

# SINGLE STEP TRANSEPITHELIAL PHOTOREFRACTIVE KERATECTOMY VERSUS CONVENTIONAL PHOTOREFRACTIVE KERATECTOMY IN THE TREATMENT OF MYOPIA AND MYOPIC ASTIGMATISM

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## INTRODUCTION

Photorefractive keratectomy (PRK) has commonly been used in refractive surgeries. It is definitely a safe and effective technique for correction of low to moderate myopia and astigmatism. PRK involves removal of the epithelium of the cornea then ablation of the stroma. Epithelial debridement could be done by several techniques which includes rotating brush, chemical, mechanical, or with the help of excimer laser. An excimer laser is used in transepithelial PRK instead of chemical or mechanical debridement techniques to ablate both the corneal epithelium and stroma. It has the potential to avoid debridement- and corneal flap-related Problems in traditional PRK and laser in situ keratomileusis (LASIK) procedures, respectively. StreamLight™ is a new transepithelial PRK procedure in which removal of the epithelium occur first by Phototherapeutic keratectomy (PTK) and after that PRK take place in a single procedure.

The size and position of the PTK treatment zone are automatically aligned with the PRK ablation profile thanks to newly calculated nomograms and centration is only required once in the StreamLight™ surgery. Additionally, a multidimensional eye tracker is used throughout the surgery.

## AIM OF THE WORK

The aim of this study is to compare safety, efficacy and predictability of PRK using manual epithelial removal method versus transepithelial PRK.

## SUBJECTS

**Inclusion criteria:** Patients with myopic range from -1 to -5 and maximum astigmatism of 2 diopters, Age more than 18 years old and Stable refractive error for at least 6 month before surgery.

**Exclusion criteria:** Keratoconus, Autoimmune disease, Severe dry eye, Diabetes, Glaucoma and Previous corneal or ocular surgery.

## Method

The study was designed as prospective study . It included 60 eyes of 30 patients . In the right eye conventional PRK surgery was done while in the left eye StreamLight PRK surgery was done .All patients received a standardized comprehensive Ophthalmologic examination comprising visual acuity (uncorrected and best corrected visual acuity), cycloplegic refractive error, slit lamp examination of anterior segment structures, fundus examination, pentacam using Oculyzer machine (Wavelight, Germany), corneal topography using Allegro topolyzer (Wavelight, Germany) and intraocular pressure measurement. Postoperative follow up at 3rd day, 1week, 1 month and 3 month. We evaluate the following: UDVA, CDVA, SE and time for complete epithelialization in each eye.

## RESULTS

Table (1): Comparison between the two studied groups according to pain level

Pain level	Conventional PRK (n = 30)	Stream light transepithelial PRK (n = 30)	U	p
1 <sup>st</sup> day				
Range	1.0 –5.0	1.0 –3.0	62.0	<0.001*
Mean ± SD.	3.43 ± 0.82	1.67 ± 0.61		
Median (IQR)	4.0 (3.0 –4.0)	2.0 (2.0 –3.0)		
3 <sup>rd</sup> day				
Range	1.0 –3.0	1.0 –2.0	159.0	<0.001*
Mean ± SD.	2.17 ± 0.70	1.27 ± 0.45		
Median (IQR)	2.0 (1.0 –2.0)	1.0 (1.0 –2.0)		
Z	4.802	3.464		
p <sub>0</sub>	<0.001*	0.001*		

IQR; Inter quartile range  
U; Mann Whitney test  
p<sub>0</sub>; p value for comparing between the studied groups in each group

SD; Standard deviation  
Z; Wilcoxon signed ranks test  
p<sub>0</sub>; p value for comparing between 1<sup>st</sup> day and 3<sup>rd</sup> day  
\*: Statistically significant (p ≤ 0.05)

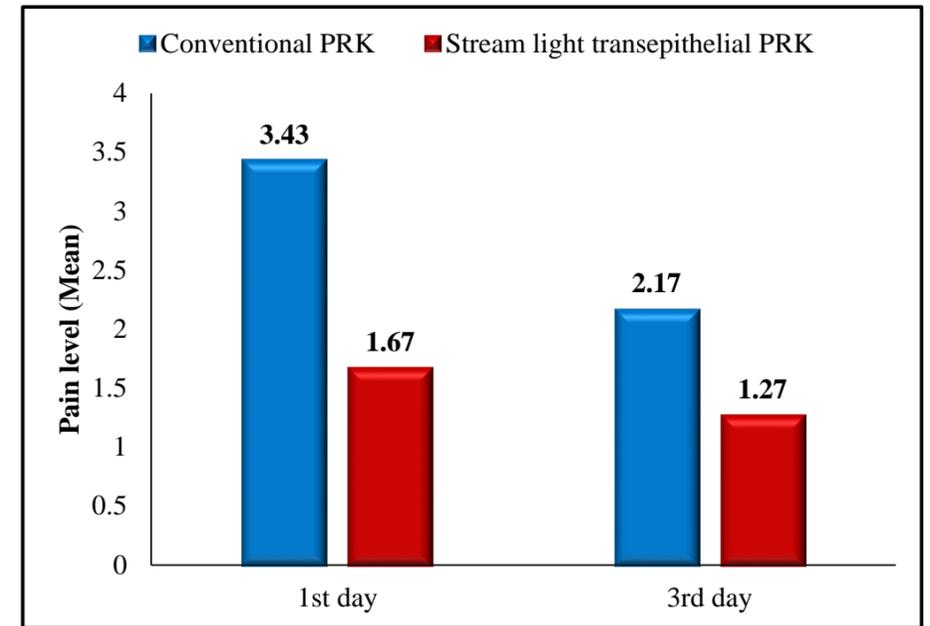


Figure (1): Comparison between the two studied groups according to pain level

## CONCLUSION

Both procedure are safe effective and predictable  
Pain was significantly lower in StreamLight™ PRK.