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ORIGINAL ARTICLE

Third Molar Surgery: Risk Factors and Complications after Removal of Third Molars

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ABSTRACT

Objective: There is a need for this research because it aims to identify characteristics that increase the likelihood of negative outcomes following the removal of third molars.

Study Design: Observational/transversal study

Place and Duration: Dental College HITEC-IMS Taxilla/ Gulraiz Dental Clinic Quaid Avenue Main Road, Gulraiz 3, Rawalpindi. Nov 2020-June 2021

Methods: A total of 180 male and female participants were included in this study. The patients ranged in age from 20 to 50. Pericoronitis and tooth impaction were among the complaints of the patients included in the study. The oral and maxillofacial department operated on all of the patients who requested the removal of their third molars. All patients provided written consent before having their personal data collected, including their age, gender, BMI, kind of impaction, and location of their third molar. Various operative variables were employed. In our research, we looked at post-operative complications and risk variables. The whole data was analyzed with SPSS 23.0.

Results: 110 (61.1%) patients were males and 70 (38.9%) cases were females. 28.17±9.47 years were the mean age with mean BMI 24.11±3.65 kg/m^2. Most of the teeth impacted in left side found in 102 (56.7%) patients. Most common type of impaction was mesioangular among 90 (50%) cases followed by distoangular 45 (23.7%) cases. Majority of the third molars were fully impacted 120 (66.7%), 38 (21.1%) were partially impacted and frequency of erupted tooth was 22 (12.2%). All the third molars were removed by buccal guttering technique under local anesthesia. Post-operative infection was the most common complication found in 80 (44.4%) cases followed by gingival defect in 27 (15%) radicular fractures in 24 (13.3%) cases. Location of the third molar and bone removal was the most common factor found.

Conclusion: There was an increased risk of problems with tooth sectioning, bone removal, and/or tooth localization in patients above the age of 22. Both the evaluation of the indications for the removal of third molars and the process of informed consent should reflect this information.

Keywords: Third Molars, Surgery, Anesthesia, Complications, Impactions

INTRODUCTION

The surgical extraction of impacted third molar teeth is a common procedure in the field of oral medicine. After a third molar surgery, complications like as sensory nerve damage, dry socket, discomfort, edoema, trismus, infection, and bleeding are possible [1, 2]. Other complications include oro-antral fistula, buccal fat herniation, iatrogenic harm to the neighbouring second tooth, and iatrogenic mandibular fracture, among others. Both inferior alveolar and lingual nerve injury are common occurrences, with the latter having the potential to be permanently damaged, and are almost always associated with discomfort, trismus, and edoema. [3] 0.7 percent for the inferior alveolar nerves and 1.0 percent for the lingual nerves were found after two years of follow-up surgery, according to Jerjes et al[3]. In a separate study, Blondeau and Daniel found that 3 (0.5 percent) of the 327 patients who had their impacted third molar teeth surgically extracted had permanent nerve damage, while 6 (1.1 percent) of the 327 patients who had their impacted third molar teeth surgically extracted had nerve injuries. Patient's above the age of 24 were shown to have a higher frequency of nerve injury, according to the researchers [4]. In the field of M3 removal, there is a huge amount of research on the potential difficulties. M3 problems are connected with anatomic and procedural parameters, and despite the abundance of information available, there is a dearth of studies evaluating these aspects. As a result of this, it is critical that mathematical models be utilised to detect and correlate risk variables with problems. [5]

In a study conducted by Handelman et al. [6], OMFS residents were involved in the surgical removal of third molars. A comparison was made between the findings of this study and the findings of a study undertaken by general dentistry residents to evaluate postoperative problems in patients who had had surgical removal of third molars. In terms of problem occurrence, the researchers found no statistically significant difference between the two groups, while patients treated by general dentistry residents required more pain management than patients treated by other dental experts.. According to the findings, the level of experience had no effect on the outcomes, but rather the type of analgesics administered after the procedure did.

Berge and Gilhuus-Moe [7] conducted a study in which they looked at postoperative issues following surgical removal of third molars in two groups of individuals. The first group received surgery from four general dentistry practitioners, while the second group received surgery from a specialist oral surgeon. It was revealed that the general practitioners group had a greater rate of postoperative alveolar osteitis, as well as more pain and a longer length of operation than the other groups studied..

The authors [de Boer et al.] [8] found that third molar surgery in the hands of residents was associated with greater complication rates in the areas of alveolar osteitis, edoema, and post-operative haemorrhage. Post-operative infection and paraesthesia were shown to be more common in senior staff members, according to the same study.

In general, it has been demonstrated that inexperienced surgeons are more likely to have postoperative problems [6, 7]. A number of other investigations [9], on the other hand, have failed to find a link between a surgeon's previous experience and postoperative problems. An impacted third molar surgery's post-operative problems can be complicated by a number of circumstances, including the patient's medical condition, the type and degree of impaction, the surgeon's past experience with similar cases, and the use of an oral contraceptive pill by the patient. [10,11] When it comes to the development of alveolar osteosteitis, there has been a lot of debate recently (bone spurring). According to some specialists, oral contraceptive pills are linked to an increased risk of post-extraction alveolar osteitis.

Some scientists, on the other hand, believe the polar opposite. [12,13]

The goal of this study is to determine the overall incidence of complications associated with M3 removal and to identify risk variables that are associated with these difficulties in order to improve patient outcomes.

MATERIAL AND METHODS

This observational transversal study was conducted at Dental College HITEC-IMS Taxilla/ Gulraiz Dental Clinic Quaid Avenue Main Road, Gulraiz 3, Rawalpindi. All patients provided written consent before having their personal data collected, including their age, gender, BMI, kind of impaction, and location of their third molar. Patients less than 22 years of age, previous history of dental surgery and those did not give any written consent were not included in our study.

Age of the patients was between 20-50 years. Included patients had complaint of pericoronitis and impaction of tooth. All the patients came for the removal of third molars were operated in oral and maxillofacial department. Various alternative health status assessments were performed in addition to the American Society of Anesthesiologists (ASA) system, which ranged from I through V. According to the American Association of Oral and Maxillofacial Surgeons (AAOMS) recommendations of treatment, the location of the third molar was chosen as the anatomic measure because it can be characterised as missing, erupted, partially bony impacted, or completely bony impacted (AAOMS). Removal of bone and sectioning of teeth were also studied as possible procedures. A complication was defined as any incidence that necessitated additional patient management beyond the scope of the specified treatment course. Postoperative issues were the key outcome variables. The most often encountered intraoperative and postoperative complications were internal and exterior bleeding. Radicular fractures, osseous spicules, injury to a neighbouring tooth, gingival defect, infection, paresthesia, haemorrhage, oral-antral communication, sinusitis, suture dehiscence, and any other difficulties were among the issues that were brought to the attention of the doctors. The full data set was analyzed using the SPSS 23.0 edition. Frequency and percentage were used to evaluate categorical variables.

RESULTS

110 (61.1%) patients were males and 70 (38.9%) cases were females. 28.17±9.47 years were the mean age with mean BMI 24.11±3.65 kg/m^2. Most of the teeth impacted in left side found in 102 (56.7%) patients. Most common type of impaction was mesioangular among 90 (50%) cases followed by distoangular 45 (23.7%) cases.(table 1)

Table 1: Baseline characteristics of included cases

Characteristics	Frequency	Percentage
Mean age (years)	28.17±9.47	
Mean BMI (kg/m^2)	24.11±3.65	
Sex		
Male	110	61.1
Female	70	38.9
Side of third molar		
Left	102	56.7
Right	78	43.3
Type of Impaction		
Mesioangular	90	50
Distoangular	45	23.7
Horizontal	25	13.9
Vertical	20	11.1

Majority of the third molars were fully impacted 120 (66.7%), 38 (21.1%) were partially impacted and frequency of erupted tooth was 22 (12.2%).(table 2)

All the third molars were mostly removed by buccal guttering technique under local anesthesia.(table 3)

Table 2: Position of the 3rd Molars

Characteristics	Frequency	Percentage
Fully Impacted	120	66.7
Partially impacted	38	21.1
Erupted	22	12.2
Total	180	100

Table 3: Operative technique among impacted molars

Characteristics	Frequency	Percentage
Technique		
Lingual aveolectomy	20	11.1
buccal guttering	160	88.9
Anesthesia		
General	8	4.4
Local	172	95.6

Post-operative infection was the most common complication found in 80 (44.4%) cases followed by gingival defect in 27 (15%) radicular fractures in 24 (13.3%) cases. Location of the third molar and bone removal was the most common factor found.(table 4)

Table 4: Association of complications and frequency of location among all cases

Characteristics	Frequency	Percentage
Complications		
Infection	80	44.4
gingival defect	27	15
radicular fractures	24	13.3
Oral-antral communication	19	10.6
Paresthesia	16	8.9
Sinusitis	14	7.8
Factors		
Location	105	58.3
Bone removal	75	41.7

DISCUSSION

The great majority of impacted mandibular third molars are discovered and removed between the second and third decade of life, according to statistics. [13] According to the results of the current analysis, which found that more than 60% of the extractions were performed on patients under the age of 30, this was definitively proved. One possible explanation is that the vast majority of studies on third molar surgery have been conducted in university contexts or urban settings where a high proportion of the population falls within that specific age group, as has been the case with the current study. This information can also be used to plan and schedule surgeries, as well as teach medical students and residents how to avoid common pitfalls during M3 extractions. [14] The primary objective of this study was to identify and quantify the risk variables for poor M3 extractions. Few people participated in this research. Using these data, the bone was removed and the teeth were sectioned to determine if M3 abnormalities had occurred.

In current study one hundred and eighty patients came for the removal of third molar were presented. 110 (61.1%) patients were males and 70 (38.9%) cases were females. 28.17±9.47 years were the mean age with mean BMI 24.11±3.65 kg/m^2. Most of the teeth impacted in left side found in 102 (56.7%) patients. Most common type of impaction was mesioangular among 90 (50%) cases followed by distoangular 45 (23.7%) cases. Results of current study showed resemblance to the previous some studies.[15,16] Vertical impaction, according to a few authors, was the most common type of impaction. Recurring pericoronitis was the most common reason for third molar surgery, even though our data did not include information on mucosa covering. Repeated bouts of pericoronitis have been found to be more common in patients with minimal mucosa coverage, according to one study.[17] Majority of the third molars were fully impacted 120 (66.7%), 38 (21.1%) were partially impacted and frequency of erupted tooth was 22 (12.2%).[16,18] As a result, the high proportion of mesioangular impactions seen in this study may be linked to an elevated prevalence of recurrent periconitis. In

accordance with existing studies, our data support the need for surgery to remove third molars. [19] Mwaniki and Guthua[20] evaluated 827 individuals and found that discomfort from caries was the most common reason dental surgery.

All the third molars were mostly removed by buccal guttering technique under local anesthesia. Post-operative infection was the most common complication found in 80 (44.4%) cases followed by gingival defect in 27 (15%) radicular fractures in 24 (13.3%) cases. Location of the third molar and bone removal was the most common factor found. Patients treated by oral and maxillofacial surgery residents had a higher prevalence of postoperative problems than patients treated by specialists in a prior study, according to the findings. Trismus, sore throat, delayed healing, infection, alveolar osteitis, and nerve paraesthesia were all examples of postoperative problems for which this was true, as was nerve paraesthesia. Postoperative bleeding was the only criterion in which patients treated by more senior surgeons had a significantly higher incidence than those treated by less experienced surgeons. [21]

For third molar extractions, Sisk and colleagues discovered that the outcomes of an oral surgery faculty group were better than those of a resident group at the same institution. Less experienced surgeons encountered substantially more difficulties when trying to remove teeth that were partially or entirely impacted within bone.

CONCLUSION

There was an increased risk of problems with tooth sectioning, bone removal, and/or tooth localization in patients above the age of 22. Both the evaluation of the indications for the removal of third molars and the process of informed consent should reflect this information.

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