

# Age Estimation from Eruption of Permanent Teeth in North Indian: An Issue for Forensic Odontology

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## Abstract

The aim of this study was to present new data on the time and sequence of primary and permanent tooth emergence in large sample of north Indian and to compare the finding with those of earlier studies. The results were significantly different from earlier literature on the eruption pattern in primary. Tooth emergence was advanced in girls compared with boys ( $p < 0.001$ ). Moreover, there is slightly delayed eruption of in north Indian as compared to Iraq and US. The results of this research prove valuable to dentists as well as anthropologists for comparison.

## Keywords

Anthrology, eruption, primary

## Teeth in North Indian

An Issue for Forensic Odontology

## Introduction

Up-to-date population specific standards on the time and sequence of emergence of the teeth represent an important resource for general dental practitioners, dental anthropologist, forensic odontologist and dental auxiliaries. Eruption of teeth is affected by climate, race, diet and geographical factors (Lunt and Law 1974, Baghdady and Ghose 1981). India is very big country, with different climates. Hence it is not correct to apply same data to whole of the country. Moreover, no recent study on eruption of teeth has been performed in north on India.

The purpose of this study was to determine the mean ages and standard deviation of eruption times for primary dentition and permanent teeth in north Indian and to compare the eruption times with other studies.

## Subjects and Methods

### For permanent teeth:

A randomly selected sample of 929 normal clinically (M:F 460: 469) aged three to 17 years from out Deptt. Govt. Dental College, PGIMS, Rohtak, Haryana (India).

### For primary teeth

Our sample consists of 942 normal clinically (M:F 465: 461) aged 3 months to 45 months selected from out Department, Govt. Dental College, PGIMS, Rohtak (Haryana) India.

The age of each child was ascertained from the birth certificate by calculating the chronological age from the date of births.

For purpose of this study, an erupted tooth was defined as any tooth with any part of its crown penetrating the gingiva and visible in oral cavity. The determination of tooth eruption was carried by Balwant Rai, one of the authors and Ajaypal using a month mirror in a room with good light source. The inter-rater reliability was determined in randomized of the 110 children by the two examiners and the agreement was 95%.

The data was statistically analyzed by SPSS version 7.0 and student t-test was applied.

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## Results

Table I: (mean + SD) eruption ages (in months) of maxillary teeth in north Indian (gender).

Tooth (FDI)	Boys (age in months) mean $\pm$ SD	Girls (in months) mean $\pm$ SD	Both genders (aged in months) mean $\pm$ SD
51,61	10.38 $\pm$ 1.32	11.09 $\pm$ 1.33	10.99 $\pm$ 1.3
52,62	12.43 $\pm$ 1.34	13.07 $\pm$ 1.43	12.94 $\pm$ 1.37
53,63	20.34 $\pm$ 1.43	21.04 $\pm$ 1.52	20.97 $\pm$ 1.43
54,64	15.32 $\pm$ 1.23	15.94 $\pm$ 1.54	15.47 $\pm$ 1.42
55,65	27.15 $\pm$ 1.37	27.37 $\pm$ 1.53	27.32 $\pm$ 1.41

p<0.001

Table II: (mean  $\pm$  SD) eruption ages (in months) of mandibular teeth in north Indian (gender)

Tooth (FDI)	Boys (age in months) mean $\pm$ SD	Girls (age in months) mean $\pm$ SD	Both genders (aged in months) mean $\pm$ SD
71,81	9.42 $\pm$ 1.47	9.97 $\pm$ 1.42	9.62 $\pm$ 1.45
72,82	13.42 $\pm$ 1.43	14.62 $\pm$ 1.47	13.85 $\pm$ 1.44
73,83	20.21 $\pm$ 1.37	21.42 $\pm$ 1.58	20.92 $\pm$ 1.41
74,84	16.94 $\pm$ 1.29	16.47 $\pm$ 1.52	16.82 $\pm$ 1.34
75,85	26.97 $\pm$ 1.37	26.96 $\pm$ 1.53	26.95 $\pm$ 1.42

p<0.001

Table III: Comparison of mean eruption age (in months) of maxillary teeth in gender in north Indian population with others

Tooth	Sex	US (Lunt and Law, 1974)	Saudi (Al-Jasser and Bello, 2003)	Iraq (Baghdady and Ghose, 1981)	North India
51,61	M	9.36	11.19	10.70	10.38
	F	8.76	11.20	10.60	11.09
52,62	M	12.00	13.09	10.10	12.43
	F	11.76	13.31	11.40	13.07
53,63	M	21.00	21.14	18.80	20.34
	F	20.76	21.03	19.90	21.09
54,64	M	17.52	16.88	16.30	15.32
	F	16.32	16.90	16.40	15.94
55,65	M	30.96	28.16	26.00	27.15
	F	31.44	28.25	27.00	27.37

The median ages of emergence for all of the primary teeth in boys and girls are provided in Table I, II for both maxillary and mandibular there were no difference in the mean age of eruption of the teeth in right and left sides. There is a tendency for teeth to erupt earlier in boys in both maxilla and mandible as compared to girls (table I, II,  $p < 0.001$ ). The results of this study were compared to those similar studies involving varying social or countries (Table III, IV); they suggest a slightly delayed eruption as compared to Iraq and US, but earlier as compared to Saudi (Table III, IV).

### Discussion and Conclusions

Teeth are very important indicators in medico-legal and dental anthropology as they help in identification and age estimation in the living as well as in the dead because they resist putrefaction and are constant in their appearance. We found a tendency for teeth to erupt earlier in boys for both jaws, although the differences was marginal (Table I, II  $p < 0.001$ ) as previous studies. (Falknes 1957, Nanda 1960)

It has been observed that slightly delayed of primary teeth eruption in North Indian as compared to Iraq (Table III, IV). Several studies have considered influential factors such as nutrition, socio-economic status, climate, and premature extraction of deciduous teeth on the time and order of the emergence of teeth. (Lavelle 1975).

In the previous study pointed out the relative unimportance of environment influence in permanent dental emergence. (Friendlaender and Bailit 1969).

The data presented in this study provide new standards for primary and permanent tooth emergence derived from a sample of North Indian population. Generally median emergence times were delayed compared with Iraq and US. There are several possible reasons for those difference that may be related to either, or, both, methodological and biological issues. This paper would prove a useful basis of comparison for anthropologists as well as dentist for health care delivery.

Table IV: Comparison of mean eruption age (in months) of mandibular teeth in gender in north India population with others

Tooth (FDI)	Sex	US (Lunt and Law, 1974)	Saudi (Al-Jasser and Bello, 2003)	Iraq (Baghdady and Ghose, 1981)	North India
71,81	M	7.20	8.44	9.20	9.42
	F	7.68	8.49	8.40	9.62
72,82	M	13.08	14.44	14.00	13.42
	F	13.32	14.61	14.30	13.85
73,83	M	20.88	21.03	19.00	20.21
	F	20.52	21.10	20.30	20.92
74,84	M	16.56	17.17	16.90	16.94
	F	16.44	17.13	17.00	16.82
75,85	M	30.00	27.92	26.00	26.97
	F	29.52	27.97	25.10	26.95
31,41	6.6	6.4	6.9	6.4	
32,42	7.8	7.5	7.9	7.6	
33,43	11.0	10.1	11.3	10.8	
34,44	11.2	10.6	11.8	10.9	

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