Original Research Article

A study of gender wise variation in eruption of third molar teeth by radiological method

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Abstract

Introduction: Age of an individual is the sign of maturity which may be divided in to chronological age (attainment of a certain number of years), anatomical age (skeletal, radiological age), mental age, sexual age, and dental age. In this study we studied effect of gender on development of third molar. **Aim and Objective:** To study gender wise variation in eruption of third molar teeth **Material and methods:** The study was conducted on total 138 subjects, 68 males and 70 females of age between 15 to 25 years. Data was collected by clinical examination and Digital Panoramic Radiographs (DPR). OPG were done and reported by senior radiologist Developments of third molar tooth of all the subjects were evaluated by radiological examination according to Demirjian's stages of development of third molar tooth. **Result and Discussion:** Of the total 138 cases, 68 were males and 70 were females. Mean age in years for developmental stages D, E, F, G, H of third molar tooth in males and females were 15.5±0.51, 16± 0.67; 16.82±0.39, 16.86±0.35; 17.82±0.39, 17.86 ± 0.42; 19.22± 0.51, 19.03± 0.54 ; 21.8±1.51, 21.85 ± 1.62 years **Conclusion:** Different stages of development of third molar tooth are more or less similar in males and females.

Key Words: Blood glucose levels, Major depressive disorder, Suicidal behaviour, Suicidal ideation, Suicidal attempt.

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INTRODUCTION

Introduction: A study of radiographs of the teeth is a non-destructive, simple method to obtain information. Inspection of radiographs and subsequent comparison with radiographic images, drawings and description in charts yields maturity scores that help us to assess the age of an individual.1 Alternative approaches based on digitalization of panoramic radiographs and their computerized storage has recently become available. Forensic odontologists can use these techniques that are relatively precise and accurate and avoid the bias inherent in observer subjectivity.1 This study has been carried out to find out age influence of gender on different stages of development of third molar tooth

MATERIAL AND METHODS

In this study 138 cases were studied to see the gender wise variation in eruption of third molar teeth. This study was carried out at Department of Forensic Medicine and Toxicology at Tertiary care Medical teaching Institute during the period from November 2014 to October 2016. Study was approved by the institutional Ethical Committee. The study was conducted on total 138 subjects, 68 males and 70 females of age between 15 to 25 years. Age of each individual has been confirmed by authenticated school records or by birth certificate issued by Municipal Corporation or as approved by Government.

Inclusion Criteria

1. Age group of 15 – 25 years.
2. Voluntary consent for the study procedure.
3. Documentary proof of age certificate as approved by Government.

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Exclusion Criteria

1. Any congenital anomalies of teeth.
2. Malnutrition or other diseases that would affect the skeletal growth and general development of the individual.
3. Subjects with history of third molar extraction.
4. Pregnant females.
5. Subjects having Dental Caries.

After explaining the study consent was taken from the patients. Data was collected by clinical examination and Digital Panoramic Radiographs (DPR).DPR was taken following radiation protection.OPG were done and reported by senior radiologist in co-ordination with dentist at the tertiary health care centre. Dental details were noted as per FDI notation. Developments of third molar tooth of all the subjects were evaluated by radiological examination according to Demirjian's stages of development of third molar tooth.[2]

RESULTS

Of the total 138 cases, 68 were males and 70 were females. Cases were grouped by age difference of 1 year. Maximum (twenty) cases were in the age group 17.1 to 18 years. There was no statistically significant difference in age and sex.

Table 1: Sex Wise Distribution of Total Number of Third Molar Teeth according to Demirjian's staging

Stage	Maxillary				Mandibular				Total no. Of 3rd Molar		
	Right Upper		Left Upper		Left Lower		Right Lower				
	M	F	M	F	M	F	M	F	M	F	Total
Absent 3rd Molar	04	04	05	01	02	01	**02**	02	13	08	21
D	11	10	11	12	13	12	**13**	11	48	45	93
E	04	12	04	12	04	13	**05**	13	17	50	67
F	07	10	07	09	07	09	**07**	09	28	37	65
G	09	09	07	10	05	07	**06**	06	27	32	59
H	33	25	34	26	37	28	**35**	29	139	108	247
Total	**68**	**70**	**68**	**70**	**68**	**70**	**68**	**70**	**272**	**280**	**552**

Demirjian's Stage H is most common in both the sexes for age group between 15 to 25 years. Out of the total 552 third molar teeth studied 21 third molar teeth were absent including 13 teeth in males and 8 teeth in females. In right Upper 3rd Molars studied on Orthopantomograph (OPG), Stage H wasmost common in both sexes while stage E and Stage G were least observed in males and females respectively. Total 8 right Upper 3rd Molars were absent on OPG. In right lower 3rd Molars studied on Orthopantomograph (OPG), Stage H was most common in both sexes while stage E and Stage G were least observed in males and females respectively. Total 4 left lower 3rd Molars were absent on OPG including 2 in each sex. In left upper 3rd Molars studied on Orthopantomograph (OPG), Stage H was most common in both sexes while stage E and Stage F were least observed in males and females respectively. Total 6 left upper 3rd Molars were absent on OPG including 5 males and 1 female. In left lower 3rd Molars studied on Orthopantomograph (OPG), Stage H was most common in both sexes while stage E and Stage G were least observed in males and females respectively. Total 3 left lower 3rd Molars were absent on OPG including 2 males and 1 female.

Table 2: Gender wise Mean age for different stages of development of third molar tooth

Group	Statistic	Stage of Development				
		D	E	F	G	H
Male	Mean	15.5	16.82	17.82	19.22	21.8
	SD	0.51	0.39	0.39	0.51	1.51
Female	Mean	16	16.86	17.86	19.03	21.85
	SD	0.67	0.35	0.42	0.54	1.62
Statistical Analysis	'p' Value	0.0001	0.49	0.7	0.17	0.8

Above table depicts mean age in years for developmental stages D, E, F, G, H of third molar tooth in males and females were 15.5+0.51, 16+ 0.67; 16.82+0.39, 16.86+0.35; 17.82+0.39, 17.86 + 0.42; 19.22+ 0.51, 19.03+ 0.54 ; 21.8+1.51, 21.85 + 1.62 years for stages D, E, F, G and H respectively. Statistically non-significant difference was observed in different stages of development of third molar tooth except for stage D with 'p' value 0.0001 representing delayed development in females.

Table 3: Side wise Mean age (in years) for different stages of development of mandibular third molar tooth

Group	Statistics	Stage of Development				
		D	E	F	G	H
Right	Mean	15.71	16.85	17.84	19.13	21.8
	SD	0.63	0.36	0.44	0.57	1.56
Left	Mean	15.77	16.85	17.84	19.1	21.75
	SD	0.66	0.36	0.37	0.49	1.54
Statistical Analysis	'p' Value	0.66	0.99	0.99	0.83	0.8

Above table demonstrates side wise mean age along with standard deviation for developmental stages D, E, F, G and H of Rt. and Lt. third molar teeth. It was observed that mean age (in years) along with standard deviation for stages D, E, F, G and H were 15.71± 0.63, 16.85 ±0.36, 17.84 ±0.44, 19.13 ±0.57 and 21.8 ±1.56 years respectively for right third molar while that for left third molar were 15.77 ±0.66, 16.85 ±0.36, 17.84 ±0.37, 19.1 ±0.22 and 21.75 ±1.54 years respectively. It was also observed that there was no significant difference in mean age of different developmental stages of right and left third molar tooth.

Table 4: Mean age (in years) along with standard deviation of maxillary and mandibular third molar tooth

Group	Statistics	Stage of Development				
		D	E	F	G	H
Upper (Maxillary)	Mean	15.77	16.78	17.81	19.09	21.92
	SD	0.68	0.42	0.46	0.56	1.5
Lower (Mandibular)	Mean	15.71	16.91	17.88	19.17	21.71
	SD	0.61	0.28	0.34	0.48	1.61
	'p' Value	0.65	0.14	0.49	0.57	0.29

Above table shows means age along with standard deviation for different stages of development of maxillary and mandibular third molar tooth.. It was observed that mean age (in years) along with standard deviation for stages D, E, F, G and H were 15.77± 0.68, 16.78 ±0.42, 17.81 ±0.46, 19.09 ±0.56 and 21.92 ±1.5 years respectively for upper third molar (Maxillary) while that for lower third molar (Mandibular) were 15.71 ±0.61, 16.91 ±0.28, 17.88 ±0.34, 19.17 ±0.48 and 21.71 ±1.61 years respectively. It was observed that there is no significant difference in mean age for developmental stages D, E, F, G and H for maxillary and mandibular third molars tooth.

DISCUSSION

In this study, the influence of gender on the development of the third molar was evaluated by determining mean, standard deviation and p value for various developmental stages of third molar tooth in males and females. Statistically non-significant difference was observed in different stages of development of third molar tooth except for stage D with p value 0.0001 representing delayed development in females. In our study, analysis of mean age and standard deviation for developmental stages E - H observed no significant difference in males and females. Bhat VJ *et al*.3 observed no significant difference between the boys and the girls in the various stages of root development of the third molars. Singh K *et al*.4 observed that even though wisdom tooth erupted earlier in females, the difference was statistically not significant. Golovcencu L *et al*.5 evaluated Orthopantomograms of 250 Romanian patients and reported that no significant differences was observed in third-molar development between males and females. Chandramohan M *et al*.6 retrospectively analysed 280 panoramic radiographs and found no statistically significant difference in age between all the four third molars for each developmental stage in both the genders. Darji JA *et al*.7 concluded no statistically significant difference was present in third molar development between males andfemale in all eight stages of development. Mohammed RB *et al*.8 in their Study consisting of 330 randomly selected subjects observed no significant sex difference in third molar development. In our study we found earlier development of third molar for stage D. There was no statistically significant difference for development of third molar in males and females for stage E - H. These findings are against the study done by Rai B *et al*.9 which showed earlier third molar development in females than in males. Gunst K *et al*.10, Mesotten K *et al*.11, Szilvia A *et al*.12, Sismana Y *et al*.13, Verma P *et al*.14, Jaafar JA *et al*.15, Branco MS *et al*.16, Naik SB *et al*.17 observed earlier development in males than in females for different stages from D-H. In Jaafar JA *et al*.15 study observed earlier development of stage D and E in males than in females. But in our study, we found earlier development of third molar in males for only stage D. This difference may be related to different genetic, geographical, environmental factors and pattern of study.

CONCLUSION

Different stages of development of third molar tooth are more or less similar in males and females except for stage D which represents, advanced development in males.

REFERENCES

1. Schmeling A, Geserick G, Reisinger W, Olze A. Age estimation. Forensic Science International. 2007; 165:178–18.

2. Bolãnos MV, Moussa H, Manrique MC, Bolãnos MJ. Radiographic evaluation of third molar development in spanish children and young people. Forensic Sci Int 2003; 133:212-9.
3. Bhat VJ, Giridhar K. Age estimation from the root development of mandibular third molars. Medico-legal update.Oct – Dec 2004; 4(4):127-130.
4. Singh K, Gorea RK. Bharti V. Age estimation from eruption of permanent teeth. Jiafm. 2005; 27 (4). ISSN 0971-0973.
5. Golovcencu L, Scripcaru C, Zegan G. Third molar development in relation to chronological age in Romanian children and young adults. Rom j leg med. 2009; 4: 277 -282.
6. Chandramohan M, Shankar S, Hidhayathulla Shaikh, Vinay S, Ashwini OR, Murali K. Estimation of age using third molars among Indian juveniles: a retrospective analysis using panoramic radiographs. Journal of Oral Health Research. September 2010; 1(3): 113-117.
7. Darji JA, Govekar G, Kalele SD, Hariyani H. Age estimation from third molar development a radiological study. J Indian acad forensic med. April-June 2011; 33(2):130-134.
8. Mohammed RB et al. Digital radiographic evaluation of mandibular third molar for age estimation in young adults and adolescents of South Indian population using modified Demirjian's method. J Forensic Dent Sci. 2014; 6(3): 191–196.
9. Rai B, Kaur J, Anand SC. Mandibular third molar development staging to chronologic age and sex in north Indian children and young adults. J forensic odontostomatol. 2009; 27(2):45-49: 428-432.
10. Gunsta K, Mesottena K, Carbonezb A, Willemsa GC. Third molar root development in relation to chronological age: a large sample sized retrospective study. Forensic Science International. 2003; 136: 52–57.
11. Vij K. Textbook of forensic medicine and toxicology. 2nd ed. New Delhi: b.i.churchill Livingstone; 2002. p. 68-69.
12. Szilvia A, Mitsuyoshi I, Naofumi Y. Radiographic survey of third molar development in relation to chronological age among Japanese juveniles. J forensic sci. may 2004; 49(3):1-5.
13. Sismana Y, Uysalb T, Yagmurc F, Ramoglud SI. Third-molar development in relation to chronologic age in Turkish children and young adults. Angle orthodontist. 2007; 77(6): 1040-1045.
14. Verma P, Sachdeo J, Verma KG, Gupta SM, Guruprasad R. Age estimation of adolescents and young adults based on development of mandibular third molars: a panoramic study. Journal of Indian academy of oral medicine and radiology.January-march 2011; 23(1): 9-13.
15. Jaafar JA, Jamal AT. Chronological age estimation in adolescent and young adult subjects in relation to mandibular third molar development using digital panoramic image. J Bagh Coll Dentistry. 2012; 24(2): 47-50.
16. Mário Silva Branco, Dinis Pestana,Cristiana Palmela Pereira. Medico-Legal Age Estimation in Living Individual from a Portuguese Population: Third Molar Mineralization. J Forensic Res. 2012; 3(5):149-156.
17. Naik SB, Patil SN, Kamble SD, Mowade T and Motghare P. Reliability of Third Molar Development for Age Estimation by Radiographic Examination (Demirjian's Method). Journal of Clinical and Diagnostic Research. May 2014; 8(5): ZC25-ZC28.

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