



# Visual Improvement with Wavefront Guided Scleral Lenses for Keratoconus After Intracorneal Ring Segment Implantation

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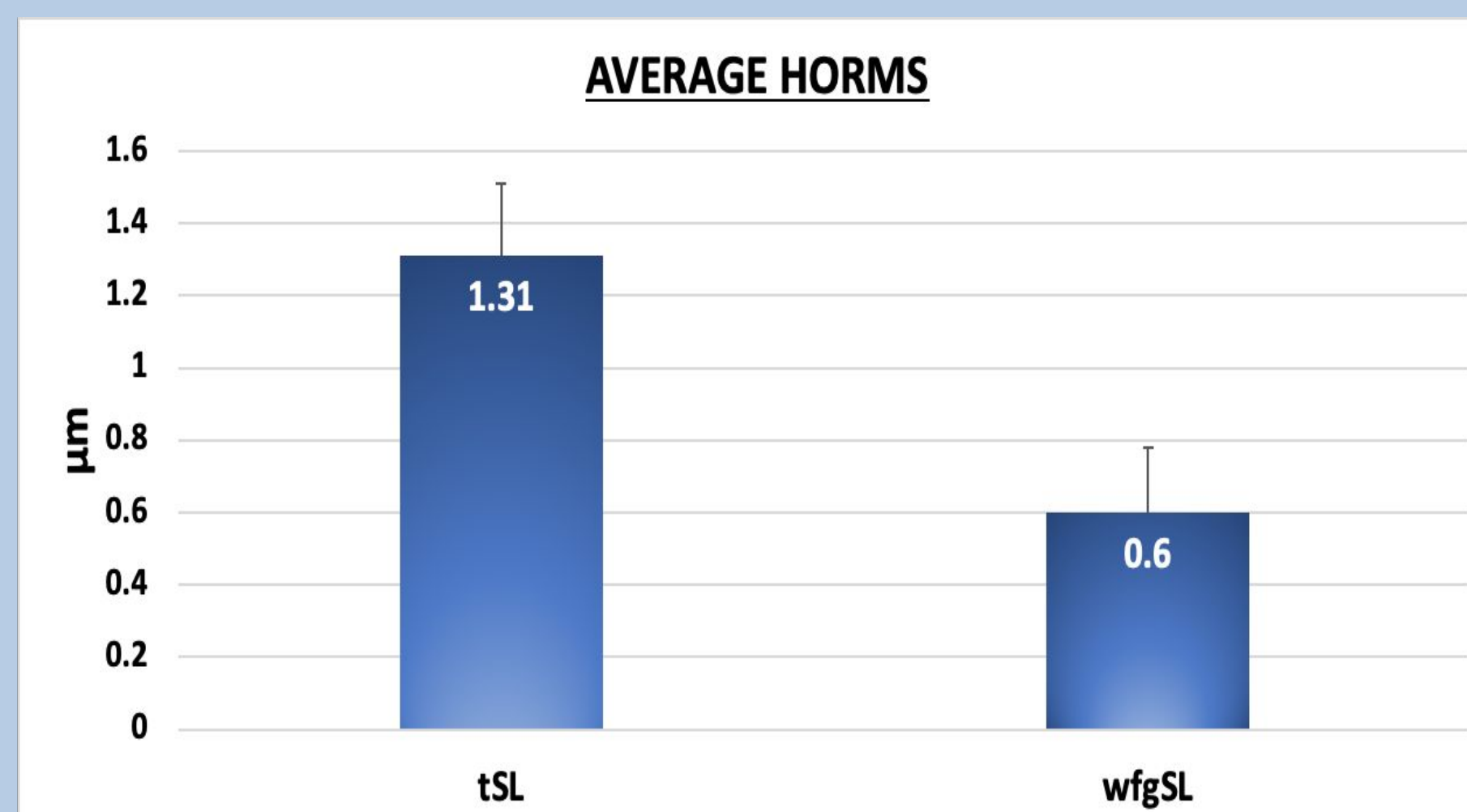
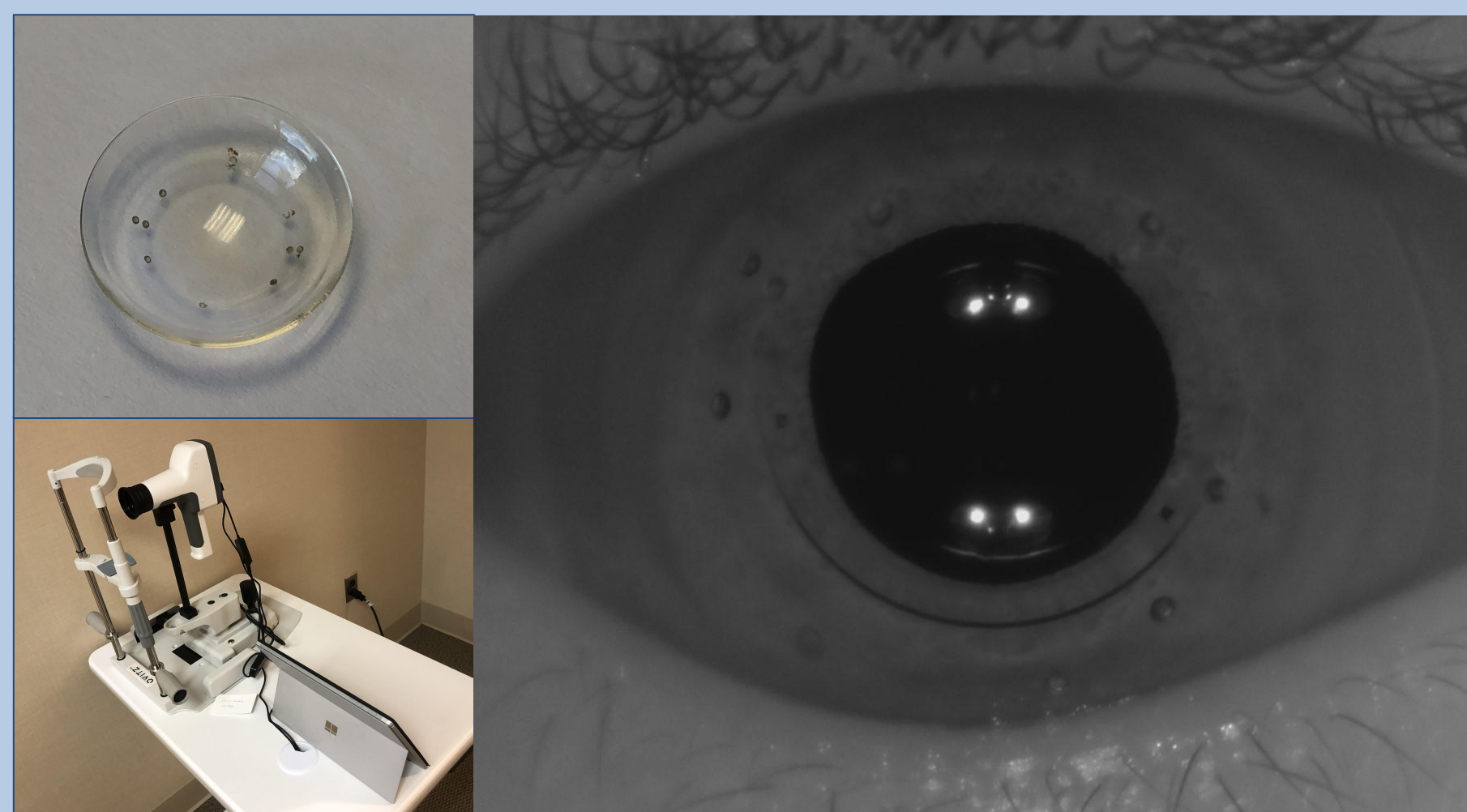
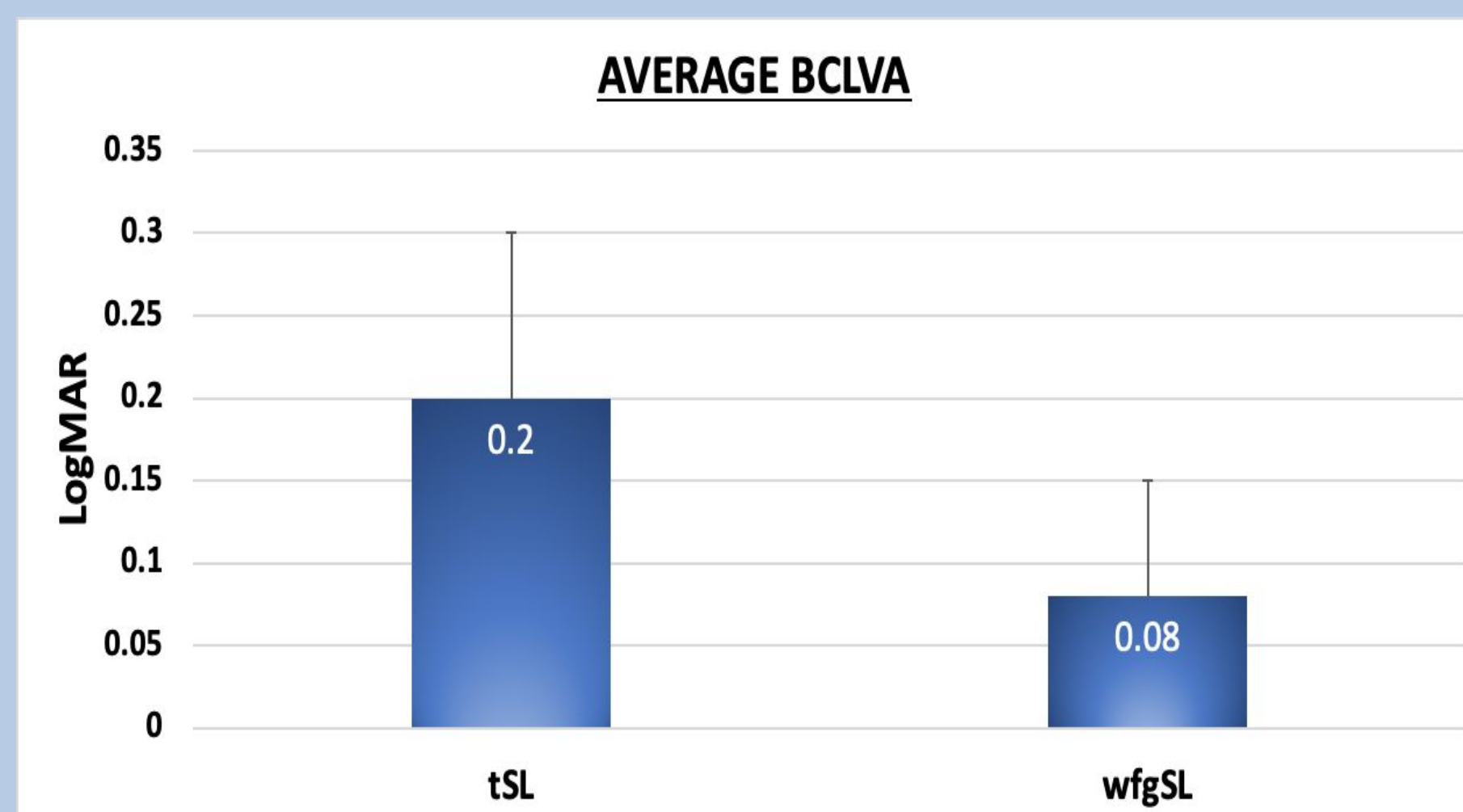
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## Introduction

- The application of wavefront-guided optics to scleral lenses has been shown to reduce higher order aberrations in eyes with keratoconus.<sup>1</sup>
- This retrospective review compares visual outcomes between traditional scleral lens optics (tSL) and wavefront-guided scleral lens optics (wfgSL) in patients with keratoconus after intracorneal ring segments (ICRS) implantation.

## Methods

- 6 eyes of 4 patients, all with keratoconus and ICRS (Intacs, AJL Ophthalmic S.A., Spain), 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).
- 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.



## Results

- The tSL cohort averaged BCLVA of  $0.2 \pm 0.1$  LogMAR and HORMS of  $1.31 \pm 0.2 \mu\text{m}$ .
- The wfgSL cohort averaged BCLVA of  $0.08 \pm 0.07$  LogMAR and HORMS of  $0.60 \pm 0.18 \mu\text{m}$ .
- An average BCLVA improvement of  $0.12 \pm 0.12$  LogMAR ( $p < 0.05$ ) and HORMS improvement of  $0.58 \pm 0.29 \mu\text{m}$  ( $p < 0.05$ ).
- 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 31% to 73%, with wfgSL.

## Conclusions

- In patients with Keratoconus and ICRS, 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.

## References

1. 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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