HUBUNGAN STABILITAS *CLEAR CORNEAL INCISION* TERHADAP PERUBAHAN NILAI REFRAKSI DAN KERATOMETRI PADA PASIEN KATARAK PASCA FAKOEMULSIFIKASI

TESIS

Diajukan sebagai salah satu syarat untuk mendapatkan gelar

Dokter Spesialis Mata

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PROGRAM STUDI ILMU KESEHATAN MATA PROGRAM SPESIALIS

FAKULTAS KEDOKTERAN UNIVERSITAS ANDALAS

PADANG

2026

THE RELATIONSHIP BETWEEN CLEAR CORNEAL INCISION STABILITY AND CHANGES IN REFRACTIVE AND KERATOMETRIC VALUES IN CATARACT PATIENTS AFTER PHACOEMULSIFICATION

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Abstract

Introduction: Clear corneal incision (CCI) stability and postoperative refractive and keratometric changes are important in evaluating outcomes after phacoemulsification. However, the relationship between corneal wound micro-architecture and optical outcomes remains unclear. This study aimed to evaluate the association between CCI stability and changes in refractive and keratometric values after phacoemulsification

Method: This prospective observational cohort study included 30 eyes of senile cataract patients undergoing uncomplicated phacoemulsification with a 2.2 mm temporal CCI performed by a single surgeon. Evaluations were conducted on postoperative days 1, 7, 14, and 28. Refractive and keratometric parameters were measured using automated refractokeratometry, while wound architecture was assessed using anterior segment optical coherence tomography (AS-OCT). Statistical analyses included Friedman, Wilcoxon, Mann–Whitney, and Spearman correlation tests.

Results: Epithelial and stromal layers demonstrated stability by day 7, with no epithelial gap, misalignment, or coaptation loss. Endothelial healing was slower, with Descemet's membrane detachment (DMD) and endothelial gaping observed in some eyes up to day 28. Refractive and keratometric parameters showed minimal changes over time (median ≤0.25 D) with no significant differences across follow-up periods ($p > 0.05$). No consistent correlation was found between CCI stability and refractive or keratometric changes, except for a transient association with K2 on day 14 ($p = 0.034$).

Conclusion: Refractive and keratometric stability can be achieved early following phacoemulsification, in parallel with early stabilization of epithelial and stromal wound architecture, despite ongoing endothelial healing. These findings support consideration of early postoperative refractive correction.

Keywords: Clear corneal incision, phacoemulsification, refraction, keratometry, AS-OCT, wound healing