

Pattern of Presentation of Impacted Third Molar in a Nigerian Tertiary Health Facility: A Prospective Study

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ABSTRACT

Background: Though pattern of impacted third molar is well documented in the literature, it appears none has been reported in our centre.

Objective: To evaluate the pattern of impacted third molar in the university of Benin teaching hospital

Methods: This was a prospective study design carried out at the Department of Oral and Maxillofacial Surgery, University of Benin Teaching Hospital, Benin-city, Edo state, Nigeria from January 2021 to February 2022. All consecutive patients that presented with impacted third molars were recruited for the study. The data collected were sociodemographic data such as age, sex, marital status and level of education while the clinical data were side of extraction, type of impaction and indication of extraction. Descriptive statistics were performed. All collected data were screened, entered into a computer, and analyzed using Statistical Package for the Social Science (SPSS) software version 20 (SPSS Inc., Chicago, USA).

Results: A total number of 43 patients were seen in this one year prospective study. The mean age and standard deviation (SD) were 30.10 ± 6.42 , with an age range of 20-43 years, respectively. More than half (54.8%) of the participants were females compared to their male counterparts, with a male: female ratio of 1:1.2. Most (51.2%) of the impacted lower third molars were removed from the left mandibular arch. The most (39.5%) extracted impacted lower molar were mesioangular, while the least (9.3%) was distoangular impaction. Recurrent pericoronitis constituted the major (46.5%) reason for extraction of impacted lower third molars in this study, while the least (2.3%) indication of extraction was for orthodontic reasons

Conclusion: Most prevalent impacted third molars was mesioangular impaction leading to mostly recurrent pericoronitis mainly in the females

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INTRODUCTION

An impacted tooth is one that fails to erupt into the dental arch within a specific time (Chaparro-Avenidaño et al, 2005). Third molars normally emerge into the oral cavity between 18-24 years, although there is a wide variation (Gopee and Rikhotso et al, 2017). Impaction is primarily due to a lack of sufficient space for eruption in the posterior maxilla and mandible (Jadhao et al, 2018). The obstruction to the path of eruption can

be caused by hard (bone or tooth) or soft tissue (Costich et al, 1964).

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The impaction rate for third molars is higher than for any other tooth in the arch (Delilbasi et al, 2002). Impacted teeth were found in 14.1% of the patients. The most frequently impacted teeth were

the third molars, 76.1%, and of these, no difference between the maxilla and mandible was observed (Saghiri et al, 2018). The prevalence of impacted maxillary cuspids was significantly higher than that of the mandibular cuspids (Osunde and Anyanechi, 2017). The percentage of the other impacted teeth was only 3.6 %. No difference in sex in the prevalence of third molars was observed (Fine et al, 1996). The number of impacted third molars predominated in the age group 20-29 years, and a percentage decrease in their number was observed with the increase in age, obviously due to extractions (Rahn et al, 1995).

There have been many attempts to classify the type of impaction of third molars to predict operative difficulty (Pai et al, 2004). Various (Carter and Worthington, 2016) extraction difficulty indices exist, but controversy remains over their validity in predicting surgical outcomes. In 1926, Winter described the depth and angulation of the impaction using three imaginary lines (Southern et al, 2006).

In 1933, Pell and Gregory predicted surgical difficulty radiographically based on the depth of the third molar within the bone, its relation to the ramus of the mandible, and the long axis of the mandibular second molar. This assessment has been shown to be insensitive in predicting surgical difficulty (Arweiler et al., 2000).

In recent years, more emphasis has been placed on patient variables to predict the assessment of difficulty. Age is a significant factor, with studies showing surgical difficulty increases with increasing age (Lee et al, 2004). Increasing age is associated with increased radiographic bone density and surgical difficulty, according to Peterson. Ethnic diversity and male gender have been shown to impact surgical time and difficulty (Haffajee et al, 2008)

Again, differences in bone properties are implicated as the reason for this (Lakshmi et al, 2015)

Various efforts have been made to determine a reliable model for assessing difficulty. Although many have been postulated, none could be said to be universally acceptable. A combination of radiographic and patient variables must be considered when predicting the difficulty of third molar surgery (Kim et al, 2006)

Age, Basal Metabolic Index (BMI), the curvature of roots, and depth from the point of elevation appear to be four of the most important variables to measure (Hill and Walker, 2006).

Though pattern of impacted third molar is well documented (Pushpinder and Lewis, 2012) in the literature, it appears none has been reported in our

centre. The finding of this study will help to better characterize impacted third molar in our centre. Therefore, the aim of this study is to evaluate the pattern of impacted third molar in the university of Benin teaching hospital.

MATERIALS AND METHODS

This was a prospective study design carried out at the Department of Oral and Maxillofacial Surgery, University of Benin Teaching Hospital, Benin-city, Edo state, Nigeria from January 2021 to February 2022. Ethical approval (ADM/22/A/VOL. VII/14,831289) for this study was obtained from the Ethics and Research Committee of the University of Benin Teaching Hospital. Written informed consent was also obtained from all prospective subjects who participated in the study. Only those who were given written informed consent to participate in the study were enrolled in the study. All consecutive patients that presented with impacted third molars were recruited for the study. Excluded from the study were those who refused to participate in the study.

The data collected were sociodemographic data such age, sex, marital status and level of education while the clinical data were side of extraction, type of impaction and indication of extraction. Descriptive statistics were performed. In the descriptive analysis, the mean and standard deviation of the numerical data were estimated, while the frequency and percentage of the nominal data were estimated. All collected data were screened, entered into a computer, and analyzed using Statistical Package for the Social Science (SPSS) software version 20 (SPSS Inc., Chicago, USA).

RESULTS

A total number of 43 patients were seen in this one year prospective study. The mean age and standard deviation (SD) were 30.10 ± 6.42 , with an age range of 20-43 years, respectively. Table 1 shows the sociodemographic characteristics of the patients. Most (35.7%) of the study participants were between the age of 25-30 years, followed (23.8%) by those in age group 20-24 years. More than half (54.8%) of the participants were females compared to their male counterparts, with a male: female ratio of 1:1.2 (Figure 1).

Table 2 shows the clinical characteristics of the study participants. Most (51.2%) of the impacted lower third molars were removed from the left mandibular arch. The most (39.5%) extracted impacted lower molar were mesioangular, while the least (9.3%) was distoangular impaction (Table 2). Recurrent pericoronitis constituted the major

(46.5%) reason for extraction of impacted lower third molars in this study, while the least (2.3%)

indication of extraction was for orthodontic reasons (Figure 2).

Table 1: Demographic characteristics of the study participants (n=43)

| Variables | Frequency(n) | Percentage (%) |
|--------------------------|--------------|----------------|
| Age (years) | | |
| 20-24 | 10 | 23.8 |
| 25-30 | 15 | 35.7 |
| 31-35 | 9 | 21.4 |
| 36-43 | 8 | 19.0 |
| >43 | 0 | 0.0 |
| Mean age ± SD (years) | 30.1 ± 6.42 | |
| Age range (years) | 20-34 | |
| Gender | | |
| Male | 19 | 45.2 |
| Female | 23 | 54.8 |
| Marital status | | |
| Single | 28 | 65.1 |
| Married | 15 | 34.9 |
| Educational level | | |
| Primary | 3 | 7.0 |
| Secondary | 19 | 44.2 |
| Tertiary | 21 | 48.8 |

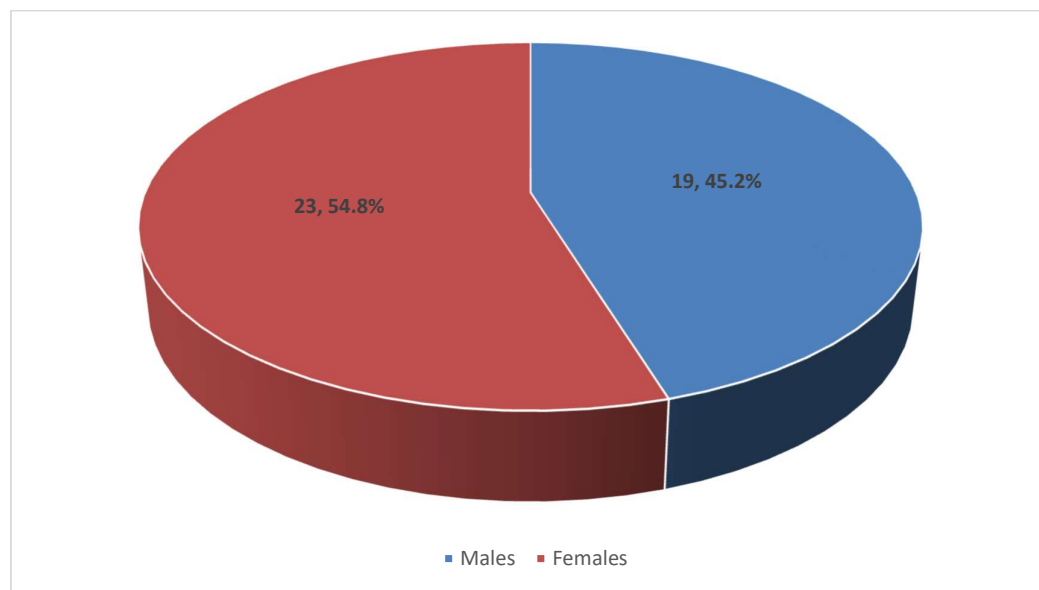


Figure 1- Pie chart showing gender distribution among subjects

Table 2: The Clinical Characteristics of the Study Participants (n=43)

| Variables | Frequency (n) n=43 | Percentage (%) |
|---------------------------|--------------------|----------------|
| Side of Extraction | | |
| Mandibular left | 22 | 51.2 |
| Mandibular right | 21 | 48.8 |
| Type of Impaction | | |
| Mesioangular | 17 | 39.5 |
| Distoangular | 4 | 9.3 |
| Vertical | 13 | 30.2 |
| Horizontal | 9 | 20.9 |

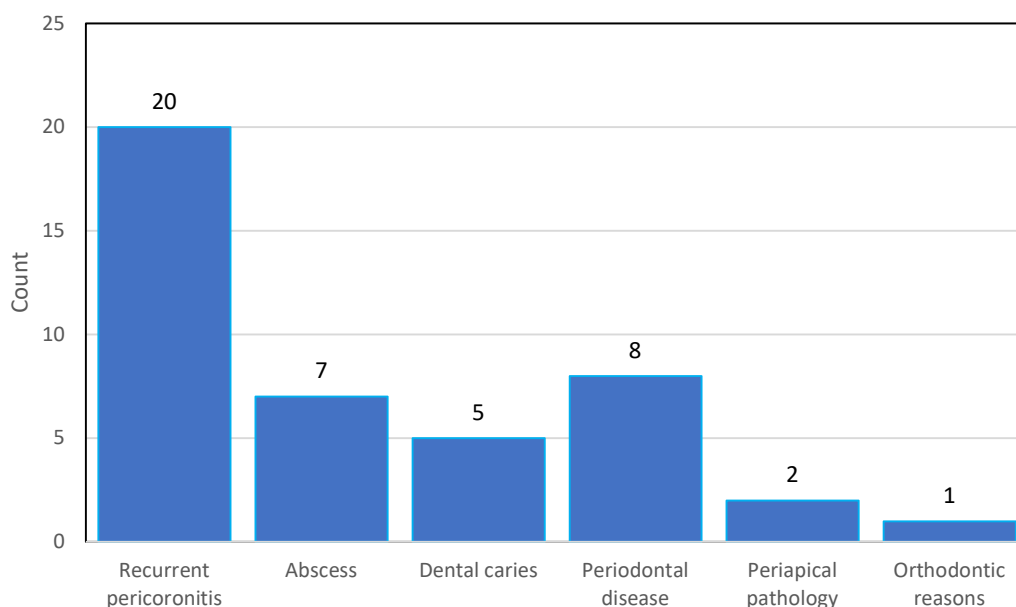


Figure 2 - Bar chart showing indication for extraction among subjects

DISCUSSION

Impacted mandibular third molar surgery is one of the most common surgical procedures in oral and maxillofacial surgery (Chaparro-Avendaño et al, 2005). As for any other surgical procedures, mandibular third molar surgery has its own risks and post-operative complications, that influence the recovery period and affect the patient's quality of life (Chaparro-Avendaño et al, 2005). Pain, limitation of mouth opening, and clinical evidence of swelling have a significant effect on the oral health related quality of life during the immediate post-operative period following lower third molar surgery (Gopee and Rikhotso et al, 2017).

Wound healing after lower third molar surgery has a significant clinical importance for the clinician, as delayed healing and wound dehiscence make hygiene more difficult and may require intense follow-up treatment, which potentially extends the time of postsurgical treatment (Haffajee et al, 2008). From the patient's point of view, delayed healing could result in a longer period of discomfort and continuous pain which is caused by hypersensitivity in the exposed distal root surface of the adjacent second molar (Haffajee et al, 2008). A total of 43 subjects completed the post-operative evaluation, consisting of slightly more females (54.8%) than males (45.2%), who presented with mandibular third molar impactions, giving a male-to-female ratio of 1:1.2. The higher ratio of females reported in this study reflects the slight female

predilection for third molar impaction in our environment as also reported in previous Nigerian studies (Hassanali et al, 1985).

The ratio stated in this study is lower than that reported by other Nigerian studies (Hill & Walker, 2006) but contrary to the findings of Osunde et al (Osunde & Anyanechi, 2017) who reported no gender predilection in Calabar, Nigeria. The reason for the higher female proportion could be due to lower tolerance to painful stimuli in females and their good health care-seeking attitude, thereby presenting at the hospital earlier.

The mean age of subjects recruited in this study was 30.10 ± 6.42 years with an age range of 20 – 43 years, with most of the participants in their third decade of life. This finding is consistent with previous studies which reported a wide age range of patients presenting with an impacted mandibular third molar and a higher proportion made up of those within the third decade of life (Olive and Basford, 1981).

Saheeb and Obuekwe reported that there were more impactions within the 21 – 30 years age range, and this was in line with this study (Hill and Walker, 2006). The mean age in this study was comparatively similar to that reported by Chukwunke & Saheeb; Pai et al, 2004) but higher than that reported by Klongnoi et al (Arweiler et al, 2000). Similarly, Renton et al (Lee et al, 2004) and Abu-Serriah et al reported slightly lower mean ages respectively. The fact that most of the

patients in this study were in their third decade of life, corroborates the assertion of Ventä et al that the period between 20 and 30 years of age may be considered the most active years for impacted third molar removal. Also, the mean age and range of this study were much higher compared to studies conducted by Bachalli et al and Bhaskar et al. In their studies subjects had a mean age of 23 and 17.5 years respectively.

In this study, the major indication for extractions was mainly due to pericoronitis (37.2%), and this is in contrast with a study by Adeyemo et al, who demonstrated that the major reason for third molar removal is dental caries with an incidence of 63.2%. The current study finding is in conformance to some other study findings that report recurrent pericoronitis as the most common pathology associated with impacted mandibular third molar (Aitasalo et al, 1972)

In this study, mesioangular impaction was common, which promotes food packing in the undercut caused by the inclination of the mandibular third molar and second molar, and these results in the development of caries.

Mesioangular impaction was the most common kind of impaction in this research, accounting for roughly 39.5% of all instances; and this was consistent with some studies (Lee et al., 2004), which indicated a 59.5% and 50% prevalence, respectively. Mesioangular Impaction is more common than other types of angulations, according to other Nigerian studies. However, Ladeinde et al. identified distoangular impaction as the most typical type. The higher occurrence of mesioangular impaction in the literature was not specifically explained. The disparity in mandibular third molar angulation may be explained by the fact that the majority of authors did not specify how the third molar angulation was assessed. Some authors have reported that the primordial tooth germ of the mandibular third molar developed high up in the mandibular ramus with its occlusal surface slanting mesially or horizontally: The developing crown moves in response to postural changes in the mandible induced by growth cessation of the jaw before complete uprighting of the crown and this most likely traps the developing tooth in a mesioangular position. This study has few limitations. First, the sample size could be small since it was time bound study. Secondly, clinical data like lifestyle habits such as alcohol intake and smoking were not assessed. Lastly, sociodemographic data such as religion and ethnicity were not evaluated

CONCLUSION

In conclusion, the most prevalent impacted third molars was mesioangular impaction leading to mostly recurrent pericoronitis mainly in the females.

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Conflicts of interest

None declared

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