

Case Report

Management of Ectopically Erupting Maxillary Central Incisor Using Removable Appliance

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ABSTRACT

Ectopic eruption is a deviation from normal eruption pattern. The occurrence of ectopic eruption is most commonly associated with maxillary incisors. The normal eruption, position and morphology of these teeth are crucial to craniofacial development, facial esthetics as well as for phonetics. Various etiological factors may be responsible for ectopic eruption of teeth, so their management depends on the correction of the established etiological factor. The present case report describes a case of ectopically erupting right central incisor with incisal edge encased within inner soft tissue of upper lip, which was treated by removable orthodontic appliance.

Key Words: Ectopic eruption, pseudo-pouch, intrusion, removable orthodontic appliance, split labial bow.

INTRODUCTION

A permanent tooth while erupting into the oral cavity and are visible, it moves through the bone along their “path of eruption”. When this eruption path is incorrect, the tooth will erupt in the mouth in an incorrect position or may not erupt at all. This undesirable eruption is called “ectopic eruption”.

Maxillary anterior teeth are important to facial esthetics, they often referred to as the ‘social six’, as they are on maximum display during speech and smile in most individuals. A variety of eruption disturbances arise during the transitional dentition period, which can be broadly classified as: a) disturbances related to time and b) disturbances related to position. Ectopic eruption and transposition are disturbances related to position, which can cause a delay in eruption time; however, commonly the involved tooth erupts within

the expected period with an abnormality in position. ^[1]

Ectopic eruptions can be seen in many regions of the maxillofacial skeleton including palate, maxillary sinus, condyle, orbit, or even through skin. ^[2]

Any tooth can show this type of ectopic path of eruption, studies show that ectopic eruption of upper and lower permanent central incisors amounts to more than half of the total frequency. ^[3]

The prevalence of ectopic eruption is 5.6% and majority of these are permanent central incisors; maxillary incisors can erupt ectopically or be impacted from super-numerary teeth in up to 2% of the population. ^[4,5]

Etiology of this rare developmental anomaly is considered unknown and many controversies exist. Several attempts are made to explain the cause of ectopic eruption, but multifactorial growth and

development process makes it difficult to identify a specific primary etiological factor.

Sweet, in 1939, said it to be related to evolutionary changes, which resulted in gradual reduction in the number of permanent teeth of the human dentition.

O'Meara stated that it may be due to many factors but insufficient intercanine and anteroposterior growth of the jaws contribute the most. [6]

Nikiforuk stated that it may be due to lack of regional bone growth. [7]

Moreover, ectopic eruption of the permanent teeth may occur due to many local causes including trauma, cyst, the presence of supernumerary tooth, retained primary tooth, and crowded dentition/ tooth arch discrepancy. [8]

Congenital defects like cleft palate, single tooth macrodontia may cause ectopic eruption. [9] Intrusive trauma to primary tooth is also one of the many causes of ectopic eruption of the successors permanent tooth. [10]

The present case report describes management of an interesting and unusual case of ectopically erupted right maxillary central incisor with incisal edge encased in inner aspect of upper lip.

CASE REPORT

A healthy 9 years old girl reported to the out patients department of pedodontics and preventive dentistry with a chief complain of unhealed swelling in inner aspect of upper lip with faulty eruption of upper right front tooth. On intraoral examination, we found ectopically erupting permanent maxillary right central incisor, with incisal edge encased within the inner soft tissue of upper lip. The tooth was positioned to an almost horizontal position at the labial sulcus. Due to incisal edge of horizontally erupting tooth it had led to chronic soft tissue irritation of inner aspect of upper lip and labial frenum leading to its hypertrophy and formation of hypertrophied 'pseudo-pouch'. (Fig 1)

As the hypertrophied labial mucosa encased the tooth in such extent, making it invisible in normal mouth-opening positions. The extent of encasing in the 'pseudo-pouch' was such extent that the tooth could only be visualized when the patient's upper lip was stretched upward and outward. (Fig 2)



Figure 1, ectopically erupting right max. incisor



Figure 2, encased in pseudo-pouch

Radiographic evaluation was done for presence of any impacted supernumerary tooth or any retained root stump of primary tooth. Study model was analyzed for space discrepancy. After finding that there was no marked space loss to accommodate the ectopically erupted incisor. Treatment was planned: *a removable orthodontic appliance*

was fabricated with split labial bow. The left portion of the split labial bow was given for mild distal movement of left maxillary incisors. The right portion of split labial bow was kept very active with an angulation which facilitated the downward movement of right maxillary incisor. Fig 3 and 4.

A follow up schedule of one month interval with proper activation of appliance was done. Gradually the right maxillary incisor came in its normal position and due

to removal of constant irritation from incisal edge, the hypertrophied labial mucosa also healed. (Fig 5,6,7,8)



Figure 3, Removable orthodontic appliance placed



Figure 4, Appliance activated



Figure 5, follow-up after one month



Figure 6, follow up after two months



Figure 7: follow up after 3 months.



Figure 8

DISCUSSION

As there exists an anatomic proximity between the root of primary tooth and its permanent successor, trauma to primary dentition may cause either the developmental disturbances or deviation in the path of eruption of their successors, leading to its impaction or ectopic eruption.

[11] Intrusion is such type of trauma, which is defined as the displacement of tooth into the alveolar bone. [12] Intrusive luxations constitute 4.4%–22% of traumatic injuries in primary dentition and are most commonly encountered in children between 1 and 3 years of age. [13]

Management depends mostly on the correction of establish etiology and may include extraction of retained primary teeth or removal of any existing pathology that is cysts that are causing the deviation. Followed by interceptive orthodontics or orthodontic repositioning of the tooth within the arch if required. Interceptive treatment will usually greatly improve the eruption of the ectopic tooth but final orthodontic alignment is normally required to obtain an ideal result.

Observation for spontaneous correction after removal of the etiological agent may be considered also. [1]

Management of intruded primary incisor depends on the direction and severity of intrusion and generally includes watchful waiting for spontaneous re-eruption of intruded tooth or extraction, if required. [11] Final decision depends on clinician's clinical expertise and his interpretation of radiograph.

In this represented case intrusion of primary incisor may be the probable cause of ectopic eruption of permanent incisor. The patient had history of trauma in younger years in upper anterior region, but lack of timely treatment, may had led to the displacement of permanent incisor tooth budlabially and its subsequent ectopic eruption at vestibular depth in a soft-tissue pseudo-pouch encasing the incisal edge, involving the inner aspect of upper lip.

The treatment needed in such cases may be surgical repositioning, surgical exposure and orthodontic correction. In the presented case as there were no marked space discrepancy to accommodate the incisor and as the patient cooperation was satisfactory, a removable appliance was opted.

In a case reported by Gugnani N et al., of a 13 years old girl patient with ectopically erupting right upper central incisor which was encased within the maxillary labial frenum, the treatment was done in three stages: regaining the space as there was space loss, by the use of coil spring, surgical excision of hypertrophied

frenum and orthodontic alignment with fixed appliance. [14]

In a case reported by Canoglu et al., orthodontic extrusion and respecting was carried out in a 9-year-old patient using a modified fan-type removable expansion appliance. Comparatively more space was required to be regained; therefore, an open coil spring was used. [15]

In a series of cases reported by Suresh KS, two patients with retained deciduous incisor leading to ectopic eruption of permanent successor where treated with removal of etiology that is retained primary tooth and follow up for spontaneous eruption of permanent incisor and self correction. They also reported with two cases with presence of supernumerary leading to ectopic eruption of permanent incisor where treated with removal of supernumerary followed by orthodontic treatment with elastics and springs in 2 by 2 appliances. [16]

However, in this presented case, as the space was satisfactory to accommodate the tooth, younger age of the patient and good cooperation level, removable appliance was opted.

CONCLUSION

A proper clinical examination along with proper history is mandatory in patients with eruption or developmental anomalies. It is important to make correct diagnosis and plan the most suitable treatment for each patient, especially in case of ectopically erupting teeth to avoid any further damage to the dentition and to improve aesthetic and function.

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