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Author:	Paul van Saarloos, PhD
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Title:	Accuracy of Eye Trackers in Laser Refractive Surgery
Contributing Authors:	van Saarloos, Paul; Pujara, Tarak A.; Jain, Mukesh
Purpose:	Eye and head movements during laser refractive surgery can adversely affect the surgical beam position and the desired location for optimum correction. This may reduce postoperative vision and may also induce high-order aberrations. An Active eye tracker incorporated in to the laser delivery system can reduce the effect of patient eye and head movements. This study is to compare the accuracy of a limbal eye-tracker and a pupil eye-tracker.
Methods:	Individual frames for the limbal eye-tracker were manually measured and compared with the eye tracker output. The recorded position was compared to the pre-programmed position of the scanning device. The pupil-based tracker data was taken from previous clinical trials.
Results:	The pupil-based eye-tracker had an accuracy of 0.06mm for an intact cornea and 0.10 mm for a cornea with the flap removed as pupil based eye-trackers need to image the pupil through the dry, treated corneal surface. This compares to an average decentration of ablation of 0.40 mm for patients relying on passive fixation, as measured by previous clinical trials. The limbal eye-tracker had an accuracy of 0.04 mm during surgery, which decreases the chance of decentration to minimum.
Conclusion:	Implementation of this eye tracker can lead to improved alignment between the laser and eye during Laser in Situ Keratomileusis surgery. Accuracy is a more important parameter to assess eye-trackers then latency. In this preliminary study, limbal tracking proved to be more accurate than pupil-based eye-tracking.