

Eruption of 2nd molar in age 12-14 years: A Clinical Assessment in Rural Maharashtra

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ABSTRACT

Background: Dentition occurs in a well defined manner starting from age 6 months to 2 years with appearance of temporary teeth followed by appearance of permanent set of teeth from 5 to 25 years. Hence the assessment of chronology of appearance of various teeth is useful in age estimation. Age 12-14 years is of immense significance from forensic point of view. **Materials & methods:** The present study was under taken in the department of Periodontics, Rural Dental College, Loni, from 10th Jun 2009 to 3rd May 2010. The dentition was examined using Mouth Mirror, Probe and Torch. The individual data was filled in a predesigned proforma. Charting was done as per the *Federation Dentaile Internationale* system (F.D.I). Socioeconomic and dietary factors were also analyzed and their influence if any resulting in variation in the eruption of second molar was studied. **Results:** A total of 250 students studying in class 8th to 10th, of schools located in Loni and neighboring area of Pravara Nagar were assessed in the study, of which 142 were male and 108 were female. A correlation was found between the clinical eruption of 2nd molar and age.

Key words : Clinical eruption, Second Molar, Age estimation.

INTRODUCTION

Dentistry and Medico-legal work share a common interface where a dentist is approached at times for resolving numerous issues related to identification, age estimation etc. One of the important and frequent requirements posed to the

medico-legal fraternity by the investigating authorities is to estimate age of a child, which holds great importance from the point of view of Criminal responsibility, kidnapping, consent, child labor etc ¹⁻⁴.

The age estimation in these cases is usually carried out with the help of radiological assessment of various ossification centers, dental examination and physical examination.

Numerous studies have been carried out to assess the age of a young individual by assessment of eruption of teeth⁵⁻¹⁰. Regional variations due to nutritional, environmental, racial, genetic and numerous other factors exist. Emphasis by survey committee for generation of regional data

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corroborates it ¹¹. No data exists in this region of Maharashtra, hence the study was conducted to address the issue.

MATERIAL AND METHOD

The study was conducted during the period 10th Jun 2009 to 3rd May 2010 at the Department of Periodontics, Rural Dental College, Loni. The simple random sample of size 250, with 142 male and 108 female students was taken. The subjects

were chosen amongst the students of class 8th to 10th of schools in Loni and the neighboring region of Pravara Nagar irrespective of their socioeconomic background. The purpose and method of study was explained to all and those consenting and meeting the inclusion criteria of being native of this region with valid proof of birth (Birth certificate/School documents), good oral hygiene, no developmental malformations and absence of any acute/chronic diseases were included in the study.

Table No 1. Age & Sex wise distribution of study subjects

Age group	Male		Female	
	Number	%	Number	%
12- <13 years	76	30.4%	60	24%
13-14 years	66	26.4%	48	19.2%
Total	142	56.4%	108	43.2%

The subjects were divided into two groups as per the age. **Table No 1.**

Group I : Age 12 years to 12 years 364 days. (76 male/ 60 female)

Group II : Age 13 years to 13 years 364 days (66 male/48 female)

The dentition was examined using Mouth Mirror, Probe and Torch. The individual data was filled in a predesigned proforma. Charting was done as per the Federation Dentaire Internationale system (F.D.I). Socioeconomic and dietary factors were also analyzed and their influence if any resulting in variation in the eruption of second molar was studied.

The evaluation of tooth eruption was done as mentioned in the table below:-

S. No.	Stage	Characteristics
1.	'0'	Non-Eruption of temporary tooth/fall out of temporary tooth and non eruption of corresponding permanent tooth
2.	'1'	Tip of crown of tooth penetrated the gum margin
3.	'2'	Crown has grown into the oral cavity beyond gum margin but has not yet reached the occlusal plane
4.	'3'	Occlusal surface comes in contact with its counterpart and the bite is complete

The subjects were also classified after assessing their socio-economic status as per the Modified B.G. Prasad classification for the year 2008 ¹². The data generated was analyzed statistically and compared with other studies.

RESULT AND DISCUSSION

Evaluation of the data collected during the study revealed that a significant difference exists in the eruption of 2nd molar in both sexes, with

relatively early eruption in females. The reason for the same needs to be evaluated. Table No 2.

The findings are similar to those of studies conducted by Shourie⁵, Kaul⁶, Mishra⁷, Agarwal⁸, Carr⁹, Knot¹⁰. The mean age of eruption was relatively on the higher side in the present study, as compared to other studies as depicted in Table No 3.

Effect of nutrition and socio-economic status does exist. The socioeconomic demography of this rural area reveals that majority of the population belongs to Class II/ Class III as per the Modified B.G. Prasad classification and Consumer Price Index (2008). Those belonging to Class II had eruption of 2nd molar prior to those in Class III.

Table No 2. Second Molar Eruption Stages

Stage	Group I (12 - <13 years)				Group II (13-14 years)			
	Male (76)		Female (60)		Male (66)		Female (48)	
	Number	%	Number	%	Number	%	Number	%
Rt Upper Jaw (17)								
'0'	40	52.63%	7	11.66%	8	12.12%	11	22.91%
'1'	8	10.52%	7	11.66%	0	00%	12	25%
'2'	10	13.15%	32	24.32%	54	81.81%	11	22.91%
'3'	18	23.68%	14	10.64%	4	06.06%	14	29.16%
Lt Upper Jaw (27)								
'0'	44	57.89%	0	00%	9	13.63%	17	35.41%
'1'	0	00%	9	15%	0	00%	0	00%
'2'	16	21.05%	46	76.7%	48	72.72%	24	50%
'3'	16	21.05%	5	08.3%	9	13.63%	7	14.58%
Lt Lower Jaw (37)								
'0'	30	39.47%	0	00%	0	00%	0	00%
'1'	14	18.42%	14	23.33%	1	01.51%	13	27.08%
'2'	16	21.05%	14	23.33%	23	34.84%	17	35.41%
'3'	16	21.05%	32	53.33%	42	63.63%	18	37.5%
Rt Lower Jaw (47)								
'0'	25	32.89%	14	23.33%	0	00%	6	12.5%
'1'	12	15.79%	0	00%	2	03.03%	7	14.58%
'2'	18	23.68%	22	36.66%	15	22.72%	5	10.41%
'3'	21	27.63%	24	40%	49	74.24%	30	62.5%

Table No 3. Comparison with other studies

Study	Maxillary				Mandibular			
	Male		Female		Male		Female	
	Rt	Lt	Rt	Lt	Rt	Lt	Rt	Lt
Shourie ⁵	12.37	12.37	11.86	11.93	12.26	11.9	11.95	11.48
Kaul ⁶	11.48		11.35		11		10.89	
Mishra ⁷	12.66	12.1	11.68	11.78	11.83	11.37	11.47	11.48
Agarwal ⁸	11.64	11.59	-	-	11.34	11.34	-	-
Carr ⁹	12.1		11.7		12		11.4	
Knott ¹⁰	11.9	11.9	11.9	11.9	11.6	11.5	11.2	11.2
Present study	13.4	13.2	12.10	12.11	13.2	13.2	12.10	12.10

CONCLUSION

The study leads us to the following significant conclusions. The eruption of 2nd Molar starts at age 12.10 years in females, and 13.2 years in males, i.e. earlier in females than in males. Very insignificant difference existed between the chronologies of appearance in both sides in either sex. However further studies are desirable to evaluate it further.

Appearance of 2nd molar by 14 years in most of the subjects helps in associating it with chronological assessment of age.

Variations which exist in respect to the other studies can be attributed to the restriction of sampling to age group 12-14 years.

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