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MANAGEMENT OF TURNER'S TOOTH

Endodontics

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ABSTRACT

Management of Turner's tooth using direct composite veneer. Enamel hypoplasia may be defined as an incomplete or deformative formation of the organic enamel matrix of the teeth. Turner's dysplasia or Turner's tooth is a type of enamel hypoplasia caused due to local infection or trauma; the incidence of this hypoplasia being 46.08% [1]. Hypoplasia results only if the injury occurs during the time the teeth are developing, formative stage of enamel development. There is no treatment except of cosmetic appearance. Different treatment modalities such as crowns or veneers can be attempted depending upon the degree of hypoplasia. The clinician needs a balanced treatment protocol to make a decision on a complete review of the case. In the following paper, we present a clinical case report of aesthetic management of Turner's tooth.

KEYWORDS

Enamel hypoplasia, vital, trauma, Turner's hypoplasia, direct composite veneer.

INTRODUCTION-

Enamel hypoplasia may be defined as an incomplete or defective formation of the organic enamel matrix of the teeth. It can be either hereditary or environmental factors (i.e. nutritional deficiency, certain exanthamtous diseases, congenital syphilis, hypocalcemia, birth injury, local infection or trauma, ingestion of chemicals like fluoride, idiopathic). Histologically, there is a disturbance in the differentiation or viability of ameloblasts. [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.

If Turner's hypoplasia is found on a canine or a premolar, the most likely cause is an infection that was present when the primary tooth was still in the mouth. Most likely, the primary tooth was heavily decayed and an area of inflamed tissues around the root of the tooth affected the development of the permanent tooth. The appearance of the abnormality will depend on the severity and longevity of the infection.

If Turner's hypoplasia is found in the anterior area of the mouth, the most likely cause is a traumatic injury to a primary tooth. The traumatized tooth, which is usually a maxillary central incisor, is pushed into the developing tooth underneath it and consequently affects the formation of enamel. Because of the location of the permanent tooth's developing tooth bud in relation to the primary tooth, the most likely affected area on the permanent tooth is the facial surface. White or yellow discoloration may accompany Turner's hypoplasia.[3]

Hypoplasia was categorized into the following types by *Silberman et al*.[4]

Type I hypoplasia: Enamel discoloration due to hypoplasia
Type II hypoplasia: Abnormal coalescence due to hypoplasia
Type III hypoplasia: Some parts of enamel missing due to hypoplasia
Type IV hypoplasia: A combination of previous three types of hypoplasia.

There is no treatment, except of improving cosmetic appearance in cases of vital teeth with enamel hypoplasia.

The following paper is a case report of a mandibular incisor with Turner's dysplasia, which was successfully treated using direct composite veneer.

Case Report-

A 16 year old male was referred to the Department of Endodontics with of brownish discoloration seen along with a horizontal furrow at the junction of the middle and cervical third on the labial surface, since the eruption of 41. Patient had no history of sensitivity to cold food; no history of nocturnal pain or pain on chewing or biting. Vitality test with 41 elicitated a positive response. An intraoral radiograph revealed no periapical pathology. Based on the clinical and radiographic findings, a diagnosis of Type I hypoplasia was done, and the patient was advised direct composite veneer restoration. [Fig 1]

Figure 1: Pre-operative picture with Type I hypoplasia

Prior to cavity preparation, shade selection was done as A1 in the middle and incisal third and A2 in the cervical third, using the Vita scale. [Fig 2]

Figure 2: Shade selection with 41

Following shade selection, tooth preparation was done with a diamond depth cutter and round end tapering diamond with a high-speed handpiece and a under water cooling; about 0.8-mm-deep window preparation was done on the labial surfaces of the tooth. Cervical borders of the preparations were arranged just at the same line of the gingiva by setting a cervical step without impinging on the natural gingival contour.[Fig 3]

Figure 3:Tooth preparation with 41

For mesial and distal margins of the teeth, transparent matrix bands were cut, applied and fixed with appropriate wedges. Isolation was done using cotton rolls and Retraction cords (size-000, Zhermack) were placed in the gingival sulcus.

Etching was done using 37% phosphoric acid on the enamel surfaces for 15 seconds, rinsed with water spray for 20 seconds and dried

slightly. Bonding agent was applied on the prepared tooth surfaces by using a bonding brush and polymerized with a light-curing unit for 20 seconds. The prepared surface were restored with A2 shade of composite resin on the cervical third and A1 composite resin on the middle and incisal third incrementally and polymerized each time for 30 seconds. [Fig 4]

Figure 4: Direct Composite Veneer Done With 41

Following shade selection, tooth preparation was done with a diamond depth cutter and round end tapering diamond with a high-speed handpiece and a under water cooling; about 0.8-mm-deep window preparation was done on the labial surfaces of the tooth. Cervical borders of the preparations were arranged just at the same line of the gingiva by setting a cervical step without impinging on the natural gingival contour.[Fig 3]

Figure 5: Shofu polishing discs

Figure 6: Pre-operative clinical image **Figure 7: Post-operative clinical image**

DISCUSSION-

Enamel Hypoplasia due to local infection or trauma is unusual and only a single tooth may be involved. It is most commonly seen in permanent maxillary incisors or a maxillary or mandibular premolar. There may be any degree of hypoplasia, ranging from mild, brownish discoloration of the enamel to a severe pitting and irregularity of the tooth crown. These single teeth are frequently referred to as **"Turner's teeth",** and the condition is called 'Turner's hypoplasia'. [2]

Hypoplasia is a disturbance that occurs at the time when teeth are developing and is associated with macroscopic enamel defects. Traumatic injuries to the primary dentition are very common, affecting from 4-30% of all children.[5] The effect of trauma is more pronounced if it occurs prior to third year of life. The assessment of trauma in primary dentition seems to be very important because of the presence of sequelae in the permanent dentition. Diana Ribeiro *et al* reported from their longitudinal study of 8years that discolorations of enamel and/or enamel hypoplasia (46.08%) were the most prevalent sequelae on permanent dentition due to traumatic injury.[6]

If a deciduous tooth becomes carious during the period when the crown of the succeeding permanent tooth is being formed, a bacterial infection involving the periapical tissue of the deciduous tooth may disturb the ameloblastic layer on the permanent tooth and result in hypoplastic crown. The severity of the hypoplasia depends upon the severity of infection, the degree of tissue involvement, and the stage of permanent tooth formation during which the infection occurred. A similar type of hypoplasia may follow trauma to a deciduous tooth, particularly when the deciduous tooth has been driven into the alveolus and has disturbed the permanent tooth bud. If this permanent tooth crown is still being formed, the resulting injury may be manifested as a yellowish or brownish stain or pigmentation of the enamel, usually on the labial surface, or as a true hypoplastic defect or deformity. This form of dental injury can occur due to disturbance, either in matrix formation or in calcification, depending chiefly upon the stage of tooth formation at the time of injury.[2]

Parents should be informed about this condition, so that they will not overlook any minor injuries that occur in early childhood and/or ignore any untreated, potentially carious primary teeth, as these may result in developmental defects of the permanent dentition. Delayed treatment of affected primary and permanent teeth can lead to pulp pathosis and its sequelae. The primary goal in the treatment for Turner's hypoplasia should be to preserve the vitality of the tooth and prevent further enamel destruction, rather than any aesthetic considerations. Enamel hypoplasia usually can be managed by restoring the affected enamel (that is, bonding a tooth-coloured material on the tooth to protect it from further wear) and following proper oral hygiene methods. Topical fluoride application is effective at reducing dentin sensitivity and caries. In most cases, interim therapeutic restorations are necessary until definitive rehabilitation is possible.[7]

CONCLUSION-

The need for close periodic examination and early detection of all possible developmental defects in the permanent dentition and the importance on preventive measures should be stressed for maintaining the vitality of the tooth. The dentist has to make the decision after a complete review and a correct indication after proper clinical examination. The dentist should also analyze the patient's socioeconomic status, aesthetic expectations and oral hygiene conditions. Many patients desire smile enhancement procedures that are less invasive on their teeth and which are also economical. Therefore, by understanding sound principles, selecting the right dental materials, and applying proven techniques, the clinician can deliver predictable and natural-looking direct composite restoration for the teeth.

Clinical Pictures-

Figure 1: Pre-operative picture with Type I hypoplasia
Figure 2: Shade selection with 41
Figure 3:Tooth preparation with 41
Figure 4: direct Composite veneer done with 41
Figure 5: Shofu polishing discs
Figure 6: Pre-operative clinical image
Figure 7: Post-operative clinical image

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