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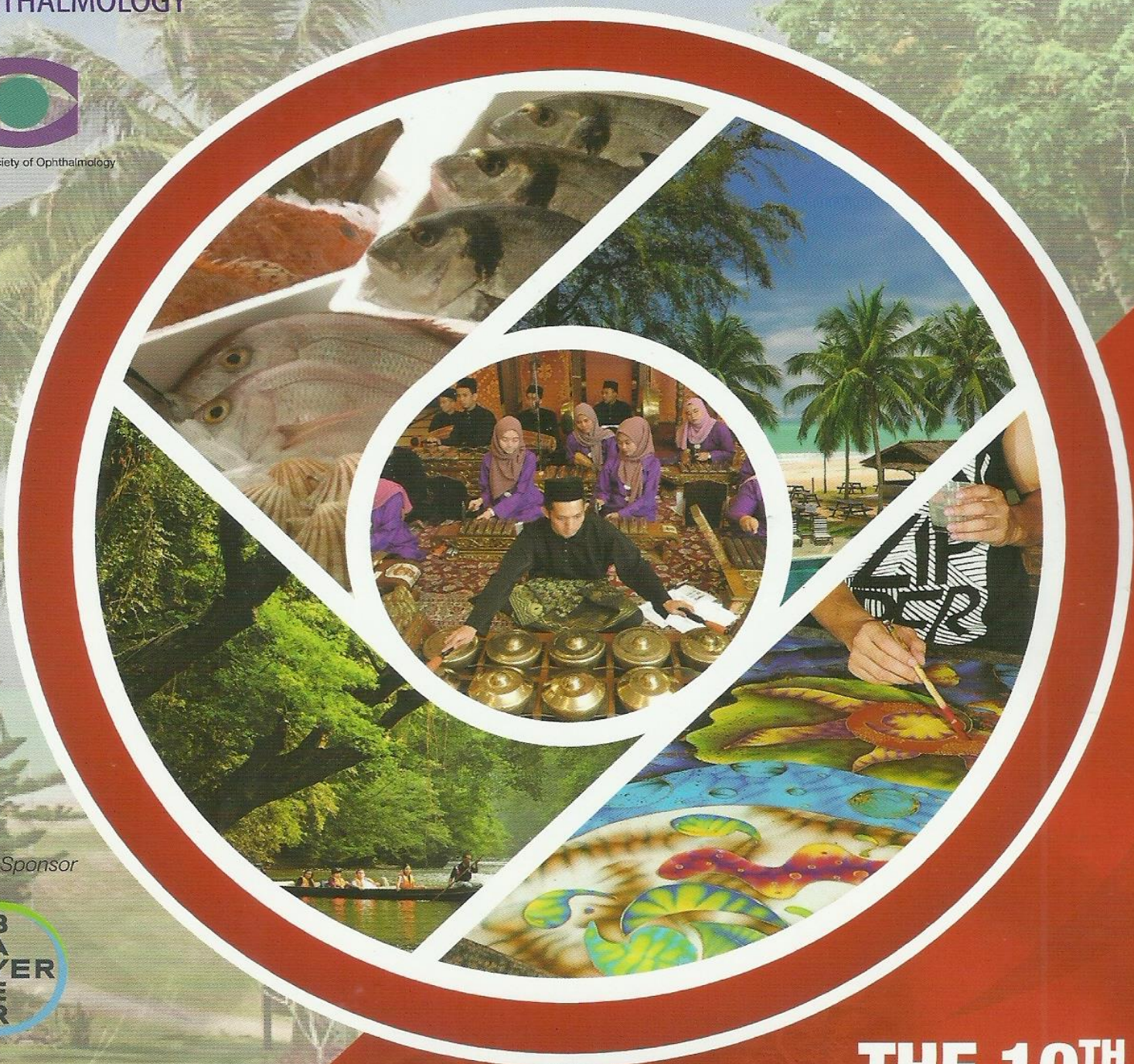
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Abstract ID 126　**EVALUATION OF FOUR CALCULATORS IN DETERMINING SURGICALLY INDUCED ASTIGMATISM VALUES**

Nazaryna Binti Marzuki, Md Muziman Syah Md Mustafa, Khairidzan Mohd Kamal, Noorhazayti Ab. Halim

International Islamic University Malaysia

Objective: To compare the surgically induced astigmatism (SIA) values and the analysis report of four different SIA calculators.

Method: In this retrospective study, surgical data, preoperative and postoperative K-readings of 80 eyes (n = 72 subjects) that undergone uneventful phacoemulsification surgery were analysed. Four available online SIA calculators were used to determine SIA values. Two of the calculators; SIA calculator (SIAC) and SIA calculator version 2.1 (SIA2.1) adopted Holladay method of vector analysis, while the other two calculators namely Ophthalmology Calculator Version 6.0 (OC6.0) and VECTrAK™ Vector calculator version 2.4.2 (VVA) employed Alpins method of vector analysis. The mean individual SIA values and analysis reports of each calculator were compared.

Results: There were no significant differences in mean SIA between the calculators ($P > 0.05$). The 95% limit of agreement between calculators ranged from -0.006 to 0.005 D. The OC6.0 and VVA provided various indexes which came with suggestions of astigmatic correction, but did not produce aggregate SIA analysis. On the other hand, the SIAC and SIA2.1 provided aggregate SIA analysis which was reported as centroid value. The SIAC also produced subset SIA analysis that allows SIA evaluation according to specific clinical condition.

Conclusion: All calculators are comparable in determining SIA value. Each calculator provides different analysis report that can be suited to particular clinical or research requirements. Therefore, surgeon can utilize any of these calculators to determine their actual SIA according to individual preferences and clinical application.

Abstract ID 130　**COMPARISON BETWEEN PREDICTED AND ACTUAL SURGICALLY INDUCED ASTIGMATISM (SIA) ON THE TORIC IOL CALCULATION OUTCOME USING TWO TORIC INTRAOCULAR LENS (IOL) CALCULATORS**

Md Muziman Syah Md Mustafa, Nazaryna Marzuki, Khairidzan Mohd Kamal, Noorhazayti Ab. Halim

International Islamic University Malaysia

Objective: To compare surgeon's predicted SIA and actual SIA values, and its effect on toric IOL selection using two toric IOL calculators.

Method: Predicted SIA values of four surgeons (Surgeon A, B, C and D) from single public institution were retrieved from medical records. The actual SIA values for each surgeon were determined by SIA calculator version 2.1 (SIA2.1) and were compared with predicted SIA using one sample t-test. Using the two SIA values, toric IOL calculation was then determined using ZCalc Calculator (ZCalc) and Barrett Toric Calculator (BTCalc). The results were analysed by the selection of toric IOLs, IOL toricity difference and spherical equivalent difference.

Results: Eighty subjects for SIA calculation and 50 patients for toric IOL calculation were recruited. All surgeons predicted their SIA to be 0.50D, except for Surgeon C. However, only 50% of the actual SIA were closed to the predicted SIA values. Surgeon C and D had statistically significant SIA prediction error of 0.31D and -0.44D respectively. Both of the surgeons were found to have 85% difference in toric IOL selection. Underestimation of actual SIA has resulted in higher toricity IOL selection. BTCalc revealed a higher percentage of matched IOL selection compared to ZCalc for all surgeons when the two SIA values were applied.

Conclusion: There were discrepancies between predicted SIA and actual SIA values. Nominal SIA prediction error of less than 0.50D has significant effect on toric IOL selection. Therefore, surgeons should consider calculating their actual SIA for toric IOL implantation.