Research Article

A school based study on assessment of age by third molar space in an urban area of Tamil Nadu

Sivakkumar Shanmugasundaram

Professor and HOD, Department of Forensic Medicine, Madha Medical College and Research Institute, Chennai-122, Tamil Nadu, INDIA.
Email: sivakkumar_sk@yahoo.ca

Abstract

Aim: Estimation of the age in living individual by using the third molar space as a criteria was attempted and also the female preponderance in the development of third molar space was verified. **Materials and Methods:** 151 school students between the age group of 14 and 17 years were selected based on the availability of their birth certificates. Their oral cavity was examined for the development of third molar space behind second permanent molar. **Observations and Results:** It has been observed that third molar space developed in the students between the age group of 14 and 17 years in various percentages and female preponderance is present in 14 and15 year group and male preponderance is Present In 16 and17 Year Age Group of Students.

Keywords: third molar space, age estimation, female preponderance.

Address for Correspondence:
Dr. Sivakkumar Shanmugasundaram, Professor and HOD, Department of Forensic Medicine, Madha Medical College and Research Institute, Chennai-122, Tamil Nadu, INDIA.
Email: sivakkumar_sk@yahoo.ca

Received Date: 27/11/2014 Accepted Date: 07/12/2014

Access this article online

Quick Response Code:

Website: www.statperson.com

DOI: 10 December 2014

INTRODUCTION

Estimation of the age of an living individual is often required to decide the offences as well as punish the same. To execute this usual challenge the medical officer should conduct physical, dental and radiological examination. Of these, age from eruption of teeth is the best parameter which is pretty constant in most individuals and remains in a narrow range[1]. Eruption of both temporary and permanent teeth follow a periodic sequence and this can be utilized for age estimation[2]. Moreover, dental age predictors are minimally influenced by the nutritional, environmental, medical and living conditions [3]. The permanent second molar erupts between 12 and 14 years of age. After that, for the estimation of age one should depend on the third molar, which erupts between 17 and 25 years[4,6,]. But, there is great uncertainty regarding the eruption of the third molar. Because, third molar is one of the most frequent congenitally missing tooth. Sometimes it appear late; often it gets impacted and giving rise to cyst formation called dentigerous cyst[7].All these factors create a difficult situation for the estimation of age especially after eruption of the permanent second molar. After eruption of the second permanent molar in all four quadrants, the ramus of mandible extends backwards to create space for the upcoming third molar. This developing space is known as space for third molar. The full space usually develops between 15 and 17 years[5], which could be used to estimate age of an individual especially after the eruption of the second permanent molar. In this study, an attempt was made to assess the age of the living individual based on the development of the full space for third molar through oral examination of school students and also the preponderance of sex in the development of third molar space was verified.

MATERIALS AND METHODS

This study was conducted at a Christian school in north Chennai. Among 14 years to 17 years age group about 151 students (male- 70, female-81) were selected based on the availability of their birth certificates and the consent from parents. After calculating the chronological age from their copy of birth certificates, students were grouped as14year group includes 14 year 19 days to 14 year 9 months (51 students), 15year group includes 15year 11 days to 15 year 10 months (41 students), 16 year group includes 16 year 28 days to 16year 9 month (40 students), 17year group includes 17 year 30 days to 17 year 9 months (19 students). During the oral examination of the selected students, the gloved index finger was placed distal to the erupted permanent second

How to site this article: Sivakkumar Shanmugasundaram. A school based study on assessment of age by third molar space in an urban area of Tamil Nadu. *International Journal of Recent Trends in Science and Technology* December 2014; 13(2): 335-337 http://www.statperson.com (accessed 12 December 2014).

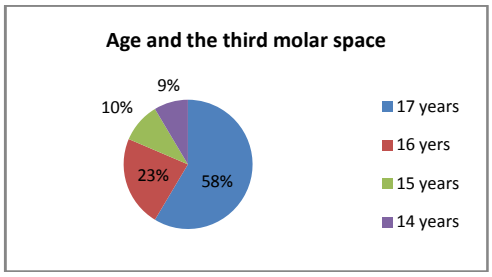
molar and also the gums were palpated[2]. Accommodating the breadth of the index finger and harder gum on palpation, was taken as a proof for development of the full space for the third molar.

OBSERVATIONS AND RESULTS

In this study, of 151 students examined, the space for third molar was present in 84 students. Of these 84 students about 9% belong to 14 year age group, about 10% belong to 15 year age group, 23 % to 16 year age group and nearly 58 % belong to 17 year age group (table 1).

Table 1: Age wise distribution of the third molar space

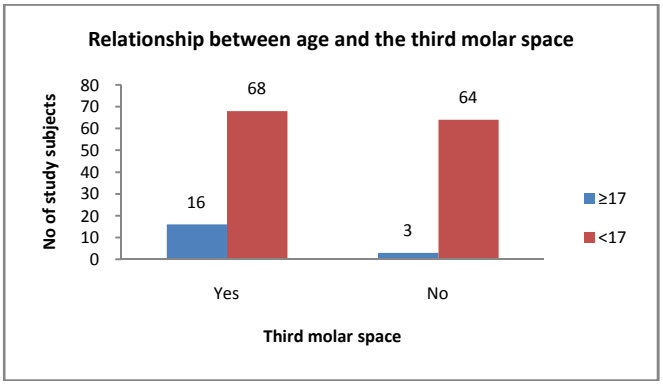
Age	Total students	Development of the third molar space	Proportions
14	51	24	9%
15	41	18	10%
16	40	26	23%
17	19	16	58%
Total	**151**	**84**	**100%**



This study also reveals that as the age advances the chance of the development of the third molar space also increases. Students of 17 year age group had more chance of developing third molar space than the 14,15,16 year age group. The relationship between age and the third molar space is statistically significant (Chi value-7.1456, p value = 0.007, OR– 5).

Table 2: Relationship between age and the third molar space

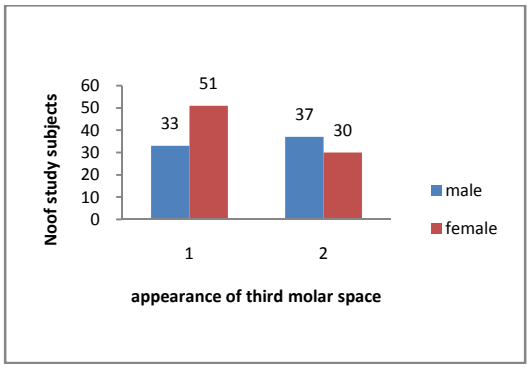
Age in years	Third molar space		Total	Chi square Value($\chi 2$)	P value*	Odds ratio	95% CI
	Yes	No					
≥17	16	3	19	7.1456 (df=1)	0.007	5.0	1.48-22.26
<17	68	64	132				
Total	**84**	**67**	**151**				



And this study also showed that the space for third molar developed earlier in female students than males. The association between sex and the development of the third molar space is statistically significant (table 3). (Chi value =3.84, p value =0.05).

Table 3: Association between sex and the development of the third molar space

Age group	Development of Third molar space Male students	female students	Chi square Value($\chi 2$)	P value
14	7	17		
15	4	14		
16	16	10	3.84	0.05*
17	6	10		
Total	**33**	**51**		



DISCUSSION

According to Rajesh Bardale, development of full space for the third molar occurs between 15 and 17 years [5].In this present study, it is observed that the development of third molar space is present in 14 years group (9%), 15 years group (10%), 16 years group (23%) and 17 years group (58%). Earliest development is in 14 years and 6 days and the late development is in 17 year and 9 months. The students of the 17 years age group showed as the more significant group than the other 14, 15 and 16 years age group for the development of the third molar space. Regarding sex and the development of third molar space, in this study female students showed the earlier development than male students.

CONCLUSION

From this study, it has been concluded that the space for third molar can be used as a criteria for age assessment in living individuals with wide range between14 and 18 years. Also the preponderance of sex for the development of third molar space is females.

REFERENCES

1. Ajay kumar, personal identity, Text book of Forensic Medicine, 1st edition, Delhi, Avichal publishing company, 2011 ; 60.
2. VV Pillay, Identification, Text book of Forensic Medicine and Toxicology, 16 th edition, Hyderabad /New Delhi, Paras Medical Publisher, 2011 ;61
3. Sushil B Naik, Reliability of Third Molar Development for Age Estimation by Radiographic Examination (Demirjian's Method), Journal of Clinical and Diagnostic Research, May 2014 ; 8 (5)
4. Dr K.S. Narayan Reddy and O.P. Murty, Identification, The Essentials of Forensic Medicine and Toxicology, 33rd edition, New Delhi / London / Philadelphia / Panama, The Health Sciences Publishers, 2014 ; 71.
5. Rajesh Bardale, Identification, Principles of Forensic Medicine and Toxicology, 1st edition, New Delhi /London / Panama city, Jaypee Brothers Medical Publishers (P) L td, 2011, 56
6. Apurba Nandy, Identification of an individual, Principles of Forensic Medicine, 2nd edition, Kolkata, New Central Book Agency (P) Ltd, 2000 ;61.
7. P V Guharaj, M R Chandran, Personal Identity, Forensic Medicine, 2nd edition, Chennai, Orient Longman Pvt Ltd, 2003, 35.

Source of Support: None Declared
Conflict of Interest: None Declared