# Idiopathic failure of multiple permanent teeth eruption: A case report

**Zohre Tabatabaei** [a] , **Mohammad Danesh Ardakani** [b]

**Abstract**
Failure of multiple teeth eruption is a rare dental anomaly. Various local, systemic or genetic factors implicated in this condition, or it may be an Idiopathic phenomenon. Here we describe an Iranian young female with multiple teeth impaction who is free from any systemic disease or syndromic condition. This patient was managed successfully by interdisciplinary treatment.
Based on clinical presentation and radiographic examination this paper discusses the differential diagnosis and management of this case.
**Keywords**: Failure of eruption, multiple teeth, eruption.
(Received July 2010; Revised and accepted Nov.2010)

Eruption is a dynamic process of axial tooth movement from nonfunctional crypt position through the alveolar process, into the oral cavity and to a functional occlusion with its antagonist. [1]Impaired tooth eruption either delayed or complete absence of eruption may occur.[2] Term of delayed tooth eruption is used to describe the condition of teeth which delayed significantly beyond the time when normal dental eruption should have occurred.[3]

[a]Assistant professor, Department of orthodontics, school of Dentistry, Yazd University of Medical Sciences, Yazd /IRAN
[b] Assistant professor, Department of Oral and maxillofacial pathology , school of Dentistry, Yazd University of Medical sciences, Yazd /IRAN

Corresponding author:
Dr Zohre Tabatabaei
zohre.tabatabaei@gmail.com

Under normal circumstances, when 3/4 of tooth final root length is established, tooth begins to erupt 4; So when the tooth has developed more than expected amount of root development but does not start eruption, it should be considered as delayed eruption.
Rasmussen and Kotsaki suggested when tooth emergence is deviated more than two standard deviations (SDs) from the mean of established norms of emergence time, it should be defined as delayed eruption. [5] Some local, systemic and genetic factors are suggested to have a role in delayed tooth eruption. (Table 1)[1,6,7,8,9,10]
The purpose of this article is to present a case with multiple delayed tooth eruption with no systemic condition or syndrome detected.

**Table 1: Conditions reported in literature to be associated with delayed tooth eruption**

| |
|---|
| **Local**<br>* Mucosal/ gingival barriers<br>* supernumerary teeth<br>*ankylosis/premature loss/ lack of resorption/ infection of primary teeth<br>* injury<br>* tumors : AOT,odontoma,…<br>*space deficiency/ectopic eruption<br>* facial cleft |
| **Systemic**<br>* malnutrition<br>* endocrine disorders : Hypothyroidism, hypopituitarism, …..<br>* drugs: Phenytoin, …<br>*anemia<br>* low birth weight<br>* renal failure<br>* Vit.D deficiency |
| **Genetic**<br>*Amelogenesis imperfecta<br>* Apert<br>* Cherubism<br>* Noonan's syndrome<br>* Down<br>*Cleidocranial displasia<br>*Ellis-van creveld syndrome<br>* Ectodermal displasia<br>* Gardner syndrome |
| **Idiopathic** |

**Case report**

In 2005, a 16 years old female patient referred to our clinic (Dental faculty of Isfahan university of medical sciences) with a delayed eruption of all canines and second molars, upper central incisors and upper left second premolar. (Figure 1A) In her medical history, it was detected that she was born at 37 weeks gestation to a 24 year old mother and 29 year old father.

The pregnancy and delivery were normal and her birth weight was 3.0 kg and her length was 50 cm.

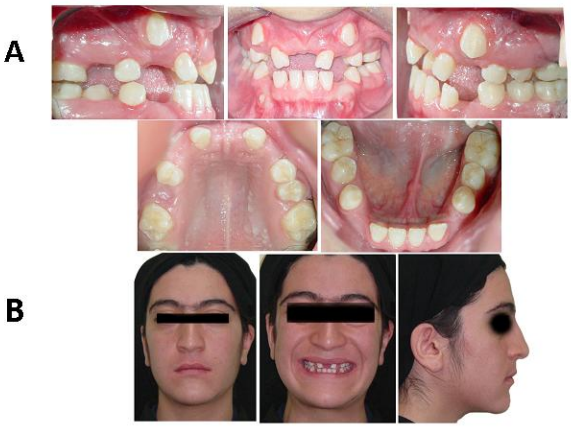

Figure1- A) Intra oral photographs showing clinical absence of second molars, upper central incisors, upper left second premolar , lower left canine and delayed eruption of other canines. Note the healthy status of soft tissue and bulging of unerupted teeth.
B) Facial appearance
Atpresent time her height was 166 cm and her weight was 65 kg. Her past medical history was completely unremarkable, her family history was equally unremarkable and no other family members had this problem of clinical missing teeth. Results of general physical examination were within normal limits and the hematocrit and white blood cell counts were also normal. There was no evidence of syndromic abnormalities. Proportions of her face and head was normal and the profile was straight, lips were normal in thickness, tonicity and length (Fig. 1B).Her skeletal relationship was class I. (Figure 2A) In local examination, gingivae was not fibrotic and soft tissue texture and tonicity were normal. (Figure 1A)

Mobile over-retained primary teeth were extracted several mounts ago. Impactions of permanent teeth were at soft tissue levels. On palpation, bulging of dentoalveolar apparatus was seen but no pain or crackling (Figure 1A). X-ray films showed unerupted permanent teeth in both jaws. There were no obliteration of PDL spaces (sign of ankylosis) and teeth roots development were complete and also they were normally oriented along the eruption path. There was no space deficiency. (Figure 2b)

**A**

**B**

**Figure 2- A) Cephalometric radiograph B) Panoramic radiograph**

Panoramic radiograph showing multiple unerupted teeth with normal orientation along eruptive path. There is no space deficiency.
Treatment of this patient was planned by non extraction procedure and teeth exposure was scheduled after beginning of treatment; but upper canines and lower right one erupted before bonding.
So, first exposed tooth was lower left canine which was brought to arch by elastic traction and a designed box loop. (Figure 3)

**Figure 3: Exposure and alignment process of lower left canine**

Second exposed tooth was upper left second premolar which erupted spontaneously after exposure. After that upper central incisors were exposed tractions were done with elastics. (Figure 4) Upper right central incisor aligned more rapidly but the left one was impacted deeper and took a longer time to align with the other teeth.

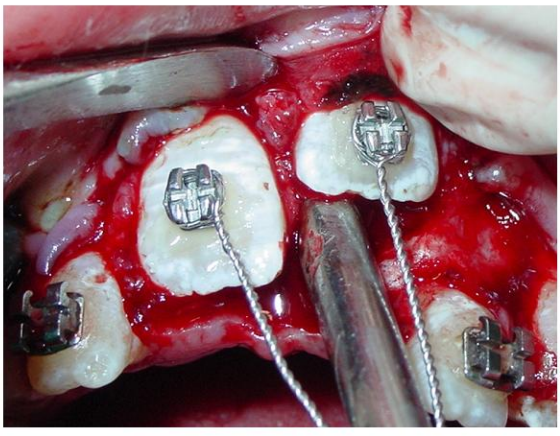

**Figure 4: Exposure of upper incisors**

Upper and lower second molars were exposed with two weeks interval (between both sides) and reciprocal tractions were used to erupt them.(Figure 5) Most of these teeth erupt by simple traction and the sole problem encountered was partially ankylosis of lower left second molar during tractions. It was moved after luxation.

**Figure 5: Reciprocal traction of left second molars.**

Treatment duration was two years and at the end of treatment all impacted teeth brought to the arch and aligned with the other teeth. (Figure 6) They were in normal clinical condition in six months and one year follow up.

**Figure 6: Final alignment of tooth at the end of treatment.**

A)Facial appearance and Intra oral photographs
B) Panoramic and cephalometric radiographs

**Discussion**

Tooth eruption is a localized event that modulated by genes of dental follicle cells. Some deviations from normal eruption time may occur.[11] Local, systemic and genetic factors can alter eruption time [1] but none of them applies to this patient. Presence of over retained deciduous teeth probably was consequence rather than a cause for failure of eruption [12] and clinical examination showed normal soft tissue which could not act as a barrier.

According to guidelines to diagnose the causes of impaired eruption [12] if there is not local barrier we should examine systemic condition which was normal in this patient and also genetic factors were negative.

New erupted teeth displayed an enamel of normal thickness and hardness but with a chulky surfaces which resembled hypomaturution form of Amelogenesis Imperfecta 12 and in differential diagnosis: fluorosis.

Amelogenesis Imperfecta represents a group of genetic developmental condition which alter the structure and appearance of enamel of all or some of teeth, characterized by hypoplasia/ hypomineralization.[12]

Although primarily affect the enamel, other manifestations associated with these disorder are

reported like taurodontism, and in severe form of Amelogenesis Imperfecta failure of multiple permanent teeth to erupt into the oral cavity has been described.[13]

The most common differential diagnosis is dental fluorosis and may present with areas of horizontal white banding corresponding to periods of more intense fluoride intake. [12]

The patient lived in an area which had a high concentration of local water fluoride and in bonding session longer time for enamel etching was representative for this phenomenon.

Possible etiologic role of primary failure of eruption excluded because of tooth eruption after application of orthodontic force.[14]

So seemed there was no obvious explanation for her unerupted tooth and probably she is a case of idiopathic failure of eruption.

**Conclusion**

Multiple unerupted teeth without a known cause is a rare anomaly. It can also have psychological implication for the patients. 1

Proper evaluation of this condition is critical especially in orthodontic practice which is often in a sentry position to perform an early evaluation of craniofacial structure.

**References**

1- Suri L, Gagari E, Vastardis H. Delayed tooth eruption: pathogenesis, diagnosis, and treatment. A literature review. Am J Orthod Dentofacial Orthop 2004;126(4):432-45.

2- Noffke CE, Chabikuli NJ, Nzima N. Impaired tooth eruption: a review. SADJ 2005;60 (10):422, 424-5.

3- Graber TM, Vanarsdall RL, Wig KWL. Orthodontics: current principles and techniques: 4th ed. St.Louis: Mosby Co; 2005, P920

4- Gron AM. Prediction of tooth emergence. J Dent Res 1962;41:573-85.

5- Rasmussen P, Kotsaki A. Inherited retarded eruption in the permanent dentition. J Clin Pediatr Dent 1997;21(3):205-11.

6- Bayar GR, Ortakoglu K, Sencimen M. Multiple impacted teeth: report of 3 cases. Eur J Dent 2008;2(1):73-8.

7- Yoda S, Suda N, Kitahara Y, Komori T, Ohyama K. Delayed tooth eruption and suppressed osteoclast number in the eruption pathway of heterozygous Runx2/Cbfa1 knockout mice. Arch Oral Biol 2004;49(6):435-42.

8- Cozza P, Marino A, Lagana G. Interceptive management of eruption disturbances: case report. J Clin Pediatr Dent 2004;29(1):1-4.

9- Babu V, Nagesh KS, Diwakar NR. A rare case of hereditary multiple impacted normal and supernumerary teeth. J Clin Pediatr Dent 1998;23(1):59-61.

10- Neville BW, Damm DD, Allen CM, Bouquot JE. Oral and maxillofacial pathology: 3rd ed. Philadelphia: W.B. Saunders; 2009. P 74.

11- Sivakumar A, Valiathan A, Gandhi S, Mohandas AA. Idiopathic failure of eruption of multiple permanent teeth: report of 2 adults with a highlight on molecular biology. Am J Orthod Dentofacial Orthop 2007; 132(5):687-92.

12- Crawford PJ, Aldred M, Bloch-Zupan A. Amelogenesis imperfecta. Orphanet J Rare Dis 2007 4;2:17.

13- Collins MA, Mauriello SM, Tyndall DA, Wright JT. Dental anomalies associated with amelogenesis imperfecta: a radiographic assessment. Oral Surg Oral Med Oral Pathol Oral Radiol Endod 1999;88(3):358-64.

14- Proffit WR, Vig KW. Primary failure of eruption: a possible cause of posterior open-bite. Am J Orthod 1981;80(2):173-90.