MANAGEMENT OF ORBITAL FRACTURES

Essay
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INTRODUCTION

Blunt trauma to the orbital rim is a frequent cause of both orbital fractures and damage to the surrounding facial bones and soft tissues. Many surgical specialties, including ophthalmologists, otolaryngologists, maxillofacial specialists, neurosurgeons, and plastic surgeons, evaluate and treat orbital fractures. A wide range of treating physicians means that varying levels of expertise and experience are involved in the care of patients with periorbital trauma ***(Joseph & Glavas, 2011)***.

Trauma to the orbital region can result in considerable facial deformity and can affect vision and the nervous system of the face. Rehabilitation of the patient requires an understanding of the alteration in form and function of the orbit, including the intraorbital and intraocular tissues, and the materials and methods available for repair ***(Kontio & Lindqvist, 2009)***.

The indications for surgery on orbital floor fractures are controversial. Strong indications include enophthalmos greater than 2 mm, significant hypoglobus, or diplopia. Certain consensus also prevails regarding the need for surgery when there is an increase of orbital volume more than 1 cm3. When there are lesser degrees of trauma, disagreement remains regarding the best

method of treatment. The timing of surgery for orbital fractures has also been a controversial issue. Orbital fractures differ from all other facial fractures in that surgery does not typically attempt to achieve bone healing. Rather, the goal of surgery is simply to reconstruct the defect area of the fractured wall. As such, delaying the operation for varying periods of time is feasible. Rarely can it be considered an emergency operation ***(Kontio & Lindqvist, 2009)***.

The material of choice for wall reconstruction has also been under continued debate. There is general agreement that the ideal material for repairing the orbital floor should be rigid enough to support the orbital contents and should restore the original orbital form and volume. It should be safe and user friendly so that even inexperienced surgeons can handle it. It is the responsibility of the surgeon to recognize the diversity of the materials available and to apply them selectively in clinical use ***(Kontio & Lindqvist, 2009)***.

AIM OF THE STUDY

The aim of this essay is to review different aspects of management of orbital fractures

ANATOMY OF THE ORBIT

The orbit is essentially intended as a socket for the eyeball and also contains the muscles, nerves and vessels, which are essential for its proper functioning. Moreover, it serves to transmit certain vessels and nerves destined to supply areas of the face around the orbital aperture. Seven bones share in the formation of the orbit which are the maxilla, the palatine bone, the frontal, the sphenoid and zygomatic bone, the ethmoid and the lacrimal bone ***(Bron et al., 1997)***(Fig 1).

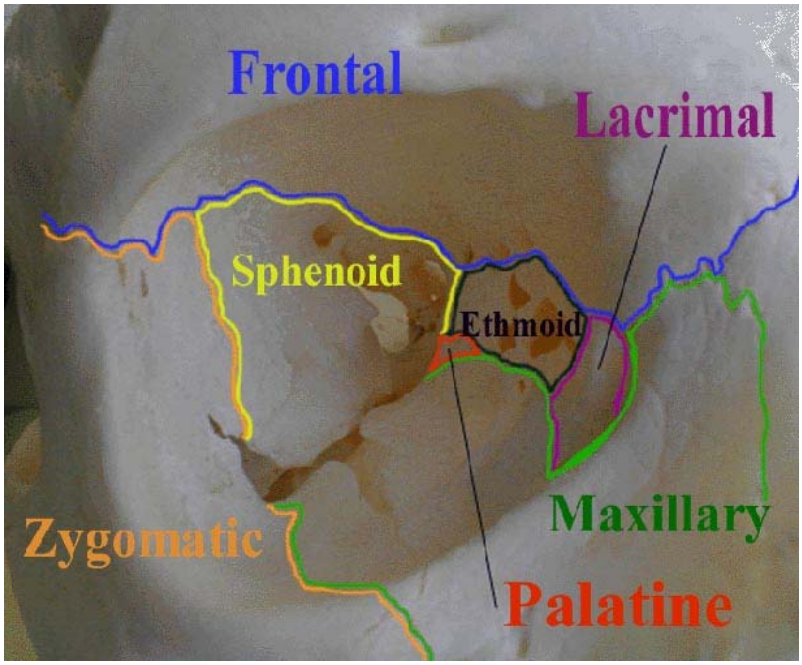

Fig. (1): Bones sharing in the formation of the orbit.

(www.drtbalu.com,2012)

Each orbital cavity is pear-shaped and its apex is directed posteriorly, medially and slightly upward; the stalk of the pear lying within the optic canal. The medial wall runs anteroposteriorly parallel to the sagittal plane while the lateral wall diverges at an angle of about 45 degrees ***(Snell & Lemp, 1998)*** (Fig 2).

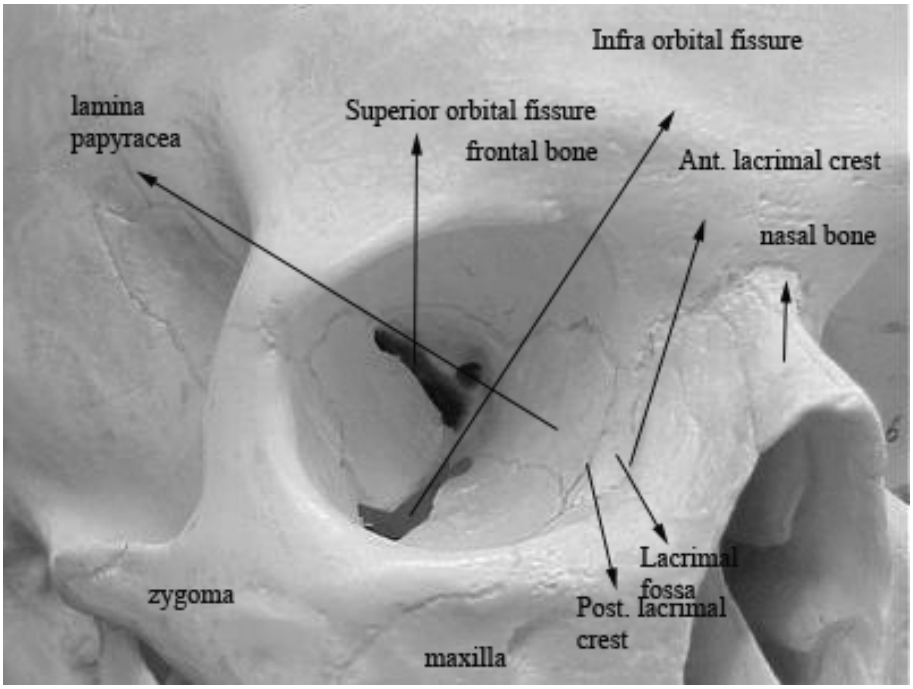

Fig. (2): The orbit ***(www.drtbalu.com,2012)***

The roof or the vault of the orbit is triangular in shape, Formed mainly by the triangular orbital plate of the frontal bone and behind this by the lesser wing of the sphenoid. It does not look

directly downwards but slightly forwards as well ***(Bron et al., 1997)***.

Anteromedially the roof is invaded by the frontal air sinus. Anterolaterally there is a slight depression, the lacrimal fossa, for the orbital part of the lacrimal gland. Medial to the supraorbital notch and 4 mm behind the orbital margin is a small depression or spine for the pulley of the superior oblique muscle ***(Snell & Lemp, 1998)***.

Structure: The roof of the orbit is very thin, translucent and fragile except where it is formed by the lesser wing of sphenoid, which is 3 mm thick. If the bone be held up to the light, one can make out the ridges and depressions on the cranial aspect formed by the sulci and gyri of the frontal lobe of the brain. This is especially true for the posterior two thirds. The translucency of the anterior third enables the outline of the orbital extension of the frontal sinus to be seen. Penetrating wounds through the lids are sometimes inflicted with the points of umbrellas or walking-sticks and the roof of the orbit may easily be fractured by direct violence, leading to frontal lobe injury ***(Schuenke et al., 2007)***.

Relations: The frontal nerve lies in direct contact with the periorbita for the whole extend of the roof where the supraorbital artery accompanies it only in the anterior half. Beneath the nerve

is the levator palpebrae, and deep to this again is the superior rectus. The Trochlear nerve lies medially, in contact with the periorbita. The lacrimal gland adjoins the lacrimal fossa, and the superior oblique lies at the junction of the roof and the medial wall. Invading the roof to a variable extend are the frontal and the ethmoidal sinuses. Above the roof are the meninges covering the frontal lobe of the brain ***(Agur &Lee, 1999)***.

The Medial wall of the orbit runs parallel with the sagittal plane, and consists from before backwards of four bones united by vertical sutures which are the frontal process of the maxilla, the lacrimal bone, the orbital plate of the ethmoid and a small part of body of sphenoid, where the orbital plate of the ethmoid takes by far the largest portion ***(Bron et al., 1997)***.

On the anterior part of the medial wall is the lacrimal groove for the lacrimal sac. The lacrimal groove is formed by the lacrimal bone posteriorly and the frontal process of the maxilla anteriorly. The groove is bounded in front and behind by the anterior and posterior lacrimal crests .Below, the lacrimal groove is continuous with the nasolacrimal canal ***(Snell & Lemp, 1998)***(Fig 3).