Journal of Advanced Medical and Dental Sciences Research

@Society of Scientific Research and Studies ***NLM ID:*** *101716117*

Journal home page: www.jamdsr.com doi: 10.21276/jamdsr Indian Citation Index (ICI) Index Copernicus value = 91.86

(e) ISSN Online: 2321-9599; (p) ISSN Print: 2348-6805

Original Research

Evaluation of occurrence of ectopic eruption of different classes of teeth in growing children

[1]Kuldeep Singh, [2]Rajesh Chaudhary

[1]MDS, Orthodontics and Dentofacial Orthopaedics, Zonal Hospital, Dharamsala, Kangra, HP, India;
[2]MDS, Orthodontics and Dentofacial Orthopaedics, India

ABSTRACT:
Background: To evaluate the occurrence of ectopic eruption of different classes of teeth in growing children. **Materials & methods:** A study included 40 patients with bilateral ectopic eruption of maxillary second molars. Forty patients with normal eruption of maxillary second molars were assigned as the normal eruption group. All subjects were with average age of 27.40 years for the normal eruption group and 21.65 years for the ectopic eruption group. **Results:** A total of 40 subjects were taken. 20 male and 20 female were considered. The ectopic eruption group had significantly greater arch length compared with the normal eruption group. The arch length for normal eruption was 27.1 and for ectopic eruption was 29.8. **Conclusion:** There is an increase in arch length on comparison of ectopic eruption and normal eruption.
Keywords: ectopic eruption, children, molars.

Received: 22 June, 2022 Accepted: 26 July, 2022

Corresponding author: Rajesh Chaudhary, MDS, Orthodontics and Dentofacial Orthopaedics, India

This article may be cited as: Singh K, Chaudhary R. Evaluation of occurrence of ectopic eruption of different classes of teeth in growing children. J Adv Med Dent Scie Res 2022;10(8):115-117.

INTRODUCTION

Tooth eruption is associated with various biological factors. Disturbances during the eruption process may be from genetic, systemic, or local factors. Genetic or systemic factors affect the tissues and cells involved in the eruption of multiple teeth and are found in patients with certain developmental syndromes. [(1)] Local factors are primarily from physical barriers that obstruct normal tooth eruption and affect only a few permanent teeth. Eruption disturbances due to local factors are predominantly found in the canine or molar area and can be caused by fibromatous scar tissue after surgery, inflammation, premature loss of primary teeth, space shortage within the dental arch, etc[(2,3)]

Guidance of eruption and development of the primary, mixed and permanent dentitions is an integral component of comprehensive oral healthcare for all pediatric dental patients. Such guidance should contribute to the development of a permanent dentition, i.e. in a stable, functional and esthetically acceptable occlusion. [(4)] Incisors are among the first tooth to erupt in both primary and permanent dentition. Maxillary anterior teeth are very important to facial esthetics, often referred to as the 'social six', as they are on maximum display during speech and smile in most individuals.

Ectopic eruption refers to the eruption of a tooth in a position that is not its normal position in the dental arch. [(5)] A variety of eruption disturbances arise during the transitional dentition period, which can be broadly classified as: disturbances related to time and 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 time frame with an abnormality in position. [(6,7)]

MATERIALS & METHODS

A study included 40 patients with bilateral ectopic eruption of maxillary second molars. Forty patients with normal eruption of maxillary second molars were assigned as the normal eruption group. All subjects were with average age of 27.40 years for the normal eruption group and 21.65 years for the ectopic eruption group. Linear measurements were made on study models. Differences between the normal and ectopic eruption groups were compared by

independent t-tests. P value <.002 was considered significant. Results were obtained.

RESULTS

A total of 40 subjects were taken. 20 male and 20 female were considered. Measurements made on study models showed significantly greater values in tooth widths of the bilateral lateral incisors, canines, first premolars, and second premolars in the ectopic eruption group. Consequently, the ectopic eruption group had significantly greater arch length compared with the normal eruption group. The arch length for normal eruption was 27.1 and for ectopic eruption was 29.8.

Table: Study Model Analysis of the Normal and Ectopic Eruption Group (Mean ± Standard Deviation) (mm)

Measurement (width)	Normal eruption	Ectopic eruption	p- value
Incisor1 (R)	8.0	8.9	0.4
Incisor2 (R)	6.8	7.4	0.002*
Canine (R)	8.2	8.7	0.001*
Premolar1 (R)	7.6	8.3	0.002*
Premolar2 (R)	6.1	7.4	0.02
Molar1 (R)	10.6	10.9	0.4
Molar2 (R)	10.2	10.2	0.6
Incisor1 (L)	8.8	9.1	0.8
Incisor2 (L)	7.0	7.5	0.3
Canine (L)	7.4	7.8	0.002*
Premolar1 (L)	6.9	7.1	0.03
Premolar2 (L)	6.5	6.9	0.02
Molar1 (L)	10.2	10.5	0.2
Molar2 (L)	10.0	10.0	0.6
Arch length	27.1	29.8	0.002*

* : significant

DISCUSSION

It is not uncommon for children to present with variations in normal eruptive patterns of the maxillary incisors. By virtue of the location of the maxillary incisors, parents are often discouraged when eruption patterns do not follow the norms; and will usually prompt the parent to seek treatment to prevent psychological ramifications that accompany abnormalities of the anterior maxilla. To properly treat these individuals, the clinician must have knowledge of the etiology, classification and timely intervention treatment modalities in managing the ectopic eruption of the maxillary incisors. [8] Dental ectopia is more frequently seen in girls, but according to one of the researcher, there is no evidence for sex prediction. [9] Ectopic eruption of permanent incisors can be suspected commonly after trauma to primary incisors, with pulpally-treated primary incisors, retained deciduous teeth, asymmetric eruption and presence of supernumerary tooth. [10,11] In our study, a total of 40 subjects were taken. 20 male and 20 female were considered. Measurements made on study models showed significantly greater values in tooth widths of the bilateral lateral incisors, canines, first premolars, and second premolars in the ectopic eruption group.

One of the retrospective study evaluated the study models, lateral cephalographs, and panoramic radiographs of 40 adult subjects (20 men, 20 women) with bilateral ectopic eruption and 40 subjects (20 men, 20 women) with normal eruption of the maxillary second molars. Tooth widths of bilateral lateral incisors, canines, and premolars were wider in the ectopic group, which resulted in greater arch lengths. The ANB angle and maxillary tuberosity distance (PTV-M1, PTV-M2) were smaller in the ectopic group. The long axes of the maxillary molars showed significant distal inclination in the ectopic group. The multivariate logistic regression analysis showed that three key factors—arch length, ANB angle, and PTV-M1 distance—were significantly associated with ectopic eruption of the second molars. An increase in arch length, decrease in ANB angle, and decrease in maxillary tuberosity distance to the distal aspect of the maxillary first molar (PTV-M1) were the most predictive factors associated with ectopic eruption of maxillary second molars. [12,13] Consequently, in our study the ectopic eruption group had significantly greater arch length compared with the normal eruption group. The arch length for normal eruption was 27.1 and for ectopic eruption was 29.8.

One of the other retrospective radiographic cross-sectional study was to assess the prevalence and severity of ectopically erupting FPMs in children. This retrospective study was conducted using panoramic radiographs (OPGs) of 2014 patients (973 females and 1041 males) aged from 5 to 8 years old. They assessed and recorded the age and gender of the subjects, the tooth number, arch, and location of the

ectopic erupted FPMs, and the severity of resorption of the roots of the primary molars. Of 2014 reviewed OPGs, 45 (2.2%) cases were diagnosed with an ectopic eruption of the permanent first molar. The distribution of ectopic eruption based on gender showed that there was a higher prevalence in males 28 (2.9%) than in females 17 (1.6%). Of the 45 ectopic FPMs cases, 47 (78.33%) were detected in the maxilla, while 13 (21.66%) were seen in the mandible. Severe and moderate degrees of the ectopic eruption were found to be more common in the maxilla than in the mandible ($p < 0.001$). [14,15]

CONCLUSION

There is an increase in arch length on comparison of ectopic eruption and normal eruption.

REFERENCES

1. Proff P, Bayerlein T, Fanghanel J, Allegrini S, Jr, Gedrange T. Morphological and clinical considerations of first and second permanent molar eruption disorders. Ann Anat. 2006;188:353–361.
2. Grover PS, Lorton L. The incidence of unerupted permanent teeth and related clinical cases. Oral Surg Oral Med Oral Pathol. 1985;59:420–425.
3. Pulver F. The etiology and prevalence of ectopic eruption of the maxillary first permanent molar. ASDC J Dent Child. 1968;35:138–146
4. Bradley EJ, Bell RA. Eruptive malpositioning of the mandibular permanent lateral incisors: three case reports. Pediatr Dent. 1990;12(6):380–387
5. Mattos BSC, Carvalho JCM, Matusita M, Pinhiero Alves APP. Tooth transposition literature review and a clinical case. Braz J Oral Sci. 2006;5(16):953–957
6. Barberia-Leache E, Suarez-Clua MC, Saavedra-Ontiveros D. Ectopic eruption of the maxillary first permanent molar: characteristics and occurrence in growing children. Angle Orthod. 2005;75(4):610–615.
7. Doruk C, Babacan H, Bicakci A. Correction of a mandibular lateral incisor-canine transposition. Am J Orthod Dentofacial Orthoped. 2006;129(1):65–72
8. Sasakura H, Yoshida T, Murayama S, Hanada K, Nakajima T. Root resorption of upper permanent incisor caused by impacted canine. An analysis of 23 cases. Int J Oral Surg. 1984;13(4):299–306
9. Huber KL, Suri L, Taneja P. Eruption disturbances of the maxillary incisors: a literature review. J Clin Pediatr Dentist. 2008;32(3):221–230.
10. Brin I, Ben-Bassat Y, Zilberman Y, Fuks A. Effect of trauma to the primary incisors on the alignment of their permanent successors in Israelis. Community Dent Oral Epidemiol. 1988;16(2):104–108.
11. Coll JA, Sadrian R. Predicting pulpectomy success and its relationship to exfoliation and succedaneous dentition. Pediatr Dent. 1996;18(1):57–63.
12. Hwang S, Choi YJ, Lee JY, Chung C, Kim KH. Ectopic eruption of the maxillary second molar: Predictive factors. Angle Orthod. 2017 Jul;87(4):583-589. doi: 10.2319/020917-95. Epub 2017 May 3. PMID: 28467167; PMCID: PMC8366707.
13. Thilander B. Dentoalveolar development in subjects with normal occlusion. A longitudinal study between the ages of 5 and 31 years. Eur J Orthod. 2009;31:109–120
14. Aldowsari MK, Alsaidan M, Alaqil M, BinAjian A, Albeialy J, Alraawi M, Al Moaleem MM. Ectopic Eruption of First Permanent Molars for Pediatric Patients Attended King Saud University, Riyadh, Saudi Arabia: A Radiographic Study. Clin Cosmet Investig Dent. 2021 Jul 24;13:325-333. doi: 10.2147/CCIDE.S320441. PMID: 34335057; PMCID: PMC8318212.
15. Sun J, Nam O, Kim M, Lee H, Choi S. Predictive factors of ectopic eruption of the maxillary first permanent molar. J Korean Acad Pediatr Dent. 2016;43(3):284–291