

Fevikwik Not Only Joins But Also Heals" - Fevikwik Temporary Tarsorrhaphy for Exposure Keratitis

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Abstract:

Purpose: To report a novel method of temporary tarsorrhaphy for exposure keratitis

Methods: Five consecutive patients with exposure keratitis due to various etiologies were recruited. All patients received Fevikwik glue to partially close the eye lids. Patients followed up after 3 days, 1, 2, 4, 8 and 12 wks. The procedure repeated to a maximum 3 times in 3 months. Success is defined as intactness of tarsorrhaphy on every follow-up, Progressive clearing of exposure keratitis from serial digital and slit lamp photos, failure is defined as need for surgical intervention and progression of keratitis or appearance of new corneal lesions within 3 months and loss of tarsorrhaphy effect even after 3 attempts.

Results: Procedure was successful in 4 out of 5 patients i.e 80% (95% CI= 60.4 - 99.6). One patient needed surgical tarsorrhaphy after 1 month.

Conclusion: Fevikwik temporary tarsorrhaphy is simple, safe, effective, economical, repeatable and sight saving OPD procedure. Also useful for intensive care physicians treating bedridden patients in whom surgical interventions are difficult due other reasons. Further study with large sample size is required to authenticate the procedure.

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I. Introduction

Exposure keratopathy is caused by the drying of the ocular surface. Typically, this is caused by incomplete blinks, sleeping with one's eyelids opened, or abnormal eyelids (from trauma or surgery.) This can lead to more severe conditions like a neurotrophic ulcer. This can also be caused by bell's palsy, acoustic neuroma, proptosis, eyelid dysfunction from restrictive eyelid diseases or previous blepharoplasty. Inattentive mental states such as in comatose patients or nocturnal exposure are also prone for exposure keratitis. Patients in the ICU are at increased risk of corneal dryness and ulceration if they are unable to close their eyes. Mercieca et al. found that 75% of such patients have lagophthalmos, predisposing them to corneal dryness.¹ Various studies have show that 20% to 42% of patients in ICU develop exposure keratopathy several Protocols have been developed to prevent corneal damage from exposure, but there is no widely accepted standard of care.²

From review of the literature, suggestions that have been made for protecting the ocular surface include taping the eyes closed with transparent tape, moisture chamber, covering the eyes with gauze, lubricants, normal saline irrigation of the eyes. A moisture chamber refers to using a substance such as polyethylene covers or swimming goggles to completely seal-off the eye from the environment. In extreme cases, closure by tarsorrhaphy has been suggested, but it makes examination of the eyes difficult and needs asurgical intervention. Several attempts were made to temporarily close the eyelids to prevent corneal damage while patient recovering from the underlying cause. Ezra et al. compared eye toilet with Geliperm and Lacrilube. This comparison is of interest, because in 2003 a large survey showed that 75% of British ICUs use Geliperm, a product not designed for this purpose^{3,4}

II. Materials And Methods

In our study we have included five consecutive patients with exposure keratitis due to incomplete closure of eyelids due to various etiologies. This includes exposure due to bells palsy (2), brain tumor surgery (1), herpes zoster(1), and idiopathic lagophthalmos(1). These patients were suffereing with keratitis of various grades. All patients were given option of conservative management of lid taping and lubricants and Fevikwik temporary tarsorrhaphy or surgical temporary tarsorrhaphy where applicable. All five patients agreed for fevikwik temporary tarsorrhaphy. **Procedure:** In the outpatient set up 0.3% proparcaine topical anasthesia eye drops were instilled, lid margins were cleaned and dried using cotton buds. Superficial epithelium of the lid margins (where we want the apposition) was debrided using the cotton bud or 15 No. BP blade or a light bipolar cautery. A drop of fevikwik was applied on the derided margin directly or with a cap of 23G needle taking care not to spill the

glue in the eye and eyelids were apposed manually for 30 seconds. (Figure1,2) Lubricating eye drops were given to all the patients. Patients were instructed not rub the eyes by force. All patients were followed up after 3 days, 1, 2, 4, 8 and 12 wks. The procedure was repeated to a maximum 3 times in 3 months. Success is defined as intactness of tarsorrhaphy on every followup, Progressive clearing of exposure keratitis from serial digital and slit lamp photos, failure is defined as need for surgical intervention and progression of keratitis or appearance of new corneal lesions with in 3 months and loss of tarsorrhaphy effect even after 3 attempts.

III. Results

Procedure was successful in 4 out of 5 patients i.e 80% (95% CI= 60.4 - 99.6). One patient needed surgical tarsorrhaphy after 1 month. Three patients procedure was repeated 2 times and 2 patients only three times. One of this patient underwent neurosurgery for a brain tumor and was hospitalised for about a month during which period she developed keratitis. After one month of repeated attempts we performed cataract surgery followed by permanent surgical tarsorrhaphy. None of the 5 patients worsened. The minimum retention time was 5 days and maximum was 65 days. The mean retention time was 30 days. Table 1

Table1 - showing the details of 5 cases and retention time of fevikwik temporary tarsorrhaphy

	Retention time after 1 st attempt	Retention time after 2 nd attempt	Retention time after 3 rd attempt		Result
Case 1	25 days	25 days to 3 months	-	Lagophthalmos	success
Case 2	10 days	11- 50 days	51-90 days	Bells palsy	success
Case 3	20 days	21 – 80 days	81-90 days	Bells palsy	success
Case 4	5 days	6 – 90 days	-	Herpes Zoster Ophthalmicus	success
Case 5	5 days	6-15 days	16-29 days	Post neurosurgery	failure

IV. Discussion And Conclusion

Incomplete closure or eye lids due to any cause leads to exposure keratopathy, In a study designed to evaluate the effect of lid closure on the cornea, McHugh et al ⁵ . found that 70% of patients with incomplete lid closure developed keratopathy compared with 28.9% of patients whose lids were completely closed. Tarsorrhaphy involves fusion of upper and lower lid margins used to heal corneal lesions which are difficult to treat. In 2003, a large survey showed that 75% of British ICUs use Geliperm, to prevent exposure keratopathy ⁶. While Most important management is treatment of underlying cause(s), cornea needs to be protected during that time. Nonpreserved topical drops during the day and lubricating ointment at bedtime. Antibiotic for epithelial corneal defects. Lid taping. Moisture chamber glasses are used for this purpose and tarsorrhaphy as a last resort can be done in two different ways suture tarsorrhaphy over bolsters (for short-term use) and permanent eyelid adhesion tarsorrhaphy (for longer-term use). The former is commonly accepted as the gold standard for temporary eyelid closure. However, both forms of surgical tarsorrhaphy are time consuming, and carry risk of permanent scarring to the eyelids.sometimes, patients often refuse surgical tarsorrhaphy for cosmetic reasons. alternatively, botulinum toxin may be considered but it is not be available universally because of constraints of cost and expertise. An alternative approach is to perform glue-assisted tarsorrhaphy. Amcrylate is a tissue adhesive (N-butyl- 2-cyanoacrylate monomer) that is widely used in surgery for the closure of skin wounds and internal wounds without the need for suturing. The use of cyanoacrylate glue has been described previously in the management of corneal epithelial defects² and other ocular problems. With regard to safety, a previous case series has suggested that there is no longterm morbidity from superglue contact with the eye. ⁷ Glue tarsorrhaphy is not new cyanoacrylate was earlier used by some ophthalmologists for temprary tarsorrhaphy. ⁸ We have chosen Fevikwik for it is readily available, cheap and harmless even if it falls in the eye except for foreign body sensation.donen feld used cyanoacrylate glue in 17 patients of persistent epithelial defects. The mean duration of tarsorrhaphy effect was 5.7 days)In our study the mean duration effect was nearly 30 days.Only one patient who underwent neurosurgery needed surgical intervention.

The authors state this is not a replacement for surgical tarsorrhaphy; however, it may be considered as an alternative in certain situations. First, the technique can be used to provide short-term corneal protection prior to recovery of facial nerve palsy. Second, it may serve as a temporary measure for exposure keratopathy while awaiting more definitive treatment. Third, it is of value in patients who refuse surgical intervention. Fourth this can be easily replicated by intensive care physicians while they are waiting for patient recover or ophthalmologist's intervention. Fevikwik temporary tarsorrhaphy is simple, safe, effective, economical, repeatable and sight saving OPD procedure. Also useful for intensive care physicians treating bedridden patients in whom surgical interventions are difficult due other reasons. This procedure is easy to learn and replicable without much separate instrumentation and can be performed in the ICU itself. Further studies with large sample size is required to authenticate the procedure.

References

- [1]. Mercieca F, Suresh P, Morton A, et al: Ocular surface disease in intensive care unit patients. *Eye* 1999; 13:231-236
- [2]. Hernandez EV, Mannis MJ: Superficial keratopathy in intensive care unit patients. *Am J Ophthalmol* 1997; 2:212-216,
- [3]. Ezra DG, Lewis G, Healy M, et al: Preventing exposure keratopathy in the critically ill: A prospective study comparing eye care regimes. *Br J Ophthalmol* 2005; 89:1068- 1069,
- [4]. King DJ, Healy M: Prevention of eye disease in intensive care-A telephone survey. *Intensive Care Med* 2003; 29:155
- [5]. McHugh J, Alexander P, Kalhor A, et al: Screening for ocular surface disease in the intensive care unit. *Eye* 2007 Aug 24
- [6]. Ezra DG, Lewis G, Healy M, et al: Preventing exposure keratopathy in the critically ill: A prospective study comparing eye care regimes. *Br J Ophthalmol* 2005; 89:1068- 1069
- [7]. McLean CJ. Ocular superglue injury. *J Accid Emerg Med.* 1997;14:40-41.
- [8]. Donnenfeld ED, Perry HD, Nelson DB. *Ophthalmic Surg.* 1991 Oct;22(10):591-3. Cyanoacrylate temporary tarsorrhaphy in the management of corneal epithelial defects.

Figure1

Serial Digital photos showing the procedure of fevikwik tarsorrhaphy



Figure 2

Digital photos - Exposure keratitis of left eye due to lagophthalmos



Closure of eye lids of left eye after fevikwik tarsorrhaphy

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