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Early outcomes of INTRACOR femtosecond laser treatment for presbyopia.

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Abstract

PURPOSE: To investigate early functional outcomes of the INTRACOR femtosecond laser-based intrastromal procedure to treat presbyopia.

METHODS: Twenty-five eyes of 25 presbyopic patients were enrolled in this prospective, ethics committee-approved study. Following detailed preoperative examination, the INTRACOR procedure was performed using the TECHNOLAS femtosecond laser (Technolas Perfect Vision GmbH) in the non-dominant eye. Postoperatively, follow-up examinations were performed at 1 day, 1 week, and 1 and 3 months, including near and distance visual acuity, slit-lamp microscopy, and corneal topography.

RESULTS: All 25 surgeries were uneventful. The mean postoperative uncorrected near visual acuity increased from 0.7+/-0.16 logMAR to 0.26+/-0.21 logMAR and the mean uncorrected distance visual acuity changed slightly from 0.11+/-0.11 logMAR to 0.05+/-0.1 logMAR at 3 months postoperative. Regarding best distance correction, mean sphere changed from +0.75+/-0.23 diopters (D) preoperatively to +0.15+/-0.31 D postoperatively and mean cylinder from -0.33+/-0.17 D to -0.42+/-0.23 D. Postoperative healing was uneventful, and in all eyes, the cornea was clear within a few hours after surgery without any remaining cavitation gas bubbles.

CONCLUSIONS: The INTRACOR procedure for presbyopia showed good visual acuity outcomes in the early postoperative period. The short treatment time in combination with maintained corneal integrity suggests this new technique has good potential for the treatment of presbyopia.

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Intrastromal correction of presbyopia using a femtosecond laser system.

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Abstract

PURPOSE: To introduce a new, minimally invasive intrastromal correction for presbyopia (INTRACOR procedure) using the TECHNOLAS femtosecond laser system (Technolas Perfect Vision GmbH).

METHODS: The INTRACOR procedure was performed in 83 eyes of 45 patients aged 44 to 67 years. Follow-up was 6 to 12 months. Data recorded included age; pre- and postoperative refraction; uncorrected distance (UDVA), intermediate, and near visual acuity (UNVA); corrected distance visual acuity (CDVA); distance corrected near visual acuity; corneal hysteresis (CH), corneal resistance factor (CRF), and asphericity; pachymetry; endothelial cell density; contrast sensitivity; and ocular aberrations.

RESULTS: At 6 months postoperatively, all 83 (100%) eyes had improved UNVA, with minimal or no change in UDVA. Twenty-two eyes were available at 12 months; UNVA improved to J1 in these eyes with continued improvement in mean UDVA. At last follow-up, a mild myopic shift in refraction was noted with only 3 (3.6%) eyes showing a 2- or 3-line decrease of UDVA, and 74 (89.2%) eyes achieved both J2 and 20/25 or better. Mean CDVA and distance corrected near visual acuity continued to improve with time. Two (2.4%) eyes lost 2 lines of CDVA at 6 months, but this did not occur in the 22 eyes seen at 1 year. Overall stability was noted in CH, CRF, pachymetry, endothelial cell density, and contrast sensitivity. Primary spherical aberrations shifted toward negative values and secondary spherical aberration shifted toward positive values. No corneal structural complications were observed.

CONCLUSIONS: The INTRACOR intrastromal procedure using the TECHNOLAS femtosecond laser is a promising procedure for presbyopia correction. It preserves the corneal epithelium and anterior stromal fibers.