



DECIDUOUS TEETH ERUPTION - A LONGITUDINAL STUDY

Dr. Navjot Kaur

ABSTRACT Tooth eruption is an important milestone during a child's development. An erupted tooth is defined as a tooth with any part of its crown penetrating the gingiva and visible in the cavity.

AIM: To assess the timing and eruption sequence of deciduous teeth.

SETTINGS AND DESIGN: A longitudinal study

STATISTICAL ANALYSIS USED: Data processing and analysis was carried out using the statistical package SPSS version 20.0.0) Illinois, Chicago.

METHOD: A longitudinal study on deciduous tooth eruption was performed in 160 female children over 3 years by simple random sampling methods. The present study assessed the timing and eruption sequence of deciduous teeth in 80 Jat Sikh and 80 Bania female children.

RESULTS: A full complement of 20 deciduous teeth emerged by the age 30 months in female children of the present study. This study provides a model data on eruption of deciduous teeth in these children.

KEYWORDS : Eruption, Deciduous, Teeth, female children

INTRODUCTION

The ages at which the deciduous teeth erupt are of great significance in relation to growth and development of the child.¹ Several studies have shown variation in the ages at which individual deciduous teeth erupt. The physiological maturity of a person can be studied by making observations on one's morphological maturity, skeletal maturity, dental maturity and development of secondary sex characters.^{2,3} The development of deciduous teeth begins early in the prenatal period, and the survival value to the infant of having a full set of teeth early in life must be very high.⁴ In the deciduous dentition a probable male advancement was found.⁵ All deciduous teeth except the mandibular second molar erupted earlier in boys. All permanent teeth emerged significantly earlier in girls.⁶

Research Design And Methodology

This longitudinal study included 160 healthy female children between ages of birth to 3 years by simple random sampling methods. The emergence of deciduous teeth was noted as and when they appeared in the oral cavity. Parents were informed about the study & consents were taken from parents. Data processing and analysis was carried out using the statistical package SPSS version 20.0.0) Illinois, Chicago.

RESULTS

The present study found that earliest primary tooth to emerge in the oral cavity was mandibular central incisor, followed by maxillary central incisor then mandibular and maxillary lateral incisor. The sequence of emergence of the deciduous teeth is the same in the maxilla and the mandible, both in the left and right sides. The sequence seen is central incisor, lateral incisor and first molar, canine and second molar, hence a summary statistics comparing the mean age of tooth eruption of both sides has been presented in Table 1.

Table 1 Mean Emergence Time Of Left, Right And Combined Sides Of Dentition For The Maxillary And Mandibular Arches In Jat Sikh And Bania Females

Tooth	Age Of Emergence (Months)					
	Jat Sikh			Bania		
	Left Side	Right Side	Combine d Side	Left Side	Right Side	Combine d Side
Maxilla	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)
Central Incisor	8.58 (0.11)	8.52 (0.10)	8.55 (0.10)	8.67(0.11)	8.55 (0.11)	8.66 (0.11)
Lateral Incisor	10.76 (0.10)	10.41 (0.09)	10.58 (0.09)	10.70 (0.11)	10.41 (0.10)	10.67 (0.10)
Canine	18.36 (0.14)	18.26 (0.12)	18.31 (0.13)	18.06 (0.14)	17.98 (0.13)	18.92 (0.13)
First Molar	17.46 (0.13)	17.66 (0.16)	17.56 (0.14)	17.19 (0.14)	17.27 (0.17)	17.68 (0.15)
Second Molar	25.00 (0.16)	24.67 (0.16)	25.83 (0.16)	24.99 (0.15)	24.66 (0.16)	25.41 (0.15)
Mandible						

Central Incisor	7.01 (0.09)	7.35 (0.09)	7.18 (0.09)	7.08 (0.11)	7.34 (0.11)	7.49 (0.11)
Lateral Incisor	11.81 (0.11)	11.70 (0.13)	11.75 (0.12)	11.66 (0.12)	11.64 (0.11)	11.88 (0.12)
Canine	18.62 (0.12)	18.64 (0.13)	18.63 (0.12)	18.26 (0.14)	18.21 (0.12)	18.93 (0.13)
First Molar	17.46 (0.17)	17.66 (0.16)	17.56 (0.16)	17.28 (0.15)	17.39 (0.17)	17.85 (0.16)
Second Molar	25.40 (0.15)	25.24 (0.17)	25.32 (0.16)	25.33 (0.15)	25.31 (0.18)	25.51 (0.16)

SD= Standard Deviation of mean

The mandibular central incisor erupts earlier than its maxillary counterpart in both quadrants in both the endogamous groups. The maxillary lateral incisor erupts earlier than its mandibular counterpart in both quadrants in both the endogamous groups. The maxillary canine erupts slightly earlier than its mandibular counterpart in both the halves in both endogamous groups. The first molar has nearly comparable ages of emergence in the maxilla and mandible with slight earlier tendency in maxilla in females of both endogamous groups. Similarly the second molar also has tendency of emergence earlier in the maxilla than in the mandible in females of both endogamous groups.

DISCUSSION

Studies on eruption of deciduous teeth using the longitudinal approach give more information than those of cross-sectional type, since in addition to giving information on the ages of eruption of individual teeth; they give knowledge on individual variation and more frequent order of tooth eruption. In the present study numbers of emergence of deciduous teeth were periodically counted in 160 female children from birth to three years of age of both the endogamous groups. Table 1 shows the mean times of emergence of deciduous teeth, for the maxillary and mandibular arches, for each side and for both sides combined. A full complement of 20 deciduous teeth emerged by the age 30 months in children of the present study. This is similar to the pattern found in children of Ludhiana city.⁷ In some populations, such as Andhra Pradesh, West Bengal, Gambia and Hong Kong the same is achieved by the age of 36 months.⁸ The results of present study were compared to those of similar studies involving varying racial and ethnic groups. The comparative data with Indian studies on deciduous teeth emergence timing is given in Table 2. The Garhwa females⁹ and Hyderabad females¹⁰ on comparison with females of the present study are seen to start and complete eruption of their deciduous teeth a bit later but Garhwa females⁹ show eruption of first molar comparatively earlier than those of the present study females.

Table: 2 The Comparison Of Mean Age (in Months) Of Deciduous Teeth Emergence In Females With Other Indian Populations

Tooth	Present study	Vinod et al.	GunaShekhar & Tenny

	Jat Sikh Mean (SD)		Banias Mean (SD)		Garhwa (Jharkhand) Mean (SD)		Hyderabad Mean (SD)	
	Right Side	Left Side	Right Side	Left Side	Right Side	Left Side	Right Side	Left Side
Maxilla								
Central Incisor	8.58 (0.11)	8.52 (0.10)	8.67 (0.11)	8.55 (0.11)	9.91 (0.45)	9.97 (0.49)	12.00 (0.74)	12.16 (0.85)
Lateral Incisor	10.76 (0.10)	10.41 (0.09)	10.70 (0.11)	10.41 (0.10)	12.35 (0.39)	12.17 (0.65)	13.56 (0.79)	13.57 (0.97)
Canine	18.36 (0.14)	18.26 (0.12)	18.06 (0.14)	17.98 (0.13)	20.27 (0.93)	19.50 (1.22)	21.17 (1.36)	21.32 (1.40)
First Molar	17.46 (0.13)	17.66 (0.16)	17.19 (0.14)	17.27 (0.17)	15.61 (1.21)	15.59 (1.04)	17.09 (1.06)	17.16 (0.92)
Second Molar	25.00 (0.16)	24.67 (0.16)	24.99 (0.15)	24.66 (0.16)	26.91 (0.58)	27.12 (1.6)	27.81 (0.78)	28.14 (1.25)
Mandible								
Central Incisor	7.01 (0.09)	7.35 (0.09)	7.08 (0.11)	7.34 (0.11)	9.89 (0.59)	9.55 (0.39)	10.97 (0.72)	10.56 (0.42)
Lateral Incisor	11.81 (0.11)	11.70 (0.13)	11.66 (0.12)	11.64 (0.11)	13.97 (0.57)	13.89 (0.57)	12.55 (0.98)	12.69 (0.84)

Canine	18.62 (0.12)	18.64 (0.13)	18.26 (0.14)	18.21 (0.12)	23.12 (0.26)	22.89 (0.57)	22.35 (1.41)	21.99 (1.21)
First Molar	17.46 (0.17)	17.66 (0.16)	17.28 (0.15)	17.39 (0.17)	16.54 (1.07)	15.48 (0.45)	18.94 (0.93)	18.91 (0.74)
Second Molar	25.40 (0.15)	25.24 (0.17)	25.33 (0.15)	25.31 (0.18)	26.48 (1.1)	26.16 (0.45)	27.53 (0.98)	27.19 (0.85)

Comparisons from studies between populations from Nepal¹, USA¹¹, Saudi Arabia¹², Iraq¹³, Iceland¹⁴, Nigeria¹⁵ & Egypt¹⁶ are presented in Tables 3. The sequence of eruption was identical in all the countries. In the present study also, all children had the same sequence in the maxillary & mandibular deciduous teeth.

The comparative data with foreign studies is given in & Table 3. The female children of Iraq¹³ on comparison with females of the present study are seen to start eruption of their deciduous teeth a bit later but complete it a little earlier. The timing of eruption of the second molar in females of the present study is very close to those of Nigerian, Iceland and Nepal females^{15,14,1} but much earlier than those of USA¹¹, Saudi Arabian females¹² & Egyptian females¹⁶ comparatively start eruption of their deciduous teeth later than those of the present study.

Table:3 Country Based Comparison Ofthe Mean Age In Months Of Emergence Of Deciduous Teeth In Females

Tooth	Present study		Soliman et al	Folayan et al	Al-Jasser & Bello	Baghdady & Ghose	Mangnusson	Nanda	Gupta et al
	Jat Sikh Mean (SD)	Banias Mean (SD)	Egypt Mean (SD)	Nigeria Mean (SD)	Saudi Arabia Mean (SD)	Iraq Mean (SD)	Iceland Mean (SD)	USA Mean	Nepal Mean (SD)
Maxilla									
Central Incisor	8.55 (0.10)	8.61 (0.11)	9.9 (4.8)	10.40 (3.3)	11.2 (1.9)	10.6 (2.7)	9.2 (2.6)	8.7	10.3 (3.8)
Lateral Incisor	10.58 (0.09)	10.55 (0.10)	13.2 (5.0)	13.1 (3.7)	13.3 (2.7)	11.4 (3.8)	10.2 (3.0)	11.7	11.5 (0.7)
Canine	18.31 (0.13)	18.02 (0.13)	19.9 (4.3)	19.5 (4.3)	21.0 (3.6)	19.9 (3.6)	17.9 (2.8)	20.7	18.8 (11.7)
First Molar	17.56 (0.14)	17.23 (0.15)	17.0 (4.4)	16.3 (3.2)	16.9 (3.6)	16.4 (2.6)	14.9 (2.0)	16.3	14.7 (4.8)
Second Molar	25.83 (0.16)	25.82 (0.15)	28.0 (5.6)	25.6 (5.5)	28.2 (4.9)	27.0 (5.3)	25.1 (5.3)	31.4	25.0 (5.1)
Mandible									
Central Incisor	7.18 (0.09)	7.21 (0.11)	7.8 (5.3)	8.3 (2.9)	8.5 (2.8)	8.4 (2.2)	6.8 (2.1)	7.6	9.5 (2.1)
Lateral Incisor	11.75 (0.12)	11.65 (0.12)	13.1 (5.3)	8.4 (3.6)	14.6 (3.6)	14.3 (3.2)	11.7 (2.6)	13.3	12.0 (0.7)
Canine	18.63 (0.12)	18.23 (0.13)	19.5 (4.1)	19.6 (4.1)	21.1 (3.7)	20.3 (4.0)	18.1 (2.2)	20.5	21.5 (7.7)
First Molar	17.56 (0.16)	17.33 (0.16)	16.7 (4.6)	16.0 (3.0)	17.1 (2.7)	17.0 (2.8)	15.4 (2.4)	16.4	16.2 (2.3)
Second Molar	25.32 (0.16)	25.32 (0.16)	28.1 (5.6)	25.2 (4.9)	27.9 (4.0)	25.0 (5.3)	23.7 (4.1)	29.5	27.0 (0.7)

CONCLUSION:

The finding of this study established a new chronological table for eruption of deciduous teeth in female children of Punjab. This data will have significant role for optimal use in caries orthodontics, clinical, academic anthropological research and forensic applications.

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