

The Relationship Between Preoperative Anterior Chamber Depth and Postoperative Intraocular Pressure in Non-Glaucomatous, Non-Ocular Hypertensive Eyes Following Cataract Surgery

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Introduction

An increase in anterior chamber depth (ACD) and decrease in intraocular pressure (IOP) has been previously described in the weeks to months following cataract surgery (1). The relationship between preoperative ACD and IOP changes following cataract surgery has shown conflicting results in past studies (2,3). The primary aim of this study was to determine the relationship between ACD and 1 day postoperative IOP following uncomplicated phacoemulsification with intraocular lens (IOL) implantation.

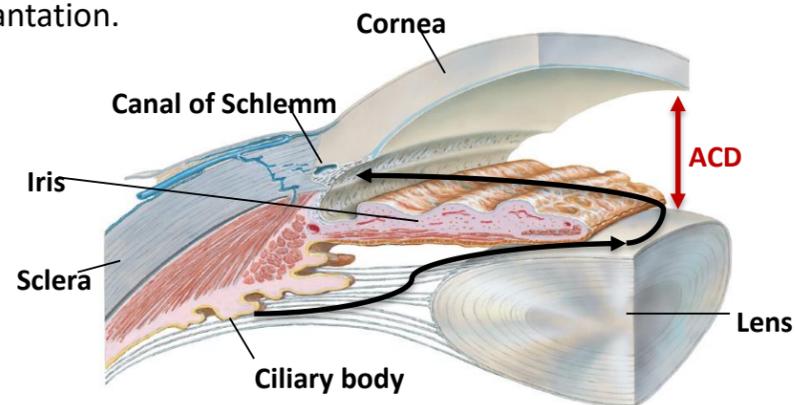


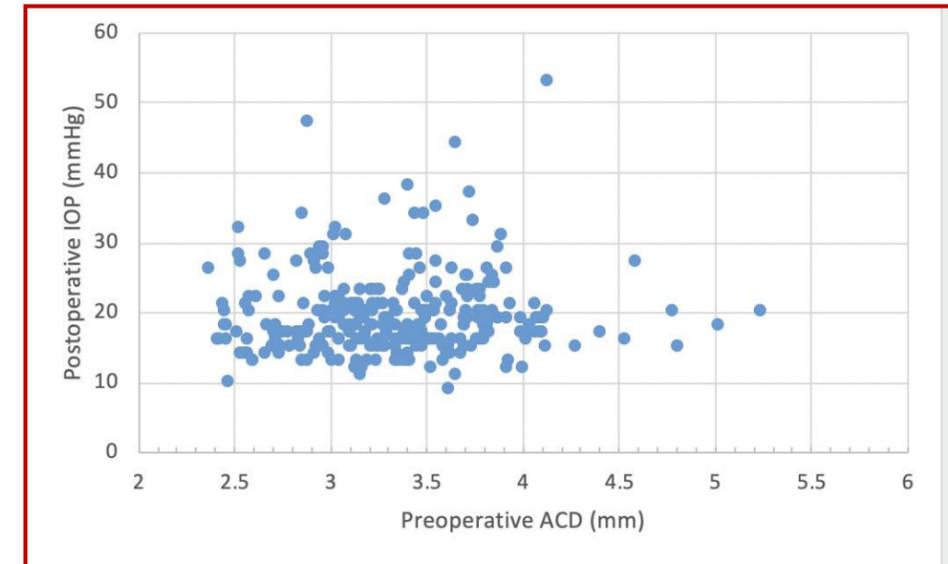
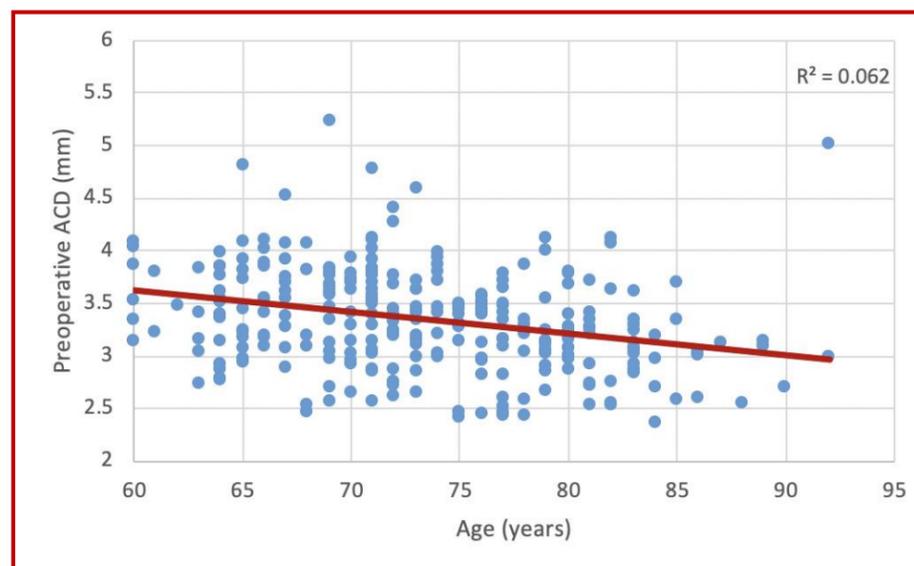
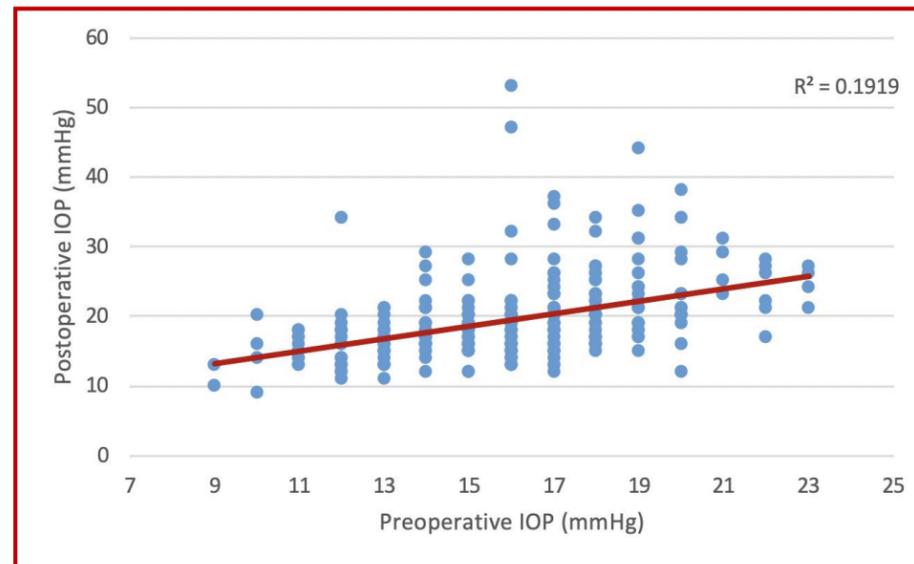
Figure 1 modified image from Netter (5): Illustration of aqueous humor production in ciliary body and pathway to reabsorption by the Canal of Schlemm. The ACD is the distance between innermost surface of the cornea and the front of the lens.

Methods

We analyzed phacoemulsification with IOL implantation surgical data for a clinic in Portland, OR between 1/1/2016-6/1/2018 (N=288). Patients were included in the study if they were 60 years of age or older, had no history of glaucoma, ocular hypertension (OHT), pseudoexfoliation syndrome, pigment dispersion syndrome, eye trauma, use of IOP-lowering drops, or intraoperative complications. ACD measurements were taken using IOLmaster machinery. IOP was checked preoperative and postoperatively (within 16-30 hours of surgery) using Goldmann applanation tonometer. Paired t-test were conducted to assess the change in IOP. Pearson correlation coefficient was reported for the association between ACD and IOP.

Results

Preoperative IOP was positively correlated ($r=0.438$) with 1-day postoperative IOP ($p < 0.0001$). Preoperative ACD was not significantly correlated with postoperative IOP ($r = 0.0629$, $p = 0.2875$) nor the change in IOP (preoperative IOP – postoperative IOP) ($r = 0.0594$, $p = 0.3154$). Age was negatively correlated ($r = -0.249$) with ACD ($p < 0.0001$).



Conclusions

Our results demonstrated no correlation between ACD and 1-day postoperative IOP in non-glaucomatous, non-OHT patients undergoing cataract surgery. This suggests that preoperative ACD may not be a reliable predictor for postoperative IOP in patients without pre-existing glaucoma or OHT. Future studies could examine patients longitudinally using different factors in predicting postoperative IOP.

References

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