CHAPTER 2

COMPREHENSIVE MANAGEMENT OF DRY EYE DISEASE: FROM CONVENTIONAL APPROACHES TO ADVANCED THERAPIES

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INTRODUCTION

Dry eye disease (DED) is a multifactorial disorder of the ocular surface that arises from disruption of tear film stability and results in ocular discomfort, fluctuating vision, and tissue damage (1). It represents one of the most common and challenging conditions encountered in ophthalmic practice (2). The pathophysiology of DED is complex, involving tear film instability, hyperosmolarity, inflammation, neurosensory abnormalities, and meibomian gland dysfunction, often in overlapping patterns (3).

Because of its chronic and recurrent nature, DED can substantially impair quality of life by interfering with common daily activities including reading, driving, and prolonged screen exposure (2). Advances in understanding the underlying pathophysiology have led to the development of a wide range of diagnostic tools and therapeutic approaches. Management strategies now range from patient education and lifestyle modifications to advanced pharmacological, biological, and surgical interventions (4).

This chapter provides a comprehensive overview of current treatment modalities for dry eye disease, highlighting both conventional approaches and recent innovations, and offering practical insights into their clinical application.

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Salivary gland transplantation

Submandibular or minor salivary glands can be transplanted to provide continuous lubrication in end-stage, severe aqueous-deficient DED unresponsive to other treatments, though complications limit us (89).

STEPWISE MANAGEMENT

Beyond individual therapies, a staged approach to management is widely recommended, in which treatment intensity is adjusted according to disease severity and patient response. This framework integrates options ranging from lifestyle modifications to advanced surgical procedures. Initial steps include patient education, environmental and dietary adjustments, and preservative-free artificial tears, preferably with lipid supplementation when meibomian gland dysfunction is present. Lid hygiene and warm compresses provide additional support. If symptoms persist, escalation may involve frequent use of lubricants, tear-conservation methods such as punctal occlusion or moisture devices, and in-office treatments for meibomian gland disease. Pharmacologic therapies can be introduced at this stage, including short courses of corticosteroids, long-term immunomodulators such as cyclosporine or lifitegrast, and selected topical or oral antibiotics. In more advanced disease, systemic secretagogues, serum-derived eye drops, or therapeutic contact lenses may be used. For severe or refractory cases, invasive options such as amniotic membrane grafting, tarsorrhaphy, or conjunctival reconstruction may be required (4).

CONCLUSION

Although a broad spectrum of treatments is available, optimal outcomes depend on matching the right therapy to the right patient. Initial measures often involve environmental and lifestyle adjustments, progressing to pharmacological or surgical interventions when necessary. Future research should prioritize the development of therapies.

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