

# Pattern of Mandibular Third Molar Presentation: Ten Years Experience at the University College Hospital Ibadan

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## Abstract

**Background:** Tooth impaction occurs when a tooth fails to erupt or develop in its proper functional location. The third molar is said to be the most commonly impacted tooth in the oral cavity and accounts for 98% of all impactions and mandibular third molars are the most frequently impacted.

**Aim:** The purpose of this study was to review 10 years pattern of presentation of mandibular the third molar impaction seen at the University College Hospital in Ibadan.

**Material and Methods:** A total of 597 impacted third molar teeth were reviewed. The angulations of impacted third molar teeth according to Winter's classifications were recorded as documented in the patient's case note. The cause of extraction such as pericoronitis, caries, other pathology, and orthodontic reason and second molar pathology were noted and recorded for every patient. Distributions of obtained values were compared using the Pearson  $\chi^2$  test.

**Results:** The mean age of the subjects was 27.7 (range: 19-50); in a review of the 597 impacted third molar teeth, the most common angulation of impaction was mesioangular (320;53.6%) and pericoronitis (514;86.2%) was found to be the most common reason for disimpaction. Among 597 patients (244 males, 353 females), pericoronitis was more prevalent in females (101;30%).

**Conclusion:** The pattern of third molar impaction in UCH population was characterized by mesioangular impaction and was more common in females than males. Pericoronitis was the most common symptoms usually associated with level tooth impaction.

**Keywords:** Review; Pattern; Third molar; Impaction

## Introduction

Tooth impaction is a failure of a tooth to erupt to the normal functional position within the expected time; due to lack of space, or physical barriers [1]. Teeth are said to be impacted when they fail to erupt or develop in their proper functional location [2].

The third molar is said to be the most commonly impacted tooth in the oral cavity and accounts for 98% of all impactions [2] and mandibular third molars are the most frequently impacted [3,4].

Inadequate space in the mandible, among other factors, is the cause of third molar impaction [5].

There is a substantial variation in the frequency of third molar impaction amongst different populations; and these range between 18% and 70% [6-10]. This is attributed to racial variation in facial growth, jaw and tooth size [2].

The impacted teeth can give rise to pathological conditions such as pericoronitis or develop to cystic lesions or other odontogenic pathology [11,12].

Different classification systems have been used to describe impacted third molars, these are Winter's [13] classification system which describe the angle formed between the intersected longitudinal axes of the second and third molars, [13] the Pell and Gregory [14] classification system which assess the level of third molar impaction where the impacted third molars are assessed in relation to the neighboring second molars [14].

Studies have reported different prevalence for impaction of the mandibular third molars and this varies between 16.7% and 68.6% [15-21]. Most studies available did not find a gender predilection; however, some studies have mentioned a higher incidence of impaction in females when compared to males [15,16,22].

The aim of the present study is to evaluate the pattern of third molar impaction in patients seen in the University College Hospital (UCH) within 10 years in terms of age, gender, angulations of impaction as recorded in the day book and the patients case note, furthermore, cross tabulation between patterns of impaction and gender was evaluated for any significant difference.

## Materials and Methods

This study was undertaken on a group of patients who presented at the exodontias clinic of Oral and Maxillofacial Surgery UCH between January 2007 and December 2016.

A total of 597 patients who had impacted the third molar extracted were included in the study. The data required for each patient were collected retrospectively: Age, Gender, Type of impaction based on angulations and the quadrant where the impacted tooth is located were extracted from their records in the case note and oral and maxillofacial daily record book.

Due to the nature of the study (retrospective study), informed consent could not be obtained from the patients.

Data analysis was completed using SPSS 23.0 software (SPSS Inc.,

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Chicago, IL). Statistical tests carried out included Pearson’s chi-square and Student’s t-test. A P-value less than 0.05 was considered statistically significant. All information gathered was carried out by two examiners to avoid the error of omission.

## Results

The total number of 611 patients who had impacted mandibular third molar extraction done between January 2007 and December 2016 were reviewed but only 597 who had complete information were eventually included in the analysis, 14 patient were not included due to insufficient information and each patient had one mandibular third molar disimpaction done, with a total of 597 third molars that were reviewed and included in the study. The sample consisted of 244 (40.9%) male and 353 (59.1%) female (Table 1) with age ranged from 18 to 50 and mean of 27.7 with female having more third molar extraction done more than male and the difference between male and female was statistically significant (  $X^2=16.7$  and P Value=0.002) (Table 2).

Most patients were recorded in 2011 and the least was recorded in 2014. Six-five were recorded in 2007, 59 in 2008, 53 in 2009, 48 in 2010, 72 in 2011, 49 in 2012, 70 in 2013, 44 in 2014, 66 in 2015, 71 in 2017 with average of 59.7.

The highest pattern for impacted teeth was mesioangular 320

(53.6%) impaction and lowest was transverse 2 (0.3%) (Tables 1-4).

Most third molar extraction that was done in this study was in the third decade where 405 (67.9%) cases were recorded followed by the fourth decade, a second decade and fifth decade, the difference was statistically significant with  $X^2=274.89$  and P Value=0.0001 (Table 2).

More third molar extractions were done on the left than the right mandible with a statistically significant difference ( $X^2=16.61$ , P Value=0.00158) (Table 3).

There is no different between male and female in the distribution of impacted teeth on the right quadrants ( $X^2=13.06$ , P Value=0.005) while there is a statistically significantly different between male and female in the distribution of impacted teeth on the left quadrant especially the mesioangular impaction with ( $X^2=24.04$  13.06, P Value=0.0001) (Table 4).

Recurrent pericoronitis 525 (85.3%) was the main cause for extraction followed by caries (Table 5).

## Discussion

The majority of patients in this study were Yoruba tribes between the Age of 18 and 50 years. In this study, we found that the incidence of mandibular third molar impaction was significantly higher in females

Gender	Impaction mesioangular	Distoangular	Horizontal	Vertical	Transverse	Total x <sup>2</sup> P value
Male	111 (34.7)	42 (52.5)	68 (51.5)	22 (34.9)	1 (50.0)	244 (40.9)
Female	209 (65.3)	38 (47.5)	64 (48.5)	41 (65.1)	1 (50.0)	353 (59.1)
<b>Total</b>	<b>320 (100)</b>	<b>80 (100)</b>	<b>132 (100)</b>	<b>63 (100)</b>	<b>2 (100)</b>	<b>597 (100) 16.72 (0.002)</b>

Table 1: Gender distribution.

Impaction						
Age	Mesioangular	Distoangular	Horizontal	Vertical	Transverse	Total x <sup>2</sup> P value
18-20	15 (4.6)	3 (3.8)	5 (3.8)	0 (0.0)	0 (0.0)	23 (3.9)
21-30	231 (72.2)	62 (77.4)	74 (56.1)	36 (57.1)	2 (100.0)	405 (67.8)
31-40	67 (21.0)	12 (15.0)	45 (34.1)	24 (38.1)	0 (0.0)	148 (24.7)
41-50	7 (2.2)	3 (3.8)	8 (6.0)	3 (4.8)	0 (0.0)	21 (3.5)
<b>Total</b>	<b>320 (100.0)</b>	<b>80 (100.0)</b>	<b>132 (100.0)</b>	<b>63 (100.0)</b>	<b>2 (100.0)</b>	<b>597 (100.0) - 0.0001</b>

Table 2: Age distribution.

Impaction						
Quadrant	Mesioangular	Distoangular	Horizontal	Vertical	Transverse	Total x <sup>2</sup> P value
Right	112 (35.0)	32 (40.0)	61 (46.2)	22 (34.9)	0 (0.0)	227 (38.0)
Left	208 (65.0)	48 (60.0)	71 (53.8)	41 (65.1)	2 (100.0)	370 (62.0)
<b>Total</b>	<b>320 (100)</b>	<b>80(100)</b>	<b>132 (100)</b>	<b>63 (100)</b>	<b>2 (100)</b>	<b>597 (100) 16.61 0.00158</b>

Table 3: The affected quadrant.

Impaction									
Quadrant	Gender	Mesioangular	Distoangular	Horizontal	Vertical	Transverse	Total	x <sup>2</sup>	P value
Right	Male	59 (52.7)	19 (59.4)	31 (50.8)	3 (13.6)	0 (0.0)	112 (49.3)	13.06	0.005
	Female	53 (47.3)	13 (40.6)	30 (49.2)	19 (86.4)	0 (0.0)	115 (50.7)		
	Total	112 (100.0)	32 (100.0)	61 (100.0)	22 (100.0)	0 (0.0)	227 (100.0)		
Left	Male	52 (25.0)	23 (47.9)	37 (52.1)	19 (46.3)	1 (50.0)	132 (35.7)	24.04	0.0001
	Female	156 (75.0)	25 (52.1)	34 (47.9)	22 (53.7)	1 (50.0)	238 (64.3)		
	Total	208 (100.0)	48 (100.0)	71 (100.0)	41 (100.0)	2 (100.0)	370 (100.0)		
Total	Male	111 (34.7)	42 (52.5)	68 (51.5)	22 (34.9)	1 (50.0)	244 (40.9)	16.72	0.002
	Female	209 (65.3)	38 (47.5)	64 (48.5)	41 (65.1)	1 (50.0)	353 (59.1)		
	Total	320 (100.0)	80 (100.0)	132 (100.0)	63 (100.0)	2 (100.0)	597 (100.0)		

Table 4: Quadrant, gender, and type of impaction tabulation.

Gender	Cause					Total
	Pericoronitis	Caries	Other pathology	Orthodontic reason	2nd Molar Pathology	
Male	201 (39.5)	19 (47.5)	9 (52.9)	8 (53.3)	7 (43.8)	244 (40.9)
Female	308 (60.5)	21 (52.5)	8 (47.1)	7 (46.7)	9 (56.2)	353 (59.1)
<b>Total</b>	<b>509 (100.0)</b>	<b>40 (100.0)</b>	<b>17 (100.0)</b>	<b>15 (100.0)</b>	<b>16 (100.0)</b>	<b>597 (100.0)</b>

Table 5: Associated pathology.

when compared with males. This finding is in agreement with the findings in the literature [8,9,15,20]. The higher incidence in women has been attributed to the fact that the physical growth in women usually stops earlier than men leading to a smaller jaw size [8,9]. Also, the initiation of third molar eruption in women is said to occur after the growth of the jaw is completed unlike in men whose jaw growth continues during the third molar eruption and thus provides more space for the tooth [9].

Some studies however did not find gender differences in the pattern of third molar impaction [7,18,19].

More third molar extractions were done on the left than the right mandible with a statistically significant difference. There is no difference between male and female in the distribution of impacted teeth on the right quadrants while there is a statistically significantly different between males and females in the distribution of impacted teeth on the left quadrant especially the mesioangular disimpaction.

In the present study, the most common type of angulation of impacted mandibular third molar was mesioangular, followed by horizontal, distoangular, vertical and transverse being the least. The findings are similar to those of Eshghpour et al. [8]. It is also similar to that of Hashemipour et al [15] who found that mesioangular impaction was the most prevalent type of impaction in the mandibular third molars of African American, Singaporean, American, Arabian, and Iranian populations, respectively.

However, some studies reported that the most common angulation of third molar impaction was the vertical position. [20-23].

Most third molar extraction that was done in this study was in the third decade where 405 (67.9%) cases were recorded followed by the fourth decade, a second decade and fifth decade. This is in agreement with the findings in the literature [24,25].

In this study, we found that pericoronitis is the main reason for impacted mandibular third molar disimpaction. The findings are similar to those of Jamileh and Pedlar [26] et al. and Khawaja [27]. There was a tendency in female patients for pericoronitis, but other symptoms showed no gender predominance. This finding is similar to those of Bataineh et al. [21] and Yamalik and Bozkaya et al. [28]. However, Almendros-Marqués et al. [22] and Akarslan and Kocabay et al. [29] found no gender predominance for all complaints and pathologies. While Yilmaz et al. [23] reported male predominance.

Prajapati, et al. [30] in their study, recorded caries (especially of the adjacent tooth) and its sequelae as the major reason (63.2%) for the mandibular third molar extraction, followed by recurrent pericoronitis (26.3%) and periodontitis (9.2%) [25]. Allen et al. [31] reported the incidence of 42% of the distal second molar caries associated with partially or completely impacted mandibular third molars [31].

## Conclusion

Impacted teeth are commoner in females than males and in the left side than the right. Mesioangular impaction is the most occurred of all impaction and also commoner on the left side than on the right. This is

true for all the years put together and also from an individual year and more in the third decade of life.

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