

# Accepted Manuscript

Changes in corneal biomechanics and intraocular pressure following cataract surgery

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PII: S0002-9394(18)30406-9

DOI: [10.1016/j.ajo.2018.07.025](https://doi.org/10.1016/j.ajo.2018.07.025)

Reference: AJOPHT 10594

To appear in: *American Journal of Ophthalmology*

Received Date: 24 December 2017

Revised Date: 18 July 2018

Accepted Date: 20 July 2018

Please cite this article as: Hirasawa K, Nakakura S, Nakao Y, Fujino Y, Matsuura M, Murata H, Kiuchi Y, Asaoka R, Changes in corneal biomechanics and intraocular pressure following cataract surgery, *American Journal of Ophthalmology* (2018), doi: 10.1016/j.ajo.2018.07.025.

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**Abstract**

**Purpose:** The purpose of this study was to investigate the effects of cataract surgery on corneal biomechanics and intraocular pressure (IOP) measured with the updated CorvisST tonometer (CST).

**Design:** Prospective, interventional case series study.

**Methods:** This study included 39 eyes of 39 cataract patients. CST measurements were performed on pre-surgery (Pre) as well as 1 week (1W), 1 month (1M), and 3 months (3M) post-surgery. The following CST parameters were recorded: deformation amplitude max (DA max), DA ratio max 1mm and 2mm, integrated radius, stiffness parameter at applanation 1 (SP A1), Ambrosio relational thickness to the horizontal profile (ARTh), Corvis biomechanical index (CBI), central corneal thickness (CCT), non-corrected intraocular pressure (IOP<sub>nct</sub>), and biomechanically-corrected IOP (bIOP). IOP was also measured with Goldmann applanation tonometry and the non-contact tonometer CT-90A. All measurements were compared at each period using the linear mixed model, with and without adjustment for bIOP and CCT.

**Results:** All IOP measurements decreased over time ( $p < 0.01$ ). CCT was increased at 1W and 3M ( $p < 0.01$ ), whereas ARTh was decreased at 1W and 1M ( $p < 0.01$ ), but returned to its Pre level at 3M. DA max and Integrated radius were increased at 3M ( $p < 0.01$ ), whereas SP A1 was decreased at 3M ( $p < 0.01$ ). CBI was increased at 1W ( $p < 0.01$ ), but returned to its Pre level at 1M.

**Conclusions:** IOP and Corneal biomechanical properties are changed after cataract surgery. In particular, SP A1 decreases while DA max and integrated radius increase, even at 3M, suggesting a less stiff cornea.

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