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A Modified Lateral Canthal Approach for the Treatment of Zygomatic Complex Fractures

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ABSTRACT

We present a modification of the classic lateral canthal approach by means of which the anatomy of the lateral palpebral edges remain unscathed, with the incision beginning 2mm lateral to the external canthus. We have used this technique in 76 patients at 3 major trauma centers in Bogota, Colombia from January 2006 to January 2012. The approach provides excellent access to the fronto-zygomatic area, lateral wall of the orbit, and malar body. This method avoids important anatomical structures and offers outstanding cosmetic results, especially in adult patients.

Zygomatic complex fractures are very frequent injuries in today's clinical practice,[1] representing around 45% of all mid-face fractures.[2] The main therapeutic goals for the management of these injuries are to restore form and function, to preserve facial symmetry, to restore ocular function, to correct or prevent enophthalmos or exophthalmos, to restore pretrauma sinus function when damaged, and to restore mandibular range of motion.[1-2]

Several surgical approaches have been described to treat these fractures and there is controversy about which one offers the best esthetic result while providing access to the fractured bones. This paper describes a modification to the classic lateral canthal approach for the treatment of zygomatic complex fractures. With this uncomplicated technique the anatomy of the lateral palpebral edges remain unscathed, with the incision beginning 2mm lateral to the external canthus. We have been using this method since 2006 at 3 major trauma centers in Bogotá, Colombia.

SURGICAL TECHNIQUE

Under general anesthesia and after the patient has been prepared and draped, the skin expression lines lateral to the external canthus are identified (Figure 1). The surgical area is infiltrated with local anesthetic and a 5-0 prolene suture placed at the palpebral edge to prevent it from tearing. The proposed lateral canthal incision is made through the deepest, most visible expression line. Beginning 2mm lateral to the external canthus, start a 15 mm incision with a scalpel in a lateral direction.

Sub-periosteal dissection provides access to the fronto-zygomatic area, lateral wall of the orbit, and malar body. Through tissue tunneling the infraorbital rim and zygomatic arch can be reached. Once the fracture is exposed (Figure 2), it is anatomically reduced and stabilized with plates and screws (Figure 3). The procedure ends with a two-layer suture (Figure 4) and removal of the protecting suture initially placed at the lateral canthus.

DISCUSSION

Many approaches to the zygomatic complex have been described in the maxillofacial surgery literature over the years, ranging from the most conservative to quite invasive techniques. The coronal approach, for example, is used when zygomatic fractures present in conjunction with upper third facial fractures. This approach was adapted for this purpose in 1986 by Lauritzen[3] and although it offers outstanding access, it leaves a long scar and does not provide access to the orbital floor and infraorbital rim. The subciliary method, introduced by Pospisil[4] in 1984, has the superior advantage of an esthetic scar. Disadvantages of this method are that it can only be used to explore the orbital floor and infraorbital rim, and the risk of developing either ectropion or entropion.

Another useful approach in this context is the transconjunctival, initially described by Bourquett[5] and popularized by Tessier.[6] Advantages of this philosophy include good access to the orbital floor and rim through an invisible scar. Disadvantages are the possibility of ectropion and entropion of the lower eyelid in addition to limited surgical access.

Under certain circumstances, the transconjunctival method is combined with a lateral canthotomy, a modification introduced by McCord.[7] The transconjunctival approach is extended laterally through an incision over the lateral canthus, thus separating the superior and inferior palpebral edges. Contrary to the McCord method, where the palpebral edges are surgically severed, in the technique we advocate, the anatomy of the palpebral edges remain unscathed, since the incision begins 2mm lateral to the external canthus.

Over the years we have implemented other approaches[8] and have found this modified lateral canthal approach to be a reliable method for the treatment of zygomatic complex fractures. This modification provides excellent access to the fronto-zygomatic area, lateral wall of the orbit, and malar body. Through tissue tunneling and no direct visualization, the infraorbital rim and zygomatic arch can be reached. With this approach important anatomical structures are avoided with outstanding cosmetic results.

To date, we have successfully performed the modified lateral canthal approach in 76 patients with excellent cosmetic and functional outcomes. Our statistics show a low surgical risk, high esthetic level (Figure 5), less surgical time, low surgical sequelae and general cost reduction. This approach is more suitable for adult patients who have already developed deep lateral canthal crow's feet, but we also believe it can be useful in selected young patients when other approaches cannot be employed. Long-term cosmetic results, however, should be further studied before this method can be routinely employed in the younger population.

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