

Session 4-L: Refractive: Phakic IOLs

Title: Age-Related Behavior of Posterior Chamber IOLs During Accommodation Measured by Partial Coherence Interferometry

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Purpose: To evaluate age-related behavior of the implantable contact lens (ICL, Staar Surgical) and the crystalline lens by a new commercial anterior segment partial coherence interferometer (PCI), the ACMaster by Carl Zeiss Meditec, Germany, during accommodation in myopic eyes.

Methods: We measured 54 eyes of 29 patients (range: 21-59 years) after myopic ICL-implantation before and during subjective accommodation stimulus of 3 diopters (D) by PCI. 9 eyes were also measured with a 5 D stimulus and 16 eyes were measured at two different visits at least.

Results: We found that older patients had a tendency towards smaller initial vaults between the ICL and the crystalline lens than younger ones. In younger patients, there was a mean decrease in vault on accommodation, whereas the initial gap became larger in older people ($p=0.001$). On accommodation, the more the anterior lens shifted forward, the more did the ICL bulge ($p<0.001$). The vault was significantly larger at 5 D than at 3 D ($p=0.037$).

Conclusion: The behavior of ICL's on accommodation is age-dependent and can be shown by PCI. Even though the crystalline lens stiffens and therefore accommodation deteriorates with age, there is still a movement of the ICL pointing out to the role of the ciliary muscle in accommodation.