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Pairat Dhiravarangkura

Supa Nanthaviroj

Somporn Prapanpoch

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THIRD MOLAR AGENESIS



*Dhiravarangkura, P.**

*Nanthaviroj, S.***

*Prapanpoch, S.****

Dhiravarangkura, P.

Abstract

The total of 495 cases (300 females and 195 males) of a representative sample from the treatment files of Faculty of Dentistry Chulalongkorn University were reviewed. The congenitally absence of third molars were recorded from the orthopantomogram. The average age of the patient was 15.7 years which taken between the ages of 12 and 22 years. All of the cases studied, 32.8% had occurred in male and 31.66% occurred in female. There was no significant difference between the sexes, or between left and right side with respect to congenitally missing third molars ($p > 0.05$). The number of missing third molars in maxilla was higher than in mandible ($p < 0.05$). The most prevalence of third molars agenesis was two missing. There was no statistically significant revealed in case of unilateral and bilateral missing ($p > 0.05$).

Introduction

The tooth most commonly missing in man is the permanent third molar (Garn

et al., 1962).⁵ The prevalence of third molar agenesis, however, vary greatly. There

* associate professor in x-ray Department, Chulalongkorn University.

** assistance professor in x-ray Department, Chulalongkorn University.

*** instructor in x-ray Department, Chulalongkorn University.

Table 1. Studies of congenitally missing third molars comparison with present study

Investigators	year	Methods	Sample	Sample size	% with third molars missing	Total of missing third molars
BANKS ²	1934	15-22 Radiographs	Patients	461	19.7	19.7
DHIRAVARANGKURA et al. (Present study)	1984	12-22 Radiographs	Patient at the Faculty of Dentistry Chulalongkorn Univ.	495	M 32.8 F 31.7	M 64 F 95
GARN & LEWIS ⁴	1962	14 or over Clinical exams. & radiographs	Patients and field studies	498	—	—
GABLRISCH ⁶	1930	19-78 Clinical histories & radiographs	Patients at Mayo Clinic	2,112	9	442
HELLMAN ⁸	1936	Adult Clinical exams & radiographs	Patients at Columbia Univ.	443	M 21.7 F 30.8	M 126 F 95
KEENE ⁹	1965	17-25 Clinical histories, Models & Radiographs	U.S. male Navy recruits	257	M 27.0	M 159
NANDA ¹⁰	1954	18-21 Clinical histories, models & Radiographs	Forsyth Dental Infirmary for Children (females)	200	F 9	F 29
SPOKA & ¹² DEMIRJIAN	1971	11 Clinical histories & Radiographs	French Canadian Montreal Growth Center	193	M 26.3 F 23.7	M 51 F 46
THOMPSON et al. ¹³	1974	16 Clinical studies & Radiographs.	Patient at the Burlington Growth Center in Toronto	521	M 21.8 F 22.8	M 62 F 54

have been several previous surveys to establish the congenitally missing third molar. The purpose of the present study was to choose the probability of third molars agenesis to compare with some of the representative respected samples from previous studies. The percentages of agenesis of third molars in a review of the literatures and this study ranged from 9% to 32%. All of these studies were radiographic findings (Table 1).

Hellman⁸ Found that, 2 third molars were missing with the greatest frequency in both sexes, and also found the maxillary right third molars were more often absent than maxillary left, and that mandibular left third molars were missing more often than mandibular right. This finding appeared more frequently in females than in males. The available evidence suggested that there were racial differences in the prevalence of third molar agenesis. Hellman also studied of adult skulls of difference races which showed a low prevalence in West African Negroes and Tasmanians, and a high prevalence in European skulls from Hungary.

Davies³ found that of the individuals with missing teeth, 45% lost one or more third molars. (35% Males, and 55% Females), bilateral absent third molars were more commonly founded. Keene⁹ noted that when third molars were missing the remaining molars were usually smaller.

According to Garn and Lewis⁴ agenesis of third molars was usually accompanied by hypodontia that affected at least six or seven of the remaining teeth, and noted that third molars were more frequently missing in females than in males. John F. Gravelly⁷ stated that agenesis of third molars was 14 to 15 per-cent and one in every four

individuals was affected.

The age at which third molars develop is of great importance to investigate the prevalence of agenesis. Adamson¹ stated that third molar crypt did not appear until 9 or 10 years of age. Garn and Lewis⁴ had referred to result of a survey of over 200 children in which they found that the "critical age" after which third molars did not develop was the 14 years.

In view of such differing opinions of the investigators carried out, this study was considered to re-examine the representative of Thai people at the age from 12-22 years old.

Material and methods

The data used in this study were obtain from the files of the Faculty of Dentistry Chulalongkorn University. The orthopantomograph of 495 cases, 195 males and 300 females, ranging from age 12 to 22 years. These radiographs were taken as part of routine investigation of cases requiring for orthodontic treatment. Each radiograph was examined a congenitally missing third molars. When there was any reasonable doubt that the tooth was not congenitally missing, and might have been previously extracted or evidence that it was lost by accident, the case was excluded from the sample.

The radiographs were read by at least two qualified radiologists. A tooth was considered congenitally missing when it could not be visualized in the dental arch. Some cases concerning with previous extraction the sockets might be remained in the radiograph, such cases were acceptable. None of the patients with partial anodontia exhibited any obvious sign of other ectodermal deficiencies.

Results

Table 2 Classification of cases by sex and presence or absence of third molars.

Sex	Third molars				Total cases
	Presence		Absence		
	No.	%	No.	%	
Male	131	67.81	64	32.82	195
Female	205	68.33	95	31.67	300
Total	336	67.75	159	32.24	495

$$X^2 = 0.083, \text{ d.f.} = 1, p > 0.05$$

Table 3 Sex-specificity and third molars agenesis in the left and right side of maxilla and mandible.

Missing of 3 rd molar	Sample size				Total
	Male		Female		
	No.	%	No.	%	
Maxillary right	37	41.11	53	58.89	90
Maxillary left	43	40.57	63	59.43	106
Mandibular right	34	43.04	45	56.26	79
Mandibular left	34	41.46	48	58.54	82
Total	148	41.46	209	58.54	357

$$X^2 = 0.28, \text{ d.f.} = 3, p > 0.05$$

Table 4 Probability of third molars agenesis in the left and right side of maxilla and mandible.

3 rd Molar missing	Missing		Not missing		Number
	No.	%	No.	%	
Maxillary right	90	18.18	405	81.82	495
Maxillary left	106	21.41	389	78.59	495
Mandibular right	79	15.66	416	84.04	495
Mandibular left	82	16.57	413	83.43	495
Total	357	18.03	1623	85.87	1980

$$X^2 = 5.99, \text{ d.f.} = 3, p > 0.05$$

Table 5 Probability of third molars agenesis in maxilla and mandible.

3 rd Molar missing	Missing		Not missing		Total
	No.	%	No.	%	
Maxilla	196	19.80	794	80.20	990
Mandible	161	16.26	829	83.74	990
Total	357		1623		1980

$$X^2 = 3.91, \text{ d.f.} = 1, p < 0.05$$

Table 6 Relationship of unilateral and bilateral missing third molars to maxilla and mandible.

3 rd Molar missing	Unilateral		Bilateral		Total	
	No.	%	No.	%	no.	%
Maxilla	48	39.34	74	60.66	122	54.46
Mandible	43	42.16	59	57.84	102	45.53
Total	91	40.62	133	59.38	224	100

$$\chi^2 = 0.182, \text{ d.f.} = 1, p > 0.05$$

Table 7 The number of congenitally missing third molars.

	Cases	%
No missing	332	67.07
One missing	47	9.49
Two missing	65	13.13
Three missing	24	4.84
Four missing	27	5.45
Total	495	100

The total of 495 cases were studied. It was found that the presence or absence of third molars did not depend on the sex of the individual. Of the males, 32.82% had one or more third molars missing and of females, 31.67% had at least one third molar missing. The Chi-Square test revealed no statistically significant difference (Table 2).

According to sex specificity and third molars agenesis in the left and right side of maxilla and mandible revealed female had a higher percentage of missing than male. The Chi-Square test showed no significant difference (Table 3).

When comparing the number of third molars missing in the left and right side of maxilla and mandible. It was found that the percentage of missing of the left side was higher than of the right side. Also the Chi-Square test showed no significant difference (Table 4).

The probability of third molar agenesis in maxilla and mandible. Of the maxilla 19.80% and 16.26% in the mandible. The Chi-Square test revealed the statistically significant (Table 5). When the third molar was missing, bilateral missing of both maxilla and mandible tended to be a greater number than unilateral (Table 6). Anyway no statistically significant were found by Chi-Square test.

It was found that two missing of third molars was the most frequently found (13.13%) and three missing of third molars was the smallest in number (4.84%) as shown in the Table 7.

Discussion

The method of present study is based on radiographic examination. The radiographic examination of agenesis of third

molars is rather more accuracy to study than of those clinical examinations or history of the patients alone. The radiographic evidence shows a far away embeded tooth and can observe as early as 7 or as later as 13 years of age⁸. The age between 12 and 22 years is the most suitable range to analyse the missing of third molar.

The percentage of cases with missing third molars in the sample was different to previous studies (Table 1). The highest number of 32.8% in male and 31.7% in female were recorded. While 9% to 31% were reviewed in the literature (Table 1).

The present and other studies^{7,12,13}. found no significant sex difference in the congenitally missing third molar. However, there are more females than in males^{4,8} with congenitally absence of third molars; a 3 : 2 ratio exists, according to Richardson¹¹.

The Chi-Square test revealed that the significant difference of third molars were more frequent missing in the maxilla than in the mandible. As in Nanda material, lower third molars were missing more frequently than upper in the ratio 13 : 7 and also disagreed to some previous studies.^{5,7,12,13}.

It was the same as Banks² and Gravelly⁷ that the most common for 2 third molars to be missing, then 1, 4 and 3 in that order which Nanda¹⁰ found congenitally absence third molars to occur in order of frequency 1, 2, 3 and 4.

The previous studied^{5,8,14} as well as the present study, however, showed that there was no significant difference between the left and right side of both maxilla and mandible. This study disagrees to the finding of Hellman.⁸

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Pairat Dhiravarangkura

Dept. of Radiology

Faculty of Dentistry

Chulalongkorn University



THIRD MOLAR AGENESIS

ไพรัช ธีรรางกูร,
สุภา นันทวิโรจน์
สมพร ประพันธ์พจน์

บทคัดย่อ

ฟิล์มเอ็กซเรย์ชนิดออร์โทแพนโทโมแกรมของผู้ป่วย 495 ราย (ผู้หญิง 300 ราย ผู้ชาย 195 ราย) จากคณะทันตแพทยศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย นำมาศึกษาถึงการสูญเสียฟันกรามซี่ที่สามโดยกำเนิด ในผู้ป่วยอายุระหว่าง 12-22 ปี (เฉลี่ยอายุ 15.7 ปี) พบว่าเกิดในผู้หญิง 31.66% ในชาย 32.82% ไม่มีความแตกต่างกันอย่างมีนัยสำคัญ ($P > 0.05$) ฟันกรามซี่ที่สามในฟันบนหายมากกว่าในฟันล่างอย่างมีนัยสำคัญ ($P < 0.05$) ฟันกรามซี่ที่สามหายไป 2 ซี่ ในผู้ป่วยคนเดียวกันพบมากที่สุด ไม่มีความแตกต่างกันอย่างมีนัยสำคัญระหว่างฟันกรามซี่ที่สามที่หายไปข้างเดียวหรือทั้งสองข้าง ($P > 0.05$)