



## CANALICULAR LACERATION IN INDIAN CHILDREN

## Ophthalmology

**Dr Prabha Gupta** (MS) : Senior Resident, Department Of Ophthalmology, Gajra Raja Medical College, Gwalior

**Dr Rashmi Kujur\*** (MS): Assistant Professor, Department Of Ophthalmology, Gajra Raja Medical College, Gwalior \*Corresponding Author

## ABSTRACT

Canalicular laceration is one of the common injury seen in the pediatric age group. Common causes are blunt trauma or injury by sharp objects. Here we report cases of canalicular lacerations, majority of which caused by maternal blouse hook in breast fed infants. The injury requires prompt surgical correction by an ophthalmologist. Poorly repaired wound or unrepaired wound run the risk of persistent epiphora in these patients. This injury can be prevented to some extent if we can incorporate ocular safety counseling to the mothers along with breast feeding counseling during post partum period.

## KEYWORDS

Canalicular Tear, Hook Injury

## Introduction

Ocular and periocular injuries can cause significant morbidity. Laceration of the lacrimal canaliculi is the most common injury of the lacrimal drainage system. Canalicular lacerations can result from direct or indirect injury to the canalicular system, and have been reported in all age groups [1-4]. Direct trauma includes severing the lacrimal portion of the lid with objects, such as glass, coat hangers, knives, dog bites, cat claws, fingernails, display hooks or other sharp objects. Indirect trauma results from blunt injury to the ocular adnexa from such mechanisms as blows to the face, blunt weapons, or falls onto blunt objects [5]. The most common mechanism for canalicular laceration is blunt trauma from a fist punch. Dog bites are the most common cause of these lacerations in children. Blouse hooks have been shown to be a common cause of canalicular trauma in breastfeeding infants [5-9]. Canalicular injuries are more common in children and young adults, and frequently involve the lower canaliculus[10]. Fayet and associates reported that canalicular lacerations were associated with a 20% incidence of globe injuries [11]. Herzum et al reported that canalicular lacerations following penetrating or blunt trauma occur in 16% cases with eyelid lacerations[12]. The correct diagnosis and appropriate management of canalicular injuries are essential to avoid posttraumatic epiphora. Several excellent reports describe the management of canalicular lacerations, but there is limited literature available on the epidemiological aspects of canalicular involvement in eyelid trauma [10-12].

## Material and method

This was a retrospective clinical case series of 13 patients presented with pure canalicular lacerations from August 2016 to Jan 2018 from a tertiary care ophthalmic centre in north India. Demographics and cause of injury were retrospectively reviewed. Patients with road traffic accident were excluded as most of them were associated injury to eye and elsewhere .

**Table 1.** Showing demographic profile, and etiology of canalicular tear

| Serial no | Age in year | Sex | Duration at presentation in days | Mode/ Cause of injury | Canalicular involvement |
|-----------|-------------|-----|----------------------------------|-----------------------|-------------------------|
| 1         | 2.5         | M   | 0                                | Metal blouse Hook     | Lower                   |
| 2         | 1.5         | F   | 1                                | Metal blouse Hook     | Lower                   |
| 3         | 2           | F   | 1                                | Metal blouse Hook     | Lower                   |
| 4         | 11months    | M   | 1                                | Metal blouse Hook     | Lower                   |
| 5         | 2.75        | M   | 3                                | Metal blouse Hook     | Lower                   |
| 6         | 1.5         | M   | 1                                | Metal blouse Hook     | Lower                   |
| 7         | 9           | M   | 0                                | Dog bite              | Bi Canalicular          |
| 8         | 2           | M   | 2                                | Metal blouse Hook     | Lower                   |

|    |     |   |   |                   |       |
|----|-----|---|---|-------------------|-------|
| 9  | 2   | M | 0 | Metal blouse Hook | Lower |
| 10 | 6   | M | 1 | Screw driver      | Lower |
| 11 | 7   | M | 1 | Umbrella spoke    | Lower |
| 12 | 1.5 | F | 3 | Metal blouse Hook | Lower |
| 13 | 2.5 | F | 0 | Metal blouse Hook | Lower |

## Result

Total of 13 patients were included in the study (Table 1). Out of which 9(69.2%) were male and 4(30.77%) were females. Age ranged from 11 months to 9 years. Mean age of presentation was 3.16 yr. The cause of canalicular injury was metal blouse hook in 10 (76.9%) patients. In cases with hook injury mean age of presentation was 1.91 yr. Other causes of canalicular tear were, dog bite injury, screw driver injury and injury with an umbrella spoke. Among these 6 patients(46.15%) presented on the same day of injury, 4(30.7%)presented on next day of injury, 1(7.7%) presented two days after injury and 2(15.38%) presented three days after injury. Total of 12(92.3%) patients presented with lower canalicular involvement and 1(7.7%) presented with bicanalicular involvement.

## Discussion:

Kennedy and associates, in an 11-year epidemiologic and clinical study, noted that two-thirds of canalicular injuries occurred in children or young adults below 30 years of age[10]. In our series mean age was 3.61yr as we included only pediatric cases with pure canalicular injury. In another study from India, Naik et al[9] has described that among all age groups 50% were below 12 years of age. Kennedy et al[10] has described lower lid involvement in 66.2% cases while 6.3% cases had bicanalicular involvement. Our study has also shown similar trend with lower canaliculi being most commonly involved. We found injury by mother's blouse-hooks in breast feeding infants (10 out of 13) a unique cause of canalicular lacerations peculiar to the Indian scenario as was previously described by Naik et al.[9] There was only one case of dog bite in our study, however it has been implicated as a major cause in pediatric age group in western world.[5]

The management of canalicular laceration varies widely [13]. Over the last few years, various treatment philosophies and surgical techniques have been described for the repair of canalicular lacerations.[1,9-11]. Though there is a general agreement on the need for immediate stenting of bicanalicular injuries, controversy still exists regarding the type of stent and repair of a single-lacerated canaliculus.[1,13-16].

Surgery should be performed within 72 hours however some have described successful repair up to 5 days following injury[17,18]. Surgery is aimed at restoring the normal anatomy, eyelid pump and drainage physiology. Tetanus vaccine, rabies vaccine, and immunoglobulins are considered to patients exposed to animal bite. All steps should be taken to prevent infection of the wound. There are several varieties of lacrimal stents and surgical approaches which successfully repair canalicular lacerations and avulsions.

Canalicular lacerations, if not managed properly, can lead to lifelong epiphora. The benefits of repairing canalicular lacerations far

outweigh the alternative of not pursuing surgical repair. The overall success of canalicular repair is generally reported to be about 90 percent or higher. However, patients with canalicular lacerations can have epiphora even with successful repair. Other complications can also occur due to the initial injury and wound- healing process. The relatively thin and complicated anatomy, coupled with the highly dynamic function of the eyelids, can lead to unique complications including eyelid malposition, eyelid margin notching, infection, scarring and lagophthalmos. Epiphora after repair is more likely with stent loss, stent extrusion, eyelid malposition or if no stent was placed. Complications related to general anaesthesia may be present in pediatric cases who needs surgery.

Most common mode of injury to canaliculi seen in Indian breastfeeding infants was blouse hook injury. However this can be prevented by counseling the mother regarding this mode of injury while they are in ward/hospital during postpartum period along with breast feeding counseling. Patient with canalicular tear should be referred to an ophthalmologist by the primary physician for the optimal management. Pediatricians, Obstetricians and the nursing staff should create awareness among mothers about the possible mode of injury to lacrimal apparatus and safety precaution (avoid clothes with hooks) while breast feeding. Another common mode of injury is unsupervised play with sharp objects, which can be prevented by educating parents regarding unsafe playful activities.

### Conclusion

There is need for counselling mother during their hospital stay in the post partum period to take safety precaution while breastfeeding infants to prevent this ocular injury in Indian infants

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