



# **Comparison between Surgical Outcomes of Tarsal Marginal Rotation and Bilamellar Tarsal Rotation for Upper Eyelid Cicatricial Entropion**

*Thesis*

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**مقارنة النتائج الجراحية بين عملية تدوير غضروف الجفن  
الطريفي وعملية شق طبقتي الجفن لإصلاح الانقلاب الداخلي  
الندبي للجفن العلوي**

**رسالة**

**توطئة للحصول علي درجة الماجستير في طب و جراحة العيون  
مقدمة من**

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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

قالوا

لَسْبَحَانَكَ لَا عِلْمَ لَنَا  
إِلَّا مَا عَلَّمْتَنَا إِنَّكَ أَنْتَ  
الْعَلِيمُ الْعَظِيمُ

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## *List of Abbreviations*

<b>SJS</b>	: Stevens–Johnson Syndrome
<b>µm</b>	: Micrometers
<b>µw</b>	: Microwatts
<b>BCVA</b>	: Best-corrected visual acuity
<b>C.</b>	: Chlamydia trachomatis
<b>CO</b>	: Corneal Opacity
<b>ECAs</b>	: Eyelid Contour Abnormalities
<b>GET202</b>	: Global Alliance for the Elimination of
<b>LTS</b>	: Lateral Tarsal Strip
<b>M.</b>	: Musca sorbens
<b>mm</b>	: Millimeter
<b>MMP</b>	: Mucous Membrane Pemphigoid
<b>nm</b>	: Nanometers
<b>°C</b>	: Degrees Celsius
<b>P value</b>	: Probability value
<b>PERT</b>	: Partnership for Rapid Elimination of
<b>SAFE</b>	: Surgery for trichiasis, Antibiotics for infection, Facial cleanliness, and Environmental improvements
<b>SD</b>	: Standard Deviation
<b>TF</b>	: Trachomatous inflammation– Follicular
<b>TI</b>	: Trachomatous inflammation – Intense
<b>TMR</b>	: Transcutaneous Tarsal Marginal Rotation
<b>TS</b>	: Trachomatous Scarring
<b>TT</b>	: Trachomatous Trichiasis
<b>WHO</b>	: World Health Organization
<b>X2</b>	: Chi- square

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## **Abstract**

Eyelid entropion is a condition in which the margin of the eyelid is inverted against the corneal and conjunctival surfaces, causing damage to these structures as a result of eyelashes and skin friction.

Upper lid entropion is most commonly an acquired condition and usually occurs secondary to many cicatrizing processes, such as trachoma, which is the most commonly encountered cause of cicatricial entropion in Egypt.

Different procedures for lid margin rotation have been used to correct the upper eyelid cicatricial entropion.

A recent study had demonstrated that using a lid crease incision combines the basic mechanisms of the anterior and posterior approaches and in addition, it addresses a variety of lid problems commonly found in the aged population with cicatricial entropion.

Our aim is to compare the surgical outcomes of two procedures done for upper eyelid cicatricial entropion, "Transcutaneous Tarsal Marginal Rotation" or "TMR" Vs "Bilamellar Tarsal Rotation" or "BLTR".

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## *Abstract*

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### **Keywords:**

Entropion, Trachoma, Tarsus, Bilamellar

## **INTRODUCTION**

Eyelid entropion is a condition in which the margin of the eyelid is inverted against the corneal and conjunctival surfaces, causing damage to these structures as a result of eyelashes and skin friction. Hyperemia, foreign body sensation, lacrimation and vision loss are concurrent complaints. Secondary infection may also occur.<sup>(1)</sup>

Upper lid entropion is most commonly an acquired condition and usually occurs secondary to many cicatrizing processes, such as trachoma, chronic blepharoconjunctivitis, Stevens–Johnson syndrome (SJS), or trauma.<sup>(2)</sup> Trachoma is the most commonly encountered cause of cicatricial entropion in Egypt.<sup>(3)</sup>

Trachoma is still one of the leading causes of blindness especially in many developing countries of Africa, Asia, Latin America, and Oceania.<sup>(4),(5)</sup> It is the third most common cause of visual handicapping after cataract and glaucoma worldwide.<sup>(6)</sup>

Trachoma is caused by ocular infections with *Chlamydia trachoma* (C. trachoma) which results in chronic inflammation of the eyelids. These infections occur mainly in children, peaking around age 1–5 years and declining thereafter. This chronic inflammation of the eyelids produces scarring of the conjunctiva that can subsequently cause entropion trichiasis, resulting in inward rolling of lid margin and eyelashes. The rubbing eyelashes

as well as other alterations of the eye, such as lacrimal function and corneal limbus, harm the cornea and may cause pain, corneal opacity and consequent vision loss.<sup>(7)</sup>

Since the 19<sup>th</sup> century, different procedures for lid margin rotation have been used to correct the upper eyelid cicatricial entropion.<sup>(8)</sup> Anterior approach procedures are typically performed with a through-and-through incision placed 4 mm from the lash line. External sutures are then used to rotate the lid margin. Variations of this procedure have been described by Green, Pannas, Hotz<sup>(8)</sup>,<sup>(9)</sup> and recently by Wies<sup>(10)</sup> and Ballen<sup>(11)</sup>. The World Health Organization (WHO) has renamed the Wies/Ballen procedure Bilamellar tarsal rotation (BLTR) and recommended it as a standard modality to correct trachomatous cicatricial entropion.<sup>(12)</sup>

In 1949, Trabut was likely the first to use a different approach to manage cicatricial entropion; a conjunctival incision is used to divide the tarsal plate into two fragments. After creating a plane between the orbicularis and both tarsal fragments, the proximal tarsus is advanced over the marginal tarsal fragment with sutures exiting on the lash line. This simple procedure creates a downward vector on the marginal portion of the tarsus, which rotates the margin upwards.<sup>(13)</sup>

A recent study had demonstrated that using a lid crease incision combines the basic mechanisms of the

anterior and posterior approaches and in addition, it addresses a variety of lid problems commonly found in the aged population with cicatricial entropion. After tarsal plate exposure, a tarsotomy through conjunctiva is performed as described by Trabut. Then, instead of using external sutures secured by bolsters, internal absorbable sutures can be used to simultaneously advance the proximal tarsal fragment and exert strong tension on the marginal orbicularis muscle.<sup>(14)</sup>

Thus it appears that we have 2 major relatively simple techniques to deal with cicatricial upper eyelid entropion.