OPEN ACCESS Freely available online

Annals and Essences of Dentistry

Perspective

Surgical Techniques for Restoration of Facial Symmetry After Trauma

Sophia Martinez*

Department of Oral and Maxillofacial Surgery, University of Barcelona, Barcelona, Spain

DESCRIPTION

Facial bone fractures are among the most common injuries encountered in oral and maxillofacial surgery, often resulting from trauma due to road traffic accidents, sports injuries, falls, or interpersonal violence. These fractures not only compromise facial aesthetics but can also lead to functional impairments affecting mastication, speech, airway management and ocular function. Effective management requires timely diagnosis, accurate fracture assessment and the selection of an appropriate surgical approach to restore both form and function. Over the years, advancements in imaging, surgical techniques and fixation methods have significantly improved outcomes, reducing complications and enhancing patient quality of life.

The initial assessment of facial bone fractures begins with a detailed clinical examination and history-taking to understand the mechanism of injury. Signs such as facial asymmetry, swelling, bruising, malocclusion, trismus, diplopia and sensory deficits guide the clinician toward identifying the site and severity of fractures. Radiographic evaluation, including panoramic radiographs, Computed Tomography (CT) and Cone-Beam CT scans, plays a major role in precisely mapping the fracture pattern, displacement and involvement of adjacent structures. Three-dimensional imaging allows for enhanced visualization of complex fractures, aiding in surgical planning and determining the optimal approach for reduction and fixation.

Surgical management of facial fractures generally aims at anatomical reduction, stable fixation and restoration of pre-injury occlusion and facial symmetry. The approach chosen depends on the fracture location, severity, patient health status and the potential for functional or aesthetic compromise. Common facial fractures include those of the mandible, maxilla, zygomatic complex, orbital floor, nasal bones and midface structures. Mandibular fractures, for instance, are often treated using intraoral approaches for simple fractures or a combination of intraoral and extraoral approaches for complex or comminuted fractures. The intraoral approach is advantageous as it avoids visible scarring, while extraoral approaches provide better exposure for complex reductions but require careful handling to minimize facial nerve injury.

Maxillary and midface fractures, including Le Fort fractures, require precise alignment of the maxillary segments and restoration of occlusion. Open Reduction And Internal Fixation (ORIF) is the standard technique, often involving the placement of miniplates, microplates, or resorbable fixation systems to stabilize the bone segments. The surgical approach may involve intraoral incisions, subciliary, transconjunctival, or coronal access depending on the fracture site. Zygomatic complex fractures, which affect the cheek prominence and orbital rim, may require combined approaches to ensure proper alignment and prevent enophthalmos or facial flattening.

Orbital fractures, particularly those involving the orbital floor or medial wall, pose unique challenges due to the proximity of the globe, optic nerve and extraocular muscles. Surgical approaches must provide adequate exposure for reduction and reconstruction while minimizing the risk of ocular complications. Transconjunctival and transcutaneous incisions are commonly used, often in conjunction with the placement of titanium mesh or absorbable implants to restore orbital volume and prevent diplopia. Nasal bone fractures, which are the most frequently encountered facial fractures, are generally managed using closed reduction techniques, though open approaches may be necessary for severely displaced or comminuted fractures.

Postoperative care is critical for ensuring successful outcomes. Patients are advised on maintaining oral hygiene, adhering to prescribed antibiotics and analgesics and avoiding trauma to the affected area. Follow-up imaging is often performed to monitor bone healing, plate integrity and occlusal stability. Potential complications include infection, malocclusion, nonunion, sensory deficits and facial asymmetry, which require prompt identification and management.

The evolution of surgical approaches to facial bone fractures has been significantly influenced by advancements in technology, including virtual surgical planning, intraoperative navigation and three-dimensional printing for custom implants and guides. These innovations allow surgeons to achieve greater precision in fracture reduction, improve aesthetic outcomes and reduce operative time. Minimally invasive techniques, when feasible, further enhance recovery and patient satisfaction by reducing scarring and soft tissue trauma.

Correspondence to: Sophia Martinez, Department of Oral and Maxillofacial Surgery, University of Barcelona, Barcelona, Spain, E-mail: sophia.martinez@ub.edu

Received: 28-Apl -2025, Manuscript No. AEDJ-25-40214; **Editor assigned:** 01-May-2025, PreQC No. AEDJ-25-40214 (PQ); **Reviewed:** 15-May-2025, QC No. AEDJ-25-40214; **Revised:** 22-May-2025, Manuscript No. AEDJ-25-40214 (R); **Published:** 29-May-2025, DOI: 10.35248/0976-156X.25.17.322

Citation: Martinez S (2025) Surgical Techniques for Restoration of Facial Symmetry After Trauma. Ann Essence Dent. 17:322.

CONCLUSION

In conclusion, surgical management of facial bone fractures requires a comprehensive understanding of facial anatomy, fracture patterns and available surgical techniques. Proper assessment, precise reduction and stable fixation are key to restoring both function and aesthetics. With advances in imaging, surgical planning and fixation technology, oral and maxillofacial surgeons are increasingly able to achieve predictable, safe and cosmetically satisfactory outcomes. Multidisciplinary collaboration, patient education and meticulous postoperative care remain integral to the successful rehabilitation of patients with facial fractures, ensuring the restoration of form, function and quality of life.