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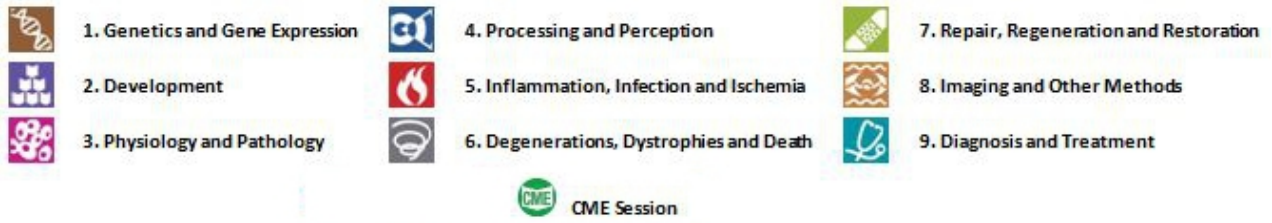

Presentation Abstract

Program#/Poster#:	5700/D639
Abstract Title:	**Ray Tracing prediction of Intraocular Lenses Power in myopic post-Lasik patients: Effect of the Equivalent Refractive Index**
Presentation Start/End Time:	Thursday, May 05, 2011, 8:30 AM -10:15 AM
Session Number:	522
Session Title:	Cataract Surgery II
Location:	Hall B/C
Reviewing Code:	140 cataract surgery - LE
Author Block:	*Carmen Canovas*[1,2], *Marrie van der Mooren*[1], *Patricia Piers*[1], *Li Wang*[3], *Douglas Koch*[3], *Pablo Artal*[2]. [1]R&D, Abbott Medical Optics, Groningen, The Netherlands; [2]Laboratorio de Optica, Universidad de Murcia, Murcia, Spain; [3]Department of Ophthalmology, Baylor College of Medicine, Houston, TX.
Keywords:	566 intraocular lens; 680 refractive surgery: LASIK; 445 cataract
Abstract Body:	**Purpose:** IOL power calculation in post-Lasik patients is not straightforward, because of the modification on the anterior cornea due to the surgery. Equivalent refractive index (ERI), that allows to model the cornea as one refractive surface, is also affected. We study here the impact of the ERI on IOL power calculations for myopic post-Lasik patients applying our customized ray tracing procedure, with only anterior corneal measurements. **Methods:** ERI was calculated for each patient from anterior post-Lasik corneal radius, achieved by an exact ray tracing at 4mm through corneal topography, and total corneal power (TCP), that was calculated from paraxial optics by considering the power of both corneal surfaces as well as corneal thickness. Because we didn't use posterior corneal measurements, posterior corneal radius was obtained using the fixed ratio of 0.838 and data from anterior pre-Lasik radius. IOL power achieving emmetropia was calculated for 25 post-Lasik patients with our customized ray tracing procedure, introducing both the personalized ERI or that obtained from the average over all the patients. Results were compared with those found as optimum for each patient after surgery and that retrieved by the Haigis-L approach. **Results:** ERI from preoperative data was on average 1.324, in a

range from 1.316 until 1.329. The accuracy of the IOL power prediction in the personalized ERI was not statistically significantly better than the Haigis-L. However, considering the average ERI value over all the patients, the IOL power prediction variance and average absolute IOL power prediction were statistically better. **Conclusions:** IOL power can be accurately predicted for myopic post-Lasik patients with ray tracing and an equivalent refractive index that should be modified with respect normal patients. It can be calculated with paraxial optics, actual patient's data and model eye values. Further understanding of the posterior cornea can lead to a fully customized procedure that could improve IOL power predictions.

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