

Session 3-E: Refractive: Mechanical and Femtosecond Microkeratomes

Title: Clinical and Anatomical Outcomes of LASIK Performed with an IntraLase Femtosecond Laser Versus a Mechanical Keratome

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Purpose: To evaluate clinical and anatomical results of LASIK performed with IntraLase FS laser vs. mechanical keratome and determine if a correlation exists between these outcomes and patient eye preference.

Methods: A prospective study of 100 patients undergoing bilateral LASIK with each eye randomized to flap creation with IntraLase FS laser or Hansatome keratome. Vision correction was performed with the LADARVision 4000 excimer laser using either Custom Cornea or standard LASIK. Visual acuity, residual astigmatism, corneal sensitivity, higher order aberrations and contrast sensitivity was measured and compared for each keratome group up to 12 months postoperatively. A subset of patients was evaluated at 12 months postoperative with the Artemis for flap architecture comparison and possible correlation with outcomes.

Results: UCVA was statistically better at all time points for eyes with IntraLase created flaps and correlated with patient preference ($p < 0.002$ except 1 day where $p = 0.03$). Significant differences were seen at the 20/16 level instead of the traditional 20/20. By 6 months, MRSE was nearly equivalent between both keratomes (-0.30 ± 0.29 vs. -0.34 ± 0.32 , $p = 0.16$), indicating the improvement in UCVA is not due to a nomogram effect. Contrast sensitivity is also clinically and statistically better in the IntraLase group and correlates with patient preference, especially with glare (improvement of 1 to 2 patches at 12 and 18 cpd, $p < 0.05$).

Conclusion: Data is excellent for both keratome groups although the precision and visual acuity of the IntraLase FS laser is clinically and statistically significantly better immediately postop through 6 months. Anatomical differences may account for some of the perceived differences between flaps created with IntraLase vs. Hansatome keratomes.