

COMPARISON BETWEEN POSTOPERATIVE PAIN AND HEALING PATTERN AFTER CONVENTIONAL PHOTOREFRACTIVE KERATECTOMY (PRK) AND TRANS- EPITHELIAL PRK

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Introduction

The refractive errors, where the optical system of the non-accommodating eye is unable to focus parallel light rays onto the fovea, which include myopia, hyperopia and astigmatism. Photorefractive keratectomy (PRK) was the initial surface ablation technique used to treat refractive errors, by targeting the anterior corneal stroma by the excimer laser, which causes stromal remodeling and an alteration in corneal refraction. Compared to other refractive procedures, PRK has a lower risk of complications such as corneal flap complications and epithelial ingrowth. Conventional PRK involves the removal of the corneal epithelium prior to the laser ablation, while trans-epithelial PRK uses the laser to remove the epithelium before the ablation. Conventional PRK has been shown to have a higher risk of pain and longer recovery time due to the removal of the corneal epithelium. . However, trans-epithelial PRK has been found to have a higher incidence of haze, which can lead to reduced visual acuity. Recent studies have shown that advanced surface ablation techniques, including the use of mitomycin C, can reduce the incidence of haze and improve visual outcomes with trans-epithelial PRK.

Aim of the work

The aim of the work was to study the healing pattern and pain score in conventional PRK versus trans epithelial PRK.

Patients

This study was a prospective comparative interventional study, 32 eyes of 16 consecutive patients with myopia up to 5 degree with or without astigmatism were included. Each patient had one eye operated through conventional PRK, the other eye using transepithelial PRK **Inclusion criteria** 1-Age more than 18 years old 2-Simple myopia from -1 to -5 ,astigmatism up to 2 diopters with Central corneal thickness of >470-µm. 3-A stable refraction for at least 6 months **Exclusion criteria** .Unstable refraction.Ocular surface disease and sever dry eye. Corneal epithelial pathology. Keratoconus. Any previous intraocular or corneal surgery. Any posterior segment pathology.

Methods

All patients were subjected to detailed history taking,complete eye examination including visual acuity(UCVA/BCVA) cycloplegic refractive error, slit lamp examination of anterior segment,fundus examination and pentacam..If the patient are contact lense wearer it should be removed 1 week befor surgery.Postoperatively, patients used corticosteroid, , antibiotic and lubricant every 2 hour for1 day then 3 times daily for 1 week. follow up daily till complete epithelial healing with contact lens removal then after 4 days.UCDVA will be measured at day4,7and3 months. pain level in each eye was measured on a questionnaire on 1st, 2nd and 3rd day.corneal haze was evaluated.

Results

Table 1: Pre-operative measurement (n: 32 eyes)

Pre-operative	Operation type		
Term	Conventional PRK	Transepithelial PRK	p-value
UCVA	0.2 (0.2)	0.3 (0.2)	0.3256
BCVA	1.1 (0.1)	1.1 (0.1)	0.5594
Sphere	-2.6 (1.9)	-2.5 (1.3)	0.8285
Cylinder	-1.2 (0.7)	-1 (0.7)	0.2952
α = 0.05. p < 0.05*, p < 0.01**, p < 0.001***			
P-values obtained from two-sample t-test (t)			
UCVA: Visual acuity measured without correcting refractive errors.			
BCVA: Visual acuity after correcting refractive errors.			

Table 2: Post-operative measurement (n: 32 eyes)

Post-operative	Operation type		
Term	Conventional PRK	Transepithelial PRK	p-value
UCVA	0.9 (0.1)	1 (0.1)	<0.001***
Sphere	-0.4 (0.3)	-0.4 (0.2)	0.8691
Cylinder	0.33 (0.55)	0.25 (0.52)	0.7607
Post-op pain day 1	3.9 (0.8)	3.6 (0.8)	0.3874
Post-op pain day 2	2.8 (0.9)	2.3 (0.9)	0.1383
Post-op pain day 3	1.4 (0.6)	0.9 (0.4)	0.0149*
α = 0.05. p < 0.05*, p < 0.01**, p < 0.001***			
P-values obtained from two-sample t-test (t)			

Conclusion

Although both conventional PRK and transepithelial PRK are effective in significantly enhancing visual outcomes in patients, transepithelial PRK may offer better pain management in the later stages of recovery. As per safety, both techniques showed appropriate post-operative healing patterns with scarce incidence of complications.