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REVIEW

Optimization of the Ocular Surface Through Treatment of Ocular Surface Disease Before Ophthalmic Surgery: A Narrative Review

Barry Schechter · Francis Mah

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ABSTRACT

Ocular surface disease commonly exists in individuals requiring ophthalmic surgery and may compromise the structure and function of ocular surface components. Ophthalmic surgery may further affect the ocular surface by injuring the epithelium and sensory nerves, disrupting the tear film, or causing local inflammation. Medical management of ocular surface disease prior to ophthalmic surgery aids in reducing inflammation, resolving infection, improving epithelial pathology, stabilizing the tear film, and easing patient symptoms, promoting positive long-term outcomes and minimizing the incidence of postoperative complications. This review summarizes frequently encountered ocular surface diseases and available preoperative medical management options, discusses common ophthalmic surgeries and their effects on the ocular surface, examines potential postoperative complications, and defines recommendations for postoperative ocular surface maintenance.

Keywords: Cataract surgery; Dry eye disease; Ocular surface disease; Ocular surface optimization; Ophthalmic surgery; Refractive surgery

Key Summary Points

Individuals requiring ophthalmic surgery commonly have pre-existing ocular surface diseases due to age or chronic use of topical ophthalmic medications, which may compromise the structure and function of ocular surface components.

Ophthalmic surgeries may further compromise the ocular surface by injuring the ocular epithelium and nerves, disrupting the tear film, and inducing inflammation.

Prior to ophthalmic surgery, appropriate medical management should be instituted for extant ocular surface diseases to reduce inflammation, treat infection, improve epithelial lesions, and stabilize the tear film.

Preoperative ocular surface optimization promotes positive surgical outcomes, improves patient satisfaction, and minimizes postoperative complications.

B. Schechter (✉)
Florida Eye Microsurgical Institute, 1717 Woolbright Rd, Boynton Beach, FL 33426, USA
e-mail: baschechter@me.com

F. Mah
Scripps Health, La Jolla, CA, USA

INTRODUCTION

The ocular surface comprises the lacrimal, accessory lacrimal, and meibomian glands, eyelids, eyelashes, cornea, conjunctiva, and tear film [1]. These structures are interconnected through the continuity of ocular surface epithelia, sensory and motor innervation, and immune, endocrine, and vascular systems [2]. Ocular surface health is vital to maintaining normal vision and may be affected by multiple disease processes. Due to the interrelation of ocular surface components, associated diseases commonly occur in a continuum where one pathology may promote or perpetuate another [1].

Ocular surface disease is more common in elderly individuals, a population that also frequently requires ophthalmic surgery [3]. Pre-existing ocular surface disease poses surgical challenges including chronic inflammation, acquired structural abnormalities, and decreased corneal clarity [4]. Additionally, surgery may further compromise the ocular surface secondary to mechanical injury of the epithelium and nerves, disturbance of normal tear film, and local inflammation [5]. Surgical procedures performed in eyes with pre-existing ocular surface disease may worsen the disease process and/or affect optimal vision, in addition to other potential adverse outcomes [4]. Whenever possible, optimizing the ocular surface prior to surgery by treating ocular surface disease may improve surgical outcomes, increase postoperative patient satisfaction, and decrease postoperative complications [4, 6].

This review provides an overview of common pre-existing ocular surface diseases found in ophthalmic surgery patients and available medical treatments, as well as frequently performed ophthalmic surgeries that may affect the ocular surface; we also define postoperative complications that may result with failure to optimize the preoperative ocular surface. It is based on previously conducted studies and does not contain any new studies with human participants or animals performed by either of the authors.

COMMON PRE-EXISTING OCULAR SURFACE DISEASES IN OPHTHALMIC SURGERY CANDIDATES

Demodex Infestation

Demodex is a common microscopic skin mite; eyelash follicle infestation is estimated to occur in 41% of adults, with increased prevalence in immunocompromised patients [7, 8]. *Demodex folliculorum* occupies the eyelash follicle and *D. brevis* inhabits eyelash sebaceous and meibomian glands [9]. Infestation may be asymptomatic or cause cylindrical eyelash dandruff, ocular discomfort, and visual disturbance [10, 11]. *Demodex* infestation may promote blepharitis, conjunctivitis, and meibomian gland dysfunction (MGD), but its pathogenicity remains controversial [10]. In patients undergoing ophthalmic surgeries such as cataract surgery, demodicosis may affect postoperative tear production and tear film homeostasis [12].

Blepharitis

Blepharitis is a chronic inflammatory disorder associated with eyelid redness and irritation; anterior blepharitis affects the lid margin, lashes, and eyelash follicles, and posterior blepharitis mainly affects the meibomian glands [13]. In a 2009 study, blepharitis prevalence ranged from 37 to 47% of eye care patients [14]. Lifelong management is suggested to reduce symptoms, minimize ocular damage, and prevent visual impairment [13]. Common sequelae include abnormal tear film and ocular inflammation, promoting conjunctivitis, keratitis, or dry eye disease (DED) [13]. Additionally, pre-existing blepharitis may be associated with postoperative endophthalmitis in patients undergoing ophthalmic surgery [13, 15].

Meibomian Gland Dysfunction

The meibomian glands open at the eyelid margin and produce meibum, a lipid-based secretion that stabilizes the tear film [16].

Meibomian gland dysfunction is a chronic abnormality involving decreased or irregular meibum secretion due to terminal duct obstruction and/or altered glandular function [16]. Its reported prevalence varies from 3.5 to 69% and appears higher in Asian populations [16]. Proposed etiologic factors include blepharitis, *Demodex* infestation, DED, and contact lens wear [16]. Symptoms include ocular irritation and vision fluctuation [16]. In MGD, insufficient or abnormal meibum causes tear film hyperosmolarity with subsequent increased tear evaporation, promoting blepharitis, DED, and ocular surface damage [16]. As the primary contributor to evaporative DED, MGD is considered the leading cause of DED [1]. Meibomian gland dysfunction has been found in over 50% of patients presenting for cataract surgery; detection and management of this condition prior to ophthalmic surgery is important to optimize surgical outcomes [17].

Allergic Conjunctivitis

Allergic conjunctivitis is a chronic condition, often beginning in childhood and exacerbated by environmental allergens [18]. Estimated prevalence is up to 40% in the US [19]. Symptoms include conjunctival injection, eyelid edema, and excessive lacrimation; allergic conjunctivitis also commonly occurs with allergic rhinitis [18]. Chronic allergic conjunctivitis may contribute to MGD, DED, ocular surface damage or structural changes, and reduced visual function [18]. Allergic conjunctivitis has been associated with increased risk of postoperative refractive surgery complications, including corneal haze, myopic regression, and diffuse lamellar keratitis [20, 21].

Dry Eye Disease

Dry eye disease is a chronic, multifactorial disease characterized by loss of tear film homeostasis with an estimated prevalence of 5 to 33% in US adults [1, 22]. Ocular disorders, such as blepharitis and MGD, as well as numerous systemic diseases, such as Sjögren syndrome, diabetes mellitus, and autoimmune conditions like rheumatoid arthritis and systemic lupus erythematosus, can contribute to the development of DED [2]. These conditions may impair the normal function of the cornea, conjunctiva, lacrimal glands, or meibomian glands, which secrete and regulate tear film components [1]. Dry eye disease has been traditionally classified into aqueous deficient and evaporative subtypes, but recent research suggests that in most cases, these etiologies co-exist or occur as a continuum [1]. The resultant qualitative and/or quantitative tear deficiency initiates a vicious cycle of ocular surface inflammation and damage that may affect vision and cause symptoms of ocular discomfort [1, 2]. Pre-existing DED has been shown to negatively impact refractive surgical outcomes and may convey increased risk of postoperative infections and surgical complications [23].

Epithelial Basement Membrane Dystrophy

Epithelial basement membrane dystrophy (EBMD) is an often degenerative disorder in which abnormal corneal basal laminar material causes development of an irregular epithelium prone to recurring erosions [24]. It is estimated to occur in $< 2\%$ of the population [25]. Most patients are asymptomatic; symptoms include ocular pain, epiphora, and decreased visual acuity [24, 26]. Preoperative testing for EBMD is imperative in patients undergoing ophthalmic surgery, as the disorder may significantly alter biometry measurements, increase the risk of postoperative wound healing complications, and induce irregular astigmatism [27, 28].

Salzmann's Nodular Degeneration

Salzmann's nodular degeneration (SND) is a rare degenerative disease occurring most often in middle-aged women; it may be idiopathic or associated with past corneal inflammation [29]. It involves formation of bluish-gray corneal nodules or sheets, which are cellular accumulations of extracellular matrix between thinned corneal epithelium and Bowman's layer [30]. Symptoms include ocular discomfort and visual disturbance [29]. Nodules can impede vision,

induce corneal astigmatism, and disrupt the tear film [29]. Additionally, SND can significantly alter preoperative biometry measurements in patients undergoing cataract surgery [28].

PREOPERATIVE OPTIMIZATION OF THE OCULAR SURFACE

Each unique ocular surface disease may ultimately affect the ocular surface similarly. Shared potential outcomes include inflammation and damage to ocular structures, patient discomfort, and compromised vision. The appropriate medical management should be implemented in affected patients to decrease likelihood of these outcomes.

Effective medical management of ocular surface diseases involves following established treatment guidelines for each condition. Many therapeutics exist, including topical and systemic medications, procedural therapies, and lifestyle adjustments. As ocular surface diseases are often multifactorial, multifaceted therapy plans to address singular conditions are frequently necessary. Medical treatment of allergic conjunctivitis, for example, may require topical antihistamines to address the underlying etiology, topical anti-inflammatory agents such as corticosteroids to treat severe inflammation, topical lubricants to provide symptom relief, and daily eyelid cleansing to reduce allergen exposure [18].

Additionally, ocular surface diseases commonly occur in continuum, necessitating comprehensive treatment protocols to address each component [31]. For example, blepharitis, MGD, and DED are often interrelated: posterior blepharitis impairs meibomian gland function and abnormal meibomian secretion may cause tear film alterations, resulting in evaporative DED [1, 13]. To address all involved etiologies, a therapeutic approach in affected patients may call for topical lubricants, topical or oral antibiotics, and/or topical anti-inflammatory agents like cyclosporine; procedural therapies like meibomian gland thermal pulsation and expression; and lifestyle adjustments like implementing routine eyelid cleansing and/or warm compressing.

Overall goals of preoperative ocular surface disease management should include reducing inflammation, resolving infection, improving epithelial pathology, stabilizing the tear film, and easing symptoms before ophthalmic surgery, which increases likelihood of positive outcomes [31]. Medical treatment options for common ocular surface diseases are summarized in Table 1.

COMMON OPHTHALMIC SURGERIES AND THEIR EFFECTS ON THE OCULAR SURFACE

Prior to ophthalmic surgery, preoperative assessments are necessary to evaluate ocular health and allow detection and treatment of any of the previously described ocular surface diseases. Since ophthalmic surgeries may exacerbate pre-existing ocular surface diseases, induce their de novo occurrence, or cause other ocular surface damage, preoperative management of any existent conditions to optimize the ocular surface is vital [5, 32, 33]. The American Society of Cataract and Refractive Surgery (ASCRS) Cornea Clinical Committee recently developed the ASCRS Preoperative Ocular Surface Disease Algorithm, a clinical diagnostic tool to help surgeons diagnose and treat ocular surface disease before refractive surgery [34]. Potential presurgical assessments are summarized in Table 2.

Common ophthalmic surgeries affecting the ocular surface include cataract surgeries, refractive surgeries, glaucoma surgeries, and corneal transplants. These surgeries employ different procedures and treat distinct conditions but often impact the ocular surface in similar ways. For example, multiple ophthalmic surgeries involve transection of corneal afferent nerves, possibly employing vertical nasal or temporal incisions that disrupt the corneal nerve plexus. This interrupts the sensory feedback mechanism vital to tear secretion; impaired corneal sensation secondary to corneal afferent nerve damage then causes infrequent blinking, decreased lacrimation, and increased tear

Table 1 Summary of medical management options

	Use(s)	Function	Mechanism of action	Contraindications or drawbacks
Topical products				
Ocular lubricants	Allergic conjunctivitis, DED, epithelial basement membrane dystrophy, SND	Improvement of tear quantity and/or quality [31] Relief of ocular discomfort [31]	Ocular lubrication [31] Supplementation or substitution of tear film components [31]	Often inadequate for long-term management [31]
Antihistamines	Allergic conjunctivitis	Ocular allergy symptom relief [18]	H1 receptor antagonists	None
Antibiotics	Blepharitis	Treatment of infections	Bactericidal or bacteriostatic action	Risk of resistance with chronic or repeated use [58]
Azithromycin	Blepharitis, MGD	Reduction of inflammation [59] Improvement of meibomian gland function [59]	Bacteriostatic action [59] Inhibition of multiple inflammatory mediators [31] Bacterial lipase inhibition [59]	
Anti-inflammatories				
Non-steroidal anti-inflammatories	Allergic conjunctivitis	Reduction of inflammation	Cyclooxygenase inhibition	Risk of corneal toxicity with epithelial compromise [60]
Corticosteroids	Allergic conjunctivitis, blepharitis, DED, MGD	Reduction of inflammation	Inhibition of multiple inflammatory mediators	Risk of cataracts or elevated IOP with long-term use [13]
Immunomodulators				
Cyclosporine A	Allergic conjunctivitis, blepharitis, DED, MGD	Reduction of inflammation [31]	Calcineurin inhibition [61]	Long-term therapy required [31]
Cyclosporine ophthalmic solution (Cequa™, Sun Pharmaceutical Industries, Inc.)	DED	Increase in tear production [61]		

Table 1 continued

	Use(s)	Function	Mechanism of action	Contraindications or drawbacks
Cyclosporine ophthalmic emulsion (Restasis®, Allergan, Inc.)	DED	Increase in tear production [62]		
Lifitegrast 5% ophthalmic solution (Xiidra®, Novartis Pharmaceuticals Corporation)	DED	Treatment of DED signs and symptoms [63]	LFA-1 antagonist [63]	None
Systemic products				
Omega-3 fatty acids	Blepharitis, DED, MGD	Reduction of inflammation [64]	Inhibition of proinflammatory mediators [64]	Debated efficacy [65]
Oral antibiotics				
Macrolides	Blepharitis, MGD	Treatment of infection Reduction of inflammation [13]	Bacteriostatic and/or bactericidal action Inhibition of multiple inflammatory mediators [31]	Long-term use may cause resistance [31] Oral azithromycin may cause abnormal cardiac electrical activity [66]
Tetracyclines	Blepharitis, DED, MGD	Treatment of infection Reduction of inflammation [13] Tear film stabilization [67]	Bacteriostatic action Inhibition of multiple inflammatory mediators [31] Bacterial lipase inhibition [31]	Long-term use may cause resistance [31] Contraindicated during pregnancy and in young children [13] Risk of photosensitization, GI upset, vaginitis [13]

Table 1 continued

	Use(s)	Function	Mechanism of action	Contraindications or drawbacks
Procedural therapies				
Meibomian gland thermal pulsation and expression	Blepharitis, MGD	Meibomian gland expression [13] Improvement of meibomian gland function [13] Relief of MGD symptoms [13]	Application of heat to inner eyelid and pulsating pressure to outer eyelid [13]	None
Punctal occlusion	DED	Tear film stabilization	Obstruction of punctal orifices for reduction of tear drainage [31]	Controversial with active ocular surface inflammation [31] Risks include epiphora, local irritation, infection [31]
Intense pulsed light	Blepharitis, DED, MGD	Reduction of eyelid inflammation and telangiectasia [13]	Mechanism of action unclear; use of light source with photothermal effect [13]	Must be repeated for lasting effects [13]
MBE	Blepharitis, *Demodex* infestation, MGD	Removal of eyelid margin debris [13] Resolution of meibomian gland obstruction [13]	Mechanical debridement and exfoliation of eyelid margin [13]	None
Other				
Lifestyle changes				
Regular screen breaks	DED	Tear film stabilization	Promotion of normal blinking to prevent abnormal tear film evaporation [68]	None

Table 1 continued

	Use(s)	Function	Mechanism of action	Contraindications or drawbacks
Blinking exercises	DED	Tear film stabilization	Prevention of abnormal tear film evaporation [68]	None
Avoidance of desiccating conditions	DED	Tear film stabilization	Prevention of abnormal tear film evaporation [68]	None
Avoidance of allergen or irritant exposure	Allergic conjunctivitis	Reduction of ocular irritation	Prevention of exposure to irritating substances [18]	None
Eyelid cleansing	Allergic conjunctivitis, blepharitis, DED, *Demodex* infestation, MGD, SND	Improvement of eyelid health Reduction of allergens or irritants	Mechanical removal of eyelid margin debris [13]	Risk of injury if performed incorrectly [13]
Tea tree oil cleansers	*Demodex* infestation	Reduction or elimination of *Demodex* mites [69]	Oxygenated terpenoids with acaricidal action [70]	Risk of ocular irritation [69]
Hypochlorous acid 0.01% cleansers	Blepharitis, MGD	Reduction of eyelid margin bacterial counts [71]	Bactericidal action [71]	Multiple daily treatments required for optimal effect [71]
Warm compress and eyelid massage	Blepharitis, MGD, SND	Facilitation of meibomian gland expression [13] Reduction of eyelid margin debris [13]	Softening of debris facilitates mechanical removal [13] Warming facilitates meibomian gland expression [13]	Risk of injury if performed incorrectly [13] Risk of elevated IOP in glaucoma patients [13]

DED dry eye disease, *GI* gastrointestinal, *H1* histamine-1, *IOP* intraocular pressure, *LFA-1* lymphocyte function-associated antigen-1, *MBE* microblepharoexfoliation, *MGD* meibomian gland dysfunction, *SND* Salzmann's nodular degeneration

osmolarity, leading to tear film instability [5, 35]. The following sections review common ophthalmic surgeries and their peri- and post-operative effects on the ocular surface.

Cataract Surgery

Cataract surgery is the most common ophthalmic surgery performed in the Western world, with increasing annual incidence

Table 2 Preoperative patient assessments

Preoperative assessment	Concept being evaluated
Patient history	Ocular disease signs or symptoms [16]
Clinical examination	Ocular morphology [16]
	Ocular disease signs [16]
Slit-lamp biomicroscopy	Ocular morphology [16]
	Meibomian gland expressibility: meibum quality and volume [16]
	Tear film lipid layer, thickness, spread time and rate [16]
Tear evaluation	
Osmolarity test	Tear osmolarity [16]
Tear breakup time	Tear film stability: time between blink and break in tear film [16]
Meniscus height	Tear volume [16]
Schirmer test	Tear secretion over 5 min [16]
Ocular surface staining	Integrity of conjunctival and corneal epithelium [13]
Tonometry	Intraocular pressure [13]
Fundoscopic exam	Ocular fundus (retina, macula, optic nerve) morphology [72]
Visual acuity test	Accuracy of distance vision [73]
Visual field test	Extent of peripheral vision [74]
Biometry	Corneal refractive power [75]
	Eye length [75]
Corneal topography/keratometry	Anterior corneal surface curvature [75]
Corneal tomography	Corneal thickness and shape [76]

[36, 37]. Ocular surface damage during cataract surgery may be caused by exposure to topical sterilizing solutions, operating microscope light phototoxicity, lid speculum trauma, transection of corneal epithelium and nerves, extensive corneal irrigation, or use of preservative-containing eyedrops [5]. Many patients experience some postoperative ocular inflammation and temporarily decreased conjunctival goblet cell density–changes that may lead to ocular symptoms including foreign body sensation, eye fatigue, and ocular redness [5, 38].

Refractive Surgeries

Laser-Assisted In Situ Keratomileusis

Laser-assisted in situ keratomileusis (LASIK) corrects myopia, hyperopia, presbyopia, and/or astigmatism through laser modification of corneal architecture. LASIK damages the ocular surface by transecting the corneal epithelium and afferent nerves during corneal flap creation and through extensive intraoperative irrigation and suction ring use, which may both damage conjunctival goblet cells [35, 39, 40]. Additionally, LASIK alters corneal curvature, which may affect lubrication of the ocular surface during blinking [35]. Patients undergoing LASIK may have short-term, long-term, or permanent

postoperative tear film instability and decreased tear secretion [40, 41].

Limbal Relaxing Incisions

Limbal relaxing incisions are non-perforating corneal incisions made during or after cataract surgery to reduce pre-existing astigmatism. Placement at the limbus minimizes central corneal irregularity and patient discomfort [42]. However, transection of the corneal epithelium and nerves dependent on incision placement and variability due to the axis of astigmatism or surgeon dependence may cause postoperative complications [42].

Femtosecond Laser-Assisted Astigmatic Keratotomy

Femtosecond laser-assisted astigmatic keratotomy (FSLAK) corrects astigmatism by making relaxing corneal stromal incision(s) at the site of greatest astigmatism, leaving the epithelium intact. Laser use has increased accuracy and safety compared to manual blades, reducing incisional variability [43]. However, FSLAK may still cause postoperative ocular surface inflammation due to coupling difficulties, and/or corneal scarring [44].

Conductive Keratoplasty

Conductive keratoplasty corrects mild-to-moderate hyperopia via delivery of radiofrequency current through a tip inserted into multiple sites in the peripheral cornea, heating and contracting stromal collagen, and increasing central corneal curvature [45]. Surgical complications are uncommon [45]. However, because regression of procedural correction invariably occurs over time, this procedure is infrequently performed in the modern day [46].

Radial Keratotomy

During radial keratotomy, multiple radial incisions are made in the anterior cornea to correct myopia [47]. Though commonly performed in the late 20th century, due to concern for poor long-term refractive stability and overcorrection and with the introduction of more dependable laser surgeries, the popularity of this procedure has decreased [48].

Trabeculectomy

Trabeculectomy, a common surgical glaucoma treatment, lowers intraocular pressure through creation of a trans-scleral fistula [49]. Trabeculectomy promotes ocular surface inflammation with conjunctival bleb formation at the limbus and increases tear film osmolarity and dry eye symptoms [49, 50]. Inflammation overlying the fistula, whether surgically induced or secondary to preservative toxicity from topical hypotensive medications, may cause conjunctival thickening and scarring, potentially leading to surgical failure [49, 50].

Corneal Transplantation

Corneal transplantation, or penetrating keratoplasty, is a main method of sight restoration for corneal blindness [51]. Keratoplasty may lead to postoperative corneal epithelial defects, impaired meibomian gland function, tear film instability secondary to sutures or wound edge irregularity, and ocular surface inflammation, potentially leading to allograft rejection [32].

Pterygium Surgery

A pterygium is a fibroblastic growth continuous with the conjunctiva that extends onto the cornea [52]. It may obstruct vision and/or induce corneal deformity and astigmatism, restrict ocular movement, and cause patient discomfort [53]. Surgical removal may successfully reverse corneal topographic changes [52]. Newer surgical techniques have decreased the pterygium recurrence rate to an estimated 1.22%, but patients may still experience ocular irritation following surgery [53, 54].

POSTOPERATIVE COMPLICATIONS AND MAINTENANCE

The risk and incidence of postoperative ophthalmic surgery complications vary by procedure, but surgeries affecting the ocular surface in similar ways are often associated with comparable adverse effects. For example, despite

Table 3 Postoperative complications

Complication	Etiology/risk factors
Infection	Blepharitis [13]
Infectious keratitis	DED [23]
Endophthalmitis	
Foreign body sensation	Transection of corneal afferent sensory nerve fibers [39]
	Postoperative changes to tear film and ocular surface epithelium causing chronic ocular irritation [41]
Visual changes	Corneal structural abnormalities [77]
Vision fluctuations	
Light scattering	Corneal opacities [39, 77]
Glare effect	Tear film instability [78]
Decreased visual acuity	
Refractive errors	Corneal surface irregularity [79]
Myopia	
Hyperopia	Large surgical incisions [80]
Astigmatism	Biometry miscalculation [79]
Refractive regression	Lens misalignment [80]
	Prior laser refractive surgery [81]
	DED [82]
Emergence or exacerbation of ocular surface diseases	Incisional damage to corneal afferent sensory nerves [35]
DED	Increased postoperative inflammatory mediators [5]
MGD	Tear film instability [32]
	Preservative toxicity from medicated eye drops [49]

DED dry eye disease, *MGD* meibomian gland dysfunction

utilizing distinct surgical techniques, cataract surgery and LASIK both disrupt corneal nerve function as previously described and thus are both frequently associated with postoperative DED [5, 33]. Failure of preoperative ocular surface optimization makes postoperative complications increasingly likely [55]. Common complications of ophthalmic surgeries and their risk factors are listed in Table 3.

In addition to presurgical evaluation and management, postsurgical ocular surface maintenance is also vital for positive outcomes. Medical management should be adjusted as appropriate to address any postoperative ocular surface changes. Artificial tears solutions should be administered to protect the ocular surface and assist in regeneration of normal tear film following surgery, and any appropriate pharmacological interventions should also be utilized [40]. Eyelid cleansing should be implemented to help manage blepharitis, reduce *Demodex* populations, and minimize allergic conjunctivitis [13]. Ocular sun protection should be used to reduce UV light exposure, which can promote cataract formation and ocular neoplasms [56, 57]. Eye protection also decreases airborne irritant exposure [18]. Patients should regularly visit their ophthalmologist or optometrist, especially for symptom exacerbation [13].

CONCLUSIONS

Ophthalmic surgeries may compromise the ocular surface in multiple similar ways, and resulting postsurgical complications can affect patients' visual function and ocular health and comfort. Preoperatively optimizing the ocular surface through appropriate medical management of any pre-existing ocular surface diseases minimizes the incidence of postoperative complications and improves surgical outcomes.

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