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To Improve Quality and Safety of Cataract Surgery by comparing different Ultrasonic Techniques for Intraocular Lens Power Calculation

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Introduction

Objectives

1. To improve quality by comparing the ultrasonic techniques: Ocuscan and Compact II A-Scan, versus the optical technique: IOL Master 500 in axial length measurements;
2. To improve safety by determining which ultrasonic technique should be used when the optical technique fails to measure axial lengths in patients with dense cataract.

Methodology

Patients with cataracts were recruited from the Ophthalmic Centre, Caritas Medical Centre in December 2015. Their axial lengths were measured by IOL Master 500, Ocuscan, and Compact II A-Scan. To minimize inter-observer variations, IOL Master 500 was operated by a trained technician while Ocuscan and Compact II A-scan were operated by another trained practitioner.

Result

ALs of thirty-one patients were measured by IOL Master 500, Ocuscan and Compact II A-scan and the mean \pm SD ALs were 23.39 ± 0.98 mm, 23.32 ± 0.97 mm and 23.47 ± 0.91 mm respectively. Comparing to the IOL Master, Ocuscan measured shorter ALs (mean difference -0.06 mm) while Compact II A-Scan measured longer ALs (mean difference 0.09 mm). AL measured by IOL Master and Compact II demonstrated a statistically significant difference ($P = 0.04$), while AL measured by IOL Master and Ocuscan did not show such difference ($P = 0.14$). The accuracy of AL measurement of Ocuscan appears to be higher than Compact II A-scan. To ensure quality and safety, it should be used when IOL Master fails.