

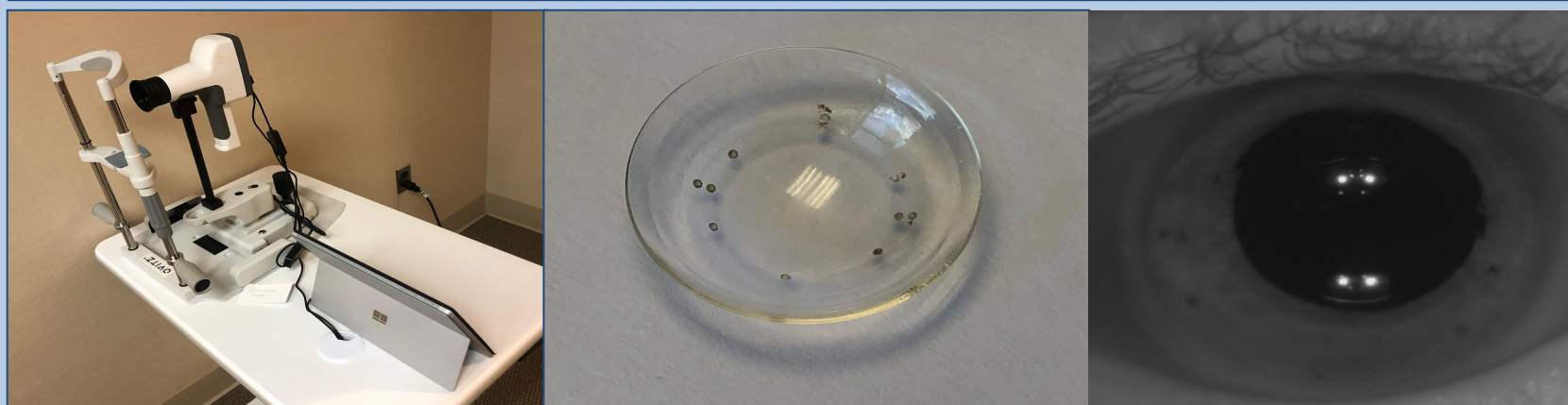


Introduction

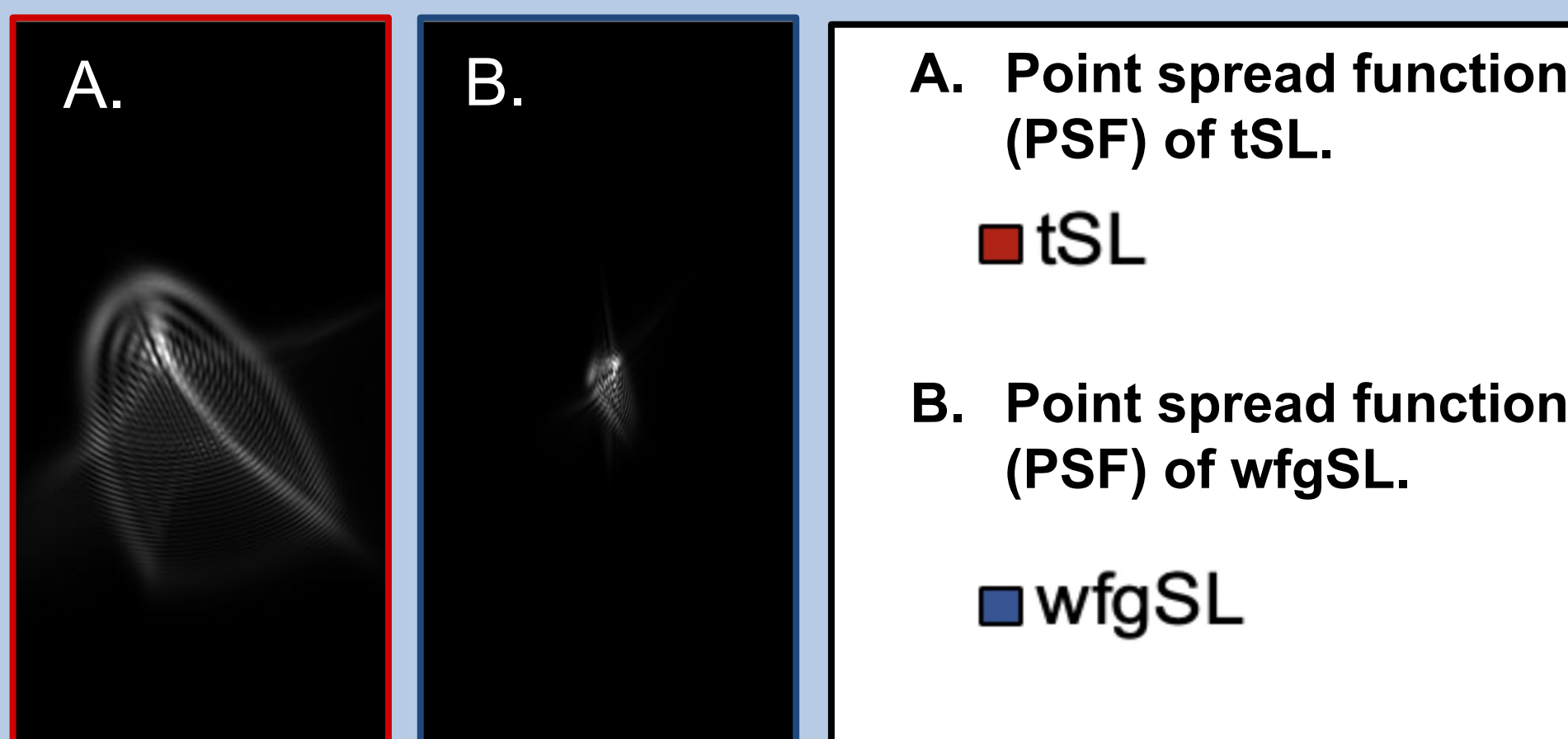
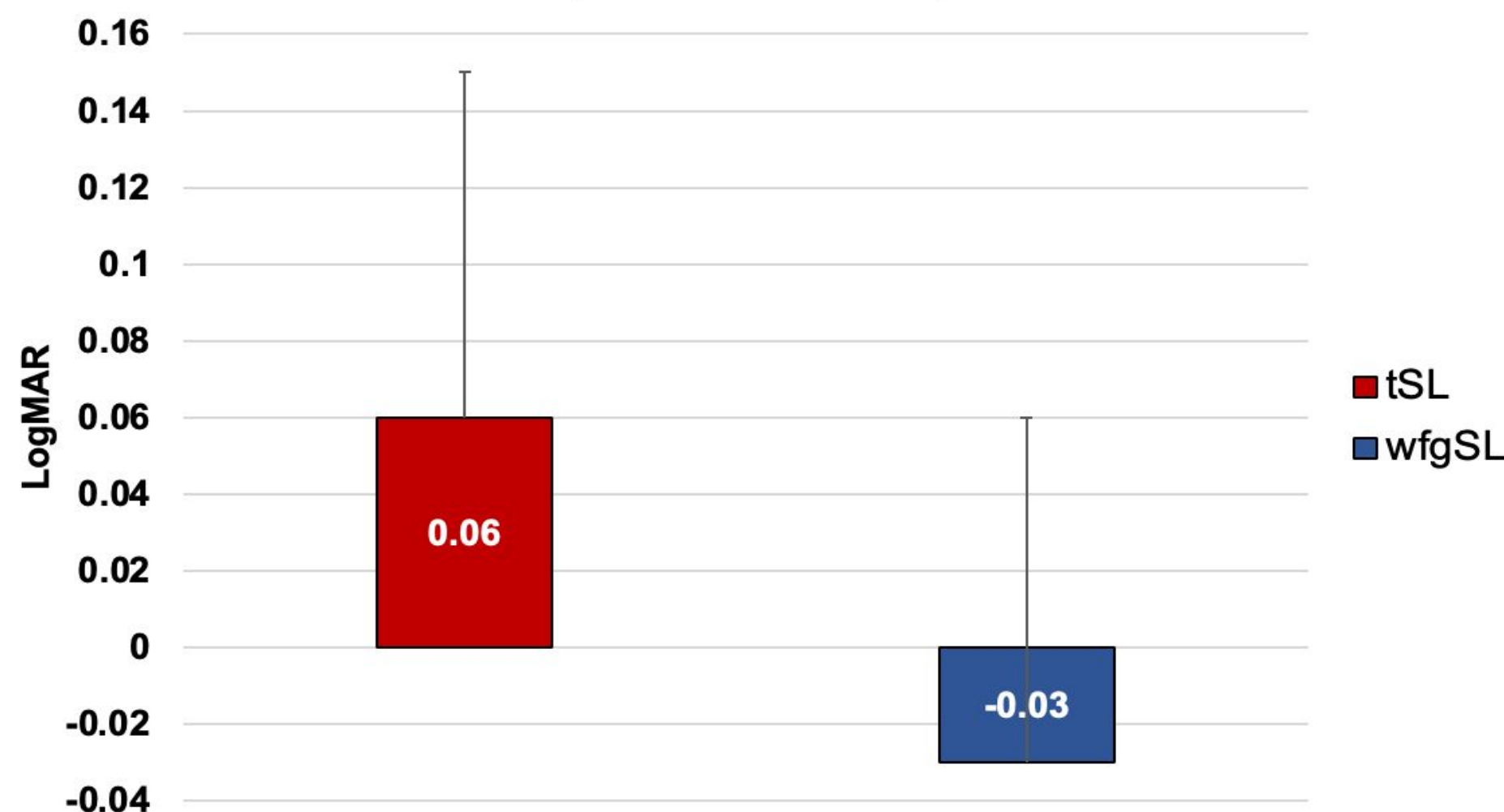
- The application of wavefront-guided optics to scleral lenses has been shown to reduce higher order aberrations in eyes with keratoconus.¹
- This retrospective review compares visual outcomes between traditional scleral lens optics (tSL) and wavefront-guided scleral lens optics (wfgSL) in patients with a history of penetrating keratoplasty (PK).

Methods

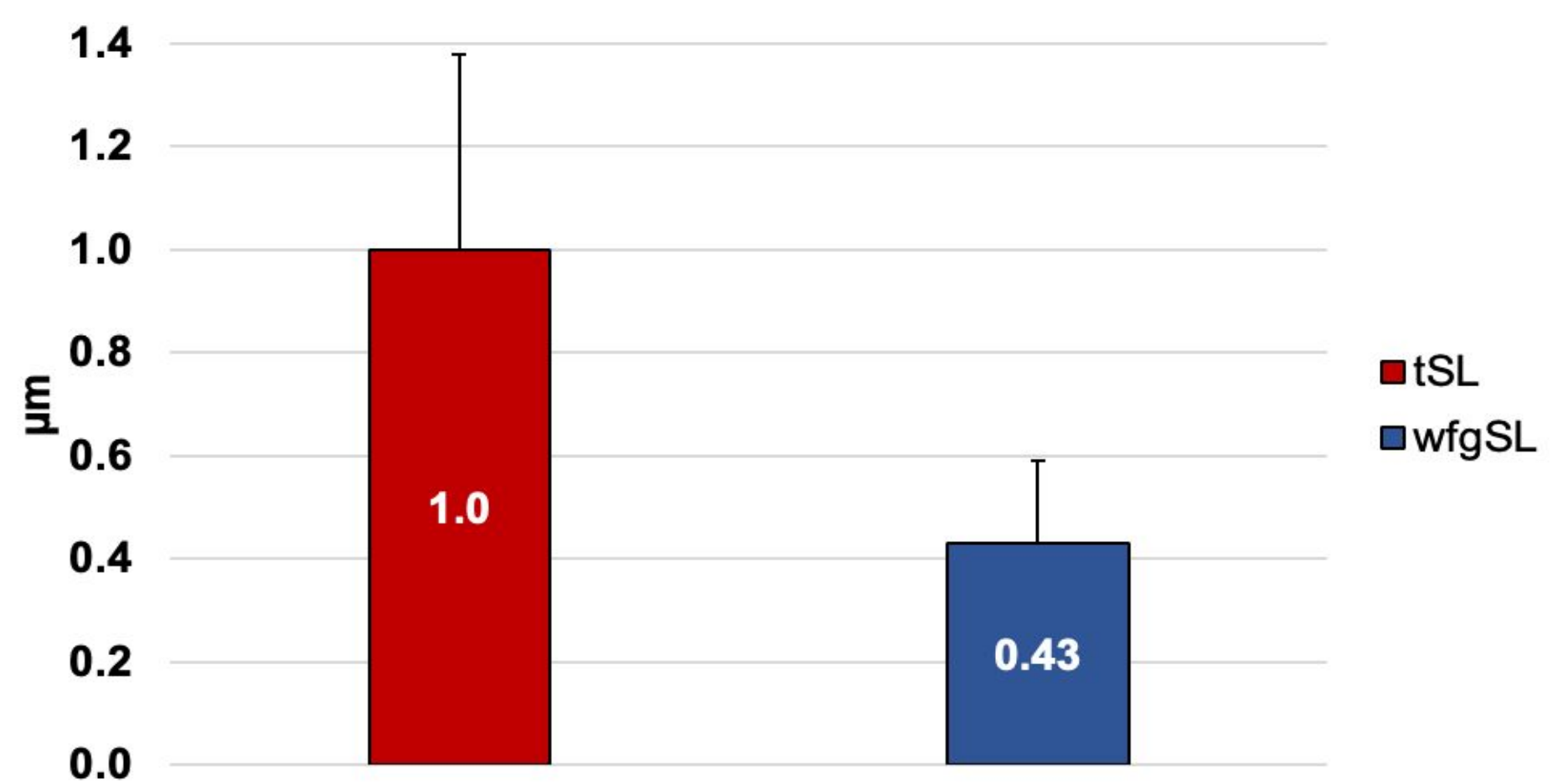
- 6 eyes of 4 patients, all with a history of PK, were fitted with a tSL with sphere and cylinder correction only.
- After the tSL was finalized, a comprehensive wavefront aberrometry system (xWave, Ovitz, Rochester, NY) was used to create a wfgSL (ARES, Ovitz, Rochester, NY, manufactured by Valley Contax, Eugene, OR, and EyeFitPro, EyePrint Prosthetics, Lakewood, CO).
- A crossover was performed, best-corrected lens visual acuity (BCLVA) and total higher-order root mean square (HORMS) were compared between the tSL and wfgSL after 4 weeks of lens wear.



AVERAGE BCLVA



AVERAGE HORMS



Results

- The tSL cohort averaged BCLVA of 0.06 ± 0.09 LogMAR and HORMS of $1.00 \pm 0.38 \mu\text{m}$.
- The wfgSL cohort averaged BCLVA of -0.03 ± 0.09 LogMAR and HORMS of $0.43 \pm 0.16 \mu\text{m}$.
- wfgSL showed an average BCLVA improvement of 0.08 ± 0.07 LogMAR ($p < 0.05$) and HORMS improvement of $0.57 \pm 0.29 \mu\text{m}$ ($p < 0.05$) compared to tSL.
- 4 of 6 eyes, 67%, improved 1 line or greater, and 2 of 6 eyes, 33%, showed no improvement in BCLVA with wfgSL.
- All eyes showed a reduction of HORMS of 30% or greater, ranging from 34% to 68%, with wfgSL.

Conclusions

- In patients with a history of PK, wfgSL reduce HORMS and improve BCLVA when compared to tSL.
- Further studies are needed to understand factors related to the level of improvement in HORMS and BCLVA. Factors may include graft age, endothelial health, corneal clarity, and intraocular media clarity.

References

- Sabesan R, Johns L, Tomashevskaya O, Jacobs DS, Rosenthal P, Yoon G. Wavefront-guided scleral lens prosthetic device for keratoconus. *Optom Vis Sci*. 2013;90(4):314-323. doi:10.1097/OPX.0b013e318288d19c

Disclosures

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