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RESEARCH ARTICLE

CONSEQUENCE OF ANTERIOR TOOTH TRAUMA: A UNIQUE CASE REPORT

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ABSTRACT

Traumatic dental injuries are very common in young children in the age group of 2 to 5 years. This is most often due to the increased motor development during this period. Different types of traumatic injuries affect the primary dentition. The potential for disturbances of the developing germs is relatively high following injuries to their predecessors. Developmental aberrations in the form of coronal discolorations, eruption disturbances, crown/root dilacerations, bifid roots and cessation of root formation are encountered. The current case report highlights an unusual presentation of the sequelae following trauma sustained during early childhood in a permanent maxillary incisor.

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INTRODUCTION

The injury to primary teeth due to trauma depends on a multitude of factors like, the stage of tooth development, relationship of the permanent tooth to primary tooth roots, and direction and amount of force (Talitha de Siqueira Mellara *et al.,* 2012). The prevalence of traumatic injuries to the primary dentition ranges from 11% to 47% world over. The developmental disturbances documented among the permanent teeth vary from 20% to 74% (Pugliese *et al.,* 2004; Jacomo and Campos, 2009). Trauma to the primary dentition may affect the crown, root or the whole permanent tooth bud. The most common sequelae include yellow or brown discoloration, enamel hypoplasia, crown and root dilacerations or eruption disturbances (Tewari and Pandey, 2011). This is a unique presentation of an unusual tooth showing presence of both accessory root with multiple accessory cusps as a result of traumatic injury during childhood.

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CASE REPORT

A 16-year old female patient reported to the Department of Pedodontics & Preventive Dentistry, Faculty of Dental Sciences, Ramaiah University of Applied Sciences, Bengaluru, India with a chief complaint of pain in the upper front tooth region since 1 week. The patient gave a history of fall one month back. The patient's mother also gave past history of trauma sustained at 3 years which resulted in intrusion of 61. On oral examination, the palatal mucosa in relation to 21 displayed a diffused swelling measuring approximately 1cm x1cm extending from the marginal gingiva of 11, 21 upto the incisive papilla posteriorly.The swelling was non-fluctuant and tender on palpation. 21 was tender on percussion & 11 disto-labially rotated with a midline diastema. On a conventional intra-oral periapical radiograph, an unusual root configuration with a periapical radiolucency was seen with respect to 21. For better clarity of the root anatomy and extent of the lesion, a Cone Beam Computed Tomography (CBCT) image of the segment was taken. The CBCT revealed a bifid root in relation to 21.The accessory root was conical in shape with a patent pulp canal and closed apex (Figure 1). It resembled the usual root anatomy oriented palatal to the main root (Figure 2).

Figure 1. Preoperative cbct:saggital section showing accessory cusps and root

Figure 2. CBCT image of the anterior segment showing accessory roots

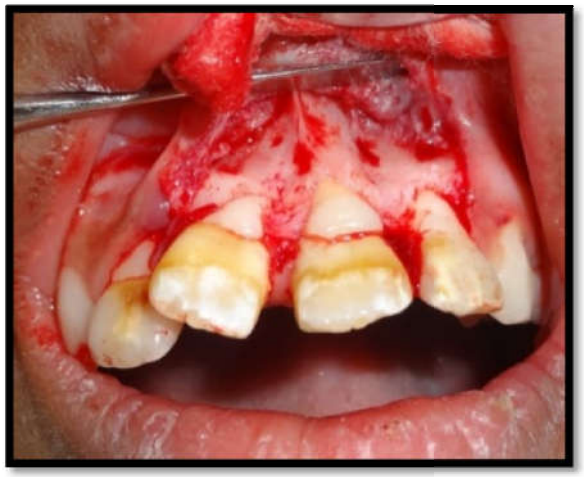

Figure 3. Accessory cusps visible on flap reflection

Additionally, accessory cusps were seen extending from the cervical third of the crown to the coronal third of the root surface of 11,12,21,22 (Figure 3). When viewed sagittally, a single periapical radiolucency with irregular borders measuring 8.7mm in diameter involving the furcation area of 21 was seen. At the periapical region, the CBCT revealed perforation of the buccal and lingual cortical plates. Loss of lamina dura was seen in relation to both roots with no root resorption. Based on the clinical examination and radiographic findings, a diagnosis of periapical abscess was made. The treatment plan comprised of a multidisciplinary approach involving root canal therapy in relation to 21, followed by apicectomy and bone graft placement. During access cavity preparation, the accessory canal orifice was located immediately below the cingulum. On flap reflection, maxillary anteriors revealed accessory cusps about 3mm projecting from the cervical third of the crown which was unusual. The presence of a distinct groove between the accessory cusp and the permanent tooth crown was noted. The labial morphology of the accessory cusps resembled that of primary incisor crowns giving a pseudo impression of deciduous tooth fusion with its successors.

DISCUSSION

Accessory root formation can occur, either by splitting of the Hertwig's epithelial root sheath (HERS) to form two identical roots, or by folding of the HERS to form an independent root (Ahmed and Hashem, 2016). Its aetiology remains unclear but factors like ethnicity, genetic factors, caries, and trauma may play a role (Kang and Kim, 2014; Kocsis and Marcsik, 1989). Based on the chronology of eruption, maxillary permanent incisors show first evidence of calcification by 3-4 months in utero with crown formation being completed by 4-5 years (Kronfeld and Schour, 1939). Any trauma during its development may be associated with anomalies of the permanent maxillary incisors. Root dilacerations, bifid root formation may be a consequence of trauma to the HERS during the formative period (Diab and elBadrawy, 2000). Between 3 and 4 years of age, the root development is initiated and during this period, the root becomes the most susceptible to trauma. Intrusive injuries sustained during 2 to 5 years of age can cause displacement, deflection or distortion of the HERS resulting in changes in root length, shape or root duplication (Pomeroy, 2009). In the current scenario, the accessory root could be probably due to the clefting of the HERS attributed to the force of the intruded tooth. The etiology of accessory cusp formation observed in the present case is unclear. The trauma during the childhood may have caused the primary incisors to intrude severely resulting in disruption of enamel morphodifferentition causing outward folding of the inner enamel epithelium. The accessory cusp in present case could be considered similar to a form of labial Talon cusp (Pomeroy, 2009). Literature suggests that developmental disturbances among the successors were more severe if the traumatic event occurred at a younger age.

Conclusion

The current case is an example of an unusual presentation following trauma. Such anamolies can often go unnoticed jeopardizing the prognosis of the tooth if one relies on conventional diagnostic aids. By means of contemporary diagnostic modalities such as Cone Beam Computed Tomography, an enhanced three dimensional picture of such dental aberrations can be obtained enabling its effective management.

Why this paper is important to paedatric dentists?

- It brings into perspective the unique presentations of sequelae following trauma which may often go unnoticed, when asymptomatic as in the present case.
- It also emphasizes on the importance of an accurate diagnosis in such cases through advanced imaging tachniques

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