Impact of Combined Pars Plana Vitrectomy and Encircling Scleral Band on Axial Length and Intraocular Lens Power Calculations

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Purpose

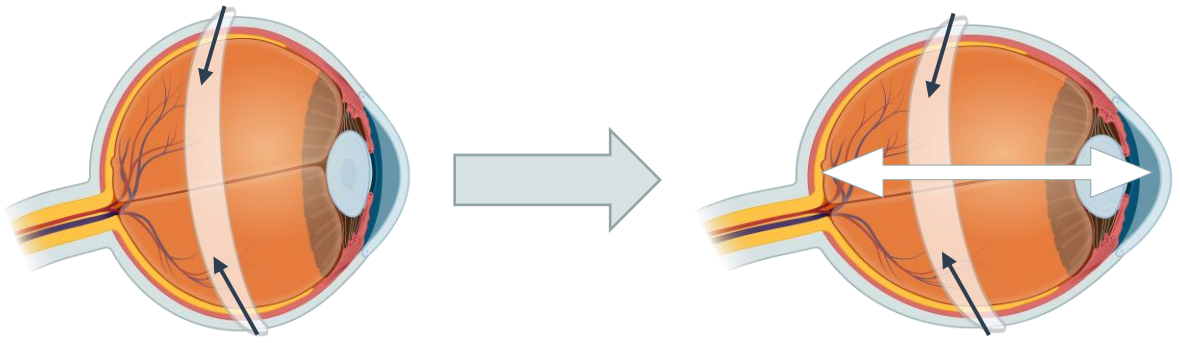
To evaluate postoperative changes in axial length (AL) and ocular biometry following combined pars plana vitrectomy (PPV) and encircling scleral band surgery. To our knowledge, this study is the first to investigate combined PPV and encircling scleral band surgery.

Methods

A retrospective study of patients who underwent combined PPV and encircling scleral band surgery between 2018 and 2024 and had Preoperative and postoperative biometric measurements.

Conclusions

Combined PPV and encircling scleral band surgery results in significant AL elongation with corresponding reductions in IOL power predictions.



The encircling scleral band effect causes an axial length increase

Results

Data from 45 eyes was analyzed; the mean age was 55.7 ± 11.2 years, the mean preoperative BCVA was 0.88 ± 0.85 LogMAR, and 20 eyes (44.4%) were Mac-On.

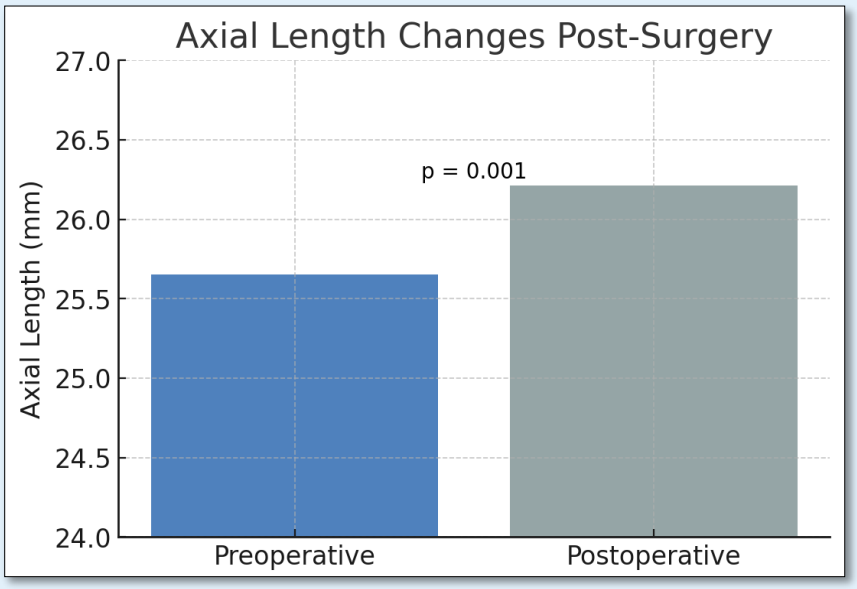


Figure 1:

A significant postoperative AL increase was observed (25.65 ± 1.66 mm vs. 26.21 ± 1.70 mm; $p < 0.001$). Mac-On and Mac-Off groups showed significant AL elongation after macular status stratification ($p < 0.001$).

Preoperatively, AL was similar between operated and fellow eyes ($p = 0.775$), and the difference between the eyes was significantly greater postoperatively ($p = 0.001$).

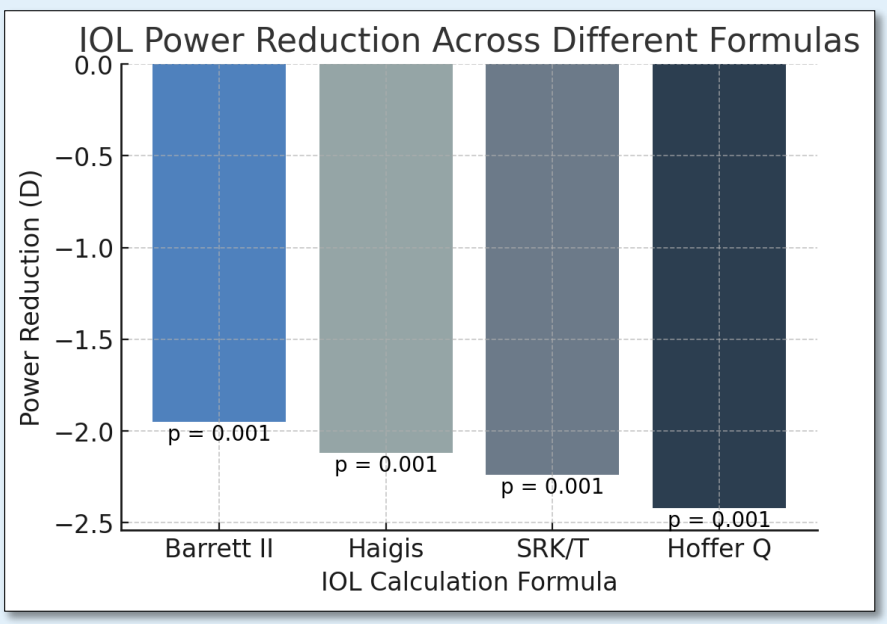


Figure 3:

All formulas showed significant reductions in predicted IOL power postoperatively ($p < 0.001$): Barrett Universal II (-1.95D), Haigis (-2.12D), SRK/T (-2.24D), and Hoffer Q (-2.42D) (all $p < 0.001$).

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