Initial experience with dual-pulse femtosecond laser-assisted capsular marks for toric IOL alignment

Bennett Walton, MD
Stephen Slade, MD

Slade & Baker Vision
Houston, Texas

SLADE & BAKER VISION

DISCLOSURES

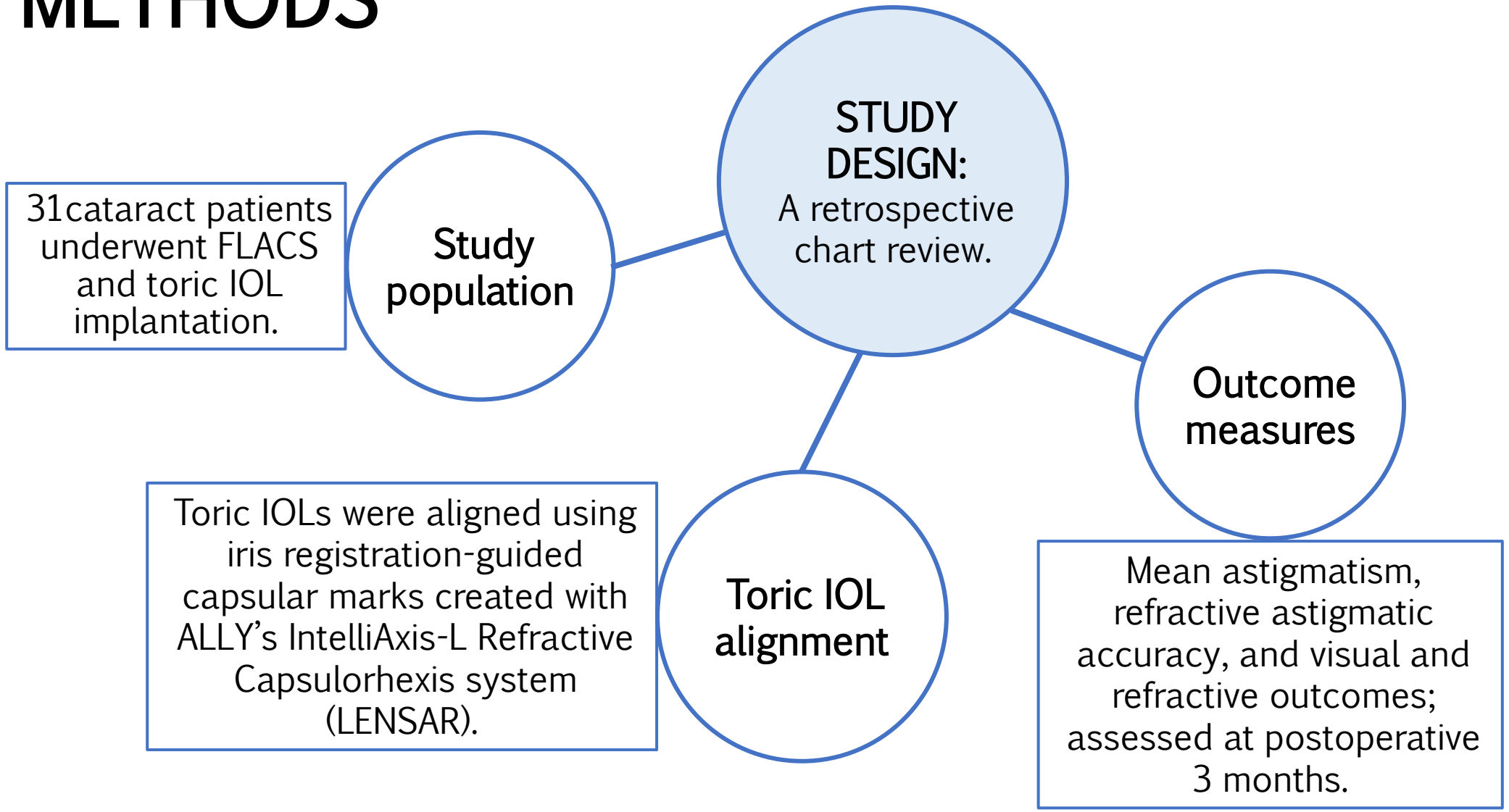
INTRODUCTION

- Three vital elements are required for the successful incorporation of toric IOLs into cataract surgery practice.
  - Preoperatively, accurate measurement of corneal astigmatism to calculate toric IOL's power and intended axis of implantation after accounting for surgically induced astigmatism.
  - Intraoperatively, accurate alignment of toric IOL on the intended axis of implantation.
  - Post-operatively, assess for any IOL rotation.
- LENSAR's IntelliAxis creates a pair of capsular marks (CMs) on the capsular rim as a part of the laser capsulotomy procedure. These CMs:
  - facilitate precise toric IOL alignment on the predefined axis of implantation.
  - Remain visible postoperatively to check for any postop IOL misalignment and help to reposition the IOL if required.

PURPOSE

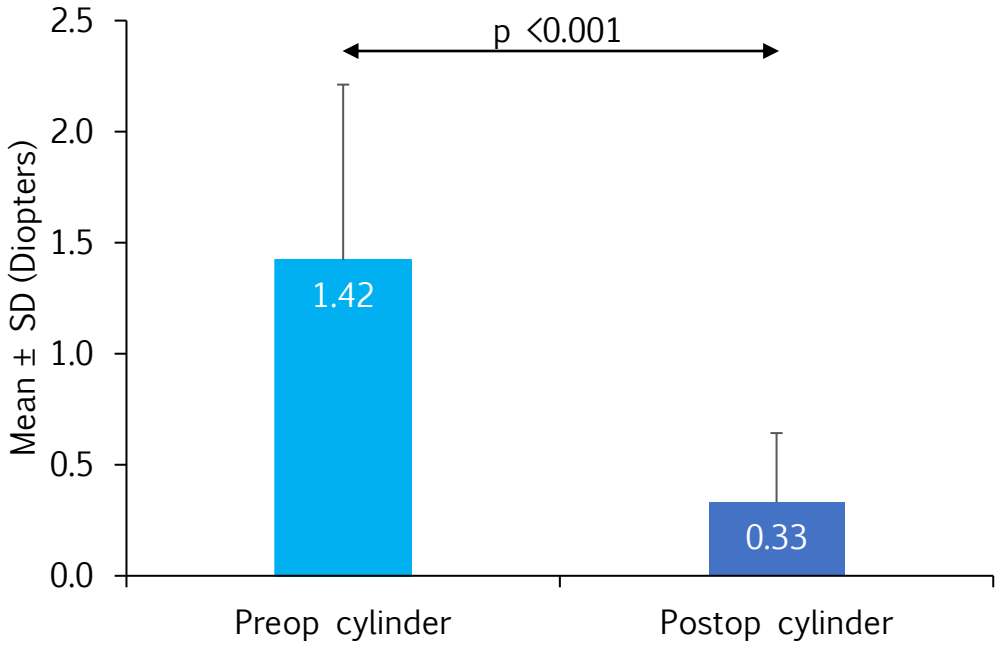
- To evaluate initial refractive outcomes of toric IOLs aligned using iris-registration guided capsular marks created by a femtosecond laser.

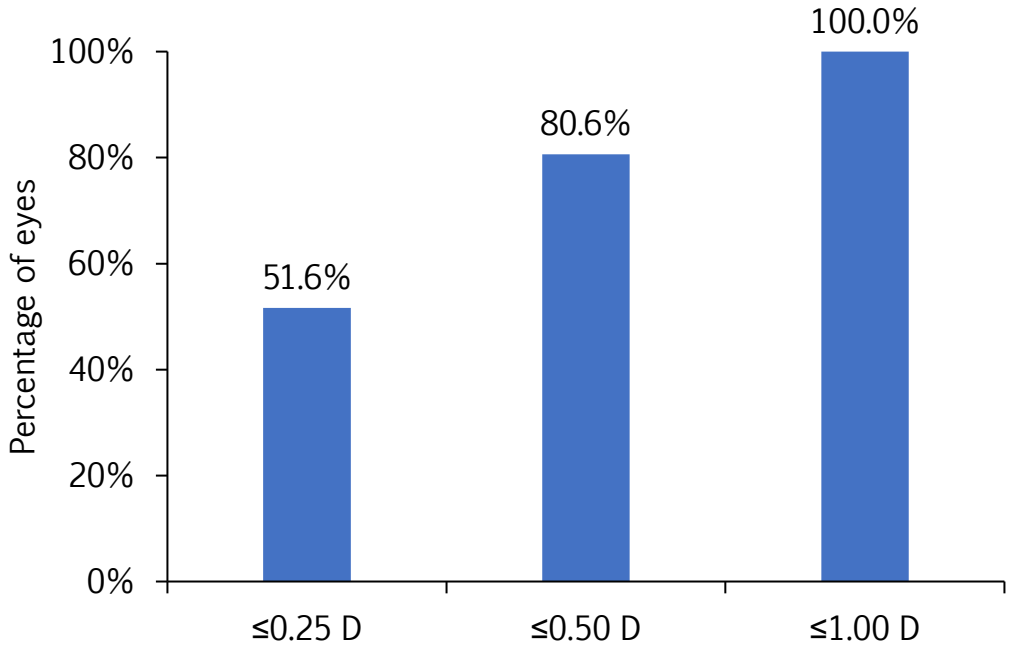
METHODS


STUDY DESIGN:
A retrospective chart review.
Study population
31cataract patients underwent FLACS and toric IOL implantation.
Toric IOL alignment
Toric IOLs were aligned using iris registration-guided capsular marks created with ALLY's IntelliAxis-L Refractive Capsulorhexis system (LENSAR).
Outcome measures
Mean astigmatism, refractive astigmatic accuracy, and visual and refractive outcomes; assessed at postoperative 3 months.

RESULTS

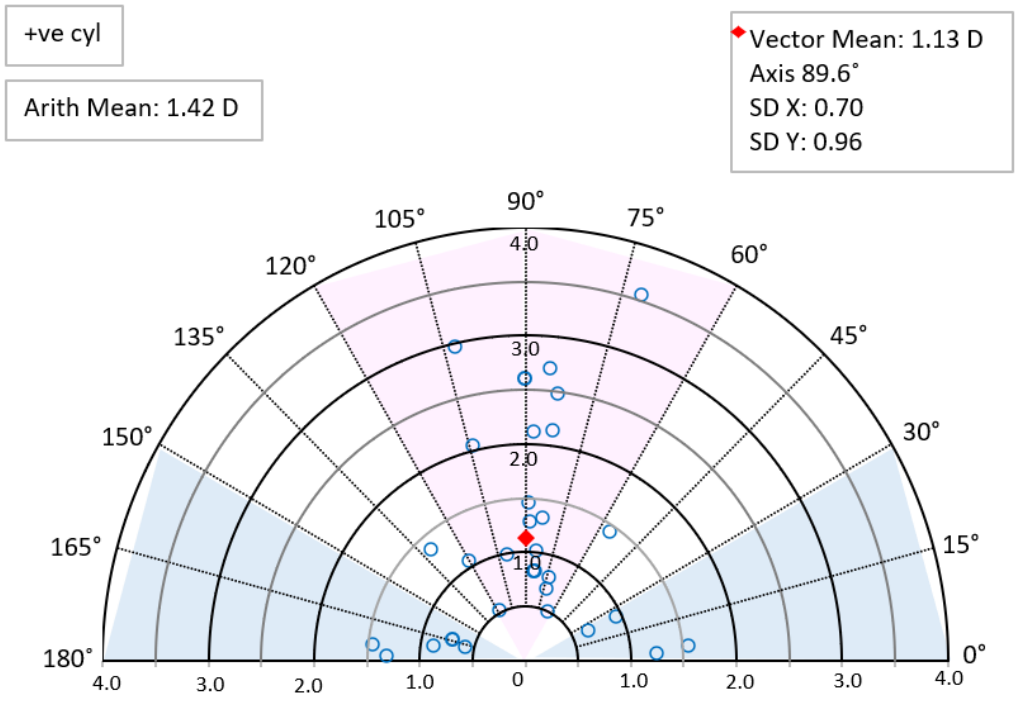
Preop corneal vs postop refractive astigmatism



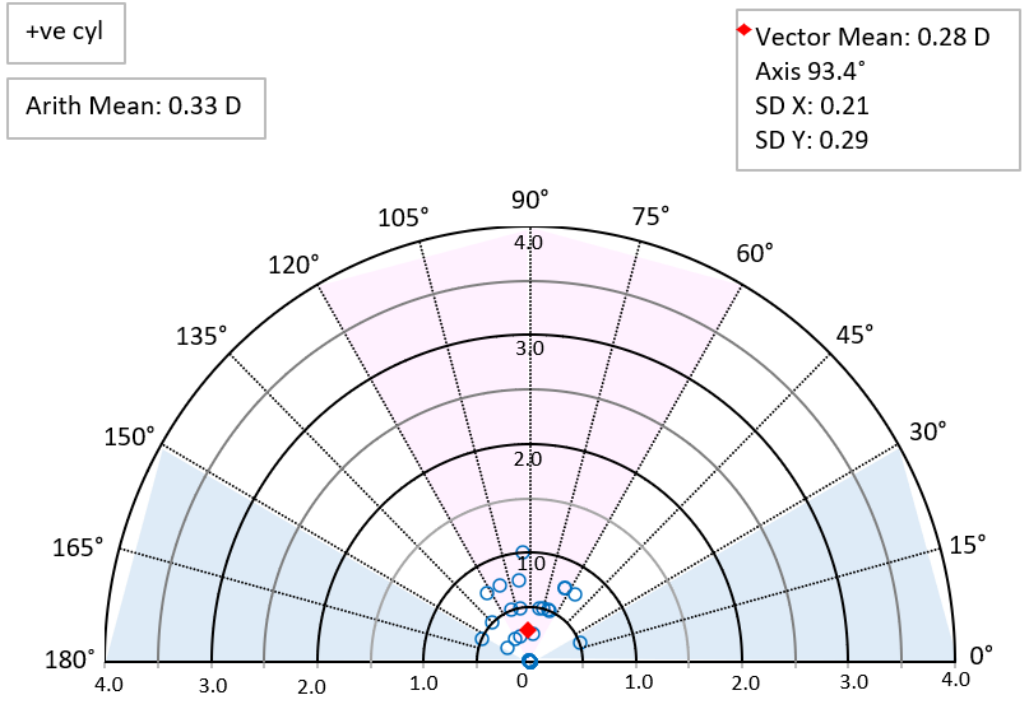


RESULTS

Preoperative corneal astigmatism



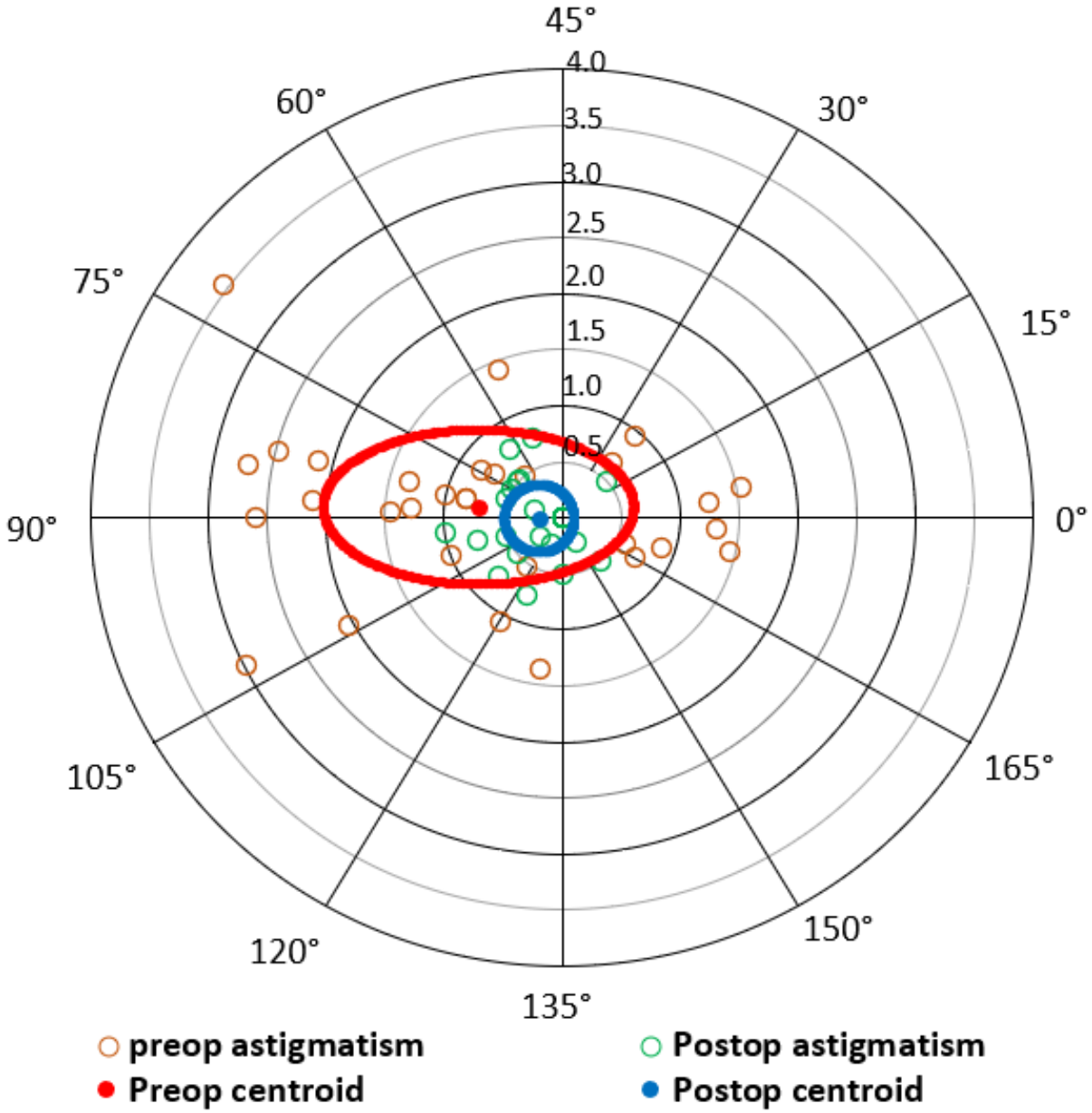
Postoperative refractive astigmatism



Vectoral mean of astigmatism decreased from 1.13 D preoperatively to 0.28 D postoperatively.

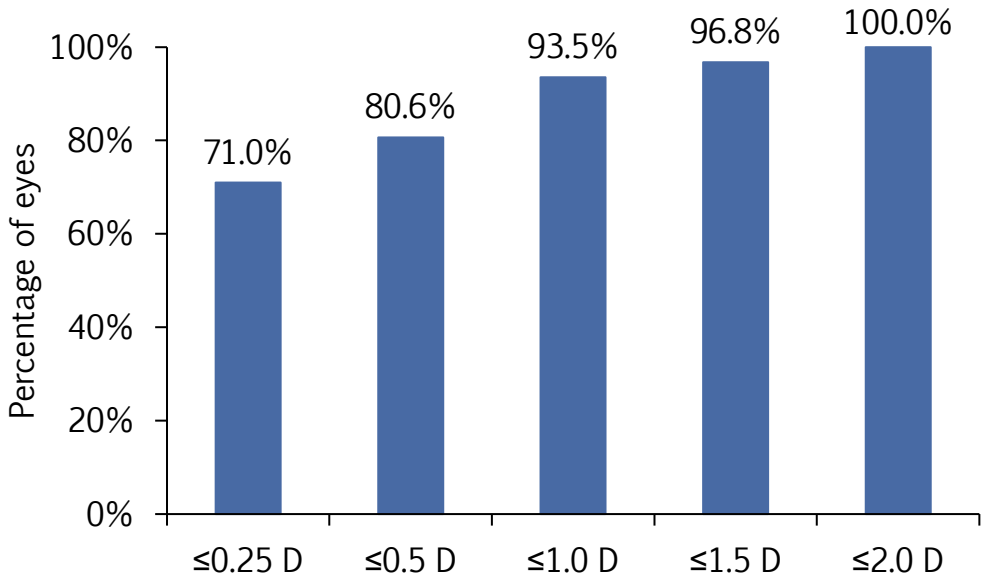
RESULTS

Centroid of postop astigmatism was closer to 0.0 D and had a smaller vectoral standard deviation (represented by ellipse).

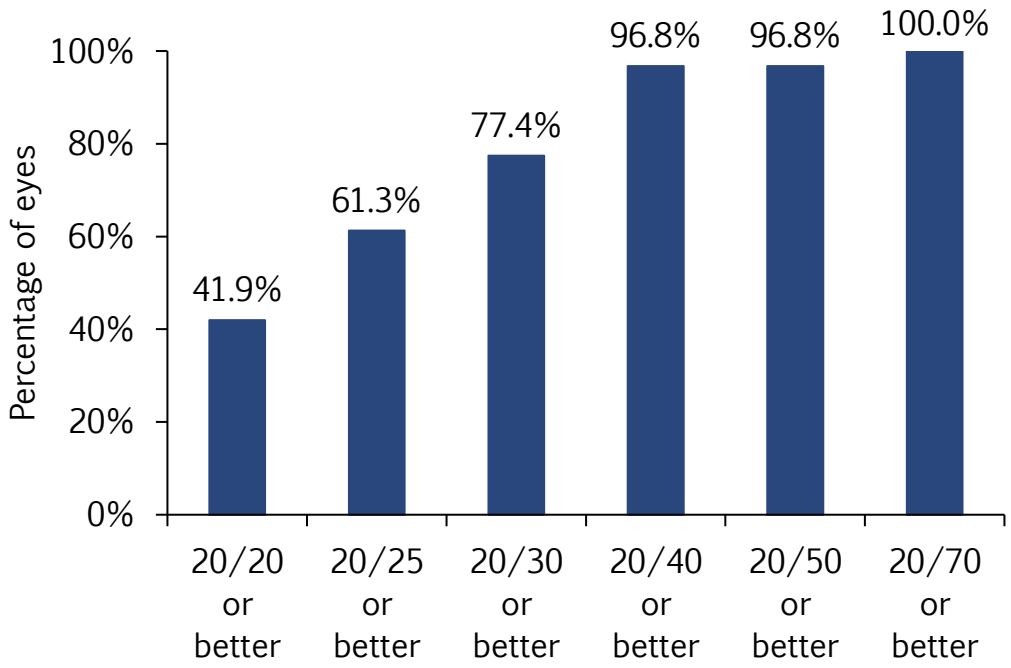


RESULTS

Postoperative MRSE
Mean: -0.17 ± 0.48 D



Postoperative UDVA
Mean: 0.12 ± 0.14 logMAR



DISCUSSION:

DUAL PULSE FLACS WITH IRIS REGISTRATION GUIDED CAPSULOR MARKS FOR TORIC ALIGNMENT

CONCLUSION

- Toric IOLs aligned using iris registration-guided femtosecond laser capsular marks (CMs) were effective in correcting astigmatism yielding good outcomes postoperatively.
  - 81% of the eyes achieved refractive cylinder and MRSE within 0.50 D postoperatively.
    - Further optimization of toric correction through direct measurement of posterior corneal astigmatism
    - Improved optimization of spherical equivalent accuracy through personalization of surgeon factor/A constant
- Refractive Capsulorhexis automatically compensates for cyclotorsion and marks the intended axis of implantation on the capsulotomy margin.
- Capsular marks also serve as a ready reference point to assess the postoperative rotational stability of the IOL and rotate into position, if needed

THANK YOU