INTRAOCULAR LENS (IOL) POWER SELECTION PATTERN OF TWO DIFFERENT TORIC IOL CALCULATORS

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ABSTRACT

Aims: This study aimed to evaluate the IOL power selection pattern of two commonly used toric IOL calculators and its agreement in IOL power selection.

Methodology: Toric IOL power calculations were employed by the Barrett Toric Calculator 2.0 (BTCalc) and ZCalc IOL Calculator 2.2 (ZCalc). Two surgeons with surgically induced astigmatism prediction error (SIA_{err}) < 0.25 D (Group 1) and other two surgeons with SIA_{err} > 0.25 D (Group 2) were involved. Fifty eyes of 46 post-phacoemulsification patients with toric IOL implantation were recruited. Pattern of IOL power selection for each calculator was assessed. The agreement between the calculators was evaluated by limits of agreement (LoA).

Results: The pattern of IOL power selection for BTCalc was higher IOL toricity resulted in higher IOL spherical equivalent (SE) and vice-versa. These selection patterns were consistent in Group 1 and Group 2. Whereas the IOL power selection patterns for ZCalc were varied. No consistent pattern was found neither in Group 1 nor Group 2 surgeons. The 95% LoA between the two calculators for Group 1 surgeon showed less than two-step (< ±1.00 D), meanwhile Group 2 surgeon showed more than two-step (> ±1.00 D).

Conclusion: Both calculators have different IOL power selection patterns and its agreement was low when SIA_{err} > 0.25 D. BTCalc is able to produce a predictable IOL selection pattern and it is therefore suggested toric IOL calculator either for surgeons with SIA_{err} < or > 0.25 D.

Keywords: toric IOL calculator, IOL power selection pattern, surgically induced astigmatism