

# Treatment of periodontal abscess caused by occlusal trauma: A case report

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### ABSTRACT

Orthodontic treatment has a big role in prevention and treatment of dental malposition. The signs and symptoms experienced by patients with occlusal trauma are mobility of teeth, pain on mastication, and periodontal disease. In this case report, an 8-year-old girl who was noticed to have intraoral swelling by her parents 2 days ago is reported. It was diagnosed as a periodontal abscess caused by occlusal trauma. As a treatment planning, it was decided that abscess be drained and orthodontic appliances be used to eliminate chronic trauma. Root developing and healthy periodontal status were observed following the treatment as a result of 36 months follow-up.

**Key words:** Occlusal Adjustment, Orthodontic Appliances, Periodontal Abscess, Permanent Dentition

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### INTRODUCTION

Occlusal trauma is defined as an injury to any component of the masticatory system as a result of an alteration in the occlusion that could generate an inflammatory process in periodontal ligament and dental pulp.<sup>[1]</sup> Excessive occlusal loading can result in dystrophic changes in the periodontal ligament, alveolar bone, cementum and pulp, as well as periapical inflammation and root resorption.<sup>[2]</sup> A traumatic occlusion is often provoked by an abnormal contact of the teeth, a masticatory system dysfunction, and prosthetic or orthodontic treatments that create occlusal interferences.<sup>[3]</sup>

This case report presents treatment of patient with periodontal abscess caused by occlusal trauma.

### CASE REPORT

An 8-year-old girl was referred to the pediatric dentistry clinic for swelling that occurred 2 days ago before arriving clinic [Figure 1]. The patient's medical history was noncontributory. Extraoral examination revealed no sign of any pathological conditions.

A reddish purple colored swelling (one cm diameter) was observed on labial cervical gingiva on tooth 21 region by intraoral examination. Also anterior cross-bite was observed between teeth 21 and 41 [Figure 2]. Because tooth 41 inclined to the labial direction, there was a gingival recession on this tooth, which included only crown of tooth. Also, posterior occlusal relationships were generally within normal limits.

According to the history taken from patient and her parent, the incisors (21, 41) were asymptomatic and had not been traumatized. There was no sensitivity to percussion or palpation. The mobility of tooth 21 was classified as grade I. The periodontal tissue was healthy with normal probing depths except labial surface of tooth 21 (7 mm gingival pocket depth). Radiological examination showed slightly widening of the lamina dura and incomplete root development on tooth 21. There were no signs of periapical pathosis [Figure 3].

A periodontal abscess was diagnosed for tooth 21 caused by occlusal trauma. Abscess was drained by gingival pocket in the same session. Three days later gingival swelling and discoloration disappeared and pocket depth was seen to approach normal limits. Following the observation of recovery, dental cast was obtained

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Figure 1: Intraoral photograph of the patient in pretreatment



Figure 2: Intraoral photograph of the patient in centric occlusion with anterior cross-bite



Figure 3: Pretreatment periapical radiograph of left maxillary permanent central incisor with incomplete root development



Figure 4: Intraoral photograph of the patient with upper and lower removable appliances



Figure 5: Periapical radiograph of a completed root development at the end of 36 months follow-up

from patient. Upper removable appliance with labio-lingual spring, vestibular arch, and bite plane and lower removable appliance with activated vestibular arch were used for the treatment [Figure 4]. Anterior cross bite was eliminated following the use of orthodontic

appliances for a week.

The patient was, then, scheduled for regular clinical and radiographic follow up visits. Root developing and healthy periodontal status were observed as a result of 1-year follow-up. The periodontal tissue was healthy with normal probing depths and no discoloration was evident on clinical examination. Thirty-six months later from the initial treatment, radiographic examination confirmed closure of the apex and thickening of the root wall [Figure 5]. After two and a half years, the treated tooth has satisfying esthetics and function [Figure 6].

## DISCUSSION

Dental abscess has been divided into periodontal and gingival, depending on the location.<sup>[4]</sup> The gingival abscess is described as localized painful swelling, affecting only the marginal and interdental gingiva. Periodontal abscesses share similar symptoms, but usually affect deeper periodontal structures, including deep pockets, furcations, and vertical osseous defects. They are usually located



Figure 6: After two and a half years of treatment

beyond the mucogingival line.<sup>[5]</sup> In this case, the lesion was diagnosed as a periodontal abscess due to the presence of deep pocket.

Occlusal trauma can be classified as either primary or secondary.<sup>[6]</sup> Primary trauma from occlusion is described as abnormal occlusal force acting upon a healthy periodontium. Secondary trauma from occlusion is occlusal force acting on a reduced or weakened periodontium. Additionally some authors prefer further distinction into acute and chronic trauma from occlusion to describe the temporal character of the force acting on the affected tissues.<sup>[7]</sup> However, clinically, trauma from occlusion is caused by premature contacts with the suspected teeth showing fremitus and a radiographic widening of the periodontal space.<sup>[8]</sup>

The detection rate of secondary trauma from occlusion in relation to extent and severity of periodontal disease might be helpful in clarifying the role of occlusal forces in the progression of periodontal disease.

In terms of periodontal and orthodontic relationship, statistically significant periodontal differences have been demonstrated in patients with cross-bite, excessive overjet, and crowding compared with members of a control group.<sup>[9]</sup> A study by Ashley *et al.* evaluated the relationship between the irregularity and the incidence of periodontal disease.<sup>[10]</sup> The results indicated that

overlapping of incisors is related directly to gingivitis and that this relationship could not be explained simply by an effect of oral hygiene.<sup>[10]</sup>

The selection of treatment options should always be customized to the individual case, and a multidisciplinary approach should always be considered to rehabilitate such cases. This case report presents that occlusal trauma may lead to periodontal abscess, and that occlusal adjustment for occlusal trauma caused by anterior cross-bite to prevent excess damage to periodontium and loss of dental structures. Further study is needed to clarify the role of occlusal trauma on the periodontal diseases.

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