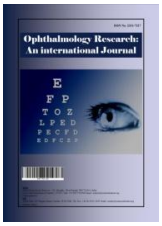

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Novel Application of Vasofix Cannula for Punctal and Canalicular Laceration

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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Case Study

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ABSTRACT

Aim: Purpose of present study is to investigate the efficacy of vasofix cannula in preserving punctum position and canalicular patency.
Presentation of Case: A thirty four year old male patient presented with multiple right both eyelid injuries consisting of lower punctum, vertical and horizontal canalicular laceration, lower eyelid tear with tarsal plate fracture with pretarsal orbicularis muscle splitting, laceration near lateral canthus running for about an inch horizontally and vertical upper lid laceration near upper punctum inflicted by flying zinc sheet at work place. Examination revealed normal and intact ocular functions. Ocular movements were full with unremarkable fundoscopy. CT orbit showed no orbital fractures and intraocular foreign body. Vasofix cannula 24 Gauge inserted into lower punctum and canaliculus, and anchored to lid margin by vicryl 10-0 along with lid laceration repair under local anesthesia.
Discussion: Punctal position, canalicular support and patency were maintained with no infection or extrusion. There was no epiphora or ocular irritation during 10 weeks of follow up.
Conclusion: This case study describes management of monopunctal and horizontal as well vertical canalicular laceration by vasofix cannula acting as a stent. Anatomical and physiological functions

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restored with acceptable cosmetic appearance. Added advantage is that all time availability of cannula in all operation theatres. Although Vasofix cannula is semi flexible in nature can be used as a stent for canalicular intubation purpose.

Keywords: Zinc sheet; vasofix cannula; punctal tear; canalicular tear; lid lacerations.

1. INTRODUCTION

Lids with punctal laceration are common ocular adnexal injuries that occur due to several blunt or sharp objects. Common vulnerable sites for laceration are lateral canthal angle and at the punctum level. Retrospective study of 66 patients revealed 24 (36%) cases of canalicular lacerations in which mode of injury was bicycle handle, blouse-hook fastener, and metal rods [1]. Previous prospective analysis revealed 100% success rate in 88 patients following long term canalicular intubation with Fryet's tube and KAWAI open tube with punctal plugs [2]. Another study showed 88% anatomical success rate with mini monoka stent and silicone plug placement [3].

In this case report, patient had acquired multiple right eyelid injuries by a flying zinc sheet which hit the right eye by the force of wind. This is probably the first case report of ocular trauma induced by flying zinc sheet causing multiple eyelid lacerations sparing the globe managed successfully with vasofix 24 G cannula.

2. PRESENTATION OF CASE

A-34-year old male patient sustained multiple right eye lids lacerations when a flying zinc sheet driven by a wind force hit at his work place. Written informed consent from the patient was obtained for presentation purpose after taking permission from the institutional ethical committee.

Lid lacerations were noted at four sites. A curvilinear full thickness laceration starting near the lower punctum including vertical canaliculus, tearing across the tarsal plate horizontally up to half way down the lower lid about 1 cm long and continuing as a partial thickness horizontal tear with pretarsal orbicularis oculi muscle splitting just 2 mm below the lower lid that was extending to the lateral canthus. Third laceration was S shaped and situated just near the lateral canthus. Another upper lid vertical laceration sparing upper punctum and canaliculus was noted just about 1 cm long extending up to the right end of the eyebrow. Ocular movements were full with 6/9 visual acuity in both the eyes. Globe was intact with normal fundus. CT scan of right orbit and paranasal sinuses was normal which showed no fractures or intra orbital or intra ocular foreign body.

Wound was explored under local infiltration anesthesia and thorough saline was given to remove debris and sand particles. Initially S shaped laceration near the lateral canthus was repaired in layers with 6-0 vicryl for orbicularis oculi muscle and 5-0 prolene suture for skin. Upper lid laceration was sutured in layers. Cardinal stitch was taken near the lower punctum; lacerated lower lid and tarsal plate were repaired. Vasofix cannula 24 G is trimmed near its brim and inserted into the torn lower punctum and canaliculus, and fixed to the repaired lid margin by three 6-0 prolene sutures fixing vasofix cannula with multiple knots. Cannula was retained in the lower canaliculus for 2 weeks during which period lacrimal sac syringing confirmed patency of the canaliculus.

Cannula was removed after 2 weeks as it started moving and patient was followed up for next two months for epiphora and ocular irritation. There was no history of epiphora or ocular irritation. Anatomical approximation of the lower punctum and canaliculus was observed.

3. DISCUSSION

This case report describes a 34 year old young male patient who sustained multiple lid lacerations with lower punctum and vertical as well horizontal canaliculus laceration hit by a flying zinc sheet that required surgical intervention, however surprisingly the globe was intact with no orbital fractures were demonstrated on computed tomography. Mechanism of multiple wound infliction by a zinc sheet is difficult to explain. As the zinc sheet used for roof construction that comes in multiple layers might have been separated at the time of injury that could probably explain the mechanism of multiple injuries. With drawl reflex by the patient due to sudden impact of the object upon face might be another factor in causing multiple laceration wounds.

Intra operatively, lid lacerations appeared superficial and trivial but proved to be in fact deep when the wound was explored. Therefore in superficially appearing lid lacerations the role of wound exploration is at most emphasized because elastic recoiling of the lid tissues may help in approximation. Regional anesthesia by 2% Lignocain hydrochloride administered below supratrochlear notch anesthetizes supratrochlear and supraorbital nerves. Infraorbital nerve was anesthetized near the infraorbital foramen to attain analgesia along with lids infiltration. Tarsal plate was sutured with 6-0 absorbable vicryl by taking reverse bites deep from the tarsal plate to bury the knots within tarsus to prevent conjunctival and corneal irritation. In this surgical intervention, concern was the lower punctum and canaliculus repair as it was very near to one end of lower lid laceration.

Initially, apex of tear near lower punctum was identified and cardinal stitch was taken with 6-0 vicryl. Vasofix cannula 24 G was inserted and fixed to the repaired lid margin. Torn orbicularis oculi muscle was sutured in layers (Fig. 1).

Tarsal plate and orbicularis oculi repair is very important to maintain stability of precorneal tear film and to preserve the lacrimal pump mechanisms. However, Vasofix cannula is semiflexible but stable. Nevertheless, patient reported instability of the cannula with each blink as it is slippery in nature after two weeks that slightly altered its position. Hence to obtain good stability of the cannula, sutures should be reasonably tight enough. Therefore multiple knots are advisable when fixing vasofix cannula to the lid margin. Microsurgical repair of punctum and canaliculus with sutures was reported in previous study compared to the management of the present case [4].

Similar age group was observed in the present case study compared to previous study managed with monoka monocanalicular stent that showed 92% success rate with two tube protrusion, two punctual slits and one punctual ranuloma [5]. In a retrospective analysis of 39 patients, complications were stent extrusion, puctal granuloma and stent exposure [6].

Mini monoka is a monocanalicular stent for the repair of canaliculus, however main complications is stent loss (29%) and stent migration (14%) as reported by previous study [7,8]. Silk stent was also used to repair lower punctum, vertical canalicular and lid lacerations compared to the present case report coinciding with similar type of injuries [9].

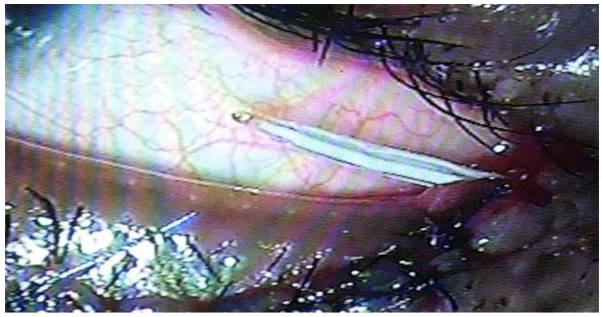

Fig. 1. Vasofix cannula fixation with prolene suture at the lower did margin

Fig. 2. After vasofix cannula removal at two weeks post operative period

Fig. 3. Clinical healing of lacerations and normal lids architecture return at ten weeks post operative period with acceptable cosmoses

Advantages of vasofix cannula are its ready availability in all operation theatres and more importantly it is cost effective. The cannula was removed after 2 weeks in minor operation theater (Fig. 2).

Anatomical lid margin continuity was observed with normal punctum position. Canalicular approximation and patency was confirmed by lacrimal sac syringing (Fig. 3).

4. CONCLUSION

This study describes management of monopunctal and vertical as well horizontal canalicular laceration by vasofix cannula acting as a stent. Anatomical and physiological functions were restored with acceptable cosmetic appearance. Another advantage is all time availability of cannula in operations theatres. Although Vasofix cannula is semi flexible can be used as a stent for monocanalicular lacerations. In conclusion, trimmed vasofix cannula 24 Gauge was efficient in maintaining lower punctum position and canalicular approximation.

CONSENT

A written informed consent was obtained from the patient.

ETHICAL APPROVAL

Permission from institutional ethical committee was taken.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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