

## Original Article

### **Cross Sectional Evaluation of etiology, complications and quality of post surgical life as related to Mandibular Impacted Third Molar Surgery: A Questionnaire Based Original Study**

<sup>1</sup>Gaurav Verma, <sup>2</sup>Vonchibeni Kithan, <sup>3</sup>Sadaf Rahman

<sup>1,2,3</sup>Post Graduate Student, Department of Oral and Maxillofacial Surgery, Shree Bankey Bihari Dental College and Research Centre, Ghaziabad, India

#### **ABSTRACT**

**Background and Aim:** Mandibular impacted third molar surgery is considered as one of the most common surgical procedures done in oral cavity. It is frequently related with mild to severe complications and other factors. This study aimed to estimate the etiology, complications and quality of post surgical life as related to mandibular impacted third molar surgery. **Materials & Methods:** A cross sectional, questionnaire-based survey comprised of 100 patients of dental hospital's oral surgery department. Author used preformed questionnaire having questions regarding etiology, complications and quality of post surgical life as related to mandibular impacted third molar surgery. This study comprised of records of patients and other available data. Response was recorded and data was processed statistically to estimate outcomes. **Results:** Statistical analysis using statistical software Statistical Package for the Social Sciences (SPSS). The obtained data was subjected to relevant statistical tests to obtain p values, mean, standard deviation, standard error and 95% CI. Pain (70%) and inflammation (25%) was most common etiologies as reported by the studied patients. Edema (73%) and Hemorrhage (13%) was frequently observed complications. A very obvious decline in patients quality of life was also noted. **Conclusion:** This cross sectional study was completed using patient's data and questionnaire wherein we have outlined certain very imperative inferences. Pain and inflammation was most common etiologies as reported by the studied patients. Edema and Hemorrhage was commonly seen complications. A very reasonable decrease in patient's quality of life was observed.

**Key words:** Impacted third molar, Oral surgery, Complication, Quality of life.

Received: 16 June 2018

Revised: 26 June 2018

Accepted: 17 July 2018

**Corresponding author:** Dr. Gaurav Verma, Post Graduate Student, Department of Oral and Maxillofacial Surgery, Shree Bankey Bihari Dental College and Research Centre, Ghaziabad, India

**This article may be cited as:** Verma G, Kithan V, Rahman S. Cross sectional evaluation of etiology, complications and quality of post surgical life as related to mandibular impacted third molar surgery: a questionnaire based original study. J Adv Med Dent Scie Res 2018;6(8):20-24.

#### **INTRODUCTION**

Since many decades mandibular third molars are of clinical importance regarding its interrelated symptoms, complications in surgeries and after care. Wisdom teeth usually account for roughly 97% of all impactions, because they are the last teeth of permanent dentition to erupt in oral cavity.<sup>1</sup> Most of the studies have shown that mandibular third molar impactions are more common in male (92%) as compared to the female (8%).<sup>2</sup> However, the accurate rationalization for high incidence in male is still indistinct. Some authors claim that it could be related to the fact that our civilization is male dominant wherein they have more avenues to receive dental consultation. There is universal agreement that symptomatic third molar that will not erupt

normally should be extracted, however is not that simple, especially when critical symptoms are present. According to some pioneer workers, indications and contraindication for elimination of asymptomatic wisdom teeth can't be authentically established however the most common indication for removal of impacted third molar is pericoronitis.<sup>3</sup> Pericoronitis is infection and inflammation of the soft tissue that usually covers the erupting third molars. Most of the authors believe that the permanent solution of pericoronitis is surgical removal of impacted third molar. The vertically impacted third molar seems the most likely to develop pericoronitis usually in third decade. When third molar eruption is quite slow, clinician must suspect for a cyst formation because of continued contact of dental

follicle to intraoral bacterial infection. The cyst may develop to a large size and may enclose the crown of the tooth as dentigerous or it may be of periodontal variety. The literature has very well reported the incidence of cyst formation in the ranges between 0.002% and 12% and of odontogenic tumor is between 0.002-3%.<sup>4</sup> The most commonly encountered complications through third molar removal are edema, trismus, infection, bleeding and paresthesia. Less common complications are infection, iatrogenic damage of the second molar and bone fractures. The impacted mandibular third molar has an usual tendency to put pressure on the inferior alveolar nerve. This could result into intermittent neuralgic symptoms, headaches of frontal and occipital lobes and incomprehensible imprecise sense of pressure, otalgia dentalis and tinitis. Few other researchers suggest prophylactic extraction of third molar as soon as early as possible.<sup>4</sup> This will probably prevent the succeeding dilemmas for instance periodontal pocketing, caries, recurrent peri-coronitis, pressure root resorption of adjacent tooth, odontogenic cyst or tumor formation, pain of unknown origin, fracture of mandible. When considering quality of life, we must deem that it has many aspects, and in the last 15 years the measurement techniques for quality of life have been significantly enhanced. Literature exploration shows that there are several surveys about evaluation of quality of life related to the post surgical implant surgeries. These surveys are extremely imperative as it provides information about the effects of the surgical procedure on the life quality of the patients, and about the significance of dental health. The most vital point in the groundwork of any survey is comprehensibility without which it's totally valueless. Considering all these attributable factors, this study aimed to estimate the etiology, complications and quality of post surgical life as related to mandibular impacted third molar surgery. Here authors have genuinely attempted to explore the existing inferences by processing data and their responses generated through pre-framed questionnaire.

**MATERIALS & METHODS**

A cross sectional, questionnaire-based survey comprised of 100 patients of dental institute's oral surgery department. The details of the patients were obtained from institute record. Initially we had selected 230 cases but after thorough examination the number were reduced to 208. To skip over any kind of inconsistency in selection procedure one in every two was selected through systemic random sampling. Resultant sample size was 104 out of this 4 of them not responded appropriately to our questionnaire, thus final

sample including in the study was total 100 patients. A self prepared, close ended questionnaire containing 10 items were provided to the patients. Patients were asked to complete the questionnaire in their post surgical visits. Questions about etiologies and complications were also asked in patient's post surgical recall visits. The privacy of the respondents and their freedom of expression were entirely ensured. Written Informed consent was taken from the respondents those were willingly ready for participation. To ensure completely hassle-free answers, the study was conducted only after absolutely relaxing and calming the patients. The importance of this study was explained to all patients. All 100 responded to it and the results were subjected to statistical analysis using chi- square test. P value less than 0.05 was considered as significant.

**STATISTICAL ANALYSIS AND RESULTS**

All the observational findings were compiled and sent for statistical evaluation using statistical software Statistical Package for the Social Sciences version 21 (IBM Inc., Armonk, New York, USA). The obtained data was subjected to suitable statistical tests to calculate p values, mean, standard deviation, standard error an 95% CI. Frequencies of responses were also recorded along with their percentage values. Table I & Graph I shows that age groups 20-30 years had 24 males and 10 females, 31-40 years had 17 males and 13 females, 41-50 years had 12 males and 12 females and >50 years had 7 males and 5 females. 70 patients experience pain while other 25 feel inflammation as underlying etiology for third molar extraction surgeries (Table II). 3 patients complain of caries following third molar surgery. When observing postoperative complications related to third molar surgery, total 73 patients experienced edema while only 13 patients noticed hemorrhage. Soft tissue infection was noticed only in 12 patients. Petechiae were observed only by 10 patients (Table III). Mandibular fracture was reported by only 2 cases. The overall observational statistical inferences regarding quality of life of patients in the postoperative period was fair. Roughly all patients were moderately satisfied regarding quality of life following these surgeries (Table IV). Level of significance estimation using pearson chi-square test revealed some attractive findings. It showed Significance differences [ $*p < 0.05$  significant] in responses of questions 4,5,6 & 7. The observed p values were 0.020, 0.002, 0.003 and 0.003 for above mentioned parameters respectively (Table V).

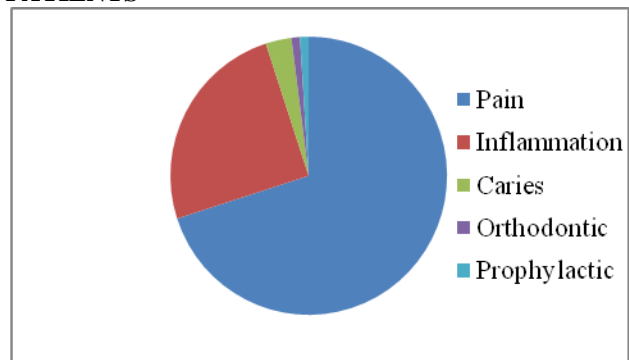
**Table I: AGE & GENDER WISE DISTRIBUTION OF PATIENTS**

Age Group (Yrs)	Male	Female	Total
20-30	24	10	34 [34 %]
31-40	17	13	30 [30 %]
41-50	12	12	24 [24 %]
>50	7	5	12 [12 %]
Total	60	40	100

**Table II: THE DISTRIBUTION OF THE MANDIBULAR THIRD MOLAR TEETH IMPACTION SURGERIES ACCORDING TO THE UNDERLYING ETIOLOGIES**

S. No	Presenting Complaint	No of patients	Percentage
1	Pain	70	70%
2	Inflammation	25	25%
3	Caries	3	3%
4	Orthodontic	1	1%
5	Prophylactic	1	1%
		Total = 100	Total = 100 %

**Graph I: ETIOLOGICAL DISTRIBUTION OF THE PATIENTS**



**Table III: THE DISTRIBUTION OF THE MANDIBULAR THIRD MOLAR TEETH EXTRACTIONS ACCORDING TO THE TYPE OF POSTOPERATIVE COMPLICATIONS**

Complication	Responses	No. of patients	Value in %
Edema	Yes	73	73 %
	No	27	27 %
Hemorrhage	Yes	13	13 %
	No	87	87 %
Infection (soft tissue)	Yes	12	12 %
	No	88	88 %
Petechiae, Echymosis	Yes	10	10 %
	No	90	90 %
Trismus	Yes	8	8 %
	No	92	92 %
Paresthesia	Yes	7	7 %
	No	93	93 %
Alveolitis	Yes	4	4 %
	No	96	96 %
Mandibular Fracture	Yes	2	2 %
	No	98	98 %

**Table IV: QUESTIONNAIRE RESPONSES WITH OBSERVATIONAL STATISTICAL INFERENCES REGARDING QUALITY OF LIFE OF PATIENTS IN THE POSTOPERATIVE PERIOD**

Questionnaire	Response [Value in %]	Mean	Std. Deviation	Std. Error	95% CI
1. Feeling good after the surgery	Yes- 65 [65 %]	1.543	0.237	0.077	1.23
	No- 35 [35 %]				
2. Pain at the extraction area	Yes- 72 [72 %]	2.06	0.743	0.025	2.221
	No- 28 [28 %]				
3. Analgesics effectiveness in controlling pain	Yes- 52 [52 %]	2.33	2.650	0.054	1.96
	No- 48 [48 %]				
4. Any other analgesics used Apart from prescription	Yes- 86 [86 %]	2.43	1.662	0.260	1.96
	No- 14 [14 %]				
5. Headache after the surgery	Yes- 36 [36 %]	2.14	0.553	0.018	1.96
	No- 64 [64 %]				
6. Any throat ache after the surgery	Yes- 25 [25 %]	2.41	1.22	0.020	1.96
	No- 75 [75 %]				
7. Weakness after surgery	Yes- 55 [55 %]	2.33	0.004	0.058	1.96
	No- 45 [45 %]				
8. Sound sleep at the first night after the surgery	Yes- 32 [32 %]	2.1	0.811	0.027	1.96
	No- 68 [68 %]				
9. Other discomfort after the surgery	Yes- 8 [8 %]	1.44	0.144	0.021	1.96
	No- 94 [94 %]				
10. Recommendations of this surgery to other natives	Yes- 57 [57 %]	1.06	0.446	0.071	1.96
	No- 43 [43 %]				

**Table V: LEVEL OF SIGNIFICANCE ESTIMATION USING PEARSON CHI-SQUARE TEST**

Questionnaire No.	Pearson Chi-Square Value	df	Level of Significance (P value)
1.	0.329	1.00	0.224
2.	2.132	2.00	0.333
3.	0.513	2.0	0.237
4.	4.335	2.0	0.020*
5.	3.332	3.0	0.002*
6.	6.568	3.0	0.003*
7.	2.406	1.0	0.003*
8.	1.440	4.0	0.060
9.	1.353	1.0	0.245
10.	1.069	1.0	0.301

\* $p < 0.05$  significant

## DISCUSSION

Impacted mandibular third molar can be related with a higher risk of angle fracture of mandible. When it is confirmed in fracture, the fracture line can produce severe complications in the management of fracture.<sup>5</sup> Consequently, such teeth must be extracted prior to reduction and fixation and rehabilitation of fracture. This is done to diminish further progresses of the successive complications. The location of an impacted tooth could cause food lodgment, which further augment caries progression in the neighboring tooth.<sup>6</sup> Reports in the literature showed that 73.7% of patients consulted for elimination of third molars only because of pain.<sup>7</sup> Laskin et al reported caries as a general finding in partly erupted third molars.<sup>8</sup> The second most common complaint was recurring pericoronitis. Leone in their study on pericoronitis concluded that incompletely erupted third molar is most vulnerable for pericoronitis.<sup>9</sup> This is due to bacterial adhesion, obscurity, wetness under the mucosa and predominantly complexity in maintenance of optimal oral hygiene. As we all know that age is a risk factor for post surgical complications happening soon after the surgical procedures. There is a typical relationship existing between age and reported post surgical complications. Such relations usually result from the truth that the interference in geriatric patients lasts longer due to increased bone density. Some pioneer workers claim that there is no association between age and the complications like pain, edema and Trismus. However, in our study the results was somewhat contrasting. Few researchers like Bruce et al, Chiapasco et al and Fisher et al disagree that older patients have more pain, edema and trismus as postoperative complications.<sup>10-12</sup> Charparro-Avendano and co workers confirmed that pain, edema and Trismus are seen more in younger patients.<sup>13</sup> However in our study, we found no significant relationship between age and said complications. This could possibly be explained on the basis of differences in race of studied population. Yuasa and associates said that the amount of post surgical edema depends on the gender.<sup>14</sup> Monaco et al confirmed that the prevalence of post surgical edema in female patients is considerably superior than in male patients.<sup>15</sup> Moreover,

Capuzzi et al described that male patients usually have more pain sensation compared to female patients.<sup>16</sup> However in contrast with their study, our study results were not in agreement. Here we noticed no significant findings that could authenticate the relation between gender and edema. Third molar surgery is the most frequently performed oral surgical procedure. It is well known establish fact that the mandibular third molar is the most commonly impacted of the third molars.<sup>17-19</sup> Hence it's management typically requires a surgical involvement. The most frequently seen complications soon after an impacted mandibular third molar surgery are pain, edema, trismus, hemorrhage, paresthesia and alveolitis. Infection, iatrogenic damage of the second molar.<sup>20-25</sup> Such complications after an impacted mandibular third molar surgery may result into longer post treatment healing and prolonged pain.

## CONCLUSION

In this study, we have proceeded with questionnaire based study model as they are exceptionally useful to obtain detailed information about personal and group perceptions with corresponding opinions. They are also capable of saving time and money while comparing subjects at individual levels. This cross sectional study was accomplished using patient's data and questionnaire wherein we have made out certain very essential and crucial clinical inferences. Pain and inflammation was most common etiologies as reported by the studied patients. Edema and Hemorrhage was commonly seen complications. A very reasonable decrease in patient's quality of life was observed. Nevertheless, the information we had from the data and questionnaire highlights the post surgical complications and the alteration and deprivation in the quality of life after the third molar extraction. Furthermore, our study outcomes could be treated as suggestive for predicting clinical inferences of such situations. Nevertheless we expect other genuine studies to be conducted that could further establish certain concrete guidelines in this field.

## REFERENCES

1. Tomei F, Aubert JP, Benaim JL, Legre R, Magalon G. Results of nerve sutures in the wrist in children. *Chir Main* 2000;19(1):23-30.
2. Kipp DP, Goldstein BH, Weiss WW Jr. Dysesthesia after mandibular third molar surgery: a retrospective study and analysis of 1,377 surgical procedures. *J Am Dent Assoc* 1980;100(2):185-92.
3. Macgregor AJ. The impacted lower wisdom tooth. Oxford: Oxford University Press, 1985.
4. Phillips C, White RP Jr, Shugars DA, Zhou X. Risk factors associated with prolonged recovery and delayed healing after third molar surgery. *J Oral Maxillofac Surg* 2003;61(12):1436-48.
5. Von Wowern N, Nelson HO. The fate of impacted lower molars after the age of 20. *Int J Oral Maxillofac Surg* 1989;18:130-44.
6. Huskisson EC. Measurement of pain. *Lancet* 1974;2(7889):1127-31.
7. Hayward, JR, Reed R. Third molar Malocclusion and recurrent TMJ dislocation. *J Mich Dent Association* 1979;61:614.
8. Daniel M Laskin. "Oral and Maxillofacial surgery" vol-1, 1974:335-40.
9. Leone SA, Edenfield MJ, Cohen ME. Correlation of acute pericoronitis and the position of Mandibular third molar. *Int J Oral Surg Oral Med Oral Path* 1986;62:245.
10. Bruce RA, Frederickson GC, Small GS. Age of patients and morbidity associated with mandibular third molar surgery. *J Am Dent Assoc* 1980;101(2):240-5.
11. Fisher SE, Frame JW, Rout PG, McEntegart DJ. Factors affecting the onset and severity of pain following the surgical removal of unilateral impacted mandibular third molar teeth. *Br Dent J* 1988;164(11):351-4.
12. Chiapasco M, De Cicco L, Marrone G. Side effects and complications associated with third molar surgery. *Oral Surg Oral Med Oral Pathol* 1993;76(4):412-20.
13. Charparro-Avendano AV, Perez-Garcia S, Valmaseda-Castellon E, Berini-Aytes L, Gay-Escoda C. Morbidity of third molar extraction in patients between 12 and 18 years of age. *Med Oral Patol Oral Cir Bucal* 2005;10(5):422-31.
14. Yuasa H, Suquira M. Clinical postoperative findings after removal of impacted mandibular third molars: prediction of postoperative facial swelling and pain based on preoperative variables. *Br J Oral Maxillofac Surg* 2004;42(3):209-14.
15. Monaco G, Staffolani C, Gatto MR, Checchi L. Antibiotic therapy in impacted third molar surgery. *Eur J Oral Sci* 1999;107(6):437-41.
16. Capuzzi P, Montebugnoli L, Vaccaro MA. Extraction of impacted third molars. A longitudinal prospective study on factors that affect postoperative recovery. *Oral Surg Oral Med Oral Pathol* 1994;77(4):341-3.
17. Duarte BG, Assis D, Ribeiro-Júnior P, Gonçalves ES. Does the relationship between retained mandibular third molar and mandibular angle fracture exist? An assessment of three possible causes. *Cranio Maxillofac Trauma Reconstr* 2012;5(3):127-36.
18. Lamping DL, Brown J, Smith SC. Patient-based measures to evaluate surgical outcomes: myths and realities. *Ann R Coll Surg Eng (Supp)* 2001;83:78-81.
19. Thomson PJ, Fletcher IR, Briggs S, Barthram D, Cato G. Patient morbidity following oral day surgery: use of a post-operative telephone questionnaire. *J Ambulatory Surg* 2003;10:122-7.
20. Smith BL, Young PN. Day stay anaesthesia. A follow-up of day patients undergoing dental operations under general anaesthesia with tracheal intubation. *Anesthesia* 1976;31(2):181-9.
21. Bridgman CM, Ashby D, Holloway PJ. An investigation of the effects on children of tooth extraction under general anaesthesia in general dental practice. *Br Dent J* 1999;186(5):245-7.
22. Lilly GE, Osborn DB, Rael EM, Samuels HS, Jones JC. Alveolar osteitis associated with mandibular third molar extractions. *J Am Dent Assoc* 1974;88(4):802-6.
23. Catellani JE, Harvey S, Erickson SH, Cherkin D. Effect of oral contraceptive cycle on dry socket (localized alveolar osteitis). *J Am Dent Assoc* 1980;101(5):777-80.
24. Sweet JB, Butler DP. The relationship of smoking to localized osteitis. *J Oral Surg* 1979;37(10):732-5.
25. Sisk AL, Hammer WB, Shelton DW, Joy ED Jr. Complications following removal of impacted third molars: the role of the experience of the surgeon. *J Oral Maxillofac Surg* 1986;44(11):855-9.

**Source of support:** Nil

**Conflict of interest:** None declared

This work is licensed under CC BY: **Creative Commons Attribution 3.0 License.**