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Case Report

Management of Apical Fenestration in Children: A Case Report

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ABSTRACT

Background: Intrusion due to apical fenestration is caused by traumatic occlusal forces and often not documented by clinical practitioners, especially in primary teeth.
Purpose: This case aims to describe patient diagnosed with apical fenestration in maxillary anterior primary teeth **Case:** A 6-year-old female patient was coming to the Department of Pediatric Dentistry, Indonesia and complaining about the right upper front teeth that protruded to gingival area. Patient had stomatitis and history of trauma.
Case Management: Patient was indicated to be extracted.
Conclusion: Extraction due to apical fenestration of the tooth is a treatment of trauma occurring in primary teeth.

INTRODUCTION

Traumatic Dental Injuries (TDI) to the anterior teeth among the young children are one of the worst experiences, but often becoming ignored. Children with injuries to their anterior teeth, and their concerned parents are challenges to the dentist.[1] TDI are a serious problem among children which endangers dental health and lead to esthetic, psychological, behavioral and therapeutic problems that influence the children and their parents especially if untreated.[2] Trauma in primary first incisor is a common case and documented in literature. The prevalence of this is reported to be 4-30%, and depends on the sex and age of the child. The most common trauma on the primary first incisor are subluxation, intrusion and avulsion, however fractures of crown and root are rare.[3,4] This kind of traumatic condition can cause apical fenestration, which is a condition when the apex of the primary tooth root has been exposed to the oral cavity environment, and damages to the surrounding alveolar bone and mucosa.[5] Apical Fenestration was first elaborated in detail by Menendez in 1967 as "bone fenestration" by the root in primary teeth.[6]

Apical fenestration, due to intrusion caused by occlusal forces, is a case that is not often documented by clinical practitioners, especially in primary teeth.[7] Generally, there is a tendency to diagnose several similar cases with chronic apical periodontitis or chronic apical abscess in the absence of pathological symptoms. The reason of this condition is the examination depends only on 2-dimensional radiography. A detailed history and examination ability is needed to determine a diagnosis like this.[7] This case will discuss patient diagnosed with

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apical fenestration in primary teeth, along with clinical examination, oral manifestations and management.

CLINICAL REPORT

A 6-year-old female patient was coming with her mother to the Dental Hospital Faculty of Dentistry Universitas Padjadjaran, Bandung, West Java, Indonesia on Wednesday, March 20, 2019. Patients complained of the right front upper teeth that protruded on the gingiva. The mother reported that the child had suffered trauma to this tooth at 4 years old, and tooth became dark when the child was 5 years of age. Patient often experienced stomatitis because of this condition. The patient didn't feel pain and swelling. Patient wanted to be treated for these teeth.

General medical history and dental abnormalities were not found. Patient's behavior before and after treatment was positive, accepting treatment and following instructions. The plaque score of the child was 1.5 (medium). On extraoral examination no abnormalities were found. On intraoral examination, it was found that the child was in the period of primary teeth. There was no dental anomaly, malocclusion, and no premature loss. Clinical finding were caries media on teeth 53,73,85, caries profunda on teeth 52,61, physiological resorption on teeth 71,72,82, and decubitus ulcer on tooth 51. Intraoral examination on tooth 51 is retained root, vitality (-), percussion (+), palpation (-), tenderness (-). The condition of soft tissue around tooth 51 was inflamed, and ulcer was found. The diagnosis of based on clinical examination, was apical fenestration tooth 51. Steps taken for this patient were described below:

1. Preparing tools and materials Intraoral mirror, tweezers, halfmoon sonde, excavator, check retractor, cotton roll, cotton pellet, gauze, betadine, alcohol, pliers remove the remaining anterior root of the child, 1cc syringe, Pehacain®. (Figure 1)
2. Put povidone iodine 10% in a circular motion, from inside out using betadine in the area to be extracted, for aseptic precaution. (Figure 2)
3. Dry the working area with threeway syringe, apply topical gel anesthesia (Precaine®, Lidocaine 8%, Dibucaine 0.8%) to the labial gingiva. (Figure 3)
4. Inject Pehacain® (Lidocain HCL 20 mg and Epinephrine 0.0125 in 1 mg) with a 1cc syringe on the labial gingival mucosa of tooth 51. (Figure 4)
5. Check if the anesthetic has worked, and loosened periodontal ligament with escavator. (Figure 5)
6. Extract tooth 51 pediatric anterior root forceps, avoid pressing the coronal portion apically to prevent deeper intrusion of root apex the permanent tooth germ. (Figure 6)
7. Control of bleeding with gauze, after the 51 teeth were removed. (Figure 7, 8, 9)
8. Give the patient post-extraction instructions and follow-up for patients is 1 week of control, re-control 3-4 weeks and 6-8 weeks and 6 months, and took radiograph if needed.

Fig 1: Intraoral Photograph on Occlusion

Fig 2: Put povidone iodine 10% in a circular motion

Fig 3: Apply topical gel anesthesia

Fig 4: Inject Pehacain®

Fig 5: Loosened periodontal ligament with escavator

Fig 6: Extracted tooth 51

Fig 7: Control of bleeding with gauze

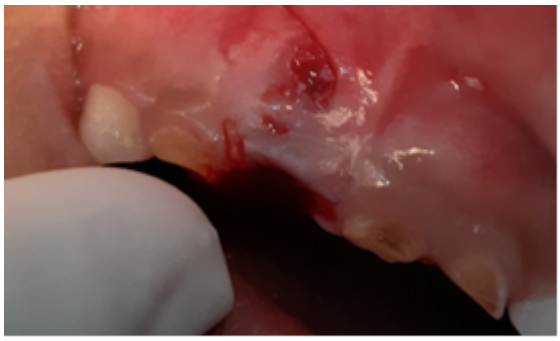

Fig 8: Condition after extraction

Fig 9: The result of extracted tooth

DISCUSSION

The patient was diagnosed as apical fenestration tooth 51 due to traumatic dental injury. The classification of trauma on tooth 51, according to Ellis and Davey, was Class IX, which was trauma occurring in primary teeth. The trauma classification according to WHO was intrusion subluxation (N 503.21).[9]

The differential diagnosis of this patient was chronic periapical abscess 51. However, clinical examination showed that the mass in the apex region had a hard consistency resembling the root of a tooth. This clinical manifestation was not fistulae or abscess because of soft consistency and positive palpation, so that the differential diagnosis could be eliminated.

Intrusion of primary first incisor usually does not require immediate treatment because it will usually erupt spontaneously for several weeks and reach its original position in 6 months. However, there is difference in non-vital condition of apical fenestration in deciduous teeth, which have experienced caries, trauma, or subluxation. This loss of vitality will interfere with physiological resorption and affect the germs of the permanent teeth, and create periapical infections. This can cause cortical bone destruction in the labial part due to several inflammatory mediators and make the root apex exposed.[3]

The American Academy of Pediatric Dentistry[10] reveals several guidelines for dealing with apical fenestration

due to intrusion. The tooth needs to be extracted When the apex moves towards the labial bone, and the apical section looks shorter than the contralateral tooth, because it can disrupt the developing tooth germ. In these patients, dental extraction is highly recommended.

Extraction of retained root teeth in 51 required surgical asepsis with povidone iodine 10%, and topical gel anesthesia (Precaine®, Lidocaine 8%, Dibucaine 0.8%) on the labial gingiva. This made the peripheral nerve fibers gingival region anesthetized, so it would reduce the patient's pain when injected. Furthermore, infiltration anesthesia with Pehacain® (Lidocain HCL 20 mg and Epinephrine 0.0125 in 1 mg) with a 1cc syringe on the labial gingival mucosa of 51 tooth will anesthetize the superior anterior alveolar nerve.

Extraction was continued by using the pediatric anterior root plier, avoid pressing the coronal portion apically to prevent deeper intrusion of root apex the permanent tooth germ. After that, patients were given post-extraction instructions.

According to the recommendations of the American Academy of Pediatric Dentistry, follow-up for patients is 1 week of control, re-control 3-4 weeks and 6-8 weeks and 6 months, and took radiograph if needed. Its successor will erupt at the age of 7 to 8 years old, with complete root formation until the age of 10 years old.

SUMMARY

Trauma on children teeth needs special attention, because it can cause problems in the deciduous teeth and also permanent teeth that will erupt. Examination and proper handling will provide a better prognosis in the affected teeth. Based on the medical history and clinical examination, patient experienced apical fenestration 51 due to intrusion. The classification of trauma in this tooth according to Ellis and Davey is Class IX, which is trauma occurring in the primary teeth. The trauma classification according to WHO is intrusion subluxation (N 503.21). Management of this patient was extraction of retained root tooth 51. Patients were given post-extraction instructions and follow-up for patients is 1 week of control, re-control 3-4 weeks and 6-8 weeks and 6 months, and took radiograph if needed.

ACKNOWLEDGMENTS

The authors declare no conflict of interest

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