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Research Article

Pattern of Mandibular Third Molar in the South Western Nigeria: Twenty-Two Years Retrospective Review of Transalveolar Extraction at the University College Hospital Ibadan

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Received: September 10, 2020; **Published:** December 29, 2020

Abstract

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.

The aim of the study is to access the pattern of presentation of mandibular the third molar impaction.

A retrospective review of cases of impacted mandibular third molar extraction in the oral surgery clinic, UCH Ibadan between January 1997 and December 2018.

1271 cases of impacted mandibular third molar teeth reviewed, only 1223 with complete information, were included in the analysis. Information was extracted from the patients case notes and maxillofacial daily record book included.

Distributions of obtained values were compared using the Pearson $\chi 2$ test and student t test.

Among 1223 cases, 490 (40.1%) were male and 733 (59.9%) were female (X2 = 17.2 and P Value = 0.002) (Table 1). The most common angulation of impaction was mesioangular (679; 55.5%).

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

Introduction

Tooth impaction is a failure of a tooth to erupt to the normal functional position in the oral cavity 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].

Thid molar is said to be the most commonly impacted tooth in the oral cavity and accounts for 98% of all impactions [2] of which mandibular third molars are the most frequently impacted [3, 4] and inadequate space in the mandible among other factors is the cause of mandibular 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 molar teeth, these are Winter's classification system which describe tghe angle formed between the intersected longitudinal axxes of the second and third molars as Vertical impaction, horizontal impaction, mesioangular impaction, distoangular impaction, inverted impaction and transverse impaction (Bucco version and Linguo version)[13], the Pell and Gregoryclassification system which assess the level of third molar impaction where the impacted thid molar s are assesed in relation to the neighbouring second molar and the ascending ramus based on the amount of the tooth covered by the anterior border of the ramus (level 1, 2 or 3) and the depth of impaction relative to the adjacent tooth (A, B, C)[14] other classification include killey and kay and Ameirican Dental Association.

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].

Aim of the Study

The aim of the present study was to evaluate the pattern of third molar impaction in patients seen in the university college hospital within 22 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 retrospective study of cases of impacted mandibular third molar seen at the exodontia clinic of Oral and Maxillofacial Surgery University College Hospital Ibadan between January 1997 and December 2018.

A total of 1271 patients who had impacted third molar extracted were included in the study. The data obtained from patients' record were Age, Gender, Type of impaction based on angulations (winter's classification system) and the quadrant where the impacted tooth is located. Only those with complete information (1223) were included in the analysis.

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., 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 a two examiners to avoid error of omission.

Results

The total number of 1271 patients who had impacted mandibular third molar extraction done between January 1998 and December 2018 were reviewed but only 1223 who had complete information were eventually included in the analysis, 48 patients were not included due to insufficient information and each patient had one mandibular third molar disimpassion done, with total of 1223 third molars that were reviewed and included in the study. The sample consisted of 490 (40.1%) male and 733 (59.9%) female (age ranged from 18 to 71 and mean age of 27.8 with female having more third molar extraction done more than male and the difference between male and female was statistically significant (X^2 = 17.2 and P Value = 0.002) (Table 2).

Most patients were recorded in 2005 (72 cases) and the least was recorded in 1998 and 2004 (37 cases each). Forty five were recorded in 1997, 37 in 1998, 62 in 1999, 54 in 2000, 57 in 2001, 51 in 2002, 54 in 2003, 37 in 2004, 75 in 2005, 40 in 2006 65 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 2016, 54 in 2017, and 60 in 2018 with average of 55.6 The most frequent angulation of impaction was mesioangular impaction (679; 55.5%) and lowest was transverse impaction (8; 0.7%) (Table 1 to 3).

Age	Impaction					Total	X^2	P Value
	Mesioangular	Distoanguler	Horizontal	Vertical	Transverse			
18.00-20.00	33 (66.0)	7 (14.0)	7 (14.0)	2 (4.0)	1 (2.0)	50 (100.0)		
21.00-30.00	479 (57.8)	134 (16.2)	145 (17.5)	66 (8.0)	4 (0.5)	828 (100.0)		
31.00-40.00	139 (48.4)	48 (16.7)	63 (22.0)	34 (11.9)	3 (1.0)	287 (100.0)		
41.00-50.00	21 (58.3)	8 (22.2)	12 (33.3)	5 (13.9)	0 (0.0)	46 (100.0)		
51.00-60.00	4 (57.1)	2 (28.5)	0 (0.0)	1 (14.3)	0 (0.0)	7 (100.0)		
61.00-70.00	2 (50.0)	2 (50.0)	0 (0.0)	0 (0.0)	0 (0.0)	4 (100.0)		
71.00-80.00	1 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (100.0)		
Total	679 (55.5)	201 (16.4)	227 (18.6)	108 (8.8)	8 (0.7)	1223 (100.0)	215.6	0.008

Table 1: *Age distribution.*

Quadrant	Gender	Impaction					Total	X^2
		Mesioangular	Distoanguler	Horizontal	Vertical	Transverse		
Right	Male	114 (51.1)	40 (17.9)	56 (25.1)	12 (5.4)	1 (0.4)	223 (100.0)	
	Female	135 (50.0)	50 (18.5)	52 (19.3)	31 (11.5)	2 (0.7)	270 (100.0)	
	Total	249 (50.5)	90 (18.3)	108 (21.9)	43 (8.7)	3 (0.6)	493 (100.0) 0.12	7.3
Left	Male	130 (48.7)	50 (18.7)	58 (21.7)	27 (10.1)	2 (0.7)	267 (100.0)	
	Female	300 (64.7)	61 (13.2)	61 (13.2)	38 (8.2)	3 (0.6)	463 (100.0)	
	Total	430 (58.9)	111 (15.2)	119 (16.3)	65 (8.9)	5 (0.7)	730 (100.0) 0.001	19.2
Total	Male	244 (49.8)	90 (18.4)	114 (23.3)	39 (8.0)	3 (0.6)	490 (100.0)	
	Female	435 (59.3)	111 (15.2)	113 (15.4)	69 (9.4)	5 (0.7)	733 (100.0)	
	Total	679 (55.5)	201 (16.4)	227 (18.6)	108 (8.8)	8 (0.7)	1223 (100.0)	17.2

Table 2: *Quadrant, gender and type of impaction tabulation.*

Causes	Impaction					Total	X^2 P Value
	Mesioangular	Distoangular	Horizontal	Vertical	Transverse		
Acute Pericoronitis	18 (66.7)	4 (14.8)	5 (18.5)	0 (0.0)	0 (0.0)	27 (100.0)	
Chronic Pericoronitis	9 (69.2)	1 (7.7)	3 (23.1)	0 (0.0)	0 (0.0)	13 (100.0)	
Recurrent Pericoronitis	585 (55.3)	177 (16.7)	195 (18.4)	94 (8.9)	6 (0.6)	1057 (100.0)	
Other Pathology (Dentigerous cyst)	12 (54.5)	1 (4.5)	4 (18.2)	5 (22.7)	0 (0.0)	22 (100.0)	
Prophylatics	5 (45.5)	2 (18.2)	2 (18.2)	1 (9.1)	1 (9.1)	11 (100.0)	
Orthodontic reason	11 (47.8)	5 (21.7)	5 (21.7)	1 (4.3)	1 (4.3)	23 (100.0)	
Second molar pathology	13 (59.1)	2 (9.1)	6 (27.3)	1 (4.5)	0 (0.0)	22 (100.0)	
Caries	26 (54.2)	9 (18.8)	7 (14.6)	6 (12.5)	0 (0.0)	48 (100.0)	
Total	679 (55.5)	201 (16.4)	227 (18.6)	108 (8.8)	8 (0.7)	1223 (100.0)	0.18

Table 3: *Associated pathology.*

Mandibular impacted third molar extraction was mostly done in the third decade, 828 (67.7%) and this was followed by fourth decade, second decade and fifth decade, the difference was statistically significant with $X^2 = 215.6$ and P Value = 0.008 (Table 2). And the left side (730; 59.7%) of the mandible was more involved than the right mandible (493; 40.3%) with statistically significant difference ($X^2=10.4$, P Value = 0.034 (Table 2).

There is no different between male and female in the distribution of impacted teeth on the right quadrants ($X^2 = 7.3$, P Value = 0.12) while the difference between male and female in the distribution of impacted teeth on the left quadrant especially the mesioangular impaction is statistically significant ($X^2 = 19.2$, P Value = 0.001 (Table 2).

Recurrent pericoronitis 525 (85.3%) was the main cause for extraction followed by caries (Table 3).

Discussion

The majority of patient in this study were Yoruba tribes between the Age of 18 and 71 years.

We found higher incidence of impacted mandibular third molar in females than males in this study. This finding is in agreement with other studies in the literature [8,9,15,20,23-25]. This higher incidence in female has been linked to the physical growth in women which stops earlier than it occurs in men and this results in a smaller jaw size in female [8,9] and that the third molars eruption in women occur after the completion of jaw growth, unlike what obtains in males whose third molars eruption occur during the growth of the jaw, thus providing more space for the tooth to erupt into [9,26]. Higher incidence of third molar impaction in females has also been attributed to earlier presentation at the clinic, probably due to their lower levels of pain tolerance and lower pain threshold, compared to their male counterparts [27]. In contrast, Stanley and co-workers reported a male-preponderance with male-to-female ratio of 2:1 [28].

In some studies however, there is no significant difference in the pattern of impacted third molar between male and female genders [7,18,19,29].

Left side of the jaw was more affected than the right side of the jaw in this study and the differences is statistically significant. Also, the distribution of impacted mandibular teeth, especially those of mesioangular orientation is more in female than male and this is statistically significant on the left lower quadrants while there is no significant difference on the right.

In this study, the most common type of angulation of impaction was mesioangular impaction, followed by horizontal, distoangular, vertical and the least was transverse angulation. The finding is similar to those of Eshghpour., *et al.* [8,30,31,26,32] and in agreement with the findings of Quek., *et al.* [9] Hashemipour., *et al.* [15] Kramer and Williams, [33] Moris and Jerman, [34] and Hassan [35] who found mesioangular impaction as the most frequently observed type of impacted third molars in Singaporean, Iranian, American, American, and Arabian populations respectively. Our finding is however in variance with some studies that reported vertical position as the most common angulation of third molar impaction [20-22,32,36].

Majority of the impacted mandibular third molar extraction was done in the third decade of life and this was followed by fourth decade, second decade and fifth decade respectively. This is in agreement with those findings reported in the literature [35,37]. This may possibly be due to the fact that eruption of third molar takes place towards the early stage of this decade which also coincide with the cessation of puberty. This result in stoppage of growth, lack of space for the eruption of third molar teeth with resultant partial eruption or complete impaction of third molars and their associated symptoms [9]. Another possible explanation is that the majority of the works on impacted

third molars was carried out either in a university community or in an urban setting where a good number of patients population fall within this age group [29].

We found pericoronitis as the main reason for impacted mandibular third molar extraction in our study, a similitude of those reported in the literature [38,39]. There was a tendency for pericoronitis in female patients, but other symptoms showed no gender predominance. This finding is similar to those of Bataineh., *et al* [21] and Yamalık and., *et al* [40]. However, it is in variance with the those of Almendros-Marqués., *et al* [22] and Akarslan., *et al.* [41] who found no gender predominance for all complaints and pathologies.

Conclusion

Our study has shown that Impacted mandibular third molars are more commonly encountered on the left side than the right. Females are more commonly predisposed to impacted mandibular third molar than male. Mesioangular impaction is the most frequent presentation of all angulation and it is more common on the left than on the right.

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