patients
- SLT may reduce the burden of lifelong eye-drop therapy, particularly valuable in rural and underserved populations where adherence and follow-up are challenging
- Future analyses: length of IOP reduction maintenance, and impact on disease progression

ACKNOWLEDGEMENTS

For the support of Drs. Campos-Baniak, Thatcher, and Rawlyk



CONTACT INFORMATION

Mark Sabau
mas445@usask.ca
College of Medicine, University of Saskatchewan

REFERENCES

- Punn BE, et al. Primary Open-Angle Glaucoma Preferred Practice Pattern® Guidelines. *Ophthalmology*. 2016;123(1):P41-111.
- Weinreb RN, Aung T, Medeiros FA. The Pathophysiology and Treatment of Glaucoma: A Review. *JAMA*. 2014;311(18):1901.
- Mittag TW, et al. Retinal damage after 3 to 4 months of elevated IOP in a rat glaucoma model. *Invest Ophthalmol Vis Sci*. 2000;41(11):3451-9.
- Chanhan BC, et al. Effect of IOP on optic disc topography, electroretinography, and axonal loss. *Invest Ophthalmol Vis Sci*. 2002;43(9):2969-76.
- Inoue K. Managing adverse effects of glaucoma medications. *OPHTH*. 2014;903.
- Hwang DK, et al. Persistence of Topical Glaucoma Medication. *JAMA Ophthalmol*. 2014;132(12):1446.
- Nordstrom BL, et al. Persistence and Adherence With Topical Glaucoma Therapy. *Am J Ophthalmol*. 2005;140(4):598.e1-11.
- Schwartz GF. Compliance and persistence in glaucoma follow-up treatment. *Curr Opin Ophthalmol*. 2005;16(2):114-21.
- Schwartz GF, Quigley HA. Adherence and Persistence with Glaucoma Therapy. *Surv Ophthalmol*. 2008;53(6):557-68.
- Garg A, et al. Primary SLT for Open-Angle Glaucoma and OHT. *Ophthalmology*. 2019;126(9):1238-48.
- Goyal S, et al. Effect of primary SLT on tonographic outflow facility: an RCT. *Br J Ophthalmol*. 2010;94(11):1443-7.
- Chavez MP, et al. SLT vs Medical Therapy for Open Angle Glaucoma or OHT: Systematic Review and Meta-Analysis. *J Glaucoma*. 2024;33(12):973-86.
- Gazzard G, et al. SLT vs eye drops for first-line treatment of OHT and glaucoma (LiGHT): a multicentre RCT. *Lancet*. 2019;393(10180):1505-16.
- Canadian Ophthalmological Society evidence-based clinical practice guidelines for the management of glaucoma in the adult. *Can J Ophthalmol*. 2009;44:57-54.