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Oral Hygiene in Combined Maxillofacial Trauma

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Abstract: In the modern world, the increase in the number and speed of vehicles, the technical advancement of industrial and agricultural enterprises, everyday life, extreme sports, as well as an intense pace of life and stress factors associated with urbanization have led to a rise in various types of peacetime injuries.

Keywords: maxillofacial surgery, bimaxillary splints, individual oral hygiene.

Introduction. Injuries of the maxillofacial region occupy a leading position among traumatic injuries, causing serious complications, prolonged courses of treatment, and a significant reduction in the quality of life of affected patients. The condition of the oral cavity plays an important role in the management of such patients. Poor oral hygiene in this area provokes inflammatory reactions, increases the risk of wound infection, and slows the healing process.

The oral cavity is a natural habitat for opportunistic microorganisms. However, any damage to the oral mucosa, bones, or soft tissues increases the risk of penetration and proliferation of these microbes. A particularly challenging situation arises in cases of combined trauma, where pain, restricted jaw mobility, fixation devices, and postoperative sutures create serious obstacles to adequate oral hygiene.

Effective hygienic practices play a key role in the success of modern maxillofacial surgery and dentistry; therefore, their development and implementation represent an task. Maxillofacial injuries combined into a single complex often result in fractures of the facial skeleton bones, as well as damage to the mucous membranes, hematomas, soft tissue edema, and disruption of the dental arches. As a consequence of such injuries, the natural self-cleansing process of the oral cavity is impaired, saliva stagnates, and dental plaque accumulates on the teeth.

Limitations in hygienic measures due to pain and restricted mobility further aggravate the situation. In the very first days after trauma, an increase in the population of pathogenic microorganisms, intensification of inflammatory processes, and a decrease in protective mechanisms, including the secretion of immunoglobulin A and lysozyme, are observed.

Failure to maintain proper oral hygiene in patients with combined injuries increases the likelihood of inflammatory diseases of the gums, oral mucosa, and periodontium. Moreover, it may provoke purulent inflammation in fracture and suture areas, negatively affecting the course of treatment and potentially requiring a longer hospital stay.

To prevent infectious and inflammatory complications after combined injuries, special attention must be paid to oral hygiene. Regular removal of plaque and food debris helps reduce the microbial load and, consequently, decreases inflammatory processes in oral tissues.

A crucial factor in the healing process is the timely initiation of hygienic procedures, starting in the first days after trauma or surgery. Gentle cleaning methods, antiseptic solutions, and agents with anti-inflammatory effects help minimize the risk of damage to injured tissues while ensuring effective oral sanitation.

A comprehensive approach to oral care has a positive effect on the balance of microorganisms in the oral cavity, strengthens local immune defense, and stimulates tissue regeneration. This is particularly important for patients with combined injuries, as their general health status is often compromised due to concomitant damage and stress effects on the body.

The choice of hygienic procedures in cases of combined trauma should be individualized, based on the nature and severity of the injuries. In the early postoperative period, passive hygiene methods—such as rinsing with antiseptic solutions and the use of irrigating agents—demonstrate the greatest effectiveness.

Effective agents include solutions of chlorhexidine and miramistin, as well as herbal preparations with anti-inflammatory and antimicrobial properties. These help reduce swelling, alleviate pain, and protect against secondary infections.

As the patient's condition improves, a gradual transition to active oral care is recommended. This includes the use of soft toothbrushes, orthodontic brushes, and irrigators. Therapeutic and preventive toothpastes with antiseptic, remineralizing, and immunostimulating properties should also be used.

Special attention should be paid to the cleanliness of areas adjacent to splints, wire fixators, and implants, as these are prone to plaque accumulation and subsequent inflammation. Patient education on proper oral care is an integral stage of any treatment process.

In summary, maintaining adequate oral hygiene is a critical component in the management of patients with combined maxillofacial trauma, as it significantly reduces the risk of complications and promotes more effective and timely recovery.

As additional sources, respondents most often mentioned television programs and printed materials.

The majority of patients (71.27% ± 2.40%) believe that preventive visits to a dentist should be regular, preferably 2–3 times a year. However, in reality, only 21.97% ± 2.20% of them adhere to this recommendation.

According to the survey, 47.04% of respondents (with a margin of error of 2.65%) stated that they have sufficient knowledge in the field of oral hygiene. Meanwhile, 33.52% (± 2.51%) found it difficult to answer, and 17.46% (± 2.02%) acknowledged that their knowledge was insufficient.

During the questionnaire survey, significant attention was paid to patients' awareness of factors contributing to the development of dental diseases, as well as to the relationship between oral health and general health. The results showed that 87.89% of respondents agreed with the statement that diseases of the teeth and gums affect the overall condition of the body; 5.63% expressed doubts, and 2.54% categorically disagreed with this idea. According to the survey, patients identified the main risk factors as inadequate oral hygiene (86.20% of respondents) and smoking (76.90%).

Unfortunately, patients with CMTF (combined maxillofacial trauma) often suffer from smoking, alcohol abuse, and unhealthy dietary habits, which further aggravates their condition.

In the course of the conducted study devoted to clinical and therapeutic–preventive measures, the need for hygienic oral care was identified in 123 patients with chronic toxic leukoplakia of the oral mucosa syndrome (CTLLOS).

The study of patients with combined fractures of the facial skeleton bones involving damage to periodontal tissues and the oral mucosa demonstrates that early implementation of hygienic measures is extremely important. The application of a hygienic approach in the early postoperative period, especially after complex reconstructive surgeries of the facial skeleton and immobilization, contributes to achieving favorable outcomes of functional rehabilitation. This approach also reduces the likelihood of infectious and inflammatory complications compared with traditional treatment methods.

The use of Eludril solution as a local therapy in patients who have sustained multiple facial skeleton injuries, compared with traditional immobilization methods, demonstrates several advantages. These include improved oral sanitation, a reduction in inflammatory processes in periodontal tissues, and accelerated recovery of periodontal and oral mucosal tissues.

There is a close relationship between the prevalence and severity of major dental diseases and risk factors, which include inadequate oral hygiene, smoking, and alcohol abuse.

In recent decades, combined maxillofacial trauma has become increasingly common due to the rapid growth of urbanization, motor vehicle traffic, industrial activity, and participation in high-risk sports. Injuries of the maxillofacial region are often severe and are frequently accompanied by fractures of the facial skeleton, damage to the oral mucosa, periodontal tissues, and dental structures. These conditions significantly complicate treatment and rehabilitation and may lead to prolonged hospitalization and a decline in patients' quality of life. In this context, oral hygiene plays a crucial role in preventing complications and improving treatment outcomes.

The oral cavity is a natural reservoir of opportunistic and pathogenic microorganisms. Any trauma to the bones, soft tissues, or mucosa of the maxillofacial region disrupts the natural protective mechanisms of the oral environment. In patients with combined injuries, pain, edema, limited mouth opening, fixation devices, splints, and postoperative sutures often make routine oral hygiene procedures difficult or impossible. As a result, dental plaque accumulates rapidly, saliva stagnates, and microbial contamination increases, leading to intensified inflammatory processes.

Poor oral hygiene in patients with combined maxillofacial trauma significantly increases the risk of infectious and inflammatory complications, including gingivitis, periodontitis, mucositis, suppuration of surgical wounds, and delayed bone healing. Studies have shown that in the early post-traumatic and postoperative periods, there is a decrease in local immune defense factors, such as secretory immunoglobulin A and lysozyme, which further predisposes patients to infection. Therefore, maintaining adequate oral hygiene should be considered an essential component of комплексное treatment.

Conclusion. Early initiation of hygienic measures is particularly important. In the first days after trauma or surgical intervention, passive methods of oral hygiene are recommended. These include gentle rinsing with antiseptic solutions such as chlorhexidine or herbal preparations with anti-inflammatory and antimicrobial properties. Such measures help reduce the microbial load, prevent secondary infection, and minimize tissue irritation.As the patient's condition improves, active oral hygiene methods should be gradually introduced. The use of soft toothbrushes, orthodontic brushes, irrigators, and therapeutic toothpastes allows effective removal of plaque while minimizing trauma to healing tissues. Special attention must be paid to areas around fixation devices, splints, and sutures, as these zones are particularly susceptible to plaque accumulation and inflammation.Patient education is a key factor in successful rehabilitation. Informing patients about the importance of oral hygiene, proper cleaning techniques, and risk factors such as smoking, alcohol consumption, and poor nutrition contributes to better compliance and long-term outcomes. A comprehensive and individualized approach to oral care in patients with combined maxillofacial trauma significantly reduces the incidence of complications, accelerates tissue healing, and improves functional and aesthetic rehabilitation results.

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