

Corneal biomechanics in eyes implanted with a small aperture corneal inlay



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Purpose



To compare the postoperative biomechanical properties of eyes implanted with a small aperture corneal inlay versus fellow eyes.

Setting And Design



Beyoglu Eye Research and Training Hospital Cornea and refractive surgery subspecialty.

Prospective clinical trial.

Methods



Medical records of patients who had a small aperture corneal inlay (KAMRA®), AcuFocus, Inc.) implantation in our clinic were retrospectively reviewed.

Emmetropic patients who had the implantation in a stromal pocket and who had preoperative and postoperative corneal hysteresis (CH) and corneal resistance factor (CRF) measurements using the Ocular Response Analyser (ORA; Reichert Inc, Buffalo, NY) were included in the study.

Methods



Inlay implanted eyes constituted Group 1 and the non-implanted fellow eyes constituted Group 2. Main outcome measures were corneal hysteresis (CH), corneal resistance factor (CRF) and Goldmann applanation tonometry measurements performed preoperatively and at postoperative month 1, 3 and 6 visits.

Results



The study included 68 eyes of 34 patients. The inlay was implanted into the non-dominant eye in all patients.

In Group 1, CH values were 10.64 ± 1.43 mmHg, 12.29 ± 2.46 mmHg, 10.86 ± 3.21 mmHg and 10.89 ± 2.97 mmHg at preoperative, month 1, month 3 and month 6 visits.

In Group 2, CH values were 11.02 ± 1.90 mmHg, 10.89 ± 1.78 mmHg, 10.70 ± 1.93 mmHg and 10.85 ± 1.67 mmHg at the same visits.

Results



In Group 1, CRF values were 10.61 ± 1.48 mmHg, 12.52 ± 2.45 mmHg, 10.40 ± 2.78 mmHg and 10.67 ± 2.71 mmHg at preoperative and months 1, 3 and 6 visits.

In Group 2, CRF values were 10.97 ± 2.07 mmHg, 10.42 ± 1.48 mmHg, 10.35 ± 1.82 mmHg and 10.53 ± 1.81 mmHg at the same follow up period.

There was no statistically significant change in the Goldmann applanation tonometry measurements between the visits ($p > 0,05$).

Conclusions



The differences in CH and CRF between Inlay-implanted eyes and the non-implanted control eyes in our study confirm a slight difference in corneal biomechanical structure in the 1 month postoperative period.