

Case Report

Aesthetic Management of Maxillary Lateral Incisor with Turner's Hypoplasia by Combined Orthodontic-Restorative Approach

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ABSTRACT:

Hypoplasia of enamel can be defined as disruption in its matrix formation leading to defective quality and thickness of enamel. Turners hypoplasia mostly affects single tooth in the mouth, in contrast to other forms of hypoplasia which influence more than one tooth. The management of hypoplasia depends on its severity and aims to replace the damaged outer enamel layer and cover all the dentin. If the hypoplasia (defect) is smaller, a filling may be sufficient while for more extensive hypoplasia, a crown is required. The present case describes management of a case of turner's hypoplasia affected maxillary lateral incisor.

Key words: Enamel hypoplasia, infection, trauma, Turner's hypoplasia.

Received: 13 May, 2019

Revised: 12 June 2019

Accepted: 14 June 2019

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This article may be cited as: Mittal N, Patel PS, Tripathi KP, Parashar V. Aesthetic Management of Maxillary Lateral Incisor with Turner's Hypoplasia by Combined Orthodontic-Restorative Approach. J Adv Med Dent Scie Res 2019;7(7): 50-52.

INTRODUCTION:

Hypoplasia is a quantitative defect of enamel that may clinically be identified as an external defect involving the surface of the enamel and is associated with reduced enamel thickness.^[1] The cervical and the incisal borders of the defects have a rounded appearance due to the prisms in the non-affected enamel is being bent, which may be attributed to a change in the prism direction. The macro and microscopical appearances suggest that only some specific ameloblasts have ceased to form enamel, whereas others are partly or completely able to fulfil their task.^[2] Unlike other abnormalities which affect a vast number of teeth, Turner's hypoplasia usually affects only one tooth in the mouth and it is referred to as a Turner's tooth. The most likely cause of Turner's hypoplasia involving canine or a premolar is presence of an infection during deciduous dentition of the mouth. If Turner's hypoplasia is found in front teeth, the most likely cause is a traumatic injury to a primary tooth. Enamel hypoplasia being more severe in permanent dentition can however occur in both deciduous as well as permanent dentition.

The characteristics of clinical enamel hypoplasia include unfavourable esthetics, higher dentin sensitivity, malocclusion and dental caries susceptibility.^[3] The treatment challenge in this type of injury is to restore both esthetics and function.

CASE REPORT

A 19 year old male reported to our department of conservative dentistry and endodontics with complaint of small sized and deformed upper front tooth and need an aesthetic correction. The patient had a history of trauma 12 years back. On clinical examination, the right maxillary lateral incisor was hypoplastic, small sized and rotated mesially (fig 1). Radiographic examination revealed dilacerated root of maxillary right lateral incisor (fig 2). There was a space of 2mm on both mesial and distal aspects of the teeth. The right central incisor showed an Ellis class 2 fracture. Medical history was not relevant. The treatment plan was orthodontic correction of crown position by rotation and extrusion on the first phase followed by restorative phase with crown

placement. The interdisciplinary approach was explained to the patient and consent was obtained.

The orthodontic correction was started with straight wire technique. The extrusion along with derotation of the lateral incisor was done first to give a normal crown length for restorative procedures (fig 3). The orthodontic alignment was done in such a way that equal space was given on both mesial and distal sides of the teeth. Then

the brackets were debonded (fig 4). Since the crown structure was insufficient for tooth preparation because of limited extrusion owing to dilaceration of root, the core build up of the tooth with composite was done with A2 shade composite (fig 5) and correction of the fractured central incisor was done with composite build up. Then tooth preparation was done and metal ceramic crown was given as final restoration (fig 6).



FIGURE 1: PREOPERATIVE PHOTOGRAPH



FIGURE 2: PREOPERATIVE RADIOGRAPH



FIGURE 3: ORTHODONTIC CORRECTION



FIGURE 4: AFTER ORTHODONTIC CORRECTION



FIGURE 5: AFTER COMPOSITE BUILD UP



FIGURE 6: AFTER CROWN CEMENTATION

DISCUSSION:

In the present case report it was seen that traumatic injuries to primary predecessors had lead to developmental disturbances in their successor. The permanent tooth which erupted exhibited crown and root defects like defective enamel formation and dilacerations. Tiecke *et al*, has defined crown dilaceration as a deviation or bent in the linear relationship of a crown to its root. Permanent maxillary central incisors are the most commonly dilacerated teeth. According to Andreasen, incidence of dilaceration in permanent teeth was 25% with primary tooth injury leading to developmental disturbances secondarily.^[4] Van Gool emphasized that dilaceration of permanent tooth followed by a traumatic injury to deciduous predecessor where the tooth was driven into the alveolus.^[5,6]

The pathology of crown dilaceration can be explained by the theory of displacement of the enamel epithelium and mineralized portion of tooth in relation to dental papilla and cervical loop. Traumatic non axial displacement occurs in already formed hard tissue portion of the tooth.^[7,8] Injury in second or third year of life may lead to only a portion of the crown tipping while whole of the crown may be tipped if the injury occurred during the fourth or fifth year. The calcified coronal portion moves bodily within the bone in response to an injury, leaving behind the more apically situated soft tissue elements undergoing calcification. If the formative tissue manages to survive the incident, it will continue development in its original alignment so that a deviation results between it and the previously calcified part of the tooth that has been moved by the injury.^[9] In the present case, the tooth was derotated and extruded orthodontically that increased the clinical crown size and was followed by core build up with composite resin. Restorative treatment options for hypoplastic incisors include procedures such as porcelain laminate veneers, metal-ceramic restorations, and all-ceramic crowns, as well as minimally invasive procedures such as direct resin composite bonding veneers.^[10,11] In this case we preferred full coverage crown compared to the direct composite for many reasons. The benefits of direct composite bonding include preservation of tooth structure, can easily change emergence profile and angles, easily repairable, can be polished and repolished to high shine and non expensive. But the disadvantages of direct composite restorations are they get easily fractured, discolored, developed marginal leakage and deleterious effect on gingival health in patients with poor oral hygiene.^[12] Because of certain disadvantages of the direct composite restoration, full coverage restoration with metal ceramic crown was opted that provides higher strength and better aesthetics in an otherwise hypoplastic tooth with short clinical crown length. The metal ceramic crown will be in compliance with the gingival health of the patient and have good retentive and resistance features compared to the direct composite restorations.

CONCLUSION:

Enamel hypoplasia with root dilaceration poses challenge to dentists specially if crown structure is not sufficient to support a prosthesis since root dilaceration makes tooth extrusion for increasing clinical crown length difficult and of greater risk. In the present case, maintaining the tooth vitality, a conservative approach was undertaken to maintain the integrity of the arch along with esthetics. Further studies should be done to explore more conservative approaches with more esthetic results.

REFERENCES:

1. Jalevik B, Noren JG. Enamel hypomineralization of permanent first molars: A morphological study and survey of possible aetiological factors. *Int J Paediatr Dent.* 2000;10:278–89.
2. Sabel N, Klinberg G, Dietz W, Nietsche S, Noren JG. Polarized light and scanning electron microscopic investigation of enamel hypoplasia in primary teeth. *Int J Pediatr Dent.* 2010;20:31–6.
3. Kalra N et al. Sequelae of neglected pulpal infections of deciduous molars. *Endodontology.* 1994;6:19–23.
4. Andreasen JO et al. The effect of traumatic injuries to primary teeth on their permanent successor. *Scand J Dent Res* 1971;145:229
5. Van Gool AV et al. Injury to permanent tooth germ after trauma to the deciduous predecessor. *J Oral Surg Oral Med Oral Pathol* 1973;35:2-12.
6. Matsumiya S et al. experimental pathological study of the effect of treatment of infected root canals in deciduous tooth on growth of permanent tooth germ. *Int Dent J* 1968;18:548-9.
7. Andreasen FM, Andreasen JO. Textbook and color atlas of traumatic injuries to the teeth. Mosby Co; 1994. p. 457-94.
8. Asokan S, Rayen R, Muthu M, Sivakumar N. Crown dilaceration of maxillary right permanent central incisor: A case report. *J Indian Soc Pedo Prev. Dent* 2004;22:4.
9. Ligh RQ. Coronal dilacerations. *J Oral Surg Oral Med Oral Pathol* 1981;51:56.
10. Operative Dentistry - A Practical Guide to Recent Innovations – Hugh Devlin Springer.
11. The Art and Science of Operative Dentistry - Studervant 5th ed Elsevier
12. Linda Greenwall, Treatment options for peg shaped laterals using direct composite bonding, *International Dentistry SA* vol 12 no 1