

Nasolacrimal Duct Obstruction after Zygoma Fracture Reduction with Inferior Orbital Margin Fixation

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ABSTRACT

Injuries of lacrimal passages are common in accidental mid-facial trauma and surgical trauma like Caldwell-Luc operation, orbital decompression and orbital floor repair. Reduction and fixation of midfacial fractures have not been reported till now to cause any injury to the lacrimal passages. We present a case of fracture zygoma who developed epiphora after reduction and fixation of the inferior orbital margin by a miniplate.

Keywords: Nasolacrimal duct obstruction, Zygoma fracture.

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INTRODUCTION

The lacrimal sac, nasolacrimal duct and the canaliculi are prone to get injured in accidental or surgical trauma of mid-face and orbits. Obstruction of lacrimal passages is a well recognized complication of midfacial fractures involving the maxilla, lacrimal bone and ethmoids.^{1,2} Although canaliculi are the most commonly injured structures, lacrimal sac and the nasolacrimal duct may also get involved in fractures of maxilla, nasal bones, ethmoids and orbits.

Postoperative nasolacrimal duct obstruction has been observed following Caldwell-Luc operation,¹ orbital decompression³ and orbital floor repair.⁴ Till date, reduction and fixation of midfacial fractures have not been reported to cause any injury to the lacrimal passages. Proximity of nasolacrimal sac and duct to maxilla, lacrimal bone, nasal bones and ethmoids make them vulnerable to injury in operative procedures on these bones. We present a case of tripod fracture which was treated by open reduction and internal fixation at the inferior orbital margin after which the patient developed nasolacrimal duct obstruction causing epiphora.

CASE REPORT

A 32-year-old male presented to us with complaint of epiphora right eye for last 2 months. He had sustained a right sided zygoma fracture in a road accident 2 months back after which he underwent fracture reduction and fixation of the inferior orbital margin with a miniplate. The fracture was reduced by a sublabial and a subciliary incision by a maxillofacial surgeon. Immediately after surgery the

patient started complaining of watering from right eye. He denied any history of epiphora before surgery and was referred for an ophthalmology consultation. Examination of patient revealed bilateral 6/6 vision and there was no abnormality of cornea, conjunctiva, lids and puncta. Pupillary reactions and ocular movements were normal bilaterally. Regurgitation test was negative. Lacrimal probing and syringing from both upper and lower puncta in right eye showed no obstruction of canaliculi, however, there was some resistance in the flow of saline from puncta into nose when compared to the left side. X-ray paranasal sinuses (Fig. 1) revealed a comminuted fracture line passing from right infraorbital margin to the lateral wall of right maxillary sinus breaching the zygomaticomaxillary buttress and a four-hole miniplate fixed across the inferior orbital margin with two screws *in situ*. Fracture line was also visible across the zygomaticofrontal process and zygomatic arch. As the tip of the screw on the medial end of the plate was close to the area of nasolacrimal duct and appeared to physically press the nasolacrimal duct, we planned to remove the miniplate. The patient was called after 1 month and the plate was removed. Epiphora improved immediately after surgery and patient was asymptomatic 3 months after plate removal.



Fig. 1: X-ray paranasal sinuses showing a miniplate fixed across the infraorbital margin with two screws

DISCUSSION

Acquired obstructions of lacrimal passages can be due to trauma, postinflammatory stenosis, tumors and iatrogenic injuries of the nasolacrimal drainage system often following Caldwell-Luc operations or following excision of tumors of the eyelids and the medial canthal region.¹ Transantral ethmoidal orbital decompression in patients having dysthyroid ophthalmopathy can also cause epiphora in many cases.³ Kohn et al⁴ have reported a case of lacrimal obstruction which developed due to migration of implant 32 months after repair of orbital floor fracture.

Postoperative epiphora is not commonly reported after reduction or fixation of midfacial fractures. As per records, our patient had a tripod fracture with a comminuted fracture line at the junction of lateral two-third and medial one-third of right inferior orbital margin. Fractures of the medial infraorbital margin may occur independently or in conjunction with fractures of the nose and zygoma.⁵ Zygoma fractures may be monopod (zygomaticomaxillary, zygomaticofrontal or zygomatic arch fractures), dipod or tripod and they may or may not involve the infraorbital margin.⁶ Tripod fractures are commonly reduced through temporal or sublabial incisions and are fixed using wires or miniplates at one, two or three points. Although fractures of infraorbital margin usually require open reduction and internal fixation,⁶ fixation of infraorbital margin is not strongly recommended as it can lead to sensory disturbances along the distribution of infraorbital nerve and unsightly scarring in the subciliary region.⁷ Injury to infraorbital neurovascular bundle and nasolacrimal duct may occur either following use of a drill to fix plates and screws or due to direct pressure of screws on these structures. It is concluded that tripod fractures should not preferably be

fixed at the inferior orbital margin and in unavoidable situations, due care should be taken to preserve the adjoining structures.

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