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Abstract Title: **LASIK: A Confocal Microscopy Analysis of the Corneal Flap Interface Performed by the Femtosecond Surgical Laser vs a Mechanical Microkeratome System**

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Purpose: To evaluate and compare the confocal microscopy findings at the corneal flap interface between 2 different systems: A femtosecond surgical laser and a mechanical microkeratome.

Methods: 18 eyes of 9 patients underwent LASK, corneal flaps were created with the femtosecond surgical laser IntraLase (IntraLase Corporation, Irvine, CA, USA) in right eyes and the Hansatome microkeratome (Chiron Vision Corporation, Claremont, CA, USA) in left eyes. A Visx star 2 sistem (Visx, Santa Ana, CA, USA) was used to perform the laser ablation in all eyes. A central scan of the total corneal thickness was taken with the confocal microscope (Confoscan, Fortune Technologies, Italy) at 1 week and 1 month after surgery. Corneal flap interface was analyzed by using the best in focus frame with the NAVIS software V. 3.1.2 (NIDEK, Multi-Instrument Diagnostic System, Japan).

Results: All eyes presented small bright particles at the corneal flap interface. Mean number of particles at 1 week after LASIK was 113.7 ± 65.1 (per square millimeter) for the post-femtosecond surgical laser eyes and 169.7 ± 124 for the post-mechanical microkeratome eyes, there was not statistical significance difference ($P=0.078$). Mean number of particles at the corneal flap interface at 1 month after LASIK was 119 ± 98.6 for the post- femtosecond surgical laser eyes and 127.2 ± 77.3 for the post-mechanical microkeratome eyes, there was not statistical significant difference ($P= 0.28$). Interface particles appear to be brighter in the eyes performed with the mechanical microkeratome system.

Conclusions: Confocal microscopy findings at the corneal flap interface showed similar number of particles in both systems: A femtosecond surgical laser and a mechanical microkeratome.

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