Investigating Post-Operative Refractive Outcomes in Patients Undergoing Cataract Surgery to Assess the Potential Impact of a Concurrent Diagnosis of Dry Eye Disease (DED).

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Cataract surgery is one of the most performed surgical procedures in the world. A cataract is defined as opaqueness in the interior of the ocular lens[2]. The exact etiology of cataracts is multifactorial ranging from environmental conditions to biochemical changes induced by aging3. The Intraocular lens (IOL) power calculation is an essential part of the pre-operative planning for cataract surgery as it determines the specific IOL that should be utilized for a patient. Keratometry measurements are required for this IOL power calculation, however, DED has been shown to cause inaccurate keratometry measurements[4,5]. We hypothesize that patients with DED undergoing cataract surgery will have a larger deviation from the predicted spherical equivalent (SE) post-operatively.

Patients who were over the age of 18 and underwent cataract surgery were included. Patients who had a diagnosis of glaucoma, Herpes Simplex Keratitis, punctual plugs, undergone Laser-Assisted in Situ Keratomileusis (LASIK) surgery, Radial Keratometry, or any form of corneal scarring were excluded from this study as they can negatively impact keratometry measurements.

The DED sample had a statistically significant larger SE deviation from the predicted SE compared to the healthy sample ($p=0.037$). The DED sample also had a statistically significant larger percentage of patients with an SE deviation of 0.50 D or greater ($p=0.002$). Finally, the DED had a statistically significant older age than the healthy group ($p=0.028$).

The significant difference in age between the healthy sample and the DED sample confirms the significant correlation between age and prevalence of DED the literature has described6. The statistically significant increased post-operative SE deviation from predicted SE within the DED sample can be the result of the increased variability in the tear film associated with DED. This can lead to inaccurate keratometry measurements, thus leading to incorrect IOL power calculations.