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Accelerated visual recovery in transepithelial phototherapeutic keratectomy in comparison to mechanical epithelial removal followed by cross-linking for progressive keratoconus

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Purpose: To evaluate the outcomes of a series of patients who were treated with either simultaneous transepithelial phototherapeutic keratectomy (trans-PTK) or mechanical epithelial removal prior to corneal collagen crosslinking (CXL) for progressive keratoconus.

Methods: This study was a retrospective non-randomized comparative case series on 60 progressive keratoconic eyes (60 patients) who underwent epithelial debridement with trans-PTK using Amaris excimer laser (Schwind, GmbH) (group 1; 30 eyes) or mechanical epithelial debridement (group 2; 30 eyes) for epithelial removal prior to CXL (3mW/cm²) for 30 minutes using 0.1% topical riboflavin sodium phosphate. Uncorrected distance visual acuity (UDVA), corrected distance visual acuity (CDVA), keratometry, pachymetry (Topcon, Inc), corneal tomography indices (Oculus Pentacam), differences among anterior and posterior corneal surfaces (Oculus Pentacam), and subjective questionnaires were analysed. Follow up was six months.

Results: No complications were observed in either group. Group 1: mean UDVA, CDVA and Kmax improved from 0.83±0.42 logMAR, 0.30±0.22 logMAR and 48.71±4.00 dioptres (D) preoperatively to 0.55±0.19 log MAR (P<0.05), 0.19±0.15 logMAR (P<0.05) and 46.36±4.49D (P<0.05) at six months, respectively; additionally in group 2, 0.80±0.23 logMAR, 0.26±0.18 logMAR and 46.35±4.55D preoperatively improved to 0.62±0.18 logMAR (P<0.05), 0.21±0.17 logMAR (P<0.05) and 45.47±4.65D (P<0.05) at six months, respectively. The mean magnitude of change observed in UDVA, CDVA, Kmax and QOV scores of group 1 was greater than group 2 (six months).

Conclusions: Initial findings suggest that epithelial removal using trans-PTK during CXL results in possible early enhanced visual and refractive outcomes compared with mechanical epithelial debridement. Long-term follow up is required.

Biography

Jonathan E Moore completed a Medical degree from Queens University Belfast (QUB), and trained in Ophthalmology in the Department of Ophthalmology, Belfast. Then he carried out an anterior segment clinical fellowship in Adelaide South Australia and then achieved a PhD in Ophthalmology from Queens University Belfast and with a year of this as a research fellowship position in Harvard Medical School, Boston. He is also Medical Director of Cathedral Eye Clinic which offers specialist expertise in laser, refractive surgery, cataract surgery, anterior segment surgery, multifocal IOLs, medical and surgical retina and Oculoplastic surgery. He has personally completed 16,000 cataract and refractive procedures.

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