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Intraocular Light Scatter in Eyes with Boston Type 1 Keratoprosthesis

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Purpose: Boston Keratoprosthesis (KPro) has been proven to be a viable option for visual rehabilitation in patients with poor prognosis for penetrating keratoplasty, and its use has steadily increased during the past decade. An improved design and postoperative management have led to longer retention rates, fewer complications and overall better outcomes. Many patients complain of significant glare and visual dysfunction despite improved visual acuity. This issue motivated us to objectively measure light scatter in eyes

one visit. Scatter measurements were also repeated on 11 eyes with Boston KPro Type 1 using a black iris occluder Orion Prosthetic contact lens(Orion Vision Group, Marietta, GA). The contact lens was polymacon 38% material, plano power, base curve 8.6, diameter 14.3, 12.25 black occluder iris with a 5.0mm clear pupil.

Results: The mean age of the KPro group was 55.5 years and 53.6 years for the control group. Mean VA was 0.47 logMAR and 0.00 logMAR for the KPro and control group respectively. Intraocular light scatter was found to be significantly higher in patients with KPro compared to healthy control subjects (logS values of 2.34 ± 0.15 and 1.29 ± 0.17 respectively, $p<0.01$). Light scatter in eyes with PMMA KPro devices (logS 2.49 ± 0.19; n=16) was higher than in eyes with titanium KPro devices (logS 1.87 ± 0.15; n=5). The LogS value was significantly lower for eyes with PMMA backplate KPro devices fit with iris occluder prosthetic lens (1.71 vs 2.42, P = < 0.05; n=11).

Conclusion: Glare is a common complaint by many patients with KPro devices. Light scatter measured in this study showed significantly higher values in eyes with KPro devices compared to healthy eyes. Possibly due to its opaque nature, the titanium backplate model appears to produce less light scatter than PMMA backplate model. Prosthetic contact lenses may serve a role to reduce light scatter in individuals with KPro devices and should be considered as an option for symptomatic patients.

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