Laser Eye Surgery for High Myopia: Managing Severe Near-sightedness.

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Introduction

High myopia, or severe near-sightedness, can significantly impact an individual's quality of life, affecting their ability to see distant objects clearly without corrective lenses. While glasses and contact lenses have traditionally been used to manage high myopia, laser eye surgery offers a potential solution for reducing dependence on corrective eyewear and improving vision clarity. In this article, we will explore the role of laser eye surgery in managing high myopia, the different surgical techniques available, candidacy criteria, potential risks, and benefits [1].

High myopia is a refractive error characterized by an elongated eyeball or steeply curved cornea, causing light rays to focus in front of the retina instead of directly on it. This results in blurred vision, particularly when looking at distant objects. High myopia is typically diagnosed when the refractive error exceeds -6.00 dioptres [2].

Laser eye surgery offers a permanent solution for correcting high myopia by reshaping the cornea to improve its focusing ability. By precisely removing microscopic amounts of corneal tissue, laser surgery can reduce the refractive error and allow light rays to focus correctly on the retina, improving vision clarity without the need for glasses or contact lenses [3].

LASIK is the most commonly performed laser eye surgery for high myopia. During LASIK, a thin flap is created on the surface of the cornea, which is then lifted to allow for reshaping of the underlying corneal tissue with an excimer laser. The flap is repositioned after the procedure, promoting rapid healing and visual recovery. PRK is an alternative to LASIK, particularly for individuals with thinner corneas or those at higher risk of flap-related complications. In PRK, the outer layer of the cornea (epithelium) is removed entirely, exposing the underlying stroma for reshaping with an excimer laser. As there is no flap creation in PRK, the recovery process may be slightly longer compared to LASIK [4,5].

Stable Refractive Error: Candidates should have stable high myopia for at least one year before surgery to ensure optimal outcomes. Adequate Corneal Thickness: Adequate corneal thickness is necessary for flap creation in LASIK or for tissue removal in PRK. Realistic Expectations: Candidates should have realistic expectations regarding the outcome of the surgery and understand that complete elimination of glasses or contacts may not be guaranteed. While laser eye surgery for high myopia is generally safe and effective, like any surgical procedure, it carries certain risks and potential complications [6]

Undercorrection or Overcorrection: In some cases, the desired correction may not be achieved, leading to residual refractive error or overcorrection. Flap Complications (LASIK): LASIK involves creating a corneal flap, which can lead to flap-related issues such as flap dislocation, wrinkles, or epithelial ingrowth. Dry Eye Syndrome: Temporary or persistent dryness of the eyes is common after surgery, particularly in LASIK. Regression: Some patients may experience regression of the initial correction over time, necessitating retreatment or enhancement procedures [7].

Improved Vision Clarity: Laser eye surgery can significantly improve vision clarity and reduce dependence on glasses or contact lenses for individuals with high myopia. Reduced Risk of Complications: By correcting the refractive error, laser eye surgery may reduce the risk of complications associated with high myopia, such as retinal detachment or myopic maculopathy. Enhanced Quality of Life: Freedom from glasses or contacts can lead to an improved quality of life, greater convenience in daily activities, and enhanced self-confidence [8,9].

Use of Eye Drops: Patients may be prescribed antibiotic and anti-inflammatory eye drops to prevent infection and reduce inflammation. Avoidance of Rubbing Eyes: Patients should avoid rubbing their eyes to prevent displacement of the corneal flap (in LASIK) or disruption of the corneal surface (in PRK). Protective Eyewear: Sunglasses should be worn outdoors to protect the eyes from UV radiation and minimize discomfort from bright light. Scheduled Follow-Up Visits: Patients are scheduled for follow-up visits to monitor healing progress and assess visual acuity [10].

Conclusion

Laser eye surgery offers a safe and effective solution for managing high myopia and improving vision clarity without the need for glasses or contact lenses. From LASIK to PRK, patients have a range of options to choose from based on their individual needs and preferences. While the decision to undergo laser eye surgery requires careful consideration and consultation with an eye care professional, the potential benefits of improved vision and reduced dependence on

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corrective lenses are significant. With advancements in technology and ongoing research, the future of laser eye surgery holds promise for further refinement and innovation in the management of high myopia.

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