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CASE REPORT

Root Resorption due to Occlusal Trauma and Infection

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Özet:

Bu vakada 5 yaşındaki bir kız çocuğunda izlenen periapikal enfeksiyon ve oklüzal travmaya bağlı gelişen kök rezorpsiyonu sunulmuştur. Raporda yeterli tedavi edilmemiş çürüğün periapikal enfeksiyonunun oluşup yayılmasına, uygun olmayan kavite preparasyonu ve restorasyonununun ise oklüzal travmaya sebep olduğu ve her iki etkenin birleşip, altında daimi diş agenezisi olduğu halde alt süt molar dişin kökünde rezorpsiyona yol açtığı düşünülmektedir.

Anahtar Kelimeler: Oklüzal travma, periapikal enfeksiyon

Abstract:

In this case, root resorption due to periapical infection and occlusal trauma in a 5-year-old girl is presented. In the report, it is thought that inadequately treated caries cause periapical infection and inappropriate cavity preparation and restoration cause occlusal trauma, and both factors combine and cause resorption at the root of the mandibular molar although there is permanent tooth agenesis under it.

Keywords: Occlusal trauma, periapical infection.

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Introduction

The most common causes of root resorption are; chronic periapical or periodontal infection, orthodontic tooth movement, benign and malignant neoplasms, systemic disorders, permanent tooth eruption, jaw traumas, especially occlusal trauma, and Paget's disease in the bone[1-8]. However, in the absence of any of these factors, cement, dentin and enamel are resorbed by unknown mechanisms. This is called "idiopathic resorption" of the tooth [2,3,4].

Previous clinical studies have shown that occlusal trauma associated with periodontal diseases can lead to pathological changes in the pulp of the tooth [4]. Results from animal experiments show that traumatic occlusion is not a local phenomenon alone, but an inflammatory reaction induced by local stimulant in the pulp and periodontium [5].

A case where an occlusal trauma associated with the infection was thought to cause root resorption is presented below.

A 5-year-old female patient applied to our clinic due to pain in her second primary molar tooth. The patient applied to another clinic with the same complaint three months ago, and periapical radiographs taken at that time showed caries in the mandibular first and second primary molar teeth. In the periapical radiograph taken during this period, it is seen that the right mandibular second premolar tooth is congenitally missing and there is no resorption in the roots of the primary second molar tooth (Figure 1). The patient's tooth with caries was treated with inappropriate amalgam restorations, and the patient applied to our clinic with a complaint of pain three months after the treatment of the primary first and second molar teeth. There was no significant finding in the medical and dental history taken from the patient. In the extraoral examination, the front view was normal, the oral hygiene was found to be sufficient, and no periodontal disease was detected. In the intraoral examination, secondary caries was observed in the mesial step of the mandibular primary second molar tooth, and no intraoral abscess or hyperemia was observed in the same region. In the occlusal examination, an improperly performed overhanging amalgam filling, which may cause occlusal trauma, was found in the patient's mandibular primary second molar tooth. Secondary caries finding was also confirmed in panoramic and periapical films (Figures 1 and 2), and congenital absence of the permanent second premolar tooth was detected. Despite the congenital deficiency of the permanent second premolar, root resorption has been observed in the mandibular primary second molar. Resorption is particularly significant in the mesial root (Figure 3). On the left side, although there is a permanent mandibular second premolar tooth, there is no sign of resorption at the roots of the mandibular primary second molar tooth (Figure 2). In the next

treatment of the patient, first the primary second molar tooth was extracted and a removable retainer was made to prevent mesial movement of the mandibular first molar tooth.

Figure 1: Periapical radiograph showing congenitally missing of the right mandibular second premolar tooth and no resorption in the roots of the primary second molar tooth
Figure 2: Panoramic radiograph showing overhanging fillings of the mandibular primary first and second molar teeth and congenital absence of the permanent second premolar tooth.
Figure 3: Periapical radiograph showing a significant resorption in the mesial root of the primary second molar tooth.

Discussion

There are many etiological factors leading to root resorption 1,6,7,8-20. Studies have shown that the heredity factor is important in resorption of both primary and permanent tooth roots, but it has been reported that the effect of heredity varies depending on individual characteristics and different teeth. In a radiographic study by Massler and Malone 9, they detected resorption in one or more permanent tooth roots in 100% of the individuals examined. Another finding in the study is that the amount of periapical resorption increases with age 9. Saravia et al. 10 reported two cases with identical twins and suggested that idiopathic root resorption may be related to genetics. There are quite old studies that establish a relationship between external root resorption and endocrinal disorders that affect the basal metabolic rate such as hypothyroidism, hypopituitarism, and hyperpituitarism 16,17. On the other hand, there are also studies showing that polymorphisms in the IL-1 gene 10.11 or the coexistence of IL-1 and IL-IB gene polymorphisms are at a high risk for the development of pathological root resorption 15.

In many studies, it has been reported that different levels of resorption may occur with occlusal trauma, chronic periapical or periodontal infection, and orthodontic tooth movement, in addition to the hereditary effect on root resorption in primary and permanent dentition 6,7,11,12,19. It has been reported that external root resorption often occurs as a result of chronic periapical infection and periodontal disease 11-14.

Robinowitch 18, on the other hand, states that trauma, using a high-speed tour without spraying water in cavity preparation, and deciduous tooth infections may be the cause of resorption. In this case, it is thought that the occlusal trauma due to the overhanging amalgam filling and the periapical infection that developed as a result of the secondary caries due to insufficient preparation of the caries caused root resorption. Although there is no permanent tooth germ under the mandibular primary second molar tooth, root resorption is remarkable.

In this case, it was seen that; Occlusal trauma, indirectly, can initiate resorption when combined with risk factors for periapical destruction such as dental caries and endodontic infection.

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