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Endoscopic Decompression of Orbital Floor Fracture

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ABSTRACT

Trauma to the orbit can result in considerable deformity of the face,and it may also lead to impairment of the vision. Such kind of trauma mostly occurs in various blunt injuries due to road traffic accidents (RTAs), assault, and sport activity. A blowout fracture of the orbit involves only the floor of the orbit, without involvement of orbital rim or any other associated facial bones. This type can also be found in association with multiple facial injuries.Significant complications can occur as a result of this orbital injury such as enophthalmos,persistent diplopia, vertical dystopia, and restriction of globe movements.The goal of surgical repair of orbital fractures is to restore the traumatized wall and reduce the contents of the globe into the orbit. Various surgical methods have been tried to reconstruct the orbital floor with varying rate of success. Our case report involves endoscopic transnasal reduction of fracture with less morbidity.

Key words: Orbit, fracture, Diplopia, Endoscope

INTRODUCTION

Orbital floor fractures were first described by MacKenzie in Paris in 1884 [1]. Smith was the first to describe entrapment of inferior rectus between the fracture fragments. He was also the first to coin the term "Blow out fracture" [2]. Blow out fracture causes an increase in the intraorbital volume, this causes enopthalmos. Entrapment of inferior rectus muscle causes diplopia. These patients usually report to an opthalmologist since orbital signs and symptoms are predominant. Shereetal in their study conclude that nearly 14% of blow out fractures are caused by contact sports in a military population [3].

Case Report

A 25 years old male patient came with complaints of Swelling left eye for 1 day durationand doublevision for 1 day duration.There was a history of injury on being struck by a cricket ball. He gave no history of loss of consciousness and ear bleed and CSF leak.On clinical examination Periorbital ecchymosis was seen around the left eye with infra orbital tenderness and parasthesia.Extra ocular movements were restricted on upward movement of eye ball. Coronal CT plain of nose and sinuses showed blow out fracture of left orbit with herniation of orbital contents- classic tear drop sign(fig 1).A clinical diagnosis of orbital blow out fracture left side was made and We planned endoscopic transnasal reduction under GA as patient had diplopia.Using 0^0 endoscope, the fracture site was reached after widening the natural maxillary ostium in the middle meatus. The contents of the orbit including fat and inferior rectus muscle were replaced back into the orbit and the fracture segment repositioned(fig 2) and supported by patient's own septal cartilage.Gelfoam packed inside the antrum. Patient had symptomatic improvement on the next day. Patient is still on regular follow up with no morbidity.

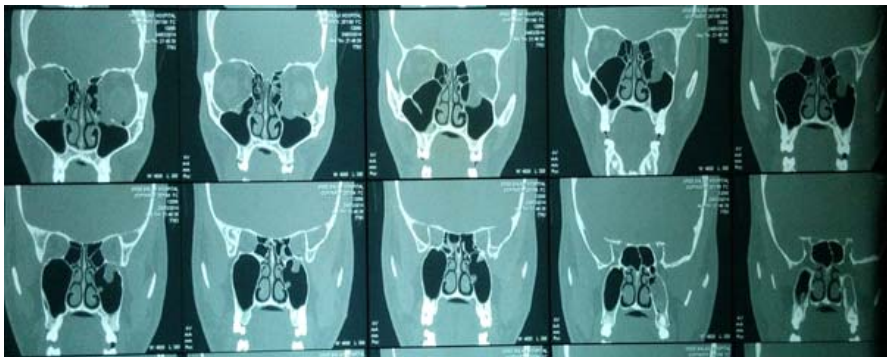

Fig. 1:

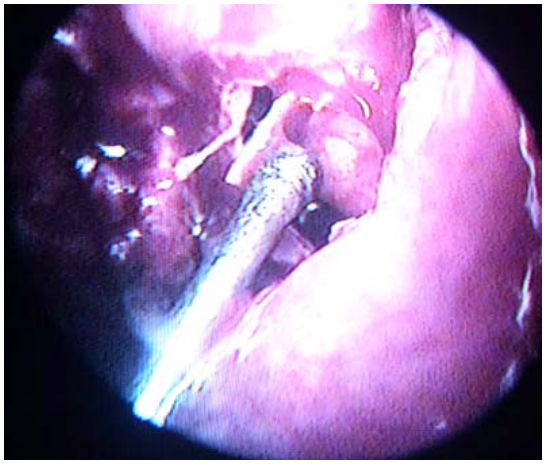

Fig. 2:

DISCUSSION

Orbital blow out fracture is commonly caused by blunt trauma to the orbit. This is commonly seen in persons who are involved in contact sports like boxing, foot ball, rugby etc. There are two theories attempt to explain this injury phenomenon:Buckling theory and Hydraulic theory

Buckling theory

This theory proposed that if a force strikes at any part of the orbital rim, these forces gets transferred to the paper thin weak walls of the orbit (i.e. floor and medial wall) via rippling effect causing them to distort and eventually to fracture. This mechanism was first described by Lefort.

Hydraulic theory[5]

This theory was proposed by Pfeiffer in 1943. This theory believes that for blow out fracture to occur the blow should be received by the eye ball and the force should be transmitted to the walls of the orbit via hydraulic effect. So according to this theory for blow out fracture to occur the eye ball should sustain direct blow pushing it into the orbit.

Common clinical presentation in a blow out fractureare Immediate swelling of the eye, tenderness over involved orbit, Pain and difficulty in eye movements, Double vision,Enopthalmos,and Numbness / tingling over lower eyelid, nose,upper lip[6].Timely intervention in these cases is essential due to the possible complications like Herniation of orbital fat into maxillary sinus[7],Orbital emphysema[8], Bleeding into maxillary sinus, Entrapment / rupture of ocular muscles, Ischaemic muscle contractures[9], Cellulitis, Diplopia.

The timing for surgical intervention is highly controversial. Some of the authors prefer a waiting period of atleast 2 weeks for the oedema to resolve before proceeding with surgical reduction of the fracture. Early intervention is indicated only in white eyed blow out fracture which is common in children. In children the bones are flexible and do not break easily but bends. Significant amounts of orbital tissue may get entrapped in between the fractured fragments causing a compromise in their blood supply. This condition is known as the white eyed blow out fracture. These patients should undergo immediate reduction. Surgery is indicated if the eye has recessed by more than 2 mm into the ortbit, ocular movements restricted, persistence of diplopia. Previously, these reductions were done through orbit which cause more handling of orbital contents and scarring of tissues. This led to more

morbidity and is cosmetically unacceptable. We attempted a endoscopic reduction via nose trying to overcome these disadvantages.

Advantages of endoscopic approach are accurate fracture visualization, reduction of contents precisely with minimal soft tissue dissection and handling.Hospital stayis minimized and it is cosmetically acceptable[10].

CONCLUSION

Blow out fractures of the orbit do not require surgical intervention in all. The decision making in these case is a topic of debate.In general patient withdiplopia are taken up for surgery for early recovery.Endoscopic approach through natural ostium gives excellent results symptomatically and cosmetically and is widely accepted today.

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