

TOPOGRAPHY-GUIDED CUSTOMIZED ABLATION TREATMENT FOR KERATOCONUS AND POST-LASIK ECTASIA: MONTREAL PROTOCOL

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PURPOSE

To determine efficacy, safety, and stability of TCAT (topography-guided customized ablation treatment) excimer laser corneal surface ablation combined with corneal collagen cross-linking (CXL) for keratoconus (KC) and post-LASIK ectasia with a new treatment protocol.

METHODS

Prospective study of a new treatment protocol for adjusting the TCAT ablation profile (the Montreal protocol), consisting of a 7.0 mm PTK zone of 60 um followed by an ablation algorithm incorporating both Topolyzer and Orbscan II measurements. Five minute accelerated CXL post-TCAT. RM-ANOVA and Holms Sidak post-hoc tests were used. Subjective quality of vision (QoV) questionnaire was administered.

RESULTS

168 eyes (133 KC, 35 ectasia), 77 with 6 month FU. Significant UDVA improvement (0.9 ± 0.6 vs. 0.6 ± 0.5 logMAR, $p < 0.001$), and cyl reduction (-3.86 ± 2.31 vs. -1.95 ± 1.41 D, $p < 0.001$). Post-op UDVA 20/20, 20/30, 20/40, 20/50 in 6, 26, 38, 45%, post-op CDVA in 21, 72, 83, 92%; pre-op CDVA in 13, 60, 76, 87%. ≥ 2 CDVA lines loss-9%, 1 line-13%, no change-32%, gain ≥ 1 - 46%. Post-op Kmax stable from 1-6 mths ($p = 0.14$). 9.3% rated postop QoV worse, 3.7% no change, 87% better. 41% using corrective lenses postop vs. 61% preop. Postop corrected and uncorrected vision rated 7.4 ± 2.5 and 5.5 ± 2.5 , vs. preop 6.3 ± 2.0 and 3.8 ± 2.4 .

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CONCLUSIONS

The Montreal protocol for TCAT/CXL showed a large reduction in cylinder, improvement in UDVA, decreased dependence on corrective lenses, and high patient satisfaction. Safety profile was good considering early reporting.