IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)
e-ISSN: 2279-0853, p-ISSN: 2279-0861.Volume 23, Issue 10 Ser. 3 (October. 2024), PP 01-05
www.iosrjournals.org

"The Study Of Eruption Of Teeth In Children From Birth To 12 Years Of Age In Western Maharashtra Region."

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Absrtact:
Human beings show 2 sets of dentition- deciduous and permanent[2]. Variation of tooth has been an enduring interest to clinical practitioner as well as from anthropological and forensic point of view[7]. These variations in the form of teeth are characteristics of race, are of anthropological, genetic and forensic interest.[2,7]hence studies have been done using teeth for age, sex determination[1,8].
As existing eruption schedule of dentition is based on western population this study is done in western Maharashtra region to find out variation in time number, form and pattern of eruption in deciduos and permanent teeth as well as in males and females.
Keywords: *Deciduous, Permenant,Teeth, Variations, Forensic*

Date of Submission: 29-09-2024 Date of Acceptance: 09-10-2024

I. Introduction

Human beings show 2 sets of dentition- deciduous and permanent[2]. There are 3 basic forms of teeth i.e. incisors(for cutting), canines(piercing, tearing), premolars/molars(grinding, have cusps). Premolars are bicuspid seen in permanent dentition, which replace deciduous molars.

The emergence of tooth through alveolar mucosa is the 1st clinical sign of eruption but it starts through bone of jaw beginning with root formation and overlying mucosa to appear and function in oral cavity.

Variation of tooth has been an enduring interest to clinical practitioner as well as from anthropological and forensic point of view[7].

The chronology[9] of human dentition appearing generally is- Deciduous teeth- in months

	Central incisor	Lateral incisor	canine	1st molar	2nd molar
Maxilla	8-12	9-13	16-22	13-19	25-33
mandible	6-10	10-16	17-23	14-18	23-31

Permanent teeth- in years

	Central incisor	Lateral incisor	canine	1st premolar	2nd premolar	1st molar	2nd molar	3rd molar
Maxilla	7-8	8-9	11-12	10-11	10-12	6-7	12-13	17-21
mandible	6-7	7-8	9-10	10-12	1-12	6-7	11-13	17-21

The primary and permanent dentition are subject to considerable variations[9] in time of eruption, number, size, form of teeth and structure of dental tissue. These developmental anomalies may be genetically determined or environment induced systemic or local changes.

These variations include supernumerary teeth, missing tooth/ hypoxemia, ectopic tooth, discoloration of tooth, crowding, spacing between teeth.

These variations in the form of teeth are characteristics of race, are of anthropological, genetic and forensic interest.[2,7]hence studies have been done using teeth for age, sex determination[1,8].

As existing eruption schedule of dentition is based on western population this study is done in western Maharashtra region to find out variation in time number, form and pattern of eruption in deciduos and permanent teeth as well as in males and females.

II. Aims And Objectives

1. To analyse pattern of eruption of teeth.
2. To find out variations in eruption of deciduous and permanent teeth.
3. To correlate the result of present study with that of previous.

III. Material And Methods

This study was done in western Maharashtra region over period of 2 years. Data was collected from pre-primary, primary schools and paediatric OPD having subjects between 0-12 years. 500 boys and 500 girls were selected randomly. Age was confirmed by school records and birth dates. Subjects having any disease/ malnutrition/ poor oral hygiene were excluded. 3rd molar was not counted as it emerges after 12 years.
Examination was done with prior permission from school authority and parents.

Detail information of the subject was taken. Examination was done in proper illumination. According to age erupted teeth were noted, any variation was also noted.
Results were calculated by different statistical analysis.

IV. Result And Analysis

Table showing mean age and range of time of eruption of deciduous teeth (in months)-

		Male	Female	Total (M+F)
Central incisor	Maxilla	8.91±2.48 (6.43-11.39)	8.33±2.16 (6.17-10.49)	25+25
	Mandible	8.87±2.78 (6.9-11.65)	8.29±2.47 (5.82-10.76)	
Lateral incisor	Maxilla	9.88±2 (7.88-11.88)	9.44±1.55 (7.89-10.99)	25+25
	Mandible	11.52±3.05 (8.47-14.57)	10.24±2.58 (7.66-12.82)	
Canines	Maxilla	18.96±3.17 (15.79-22.13)	17.96±2.71 (15.25-20.67)	25+25
	Mandible	20.32±2.73 (17.59-23.5)	19.4±2.58 (16.82-21.98)	
1st Molar	Maxilla	16.32±2.67 (13.65-18.99)	15.52±2.75 (12.77-18.027)	25+25
	Mandible	17.2±2.06 (15.14-19.26)	16.16±1.9 (14.26-18.6)	
2nd Molar	Maxilla	29.27±2.88 (26.39-32.15)	28.43±3.07 (24.36-31.50)	45+30
	Mandible	27.02±3.07 (23.95-30.9)	25.67±2.02 (23.65-27.69)	

Table showing mean age and range of time of eruption of permanent teeth (in years)-

		Male	Female	Total (M+F)
Central incisor	Maxilla	7.5±8.16m (6.81-8.25)	7.35±9.61m (6.54-8.15)	80+80
	Mandible	6.59±5.12m (6.16-7.01)	6.49±5.57m (6.02-6.9)	
Lateral incisor	Maxilla	7.68±8.16m (6.8-8.25)	7.55±9.3m (6.56-8.12)	80+80
	Mandible	6.69±5.41m (6.16-7)	6.59±5.66m (6.03-6.91)	
Canines	Maxilla	10.98±7.5m (10.77-12.03)	11.31±8.3m (10.67-11.9)	60+60
	Mandible	9.67±5.79m (9.19-10.15)	9.50±6.83m (9.1-10.07)	
1st Premolar	Maxilla	10.12±1.22m (9.9-10.13)	10.04±1.4m (9.8-10.04)	35+30
	Mandible	10.97±1.46m (9.98-10.45)	10.09±1.38m (9.94-10.4)	
2nd Premolar	Maxilla	10.44±1.10m (9.97-10.56)	10.08±1.24m (9.96-10.45)	30+30
	Mandible	9.12±2.24m (5.45-8.97)	9.06±2.74m (9.2-10.03)	
1st Molar	Maxilla	7.21±1.76m (5.45-8.97)	6.9±2.86m (4.04-9.76)	40+40
	Mandible	6.92±1.55m (5.73-8.47)	7.01±1.71m (6.3-8.72)	
2nd Molar	Maxilla	12.93±5.92m (11.9-12.9)	11.86±5.77m (11.28-12.23)	40+40
	Mandible	11.75±7.41m (11.13-12.37)	11.82±7.94m (11.16-12.5)	

Frequencies of dentitional anomalies-
Supernumerary teeth-RD- maxilla- 0.38, mandible- 0.44

	Male		Female		Sex difference
	N	%	N	%	(P)
Maxilla	4	1.6	3	1.2	0.73
Mandible	3	1.2	2	0.8	0.61
Total	7	2.8	5	2.0	N.S.

Missing teeth-

	Male		Female		Sex difference
	N	%	N	%	(P)
Maxilla	22	8.8	20	8	2.22
Mandible	12	4.8	8	3.2	1.74
Total	34	13.6	28	11.2	N.S.

Spacing-RD Maxilla- 2.03, Mandible- 2.69, more in incisors.

	Male		Female		Sex difference
	N	%	N	%	(P)
Maxilla	18	7.2	6	2.4	1.81
Mandible	10	4	4	1.6	1.46
Total	28	11.2	10	4	N.S.

Crowding-

	Male		Female		Sex difference
	N	%	N	%	(P)
Maxilla	3	1.2	5	2	1.23
Mandible	2	0.8	2	0.8	1.02
Total	5	2.0	7	2.8	N.S.

Ectopic teeth-Canines-9, incisors-4

	Male		Female		Sex difference
	N	%	N	%	(P)
Maxilla	6	2.4	2	0.8	1.01
Mandible	4	1.6	1	0.4	0.88
Total	10	4	3	1.2	N.S.

Caries teeth-

	Male		Female		Sex difference
	N	%	N	%	(P)
Maxilla	22	8.8	20	8	2.22
Mandible	10	4	8	3.2	1.44
Total	32	12.8	28	11.2	N.S.

In present study, deciduous teeth erupt earlier in females than males. Except lower central incisor and 2nd molar, they erupt earlier in maxilla than mandible. Permanent teeth erupt earlier in females than males. Some teeth erupt earlier in mandible than maxilla or may coincide.

Regarding Supernumerary teeth, Missing teeth they are seen more in maxilla than mandible. There was no statistically significant sex difference. Discoloration of teeth was not very common finding. Spacing is more common in males and in upper central incisors. Crowding was more common in females than males, but not statistically significant. It was more in canines followed by incisors. Ectopic teeth found were canines and incisors. Presence of such teeth was almost same in both sexes and jaws. Caries were common but no statistically significant difference in males and females and both jaws.

V. Discussion

The temporary and permanent dentition is subject to considerable variation in time of eruption, number, size and form of teeth. These anomalies may be genetically determined or systemic, prenatal, postnatal, environmental, local causes.

Rakhi Gupta[3] et al found permanent mandibular 1st molar and central incisors erupted 1-2 years earlier than western people. There was earlier eruption of both sets of dentition in girls compared to boys.

Deciduous teeth eruption in Israeli children by Avinom et al in 1985 stated that the number of teeth erupted at different ages was similar in both sexes[10]. J D Saha et al found deciduous molar erupt between 12-31 months, 2nd molar between 20-40 months[11].

Kaul et al[4]in study of 4-31 months age found females were showing earlier eruption.

Study by kuldeep singh et al[5] found mean age of eruption for central incisors in maxilla- 9.48±0.96, mandible- 8.28±0.84 months. For lateral incisors- 10.20±1.09 months in both jaws. Canines- 19.20±1.44, upper jaw and 19.32±1.56 months in lower jaw.1st molar of mandible- 15.56±0.72, maxilla- 15.84±0.72 months. 2nd molar- 27.72±3.36months in both jaws. According to present study, deciduous teeth erupt earlier in females than males. Except lower central incisor and 2nd molar, they erupt earlier in maxilla than mandible.

Study in Delhi (2004), by Agarwal K N[1] et al in 1800 boys of 5-14 years of age states that lower 1st molar erupted earlier.

In present study, mean age of eruption of deciduous teeth is between 8.87±2.48 months, from eruption of lower central incisor to 29.27±2.88 months (upper 2nd molar) in males.In females, mean age of eruption of deciduous teeth is between 8.29±2.48 months (lower central incisor) to 28.43±3.07 months (upper 2nd molar). Mean age of eruption of permanent dentition is between 6.59 years±5.12 months i.e. eruption of lower central incisor to 12.93 years±5.91 months (upper 2nd molar), in males.In females, permanent teeth erupt between mean ages of 6.49 years±5.57 months (lower central incisor) to 11.76 years±5.77 months (upper 2nd molar).

In study by Taru Mahesh[8], in students of age 14-16 years, supernumerary and missing teeth were found more in males than females and more in maxilla than mandible. Spacing was more in maxilla than mandible and more in males than females, statistically significant. Females had more crowded teeth, statistically significant.

In present study, ratio of supernumerary teeth in males:females is 1.4%:1%. Missing teeth were 8.8% in maxilla and 4.8% in mandible, in males. In females, it was 8% and 3.2%. Discoloration of teeth was not very common. Spacing was 7.2% in maxilla and 4% in mandible in males. In females, 2.4% and 1.6%. Crowding was in maxilla, more in females(2%) than males(1.2%). Ectopic teeth seen in maxilla more, in males(1%), females(1.2%).C

Study by Selukar[7]M. S. et al was done retrospectively by using teeth for age estimation by modified Gustafson method.

Teeth were used for sex determination in study done by Patnaik K. S. et al , which showed impact of sex factor on morphometry of mandibular canines., which can be of medicolegal use in identification.

VI. Summary And Conclusion

The variation in number of erupted teeth was seen in permanent dentition, not in temporary teeth.

The presence of supernumerary teeth was almost same in males and females, same in maxilla and mandible. Mainly these were incisors and canines.

Missing teeth do not show many differences in males and females, also in maxilla and mandible.

Spacing was mainly seen in upper incisors. No statistical significant difference found between males and females, also in maxilla and mandible.

Crowding was more in maxilla of females; same for both in mandible, but this was not statistically significant.

Ectopic teeth found were canines and incisors. Presence of such teeth was almost same in both the sexes and both the jaws.

Discoloration of teeth was not very common.

Caries of teeth were common but not significant difference in males and females, in both the jaws.

The time of eruption of both deciduous and permanent teeth is slightly earlier in India (western Maharashtra) region than in western population.

Mean age of eruption of deciduous teeth is between 8.87±2.48 months, from eruption of lower central incisor to 29.27±2.88 months (upper 2nd molar) in males.

In females, mean age of eruption of deciduous teeth is between 8.29±2.48 months (lower central incisor) to 28.43±3.07 months (upper 2nd molar).

Deciduous teeth of females erupt earlier than males.

After eruption of deciduous lower central incisor, rest deciduous teeth erupt earlier in maxilla than mandible except 2nd molar.

Mean age of eruption of permanent dentition is between 6.59 years±5.12 months i.e. eruption of lower central incisor to 12.93 years±5.91 months (upper 2nd molar), in males.

In females, permanent teeth erupt between mean ages of 6.49 years±5.57 months (lower central incisor) to 11.76 years±5.77 months (upper 2nd molar).

Females show earlier age of eruption than males in case of permanent dentition.

Permanent teeth erupt earlier in mandible than maxilla; in some cases the time of eruption may not show much difference.

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