COMPLEX TREATMENT METHODS OF PATIENTS WITH COMBINED INJURIES OF THE MAXILLOFACIAL SKELETON

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Abstract. *Combined injuries of the maxillofacial skeleton are among the most severe types of craniofacial trauma, often leading to significant functional and aesthetic impairment. The present study evaluates the effectiveness of complex treatment methods in patients with such injuries. A total of 140 patients aged 18–65 years were examined and treated in a multidisciplinary clinical setting. All patients underwent detailed clinical examination, radiological assessment, and computed tomography (CT) for accurate diagnosis and treatment planning. The study confirms that individualized complex treatment based on injury severity and localization is essential for achieving optimal clinical results.*

Keywords: *nasal trauma, paranasal sinuses, combined injury, rehabilitation, frontal sinus, acoustic rhinometry, rhinomanometry, olfactory dysfunction.*

Introduction. Maxillofacial skeletal injuries represent a significant proportion of traumatic injuries encountered in emergency medicine and otorhinolaryngology practice. These injuries commonly occur as a result of road traffic accidents, falls, interpersonal violence, and occupational hazards. Due to the complex anatomy of the facial skeleton and its functional and aesthetic importance, such injuries often result in severe consequences.

Combined injuries involving multiple facial bones, including the mandible, maxilla, zygomatic complex, and orbital structures, are particularly challenging. They not only disrupt facial aesthetics but also impair essential physiological functions such as mastication, speech, respiration, and vision. If not properly managed, these injuries may lead to long-term complications such as malocclusion, chronic pain, facial asymmetry, and psychological distress.

Modern management of maxillofacial trauma emphasizes a multidisciplinary and staged approach, combining emergency stabilization, surgical reconstruction, and functional rehabilitation. The success of treatment largely depends on early diagnosis, accurate imaging, and appropriate surgical planning.

The aim of this study was to evaluate the effectiveness of complex treatment methods in patients with combined injuries of the maxillofacial skeleton and to analyze functional and aesthetic outcomes.

Materials and Methods. This retrospective clinical study included 140 patients with combined injuries of the maxillofacial skeleton treated at a multidisciplinary hospital. The study population consisted of patients aged between 18 and 65 years, with a predominance of male patients.

Patients with isolated fractures, incomplete medical records, or severe systemic diseases that prevented surgical intervention were excluded from the study.

All patients underwent comprehensive clinical evaluation, including assessment of facial symmetry, occlusion, swelling, deformity, pain, and functional impairment of the jaw. Particular attention was paid to the restoration of occlusion and masticatory function.

Radiological examination included standard X-ray imaging of facial bones in all patients, while computed tomography (CT) was performed in the majority of cases to obtain three-dimensional visualization of fracture lines and

displacement. CT imaging was considered essential for surgical planning, especially in complex and multi-fragment fractures.

The treatment protocol was divided into stages. Initial management included emergency stabilization, airway management, bleeding control, and pain relief. Surgical treatment was then performed depending on the type and severity of injury. Closed reduction was applied in simple fractures, while open reduction with internal fixation using titanium plates and screws was used in displaced and complex fractures. Osteosynthesis techniques were employed to ensure stable fixation of bone fragments. In severe cases, reconstructive procedures were performed to restore facial contour and function.

Postoperative care included antibiotic therapy, anti-inflammatory treatment, physiotherapy, and functional rehabilitation aimed at restoring jaw movement and occlusion. Patients were followed up for a period ranging from three to twelve months to evaluate long-term outcomes.

Results. Among the 140 patients included in the study, 100 (72%) were male and 40 (28%) were female. The most affected age group was between 21 and 40 years, accounting for approximately 65% of cases, indicating a higher incidence among young and economically active individuals. The main causes of injury were road traffic accidents, which accounted for 48% of cases, followed by falls (27%), interpersonal violence (15%), and occupational injuries (10%). Regarding the type of fractures, mandibular fractures were the most common, observed in 52% of patients. Zygomatic complex fractures were present in 21%, maxillary fractures in 17%, and combined multi-bone fractures in 10% of cases.

Surgical treatment was required in the majority of patients with displaced or complex fractures. Closed reduction was sufficient in simple cases, while open reduction with internal fixation was necessary in more severe injuries. Osteosynthesis using titanium plates provided stable fixation and allowed early functional recovery.

Postoperative evaluation showed that restoration of occlusion was achieved in 88% of patients, facial symmetry was restored in 82%, and normal masticatory function was regained in 85% of cases. Complications included infection in 7%, malocclusion in 9%, facial asymmetry in 11%, and delayed healing in 5% of patients.

Patients who received early surgical intervention within the first week after trauma demonstrated significantly better functional and aesthetic outcomes compared to those with delayed treatment.

Discussion. The results of this study confirm that combined injuries of the maxillofacial skeleton require a comprehensive and multidisciplinary treatment approach. The high incidence among young males reflects increased exposure to trauma-related risk factors such as traffic accidents and physical activities.

Surgical intervention remains the cornerstone of treatment for displaced and complex fractures. Open reduction with internal fixation provides stable bone alignment and allows early restoration of function. Titanium osteosynthesis systems demonstrated high biocompatibility and mechanical stability, making them suitable for maxillofacial reconstruction. Computed tomography played a crucial role in preoperative planning by providing detailed anatomical information and enabling precise surgical decision-making. The correlation between CT findings and intraoperative results was high, confirming its diagnostic reliability.

Conclusion. Complex treatment of combined injuries of the maxillofacial skeleton is highly effective when based on early diagnosis, accurate imaging, and individualized surgical planning. Most patients require surgical intervention due to the severity of injuries. Early treatment significantly improves functional and aesthetic outcomes, while reducing the risk of complications. Computed tomography is essential for accurate diagnosis

and surgical planning. A multidisciplinary and staged approach ensures optimal recovery and long-term functional stability.

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