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ORIGINAL RESEARCH ARTICLE

OUTCOME OF PATIENTS WITH SURGICAL EXTRACTION OF LOWER THIRD MOLAR IN TEACHING HOSPITAL

Arun Kumar Shah[1,*], Shailesh Gautam[1], Harender Singh[2]
[1]Department of Oral and Maxillofacial Surgery, Chitwan Medical College, Bharatpur, Chitwan, Nepal
[2]Department of Public Health Dentistry, Chitwan Medical College, Bharatpur, Chitwan, Nepal

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***Correspondence to:** Arun Kumar Shah, Department of Oral and Maxillofacial Surgery, Chitwan Medical College, Bharatpur, Chitwan, Nepal.
Email: dr.arunshah@hotmail.com

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ABSTRACT

Background: Surgical extraction is frequently associated with considerable post-operative swelling, pain and limited mouth opening. These sequelae are caused by physiological inflammatory response to trauma. This study was carried out to evaluate the post-operative outcome after surgical extraction.

Methods: An observational study was carried out involving 141 patients. After taking proper history and performing clinical examination, diagnosis of impacted lower third molar was confirmed by Orthopantomogram (OPG). Paired T-test, independent t-test and Anova test was applied to check the level of significance. A p value less than .05 was considered statistically significant.

Results: The study revealed that the gender factor predicted pain on Day 3 and Day 7 ($p < 0.05$). Gender predicted mouth opening at Day 3 ($p < 0.05$). Swelling was not affected by gender on any day. Pain was affected by age at Day 3 and Day 7. swelling and mouth opening was affected by age at Day 3 only. Operating time affected the swelling, pain and mouth opening on both 3rd and 7th day.

Conclusions: Based on the findings of the present study, short-term outcomes of third molar surgery (swelling, mouth opening and pain) differed depending on the characteristics of the patient (age and gender) and operating time. However, due to the observational character of the study, the results should be interpreted with caution. Further studies are supposed to be carried out on relations between preoperative findings and short-term outcomes of third molar extractions.

INTRODUCTION

An impacted tooth is one that fails to erupt into the dental arch within the expected time.[1]The tooth becomes impacted due to adjacent teeth, dense overlying bone, excessive soft tissue or genetic abnormality that prevents eruption.[2-4] Because impacted teeth do not erupt they can lead to food impaction, foul smell, resorption of adjacent root, pericoronitis, space infection, osteomyelitis etc.[5]

Sometimes even the experienced surgeons encountered difficulties in removal of impacted tooth. In most of the cases it needs to be extracted surgically. Various factors play role for surgical extraction such as angulations of tooth, root morphology, hypercementosed root, accessibility, age of patient, forceps extraction failed, proximity to vital structures such as inferior alveolar nerve etc.[6,7]

Surgical removal of lower third molar is one of the common minor procedures in oral and maxillofacial surgery. Facial swelling, decreased mouth opening, and pain are common complications after such procedure caused by inflammatory response to tissue which affects quality of life.[8-11] So many clinicians feel necessary for proper management and to prescribe medicines such as antibiotics, corticosteroids and Non-Steroidal Anti-Inflammatory Drugs (NSAID). This study was carried out to evaluate the post-operative outcome of patients after surgical extraction of lower third molar in teaching hospital.

METHODS

An observational study was carried out involving 141 patients from inclusion criteria of 1 year after approval from IRC. Subjects were selected from patients visited the department of oral surgery seeking dental treatment between July 2020 and June 2021. After taking proper history and performing clinical examination, diagnosis of impacted lower third molar was confirmed by Orthopantomogram (OPG). Patients were conveniently selected those who required surgical removal of impacted lower third molar. Informed written consent had taken from participating patient and their attendant. After all, these patients were proceeded for surgical extraction.
Inclusion criteria were patient coming to department of OMFS

for surgical extraction of lower third molar and patient of age between 20 years to 60 years while the exclusion criteria were patient unfit for surgery and patient don't want to participate in study

Procedure was performed under local anesthesia. Inferior alveolar, long buccal and lingual nerve block was employed to gain anesthesia of the region. Anesthetics solution used was 2% lidocaine with adrenaline (1:100,000). After gaining proper anesthesia envelop incision was given along the crevices of tooth, from mid-portion of second molar to anterior boarder of ramus. Releasing incision was given form anterior point or incision and triangular flap was made. Mucoperiosteal flap was reflected to gain access to the surgical field. Micro motor was used with number 301 round and fissure bone cutting bur with copious saline irrigation for removal of surrounding and overlying and surrounding bone. Sectioning of tooth was done in required cases and tooth was removed. After extraction, socket was irrigated with betadine and saline solution and all sharp edges were removed. Hemostasis was ensured and wound was closed by 3-0 round body silk with interrupted suture. Post operative instruction was given with following medicines to prevent pain, swelling and other post-operative complications:

Cap. Amoxicillin 500mg, 1 cap TDS for 7 days
Tab. Metronidazole 400mg, 1 tab TDS for 5 days
Tab. Ibuprofen+Paracetamol(400+500) mg, 1 tab TDS for 3 days then SOS
Tab. Pantoprazole 40mg, 1 tab OD for 7 days

Patient was followed in 3rd and 7th post operative day and checked for mouth opening, swelling and pain. Mouth opening was measured by metallic scale in between incisal edge of upper and lower incisor when mouth is fully opened in centimeter. The extent of swelling was measured in anterio-posteriorly and superior-inferior dimension by measuring tape in centimeter. Intensity of pain was measured by Visual Analogue Scale. Visual Analogue Scale (VAS): A Visual Analogue Scale (VAS) is a measurement tool that is used to measure a characteristic of pain and believed to range 0 to 10 that best describes their current pain. 0 would mean "no pain" and 10 would mean ''worst possible pain''.[7] All these data was recorded. Operating time also recorded (from injecting Local Anesthesia to suturing). Operating time was divided into 3 categories: less than 15 minutes, 15 to 30 minutes and more than 30 minutes.

The present study received approval from the Institutional Ethics Committee (CMC-IRC/076/077-116). All recorded data was assembled and analysis was done by SPSS 22 version statistical software to analyzed for appropriate descriptive statistics. Paired T-test, independent t-test and Anova test was applied to check the level of significance. A p-value less than 0.05 was considered statistically significant.

RESULTS

One hundred sixty-one individuals participated in the present study. However, 20 were excluded from the sample for not meeting the eligibility criteria. A total of 141 (67.5%) of the extractions (80 patients) were per¬formed on males and 61 (32.5%) were performed on females [mean age ± standard deviation: 38.83 ± 9.93 years (range: 26 to 59 years). The clinical indications for removal were surgical extractions (Impaction, curve root with infected pulp, grossly decayed tooth with bulbous root, fractured root, and fractured crown).

The statistical analysis revealed that the gender factor predicted pain on Day 3 and Day 7 ($p < 0.05$). Gender predicted mouth opening at Day 3 ($p < 0.05$). Swelling was not affected by gender on any day (Table 1).

Table 1: Gender wise comparison of pain, swelling and mouth opening at 3rd day and 7th day after extraction

Pain	F	Sig.	t	Mean Difference	Std. Error Difference
Pain at 3rd day	3.969	.048	1.813	1.6115041	.8887938
			1.893	1.6115041	.8512531
Pain at 7th day	14.028	.000	2.274	.1721885	.0757230
			2.569	.1721885	.0670141
Swelling at 3rd day	.039	.844	.786	.240	.305
			.778	.240	.308
Swelling at 7th day	.504	.479	1.223	.151	.123
			1.229	.151	.123
Mouth opening at 3rd day	12.512	.001	-2.517	-.4004918	.1591265
			-2.609	-.4004918	.1535153
Mouth opening at 7th day	2.796	.097	-.856	-.0697	.0814
			-.873	-.0697	.0798

Pain was affected by age at Day 3 and Day 7. Swelling and mouth opening was affected by age at Day 3 only (Table 2).

Table 2: Age group wise comparison of pain, swelling and mouth opening at 3rd day and 7th day after extraction

Pain	Mean Square	F	Sig.
Pain at 3rd day	108.068 26.029	4.152	.008
Pain at 7th day	.840 .190	4.413	.005
Swelling at 3rd day	12.028 3.026	3.975	.009
Swelling at 7th day	.876 .519	1.688	.173
Mouth opening at 3rd day	4.178 .838	4.984	.003
Mouth opening at 7th day	.288 .228	1.263	.290

Operating time affectd the swelling, pain and moth opening on both 3rd and 7th day (Table 3).

Table 3: Comparison of pain, swelling and mouth opening on the basis of operating time at 3rd day and 7th day after extraction

Pain	Mean Square	F	Sig.
Pain at 3rd day	694.772 18.121	38.342	.000
Pain at 7th day	1.378 .187	7.356	.001
Swelling at 3rd day	38.751 2.704	14.331	.000
Swelling at 7th day	6.073 .446	13.613	.000
Mouth opening at 3rd day	10.733 .767	13.986	.000
Mouth opening at 7th day	1.636 .209	7.841	.001

Over all pain, swelling and mouth opening showed significant difference on day 3 and day 7 (Table 4).

Table 4: Comparison of swelling, pain and mouth opening at 3rd day and 7th day after the extraction

Variables	Mean	Std. Deviation	p-value
Swelling	3.540	4.993	.000
Pain	2.411	2.411	.000
Mouth Opening	-.884	.853	.000

DISCUSSION

The extraction of mandibular third molars is one of the majority common surgical events.[12] Thus, in spite of the diversified burden of practice, dental surgeons still face the difficulty of the removal of impacted mandibular 3rd molars.[13] Both the patient and dentist must hence have scientific evidence-based information relating to the estimated amount of surgical difficulty in each case.[14]

MacGregor[15] made the first attempt to launch a model for evaluateing surgical difficulty. The classic Pell and Gregory classification has recently been found to inadequate for the determination of surgical difficulty.[16] There are a numeral of previous studies carried out to assess surgical difficulty in the extraction of impacted mandibular third molars.[17-20] However, most of these studies are only based on dental factors determined through radiologic assessments.[13,15,16] While opinions may vary, most authors agree that these radiologic factors play some role in estimating difficulty.[17,19,20] Other authors believe it is difficult to approximate difficulty through radiologic methods only and that actual complexity can only estimated intraoperatively.[21] Some authors also believe that clinical variables, such as patient age, gender and weight, are also very important.[17,19]Few authors have proposed indexes for measuring surgical difficulty.[20,22] Pederson projected such an index,[24] but it is seldom used due to reports that it does not contest actual surgical difficulty.[20]

Moreover, few studies[21,22] have attempted to predict the extent of postoperative morbidity using preoperative and intraoperative characteristics rather than the assessment of surgical difficulty. It should be stressed to a risk factor that leads to bigger surgical difficulty also increases the extent of the postoperative morbidity. In addition, discontent and litigation among patients is a problem caused by repeated complaints as pain (either during treatment or afterwards), major swelling, disturbances of trigeminal or facial nerve function, poor scar formation, and discrepancies tween the expected and the actual result of treatment. However, a considerable proportion is practical consequences of the operation; the patients in turn tend not to ask about possible complications.[25]

The female-to-male gender proportion in the present study was almost 1:1, which is in disagreement with a previous study reporting that women seek third molar surgery more frequently than men.[26] The females are at more risk due to the lesser bone thickness of the mandible.[27] In the present study, gender was a determinant of greater morbidity in the postoperative period, which corroborates findings described by Nediktsdóttir et al.[17], Blondeau and Daniel[18] and Yuasa and Sugiura[22] and is in disagreement with findings described by Barbosa-Rellato et al.[12] and Carvalho and do Egito Vasconcelos.[26]

According to a numeral of authors, age is the most consistent aspect in the determination of surgical difficulty. In the current study, this variable was only a predictive factor for pain disparity in the postoperative period. Age is commonly reported to significant to the occurrence of complications.[17-20,22] The positive association may be related to the increase in bone density, which may entail more handling during the operation. Moreover, an increase in age is associated with complete root formation, which may relate to the higher rate of complications among patients over 25 years of age.[26] Few complications arose in the present study, as only two patients experienced

postoperative infection, which is in accord with findings reported by Yuasa and Sugiura.[22]

The amount of facial swelling varied depending on gender and age. Mouth opening varied depending on gender and age. Differences in mean VAS scores were associated with age, and gender. It is relatively expected that facial swelling is affected by individual characteristics, such as age. A previous study reports such a result in the univariate analysis, with gender as a predictive factor for facial swelling as well.[22]

Number of studies used operating time and surgical technique as determinants of difficulty.[12,14] In one study, the authors found both these factors to be reliable, statistically significant measures and the best way to predict surgical difficulty.[28]Surgical removal of mandibular third molar cause facial swelling, pain, decreased mouth opening. Severity is influenced by patients age, gender, medical conditions, smoking, poor oral hygiene, degree and type of impaction, root morphology and duration of surgery and surgeons experience.[29]

Further studies are needed to verify the predictive factors described in this paper. To improve the statistical analysis of the present study and minimize bias, the methodology employed was unusual from that reported in similar previous studies[20,21] in terms of being more specific with age limitations (15 to 30 years), vertical and mesioangular positions (Winter's classification), Pell and Gregory Class I-B and Campbell grades II and III.

CONCLUSION

Based on the findings of the present study, short-term outcomes of third molar surgery (swelling, mouth opening and pain) differed depending on the characteristics of the patient (age and gender) and operating time. However, due to the observational character of the study, the results should be interpreted with caution. Further studies are supposed to be carried out on relations between preoperative findings and short-term outcomes of third molar extractions.

CONFLICT OF INTEREST: None

FINANCIAL DISCLOSURE: None

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