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Periodontal Abscess during Supportive Periodontal Therapy: A Review of the Literature

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Aim: The aim of this review is to present the current status of the occurrence and management of a periodontal abscess during supportive periodontal therapy (SPT).

Background: A periodontal abscess depicts typical features and has been described in patients under SPT in clinical trials. Common periodontal pathogens have been observed in this lesion and some etiologic factors may be responsible for its recurrence. This condition can be isolated or associated with factors that can change the prognosis of affected teeth.

Review Results: Although it has been frequently noticed in untreated periodontitis, the periodontal abscess can also occur in patients under SPT and has been regarded as one of the possible complications of SPT. Patients with a high susceptibility to periodontal disease lost more teeth than those with a healthy periodontium.

Conclusion: Early diagnosis and appropriate intervention for periodontal abscesses in patients under SPT are extremely important for the management of the periodontal abscess since this condition can lead to loss of the involved tooth. A single case of a tooth diagnosed with periodontal abscess that responds favorably to adequate treatment does not seem to affect its longevity.

Clinical Significance: An accurate diagnosis and adequate treatment can preserve the longevity of affected teeth.

Keywords: Periodontal abscess, supportive periodontal therapy, SPT, periodontitis treatment

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Introduction

Among several acute conditions that can occur in periodontal tissues, the periodontal abscess deserves special attention. Besides requiring immediate attention to relieve pain, systemic complications can also be avoided with the implementation of adequate treatment. The presence of a periodontal abscess can modify the prognosis of the involved tooth and, in many cases, be responsible for its removal.[1]

Although it has been frequently noticed in untreated periodontitis, the periodontal abscess can also occur in patients under supportive periodontal therapy (SPT) and has been regarded as one of the possible complications of SPT.[2] The lesion is defined as a located purulent infection associated with the destruction of tissues (i.e., periodontal ligament and alveolar bone) adjacent to periodontal pockets[3,4] (Figure 1).

Periodontal Abscess and Tooth Loss in Patients Under SPT

Periodontal abscess was regarded as the main cause of extraction of teeth with a questionable prognoses in a group of 166 patients monitored over a 40-year period.[5] This study reported the initial treatment consisted of scaling and root planing after surgical access, and the majority of the subjects took part in a regular maintenance program in a private clinic.

In a clinical longitudinal study conducted over a seven year period, patients received SPT at regular three month intervals and supplemental periodontal therapy whenever necessary to maintain periodontal health.[6] Differences in probing depths recorded during the initial exam as well as in treatment planning decisions reportedly influenced the occurrence of periodontal abscesses. Furthermore, non-surgical patients

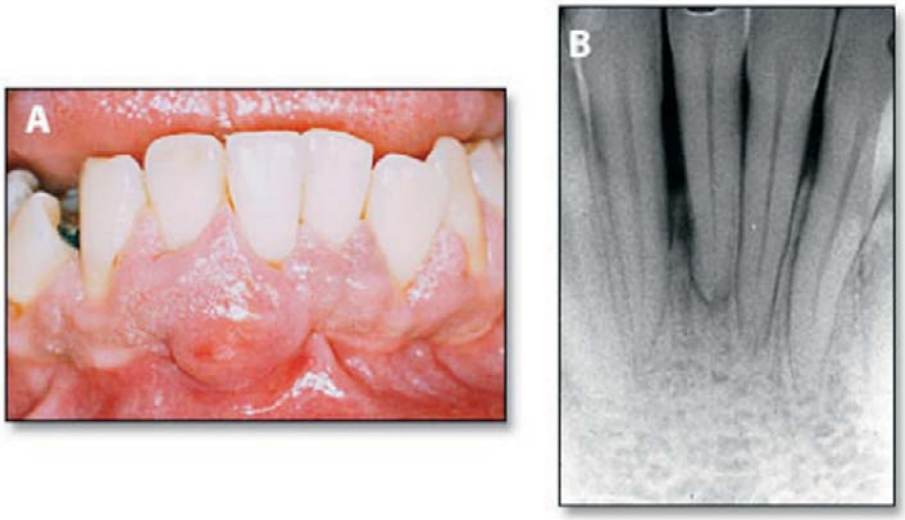


Figure 1. Periodontal abscess in a patient with untreated periodontitis: (A) clinical and (B) radiographic characteristics.

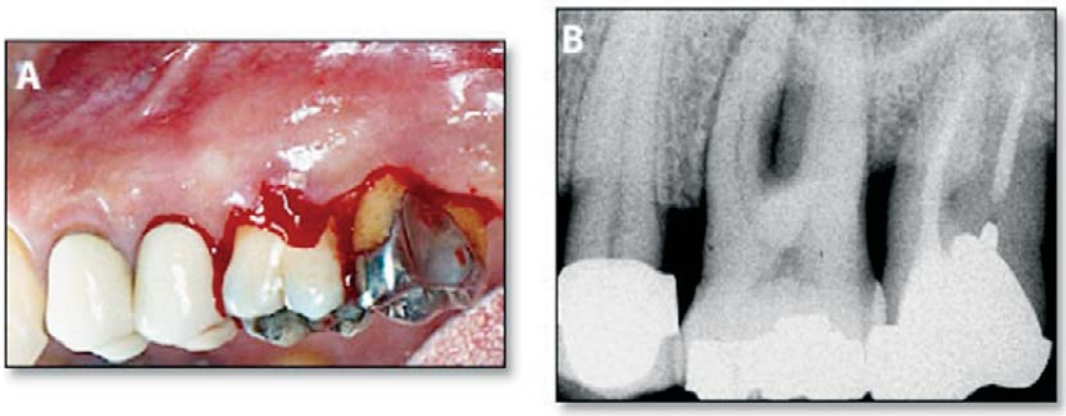


Figure 2. (A) Clinical and (B) radiographic characteristics in a patient with a periodontal abscess during SPT.

with probing depths > 5 mm exhibited a higher occurrence of periodontal abcess.

McLeod et al.[7] examined 114 patients who received periodontal treatment (surgical and non-surgical) followed by SPT for a period that varied from five to 29 years. The occurrence of periodontal abscess was observed in 109 out of 2,899 teeth of 42 patients with the molars being the most affected (i.e., 75). The authors reported the loss of 49 teeth during the SPT period.

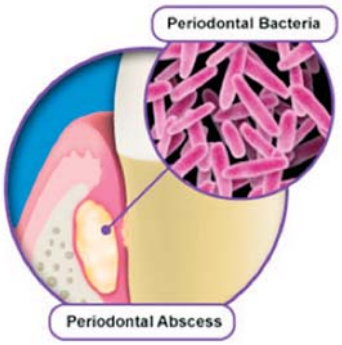
Clinical and microbiological features of periodontal abscesses were described in a previous report.[8] The condition was diagnosed in 29 patients, most of whom had moderate or severe periodontitis. Seven (24%) were in SPT, and the molars were equally affected in the upper and lower jaws.

Periodontal abscesses occurring in teeth with advanced mobility that did not respond to mechanical treatment resulted in tooth loss in a group of 109 patients under SPT over a 12-year period.[9] In particular, it was reported patients with a high susceptibility to periodontal disease lost more teeth than those with a healthy periodontium.

Clinical and radiographic characteristics of a periodontal abscess occurring during SPT are shown in Figure 2.

Pathogenesis and Microbiology

The basic pathogenic mechanisms of the periodontal abscess do not differ from other abscesses. The formation of the periodontal abscess is initiated by the multiplication and invasion of periodontal tissues by a select species of periodontal bacteria. Usually anaerobic gram-negative rods are predominant,[10,11] and it has been reported the increased bacterial activity could be a result of an imbalance in bacterial homeostasis, destruction of the epithelium barrier, and/or by random events.[12] Analysis of an aerobic culture of periodontal abscesses obtained from patients with untreated periodontitis and from patients under SPT showed pathogens such as *Fusobacterium nucleatum ssp*, *Porphyromonas micros*, *Porphyromonas gingivalis*, *Prevotella intermedia/nigrescens*, and *Tannerella forsythia* were predominant. However, the isolated microorganisms can differ among patients, sites, and even at the same site.[13,14]



Etiology

Several factors have been implicated in the etiology of periodontal abscesses in patients with untreated periodontitis.[4,15] Factors such as anatomic features, genetic vulnerability, microbial and behavioral (i.e., smoking) factors, and a low frequency of maintenance appointments working alone or in combination could in part explain why the periodontal status deteriorates even in patients under SPT.[16] Other possible causes that may contribute to the non-resolution of the condition include failure to remove the causes

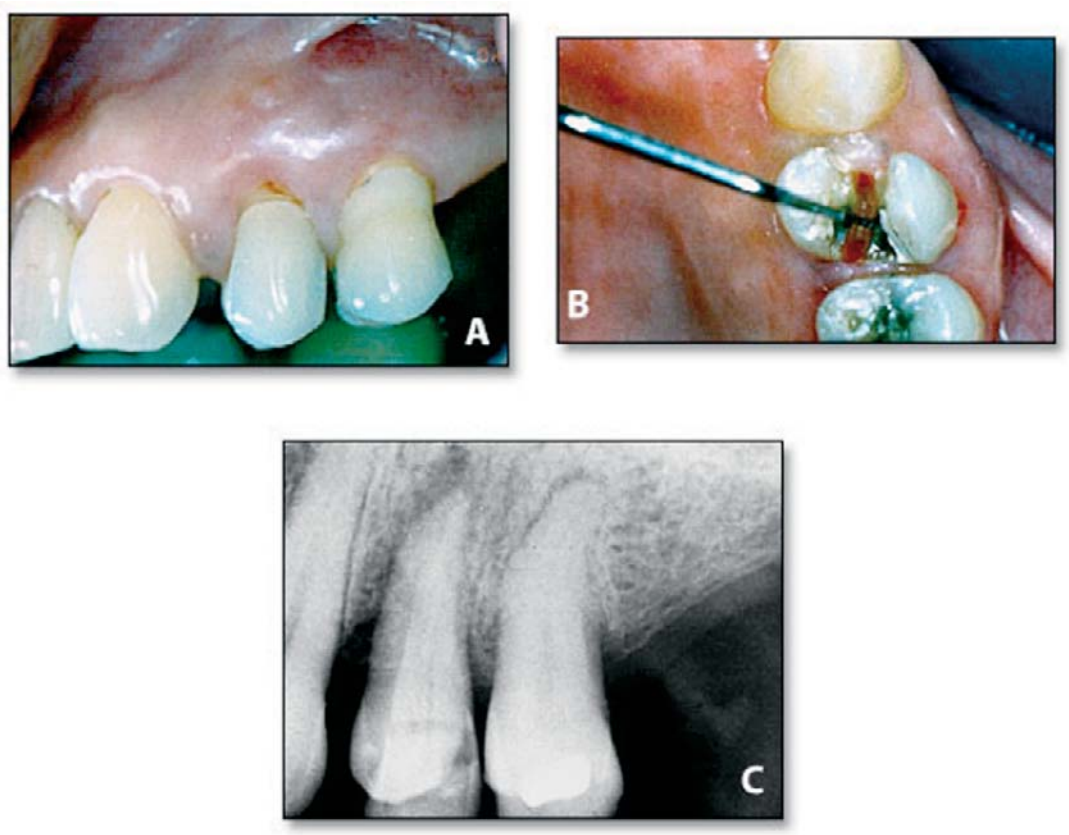


Figure 3. Abscess due to a root fracture. (A) Buccal and (B) Occlusal view; (C) Radiographic characteristics.

of irritation, incomplete debridement, inadequate diagnosis, tooth fracture (Figure 3), or the presence of an underlying systemic disease.[17]

A periodontal abscess may be acute in its presentation or chronic in nature, although in chronic cases an acute exacerbation could occur.[18] The main clinical features of periodontal abscesses are as follows:[17]

- Edema and redness at the affected site
- Increased mobility of the affected tooth
- Increased probing depth
- Bleeding or purulent exudate on probing
- Bone loss determined radiographically

Differential Diagnosis

The diagnosis of a periodontal abscess should be based on information obtained from the dental history, clinical examination, and radiographic findings. The differential diagnosis includes gingival abscess, periapical abscess, and radicular fracture (Table 1). Several reactional and neoplasic lesions can present clinical characteristics similar to the ones observed in a periodontal abscess and should be taken into consideration when diagnosing this condition.[1,18] It is important to mention an abscess that does not respond to periodontal therapy is unlikely to be a periodontal abscess.[18]

Treatment

Pain relief through abscess drainage should be the main objective in treating acute lesions. Location of the affected periodontal pocket by careful probing followed by radicular surface instrumentation should allow drainage of the purulent exudate.

Table 1. Differential diagnosis for a periodontal abscess.

Condition	Clinical Characteristics
Gingival abscess	Absent lost of clinical insertion
Periapical abscess	Absent pulpar vitality, presence of lesion in the periapical area, absence or presence of narrow periodontal pocket (fistula)
Radicular fracture	Clinical and radiographic findings (i.e., separation of the radicular walls)

* adapted from Cobert, 2004[18]

When this technique is not feasible or does not obtain an adequate result, incision and traditional drainage should be performed. The isolated use of antibiotics or its use associated with supragingival scaling has presented satisfactory initial outcomes in terms of clinical and microbiological parameters.[11,13] However, when an inadequate treatment is carried out (i.e., antibiotic therapy without abscess drainage associated with supragingival scaling), the exacerbation of the abscess is likely to be observed in approximately 40 days.[11] In addition, it has been reported antibiotic therapy should be restricted for patients with systemic signs (i.e., lymphadenopathy, fever, malaise), medically compromised, or when a diffuse infection is observed.[12,20]

Conclusions

The occurrence of periodontal abscesses in patients under SPT has been frequently described. Early diagnosis and appropriate intervention are extremely important for the management of the periodontal abscess since this condition can lead to loss of the involved tooth. A single case of a tooth diagnosed with periodontal abscess that responds favorably to adequate treatment does not seem to affect its longevity. In addition, the decision to extract a tooth with this condition should take into consideration other factors such as the degree of clinical attachment loss, the presence of tooth mobility, the degree of furcation involvement, and patient's susceptibility to periodontitis due to systemic conditions associated (i.e., poorly controlled diabetes).

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