Purpose: To compare corneal biomechanical changes after uneventful phacoemulsification cataract surgery between type 2 diabetic (DM) and non-diabetic patients.

Methods: Forty-four diabetic (44 eyes) and 44 (44 eyes) age and sex-matched non-DM controls with age-related cataract were enrolled in this prospective observational study. Corneal hysteresis (CH), corneal resistance factor (CRF) and corneal-compensated intraocular pressure (IOPcc) were evaluated using the Ocular Response Analyzer® (ORA); central corneal thickness (CCT) was recorded using the Pentacam HR. Patients were evaluated preoperatively and at 1 and 6 months after surgery.

Results: In both groups, there was a significant postoperative IOPcc reduction 6 months after surgery (p<0.001), however, CCT was not found to significantly change in the postoperative period. In the DM group, CH was observed to be significantly lower than preoperative value at 1 month (p=0.040) but not at 6 months follow-up (p=0.437); while it did not change significantly in the non-DM group (p=0.376 and p=0.135, respectively). CRF was observed to be significantly lower than preoperative value at 1 and 6 months in both groups. Multivariate linear regression showed that greater preoperative IOPcc (p<0.001), shorter axial length (p<0.001) and male gender (p=0.005) were significantly associated with greater IOPcc decrease after 6 months. Postoperative CH change was significantly associated with preoperative CH (p<0.001), preoperative IOPcc (0.004) and IOPcc change (p<0.001); whereas CRF change was only correlated with preoperative CRF (p<0.001).

Conclusion: This study shows comparable corneal biomechanical changes between DM and non-DM groups, and suggests that the CH and CRF respond differently to cataract surgery.