

Case Report

Management of Dental Trauma in Children

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ABSTRACT

Background: The trauma incidence in primary teeth mostly occurs in children aged 2-3 years and if not handled properly can interfere child psychological and jaw growth and development.

Purpose: This case aims to describe trauma management in the first anterior teeth of early childhood.

Case: A 2.5-year-old girl came with her parents to the Department of Pediatric Dentistry, Indonesia with complaints dental trauma and caused 2/3 crown disappear.

Case Management : Patient was indicated for pulpectomy with restoration of composite strip crown.

Conclusion: Dental trauma requires proper and immediate treatment such as pulpectomy and final restoration.

INTRODUCTION

Dental trauma is a damage that affects the hard tissue of the teeth and / or periodontal due to mechanical causes. Anterior tooth trauma can occur directly and indirectly. A direct dental trauma occurs when a hard object hits the tooth directly, an indirect dental trauma happened when a collision hits the chin causes the lower jaw to hit the upper jaw with sudden or great force or pressure.¹ The epidemiology of dentoalveolar fractures is similar to the epidemiology of maxillofacial fractures. The peak incidence occurs in children aged 2 - 3 years, usually occurs in the four anterior teeth. The most commonly reported etiology is due to falls and sports accidents. The most prevalence etiologies for increasing age are traffic accidents and fights.^{2,3}

Trauma to primary teeth can have effect on permanent teeth, that are the presence of white or yellowish color on the crown of a permanent tooth, hypoplastic enamel, a stoppage of root growth and eruption disruption. Dentists, parents and teachers must have knowledge about the emergency management of trauma to the teeth. All treatment procedures in cases of dental trauma carried out quickly and precisely can reduce the occurrence of tooth loss and alveolar bone. Trauma regarding the primary teeth of young children needs to be treated appropriately and as quickly as possible, so that the teeth can be maintained until replaced by permanent teeth.^{1,2}

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CASE REPORT

A 2.5-year-old girl came with her parents to the Dental Hospital Faculty of Dentistry Universitas Padjadjaran, Bandung, West Java, Indonesia with complaints of falling when playing and breaking her teeth. Clinical examination showed that there was a crown fracture on

dental pulp 51 and the fracture caused 2/3 crown 61 to disappear. The child was planned for composite restoration on tooth 51 and pulpectomy treatment with the final restoration of composite strip crown 61. There were also injuries to the child's lower and upper lip (Figure 2). Posture normal (Figure 1).



Fig 1: Body Posture



Fig 2: Tooth Fracture on 51 and 61

Steps taken for this patient were described below:

1. Determine the working length of the x-ray or 1 mm from the average root length table.
2. Control the pain with local anesthesia and isolation by using a rubber dam.
3. Discard the entire caries network and prepare access cavity with a round bur.
4. Extending the dental pulp tissue 51 and 61 with barbed broach and irrigation with 0.9% saline.
5. Tooth canal preparation 51 and 61 by using K-File No. 10-30. Root canal irrigation with 0.9% saline. Dry it with a paper point and sterilize it with Cresotin, then cover it with a temporary patch. Control 3 days later.

6. Root canal filling of teeth 51 and 61 with Zinc Oxide Eugenol material, then put the glass ionomer cement on the top.
7. Restoration with composite material on tooth 51 and composite strip crown on tooth 61 (Figure 3).
8. Evaluate 1 week later



Fig 3: Final Restoration of 51 and 61

DISCUSSION

Dental trauma usually occurs suddenly, directly and unexpectedly. Factors that can affect the effect or type are the amount of impact energy, direction, resistance and shape of the causative object. Primary dental trauma can cause pain, affect aesthetics and function, interfere with the growth and development of permanent teeth and have negative psychological effects on children and parents.⁵

Examination and treatment of dental trauma on primary teeth has its own challenges because of the child's cooperative level and limited communication skills. The dentist needs to do a thorough and comprehensive examination of the child's general condition before drawing up a dental treatment plan that is needed after trauma. Initial examination and treatment in patients with primary teeth trauma in general still adheres to the standard safety procedures for trauma patients, namely airway, breathing, and circulation. The general condition

of the patient remains a top priority, despite the visible trauma and injury to the condition of the teeth.⁵

The initial process of examination of primary teeth trauma is to do anamnesa from the patient and parents. The first step is to determine the time of the trauma, ask the location of the incident to find out if the child needs tetanus prophylaxis, how it happened, the general condition of the child after trauma (fainting, dizziness, vomiting, amnesia), changes in bite or occlusion, sensitivity to cold or hot stimuli, a history of dental care for the presence of fluid coming out of the nose and ears also needs to be evaluated to see the risk of injury to the cranial bones. The process of clinical examination of the teeth is done after the teeth have been cleaned of all post-traumatic debris. Examination carried out extraoral, intraoral and radiographic. Radiographic examination can be useful to see root condition, the effect on periodontal tissue and permanent tooth seed.^{6,7}

Treatment of primary teeth pulp in dentoalveolar trauma cases involving the pulp is pulpectomy. Pulpectomy is a procedure for irreversibly infected pulp tissue or necrosis due to caries or trauma.¹ The aim of treatment is successful treatment for caries-affected pulp, so that the tooth can remain in the oral cavity in a non-pathological state, in a healthy condition, and meets the criteria as a component of primary teeth, where primary teeth are retained not only to meet mastication needs, but also as a space maintainer for permanent teeth.⁸ Non-vital teeth can be successfully maintained when the pulpectomy procedure is performed well. The root canals are cleaned, formed and then filled with a paste that can be absorbed such as zinc oxide eugenol, calcium hydroxide or iodoform base.⁹

Indications of pulpectomy of primary teeth are:

1. Pulp necrosis of primary or carious teeth and fractures affecting the pulp in vital anterior primary teeth

2. Teeth that can still be restored
3. Radiographic features have no root resorption
4. The existence of tooth retention

The pulp was extirpated and the root canals were irrigated with saline (0.9%), chlorhexidine (0.4%) or sodium hypochlorite (0.1%). When using sodium hydroxide irrigation to the apex, care must be taken because of the potential for irritation and is cytotoxic. The working length was determined to be 2 mm shorter than the apex. Intraradicular cleaning is carried out using a file size no larger than 30. The roots were cleaned and obturated with an absorbable paste such as zinc oxide eugenol cement, calcium hydroxide paste or iodoform paste and the last stage was to be carried out restoration. An expected success rate of 86% in the 3 years is expected.¹⁰

Zinc Oxide and Eugenol mixtures are the first recommended root canal filling for root canal filling of deciduous teeth, as Sweet reported in 1930. Since then, many researchers had reported moderate to high success rates regarding the use of Zinc Oxide paste and Eugenol as a filler for root canals which have chronic infections. Zinc Oxide Eugenol is generally harmless, antiseptic, has mild analgesic properties, has a good attachment to the root canal wall, radiopaque, does not cause discoloration of treated teeth.⁸

Restoration after pulpectomy treatment of anterior primary teeth used composite resin and composite strip crown. Resins are chemically active components in composites. The shape is a liquid monomer. Based on several different types of composites (packable, hybrid, nano, macro, and micro filler) there is strong evidence showing the same clinical results on all of these materials. A survey among pediatric dental clinicians showed that 46% of respondents chose composite strip crown as their first choice for complete restoration of

primary anterior teeth. Retrospective studies show that overall composite strip crown retention ranges from 49% to 80%. The strip crown is a transparent crown for restorative materials especially for aesthetics and functionality, with results that are almost identical to natural teeth and are easily repaired if the crown is broken. While the weakness of the crown is the choice of application technique that is most sensitive to moisture contamination with blood or saliva, which can change the color of the material.^{11,12,13}

SUMMARY

Trauma cases in anterior teeth of early childhood requires proper and immediate treatment such as pulpectomy treatment and final restoration to maintain the presence of teeth in the oral cavity.

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