

Intra-ocular pressure variation associated with the wear of scleral lenses of different diameters.

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Abstract

PURPOSE:

To evaluate the variation of intra-ocular pressure during scleral lens wear, and the influence of the lens diameter on the results.

METHODS:

This is a prospective, randomized study performed on Caucasian subjects (16 F; 5 M), aged 24.7 ± 4.1 y.o. A diurnal variation pattern (IOPg) was established, then, transpalpebral IOP (IOPt) was taken before and during SL wear. One eye, randomly fitted with a 15.8 diameter SL (L1), was compared to the fellow eye, fitted with an 18 mm SL of the same design, thickness and material (L2). Anterior segment tomography was taken pre-and after lens removal.

RESULTS:

Baseline IOPg (L1: 15.2 ± 3.1 mm HG; L2: 15.1 ± 2.8 mm) did not reveal significant diurnal variations. Wearing L1, IOPt rose from 10.1 ± 1.9 mm HG to 14.4 ± 5.5 mm HG after 4.5 ± 0.3 hrs, while with L2, it rose from 9.2 ± 2.1 mm HG to 14.4 ± 4.8 mm Hg. This difference is statistically significant based on time but not on lenses. Anterior segment parameters did not vary except for the anterior chamber volume (L1: -1.53 ± 7.61 mm³; L2: -3.47 ± 6.4 mm³), and for the corneal thickness ($+2.1\%$ with L1 and L2).

CONCLUSION:

These results suggest that, as evaluated with a non-standard transpalpebral methodology, IOP during scleral lens wear may be increased in average by 5 mm Hg, regardless of the lens diameter. More work is needed to confirm if practitioners should be warned when using SL on populations at risk for glaucoma.

KEYWORDS:

Glaucoma; Intra-ocular pressure; Scleral lenses; [Transpalpebral tonometry](#)

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