Periodontics

Chronic Periodontal Abscess with an Unusual Finding: A Case Report

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Abstract

|| Brief Background

A 27 year old male patient came with a chronic painless swelling in maxillary anterior gingivae between 11 and 12 associated with deep periodontal pockets in both teeth and showed no radiographic abnormalities except for horizontal bone loss. There was no history of trauma

|| Materials and Methods

To the surprise of the operating periodontist, a loose bone piece was found embedded in the interdental connective tissue between 11 and 12 during surgical flap debridement that was carried out following no resolution after scaling and root planning.

|| Discussion

The loose bone piece that was undetected on radiographs was found to be necrotic on histopathological examination.

|| Summary and Conclusions

A seemingly simple and straightforward presentation of chronic periodontal abscess turned out to be a case with a totally unexpected and unforeseen underlying cause that was not detected in pre-operative radiographs. This highlights the limitations of the current routine diagnostic procedures and presents an additional etiologic consideration when evaluating periodontal abscesses, the third most common dental emergency. The origin of the bone piece remains a matter of speculation.

|| Key Words

Periodontal abscess, aetiology, foreign body reaction, necrosis, bone.

Introduction

The periodontal abscess is the third most frequent dental emergency, and it is especially prevalent among untreated periodontal patients and periodontal patients during maintenance [1]. The periodontal abscess has been defined as a lesion with an expressed periodontal breakdown, occurring during a limited period of time, and with easily detectable clinical symptoms, with a localised accumulation of pus, located within the gingival wall of the periodontal pocket[1]. Among all emergency dental conditions, periodontal abscesses represent approximately 8% to 14% of all dental emergencies[1]. Of the different aetiologies that have been proposed, in non-periodontitis related abscesses, impaction of foreign objects, and radicular abnormalities are two main causes. [1]

A diagnosis of periodontal abscess should be made after an overall evaluation and interpretation of the patient's chief complaint, medical/dental history, and clinical and radiographic examinations.[2] A periodontal abscess is usually associated with pre-existing periodontitis[2]. The clinical findings invariably associated with periodontal abscesses are swelling, oedema, redness and bleeding on probing at the affected site, while suppuration on pressure or on probing occurs in majority[3]. That suppuration does not always occur in response to periodontal probing is due to the tortuous nature of some pockets [3]. A tooth with an associated periodontal abscess often displays hyper-mobility [3]. While some investigators have proposed a cut-off of a pocket of 6 mm to be associated with a periodontal abscess for investigative purposes, a periodontal abscess may occur in association with a shallower pocket [3]. Although the majority of periodontal abscesses has been reported to occur interdentally, they may occur on any tooth surface [3]. A radiograph or radiographs may show bone loss consistent with previous periodontal disease experience and may reveal bone loss associated with the periodontal abscess per se.[3]

Case Report

A 27-year old male patient, tailor by occupation, presented with a painless swelling in maxillary anterior gingivae between 11 and 12. The swelling was present since approximately three months and was initially associated with pain in the involved teeth. The patient gave history of taking empirical analgesics and antibiotics with no relief. His past medical and dental history and family history elicited no significant findings. He smoked 2-3 cigarettes a day since the past 10 years and was advised to discontinue the habit. His diet was mixed, both vegetarian and non-vegetarian.

Fig. 1a: Swelling in maxillary anterior gingivae; (b) Pre-operative radiograph

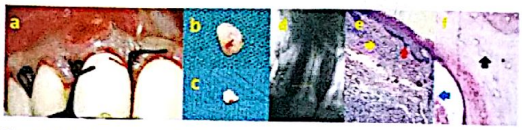

Fig. 2: (a) Flap surgical debridement; (b) Excised soft tissue mass; (c) Bone piece found in the interdental area of 11 and 12; (d) No evidence of removal of bone in post-operative radiograph; (e) Histopathology of soft tissue mass (under 10x magnification), yellow arrow points to proliferating epithelium, black arrow points to chronic inflammatory cell infiltrate; (f) Histopathology of decalcified hard tissue mass (under 45x magnification), red arrow points to empty osteocytic lacuna, blue arrow points to necrotic marrow

The swelling itself was hemispherical, seen attached to the attached gingiva in relation to 11 and 12, measuring approximately 5 mm in diameter. It was pink in colour with some red spots, soft, sessile, semi-fluctuant, non-tender and non-suppurative (Fig. 1 a). A pocket measuring 8 mm was present on the distofacial of 11 and the mesiofacial of 12. No suppuration could be elicited from the sulcus of 11 and 12. No pain was present on percussion in 11 and 12. The radiograph showed no abnormalities except for horizontal bone loss in 11 and 12 (Fig. 1 b). Judging by these features a diagnosis of chronic periodontal abscess due to periodontitis in relation to 11 and 12 was established. The differential diagnosis of periodontal abscess includes periapical abscess, lateral periapical cysts, vertical root fractures, endo-periodontal abscesses, osteomyelitis and different tumours like gingival squamous cell carcinoma, metastatic carcinoma, eosinophilic granuloma. All of these were excluded as the lesion showed no signs thereof.

Fig 3: (a) 2 week follow-up; (b) 1 year follow-up

In formulating the treatment plan, a decision was made not to carry out any emergency procedure like incision and drainage because of lack of any active suppuration and chronic nature of the lesion. Also, owing to the non-suppurative appearance of the lesion, a decision was made not to prescribe any antimicrobial agents on an emergency basis as the patient had taken empirical antimicrobial agents.

Scaling and root planing was carried out followed by prescription of Amoxicillin 500 mg TDS; Metronidazole 400 mg TDS and Ibuprofen-Paracetamol combination all for 3 days [4]. The patient was given oral hygiene instructions and was recalled after seven days to check for any remission of the swelling. No remission whatsoever was observed. Hence, a decision of flap surgical debridement was taken.

Flap surgery was carried out using Kirkland sulcular incision. The flap was sutured using interrupted sutures (Fig. 2 a). The remaining soft tissue mass of swelling was excised using an external bevel incision (Fig. 2 b). However, during the elevation of flap, a bone piece was found loose in the connective tissue in the interdental area between 11 and 12, to the periodontist's total surprise (Fig.2c). No evidence of such a bone piece was seen on the pre-operative radiograph. A radiograph taken immediately after surgery also showed no evidence that any bone was lost during the surgery (Fig.2d). The bone piece and excised soft tissue mass were subjected to histopathological examination.

The soft tissue section showed parakeratinized stratified squamous epithelium which was seen to be hyperplastic at places. The underlying connective tissue showed dense amount of mixed inflammatory infiltrate; predominantly composed of neutrophils and plasma cells (Fig.2e). The decalcified hard tissue section showed empty osteocytic lacunae along with attached necrotic connective tissue (Fig.2f). Overall the histopathological impression was that of chronic non-specific infection, confirming the diagnosis of chronic periodontal abscess. The tissues healed to a satisfactory degree in 2 weeks (Fig. 3a) and the lesion showed no recurrence at one year follow-up (Fig. 3b).

|| Discussion

Periodontal abscesses can also develop in the absence of periodontitis, due to the following causes:

(a) Impaction of foreign bodies, such as an orthodontic elastic, a piece of dental floss, a popcorn kernel, a dislodged cemental tear, a piece of a toothpick, a corn husk in peri-implant tissues, or an unknown object. Periodontal abscesses caused by foreign bodies, related with oral hygiene aids, have been named "oral hygiene abscesses";

(b) Perforation of the tooth wall by an endodontic instrument;

(c) Infection of lateral cysts;

(d) Local factors affecting the morphology of the root may predispose to periodontal abscess formation.

The presence of cervical cemental tears has been related to rapid progression of periodontitis and the development of abscesses. The presence of external root resorption, an invaginated tooth, or a cracked tooth, have also been suggested as predisposing factors for periodontal abscess formation[1]. Most investigators believe that periodontal abscesses are induced by occlusion of orifices of pockets resulting into reduced clearance of bacteria and accumulation of host cells. As a consequence, infection spreads from pocket into the supporting tissue and becomes localized. Occlusion of the pocket orifices prevents drainage of exudates from inflamed tissues adjacent to pockets [2].

In the present case, the fact that the bone piece was found loose in the interdental tissue was a matter of surprise because it was not detected in the radiograph. As the lesion was 3 months old, a necrotic bone piece should have appeared more radiopaque than the surrounding bone on radiograph [5]. Also, the very fact that the bone piece was found to be necrotic on histopathological examination is puzzling to some extent, as the nature of the process of bone destruction in periodontal disease is not necrotic but resorptive. [6]

An attempt was made to speculate the origin of the bone piece in the present case in the following way:

1) The patient's own bone could have been weakened by periodontal disease process, and then it was fractured from the rest of alveolar bone due to trauma (The patient was tailor by occupation and bending needles with teeth was one of his habits, as evidenced by notch-like abrasion of the incisal edge of tooth 11);
2) The bone piece could have been dietary in origin and then acted as a foreign body after getting lodged in the sulcus (the patient took both vegetarian and non-vegetarian diet).

The present case demonstrates the limitations of the conventional clinical and radiographic diagnostic techniques to trace the aetiology of the condition under consideration. Retrospective analysis of the case illustrates another possible etiologic basis for a commonly presenting condition, the periodontal abscess. Such cases reaffirm the fact that a surgeon must always be ready for any eventuality, even in an apparently simple case.

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