Topography-Guided Photorefractive Keratectomy for Correction of Irregular Astigmatism Following Penetrating Keratoplasty

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Introduction:

Penetrating keratoplasty (PKP) can be complicated by high and irregular astigmatism postoperatively. Treatment options such as contact lenses may not be well tolerated. We evaluated the efficacy and safety of Topography-Guided Photorefractive Keratectomy (TG-PRK) to correct irregular astigmatism following PKP.

Methods:

Patients with TG-PRK for irregular astigmatism post-PKP and 12 months of follow-up data were included in this retrospective study at a laser refractive clinic. There was a total of 182 eyes. Preoperative and postoperative uncorrected distance visual acuity (UDVA), best corrected visual acuity (CDVA), manifest refraction, and topographic cylinder were analyzed.

Results:

Postoperatively, 61 (33%) eyes had UDVA ≥20/40 at 12 months compared to preoperatively where only 2 (1.5%) eyes had a recorded UDVA ≥20/40. Over one-quarter of the patients gained ≥2 lines. 10% lost ≥2 lines from incomplete treatment, haze, or cataracts. However, no patient subsequently needed specialty contact lenses.

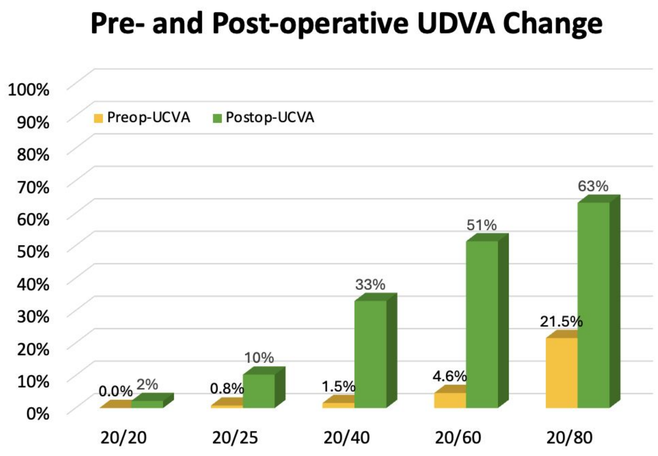
Conclusion:

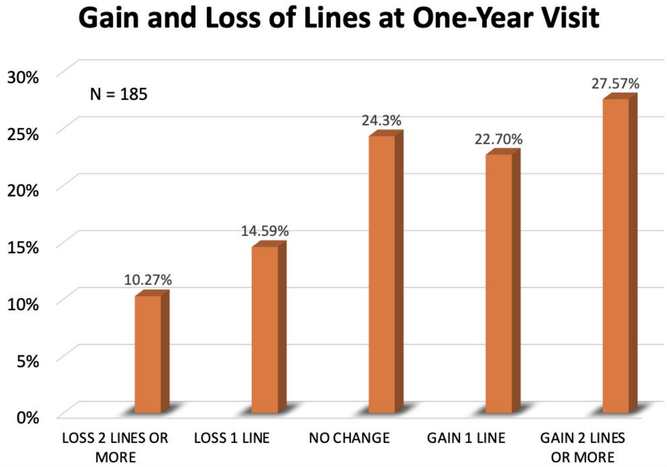
TG-PRK may improve irregular astigmatism postoperatively and improve both UDVA and CDVA with good efficacy and safety. It may be an alternative to current surgical management for post-PKP irregular astigmatism. Trans-epithelial TG-PRK is a surface procedure that avoids more invasive techniques such as wedge resection and relieving incisions for post-penetrating keratoplasty.

Spherical Equivalent	Pre-Op	Post-Op
Average	-3.51	-1.34
Standard Deviation	3.34	2.07

Astigmatism	Pre-Op	Post-Op
Average	-5.12	-2.22
Standard Deviation	2.32	1.68

Refractive Outcomes:





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