Assessment of the complications encountered during and after surgical removal of maxillary third molar: An observational study

Josie Kurian Paul and Dr. Angel Mary Elias

DOI: https://doi.org/10.22271/oral.2021.v7.i1f.1162

Abstract
Aim: To evaluate the prevalence of different complications during and after maxillary third molar extraction.

Materials and Methods: An observational study was conducted at Ruby Dental Clinic and Implant Centre, Kunnamkulam, Kerala, India from April 2018 to March 2019. Total 120 Patient who were planned for surgical extraction of maxillary third molar were included in this study. All surgical extractions of maxillary third molar were performed under local anesthesia by a qualified and experienced oral and maxillofacial surgeon.

Results: A total of 120 patients of surgical extraction of maxillary third molar were carried out under local anaesthesia over a scheduled period of study. 38 patients were having intraoperative or postoperative complications. Out of 120 patients, 75 were males and 45 were female patients. Most common complications in our study were maxillary tuberosity fracture seen in 13 patients (34.2%). The second most commonly found complication was delayed wound healing 6 (15.8%), postoperative pain 5 (13.2%) and postoperative infection 4 (10.5%).

Conclusion: The risk of complications in third molar surgery will always exist and increases in proportion to the surgical difficulty.

Keywords: Maxillary third molar, complications, surgical procedures, tuberosity fracture

Introduction
Most third molar surgeries are performed without complications. The accident or complication rates related to third molar extraction may vary between 2.6 and 30.9 %, being the results influenced by different factors, such as age and health condition of the patient, gender, tooth impact level, surgeon’s experience, smoking, intake of contraceptive medicine, quality of oral hygiene, and surgical technique among others [1]. The overall incidence of complication and the severity of these complications are associated most directly with the depth of impaction and with the age of the patient [2]. Most third molars surgeries are performed without intra- or postoperative difficulties, however sometimes this common procedure can result in several complications. The most common complications following third molar surgery include: sensory nerve damage, dry socket, infection, hemorrhage and pain. Less common complications are: severe trismus, iatrogenic damage to the adjacent second molar and iatrogenic mandibular fracture [3-5].

In all surgical procedures, proper preoperative planning and the blending of surgical technique with surgical principles is of paramount importance for decreasing the incidence of complications [6].

Complications related to third molar removal range from 4.6% to 30.9% and may occur intraoperatively or develop in the postoperative period [6, 7].

The surgeon must inform the patient before surgery of the statistical likelihood of complications so that the patient can make an informed decision as to whether to undergo surgery [5]. Any complication should be handled in a timely and corrective manner by the surgeon [6]. Factors reported to be associated with third molars complications include age, gender, medical history, oral contraceptives, presence of pericoronitis, poor oral hygiene,
smoking, type of impaction, relationship of third molar to the inferior alveolar nerve, surgical time and technique, surgeon experience, number of teeth extracted, use of perioperative antibiotics, use of topical antiseptics, use of intra-socket medications and anesthetic technique [6, 7]. The experience of surgeon also appears to be a determining factor in the development of postoperative complications and can result in a longer treatment process, social and financial difficulties and a corresponding decrease in patient’s life quality [8]. Prior to any surgical procedure, the patient must be informed about the possible accidents and/or complications that may occur during the entire treatment, being aware of the fact that any unexpected situation should be dealt with the best possible way [8]. Hence the present observational study was carried out with the aim to assess the different complications observed during and after surgical removal of maxillary third molar. 

Materials and Methods
An observational study was conducted at Ruby Dental Clinic and Implant Centre, Kunnampukal, Kerala, India from April 2018 to March 2019.

Inclusion criteria
- Maxillary third molar extraction patients.

Exclusion criteria
- Systemic disorders that affects the local complication of surgical removal of third molar

Methodology
After taking informed consent detailed history was taken from the patient. The technique, risks, benefits, results and associated complications of the procedure were discussed with all patients. All surgical extractions of maxillary third molar were performed under local anesthesia by a qualified and experienced oral and maxillofacial surgeon. Total 120 Patient who were planned for surgical extraction of maxillary third molar were included in this study. Data which includes age, sex and region of patient, medical history, frequency of pericoronal infections, use of pre and postoperative medications where verified.

Results
A total of 120 patients of surgical extraction of maxillary third molar were carried out under local anaesthesia over a scheduled period of study. 38 patients were having intra-operative or postoperative complications. Table 1: Out of 120 patients, 75 were males and 45 were female patients. Male patients had more complications and females counterparts. Table 2: Most common complications in our study were maxillary tuberosity fracture seen in 13 patients (34.2%). The second most commonly found complication was delayed wound healing 6 (15.8%), postoperative pain 5 (13.2%) and post-operative infection 4 (10.5%). Other less commonly found complications are iatrogenic injury to palate 3 (7.9%), displacement into sinus 2 (5.3%), haemorrhage 2 (5.3%), herniation of buccal fat pad into surgical site 2 (5.3%) and displacement into infratemporal fossa 1(2.6%).

Discussion
In our study, the most common complications was fractured maxillary tuberosity 13 (34.2%) Patients. Fracture of large maxillary tuberosity bone area is of concern. As maxillary tuberosity is especially important for retention of maxillary dentures. Fractures of the maxillary tuberosity will create problems of denture retention, management of fracture tuberosity is to relocate to its place and maintain environment for healing [9].

Posterior to maxillary third molar is maxillary sinus, and porous bone. That add to fracture of maxillary tuberosity when excessive force applied also anatomical connection of maxillary third molar with maxillary sinus, extraction of third molar can lead to an accidental communication of the sinus or displacement of the tooth in the sinus whenever improper, excessive force and improper use of elevators and forceps. One rare possibility of third molar displacement into infratemporal fossa. Others like fracture of root apex of tooth,
may occur mainly in root morphology such as hypercementosis and anklyosis and conditions that more resistance to avulsion \(^9\).

In our study the cases of haemorrhage was 2 (5.3%). Haemorrhage could occur through (accident) or after (complication) the surgery, classified as late or recurrent haemorrhage. In such condition of intense bleeding classified as late, the haemorrhage occur only once, after the completion of the procedure. In recurrent haemorrhages, more than one intense bleeding occur, even after initially control bleeding \(^8\). Displacement of maxillary third molars into near anatomic spaces may be due poor clinical and radiographic assessment; poor anatomic knowledge, low surgical techniques, improper visibility, inadequate flap reflection and excessive, uncontrolled force during surgical extraction of third molar \(^11\). Another postsurgical morbidity after third molar surgery were pain. The post-surgical pain arises when the effects of the local anaesthesia decreases and reaches peak levels in 6 to 12 hours postoperatively. Analgesics should be administered before the effect of the local anaesthesia subsides. In this way, pain is normally easier to control, requires fewer drugs, and may require a less potent analgesic. The administration of NSAIDs before surgery may be advantage in aiding in the control of postoperative pain \(^10\).

In our study postoperative pain was observed in 5 (13.2%) and post-operative infection 4 (10.5%) was high as compared to other studies. The postoperative infection rate stated in the literature from 1.5% to 5.8%. Antibiotic prophylaxis decreases risk of suffering infection, localised alveolar osteitis and pain after third-molar extractions in healthy adults \(^10\). Prior to any surgical procedure, patient must be well know about chances of complications and/or problem may cause during entire treatment, being aware of the fact that any unexpected situation should be dealt with the best possible way \(^13\).

**Conclusion**

The risk of complications in third molar surgery will always exist and increases in proportion to the surgical difficulty. However, for cases with a high degree of difficulty, identification of predictor variables may be useful to consider the decision when not to execute the procedure, thus avoiding complications that often require complex management.

**Reference**

1. Azenha MR, Kato RB, Bueno RBL, Neto PJO, Ribeiro MC. Accidents and complications associated to third molar surgeries performed by dentistry students. Oral Maxillofac Surg 2014;18(4):459-464.
2. Miloro M, Ghali GE, Larsen PE, Waite PD, Decker BC. Peterson’s principles of oral and maxillofacial surgery. Inc Hamilton, Second Edition 2004.
3. Woldenberg Y, Gatot I, Bodner L. Iatrogenic mandibular fracture associated with third molar removal. Can it be prevented? Med Oral Patol Oral Cir Bucal 2007;12:E70-2.
4. Visintini E, Angerame D, Costantinides F, Maglione M. Peripheral neurological damage following lower third molar removal. A preliminary clinical study. Minerva Stomatol 2007;56:319-26.
5. 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;44:855-9.
6. Bouloux GF, Steed MB, Perciaccante VJ. Complications of third molar surgery. Oral Maxillofac Surg Clin North Am 2007;19:117-28.
7. Bui CH, Seldin EB, Dodson TB. Types, frequencies, and risk factors for complications after third molar extraction. J Oral Maxillofac Surg 2003;61:1379-89.
8. Atalay B, Guler N, Cabbar F, Sencift K. Determination of incidence of complications and life quality after mandibular impacted third molar surgery. Belgrade, Serbia. XII. Congress of Serbian Association of Maxillofacial Surgeons with International Participation First Meeting of Maxillofacial Surgeons of Balkans. Oral Presentation 2008.
9. Chrkanovic BR, Feire-Maia. Considerations of maxillary tuberosity fractures during extraction of upper molars: a literature review. Dent Traumatol 2011;27:393–8.
10. Sebastiani AM, Todero SRB, Gabardo G, Joao da Costa D, Rebelatto NLB, Scariot R. Intraoperative accidents associated with surgical removal of third molars. Braz J Oral Sci 2014;13(4):276-80.
11. Ozer N, Ucem F, Saruhanoglu A, Yilmaz S, Tanyeri H. Removal of a Maxillary Third Molar Displaced into Pterygopalatine Fossa via Intraorall Approach. Hindawi Publishing Corporation- Case Reports in Dentistry Volume, ArticleID 392148, 4 pages 2013.
12. Soylu E, Asan CY, Kiliç E, Atkan A. An Unusual Complication after the Extraction of a Maxillary Third Molar: Extensive Subcutaneous Emphysema. A Case Report. J Clin Anal Med 2016.
13. Salmen F, Oliveira MR, Gabrielli MAC, Piveta ACG, Pereira-Filho VA, Gabrielli MFR. Third molar extractions: a retrospective study of 1178 case. Rev Gaúch Odontol 2016;64(3):250-5.