



REPAIR OF LOWER EYELID LACERATION WITH MONOCANALICULAR INJURY: AN ECONOMIC APPROACH

Plastic Surgery

Dr Pushan Maity*	Fellow of CranioMaxilloFacial Trauma Dept Of Plastic, Reconstructive And Craniofacial Surgery, Saveetha Medical College & Hospital, Saveetha Nagar, Thandalam, Chennai 602 105. *Corresponding Author
Dr Praveen Ganesh N	Assistant Professor, Dept Of Plastic, Reconstructive And Craniofacial Surgery, Saveetha Medical College & Hospital, Saveetha Nagar, Thandalam, Chennai 602 105.
Dr. Surya Rao RVM	Professor and Head, Dept Of Plastic, Reconstructive And Craniofacial Surgery, Saveetha Medical College & Hospital, Saveetha Nagar, Thandalam, Chennai 602 105 .
Dr. Alagar Raja D	Professor, Dept Of Plastic, Reconstructive And Craniofacial Surgery, Saveetha Medical College & Hospital, Saveetha Nagar, Thandalam, Chennai 602 105.
Dr. S Narayanamurthy	Associate Professor Dept Of Plastic, Reconstructive And Craniofacial Surgery, Saveetha Medical College & Hospital, Saveetha Nagar, Thandalam, Chennai 602 105.
Dr Anand Prasath J	Senior Resident, Dept Of Plastic, Reconstructive And Craniofacial Surgery, Saveetha Medical College & Hospital, Saveetha Nagar, Thandalam, Chennai 602 105 .

ABSTRACT

Lower Eyelid Injury can cause laceration of Lower Canalicular which in turn can cause lacrimal obstruction leading to epiphora. In these cases canalicular repair is needed and there are various techniques available out of which Stenting is the popular one. However, these systems are costly and are subject to availability. In this situation we have found an economic substitute by using an IV cannula with similar clinical outcome. In this Paper we present a case where a 60 year old male with Lower eyelid Laceration causing Lower Canalicular injury was repaired using a 24G IV cannula.

KEYWORDS

Eyelid Injury, Lacrimal Injury, Lacrimal Cannulation

INTRODUCTION

Injuries involving the Lacrimal Canalicular System are frequently, however there are controversy regarding the surgical management which includes Primary repair of the duct, Mucosal Anastomoses or placement of a Stent. In recent times, the placement of stent has gained popularity with various systems available such as, The Crawford system, the MONOKA system, Ritling System etc. However, these systems are costly and are subject to availability. In this situation we have found an economic substitute by using an IV cannula with similar clinical outcome. In this Paper we present a case where a Lower eyelid Laceration causing Lower Canalicular injury was repaired using an IV cannula.

Case History:

A 60 years old male reported to us with an alleged history of Workplace injury to the Right Lower eyelid. There were no known co-morbidities. Ophthalmological evaluation was done and no other Ocular abnormality was found apart from the torn eyelid. The patient was taken up in the OR after routine preoperative investigations.

The injury site was debrided and thoroughly irrigated to flush out any foreign body. Inspection of the area was done under magnification. The laceration on the lower eyelid was found be situated medial to the Lacrimal punctum and involved all three layers, i.e Skin, Muscle and Palpebral Conjunctiva. Jones test confirmed the laceration of the Lower Lacrimal Canaliculus. (Figure 1)



[Figure 1 : Laceration of Lower eyelid]

The Proximal and distal cut end of the canaliculus was identified. An IV cannula of 24G was placed as a stent through the Lacrimal Punctum bridging the Distal and the Proximal cut end. On the distal end, the stent was kept out of the punctum by few millimeters for ease of removal. (Figure2)



[Figure 2 : Placement of the Tube]

The Conjunctiva, Muscle and Skin was closed in layers using 7-0 vicryl. An anchor suture was placed on the eyelid securing the stent. 3 layered Ophthalmic dressing was applied. Postoperative phase was without any complications. The patient was discharged with instructions of topical antibacterial ointment application.

On the 3rd week postop, the stent was removed along with the anchor suture. Ophthalmologic evaluation was done confirming the patency of the canaliculus. After that weekly irrigation of the canaliculus was done on OPD basis for 4 weeks.

On the 3rd month postop, the wound was found to be healed without significant contracture the canaliculus was patent and there were no complaint of Epiphora. (Figure 3)



[Figure 5: Post Op]

DISCUSSION:

The Medial portion of the lower eyelid is susceptible to injury by indirect forces due to the differential Tensile Strength of its contents. Also laceration of the lower canaliculus is more common than superior ones.¹ Now, injury to the lower canaliculus can progress to obstruction of the Lacrimal System and cause Epiphora. Ortiz and Kraushar following a failed attempted inferior canalicular repair reported Epiphora in 25% cases.² Linberg stated that to avoid possible symptoms, all canalicular injury should be repaired.³

There are various methods of repair such as Primary repair of the duct, Mucosal Anastomoses or placement of a Stent. Nowadays, Stent placement has become a popular choice. Silicone tubing as a stent was introduced in the late 1960s and since then various systems such as Crawford, Ritling, Monoka etc have gained popularity. Horner's muscle or pericanalicular Orbicularis Oculi surrounds 4/5th of the lacrimal Canaliculus and the variable fibrosis of these muscle fibres lead to the variation in recovery.⁵

Another controversy lies in the preferred technique. Canalicular intubation can be monocalicular or bicanicular. Bicanicular intubation provides better restoration of the Medial canthal angle but, disadvantages of bicanicular stent is the risk of potential injury to uninvolved Canaliculus, punctal or canalicular slitting, granuloma formation, and chronic nasal irritation.⁶ Monoka stents are commonly used for monocalicular intubation and has an external diameter of 0.64mm. Although, these silicone stents provide good results, they are expensive and not readily available.⁵

Canalicular lacerations, although not an emergency, should preferably be repaired within 72 h before scarring and epithelization of the edges. Edema of the pericanalicular tissue results in difficulty of identification of the distal cut.⁷

Canalicular repair is preferably performed as early as possible. Hence a suitable, economic and easily available substitute is needed especially in peripheral centers. A 24 G IV cannula might be used instead of the Stent. The external diameter of these cannula are 0.7mm which is comparable to that of a Monoka stent. In our case, we didn't have any difficulty in placing the tube. Postoperative result was favorable. Stent extrusion, a common complication of monocalicular stents, fortunately did not occur in this case.

The timing for removal of Lacrimal stents varies according to the materials used. Metal stents were usually left in place for 6 days. Polyethylene tubing are removed in 2-3 weeks. Silicone stents, being most tolerated, can be left in for 2-6 months.¹

There are few limitation of this technique inspite of being affordable and easily available. These tubes are stiffer than Silicone stents and have more risk of extrusion. As these tubes can be used for monocalicular intubations only, they can't be used for more proximal injuries which require bicanicular intubation. Lastly, these IV cannulas are hollow tubes instead of solid stents and can harbor infection.

CONCLUSION:

There is lack of evidence whether IV cannula can be used instead of

Silicone stents. We in no way advocate the use IV cannula substituting Silicone Stents in every case. Rather, we propose it as a mere option in cases where there is unavailability of silicone stents or in austere conditions, as there is evidence suggesting better results in early interventions. Studies with large sample size are needed.

REFERENCES:

1. Reifler DM. Management of canalicular laceration. Survey of ophthalmology. 1991 Sep 1;36(2):113-32.
2. Ortiz MA, Kraushar MF. Lacrimal drainage following repair of inferior canaliculus. Annals of Ophthalmology. 1975 May 1;7(5):739-41.
3. JVL Moore CA. Symptoms of canalicular obstruction. Ophthalmology. 1988;95:1077-9.
4. Mauriello Jr JA, Abdelsalam A. Use of a modified monocalicular silicone stent in 33 eyelids. Ophthalmic Surgery, Lasers & Imaging Retina. 1996 Nov 1;27(11):929.
5. Singh M, Gautam N, Ahir N, Kaur M. Is the distance from punctum a factor in the anatomical and functional success of canalicular laceration repairs?. Indian Journal of Ophthalmology. 2017 Nov;65(11):1114.
6. Bai F, Tao H, Zhang Y, Wang P, Han C, Huang YF, Tao Y. Old canalicular laceration repair: a retrospective study of the curative effects and prognostic factors. International Journal of Ophthalmology. 2017;10(6):902.
7. Alam MS, Mehta NS, Mukherjee B. Anatomical and functional outcomes of canalicular laceration repair with self retaining mini-MONOKA stent. Saudi journal of ophthalmology. 2017 Jul 1;31(3):135-9.