

# Periodontal abscess - Diagnosis and Management

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## Abstract

**BACKGROUND** Periodontal abscesses are one of the most common dental emergencies. They are essential as patients seek emergency care and the dentist's actions must be instantaneous. For the dentists to do their job quickly and efficiently in these emergency cases diagnosed with periodontal abscess, it is necessary that they are familiar in detail with its methods of diagnosis, differential diagnoses, prognosis, treatment, complications and prevention.

**AIM** The aim of this study is to summarize the available information in the published literature regarding diagnosis, differential diagnosis, prognosis, treatment, complications and prevention.

**REVIEW RESULTS** Immediate action in patients diagnosed with periodontal abscess is extremely important. For this purpose, the dentist must know in detail all the methods for making a rapid and accurate diagnosis. They should be able to differentiate periodontal abscess from other periodontal and endodontic diseases, as well as fractured dentis. One of the most important characteristics of periodontal abscesses is that they worsen the prognosis of the affected tooth extremely quickly. For this reason, urgent, prompt curative action is needed to prevent further complications. Last but not least in importance is the knowledge of preventive measures - educating patients about good personal oral hygiene, discussing the influence of diabetes mellitus, smoking, etc.

**CONCLUSION** We may sum up by saying that periodontal abscesses are extremely serious because they require immediate medical attention, the affected tooth's prognosis is declining, and there is a chance that the infection will spread quickly. Dentists need to be extremely knowledgeable about the diagnosis, differential diagnosis, prognosis, treatment, complications, and prevention of periodontal abscesses because they happen rather frequently in clinical practice.

**Keywords:** Periodontitis, Gingivitis, Periodontal abscess, Abscess, Drainage

## Introduction

Periodontal abscess is one of the most common emergency conditions in dental medicine. It is a localized purulent inflammation in periodontal tissues caused by pyogenic bacteria (1, 2). The main microorganisms isolated in periodontal abscess are gram negative anaerobic bacteria (3, 4, 5, 6). In most of these cases, patients seek emergency dental care because of marked edema and pain (7). Prompt and expeditious

intervention by the dentist are the keys to relieving patient discomfort (8, 9). To this end, it is necessary to establish the diagnosis of periodontal abscess in the most expeditious manner by means of - history (1, 10, 11, 12), clinical examination (1, 8, 11), electric pulp test (1), radiographic examination (4), dark-field microscopic examination (1, 13). One of the most important characteristics of periodontal abscesses is that they deteriorate the prognosis of the affected tooth extremely rapidly (1, 2). For this reason, urgent, prompt curative action is required to prevent further complications (1, 9, 14).

## Aim

The aim of this study is to summarize the available information in the published literature regarding diagnosis, differential diagnosis, prognosis, treatment, complications and prevention.

## Results

### 1. DIAGNOSIS

The diagnosis of periodontal abscess is usually made on the basis of the main complaint of severe pain and swelling, anamnestic data, clinical picture, radiographic data and sometimes - microscopic examination (15, 16).

#### Anamnesis

It is crucial to find out if the patient has ever received periodontal therapy, especially whether they are currently receiving antibiotics or debridement. Data indicates that bacterial superinfection brought on by antibiotic therapy, residual calculus and bacteria introduced into the gingival pockets during debridement are all potential contributing causes (10, 12, 14, 17).

Patients' histories can be used to identify periodontal abscesses caused by foreign bodies impaction (1, 15, 17).

Upon obtaining the patient's medical history, special attention should be paid to any diabetes mellitus, whether diagnosed or not, as these patients have a higher risk of suffering from periodontal abscesses (18).

#### Clinical examination

The most frequent initial symptom is intraoral edema, which can be painful or not (8, 17). Individuals may have pain that gets worse as they bite down, and the tooth may feel unstable because of the loss of periodontal structure. It's also typical to report feeling like your teeth are elevated. Mostly visible with pressure or probing, a purulent discharge is described by patients as having an unpleasant taste connected to it (1, 12).

Critical to assisting with establishing a diagnosis is the clinical evaluation. Signs of periodontal disorders usually include increasing probing depths (generally more than 6 mm), suppuration, tooth movement and the presence of furcation. Additional observations include of palpable discomfort and lateral percussion (1, 15, 17). In more superficially located abscesses ovoid elevation of the gingivae can be seen, but when located in greater depth of the periodontal tissues - abscesses are less noticeable (19). When performing electric pulp test - the tooth will respond if the cause is periodontal rather than endodontic (1, 15, 20).

#### Radiographic examination

A radiographic examination could reveal an ordinary appearance or some decreased bone density, varying from a noticeable amount of radiographic bone loss to an increased periodontal gap (4).

When assessing the periodontal hard tissues, periodontal radiographs are essential. It is common to anticipate horizontal or vertical bone loss as well as an enlargement of the periodontal ligaments (1, 15).

The simultaneous presence of a periodontal and endodontic abscess or an endodontic abscess alone is typically indicated by a periapical radiolucency (1).

Using a periapical radiograph to determine the point of termination and a gutta-percha point inserted into the periodontal pocket or down the sinus tract are feasible methods of detecting the infection's origins (18).

### **Dark field microscopic examination**

Because of the differences in the microflora, periapical abscesses can occasionally be ruled out by darkfield microscopic examination of the abscess (1, 13).

## **2. DIFFERENTIAL DIAGNOSIS**

Detailed anamnesis and clinical symptomatology are crucial for the differential diagnosis of periodontal abscess (11, 15, 17).

At first periodontal abscess should be differentiated from gingival abscess, periapical abscess, periodontal-endodontic lesions, pericoronal abscess, fracture and crack of the tooth (15).

Gingival abscess - history of trauma in the gingival area, no periodontal pockets present in the area (15).

Periapical abscess - a history of trauma, tooth deterioration, crack or fracture, caries, or deep restoration may indicate pulpal damage. The localization of the periapical abscess is in the area around the root apex. There are no clinical symptoms of periodontitis. When using heat or electric stimulation for vitality testing, the results will either be negative or ambiguous. Acute aggravation of a chronic periapical lesion in a patient may manifest radiographically as a periapical radiolucency (1, 15, 21).

Combined periodontic-endodontic abscesses - can be divided into three categories based on where the infection originated: a true mixed periodontal-endodontic abscess, a primary periodontal abscess with secondary endodontic involvement, or a primary endodontic abscess with secondary endodontic involvement. The history, clinical examination, pulp tests, and intraoral radiographs must all be combined for a proper diagnosis. While a lack of reaction indicates endodontic origin, a positive pulp test shows periodontal origin (1, 15, 22, 23).

Pericoronal abscess - partial eruptive tooth abscesses may resemble periodontal abscesses. It is important for clinicians to keep an eye out for neighboring teeth that are not more periodontal pocketed (3).

Cracked tooth - observed in vital teeth, anamnestic data indicate severe pain on chewing. After endodontic treatment - patients continue to report persistent pain (15, 24).

Partial root fracture - Tenderness, greater movement, and visual inspection are useful methods for identifying fractures. Finding fractures might be aided by taking radiographs from several perspectives. Comparably, intraoral radiographs of different angulations can also identify endodontic perforations or perforations caused by posts (3, 15).

Squamous cell carcinoma - Given that the literature reports occurrences of gingival squamous cell carcinomas that mimic periodontal disease and the abscesses that accompany it, practitioners should exercise caution while diagnosing and treating recurring periodontal abscesses (25).

Self-inflicted gingival injuries - such lesions can result from nail-biting behaviors and damage from things like pens and pins. A thorough background can help rule these out, and habit dissuasion techniques should be taken into account (1).

A few other less frequent differentials are non-Hodgkin's lymphoma, pyogenic granuloma, osteomyelitis, odontogenic keratocyst, eosinophilic granuloma, lateral periapical cyst, postoperative infection, odontogenic myxoma, metastatic cancer, and post-surgical abscess (3).

### 3. PROGNOSIS

One of the main features of periodontal abscesses is that they lead to extremely rapid loss of periodontal ligament and alveolar bone. They can significantly affect the prognosis of the affected tooth (1, 2).

The tooth may have a "hopeless prognosis" if it is linked with additional abscesses (12, 26).

During supportive therapy, 45 percent of teeth with a periodontal abscess were extracted, according to a retrospective study on the prevalence of tooth loss caused by periodontal abscesses. On average, slightly more than half were effectively maintained for twelve and a half years (27).

The data points to worse results for teeth that already have periodontal disease. Because the disease progresses quickly and causes destruction, early detection and intervention are essential for enhancing the prognosis (14).

### 4. TREATMENT

Periodontal abscesses are treated with oral rinses, mechanical debridement, and drainage; antibiotic therapy is saved for certain situations (1).

Treatment usually happens in two stages: acute management and, after the acute phase is over, definitive treatment. The goals of acute care are to lessen symptoms and lower the chance of infection spreading (9, 28). The best way to drain the abscess is to carefully debride the root surface via the periodontal pocket or make an incision over the gingiva's most variable swelling location. Perhaps local anesthetic is needed. In order to eliminate necrotic tissue and the bacterial burden, drainage should be performed in conjunction with mechanical scaling of the periodontal pocket and antiseptic rinse. This makes it possible for the host immune system to combat the infection (1). When necessary, dental professionals must reevaluate the lesion and create a long-term treatment plan, which typically entails periodontal therapy (29).

When a dentist believes that there is little to no chance of saving a tooth due to periodontal disease or abscess-related damage, they recommend exodontia (3).

If an implanted foreign item is the source of the abscess, it must be removed by debridement, and draining through the gingival sulcus must be done with a periodontal probe (2).

Only in patients with weakened immune systems or systemic spread is antimicrobial therapy advised as an adjuvant to mechanical therapy (29). The symptoms of systemic involvement include lymphadenopathy, cellulitis, exhaustion, and fever. A doctor should take the patient's allergies, medication interactions, and the bacterial strain's susceptibility and resistance into account when choosing an antibiotic. Amoxicillin is the primary antibiotic of choice when paired with clavulanic acid. For those who are allergic to penicillins, clindamycin is suggested as a substitute (3, 9, 15).

Individuals who have several periodontal abscesses ought to be referred for additional evaluation because there is a possibility that they have a systemic ailment, like diabetes mellitus (1).

For persistent periodontal abscesses, periodontal surgery, such as gingivectomy or flap procedures, may be necessary. The purpose of these surgical procedures is to drain the abscess and destroy any remaining calculus. In abscesses associated with significant vertical defects, they are very helpful (2).

## 5. COMPLICATIONS

The long-term prognosis of the tooth might be negatively impacted by a dental abscess if it is not treated. This is especially true for individuals with moderate to severe periodontal disease (3, 15). In the long run, teeth with periodontal abscesses might have to be extracted because of discomfort, greater mobility, or recurring abscesses (27, 30). If left untreated, periodontal abscesses have the potential to spread throughout the body and cause extra-oral swellings in the neck and head area, lymphadenopathy, and even sepsis (3, 15).

## 6. PREVENTION

In order to address the causes of periodontal abscesses, it is imperative that patients get education on the primary risk factors (1):

**Oral hygiene:** Plaque accumulation and bacterial burden can be decreased by utilizing interdental tools and brushing twice a day along the gingival borders (1, 15, 24).

**Diabetes mellitus:** teaching patients about the reciprocal link between diabetes and periodontitis aids in emphasizing the need of improving diabetic control. Communicating with general practitioners can be helpful in handling this circumstance (1).

**Smoking:** giving patients information on quitting smoking can lower their chances of developing periodontitis, mouth cancer, and poor general health (1).

**Family history:** despite being an uncontrollable risk, knowledge of susceptibility can encourage people to practice excellent oral hygiene and consult a doctor more regularly and earlier (1).

## Conclusion

We may sum up by saying that periodontal abscesses are extremely serious because they require immediate medical attention, the affected tooth's prognosis is declining, and there is a chance that the infection will spread quickly. Dentists need to be extremely knowledgeable about the diagnosis, differential diagnosis, prognosis, treatment, complications, and prevention of periodontal abscesses because they happen rather frequently in clinical practice.

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