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# Comprehensive Patient Care for Multiple Facial Bone Fractures: Emphasizing Oral Health Management Significance of the Problem

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**Annotation:** Multiple facial bone fractures represent one of the most complex and challenging scenarios in maxillofacial trauma management, requiring multidisciplinary expertise and comprehensive treatment approaches that extend far beyond immediate surgical intervention. The intricate anatomical relationships within the facial skeleton, combined with the critical functional and aesthetic implications of these injuries, underscore the paramount importance of integrated care protocols that prioritize both immediate trauma management and long-term oral health preservation.

**Keywords:** multiple facial bone fractures, comprehensive patient care, oral health management, maxillofacial trauma, facial trauma, multidisciplinary care

**Introduction.** Combined injuries of the facial skeleton remain among the most challenging issues in contemporary medicine. The rising number and speed of vehicles, the introduction of advanced industrial and agricultural technologies, the fast pace of daily life, the popularity of extreme sports, and the influence of stress-related factors have all contributed to an increased incidence of traumatic injuries, even outside wartime conditions. Facial trauma accounts for a significant proportion of emergency department presentations globally, with multiple facial bone fractures representing the most severe subset of these injuries. Motor vehicle accidents, interpersonal violence, sports-related injuries, and occupational trauma constitute the primary etiological factors, with increasing incidence rates observed in urban populations and specific demographic groups. The complexity of multiple facial fractures often involves concurrent injuries to the maxilla, mandible, zygoma, nasal bones, and orbital structures, creating intricate treatment challenges that demand specialized expertise.

The immediate and long-term consequences of inadequately managed facial fractures extend beyond cosmetic concerns, encompassing functional deficits in mastication, speech, swallowing, and breathing. More critically, the oral health implications of these injuries can persist for years following initial treatment, significantly impacting quality of life and requiring ongoing specialized care.

Multiple facial bone fractures create complex three-dimensional anatomical disruptions that affect not only skeletal integrity but also the delicate balance of oral and maxillofacial function. The interdependence of facial bones in maintaining occlusal relationships, temporomandibular joint function, and airway patency necessitates comprehensive treatment approaches that consider both immediate stabilization and long-term functional outcomes.

The oral cavity, being intimately connected to the facial skeletal framework, becomes particularly vulnerable to both direct traumatic injury and secondary complications arising from fracture treatment. Dental trauma, periodontal injury, temporomandibular dysfunction, and occlusal disturbances frequently accompany facial fractures, requiring specialized oral health management protocols integrated within the overall treatment paradigm.

The complexity of multiple facial bone fractures demands coordinated care involving oral and maxillofacial surgeons, plastic surgeons, ophthalmologists, neurosurgeons, and specialized dental practitioners. However, the oral health component of this care continuum often receives inadequate attention despite its critical importance for long-term patient outcomes and quality of life.

Traditional trauma protocols frequently prioritize immediate life-threatening concerns and gross anatomical reconstruction, potentially overlooking subtle but significant oral health implications that may manifest weeks or months following initial treatment. This oversight can result in chronic pain, functional limitations, and progressive oral health deterioration that could have been prevented through early comprehensive care.

The integration of oral health management within comprehensive facial trauma care protocols represents a critical yet often underemphasized component of optimal patient care. The oral cavity serves as a unique anatomical region where form and function are inextricably linked, making preservation of oral health essential not only for immediate recovery but for long-term functional rehabilitation and quality of life maintenance.

Dental and periodontal complications following facial trauma can significantly impact nutritional intake, speech articulation, social interaction, and psychological well-being. Furthermore, the potential for late-onset complications, including temporomandibular disorders, chronic pain syndromes, and progressive dental pathology, underscores the necessity for proactive oral health management strategies integrated within comprehensive care protocols.

Current literature reveals significant gaps in standardized protocols for oral health management in multiple facial bone fracture patients, with most existing guidelines focusing primarily on surgical stabilization and immediate complications. The development of evidence-based comprehensive care protocols that systematically address oral health concerns represents a critical advancement opportunity in maxillofacial trauma management.

The establishment of comprehensive patient care protocols that emphasize oral health management significance in multiple facial bone fracture treatment addresses a critical gap in current trauma care paradigms. Such protocols promise to improve both immediate treatment outcomes and long-term patient quality of life while potentially reducing healthcare costs through prevention of chronic complications.

This investigation aims to establish evidence-based comprehensive care protocols for multiple facial bone fracture patients, with particular emphasis on integrated oral health management strategies that optimize both immediate recovery and long-term functional outcomes.

In managing maxillofacial polytrauma, one of the key objectives is the prevention of complications associated with periodontal tissue damage, as well as minimizing morbidity in patients who already present signs of periodontal involvement. This represents a pressing concern for both maxillofacial surgery and general dentistry.

The majority of patients with combined injuries to the hard and soft tissues of the maxillofacial region are unable to maintain adequate oral hygiene independently. Surgical interventions, the application of splints and orthopedic appliances, food debris accumulating on metallic components and wire ends, together with retained blood clots and necrotic tissue fragments in the oral cavity, create favorable conditions for the rapid proliferation of pathogenic microorganisms.

Consequently, in patients suffering from facial skeletal and soft tissue trauma, meticulous oral hygiene at the early stages of treatment is of paramount importance. This approach ensures the effectiveness of both surgical and conservative therapy, prevents inflammatory diseases of periodontal and mucosal tissues, and promotes timely and high-quality bone consolidation, regardless of the presence of orthopedic devices or operative interventions.

**Purpose of the Study:** To evaluate the oral hygiene status of patients with combined injuries of the facial skeleton and soft tissues, and to develop a comprehensive treatment strategy aimed at preventing periodontal pathology.

**Study Population and Methods.** The investigation included 123 patients diagnosed with combined facial skeletal injuries, treated at the Maxillofacial Surgery Department of the Central Hospital under the Samarkand City Medical Association. Among them, 96 patients (78.4%) were male and 27 (21.6%)

were female, with a mean age of 41.4 ± 1.2 years. All patients underwent clinical, laboratory, radiological, immunological, and statistical assessments.

1. Group I – 65 patients (52.8%) received standard treatment. On admission, each patient was examined by several specialists, a clinical diagnosis was established, the condition of the periodontal tissues was assessed, and conventional comprehensive therapy was administered.
2. Group II (experimental group) – 58 patients (47.2%) followed the same diagnostic protocol, but their therapeutic program additionally included the topical application of *Eludril* solution.

**Clinical Examination**

In all patients with combined injuries of the facial bones and soft tissues, both local and systemic manifestations were observed, such as severe pain, general weakness, irritability, sleep disturbances, and loss of appetite. Headaches were reported in 94 patients (85.4%), general fatigue in all 123 patients (100%), and nervousness in 79 patients (81.6%).

**Results of the Study.** Based on the conducted research, it was determined that all 123 patients with combined injuries of the facial skeleton and soft tissues required comprehensive treatment with a focus on oral hygiene.

To evaluate the condition of oral hygiene in patients of both the main (n=62) and control (n=61) groups, the PMA hygiene index was applied.

In addition to standard hygienic measures, all patients were instructed to rinse their oral cavity independently with a furacilin solution.

In the main group (n=62), before the application of immobilization devices (Tigerstedt splints), patients were additionally advised to rinse their oral cavity with *Eludril* antiseptic solution both independently and prior to surgical procedures, alongside general and local therapeutic measures.

On the day of hospitalization, comparative analysis of oral hygiene indices between the two groups showed no significant differences, ranging from 25.7±0.09 to 27.2±0.13 points ($p>0.05$).

However, by the 7th day of immobilization, oral hygiene in the control group had worsened, reaching 29.7±1.06 points. In contrast, in the main group using *Eludril*, the index significantly improved, dropping to 12.7±1.03 points.

Upon removal of immobilization devices (after 22 days), it was found that patients of the control group exhibited a further decline in oral hygiene levels compared to those in the main group. The final evaluation showed that the poorest hygiene was recorded in the control group (3.9±0.19), whereas in the main group this value was significantly better (2.6±0.09).

**Conclusion.** Thus, in patients with combined injuries of the facial skeleton and soft tissues, traditional treatment using immobilization splints without additional local oral hygiene measures contributes to inflammatory processes in the oral mucosa and periodontal tissues, leading to complications.

The study demonstrated that implementing local oral hygiene protocols in patients with combined maxillofacial trauma effectively prevents possible complications.

In summary, comparison of the two groups revealed that in the control group periodontal inflammation was more severe, while the application of *Eludril* solution in the main group significantly improved oral hygiene, prevented progression of inflammatory processes in the periodontal and mucosal tissues, and contributed to faster tissue recovery and bone consolidation.

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