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International Society For Cataract And Refractive Surgery

Online control of LASIK by intraoperative topometry

Purpose:

Average results of LASIK treatments are excellent. Nevertheless today there is still considerable scattering of the outcome. Some of the patients require retreatments that are commonly referred to as enhancements. We consider those as complications. One of the main reasons for the deviation can be found in the individual ablation rate of different patients' corneal tissues. We present first clinical results of intraoperative topometries that were performed to assess the amount of tissue taken away by the laser. The aim was to compare the real and the intended ablation.

Methods:

The topographies of the ablation zones of six eyes of six patients were measured under the LASIK flap with a specially designed uv fringe projector. Elevation data (height maps) were collected within a diameter between 7 and 9 mm. Data were acquired immediately after opening the flap and after the end of the treatment with a B&L Keracor 117 flying spot laser.

Results:

The difference between the intended and the real amount of ablated tissue reached up to 15%.

Conclusion:

The measurements have shown that common scattering in the results of laser treatments can in part be attributed to false corrections. These are due to wrong ablations which are connected with the individual hydration of the treated tissues. In a next step the measuring device will be integrated in the medical laser to allow repeated measurements at different times during the treatment. The final goal is a closed loop to control the ablation process.