



Letter to the Editor

DENTAL ABSCESSSES AND PHLEGMONS: A BRIEF REVIEW

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ABSTRACT

One of the most frequent dental emergencies is represented by abscesses and odontogenic phlegmons. The acute onset can cause trismus, pain, fever, and, in severe cases, impaired patient breathing. The colligation of the phlegmonous or abscess collection and their drainage, together with adequate antibiotic therapy, remain the fundamental prerequisite to avoiding severe complications and restoring masticatory function.

KEYWORDS: *dental abscess, dental phlegmon, oral infections, fever, trismus*

INTRODUCTION

The term “dental abscess” is referred to a well-circumscribed puss collection caused by dental-related infections. Usually, the puss collection is located in the deep and superficial neck spaces. On the other hand, phlegmon is a non-circumscribed suppurative process with an expansive and diffusive tendency (1).

Dental abscesses and phlegmons recognize the same causes, namely pulp infection consequential to caries or traumatic and physical necrosis, residual necrotic roots, periodontal infections, dysodontiasis of the third molar, secondary infections of cysts or dental granulomas (2). Abscess and phlegmons in the oro-maxillofacial area can also recognize non-odontogenic causes such as salivary gland infections, sequelae of radio-chemo-induced osteomyelitis, or (more rarely) the presence of foreign bodies in the oral tissues (3).

Pyogenic bacteria such as beta-haemolytic streptococci, *S. pyogenes*, and anaerobic bacteria typical of the oral microbiota such as *Bacteroides spp.*, *Fusobacterium necrophorum* and *nucleatum*, *Prevotella melaninogenica* and *Porphyromonas spp.* represent the most involved bacteria in the abscess and phlegmons genesis. The presence of an abscess collection with the isolation of *Actinomyces spp* is to be included in the context of oral actinomycosis (4).

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Pathogenesis

In the most classic case series, the infectious process recognizes a departure from the necrotic pulp of a tooth. A strong bacterial load and/or an ineffective immune response on the part of the host can cause the spread of infections to the periapical tissues, alveolar bone, and soft tissues. The puss that accumulates during the abscessualization process tends to collect in newly formed intra-tissue cavities (abscess) or can spread through the muscle bands and mucous layers, leading to the establishment of a phlegmon. The puss tends to drain through the *loci minoris resistentiae*, making its way between the oral and extraoral tissues, forming one or more fistulous tracts (5). Bacterial products digest the affected tissues, and intense inflammation occurs in the abscess / phlegmonous area (peri abscessual cellulite). Abscess drainage can spontaneously occur in the oral cavity, in maxillary sinuses, or drain into the peri and parapharyngeal spaces, up to the mediastinum, with life-threatening complications if not promptly treated (6).

The formation of abscesses can also occur due to the exacerbation of periapical granulomas, superinfection of included or semi-included dental elements, cysts, and teeth with deficient endodontic or conservative treatments (7).

Clinical aspects

The abscess or phlegmons formation can be preceded by odontalgia or begin without unusual dental symptoms. In its florid phase, the abscess presents as a swelling localized to the face in the genial region, submandibular, on the oral floor. It spreads to the periorbital regions (canine abscesses and upper premolars). The overlying skin may be red and hot. Palpation generates pain, and if the abscess is already colligated, an inevitable fluctuation of the purulent contents can be appreciated. The hard-wood consistency will indicate an absent or incomplete colligation of the abscess / phlegmonous content (8).

Trismus (inability to open the mouth), fever, malaise, and headache can be associated. In addition, the patient may complain of dysphagia or dyspnea, symptoms indicative of pharyngeal involvement and the urgency of treatment (9).

Diagnosis

First and possibly second-level radiological investigations clinically support the diagnosis. The oral examination will identify the causative dental element, and the orthopantomographic examination will confirm the presence of any odontogenic causes of an abscess. In case of compromise of the airways, maxillary sinuses, or in doubtful cases, it is advisable to perform a CT scan that highlights the patency of the air spaces and makes it easier to appreciate the extent of the infectious process affecting the oro-maxillofacial tissues. The collection of purulent material is useful for microbiological diagnosis and possible antibiogram (1-3).

Treatment of dental abscesses

Treatment is primarily medical. Adequate antibiotic therapy must be established with the extent of the abscess and the patient's compliance. Amoxicillin associated with clavulanic acid according to weight and age is the first-choice therapy, especially in the case of small abscesses without the involvement of the perioral or extraoral tissues. An NSAID is associated with antibiotics for managing inflammation and pain (10).

In more voluminous abscesses or refractory to oral therapy, intramuscular therapy with penicillin or cephalosporins is necessary, while in more complex cases with the risk of compromising the airways or septicemia, it is advisable to hospitalize the patient. Treatment of hospitalized patients involves using polyantibiotic therapies with penicillin, metronidazole, imipenem, or teicoplanin, also based on the response of the antibiogram.

Surgical treatment involves drainage of the abscess collection after intraoral and/or extraoral incisions. The incision occurs after the abscess collection colligation has been ascertained. Subject to surface anaesthesia, the abscess synechia are incised and debrided to allow the puss to escape. Finally, gauze or a drainage tube is applied, which will be replaced in the following days.

Surgical treatment could also include the avulsion of the causal dental element (e.g., third molar or necrotic roots) with trans-alveolar drainage of the puss (11).

In other cases, however, the devitalization of the necrotic dental element causing the abscess is necessary. The drainage will occur through the root canal or canals, which will be cleaned with irrigating solutions based on sodium hypochlorite and filled with dedicated materials (12).

Complications of odontogenic abscesses

Sepsis or septicemia is one of the most feared complications of odontogenic abscesses and phlegmons. The bacterial load can spread by hematogenous route, especially in cases of particular immunodepression of the patient (13). Osteitis and osteomyelitis can occur due to the involvement of the bone tissue by the infectious process (14).

Ludwig's angina is a complication with a potentially poor prognosis if not adequately recognized and treated. It is characterized by the spread of the abscess and/or phlegmonous process to the neck and oral floor's lodges and anterior fascial spaces. Sialorrhea, trismus, dysphagia, and stridor caused by laryngeal oedema and lifting of the back of the tongue against the palate may be present. The condition can cause airway obstruction in a short time. In addition, the infectious process can continue into the mediastinum and cause mediastinitis (15).

The spread of the infectious process could affect the maxillary sinuses (full) or, in the most severe cases, also cause brain abscesses (16).

CONCLUSIONS

One of the most frequent dental emergencies is represented by abscesses and odontogenic phlegmons. Drainage, together with adequate antibiotic therapy, remain the fundamental prerequisite to avoiding severe complications and restoring masticatory function.

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