

NCC 'FUTURE GENERATION 2024' PAPER Abstracts  
SCIENTIFIC SESSION IN COOPERATION WITH THE BCLA

**NCC 'Future generation 2024'**

**Organization Section: NCC/ BCLA**

**PAPER Abstracts**

Sunday, March 10 2024

Netherlands, Veldhoven,

NH De Koningshof, Baroniezaal

**Prospective assessment of corneal biomechanical properties and intraocular pressure during scleral lens wear**

*Rute J. Macedo-de-Araújo, Ana Amorim-de-Sousa, Rita Seco, José M. González-Méijome*

**Purpose:** Previous studies hypothesized that scleral lens wear could elevate intraocular pressure (IOP) by compressing the episcleral veins and Schlemm canal. The main goal of the present study was to study the influence of scleral lens wear on IOP and corneal biomechanics in irregular and regular corneas.

**Method:** Seventy eyes with irregular corneas (ICGroup) and 21 eyes with regular corneas (RCGroup) were fitted with 16.4mm scleral lenses. Corrected IOP (IOPcc), Goldmann IOP (IOPg) and corneal biomechanical parameters (Corneal Hysteresis (CH) and Corneal Resistance Factor (CRF)) were measured with Ocular Surface Analyzer. Measurements were taken at lens dispensing visit prior lens insertion (LDV1), and after 90 min of lens wear on LDV (LDV2), and at 1, 6 and 12 months of follow-up. Measurements were done after lens removal on follow-up appointments.

**Results:** Mean IOPcc was  $12.80 \pm 2.62$  mmHg at LDV1 and  $12.84 \pm 2.58$  mmHg at V12m on ICGroup ( $p > 0.05$ ) and  $12.71 \pm 4.27$  mmHg and  $12.79 \pm 3.28$  mmHg on RCGroup ( $p > 0.05$ ). Likewise, there were no statistically significant differences on IOPg, CRF and CRH ( $p > 0.05$ ) over the follow-up visits in both groups. Mean difference on IOPg, CRF and CRH (in mmHg) between LDV1

and V12m was -0.01, 0.05 and 0.01 on ICGroup, respectively, and -0.58, -0.22 and -0.09 on RCGroup, respectively. Negative values reveal a decrease of the respective outcome through time. Comparisons between groups (IC vs RC) revealed statistically significant differences for IOPg, CH and CRF at all the visits ( $p < 0.001$ ), with lower values in ICGroup. When analyzing IOPcc (corrected IOP considering biochemical properties) there were no differences between both groups.

**Conclusions:** Long-term scleral lens wear did not cause significant alterations on corneal biomechanics neither on IOP, either in regular or irregular corneas as measured after lens removal. Besides IOP measurement without SL removal, more studies are needed to investigate the potential relationship with SL fitting characteristics.

**Research funding received:** This project was supported in part by an unrestricted grant from Bausch & Lomb (Rochester, USA) and projects PTDC/SAU-BEB/098391/2008, PTDC/SAU-BEB/098392/2008 and the Strategic Funding UID/FIS/04650/2013. Authors declare that they do not have any proprietary or financial interest in any of the materials mentioned in this work.