CASE REPORT

'Mend the bend': a report of two cases of labial dilacerated and palatal dilacerated crownA Avinash,¹ Alok Dubey,¹ Vishal Khandelwal,² Prathibha Anand Nayak³¹Department of Pedodontics, Rungta College of Dental Sciences, Bhilai, Chhattisgarh, India²Department of Pedodontics, Modern Dental College and Research Center, Indore, Madhya Pradesh, India³Department of Periodontics, Mahatma Gandhi Dental College & Hospital, Jaipur, Rajasthan, India**Correspondence to**

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SUMMARY

Dilaceration is the result of a developmental anomaly in which there has been an abrupt change in the axial inclination between the crown and the root of a tooth. Crown dilaceration of permanent tooth occurs due to the non-axial displacement of the already formed hard tissue portion of the developing crown at an angle to their longitudinal axis due to trauma to the primary predecessors. Thus endo-aesthetic management of such teeth helps in maintaining morphology as well as aesthetics in a growing child. This article depicts two cases of severely dilacerated crown.

BACKGROUND

The term dilacerations was first used by Tomes¹ in 1848, and it is defined as a deviation or bend in the linear relationship of a crown of a tooth to its root (Latin: dilacero=tear up). Dilaceration is usually associated with dental trauma to a deciduous predecessor, in which the tooth is driven apically into the jaw. This is a rare condition, representing only 3% of the total of injuries to developing teeth and usually occurs in permanent maxillary incisors because of the proximity of their tooth germs to the primary incisors, which are more susceptible to trauma.²⁻³ Trauma results in change of the calcified portion of the tooth and the remaining tooth develops at an angle. The curve or bend in the tooth may occur anywhere along the length of the tooth, depending on the amount of tooth formed when the injury occurred.⁴

The purpose of this case report is to present the management of two rare cases of crown dilacerations of a permanent maxillary central incisor.

CASE PRESENTATION

A 14-year-old boy was brought to our OPD with an irregular front tooth which was causing aesthetic problem.

The child was healthy and had no history of any systemic disease. Mother reported that the patient had suffered trauma to the upper anterior tooth region at 3 years of age due to a bicycle fall and, at that time, clinical and radiographic examination at an emergency dental service revealed intrusion of the primary maxillary incisor, which was extracted at that moment. She reported that the permanent successor erupted with alterations of colour and shape.

The intraoral clinical examination revealed an acute curvature at the cervical third of the clinical crown to the labial side (figure 1A,B). Intraoral periapical radiograph confirmed the presence of crown dilaceration on the maxillary right central incisor (figure 2). Carious lesions were observed on buccal as well as palatal side of the tooth crown along the junction between the dilacerated and non-dilacerated portions. Hypoplastic area was observed on the crown portion of the right maxillary central incisor. It was planned to rehabilitate the tooth with endodontic root canal treatment followed by Glass Fiber Reinforced Composite Resin Fiber (GFRCR) and porcelain jacket crown.

After obtaining adequate anaesthesia, carious lesion was removed, surgical exposure of 11 was performed and single visit root canal treatment for 11 was performed. The patient was asked to report after a week, pulp chamber was prepared to receive a postmade with a suitable length of GFRCR. Following etching with orthophosphoric acid and application of bonding agent (Scotland Bond; 3M

Figure 1 (A) Clinical picture of 11 showing brownish discolouration and buccally displaced crown. (B) Incisal view shows acute curvature at the cervical third of clinical crown.

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Figure 2 Periapical radiograph of 11 showing coronal foreshortening due to bend in the crown.

ESPE, St. Paul, Minnesota, USA), the prepared GFRCR fibre stump together with flowable composite was inserted into the canal and polymerised as a single unit (figure 3). An incremental core buildup of this stump was performed with composite resin.

Figure 3 Intra-oral periapical showing fibre postplaced in radicular space prepared for postendodontic restoration.

Figure 4 Postoperative clinical picture with crown placement i.r.t 11.

Figure 5 Clinical picture of 21 showing yellow-brownish discolouration and palatally displaced crown.

Jacket crown preparation was done and elastomeric impression was made. An aesthetic porcelain jacket crown was placed after a week and postinsertion instruction were given (figure 4).

Figure 6 Intra-oral periapical showing crown dilaceration with open apex i.r.t. 21.

Figure 7 (A and B) Preoperative and postoperative clinical picture showing successful aesthetic rehabilitation of the child.

Case 2

An 8-year-old boy reported to our OPD with irregularly placed left upper anterior tooth. The child gave history of trauma to orofacial region around 3–4 years previously (figure 5). On examination 21 was found to be palatally displaced the tooth was yellow–brown and hypoplastic. Intra-oral periapical was taken, which revealed crown dilaceration towards palatal side (figure 6). The patient has been planned for intentional RCT and aesthetic rehabilitation. No treatment is started at this stage as the apices are still open. We have opted to wait and radiographically observe for physiological root closure. Once the apical root closure is achieved physiologically, intentional RCT and aesthetical rehabilitation will be planned. The same plan was explained to parents and they agreed with the treatment (figure 7A, B).

DISCUSSION

The disturbances to the permanent successor teeth due to trauma to the primary predecessors range from a simple white or yellow-brown discolouration to enamel hypoplasia, crown dilaceration, root duplication, root dilaceration, partial or complete arrest of root formation, odontoma-like malformation, sequestration of the permanent tooth germ, and disturbances of permanent successor eruption.⁵ The patients described in this paper presented crown dilaceration and white/yellow-brown discolouration with enamel hypoplasia in the permanent anterior teeth as a result of trauma to the primary teeth.

At the age of 3–5 years, the tooth germ of the permanent incisors develops in labial direction and position closer to the resorbing root of the primary tooth.⁶ If a child exposed to trauma at this critical age, the crown of the permanent tooth can be affected due to direct relationship with the resorbed root of the primary tooth.⁷ The resorbing apex of the primary incisor creates an impact point with the incisal edge of the permanent crown and causes this crown to turn upward, into its tooth follicle.^{6–8} Because the permanent incisor root is not fully developed at the time of injury, part of the already formed root will rotate along the crown, resulting in crown dilacerations. This dilacerations creates an abnormal angle between the root and the crown and the longitudinal axis of the root is deformed.⁹ In the present cases the aetiology of crown dilaceration of the succedaneous teeth can be attributed to the trauma of the predecessor tooth during the stage of crown formation as the roots of the primary incisors are in proximity to the developing permanent teeth.

In the first case we wanted to give the patient an aesthetic, functional and durable restoration, so we use GFRRCR fibres as a post. GFRRCR has high bond strength of 500 MPa and shows improved bonding with composite.¹⁰ Removal of dilacerated part of crown followed by porcelain jacket crown gave immense satisfaction to child as well as parents. At 6-month recall visit patient was asymptomatic. The patient continues to be on periodic evaluation. In the second case, we have adopted a wait-and-watch policy as we want to achieve a physiological root closure, which shall be followed by definitive management.

Learning points

- Crown dilacerations is a rare condition.
- It usually occurs in permanent maxillary incisors because of the proximity of their tooth germs to the primary incisors.
- The curve or bend in the tooth may occur anywhere along the length of the tooth, depending upon the amount of tooth formed when the injury occurred.
- Endo-aesthetic management of such teeth helps in maintaining morphology and aesthetics in a growing child.

Competing interests None.

Patient consent Obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

REFERENCES

- 1 Tomes J. *A course of lectures on dental physiology and surgery delivered at the Middlesex Hospital School*. London: John W. Parker, 1848.
- 2 Andreasen JO. *Traumatic injuries to the teeth*. 2nd edn. St Louis: CV Mosby Co, 1972:273–320.
- 3 Maragakis GM. Crown dilaceration of permanent incisors following trauma to their primary predecessors. *J Clin Pediatric Dent* 1995;20:49–52.
- 4 Adlakha VK, Chandna P, Gandhi S, et al. Surgical repositioning of a dilacerated impacted incisor. *Int J Clin Pediatr Dent* 2011;4:55–8.
- 5 Diab M, el Badrawy HE. Intrusion injuries of primary incisors. Part III: effects on the permanent successors. *Quintessence Int* 2000;31:377–84.
- 6 Crescini A, Doldo T. Dilaceration and angulation in upper incisors consequent to dental injuries in the primary dentition: orthodontic management. *Prog Orthod* 2002;3:29–41.
- 7 Senem YO. Dilacerated of mandibular central incisor: a case report. *Saudi Endod J* 2011;1:44–9.
- 8 Andreasen JO, Flores MT. Injuries to developing teeth. In: Andreasen JO, Andreasen FM, Andreasen Leds. *Textbook and color atlas of traumatic injuries to the teeth*. Oxford: Blackwell Munksgaard, 2007:542–76.

9 Topouzelis N, Tsaousoglou P, Pisoka V, *et al.* Dilacerations of maxillary central incisor: a literature review. *Dent Traumatology* 2010;26:335–41.

10 Island G, White GE. Polyethylene ribbon fibers: a new alternate for restoring badly destroyed primary incisors. *J Clin Pediatric Dent* 2005;29:151–6.

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