
Partial coherence interferometry in a teaching hospital

Leslie A. Wei, Nickolas Katsoulakis, MD, Theodoros Filippopoulos, MD, Paul B. Greenberg, MD

Partial coherence interferometry (PCI) has an 8% to 22% failure rate for a variety of reasons such as mature cataract, inability to fixate secondary to macular degeneration, tremor, keratopathy, nystagmus, and vitreous hemorrhage.1–4 The new composite IOLMaster version 5 software has demonstrated a failure rate of 7.4%, primarily because of posterior subcapsular cataracts.5 Few studies of the efficacy of PCI in a teaching hospital setting have been done. We investigated the PCI failure rate with the IOLMaster (Carl Zeiss Meditec) in a resident ophthalmology clinic at a Veterans Affairs hospital.

After investigative review board approval was obtained, the biometric measurements of 147 consecutive patients (165 eyes) who had resident-performed cataract surgery from September 2007 to June 2008 were examined. Thirty-nine patients (42 eyes) were excluded because of incomplete electronic medical records (EMRs). One hundred eight patients (123 eyes) met the inclusion criteria; 106 were men (98.1%). The mean age of the patients was 72.4 years (range 50 to 91 years). Forty-six eyes (37.4%) were documented PCI failures that required immersion A-scan for axial length determination. The subgroup of 88 eyes that had IOLMaster version 4 readings had a failure rate of 43.2%, whereas the subgroup of 35 eyes with IOL-Master version 5 readings had a significantly lower failure rate of 22.9% (odds ratio = 0.38, P < .05). All PCI failures were due to dense cataract. The mean preoperative best corrected visual acuity (BCVA) was 20/400 in those who had successful PCI compared with <20/400 in those requiring immersion A-scan (P = .01).

The limitations of this study include the retrospective nature, variability in measurements secondary to different resident physicians performing PCI, small sample size, a large number of exclusions due to incomplete EMRs, and inability to analyze the PCI failures by type of cataract because of variable grading of cataracts.

The study suggests that the PCI biometry failure rate is still significant in the veteran population due to dense cataracts, although the version 5 software appears to decrease this rate. The study also suggests that poor preoperative vision is a predictor of PCI failure. We look forward to continued improvements in PCI that will facilitate preoperative biometry in cases of advanced cataract in teaching hospital settings.

REFERENCES