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Correlation between variation in phacoemulsification surgical techniques and predictability of surgically induced astigmatismMd Muziman Syah M.M¹, Nazaryna M^{1,4}, Khairidzan M.K², Noorhazayti A.H³¹Department of Optometry and Visual Science, Kulliyah of Allied Health Sciences, IIUM Kuantan, Pahang.²Department of Ophthalmology, Kulliyah of Medicine, IIUM Kuantan, Pahang.³Department of Paediatric Dentistry and Dental Public Health, Kulliyah of Dentistry, IIUM Kuantan, Pahang.⁴Department of Ophthalmology, Sarawak General Hospital, Kuching, Sarawak.

Aim of Study To evaluate the correlation between variation in phacoemulsification surgical techniques and predictability of surgically induced astigmatism (SIA).

Methods This study involved four ophthalmic surgeons (Surgeon A, B, C and D). A self-administered Phacoemulsification Technique Related SIA (PTechSIA) Questionnaire (patency number: LY2018002935) was conducted to document the surgeons' phacoemulsification surgical techniques. The technique variation score (TVS) for each surgeon was calculated. Score 0 has been given for the surgeons who consistently applied the same surgical technique. Whereas, score 1 has been given if the surgeons used two different surgical techniques, score 2 has been given if the surgeons used three surgical techniques and so on. Twenty patients who had undergone uneventful phacoemulsification with intraocular lens (IOL) implantation by each surgeon were recruited. Preoperative and postoperative K-readings were retrieved from medical records for the SIA analysis. Centroid and coherence of SIA were calculated using SIA Calculator Version 2.1 (SIA2.1). The centroid value represented the surgeon's SIA and the coherence value represented the measure of the SIA predictability. Correlation between the variation of phacoemulsification surgical techniques and predictability of SIA was determined by the TVS and SIA coherence.

Results The TVS and coherence values for Surgeon A, B, C and D were 1, 52%; 1, 48%; 0, 90% and 3, 11% respectively. There was a significant and strong negative correlation between the TVS and SIA coherence (Spearman's $r = -0.95$, $p = 0.05$).

Conclusion Surgical technique consistency in phacoemulsification cataract surgery contributes to higher predictability of SIA outcome.

Keywords

Surgically induced astigmatism; Phacoemulsification surgical technique; SIA predictability; Coherence.