

## Trans PRK – A Surgeon’s Experience with 6,000 Eyes

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### Abstract

This article discusses the effectiveness of the modern Trans PRK laser vision correction method based on the author’s experience and results with 6,000 Trans PRK myopic eyes. This study included a total of 3056 patients that presented with no history of eye diseases.

**Keywords:** *Trans PRK; Surgeon*

### Introduction

Recent advancements in excimer laser technology now allow PRK to be done safely, accurately and with minimal complications as an all laser, no touch procedure known as Trans PRK. It holds the potential to be the ideal Advanced Surface Ablation (ASA) procedure and should be considered in the surgical armamentarium of the modern refractive surgeon.

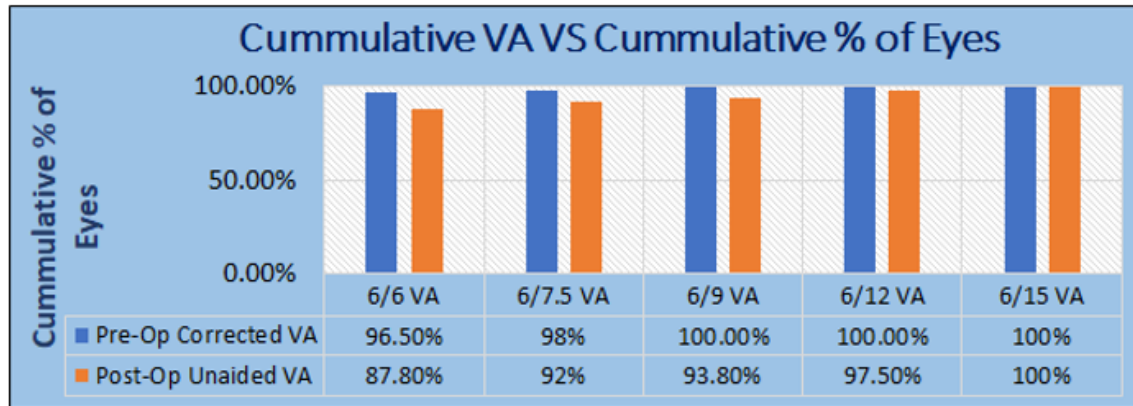
### Method

The medical records of 6000 Trans PRK eyes with myopia +/- astigmatism treatments were reviewed. The review includes 3056 patients and they did not present with any history of eye diseases. Age range of patients was from 21 to 58 years old with a mean age of 27.3 years old. Proportion of males to females was 44:56. Myopia treatment range was from -0.75D to -11.00D with mean correction of -.8D and astigmatism treatment range from -0.25D cyl to -4.00D cyl.

All patients were treated using the Trans PRK mode available on the Schwind Amaris 1050Rs excimer laser model (Schwind eye-tech-solutions). They were also treated by the same senior refractive surgeon. Prior to treatment, all patients underwent counselling and pre-op evaluation including subjective refraction, cycloplegic refraction, laser pachymetry, Orbscan, Sirius and Pentacam (Refractive and Belin model) scans. Follow-up review period ranged from 3 weeks to 6 months with a mean period of 3 months.

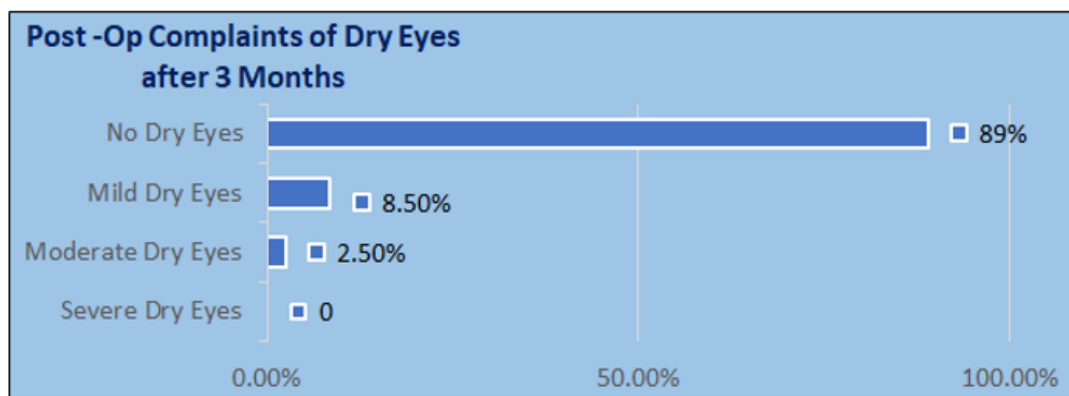
### Results and Discussion

It should be noted that pre-operatively, not all candidates had 6/6 best corrected visual acuity. We documented only 96.5% of eyes with 6/6 vision. This is attributed to the 6% of candidates who had extreme myopia of more than -10D spherical equivalent. Post-operatively, it was shown that close to 88% of eyes achieved unaided 6/6 vision, close to 95% of eyes achieved unaided 6/9 vision and close to 98% achieved unaided 6/12 vision.



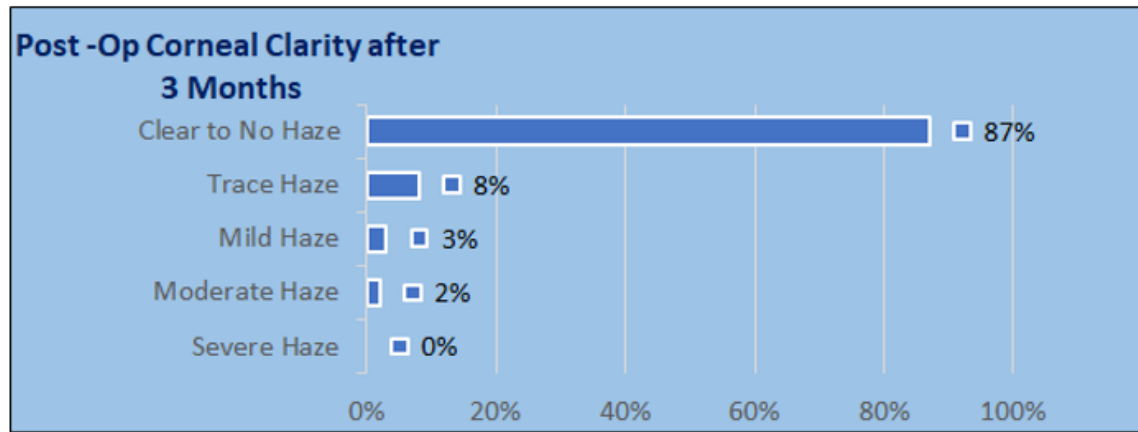
Graph 1

These results must be interpreted in the context of treatment of a 6% populace of extreme myopia (-10D or more) and 18% populace of high myopia (-8 D or more). Importantly, a significant 32% of the population did not make the three month follow up review and we know that surface ablation results are optimum only after at least three months of healing. We can surmise that 1) a high percentage of this dropout population did not come for the final three month review because they were happy with the visual results and 2) the reported visual acuity results would be better if this drop out population had come for the final review.



Graph 2

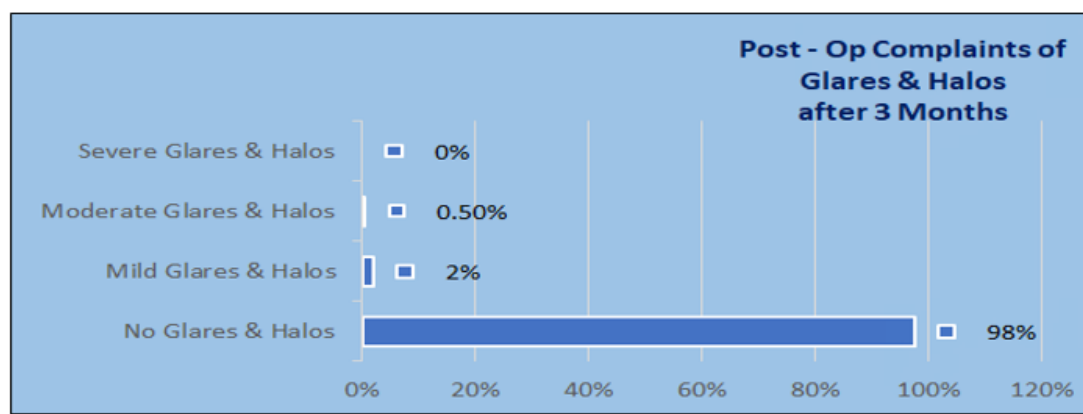
It is well documented that surface ablation procedures such as TransPRK have the lowest incidence of dry eyes. In our review study, only about one in ten patients complained of dry eyes at the last post-op review. Most complaints were of only mild dryness with only a small percentage (2.5%) complaining of moderate severity dryness. It is notable that of the 6000 eyes treated, none was documented to suffer from severe dry eyes.



Graph 3

In 87% of eyes, the cornea was graded as clear at the point of last review visit. Trace haze was noted in 8% of eyes and mild haze in 3%. Moderate haze was noted in 2% of eyes. No eye had severe haze at the point of the last visit. The surgeon’s experience is that trace to mild haze does not affect the visual acuity results and is independent of patients complaints of glare and halos.

There is a definite correlation of haze with the amount of myopia and astigmatism corrected, particularly in eyes treated with myopia and high astigmatism. Other correlations with haze are 1) patients who were non-compliant with the post-op eyedrops protocol, 2) patients who did not avoid UV exposure during the first two months post-op and 3) patients who underwent high myopia treatment with prophylactic cross-linking.



Graph 4

We were pleasantly surprised by the lack of glare and halos complaints, especially since 6% of our treatment population were in the extreme myopia category and 18% in the high myopia category. Only 2.0% mild glare and halos and 0.5% moderate glare and halos complaints were noted. This could be because patients were not actively asked about the complaint and the event was noted down in the case notes only when a complaint was made.

Another reason is the fact that all patients were treated with the top model Amaris 1050 excimer laser that is the only excimer laser with zero latency, seven dimensional eye tracking and the proprietary “Smart Surface” ablation system. Other possible contributory factors could be the routine use of prophylactic Mitomycin C for all cases, stringent counselling on avoidance of U.V. rays during the healing process, and use of NSAID for the first few days and steroid eyedrops for up to two to three months post-op [1].

### Trans-PRK Post-op recovery pictures

- Yellow arrow indicates Re- Epithelialization margins.
- Red arrow indicates trace cornea haze.

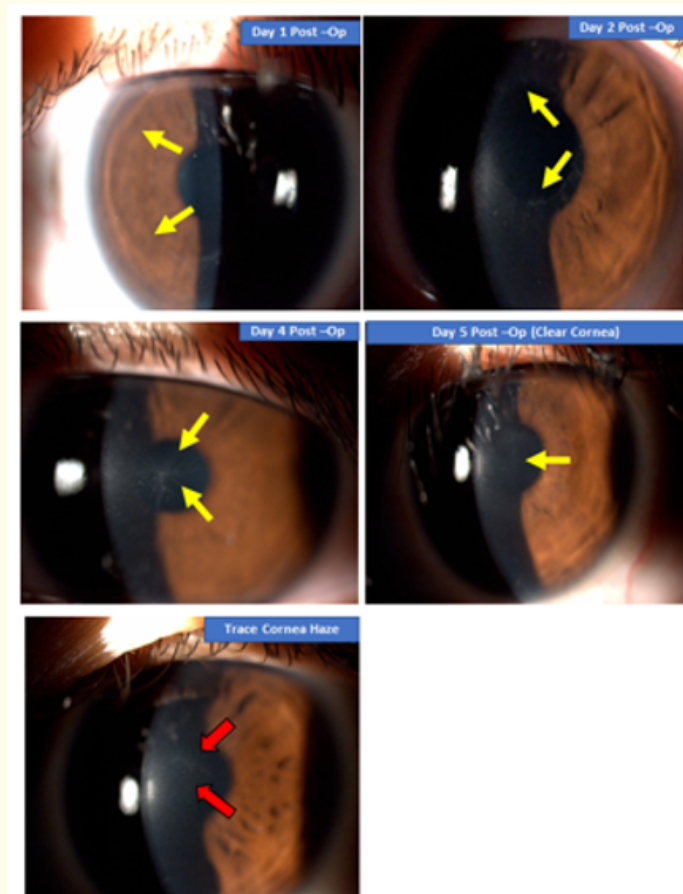


Figure 1: MRI Brain was normal.

## Conclusion

After treating over 6,000 myopic eyes, our view is that TransPRK is a safe and effective method of laser vision correction, even for high myopia, and offers the following significant advantages over traditional PRK, LASEK and epiLASIK: it is much faster, easier to do and it does not traumatise the epithelium as much. It is also a genuine “no touch” procedure as compared to all other laser vision correction methods.

It has also been our experience that not all patients like the idea of having their cornea or cornea nerves cut. Thus, we offer Trans PRK for patients who are risk averse to dry eye complications or cut flap or lenticule complications. It is also ideally suited for those participating in contact sports or martial arts. From the surgeon’s perspective, it has the widest range of indications amongst the laser vision correction procedures. As there is no laser cut, it is more suitable for patients with thin corneas or with cornea opacities. Eyes with a history of retinal tear or detachment, glaucoma, recurrent corneal epithelial erosions are ill-advised to have LASIK or SMILE done but can do Trans PRK safely. It used to be that PRK patients had to put up with a week of suffering. But this is no longer true with the advent of high oxygen permeable silicone hydrogel contact lenses, NSAID eye drops, and advanced excimer lasers able to ablate at higher speeds with smoother ablation profiles. It also used to be that PRK is “contra-indicated” for high myopia eyes because of cornea haze risk. However, this is again no longer true with the use of intraoperative Mitomycin C, with advanced tech excimer lasers and better post-op regimes.

## Conflicts of Interest

The authors report no conflicts of interest in this work.

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