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Case Study

Supratarsal Approach - An Aesthetic Option for the Surgical Treatment of Displaced Zygomatic Fractures: A Case Study

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Abstract

Fractures of the zygomatic bone are frequently encountered in the practice of maxillofacial surgery and traumatology. The treatment of choice is surgical, involving three-dimensional repositioning to stabilise the zygomatic bone and its adjacent bones (frontal, maxillary, sphenoid and temporal bones). The purpose of this article is to present the supratarsal approach, which provides exposure of the frontozygomatic suture, allowing verification of three-dimensional positioning and producing excellent postoperative aesthetic results.

Keywords: *Zygoma; Fracture Fixation; Traumatology; Oral Surgery.*

Introduction

The zygomatic bone (ZB) is the second most commonly fractured bone in the midface, surpassed only by nasal fractures, accounting for 13% of craniofacial fractures[1]. The distribution and etiology of this fracture vary, but young men and motor vehicle accidents are the most common causes[2]. In our setting, physical assaults and motorcycle falls are the main causes[3]. Because it is a bony structure that projects from the lateral aspect of the face and has intricate muscular insertions, its fracture and displacement can cause facial asymmetries, visual and sensory disturbances, necessitating three-dimensional reduction and, if unstable, fixation with miniplates and screws[4]. Three-dimensional repositioning aims to fix the zygomatic bone between the frontal, maxillary, sphenoid, and temporal bones[5]. A fractured zygoma requires surgical access to expose the sutures and joints for verification of anatomical positioning[6]. There are several described fixation points and surgical approaches, each with its own advantages and limitations. A review of these is beyond the scope of this study, and we suggest consulting specific literature[7]. We present a case study in which supratarsal access was used, which provides exposure of the fronto-zygomatic suture, allows for verification of three-dimensional positioning, and yields excellent postoperative aesthetic results.

The purpose of this article is to present a case of a patient with severe autism spectrum disorder who underwent general anaesthesia in a hospital setting for the clinical treatment of advanced periodontal disease.

Case Presentation

A patient who was the victim of physical assault and sustained trauma to the middle third of the face, presenting with a complaint of loss of zygomatic projection. The patient reported hypoesthesia in the right maxilla and crepitus during mastication, with no diplopia. The patient denied systemic diseases, as well as substance abuse and medication use. A zygomatic bone fracture was the presumptive diagnosis, which was confirmed by imaging studies (Figure 1).

The zygomatic body was elevated using a hook[9], which resolved the maxillozygomatic orbital discrepansy. The frontozygomatic suture was repositioned and fixed under direct visualization (Figures 2, 3 and 4), and the zygomatic-alveolar pillar was also fixed (Figure 5) (Toride CMF™, Mogi Mirim, Brazil).

After fix the mini-plate to both the fronto-zygomatic suture and the zygomatic-maxillary butress, the incisions were irrigated and sutured (Figure 6).

The patient was discharged in the following day. He is currently under ambulatory care, with facial projection and sensation in the right maxilla restored (Figures 7 and 8).

At the 3-week follow-up, the surgical site had already healed, with normal skin repair and, even in a patient with melasma, minimal scarring was observed (Figure 9).

The postoperative 3D computed tomography scan shows the fixation points at the frontozygomatic suture and the zygomatic-maxillary buttress (Figure 10).

Figure 1. 3D facial CT scan showing a displaced fracture of the right zygomatic bone, with a central anterior fragment extending into the infraorbital foramen.

Figure 2. Supratarsal approach design and right infraorbital ecchymosis.

Figure 3. Exposure of the right zygomatic-frontal suture and the fracture, which has already been reduced but remains unstable.

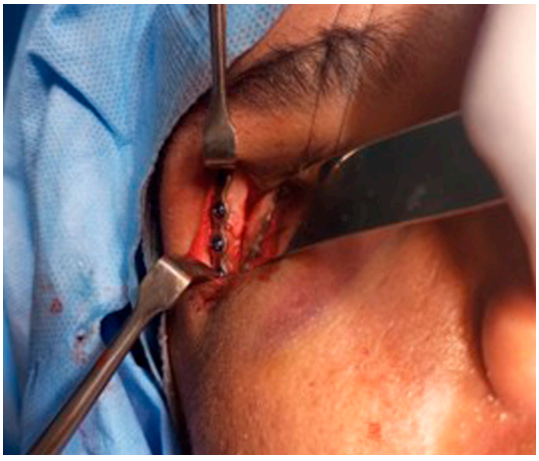

Figure 4. Supratarsal approach with a 2.0 mini-plate fix 4 screws.

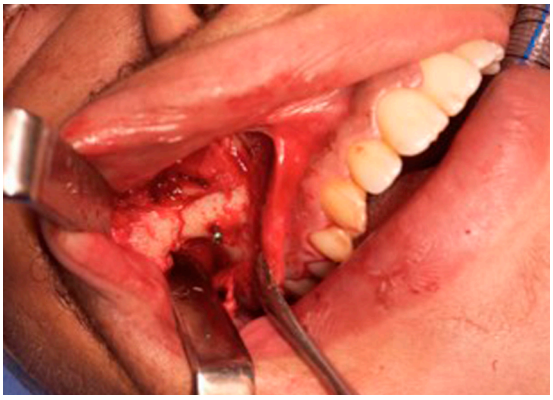

Figure 5. Central fragment of the zygomatic-maxillary butress, repositioned using a screw and manipulated with a needle holder.

Figure 6. Closed supratarsal approach with intradermal suture.

Figure 7. Clinical appearance of the surgical approach on the 14th postoperative day following suture removal.

Figure 8. Supratarsal approach at the 21-day postoperative follow-up.

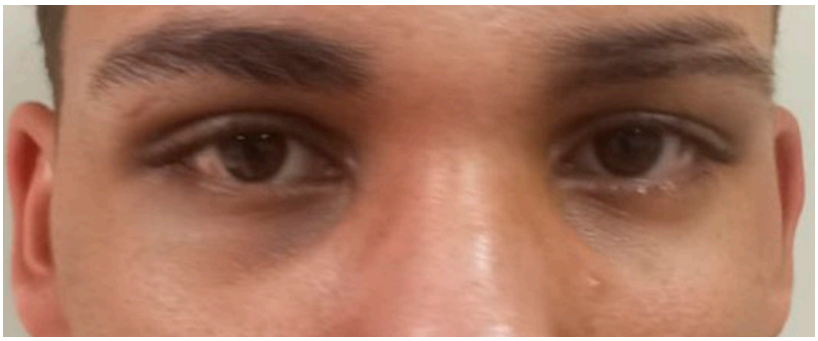

Figure 9. Clinical presentation of the surgical access site at the 21-day follow-up.

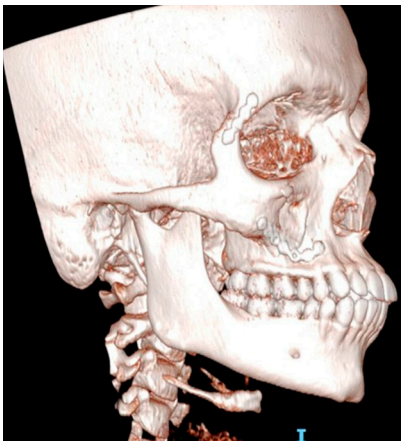

Figure 10. Postoperative 3D CT scan; note the fixation points at the fronto-zygomatic suture and the zygomatic-maxillary butress.

Discussion

Zygomatic fractures, although they do not directly alter occlusion, can cause sensory disturbances along the course of the superior alveolar nerve, leading patients to report malocclusion. In African-American patients, we prefer the intraoral approach, as it minimizes the risk of excessive scar formation8. Sometimes we use a simple fixation screw, as can be seen in the Figure 4, to assist in the manipulation and repositioning of the central fragment, followed by fixation, which in this case was performed at the fronto-zygomatic suture and the zygomatic-maxillary butress. There is still no consensus in the literature regarding the areas requiring fixation of the zygomatic fracture; however, in our practice, access to the fronto-zygomatic suture is crucial for the three-dimensional stabilization of the zygomatic bone (Figure 10), and the supra-tarsal approach fulfills several requirements, such as good visibility of the suture, technical ease, low complication rates, and excellent postoperative aesthetics, as can be seen in the Figures 7, 8 and 9.

Conclusions

A transcutaneous approach to three-dimensional stabilisation of the zygomatic bone can lead to scarring and keloids, particularly in Black patients. From this perspective, the supratarsal approach offers good visibility of the suture, technical ease, low complication rates and excellent post-operative aesthetics.

Conflict of Interest

The authors declare no conflict of interest.

Patient Consent

Not declared.

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