

## Study of complications of surgical removal of maxillary third molar

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### Abstract

**Introduction:** Removal or extraction of wisdom tooth is routine dental treatment. Maxillary or mandibular third molars extraction is advised in case of odontogenic infection, badly caries tooth causing trauma to buccal mucosa, recurrent pericoronar infections or any other reason. These are the most frequently impacted teeth in the oral cavity, which are difficult for removal and associate with the complications. This research was done to assay the complications during and after maxillary third molar extraction.

**Materials and Methods:** The study was done retrospectively and data of 3 years was assessed. Patient who were planned and followed by extraction of maxillary third molar were included in this study. Only those patients were included in study whose follow up were done after surgical extraction. All of these surgical extractions were performed by a qualified and experienced oral and maxillofacial surgeon under local anaesthesia on dental chair.

**Results:** A total of 230 patients surgical extraction of maxillary third molar were carried out. Out of these, 60 patients were found to be having postoperative or intra-operative complications. Age group of more than 40 were found more complications (30.30%) than other age groups. Out of 230 patients, Male patients had 27.86% complications and females had 24.07% complications. Most common complications present in following study were fracture of the maxillary tuberosity seen in 19 patients (31.66%). The second most commonly found complications were delayed wound healing (11 patients, 18.33%). Other less commonly found complications are post-operative pain, post-operative infection, iatrogenic injury to palate (5.0%), displacement into sinus (5.0%), haemorrhage (3.33%), Herniation of buccal fat pad into surgical site (1.66%) and Displacement into infratemporal fossa (1.66%).

**Conclusion:** Although maxillary third molar removal is routine and secure surgical procedure, risk of complications is always present. It is important to explain and assess pre-operatively each patient to minimize the post-operative complications.

**Keywords:** Maxillary third molar, Complications, Surgical extraction.

### Introduction

One of the most frequent oral surgical procedure in patients of age between 16 to 21 years is the surgical extraction of third molars. Most of third molar surgical extractions are done without any difficulties. The undesirable complications which are developed in such procedures are oedema, pain, infection and difficulty while swallowing. This makes controversial about prophylactic surgical extraction of third molars. The most common arguments for removal of maxillary third molar are prevention of tooth crowding, unfavorable eruption trajectory, periodontal disease and development of pathology around impacted tooth.<sup>1,2</sup>

Problems rates associated with surgical extraction of third molar may differ from 2.6 to 30.9%.<sup>2</sup> Factors reported to be associated with third molars complications include gender, age, oral contraceptives, medical history, poor oral hygiene, type of impaction, smoking, surgeon experience, surgical time and technique, use of perioperative antibiotics, number of teeth extracted, use of topical antiseptics, use of intra-socket medications and anaesthetic technique.<sup>3-5</sup>

Most common encounter problems are fracture of maxillary tuberosity distal to maxillary third molar, maxillary sinus perforation, fracture of root of particular tooth, entry of the buccal fat pad in to surgical site and displacement of the tooth or root fragments into the maxillary sinus.<sup>6,7</sup> According to literature, few cases of accidental maxillary third molars displacement of into the

near by anatomical spaces, such as the maxillary sinus, infratemporal fossa, buccal space, pterygomandibular space, or the lateral pharyngeal space reported during surgical interventions.<sup>8,9</sup>

The difficulty level and complications encounter during third molar extraction are not easy to evaluate. Many auxiliary methods have been mentioned in literature but not single is completely reliable.<sup>2</sup> Degree of difficulty evaluation has to be made preoperatively and it depends upon morphology of tooth, position of tooth and number, size and shape of roots.<sup>1</sup>

The purpose of this retrospective study was to analyse the complications of surgical extraction maxillary third molars.

### Materials and Methods

The study was done retrospectively and data of 3 years was assessed. Patient who were planned for surgical extraction of maxillary third molar were included in this study. Patients with regular follow up after the extraction were included in this study. Data which includes age, sex and region of patient, medical history, frequency of pericoronar infections, use of pre and postoperative medications where verified.

All surgical extractions of maxillary third molar were performed under local anesthesia by a qualified and experienced oral and maxillofacial surgeon.

### Indications

Following were the indication for maxillary third molar extraction.

1. Buccally placed, recurrent Pericoronitis of impacted third molar.
2. Periodontal reason: Damage to periodontal ligament, bone loss, root resorption of adjacent maxillary second molar.
3. Radiolucency associated with impacted tooth.
4. Impaction of both third and adjacent second molar.
5. Restorative reasons: unrestorable caries etc.

### Inclusive Criteria

1. Maxillary third molar extraction patients.
2. Patients whose data were available.

### Exclusion Criteria:

1. Systemic disorders that affects the local complication of surgical removal of third molar
2. Patient who lost follow up.

### Surgery

Under all aseptic precautions surgical extraction of upper third molar were done debries, fragments of tooth, sharp bones pieces checked and removed, surgical site was inspected, irrigated with sterile saline and surgical site sutured with 3-0 silk suture.

All patients were prescribed oral antibiotics (amoxicillin 1.5 g per day) and nonsteroidal anti-inflammatory drug twice a day for 5 days.

### Results

A total of 230 patients of surgical extraction of maxillary third molar were carried out under local anaesthesia over a scheduled period of study. 60 patients were having intra-operative or postoperative complications. Also, age group of more than 40 were found more complications (30.30%) than other age groups. (Table 1)

Out of 230 patients, 122 were males and 108 were female patients. Male patients had 27.86% complications and females had 24.07% complications, which is less than male patients. (Table 2)

Most common complications in our study were maxillary tuberosity fracture seen in 19 patients (31.66%). The second most commonly found complication was delayed wound healing (11 patients, 18.33%), postoperative pain (10 patients, 16.66%) and post-operative infection (09 patients, 15.00%). Other less commonly found complications are iatrogenic injury to palate (5.0%), displacement into sinus (5.0%), haemorrhage (3.33%), herniation of buccal fat pad into surgical site (1.66%) and displacement into infratemporal fossa (1.66%). (Table 3)

**Table 1: Distribution of patients according to different age groups**

Age group	Total Number of patients	Patients with complications	%
<18	6	01	16.66
18-24	29	07	24.13
24-40	96	22	22.91
>40	99	30	30.30
Total	230	60	26.08

**Table 2: Gender- wise distribution of the patient**

Category	Total Number of patients	Patients with complications	%
Male	122	34	27.86
Female	108	26	24.07
Total	230	60	26.08

**Table 3: Complications during surgical extraction of maxillary third molar.**

Complications	Number of cases	%
Fracture tuberosity	19	31.66
Delayed wound healing (in patients with fracture tuberosity)	11	18.33
Post-operative pain (in patients with tuberosity fracture)	10	16.66
Post-operative infection	09	15.00
Iatrogenic injury to palate	03	05.00
Displacement into sinus	03	05.00
Haemorrhage	02	03.33
Herniation of buccal fat pad into surgical site	02	03.33
Displacement into infratemporal fossa	01	01.66
Total	60	26.08

### Discussion

The most common impacted teeth are mandibular third molar and maxillary third molars, followed by the maxillary canines and mandibular premolars.<sup>10</sup>

There is a distinctive association was found in the current study between age and checked postoperative problems.

These associations consequence from the fact that the interference in geriatric patients lasts longer because of raised bone density. Age related maturing of tooth root formation and declined healing ability cause to intensive postoperative complications. Bruce and Chiapasco et al. revealed that geriatric patients have more pain, swelling and trismus as postoperative problems.<sup>11,12</sup>

In our study, most common complications were maxillary tuberosity fracture. Fracture of large maxillary tuberosity bone area is of concern. As maxillary tuberosity is specially 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.<sup>13</sup>

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 ankylosis and conditions that more resistance to avulsion.<sup>14</sup>

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.<sup>12</sup>

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.<sup>8</sup>

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 administer 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.<sup>12</sup>

The postoperative infection rate stated in the literature from 1.5% to 5.8%.<sup>9</sup> Antibiotic prophylaxis decreases risk of suffering infection, localised alveolar osteitis and pain after third-molar extractions in healthy adults.<sup>12</sup>

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.<sup>1</sup>

## Conclusion

Although third molar surgery is a protected procedure, risk of complications will always presence and it may upsurge with the increased surgical difficulty. Satisfactory preoperative evaluation of patient and meticulous surgical technique are of paramount importance to decrease incidence of such problems.

**Conflict of Interest:** None.

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**How to cite this article:** Salik A, Amjad S, Rahman T, Ansari K. Study of complications of surgical removal of maxillary third molar. *J Oral Med, Oral Surg, Oral Pathol, Oral Radiol* 2019;5(1):1-3.