https://doi.org/10.25130/tjds.4.2.5

Tikrit Journal for Dental Sciences 4 (2016) 124-128

Eruption Time Estimation of Permanent 1st Molar, Central &, Lateral Incisors in 5.5 - 10 Years Age Children at Al Ramadi City / Iraq

Mohammed Khudher Abdulhammed. (1)
Lamia Ibrahim Sood. (2)
Zena Hekmat AL_Taee. (3)

Key words
Eruption,
Ramadi city,
Permanent teeth

Abstract

The Parents consider tooth eruption as an important thing in the child's life development, and they have often showed their concern about the timing of eruption of teeth. The purpose of this study were to Estimate the average age for eruption time of Permanent 1st molar, central & lateral incisors in upper & lower Jaw (right & left) in both gender and to Compare the eruption time of these teeth between upper & lower Jaw ,right & left side ,male &female. This study was conducted at Al Ramadi City / Iraq, where the sample was consisted of **"**786**"** children (391 male & 395 female) of age 5.5 years to 10 years were they taken randomly from various schools. Eruption of various permanent teeth (1st Molar, Central & Lateral Incisors teeth) were noted in both jaws and both sides. In our study we found that the permanent 1st molars were the first permanent tooth that erupts in all children at the age between 5.87 – 7.96 years on both jaws and on both right and left sides with the mean age of eruption at 6.57 ± 0.55 years in lower jaw and 6.62 ± 0.53 years in upper jaw. In addition to that our study showed that the next permanent teeth to erupt were central incisors which erupt at the age between 6.14 – 8.93 years on both jaws and on both right and left sides with the mean age of eruption at 7.23 ± 0.61 years in lower jaw and 6.29 ± 0.57 years in upper jaw. Finally, the eruption of permanent lateral incisors were at the age between 7.66 – 9.93 years on both jaws and on both right and left sides with the mean age of eruption at 8.89 ± 0.56 years in lower jaw and 8.93 ± 0.55 years in upper jaw. The teeth erupted in female earlier than male and in the lower Jaw than upper Jaw. In the most cases the right lower teeth erupted earlier than the other quadrant of both jaws. In general, we found that there was delay in the time of eruption of nearly all the teeth that were included in this study.

Introduction:

Eruption is a process of biological maturation in which the tooth is axially moved from there developmental position within the jaw toward their functional position in the occlusal plan [1].

Two set of teeth for most people in their life; primary (baby) teeth set and permanent (adult) teeth set. At age of sex and seven year; the first permanent molar is erupted therefore is called six year molar and its one of the (extra permanent teeth which don't replace an existing primary tooth and followed by incisor eruption.

(1) Ass. Lec, Dentistry College, Anber University.
(2) Lec, Dentistry College, Anber University.
(3) Lec, Dentistry College, Anber University.

Parents regard tooth eruption as an essential event in the child's development and they have often showed their interest in the tooth eruption timing. However the literature suggests that tooth emergence standards should be derived from the population they are to be applied because emergence related factors may vary considerably in both dentation and BMI [2] similarly, diagnosis and treatment planning in pediatric dentistry, orthodontics and Community Medicine for monitoring the growth of children require adequate knowledge of permanent tooth emergence timing [3].

Furthermore, in the diagnosis of certain growth disturbances, and in forensic dentistry to estimate the chronological age of children with unknown birth records; tooth emergence information used to supplement Maturity indicator [2-5].

Assessment of dental age can be done through radio- graphical and clinical visualization of teeth eruption; crowns and roots of teeth formation and calcification can be followed by radio- graphical visualizations of teeth eruption [6].

Gonzales et al., m described that the teeth may give reliable information as to the age in childhood and youth. Eruptions of permanent teeth begin at 6 year and all the permanent teeth except the third molars or wisdom teeth erupt by twelve to fourteen years [7].

Eruption times and emergence of permanent teeth be affected by variables like genetic and hormonal factors geographical, ethnic, gender, as well as economic status parameters have been reported [2][8-13].

At Al Ramadi City this study was done to Estimate & find out the average age for eruption time of Permanent 1st molar, central & lateral incisors in upper & lower Jaw (right & left) in both gender, and to Compare the eruption time of these teeth between upper & lower Jaw (right & left side), and male & female, no previous Iraqi studies were done in this subject, so it is intended to implement this research.

Materials and method:

The objectives and methodology were explained to all participants and Ethical consent was obtained from their parents in addition to agreement of Iraqi Ministry of Education \ Directorate of Education in AL Ramadi City and school officers before starting the examination of the children.

The study was conducted at Al Ramadi City / Iraq during the period of September 2013 to June 2014, 786 children (391 male & 395 female) of age 5.5 years to 10 years were included in this study which were taken randomly from various schools. Eruption of various permanent teeth (1st Molar, Central & Lateral Incisors teeth) were examined in both jaws and both sides.

The teeth were examined visually in good light using probe, spatula and mouth mirror for eruption. The examination takes place teeth either by good daylight or by using a torch having a very fine focusing of light. A tooth was considered erupted, if it has pierced through gums and UN erupted if not present in oral cavity [5].

Excluded from the sample children with palate malformation, those with cleft lip and palate, and those with obvious asymmetry or exposed to trauma in previous years and those who had dental orthodontics.

The personal information about each child such as age, educational level, date of birth, place of birth, and family name was recorded on the especially designed form taken from their personal files in the school record.

Statistical Analysis:

All the Data analysis was produced using the Statistical Package for Social Science version SPSS 22. Descriptive statistics were tabulated including mean age, range and S.D. for eruption of each tooth in the upper and lower jaw and also for right and left sides of the same jaw.

Analysis of variance was used to determine whether significant differences existed between the Male and female; upper & lower Jaws; Right & left side.

Results:

The total sample of this study was divided according to their gender into 391 (49.75%) male and 395 (50.25 %) female with age 5.5 -10 years (Table 1).

In some patient found the permanent tooth still un erupted in some sided in spite of the same contralateral tooth in the other side was erupted this may be due to normal variation which in agreement with the finding of profit et al., 2013 who mention that A 6-month difference in the date of eruption of a tooth is considered normal, So the number of erupted right upper molar was (89) while the number of erupted left upper molar was (88) and so on for the remaining teeth.

It was found that in most cases the permanent teeth erupted earlier in the females than males and that the eruption of teeth was earlier in mandible (lower jaw) than in maxilla (upper jaw), These finding were compatible with(Dahiya et al) and (Sharma and Mittal) findings where they found that female and mandible eruption occur earlier [5, 14]. However it were incompatible with Kuldeep Singh et al and Illieva et findings where they found that the 1st molar showed no significant difference in eruption and person sex as well as no difference in eruption in two jaws [6, 15] where it may be attributed to race or environment effect or life style and social economy.

In our study we found that the permanent 1st molars were the first permanent tooth that erupt in all children at the age between 5.87 – 7.96 years on both jaws and on both right and left sides with the mean age of eruption at 6.57 ± 0.55 years in lower jaw and 6.62 ± 0.53 years in upper jaw (table 2).

This finding were in agreement with finding of Kuldeep et al where he found the eruption of 1st molar at age between 5.81 to 7.91 years [6] and also in agreement with Grewal who in his study found that first permanent teeth to erupt was 1st molar and erupts at the age between 6 to 7 years [16].

In addition to that our study showed that the next permanent teeth to erupt were central incisors which erupt at the age between 6.14 – 8.93 years on both jaws and on both right and left sides with the mean age of eruption at 7.23 ± 0.61 years in lower jaw and 6.29 ± 0.57 years in upper jaw (table 3).

This finding were nearly in disagreement with finding of Dahiya et al who found the eruption of permanent central incisors between age 6.11 to 8.60 years [5], also in disagreement with Kuldeep et al where he found the eruption of central incisors at age between 6.08 to 8.71 years [6] this disagreement may be due to the race or the effect of environment or life style and social economy.

Finally, the eruption of permanent lateral incisors were at the age between 7.66 – 9.93 years on both jaws and on both right and left sides with the mean age of eruption at 8.89 ± 0.56 years in lower jaw and 8.93 ± 0.55 years in upper jaw (table 4).

This finding were nearly in disagreement with finding of Dahiya et al who found the eruption of permanent lateral incisors between age 7.56 to 9.86 years [5], also in disagreement with Grewal where he found the eruption of lateral incisors at age between 8 to 9 years [16] this disagreement may be due to the race or the effect of environment or life style and social economy.

In the most cases the right lower teeth erupted earlier than the other quadrant of both jaws this different from funding of Billewicz et al who studied on 635 West African (Gambian) children

Within the range of 4.5 to 14.0 years .They found no difference between eruption ages of homologous permanent teeth on the left and the right side of the same jaw [9].

Conclusion:

- The teeth erupted in female earlier than male.
- In the lower Jaw erupted earlier than upper Jaw.
- In the most cases the right lower teeth erupted earlier than the other quadrant of both jaws.
- In general, we found that there were delay in the time of eruption of nearly all the teeth that were included in this study.

Table 1: Male and Female number, and percentage at age 5.5 – 10 Years.

	Male	Female	Total cases
Number	391	395	786
Percentage	49.75%	50.25%	100%

Table 2: Eruption of permanent First molar in both Jaws & Sides.

Tooth	Jaw	Side	Cases	Range	Mean	± SD
1st Molar	Upper	Right	89	5.87–7.96	6.62	0.53
		Left	88	5.87–7.96	6.62	0.53
	Lower	Right	97	5.87–7.96	6.57	0.55
		Left	97	5.87–7.96	6.57	0.55

Table 3: Eruption of permanent Central Incisor in both Jaws & Sides.

Tooth	Jaw	Side	Cases	Range	Mean	± SD
Central incisors	Upper	Right	75	6.14-8.93	7.29	0.57
		Left	74	6.14-8.93	7.31	0.55
	Left	Right	96	6.14-8.93	7.23	0.61
		Left	94	6.14-8.93	7.23	0.61

Table 4: Eruption of permanent Lateral Incisor in both Jaws & Sides.

Tooth	Jaw	Side	Cases	Range	Mean	± SD
Lateral incisors	Upper	Right	85	7.66–9.93	8.93	0.55
		Left	82	7.66–9.93	8.93	0.55
	Lower	Right	90	7.66–9.93	8.89	0.56
		Left	93	7.66–9.93	8.89	0.56

References:

1. Palma C, CoelhoA, González Y, CahuanaA. Failure of eruption of first and second permanent molars. J ClinPediat Dent .2003; 27: 239-246.
2. Garn SM, Sandusky ST, Nagy JM, Trowbridge FL. Negro-Caucasoid difference in permanent tooth emergence at a constant income level. Arch Oral Biology 1973; 18:606-615.
3. Mugonzibwa EA, Kuijpers-Jagtman AM, Laine-Alava MT, van't Hof MA. Emergence of permanent teeth in Tanzanian children. Community Dent Oral Epidemiol 2002; 30:455-462.
4. Elmes A, Dykes E. A pilot study to determine the order of emergence of permanent central incisors and permanent first molars of children in the Colchester area of the U.K. J Forensic Odonto. 1997; 15:1-4.
5. Dahiya B. R., Singh V., Parveen S., Singh H., Singh D. Age Estimation from Eruption of Permanent Teeth as a Tool for Growth Monitoring. J Indian Acad Forensic Med, 2013: 35 (2): 0971-0973
6. Kuldeep, .Gorea R.K, Bharti V., Age estimation from eruption of permanent teeth. Jiafm, 2005; 27 (4): 0971-0973.
7. Gonzales TA, Vance M, Helpern M, UmbergerCJ. Legal medicine pathology and toxicology.2nd ed. NY, USA: Appleton Century Crofts; 1954. 46.
8. Diamanti J, Townsend GC. New standards for permanent tooth emergence in Australian children. Aust Dent J 2003; 48:39-42.
9. Billewicz WZ, McGregor IA. Eruption of permanent teeth in West African (Gambian) children in relation to age, sex and physique. Ann Hum Biol 1975;
10. Pahkala R, Pahkala A, Laine T. Eruption pattern of permanent teeth in a rural community in North Eastern Finland. Acta Odontol Scand 1991; 49:341-349.
11. Lee MMC, Low WD, Chang SFS. Eruption of the permanent dentition of Southern Chinese children in Hong Kong. Arch Oral Biology 1965; 10:849-861.
12. Nonaka K, Ichiki A, Miura T. Changes in the eruption order of the first permanent tooth and their relation to season of birth in Japan. Amr J Phys Anthropol 1990; 82:191-198.
13. Adler P. Effect of some environmental factors on sequence of permanent tooth eruption. J Dent Res 1963; 42:605-616.
14. Sharma K, Mittal S. Permanent tooth emergence in Gujjars of Punjab, India. Anthropol Anz 2001; 59(2):165-78.
15. Ilieva EL, Veleganova VK, Belcheva AB.Eruption of first permanent molar in four to eight years old children in Plovdiv. Folia Med (Plovdiv) 2002;44(1-2):70-3.
16. Grewal RS. Medical jurisprudence and toxicology. 1st ed. Calcutta, India: Scientific Book Agency; 1973. ;. 40-41.