Hidden incisions on the face—use of Transconjunctival approach in management of Orbito-Zygomatico-Maxillary complex fractures.

Dr. David P. Tauro (prof.)

Dr. Siva Bharani (Prof. & H.O.D)

Dr. Saurabh kumar (Post Graduate)

Dr Subha Lakshmi (Prof.)

Dept. Of Craniomaxillofacial Reconstructive Surgery

Abstract:

Anatomic reduction of the Orbito-Zygomatico-Maxillary complex is necessary to reestablish facial symmetry, position of the globe and to restore normal sensations to the structures innervated by the infraorbital nerve. The face is the primary area of cosmesis, and the surgeon must balance the exposure needed for access and treatment with the esthetic demands of the patient. There are several popular incisions used to gain access to the orbito-zygomatico maxillary complex region: the infraorbital, the subciliary, and the transconjunctival incisions. The transconjunctival approach with a lateral canthotomy (swinging lid) is the workhorse of approaches to the orbit in the management of orbital trauma.¹ This approach provides a wide exposure for treatment of floor fractures and minimizes the risk of lower lid malpositioning and most importantly avoid the perceptible scar

on the face.

We report a case of OZM complex fracture, in which transconjunctival approach was used to access the infraorbital and the lateral orbital rim for the fracture reduction and discuss the surgical technique and associated advantages of this approach.

Abbreviations:

OZM- Orbito-Zygomatico-Maxillary

Introduction:

Operative exposure of zygomatic fractures has been accomplished through a variety of approaches including the intraoral (Keen), temporal (Gillies), brow incision, and bicoronal flap techniques. In 1973, Tessier² and Converse et al³ introduced the use of the transconjunctival approach in combination with a lateral canthotomy for exposure of the orbital floor and maxilla. Later, Nunery⁴ modified the approach to

use the lateral canthotomy approach exclusively for repair of zygomatic and orbital floor fractures. Transconjunctival approach provides adequate exposure of the infraorbital rim and the lateral orbital rim upto the Fronto-Zygomatic suture but with an added advantage of hidden scar on the face which can hardly be perceptible to the normal eye and thus have a preference over the rest of the approaches.

Patient and Method:

A patient reported to our unit with a chief complaint of pain and tenderness over the right OZM region following a road traffic accident. Based on the clinical and radiographic findings the case was diagnosed as having OZM fracture and was considered for open reduction and internal fixation under general anaesthesia. The fracture site at the infraorbital rim and the fronto-zygomatic region were exposed by transconjunctival incision with a lateral canthotomy through a retroseptal approach. The fracture site was adequately reduced and rigid fixation in the form of miniplates and screws were used to stabilize the fracture segment. Following the surgery patient recovered uneventfully without any ocular complication. The wound healing was satisfactory and there

was no perceptible scarring of the incision tract, thus giving a superior esthetic outcome.

One cc of 1% lidocaine with 1/1,00,000 epinephrine is injected into the lateral canthus and conjunctival region. A horizontal incision is made extending laterally from the lateral commissure to a length of approximately 5 mm. After this incision, superior and inferior cantholysis is performed to provide wide exposure of the entire lateral orbital rim. The traction sutures are used to evert the lower lid. The lower eyelid is everted and an incision is made through the conjunctiva and lower lid retractors, dissection can then be carried out either in the preseptal or the retroseptal plane.⁵

For pre-septal approach an incision is made below the inferior border of the tarsus. Dissection is carried in the preseptal plane down to the level of the orbital rim.

In retroseptal approach once the lower lid is everted, the position of the lower tarsal plate through the conjunctiva is noted. Blunt-tipped pointed scissors are used to dissect through the small incision through the conjunctiva made during the lateral canthotomy inferiorly toward the infraorbital rim. Scissors are used to incise the conjunctiva and lower lid retractors midway between the inferior margin of the tarsal plate

Pic 1: Pre-Op

Pic 2: Pre-Op OPG

Pic 3: Incision

Pic 4: Infra-Orbital rim fracture

Pic 5: Fronto-Zygomatic fracture

Pic 6,7: Fracture Site Fixation

Pic 8 : Closure

Pic 9 : Post-Op OPG

Pic 10: Post-Op

Pic 11: Incision Site hidden at skin fold.

Surgical Note: (Fig: 1)

Fig1: Sagittal section through the orbit showing Preseptal and Retroseptal incision

and the inferior conjunctival fornix. The incision should not extend farther medially than the lacrimal punctum. With retraction of the orbital contents and the lower lid, using suitable retractors, a scalpel is used to incise the periorbital, taking care to stay laterally to the lacrimal sac. Periosteal elevators are used to strip the periosteum over the orbital rim and anterior surface of the maxilla and zygoma, and orbital floor. A broad malleable retractor should be placed as soon as feasible to protect the orbit and to confine any herniating periorbital fat.

Discussion:

A multitude of approaches has been used extensively for approaching the fractured zygomatic complex and orbit. Existing lacerations are often used for this purpose.

However, in the absence of lacerations, properly placed incisions offer excellent access with minimal morbidity and scarring. The three basic incisions used for accessing the infraorbital rim and the orbital floor are the infraorbital, subciliary and transconjunctival incisions. They differ in the level at which the skin incision is made and the level of dissection to the infraorbital rim. The infraorbital or subtarsal incision is made in a natural crease at or below the level of the tarsus, approximately half the distance between the lash margin and the orbital rim. It is relatively easy to perform but leaves a cutaneous scar, which may not be acceptable esthetically in some individuals. The subciliary approach, also called the infraciliary or blepharoplasty approach is made with an

incision approximately 2 mm inferior to the gray line of the lower eyelid, along the entire length of the lid. The incision may be extended laterally approximately in a natural crease to the lateral canthal ligament. Though the scar is imperceptible, the procedure is technically difficult and there is a higher risk of ectropion. There is also a chance for "buttonhole" dehiscence to occur.

The main advantage of the transconjunctival approach is that it produces excellent cosmetic results as the scar is hidden behind the conjunctiva. If a canthotomy is performed with the approach, the only visible scar is the lateral extension, which heals with an inconspicuous scar. Another advantage is that these techniques are rapid, and no skin or muscle dissection is necessary. The only disadvantage of the transconjunctival approach is the limitation of medial extent of the incision by the lacrimal drainage system.

Manganello-Souza L.C and De Freitas R.R.⁵ presented their experience with the transconjunctival approach to access the orbital floor, infraorbital rim and zygomatico-frontal and zygomatico-temporal sutures in 40 patients with fractures in the orbital and zygomatic region and have reported a complication rate of 12.5%.

As specified in the literature, most of the complications seen with the transconjunctival approach would tend to reduce with meticulous care and surgical expertise.

Conclusion and summary :

The transconjunctival approach is an excellent surgical approach for orbito-zygomatoc-maxillary complex fractures. This surgical approach is simple to perform and gives good functional and aesthetic results with apparently no associated ocular complications if meticulous care is taken in hands of an experienced surgeon. It is not used however if any existing lacerations can be used. The indications are similar to those for traditional approaches to orbito-zygomatoc-maxillary complex. The complications of facial scars, ectropion and scleral show with eyelid malposition are limited. It is however obvious that meticulous care to protect the globe is necessary to prevent corneal abrasions or ocular damage. With our successful clinical experience, we recommend transconjunctival approach for the treatment of orbito-zygomatoc-maxillary complex fractures especially the orbital floor, the infraorbital and lateral orbital rim.

References:

1. Waite PD, Carr DD. The transconjunctival approach for treating orbital trauma. J Oral

Maxillofac Surg 1991;49:499–503.

2. Tessier P. The conjunctival approach to the orbital floor and maxilla in congenital malformation and trauma. J Maxillofac Surg 1973;1:3–8.

3. Converse JM, Firmin F, Wood-Smith D, Friedland JA. The conjunctival approach in orbital fractures. Plast Reconstr Surg 1973;52:656–7.

4. Nunery WR.. Lateral canthal approach to repair of trimalar fractures of the zygoma. Ophthal Plast Reconstr Surg 1985; 1:175–83.

5. Eli L. Chang, Mark P. Hatton, C. Robert

Bernardinó, Peter A. D. Rubin. Simplified Repair of Zygomatic Fractures through a Transconjunctival Approach. Ophthalmology 2005;112:1302–1309

6. Manganello-Souza LC, De Freitas RR.. Transconjunctival approach to zygomatic and orbital floor fractures. Int J Oral Maxillofac Surg 1997;26;31-4.