BG Pulse Journal USA
ISSN:1947-2536 http://www.bgpulseusa.com/index.php/bg
BG PULSE JOURNAL

MODERN PRINCIPLES OF TREATMENT OF ODONTOGENIC PHLEGMONS OF THE MAXILLOFACIAL REGION

Olimov Hojiakbar G'ayratsher o'g'li
Clinical resident of Central Asian Medical University

Abstract: This study examines modern principles of treatment of odontogenic phlegmons of the maxillofacial region. Particular attention is paid to early diagnosis, elimination of the primary odontogenic source of infection, adequate surgical drainage, rational antibacterial therapy, supportive treatment, airway management, and prevention of severe complications. The role of modern imaging methods, laboratory monitoring, and multidisciplinary cooperation in improving treatment outcomes is also discussed. A comprehensive and timely approach is essential for reducing the risk of deep neck infection, mediastinitis, sepsis, airway obstruction, and other life-threatening conditions.

Keywords: odontogenic infection, maxillofacial phlegmon, surgical drainage, antibacterial therapy, airway management, purulent inflammation, maxillofacial surgery, complications, diagnosis, complex treatment.

Odontogenic phlegmons of the maxillofacial region are severe purulent-inflammatory conditions that develop as a result of the spread of infection from teeth and surrounding periodontal tissues into the fascial spaces of the face and neck. These infections remain an important problem in oral and maxillofacial surgery because of their tendency to progress rapidly, involve several anatomical spaces, and cause serious local and systemic complications. The most common sources of odontogenic infection include untreated dental caries, pulpitis, apical periodontitis, pericoronitis, infected odontogenic cysts, and complications following dental procedures.

The anatomical structure of the maxillofacial region creates favorable conditions for the spread of purulent inflammation. Loose connective tissue, communicating fascial spaces, rich vascular and lymphatic networks, and the close relationship of the oral cavity with the deep neck structures allow infection to extend beyond the primary focus within a short period of time. Depending on the localization of the inflammatory process, the submandibular, sublingual, buccal, masticatory, temporal, pterygomandibular, and parapharyngeal spaces may be involved. In severe cases, the infection can spread to the mediastinum or bloodstream and lead to life-threatening conditions such as airway obstruction, sepsis, descending mediastinitis, and multiple organ dysfunction.

Clinically, odontogenic phlegmon is usually characterized by severe pain, diffuse swelling, tissue induration, fever, weakness, trismus, dysphagia, and general signs of intoxication. The severity of symptoms depends on the location and extent of the infection, virulence of microorganisms, immune status of the patient, and the presence of concomitant diseases. Diabetes mellitus, immunodeficiency, poor oral hygiene, malnutrition, smoking, and delayed access to medical care may contribute to a more severe course of the disease.

Modern treatment of odontogenic phlegmons is based on an integrated and individualized approach. The main principles include early diagnosis, elimination of the odontogenic source of infection, adequate surgical drainage, rational antibacterial therapy, detoxification, pain control, correction of fluid and electrolyte disturbances, and prevention of complications. Surgical intervention remains the cornerstone of treatment, because antibiotics alone are usually insufficient

in the presence of established purulent collections. Incision and drainage reduce tissue pressure, improve local circulation, remove purulent exudate, and create favorable conditions for recovery.

Antimicrobial therapy is also an essential component of treatment. Odontogenic infections are typically polymicrobial, involving both aerobic and anaerobic bacteria. For this reason, empirical broad-spectrum antibiotic therapy may be initiated in moderate and severe cases, followed by adjustment according to microbiological culture and antimicrobial susceptibility results when available. Rational antibiotic use is especially important in the context of increasing antimicrobial resistance.

Contemporary diagnostic methods have significantly improved the assessment of odontogenic infections. Computed tomography and cone-beam computed tomography are useful for determining the extent of deep-space involvement, identifying abscess formation, and planning the surgical approach. Ultrasonography may be useful for superficial collections, while laboratory markers such as leukocyte count and C-reactive protein help evaluate the severity of systemic inflammation and monitor the response to therapy.Another important aspect of modern management is airway assessment. Infections affecting the floor of the mouth, submandibular region, or deep neck spaces may cause rapid edema and respiratory compromise. Therefore, early recognition of airway obstruction and timely involvement of anesthesiology and intensive care specialists are essential in high-risk patients.

The management of odontogenic phlegmons of the maxillofacial region requires a comprehensive therapeutic approach because these infections can spread rapidly through the fascial spaces of the face and neck. Treatment should begin as early as possible, since delayed intervention increases the risk of severe complications such as deep neck infection, airway obstruction, mediastinitis, sepsis, and systemic inflammatory response.

The first important principle is elimination of the primary odontogenic source of infection. In most cases, the causative factor is an infected tooth affected by apical periodontitis, pericoronitis, advanced caries, or another dental pathology. Depending on the clinical situation, treatment may include extraction of the causative tooth, endodontic therapy, or surgical treatment of the infected periodontal focus. Removal of the source is essential because persistence of the primary infection may reduce the effectiveness of other therapeutic measures.

Surgical drainage remains the main method of treatment when purulent inflammation is established. The aim of surgery is to open the affected fascial spaces, evacuate purulent exudate, reduce tissue pressure, and create conditions for adequate drainage. The choice of surgical access depends on the localization of the phlegmon. In some cases, an intraoral incision is sufficient, while extensive infections may require extraoral or combined approaches. During the procedure, necrotic tissues may be removed and the wound irrigated with antiseptic solutions.

Adequate drainage is particularly important in preventing repeated accumulation of purulent material. Different types of drainage systems may be used depending on the depth and extent of infection. Drainage should be maintained until purulent discharge decreases and clinical signs of inflammation begin to resolve. Regular wound examination and irrigation are important components of postoperative care.Antibacterial therapy is another essential element of complex treatment. Odontogenic infections are usually polymicrobial and may include streptococci, anaerobic bacteria, and other microorganisms of the oral cavity. For this reason, empirical antibiotic therapy should provide appropriate coverage for common odontogenic pathogens. In severe or recurrent cases, microbiological examination of purulent material and determination of antimicrobial susceptibility can help guide further treatment. Antibiotic therapy should always complement, rather than replace, adequate surgical drainage.

Supportive and symptomatic treatment is also important. Patients with severe phlegmon may experience fever, dehydration, pain, weakness, and signs of systemic intoxication. Intravenous fluid therapy may be necessary to maintain hydration and correct electrolyte disturbances. Analgesic and anti-inflammatory medications may be used to reduce pain and inflammatory symptoms. In severe cases, hospitalization and intensive monitoring may be required.

Airway management is one of the most important priorities in patients with extensive odontogenic infections. Phlegmons involving the submandibular, sublingual, parapharyngeal, or floor-of-mouth spaces can cause marked edema and displacement of the tongue. These changes may lead to progressive difficulty in breathing. Therefore, respiratory status should be monitored continuously in patients with severe disease. In high-risk situations, consultation with anesthesiology and intensive care specialists is necessary, and advanced airway management may be required. Modern imaging methods significantly improve diagnosis and treatment planning. Computed tomography is particularly useful for determining the anatomical extent of infection, identifying involvement of deep fascial spaces, detecting abscess formation, and evaluating possible spread toward the neck or mediastinum. Ultrasonography may be useful in superficial infections and can help identify fluid collections. Radiological findings should be evaluated together with clinical and laboratory data.

Laboratory investigations also provide valuable information about disease severity. Complete blood count, C-reactive protein, and other inflammatory markers may help assess the systemic response to infection. In severe cases, biochemical tests, blood cultures, and monitoring of organ function may also be necessary. Dynamic changes in laboratory indicators can help determine whether the patient is responding adequately to treatment.An important modern principle is individualization of therapy. The course of odontogenic phlegmon depends not only on the anatomical localization of the infection but also on the patient's age, immune status, oral hygiene, nutritional condition, and associated systemic diseases. Diabetes mellitus, immunosuppressive conditions, cardiovascular diseases, and other chronic disorders may worsen the clinical course and delay tissue healing. Therefore, correction and control of associated diseases should be included in the treatment plan.

Postoperative care has a major influence on clinical outcomes. The patient should maintain careful oral hygiene and follow recommendations regarding diet, wound care, and medication use. Regular clinical follow-up is required to evaluate swelling, pain, drainage, mouth opening, swallowing, and general condition. Improvement in these parameters usually indicates a favorable response to therapy.

Nutritional support is also important, especially when pain, trismus, or dysphagia reduce oral intake. A soft or liquid diet may be recommended during the acute period. In severe cases, additional nutritional support may be necessary to maintain adequate energy and protein intake and support tissue repair.

Prevention of complications is a major objective of modern management. One of the most dangerous complications is the spread of infection to deep neck spaces and the mediastinum. Sepsis, thrombophlebitis, pneumonia, and intracranial complications may also occur in advanced cases. Early recognition of worsening symptoms, repeated imaging when necessary, and timely modification of treatment can significantly reduce these risks.

Multidisciplinary cooperation is especially important in severe odontogenic phlegmons. Oral and maxillofacial surgeons may need to work together with anesthesiologists, infectious disease specialists, otorhinolaryngologists, radiologists, and intensive care physicians. Such cooperation is

particularly valuable in patients with deep neck involvement, respiratory compromise, severe systemic inflammation, or multiple comorbidities.

The modern approach to treatment also emphasizes rational antibiotic use and antimicrobial stewardship. Unnecessary or prolonged use of antibiotics should be avoided, while severe infections should receive timely and adequate antimicrobial therapy. This balance is important for reducing adverse effects and limiting the development of bacterial resistance.Prevention remains an essential part of reducing the incidence of odontogenic phlegmons. Regular dental examinations, timely treatment of caries and periodontal disease, proper management of impacted teeth, and good oral hygiene can significantly decrease the risk of severe odontogenic infection. Public awareness about the dangers of delaying treatment for dental infections is also important.Overall, successful management of odontogenic phlegmons depends on the combination of early diagnosis, elimination of the infection source, adequate surgical drainage, appropriate antimicrobial therapy, supportive treatment, and close clinical monitoring. Modern diagnostic methods and multidisciplinary care have significantly improved the possibilities for controlling severe infections and reducing life-threatening complications.

Odontogenic phlegmons of the maxillofacial region are serious purulent-inflammatory conditions that require urgent and comprehensive treatment. Their rapid spread through anatomical spaces of the face and neck can lead to severe local and systemic complications if treatment is delayed. The main principles of modern management include early diagnosis, removal of the primary odontogenic focus, adequate surgical drainage, rational antibacterial therapy, control of pain and systemic intoxication, and careful airway assessment. Imaging methods and laboratory monitoring play an important role in determining the severity and extent of the inflammatory process.Successful treatment also depends on individualized management and consideration of associated systemic diseases, immune status, and other patient-related factors. Regular postoperative observation, wound care, oral hygiene, and nutritional support contribute to faster recovery and reduce the likelihood of recurrence.

In conclusion, a multidisciplinary and comprehensive approach provides the best conditions for successful treatment of odontogenic phlegmons. Early intervention and coordinated surgical and medical therapy remain the most important factors in preventing serious complications, preserving maxillofacial function, and improving overall clinical outcomes.

References:

1. Hupp J.R., Ellis E., Tucker M.R. Contemporary Oral and Maxillofacial Surgery. - Elsevier, 2019.
2. Miloro M., Ghali G.E., Larsen P.E., Waite P.D. Peterson's Principles of Oral and Maxillofacial Surgery. - PMPH-USA, 2012.
3. Bali R.K., Sharma P., Gaba S., Kaur A., Ghanghas P. A Review of Complications of Odontogenic Infections. - National Journal of Maxillofacial Surgery, 2015.
4. Flynn T.R., Shanti R.M., Levi M.H., Adamo A.K., Kraut R.A., Trieger N. Severe Odontogenic Infections, Part 1: Prospective Report. -Journal of Oral and Maxillofacial Surgery, 2006.