

## Original research article

**A Retrospective study to assess the complications of surgical removal of maxillary third molar****Dr. Shazia Khatoon<sup>1\*</sup>, Dr. Samir Jain<sup>2</sup>****<sup>1</sup>Senior Resident, Department of Dentistry, Anugrah Narayan Magadh Medical College and Hospital, Gaya, Bihar, India.****<sup>2</sup>Professor and HOD, Department of Dentistry, Anugrah Narayan Magadh Medical College and Hospital, Gaya, Bihar, India****Corresponding Author: Dr. Shazia Khatoon****Abstract****Aim:** to assess the complications during and after maxillary third molar extraction.**Materials and Methods:** A Retrospective study was conducted in the Department of Dentistry, Anugrah Narayan Magadh Medical College and Hospital, Gaya, Bihar, India from June 2019 to Nov 2019. Total 100 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 100 patients of surgical extraction of maxillary third molar were carried out under local anaesthesia over a scheduled period of study. 30 patients were having intra-operative or postoperative complications. Also, age group of more than 40 were found more complications (34%) than other age groups. Out of 100 patients, 65 were males and 35 were female patients. Male patients had 30.76% complications and females had 28.57% complications, which is less than male patients. Most common complications in our study were maxillary tuberosity fracture seen in 11 patients (36.67%). The second most commonly found complication was delayed wound healing (5 patients, 16.67%), postoperative pain (4 patients, 13.33%) and post-operative infection (3patients, 10%). Other less commonly found complications are iatrogenic injury to palate 2(6.67%), displacement into sinus 2(6.67%), haemorrhage 1(3.33%), herniation of buccal fat pad into surgical site 1(3.33%) and displacement into infratemporal fossa 1(3.33%).**Conclusion:** The risk of complications in third molar surgery will always exist and increases in proportion to the surgical difficulty.**Key words:** Maxillary third molar, complications, surgical procedures**Introduction**

Surgical removal of impacted third molars is one of the most common procedures carried out in oral and maxillofacial surgery. Most third molar surgeries are performed without complications. However, such procedure can lead to serious complications to the patient, such as hemorrhage, persistent pain and swelling, infection, dry socket (alveolar osteitis), dentoalveolar fracture, paresthesia of the inferior alveolar nerve and of the lingual nerve, temporomandibular joint injury and even mandibular fracture. 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.<sup>1</sup> 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.<sup>2</sup> 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.<sup>3-5</sup> 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.<sup>6</sup> Complications related to third molar removal range from 4.6% to 30.9% and may occur intraoperatively or develop in the postoperative period.<sup>6,7</sup> 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.<sup>5</sup> Any complication should be handled in a timely and corrective manner by the surgeon.<sup>6</sup> 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.<sup>6,7</sup> There is a distinctive association between age and observed postoperative complications. These associations result from the fact that the intervention in older patients lasts longer because of increased bone density. Age depended maturing of tooth root formation and decreased healing capacity lead to intensive postoperative complications. Bruce and Chiapasco et al. state that older patients have more pain, edema and trismus as postoperative complications.<sup>1</sup> It seems that female patients show higher accident and complication rates.<sup>9</sup> Monaco et al. reported that the incidence of postoperative edema in female patients (12.7%) is significantly higher than in male patients (1.4%).<sup>1</sup> 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.<sup>1</sup> 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.<sup>8</sup>

### **Materials and Methods**

A Retrospective study was conducted in the Department of Dentistry, Anugrah Narayan Magadh Medical College and Hospital, Gaya, Bihar, India from June 2019 to November 2019, after taking the approval of the protocol review committee and institutional ethics committee.

### **Indications**

- Following were the indication for maxillary third molar extraction.
- Damage to periodontal ligament,
- Bone loss,
- Root resorption of adjacent maxillary second molar.
- Radiolucency associated with impacted tooth.
- Impaction of both third and adjacent second molar

### **Inclusive 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 100 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 100 patients of surgical extraction of maxillary third molar were carried out under local anaesthesia over a scheduled period of study. 30 patients were having intra-operative or postoperative complications. Also, age group of more than 40 were found more complications (34%) than other age groups. Out of 100 patients, 65 were males and 35 were female patients. Male patients had 30.76% complications and females had 28.57% complications, which is less than male patients. (Table1). Most common complications in our study were maxillary tuberosity fracture seen in 11 patients (36.67%). The second most commonly found complication was delayed wound healing (5 patients, 16.67%), postoperative pain (4 patients, 13.33%) and post-operative infection (3patients, 10%). Other less commonly found complications are iatrogenic injury to palate 2(6.67%), displacement into sinus 2(6.67%), haemorrhage 1(3.33%), herniation of buccal fat pad into surgical site 1(3.33%) and displacement into infratemporal fossa 1(3.33%). (Table 2)

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

	Total Number of patients=100	Patients with complications=30	%
<b>Gender</b>			
Male	65	20	30.76
Female	35	10	28.57
<b>Age</b>			
Below 20	5	1	20
20-30	15	3	20
30-40	30	9	30
Above 40	50	17	34
Total	100	30	30

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

Complications	Number of cases=30	%
Fracture tuberosity	11	36.67
Delayed wound healing (in patients with fracture tuberosity)	5	16.67
Post-operative pain (in patients with tuberosity fracture)	4	13.33
Post-operative infection	3	10
Iatrogenic injury to palate	2	6.67
Displacement into sinus	2	6.67
Haemorrhage	1	3.33
Herniation of buccal fat pad into surgical site	1	3.33
Displacement into infratemporal fossa	1	3.33
Total	30	100

## Discussion

The most common impacted teeth are mandibular third molar and maxillary third molars, followed by the maxillary canines and mandibular premolars.<sup>9</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>2,10</sup> In our study, Most common complications were maxillary tuberosity fracture seen in 11 patients (36.67%). 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>11</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>12</sup> In our study the cases of haemorrhage was (3.33%). 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>10</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>13</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>10</sup> In our study postoperative pain (4 patients, 13.33%) and post-operative infection (3 patients, 10%) was high as compared to other studies. The postoperative infection rate stated in the literature from 1.5% to 5.8%.<sup>14</sup> Antibiotic prophylaxis decreases risk of suffering infection, localised alveolar osteitis and pain after third-molar extractions in healthy adults.<sup>10</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>15</sup>

## Conclusion

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

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