

Assessment of Post-Extraction Complications- An Institution Based Prospective Study

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ABSTRACT

BRIEF BACKGROUND

Exodontia is the painless removal of a tooth or tooth root with minimal trauma to the investing tissues with uneventful wound healing.

The complication rate is 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 used.

Aim

To assess the knowledge and attitude of the patients reporting to the department of Swami Devi Dyal Hospital and dental college regarding the post-extraction complication.

MATERIALS AND METHOD

A self-administered questionnaire of 30 questions was administered to the patients reporting to the Department of Oral and Maxillofacial Surgery of swami devi dyal dental college and Hospital, Barwala, Panchkula. Their responses were collected, and descriptive statistical analysis was done.

RESULTS

Data were analyzed using the statistical package SPSS 26.0 (SPSS Inc., Chicago, IL) and the level of significance was set at $p < 0.05$ using the Chi-Square test.

INTRODUCTION

There are several types of services in the world where oral and maxillofacial surgeries are performed. Most procedures conducted at oral surgery services are of low complexity. Such is in the case of extractions, particularly third molar extractions; dentoalveolar surgeries and surgeries are less common, However, there are times when the dentist is faced with post-extraction complications as they are unforeseen events.

Post-extraction complications can be immediate complications like failure to secure local anesthesia, failure to remove the tooth, fracture of tooth or root, fracture of the alveolus (including maxillary tuberosity), oro-antral communication, displacement of a tooth or a root into the adjacent tissues,

aspiration of the tooth, damage to surrounding soft tissues, bleeding, dislocation of the temporomandibular joint, fracture of mandible, damage to nerve or delayed complications like excessive pain, swelling, trismus, localized alveolar osteitis, acute osteomyelitis, infection of soft tissues, failure of the socket to heal or late complications like chronic osteomyelitis, osteoradionecrosis, nerve damage, chronic pain.

Exodontia is the painless removal of the whole tooth or tooth root with minimal trauma to the investing tissues with uneventful wound healing.

The complication rate is 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 used.

To avoid these complications patients should be given proper post-op instructions.

The rationale of our study is to assess the knowledge regarding post-extraction complications among the patients reporting to our institution, which will enable us to make necessary changes in the procedure among oral surgeons and the way of delivery of post-op instructions.

MATERIALS AND METHOD:

A self-administered questionnaire of 30 questions was administered to the patients reporting to the Department of Oral and Maxillofacial Surgery of Swami Devi Dayal dental college and Hospital, Barwala, Panchkula. Their responses were collected, and descriptive statistical analysis was done.

Inclusion criteria:

Patients over 18 years, medically fit and healthy with no comorbidities, patients who reported pain/swelling/open extraction wound/difficulty in mouth opening, and any other complaints after simple dental extraction.

Exclusion criteria:

Patients less than 18 years, medically compromised patients, and patients who underwent trans alveolar extractions.

Questionnaire:

The questionnaire was designed to collect data regarding the basic knowledge and attitude of patients about post-extraction complications and their management. The data from the participants were collected, statistically analyzed, and results were obtained.

Description of questionnaire

[1] When do you feel pain after extraction?

- (i) after 1 day
- (ii) after 2-4 days
- (iii) after 5-6 days
- (IV) Pain does not occur

[2] Do you properly follow the instructions given to you after extraction?

- i) Yes
- ii) No

[3] When do you start smoking after the surgery?

- (i) Immediately after the surgery
- (ii) after 1-2 days
- (iii) After 2 weeks
- (iv) does not smoke

[4] Was there any discharge from the site of surgery?

- (i) Yes
- (ii) No

[5] Was the pain manageable after the surgery with medication?

- (i) Yes
- (ii) No

[6] For how long do you feel numbness in the facial region (lip, tongue, face, mouth) after surgery?

- 3-4 hours
- 1-2 days
- 1 week
- Doesn't feel

[7] Does bleeding start after the cotton pack was removed?

- (i) Yes
- (ii) No

[8] Was there any problem in the mouth opening after surgery?

- (i) Yes, reduced mouth opening
- (ii) Yes, mild discomfort (felt more resistance)
- (iii) No

[9] Was there any discharge coming from the nose?

- (i) Yes
- (ii) No

[10] Do you hear a clicking sound during mouth opening after surgery?

- (i) Yes
- (ii) No

[11] Was your adjacent tooth displaced during or after surgery? If yes, then where it was displaced

- (i) towards the extraction site
- (ii) away from the extraction site
- (iii) No

[12] Did your adjacent tooth become mobile after surgery?

- (i) Yes
- (ii) No

[13] Was your mandible got fractured during the lower 3rd molar extraction?

- (i) Yes
- (ii) No

[14] During upper 3rd molar extraction, was there any maxillary tuberosity fracture?

- (i) Yes
- (ii) No

[15] Did you feel any hard impingement around the site of surgery?

- (i) Yes
- (ii) No

[16] During the procedure, was the tooth broken?

- (i) Yes
- (ii) No

[17] Was there any major surgery performed to remove the root fragments present in the Socket?

- (i) Yes
- (ii) No

[18] Was there a delay in wound healing after surgery?

- (i) Yes
- (i) No

[19] Did the color of your facial region alter following the extraction?

- (i) Yes
- (ii) No

[20] Did the medication recommended after the extraction cause any problems?

- (i) Yes
- (ii) No

[21] After the extraction, were any sutures given?

- (i) Yes
- (ii) No

[22] Was there any difficulty in chewing?

- (i) Yes
- (ii) No

[23] Was there any swelling following surgery?

- (i) Yes
- (ii) No

[24] Was there any foul Smell coming from your mouth after surgery?

- (i) Yes
- (ii) No

[25] Did you feel a fever after surgery?

- (i) Yes
- (ii) NO

RESULTS:

Data were analyzed using the statistical package SPSS 26.0 (SPSS Inc., Chicago, IL) and the level of significance was set at $p < 0.05$. Descriptive statistics were performed to assess the mean and standard deviation of the respective groups. The normality of the data was assessed using the Shapiro-Wilkinson test. Inferential statistics to find out the difference between the groups was done using CHI SQUARE TEST.

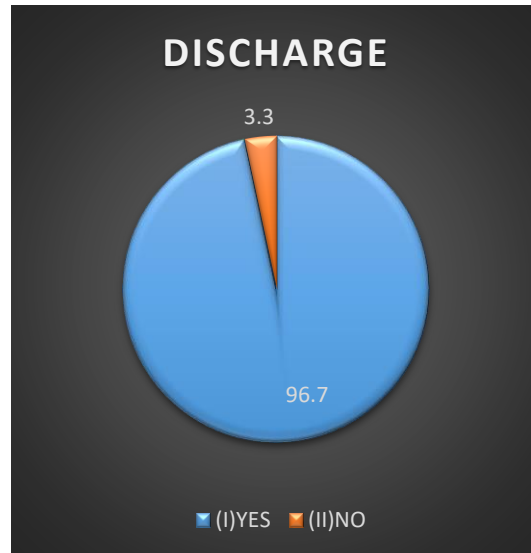
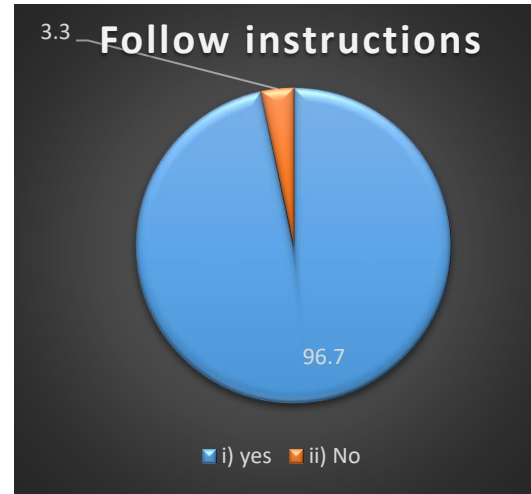
DISCUSSION:

Most procedures conducted at oral and maxillofacial surgery are of low complexity. Such is the case of extractions, particularly third molar extractions; dento-alveolar surgeries have less rate of complications followed by biopsies, cyst removal, and alveolectomies, where the difficulty of the procedure begins to increase.

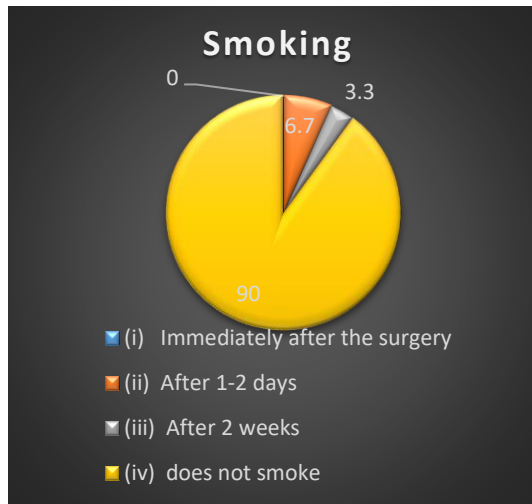
Post-extraction pain may result from incomplete extraction of the tooth, laceration of the soft tissues, exposed bone, infected sockets, or damage to the adjacent nerve and is usually treated by eliminating the cause and by prescribing analgesic drugs.

In this study among 30 patients, almost 76.7% responded to the question saying that there was no pain after extraction and 10% of them experienced pain after 1 day, and 3.3% experienced pain after 2-4 days. 96.7% of them followed the postoperative instructions properly while 3.3% of them didn't and report postoperative complications and experienced pain following tooth extraction due to food lodgement in the socket. also, this leads to delayed wound healing.

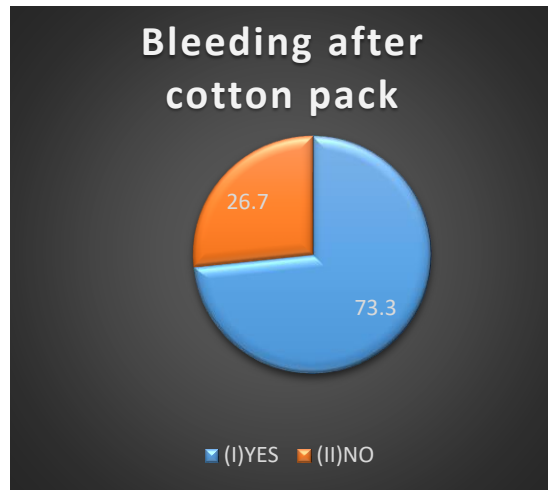
Healing is defined as the recovery of damaged tissue in the body. This can occur without swelling, hematoma, pain, or trismus patient fails to follow post-operative instructions, the medical condition of the patient, habits like smoking, or long surgical hours for extraction.



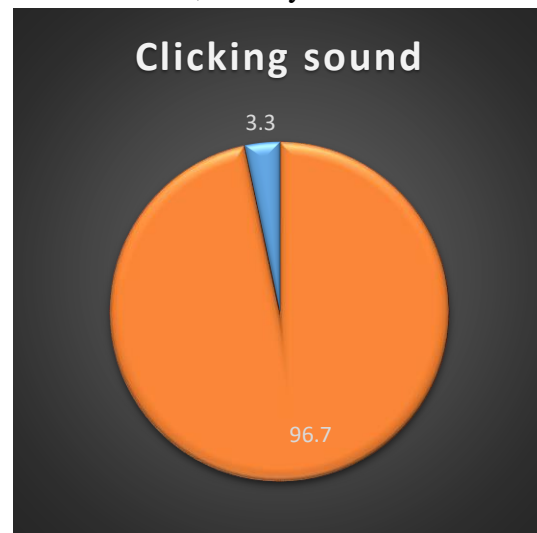
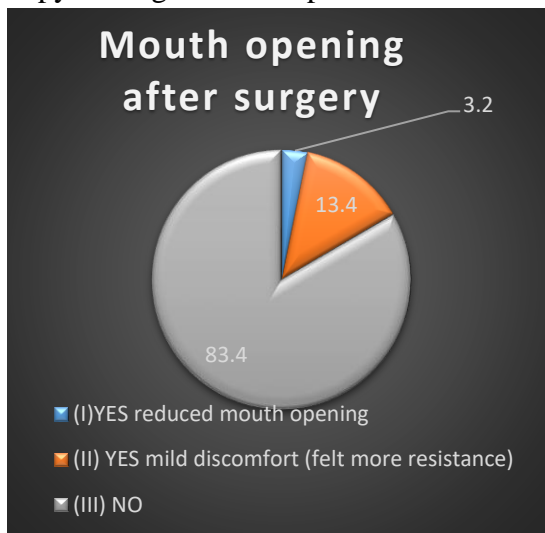
40% of the patients reported delayed healing and 96.7% of them experienced discharge from the site of surgery. Approximately 90% of patients were non-smokers while the rest 10% were smokers who have undergone extractions out of which 6.7% of them started after 24-48 hrs and the rest 3.3% after 2 weeks. Due to local anesthesia, people feel numbness until its effect waves off usually in 3-4 hours as reported by 80% of patients. Although some 3.3% of experienced numbness in the facial region for 1-2 days or even 1 week which usually occurs when there is a proximity of tooth to the nerve.



Bleeding from an extraction socket is the most common postoperative complication encountered by the dental surgeon. Bleeding may be the continuation of primary, reactionary (occurring within 48 hours of the operation when the effect of the vasoconstrictor in Local anesthesia wears off and there is reactive hyperemia), or secondary hemorrhage (a rare complication of tooth extraction which may be due to infection which destroys the blood clot. Bleeding may be due to some local causes like trauma, laceration, friable granulation tissue, clot dislodgement, infection, hemorrhagic lesions, violent exercise, application of heat, coughing, or may be due to some systemic causes like coagulopathies, anticoagulant therapy, anti-platelet drugs, liver dysfunction, chronic liver failure, uremia, Lupus Erythematosus, steroid therapy (prolonged), Multiple Myeloma, Leukaemia, Hypertension, Thrombocytopenia. Proper pre-operative measures like family history, past dental history like the history of bleeding, past medical histories like platelet disorders associated with liver disease or hypertension, and drug history such as whether the patient is on oral anticoagulants are required Peri-operative measures like careful handling of the tissues to avoid unnecessary trauma are to be taken. If a patient comes back with a hemorrhage, his general condition is then rapidly assessed. Monitor vitals periodically and the patient's mouth should be washed out with cold water and the adherent clot is to be removed with a gauze swab. Generalized oozing from the soft tissues usually can be arrested by manual pressure or a gauze pack placed over the area. The tannic acid powder can also be placed to control bleeding. If such pressure fails to control the blood flow it is obvious that the source of hemorrhage originates within the bony cavity and some sort of socket pack is required like Whitehead's varnish on ribbon gauze or some absorbable hemostatic agents such as gelatin sponge or surgicel or bone wax may be applied over the site of hemorrhage, or the bleeding vessel can be compressed by crushing the overlying bone with a blunt instrument. According to the data collected 73.3% of the patients experienced bleeding after the cotton pack is removed and in the rest, 26.7% bleeding was arrested with the cotton pack placement after extraction.

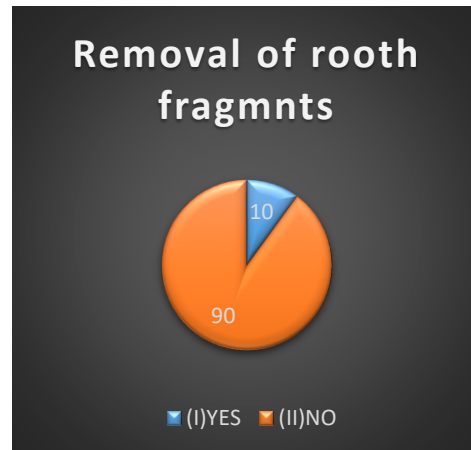
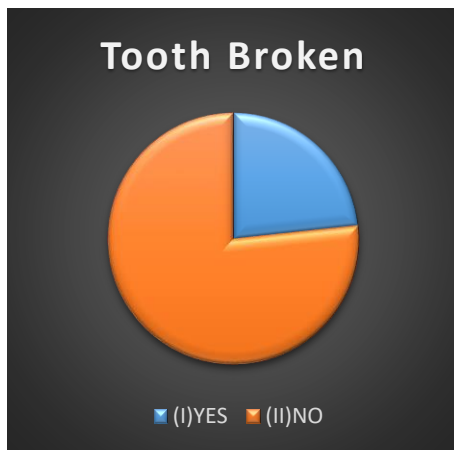


Trismus or inability to open the mouth due to muscle spasms may complicate oral surgical procedures, particularly difficult dental extractions may be caused by postoperative edema, hematoma formation, or inflammation of the soft tissues. Trismus can also be caused due to needle injury to the sphenomandibular ligament during the inferior alveolar nerve block. Damage to the temporomandibular joint due to excessive downward pressure or keeping the patient's mouth wide open for a longer period can also lead to trismus. Even though 83.4% of the patients never experienced trismus after extraction but 13.4% experienced discomfort while opening and the rest 3.2% stated that there was reduced mouth opening which was treated by the use of short wave diathermy or the use of hot saline mouth baths, analgesics, antibiotics, muscle relaxants, application of glycerine magnesium sulphate dressing, physiotherapy or surgical decompression. Patients recover with time, usually within 6 weeks.

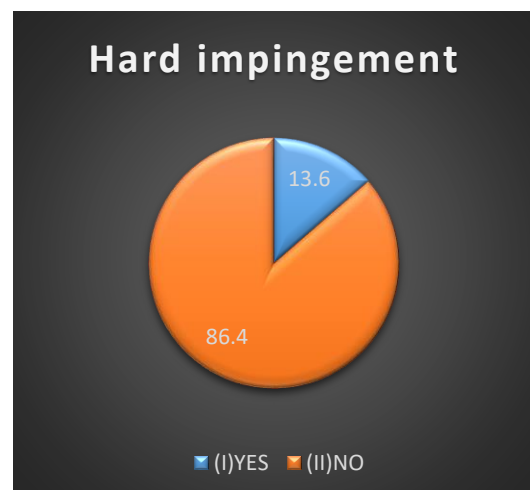
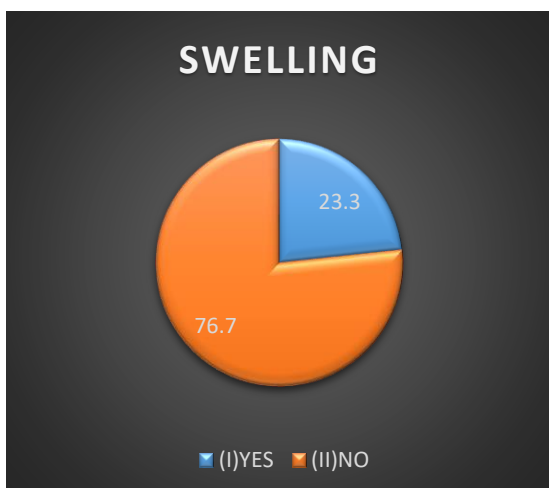
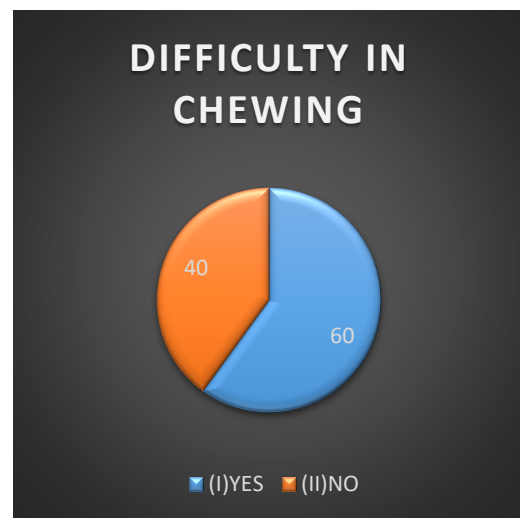
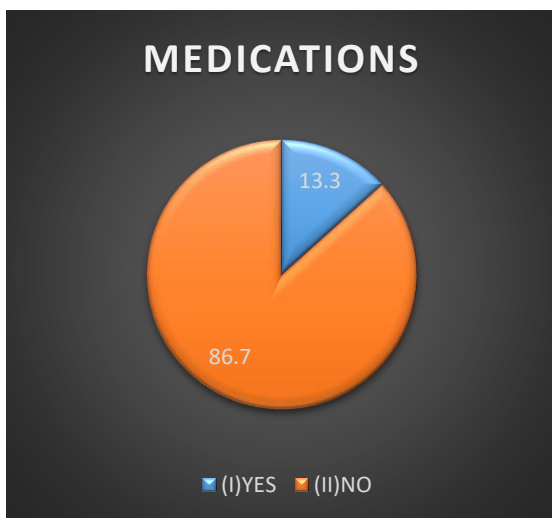


Clicking sound during mouth opening occurs as a result of failure to support the mandible during forceps extraction. 3.3% of the patients noticed the clicking sound post-extraction. To avoid this complication, the operator's left hand should ideally stabilize the jaw during this maneuver, or a rubber bite block is used, which enables the patient in mandibular stabilization during tooth extraction.

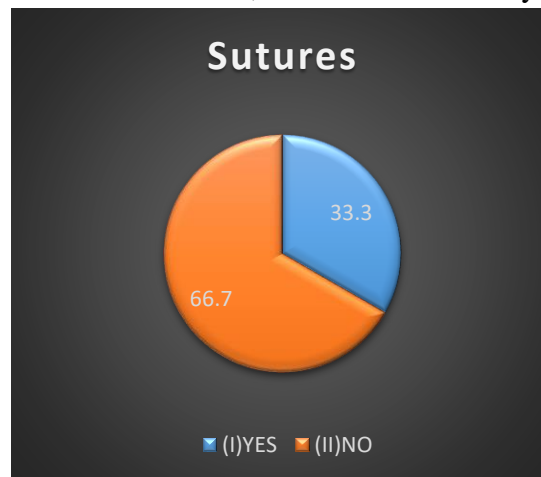
Due to variations in the anatomy of roots or because of many other reasons, 23.3% of patients reported that their tooth was broken or removed in pieces during the procedure, and in 10% of cases, surgical root removal was done.



In 86.7 % of patients, the medicines including analgesics and antibiotics were effective in reducing pain and healing of socket. Even though 60% of them complain of difficulty in chewing and 23.3% of them complain of swelling. 13.6% of the patients also reported complaining of hard impingement after extraction.



Sutures can assist in the healing of gums and other soft tissues by holding them in a desired place. In complex dental extractions, such as removing wisdom teeth or impacted teeth, the bone and gums around the tooth may need to be moved or partially removed. To ensure that the gums heal cleanly around the jaws and do not create a food trap, sutures are used to approximate natural soft tissue contours. 33.3% of patients reported placement of sutures after extraction. While 66.7% of them were given cotton packs for "simple" dental extractions, sutures are not always required.



Other minor complications such as bleeding from the nose, displacement of the adjacent tooth, facial discoloration, fever, foul smell, mandibular fracture or tuberosity fracture during 3rd molar removal, and displacement of the tooth into the sinus or lingual pouch were not reported significantly. Displacement of the tooth may lead to oro-antral fistula (OAF) formation is an epithelialized pathological communication between the oral cavity and maxillary sinus. It develops when the oro-antral communication fails to close spontaneously, remains patent, and gets epithelialized. There is the migration of oral epithelium into the defect. This epithelialization usually occurs when the perforation persists for at least 48-72 hrs. This complication occurs most commonly during the extraction of upper molar and premolar teeth (48%) due to the anatomic proximity of the roots with the maxillary sinus.

SUMMARY

A low percentage of procedures exhibited complications after surgery. The most frequent complication was clicking sound experienced by 96.7% of the patients especially after third molar removal. Other post-surgical complications were swelling, pain around sutures and difficulty in mouth opening. Bleeding was also the most common postoperative complication encountered by the dental surgeon. Other minor complications even though not reported significantly but encountered in some patients are bleeding from the nose, displacement of the adjacent tooth, facial discoloration, fever, foul smell, mandibular fracture or tuberosity fracture during 3rd molar removal, and displacement of the tooth into the sinus or lingual pouch.

CONCLUSION

Continuing dental education to the patients must include lectures and videos regarding managing some rare complications that can occur during dental surgical procedures. It is the duty of dentists to give proper oral health education and insist the patients to follow the post-operative instructions promptly, thereby occurrence of any untoward postoperative sequelae can be prevented.

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