

Periodontal Abscess : The Forgotten Emergency

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I. Definition: -

A periodontal abscess is a common periodontal disease that rapidly destroys periodontal tissue. Its importance is based on the need for urgent treatment, impaired dental prognosis, and potential for spread of infection.

Periodontal abscesses are the third most common dental emergency and are especially common in patients with untreated or undergoing maintenance periodontal disease.

In the case of periodontitis-related abscesses, the condition may arise as an exacerbation of untreated periodontitis or during the course of periodontal treatment. The two major causes of abscesses other than periodontitis are clogging of foreign bodies and abnormal roots. ^[1]

II. Classification: -

Periodontal abscesses can be classified by location, duration of infection and number. Depending on the location, it is divided into gingiva, which is limited to the gingival line, and periodontitis, which is limited to the periodontal tissue such as deep pockets and bone defects. Depending on the duration of infection, it is divided into acute and chronic. Acute abscesses included pain, tenderness on palpation, and the presence of pus. Chronic abscesses are accompanied by sinus relief and pain. Depending on their number, they are divided into single abscesses, usually caused by local obstruction, and multiple abscesses, caused by systemic diseases such as diabetes mellitus in patients receiving antibiotic therapy. ^[2] Odontogenic or dental abscesses are defined as endodontic or apical abscesses, periodontal abscesses, and pericoronal abscesses, depending on the source of infection. ^[3]

III. Clinical features: -

In periodontitis, periodontal abscesses represent periods of active bone destruction (exacerbation), but such events occur without abscess formation. The presence of a dead-end, tortuous pocket that eventually isolates may facilitate the formation of an abscess. Marginal occlusion of periodontal pockets can lead to spread of infection to the surrounding periodontal tissue due to the pressure of suppuration within the closed pocket. ^[4,5]

A periodontal abscess can occur in the absence of periodontitis for the following reasons : (a) the effect of foreign matter; B. An orthodontic rubber band, dental floss, a grain of popcorn, a crack in loose cement, a piece of toothpick, a corn husk in peri-implant tissue, or an unfamiliar object. ^[6, 7, 8, 9, 10] (b) Perforation of the tooth wall with an endodontic instrument. (c) Infection of the lateral cyst. (d) Local factors affecting root morphology may predispose to the formation of periodontal abscesses.

The presence of cemental fissures in the cervix is associated with rapid progression of periodontitis and development of abscesses. The presence of external root resorption, ingrown teeth, or fractured teeth has also been suggested as a predisposing factor for periodontal abscess formation. ^[11, 12, 13]

IV. Microbiology: -

Topol et al. Newman & Sims reported that approximately 60% of cultured bacteria are strictly aerobic. ^[14] Newman and Sims further state that the most common types of bacteria are Gram-negative anaerobic bacilli and Gram-positive facultative cocci. ^[5]

Culture studies of periodontal abscess show high prevalence (44-65%) of *Porphyromonas gingivalis*, *Prevotellaintermedia*, and *Fusobacteriumnucleatum*. ^[3, 5, 14]

High prevalence of *Actinobacillus actinomycetemcomitans* (25%) and *Campylobacter rectus* (80%) *Prevotellamelaninogenica* and *P. gingivalis* (100%) and *Treponemadenticola* (71.4%) was also found in his 7 periodontal abscess samples. [15, 16]

Bacterial species with the ability to produce proteinases, such as *P. intermedia*, are important as they may increase nutrient availability and thereby increase bacterial numbers within abscesses. *Staphylococcus aureus* has been found in abscesses in patients who had previously taken penicillin. Penicillin resistance was also found in some *S. aureus* isolates. [17, 18] (Figure 1)

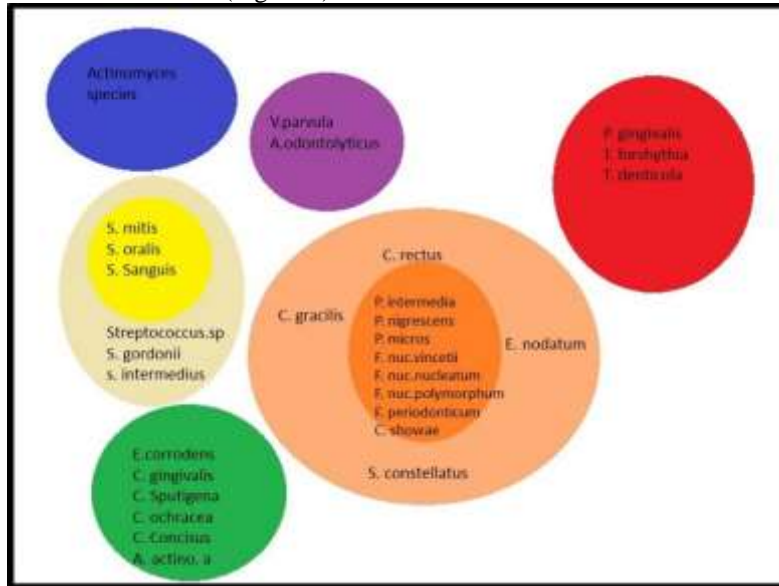


Fig.1: Schematic representation of species relationships within and between microbial complexes.

V. Pathogenesis and histopathology: -

Bacterial invasion of soft tissue pocket walls is the primary event leading to periodontal abscess. Inflammatory cells are then attracted to chemotactic factors released by the bacteria, and an inflammatory response leads to destruction of connective tissue. [20]

Histologically, intact neutrophils surround a central region of soft tissue debris and destroyed leukocytes. At a later stage, a purulent membrane consisting of macrophages and neutrophils is organized. Histological slides provide the following features: - (a) normal oral epithelium and lamina propria (b) acute inflammatory infiltrate (c) foci of intense inflammation (neutrophil-lymphocytes) with destroyed and necrotic surrounding connective tissue (d) destroyed and ulcerated Agglomerated pocket epithelium (e) a Central region as a mass of granular, eosinophilic, amorphous debris. [20]

VI. Diagnosis: -

It is based on patient-reported symptoms and signs noted during oral examination. Additional information can be obtained from the patient's complete medical and dental history.

Clinically, an abscess is an ovoid extension of the gingiva along the lateral portion of the root of the maxillary central incisor, causing pain, bleeding on probing, gingival swelling and tenderness, swelling, tooth mobility, and gingivitis. Elevation, with tooth hypersensitivity to palpation. Another common finding is suppuration, a combination of rapid tissue destruction and deep pocket formation, either spontaneously or after compressing an abscess. [21]

Radiographic examination may show a normal appearance or some bone loss, ranging from enlarged periodontal space to dramatic radiographic bone loss. Systemic symptoms such as fever, malaise, leukocytosis, and regional lymphadenopathy have been reported in some severe cases.

Liu et al. (1996) recommended using positron emission tomography and the fluorine-18-fluoromisonidazole marker to detect periodontal abscesses and other anaerobic infections in the mouth. [22]

Trope et al. (1988) recommended the use of dark-field microscopy of the abscess microbiota to rule out endodontic origin due to the high proportion of spirochetes in periodontal abscesses. [23]

VII. Differential diagnosis: -

Differential diagnosis of periodontal abscess should always be made in conjunction with other oral abscesses. Although the etiology is different, the appearance and symptoms are similar. -Periapical abscess, lateral periapical cyst, vertical root fracture, periodontal abscess, postoperative infection. [24]

A differential diagnosis is based on a variety of signs and symptoms, including: pulp vitality, presence of caries relative to periodontal pockets, location of abscesses, and careful radiographic examination.

Gingival squamous cell carcinoma, a metastatic cancer of pancreatic origin, is diagnosed by the appearance of paresthesia and rapid growth, and eosinophilic granuloma is diagnosed by rapid bone destruction after standard periodontal therapy.^[25,26] Some lesions caused by patient habits may mimic periodontal abscesses such as trauma to gingiva with a sharp object.^[27, 28]

VIII. Treatment: -

Treatment of acute periodontal abscess is usually a two-step process: Treatment of acute lesions; appropriate treatment of original and/or remaining lesions if the acute condition is under control.^[29]

When treating a gum abscess, treatment includes: Careful debridement to remove foreign bodies, drainage of grooves with probes or light scales, warm saline irrigation, and 24-48 hour follow-up.^[30, 31]

A similar protocol is recommended for the treatment of periodontal abscesses.

Drain the pocket, scale the tooth surface, debride the soft tissue wall with compression, and wash with sterile saline. After treatment, the patient should be flushed with warm saline and evaluated for abscess resolution over her 24-48 hours. After a week, definitive treatment should be done instead. Drainage may require an external incision or skin flap, and topical antiseptics can be applied after drainage.^[29]

Some authors recommend systemic antibiotics as the only initial treatment if adequate drainage cannot be established. For example, for large abscesses with diffuse swelling and severe pain.

Some authors recommend shorter antibiotic regimens, arguing that they are as effective as conventional regimens, at least for alveolar abscesses.^[32]

Some authors recommend a combination of basic therapy (incision, drainage, and debridement) and antibiotic therapy.^[33] Combination of incision and drainage with systemic penicillin is "often successful."^[34] Penicillin is the drug of choice for treating periodontal abscess.

In the treatment of chronic periodontal abscesses, surgical therapy with either gingivectomy or flap surgery has also been advocated, primarily for abscesses associated with deep vertical defects, for which abscess resolution can only be achieved by surgical intervention.^[35]

IX. Conclusion: -

Periodontal abscess is the most common dental office emergency, accounting for 7-14% of all dental emergencies. Two main causes must be distinguished. One concerns existing periodontal pockets and the other does not require deep pockets. Differential diagnostic options should be considered in the diagnosis of periodontal abscess. A detailed analysis of the various signs and symptoms associated with each type of abscess is required. Three treatment approaches were discussed, including drainage and debridement, and antibiotics.

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