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Cox proportional hazards model of myopic regression for laser in situ keratomileusis flap creation with a femtosecond laser and with a mechanical microkeratome.

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Abstract

PURPOSE: To compare predictive factors for postoperative myopic regression between laser in situ keratomileusis (LASIK) with a femtosecond laser and LASIK with a mechanical microkeratome.

SETTING: Nobel Eye Clinic, Taipei, Taiwan.

DESIGN: Retrospective comparative study.

METHOD: Refractive outcomes were recorded 1 day, 1 week, and 1, 3, 6, 9, and 12 months after LASIK. A Cox proportional hazards model was used to evaluate the impact of the 2 flap-creating methods and other covariates on postoperative myopic regression.

RESULTS: The femtosecond group comprised 409 eyes and the mechanical microkeratome group, 377 eyes. For both methods, significant predictors for myopic regression after LASIK included preoperative manifest spherical equivalent (P=.0001) and central corneal thickness (P=.027). Laser in situ keratomileusis with a mechanical microkeratome had a higher probability of postoperative myopic regression than LASIK with a femtosecond laser (P=.0002). After adjusting for other covariates in the Cox proportional hazards model, the cumulative risk for myopic regression with a mechanical microkeratome was higher than with a femtosecond laser 12 months postoperatively (P=.0002). With the definition of myopic regression as a myopic shift of 0.50 diopter (D) or more and residual myopia of -0.50 D or less, the risk estimate based on the mean covariates in all eyes in the femtosecond group and mechanical microkeratome group at 12 months was 43.6% and 66.9%, respectively.

CONCLUSION: Laser in situ keratomileusis with a mechanical microkeratome had a higher risk for myopic regression than LASIK with a femtosecond laser through 12 months postoperatively.

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