

Surgical Management of Dry Eye

Essay By

Basem Abdel-Shaheed Said

M.B., B.Ch.

Under Supervision of

**Prof. Dr. Mervat Salah
Mohammed**

*Professor of Ophthalmology
Faculty of Medicine
Ain Shams University*

**Dr. Mohammed Abdel Hamied
Qabeel**

*Lecturer of Ophthalmology
Faculty of Medicine
Ain Shams University*

**Faculty of Medicine
Ain Shams University**

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List of Abbreviation

AM.....	Amniotic membrane
DES.....	Dry Eye Syndrome
HRT.....	Hormone replacement therapy
KCS.....	Keratoconjunctivitis sicca
LASIK.....	Laser In Situ Keratomileusis
LSCD.....	Limbal stem cell deficiency
MGD.....	Meibomian gland dysfunction
NSTD.....	Non-Sjogren's tear deficiency
NSAID.....	Non-steroidal anti inflammatory drugs
OCP.....	Ocular cicatricial pemphigoid
PRK.....	Photorefractive keratotomy
SS.....	Sjogren's syndrome
SSTD.....	Sjogren's syndrome tear deficiency
SS-KCS.....	Sjogren's syndrome-associated keratoconjunctivitis sicca
SMG.....	Submandibular gland
TBUT.....	Tear film break-up time

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INTRODUCTION

Dry eye is a common disorder of the tear film that results in epithelial damage and the disruption of normal homeostasis at the ocular surface (***Elmer and Reinstorm, 2004***).

Despite this prevalence, dry eye is worldwide an under-diagnosed problem (***Kaercher, 2001***).

Clinical features of dry eye include an unstable tear film, ocular surface inflammation and epitheliopathy, resulting in symptoms ranging from discomfort to blindness (***Elmer and Reinstorm, 2004***).

The main aims of treatment are to relieve discomfort, provide a smooth optical surface, and prevent structural corneal damage (***Kanski, 2007***).

Many years ago, the traditional approach to treat dry eye has been to lubricate the ocular surface by either replacing or conserving the patient's tear using artificial tears drops (***Hong, Kim, & Chung, 2007***).

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Inspite of maximal conventional therapy; there exists a cohort of patients who have persistent symptoms and signs **(Noda, Tsuruya, Asano-Kato, & Toda, 2006).**

In cases that are refractory to medical treatment surgery may be used such as canalicular ligation or removal of the vertical portion of lacrimal canaliculus and transplantation of labial salivary glands **(Murube, 2003).**

Transplantation of minor labial salivary glands as well as all three major salivary glands (parotid, sublingual, and submandibular) has been used to substitute tears in absolute dry eyes with persistent discomfort, despite hourly application of artificial tear substitutes and the presence of a conjunctivalized ocular surface **(Rudolf Guthoff and James Katowitz, 2007).**

In severe cases, a partial or complete tarsorrhaphy, amniotic membrane transplantation and conjunctival flap may be necessary to prevent complete decompensation of the cornea **(Murube, 2003).**

Tarsorrhaphy decrease the interpalpebral surface area surgically and is used in severe dry eye disease, as smaller

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palpebral fissure width decrease evaporative stress on the ocular surface and tear film. (*Gillband, 2000*).

Amniotic membrane transplantation is a new procedure for management of dry eye and other ocular surface disorders; it is a type of reconstructive surgery used in case of symblepharon, ocular cicatricial pemphigoid, Steven Johnson's syndrome, excision of large tumor, disfiguring scars (*Azauro-Lanco et al., 1999*).

Limbal stem cell transplantation would be needed in severe cases of dry eye where there is significant loss of corneal stem cells. (**Fernandes, Sangwan, Rao, Basti, et al, 2004**).

As the aetiology and pathogenesis of dry eye is increasingly understood, management of dry eye expects promising days (*Boyd, 2001*).

Introduction & Aim of the essay

AIM OF THE ESSAY

Review the various recent surgical lines in treating severe cases of dry eye disease.

Dry Eye Syndrome

Dry Eye, is the most frequent disorder in ophthalmology characterized by ocular irritation resulting from an alteration of tear film. The effects vary from minor inconvenience for most sufferer to rare sight threatening complication in severe cases (***Elmer and Reinstorm,2008***)

Dry Eye, is a wide spread problem affecting hundreds of millions of people through the world. In United States alone, between 30 and 50 million people are thought to experience some degree of dry eye disease. Although the extent of prevalence of dry eye has been recognized only recently, clinicians have long known that dry eye symptoms are common, A fact further corroborated by surveys reporting about a 30 % incidence of dry eye symptoms as a presenting complaint in patients seeking ophthalmological attention (***Shigeru kinoshita, et al 2006***)

Dry Eye may result from a variety of disorders causing either tear deficiency or excessive tear evaporation i.e. instability of the tear film. Decreased tear production is

an aqueous layer defect, standing for almost 80% of dry eye syndrome cases. Increased tear evaporation is usually a lipid and mucin layer defect. **(Boyd, 2001).**

Table (1): Causes of dry eye. **(Elmer and Reinstorm,2008)**

Tear film abnormalities	Lid surface abnormalities	Ocular surface disorders
<i>Lipid deficiency</i> • Meibomian gland disease • Seborreic blepharitis • Staphylococcal blepharitis	Symblepharon • Ocular pemphigoid	Surface irregularity • Pterygium
<i>Aqueous deficiency</i> • Keratoconjunctivitis sicca • Sjögrens syndrome • Sarcoidosis • Drugs	Scarring • Trauma • Trachoma	Scarring
<i>Mucus deficiency</i> • Steven-Johnson syndrome • Chemical burns • Cicatrisation • Vitamin A deficiency	Incomplete blinking • Bell's palsy	Epitheliopathy

Diagnostic Classification of Dry Eye

A- Tear deficient dry eye:

The description of keratoconjunctivitis sicca (KCS) that Sjogren gave in his 1993 article has been incorporated into the nomenclature of dry eye. Consequently defective lacrimal function as a cause of dry eye subdivides into two categories: Non-Sjogren's tear deficiency (NSTD), and Sjogren's syndrome tear deficiency (SSTD). NSTD has no association with systemic autoimmune disease, with is a cardinal feature of SSTD. (*Elmer and Reinstorm,2008*)

1- Non-Sjogren's tear deficiency

Multiple studies have demonstrated that maintainance of ocular health surface with adequate quantity and quality of aqueous tear secretion is dependent upon sufficient hormonal balance. Just like in Sjogren's syndrome, decrease serum concentration of androgen have been associated with the development of aqueous tear deficiency in some non-Sjogren's patients. This phenomenon explains the increased prevelance of dry eye disease in women, particularly those