

Post-LASIK and PRK Care: The Role of Functional Eye Dressings.

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Introduction

LASIK (Laser-Assisted in Situ Keratomileusis) and PRK (Photorefractive Keratectomy) are two of the most popular refractive eye surgeries performed to correct vision problems such as near-sightedness, farsightedness, and astigmatism. While both procedures offer significant benefits, the healing process is crucial to ensure optimal outcomes and prevent complications such as infection, inflammation, or corneal haze. Functional eye dressings play a key role in postoperative care for both LASIK and PRK patients by protecting the corneal surface, promoting healing, and reducing discomfort [1].

Both LASIK and PRK involve reshaping the cornea to correct refractive errors, but the healing process differs. LASIK involves creating a corneal flap, which is lifted and then replaced, while PRK removes the outer layer of the cornea, which regenerates over time. In both cases, the cornea is vulnerable to environmental irritants, dryness, and potential infection in the immediate postoperative period. Functional eye dressings, such as bandage contact lenses or moisture chamber goggles, offer essential protection by shielding the healing corneal surface and helping to maintain a stable, moist environment conducive to healing [2].

Bandage contact lenses are commonly used after PRK surgery, where the corneal epithelium is removed and requires time to regenerate. These soft, transparent lenses serve as a protective barrier over the cornea, allowing the epithelial cells to heal while minimizing pain and discomfort caused by blinking. Bandage contact lenses also help prevent infection by creating a physical barrier between the corneal surface and the external environment. These lenses are typically worn for several days until the epithelium fully heals, reducing the risk of complications such as delayed healing or corneal scarring [3].

Dry eye symptoms are common after both LASIK and PRK surgeries, as the procedures can disrupt the tear film and reduce natural tear production. Moisture chamber goggles are an effective solution for managing postoperative dryness, as they create a humid environment around the eyes, minimizing tear evaporation and helping to maintain adequate moisture levels on the corneal surface. This is especially important during the initial healing phase, as dry eyes can slow down the recovery process and increase discomfort [4].

For patients with sensitive skin or allergies to traditional adhesive-based eye dressings, silicone-based options provide

a hypoallergenic and gentle alternative. These dressings are commonly used to secure protective shields or eye patches after surgery without irritating the delicate skin around the eyes. Silicone eye dressings are breathable, allowing oxygen to reach the cornea while still providing a protective barrier. This ensures that the eyes remain protected from external irritants without causing additional discomfort or allergic reactions, particularly for patients who require long-term use of protective dressings [5].

After LASIK surgery, the corneal flap needs time to adhere properly, and the eye is more vulnerable to accidental rubbing or external trauma. Transparent eye shields are commonly used postoperatively to protect the eyes during this critical healing period. These shields are typically worn during sleep or when patients are in environments where dust or debris may pose a risk to the healing eye. Transparent shields allow patients to maintain normal vision while providing a physical barrier that prevents accidental contact with the cornea, reducing the risk of flap dislocation or infection [6].

In some cases, patients may experience swelling or inflammation after LASIK or PRK surgery. Pressure eye dressings can be used to apply gentle pressure to the eye, reducing oedema and controlling inflammation. These dressings are particularly useful after PRK, where the cornea is more exposed, and the healing process involves regenerating the epithelial layer. By applying mild pressure, these dressings help minimize fluid buildup and promote faster recovery. However, the use of pressure dressings must be carefully monitored by a healthcare professional to avoid disrupting the healing process [7].

Postoperative infections are rare but serious complications that can occur after LASIK or PRK. Antimicrobial eye dressings are often used to reduce the risk of infection by providing localized antimicrobial protection. These dressings are sometimes infused with antibiotics or antiseptics to prevent the growth of bacteria on the healing corneal surface. Antimicrobial dressings are particularly beneficial in patients with a higher risk of infection, such as those with pre-existing eye conditions or those recovering from PRK, where the corneal surface is more vulnerable to microbial invasion [8].

PRK patients often experience more discomfort during the initial healing phase compared to LASIK patients due to the removal of the corneal epithelium. Therapeutic eye patches are used to manage pain by preventing exposure to light and

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reducing the friction caused by blinking. These patches keep the eyelid closed, allowing the corneal surface to heal in a stable environment. The darkness provided by the patches also helps reduce light sensitivity, a common issue during the early days of recovery [9].

In cases where patients experience complications or have unique postoperative needs, customizable eye dressings are often required. These dressings can be tailored to the patient's specific condition, whether it's providing extra moisture, offering enhanced protection, or combining antimicrobial and anti-inflammatory properties. For example, patients with severe dry eye symptoms may benefit from dressings that include moisture-retentive materials combined with antimicrobial agents to reduce the risk of infection. The flexibility of customizable dressings ensures that each patient receives optimal care based on their individual healing requirements [10].

Conclusion

Functional eye dressings are an indispensable part of postoperative care following LASIK and PRK surgeries. By providing protection, moisture retention, pain relief, and infection prevention, these dressings enhance the healing process and contribute to better surgical outcomes. As the understanding of postoperative eye care continues to evolve, the use of innovative and customizable dressings will remain a key factor in ensuring the best possible recovery for patients undergoing refractive surgery.

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