JOJ Ophthalmology
ISSN: 2473-5477

Juniper Publishers
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Opinion
Volume 10 Issue 4 - February 2024
DOI: 10.19080/JOJO.2024.10.555792

JOJ Ophthalmol

Laser Refractive Surgery (LRS) with Laser Asymmetric Keratectomy (Crescentic LRS) to Avoid LRS Adverse Effects

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Submission: February 06, 2024; **Published:** February 15, 2024

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Keywords: Laser Refractive Surgery; Laser Asymmetric Keratectomy; Novel approach; Refractive power; Peripheral cornea

Abbreviations: LRS: Laser Refractive Surgery; LAK: Laser Asymmetric Keratectomy

Opinion

After laser refractive surgery (LRS), adverse effects such as myopic regression, blurring, and in severe cases, halos at night are reported in a fraction of patients due to corneal biomechanical interaction of corneal thickness, corneal stiffness and IOP, resulting in optical aberrations [1-6]. Deviations in corneal thickness is a major factor in causing LRS adverse effects [5-10]. The sum of corneal central thickness deviations in four directions on Orbscan map (SUM) as a new evaluation index of corneal asymmetry was reported [7-15]. Recently, laser asymmetric keratectomy (LAK) has been reported, which is a biomechanical customized asymmetric corneal ablation method with full integration of Vision Up software and applied to avoid LRS adverse effects [7-10], a novel approach to enhancement in patients with myopic regression after LRS [11-13] and a new corneal remodeling technique in keratoconus suspect without postoperative corneal ectasia [14,15]. LRS combined with LAK (that is, so called as crescentic LASEK or LASIK) corrected refractive power and ablate on the thick peripheral cornea with integration of Vision UP software® to make cornea to be symmetric and ablate induced myopia due to LAK simultaneously. We recommend the conventional LRS to correct the refractive errors in myopic patients with relative symmetric cornea (SUM (80 μm preoperatively), but LRS (LASIK or LASK) combined LAK (crescentic LRS) can produce better surgical outcomes on myopic patients with asymmetric corneal thickness (SUM on Orbscan maps ≥80 μm) without LRS adverse effects.

References

1. Lim SA, Park Y, Cheong YJ, Na KS, Joo CK (2016) Factors affecting long-term myopic regression after laser in situ keratomileusis and laser-assisted subepithelial keratectomy for moderate myopia. Korean J Opthalmol 30(2): 92-100.
2. Moshirfar M, Shah TJ, Skanchy DF, Linn SH, Durrie DS (2017) Meta-analysis of the FDA reports on patient-reported outcomes using the three latest platforms for LASIK. J Refract Surg 33(6): 362-368.
3. Roberts CJ (2000) The cornea is not a piece of plastic. J Refract Surg 16(4): 407-413.
4. Roberts CJ (2005) Biomechanical customization: The next generation of laser refractive surgery. J Cataract Refract Surg 31(1): 2-5.
5. Roberts CJ, Dupps WJ (2014) Biomechanics of corneal ectasia and biomechanical treatments. J Cataract Refract Surg 40(6): 991-998.
6. Ikeda T, Shimizu K, Igarashi A, Kasahara AS, Kamiya K (2017) Twelve-Year Follow-Up of Laser In Situ Keratomileusis for Moderate to High Myopia. Biomed Res Int p. 7.
7. Agudo JAR, Park J, Park J, Lee S, Park K (2019) Laser asymmetric corneal ablation to improve corneal shape. Lasers Med Sci 34: 1763-1779.
8. Min JS, Min BM (2020) Comparison between surgical outcomes of LASIK with and without laser asymmetric keratectomy to avoid conventional laser refractive surgery adverse effects. Scientific Reports 10: 10446.
9. Min JS, Min BM (2021) Comparison of outcomes of laser refractive surgery (LRS) alone and LRS with laser asymmetric keratectomy in patients with myopia: A retrospective study. Medicine (Baltimore) 100(14): e25366.

10. Min JS, Min BM, Lee DC (2021) Laser asymmetric keratectomy using a semi-cylindrical ablation pattern to avoid adverse effects of laser refractive surgery. Austin J Clin Ophthalmol 8(2): 1120.

11. Min JS, Min BM (2021) A novel approach to enhancement linked laser asymmetric keratectomy using semi-cylindrical ablation pattern in patients with myopic regression after laser refractive surgery. Clin Ophthalmol 15: 1751-1758.

12. Min JS, Min BM (2021) Clinical outcomes of laser asymmetric keratectomy to management postoperative adverse effects-A retrospective clinical trial. The Open Opthalmol J 15: 171-177.

13. Min JS, Jin LY, Min BM (2020) Early postoperative changes after laser asymmetric keratectomy for the management of adverse effects after photorefractive keratectomy. J ophthalmol Open Access 1: 1-7.

14. Min BM (2023) Corneal remodeling of laser asymmetric keratectomy combined with collagen cross linking in patients with keratoconus suspect. J Ophthalmol Open Access 7: 1-10.

15. Min JS, Lee DC, Lee SS, Min BM (2024) A Novel approach for corneal remodeling of laser asymmetric keratectomy with collagen cross linking in patients with keratoconus suspect. The Open Ophthalmol J 18: 1-9.

DOI: 10.19080/JOJO.2024.09.555792

How to cite this article: Ji Sang M, Byung Moo M. Laser Refractive Surgery (LRS) with Laser Asymmetric Keratectomy (Crescentic LRS) to Avoid LRS Adverse Effects. JOJ Ophthalmol. 2024; 10(4): 555792. DOI: 10.19080/JOJO.2024.09.555792