Temporary Eyelid Closure Appliqué

Chris Robinson, MD; Avi Tantri, MD; Erin Shriver, MD; Thomas Oetting, MS, MD

Tarsorrhaphy is used for the treatment of severe ocular surface disorders and for damage from ocular exposure. The temporary tarsorrhaphy has been shown to aid in the healing of corneal epithelial defects. A variety of temporary techniques have been suggested that allow eyelid closure not only to enable epithelial healing but also to allow access to the eye. We describe a temporary eyelid closure appliqué, similar to the Stamler eyelid splint, that provides nearly complete closure of the eyelid that will last for days. The technique is inexpensive, can be applied by a family member with minimal training, and can be used in almost any setting.

Tarsorrhaphy is closure of the palpebral aperture to prevent corneal exposure and encourage surface healing. The procedure has been commonly used in the management of corneal surface disorders caused by exposure. Tarsorrhaphy has been shown to be useful in facilitating healing of neurotrophic keratitis and indolent corneal ulcers.1,2

We describe an effective, inexpensive technique that provides temporary ptosis that will last a few days. Tarsorrhaphy techniques can be either permanent or temporary. The temporary techniques may be subdivided further depending on how long they last (Table). For example, we previously described a technique for a drawstring temporary tarsorrhaphy technique that lasts for week, but it is invasive.3 Cyanoacrylate adhesive application to adhere the eyelid margins shut is an effective method to seal the eyelids but it does not always allow easy examination of the eye.4,5 Botulinum toxin injection is expensive and moderately invasive but can provide ptosis and maintain accessibility to the eye.6

The temporary eyelid closure (TLC) appliqué we describe is similar to the Stamler eyelid splint. The Stamler eyelid splint is a lightweight, adhesive-backed semicircle of plastic that when attached to the upper eyelid induces temporary ptosis. It is a quick and inexpensive technique that has proved efficacious, with a success rate greater than 90%.7 In addition to cost, the chief advantages include noninvasive and technically easy application and retained ability to examine the eye and instill drops. Mulhern and Rootman7 report a mean duration of ptosis of 3.3 days, although we found that the splints rarely lasted more than 24 to 48 hours. Some patients complained that the splint was uncomfortable.

We devised the TLC appliqué from ostomy barrier based on similar principles. The advantages include those of the Stamler eyelid splint: it is inexpensive, is rapidly and easily applied, and allows examination of the eye and instillation of drops. In addition, the heavy ostomy material adds weight to aid in eyelid closure, much like a gold weight. In our experience, the ostomy adhesive lasts longer, resulting in less need for reapplications. Furthermore, the TLC appliqué may be tailored to the patient's eyelid anatomy and is made from a softer material, providing improved patient comfort and compliance.

METHODS

The TLC appliqué is created by cutting a half circle with a radius of approximately 20 mm, de-
pending on the patient’s orbital anatomy, from a multipurpose skin barrier (Stomahesive Skin Barrier; ConvaTec, Princeton, NJ) or a similar ostomy barrier. It is recommended that the TLC appliqué be cut slightly larger than anticipated to ensure an appropriate splinting effect. The pretarsal area of the upper eyelid is cleaned with 70% ethanol wipes and allowed to dry. Benzoic compound is applied to the upper eyelid with a cotton-tipped swab (Figure 1) and allowed to dry. The white backing paper is removed from the TLC appliqué and the upper eyelid is pulled inferiorly to place the skin under tension. The adhesive side of the TLC appliqué is applied to the eyelid (Figure 2). The patient is then asked to open the eye to ensure effective ptosis (Figure 3). Examination of the eye and instillation of drops are possible by lifting the skin superiorly at the level of the brow or by pulling the lower eyelid inferiorly (Figure 4).

REPORT OF CASES

CASE 1

A 40-year-old woman who had a history of severe developmental delay and a seizure disorder was seen for an inpatient consultation because of bilateral “corneal abrasions.” She was found to have bilateral inferior corneal epithelial defects measuring approximately 4 × 3 mm with rolled edges and without visible infiltrate. Lagophthalmos of 3 mm was noted in both eyes, with corneal defects correlating with the position of the palpebral fissures. A poor tear lake and absent Bell reflex was noted. The patient was noted to sleep with her eyes partially open. She had been treated at an outside institution with erythromycin ointment several times a day without improvement. A TLC appliqué was placed and was tolerated well by the patient. By day 4, with no need for TLC reaplication, the corneal defects had healed.

CASE 2

A 37-year-old man who had a history of insulin-dependent diabetes mellitus complicated by renal failure was seen for an inpatient consultation because of painless blurry vision. Examination revealed bilateral 4 × 5-mm inferior epithelial defects with rolled edges and surrounding infiltrate. Bilateral lagophthalmos of 4 mm was noted, with defects correlating with the position of the palpebral fissures. Cultures were negative for organisms, and prophylactic moxifloxacin hydrochloride ophthalmic solution (Vigamox drops; Alcon, Fort Worth, Tex) were prescribed. Aggressive lubrication with a preservative-free lubricating eye ointment (Lacri-Lube Eye Ointment; Allergan Inc, Irvine, Calif) was recommended. After 3 days of lubrication, there were no signs of visual improvement. After a lengthy discussion of the severe nature of the patient’s systemic disease and subsequent epitheliopathy, keratopathy, and neuropathy, a lateral tarsohraphy was recommended. The patient adamantly refused the surgical procedure. Posis with cyanoacrylate adhesive was attempted; however, this did not last more than 36 hours and resulted in eyelid and eyelash irritation. A Stamler eyelid splint was applied on 2 occasions, but neither splint lasted more than 36 hours. The patient reported brow irritation from the sharp superior edge of the splint. A TLC appliqué was placed on day 6. The patient tolerated the application and therapy well. A new TLC appliqué was required on day 10 and lasted 5 days. At discharge, the patient’s epithelial defects had improved to one third of their initial size and the infiltrates had resolved. Instructions for use of the TLC appliqué were explained to the staff at his skilled nursing facility for ongoing treatment.

CASE 3

A 60-year-old man having a recent diagnosis of Bell palsy was seen in our clinic and reported irritation and the sensation of a foreign body in the right eye. Ophthalmic examination revealed right-sided seventh nerve palsy with lagophthalmos greater than 8 mm and diffuse inferior punctate epithelial erosions of the right eye. A TLC appliqué was placed, and the patient

Table. Temporary Eyelid Closure Appliqué and Other Techniques

<table>
<thead>
<tr>
<th>Technique</th>
<th>Insertion</th>
<th>Closure</th>
<th>Cost*</th>
<th>Examination</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cyanoacrylate adhesive</td>
<td>Simple</td>
<td>Complete</td>
<td>$</td>
<td>Impossible</td>
<td>2-7 d</td>
</tr>
<tr>
<td>Botulin toxin injection</td>
<td>Skilled</td>
<td>Complete</td>
<td>$$$</td>
<td>Easy</td>
<td>3-6 mo</td>
</tr>
<tr>
<td>Drawstring</td>
<td>Simple</td>
<td>Complete</td>
<td>$</td>
<td>Easy</td>
<td>2-4 wk</td>
</tr>
<tr>
<td>Stamler eyelid splint</td>
<td>Simple</td>
<td>Partial</td>
<td>$</td>
<td>Easy</td>
<td>1-3 d</td>
</tr>
<tr>
<td>Temporary eyelid closure</td>
<td>Simple</td>
<td>Partial</td>
<td>$</td>
<td>Easy</td>
<td>3-5 d</td>
</tr>
</tbody>
</table>

* $ indicates inexpensive; $$, moderately expensive; and $$$, most expensive.

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reported complete resolution of symptoms within 3 days. He was able to make and apply his own TLC at home with limited instruction. Figure 5 shows the patient before and after placement of the TLC, with his eyes open and closed.

**COMMENT**

The TLC appliqué is a simple, economical, and efficacious new approach for temporary tarsorrhaphy. It has significant advantages compared with established therapies.

The classic sutured tarsorrhaphy is the gold standard of therapy; however, it is not without significant disadvantages. A lateral tarsorrhaphy is effective but can dehisce and may deform the delicate eyelid margin. Inter marginal tarsorrhaphy may lead to damage to the eyelid margin, entropion, and trichiasis. Though the technique is straightforward, both sutured tarsorrhaphy techniques are invasive and may be contraindicated in a patient who is receiving anticoagulant therapy or who has a systemic illness. In addition, examination of the eye can be difficult. Even the simpler drawstring tarsorrhaphy is an invasive technique and requires technical acumen.

Short-term therapeutic options include tarsorrhaphy by means of application of cyanoacrylate adhesive, botulin injection, and the Stamler eyelid splint. As previously reported and in our experience, cyanoacrylate adhesive often does not result in an adhesion of acceptable length. In addition, it remains difficult to reverse the adhesion tarsorrhaphy to enable examination of the eye and instillation of drops. Botulin injection is expensive and invasive, and carries the risk for transient extraocular paresis with potentially persistent hypotropia. Further more, there is a lag between botulin injection and resultant ptosis; studies suggest that total ptosis is achieved in 75% of patients at a mean of 3.6 days.

The Stamler eyelid splint has some significant advantages but, in our experience, requires frequent reapplication and provides poor patient comfort. The TLC appliqué is based on similar principles but is created from an inexpensive, commonly found material—ostomy barrier. In addition, it adds a component of weight to the upper eyelid similar to a gold weight improving efficacy. The TLC appliqué offers quick, noninvasive, and non-technical application. Patient comfort is improved because of the nature of the material and the ability to contour it to the patient’s anatomy. In our experience, the TLC appliqué lasts 4 to 7 days without reapplication and allows easy examination of the ocular surface. The simplicity and safety of the procedure also enable easy instruction about reapplication in patients who require longer periods of closure between examinations.

**CONCLUSIONS**

The TLC appliqué is a novel combination of splint and weight that induces ptosis and may be used in the treatment and prevention of corneal exposure and the promotion of ocular surface healing. It is a quick, inexpensive, and noninvasive technique that reliably and comfortably results in therapeutic ptosis for 4 to 7 days. We have found the TLC appliqué to be particularly useful in pa-
tients with neuropathy or seventh nerve paralysis and in patients who are sedated or comatose.

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REFERENCES


ARCHIVES Web Quiz Winner

Congratulations to the winner of our December quiz, Italia Andrea, MD, Piacenza, Italy. The correct answer to our December challenge was hypercalcaemia. For a complete discussion of this case, see the Photo Essays section in the January ARCHIVES (Abeyssiri P, Sinha A. An unusual pattern of corneal calcification in tertiary hyperparathyroidism. Arch Ophthalmol. 2006;124:138-139).

Be sure to visit the Archives of Ophthalmology Web site (http://www.archophthalmol.com) and try your hand at our Clinical Challenge Interactive Quiz. We invite visitors to make a diagnosis based on selected information from a case report or other feature scheduled to be published in the following month’s print edition of the ARCHIVES. The first visitor to e-mail our Web editors with the correct answer will be recognized in the print journal and on our Web site and will also be able to choose one of the following books published by AMA Press: Clinical Eye Atlas, Clinical Retina, or Users’ Guides to the Medical Literature.