

Can Histopathological Evidence of Ankylosis of the Tooth be Helpful in the Prevention of a Medicolegal Case in Case of Iatrogenic Fracture of the Mandible during Dental Extraction where Preoperative Radiographs have not been Taken?

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INTRODUCTION

The mandible, owing to its prominence and position, is the second most commonly fractured part of the maxillofacial skeleton following road accidents and assaults.^[1,2] A mandible fracture during tooth extraction is a rare complication. Many factors are known to predispose a jaw to fracture, such as the patient's age, the presence of teeth with unfavorable root configurations, and the physical properties of the causing agent.^[3] During a dental extraction, it is very important for the dental surgeon to have control over the magnitude and direction of force being applied with the dental elevators. Excess forces applied to the jaw can lead to fracture of the jaw bone. The present article discusses one such case of iatrogenic fracture of the mandible during dental extraction and the management of the case, with an emphasis on the histopathological examination of the tooth extracted.

CASE REPORT

A 44-year-female patient reported with the complaint of pain and swelling on left side of the face since 2 days.

ABSTRACT

A fracture of the mandible is a rare complication that can occur during a dental extraction being carried out under local/general anesthesia. It is always advisable to take a pre-operative radiograph of the tooth to be considered for extraction to study the root configuration and make a surgical plan for the case. Most of the dental extractions carried out without taking a preoperative radiograph are completed uneventfully. However, in rare cases, complications can arise owing to local anatomical variations and lead to medicolegal issues and litigation. This article discusses the management of a case of iatrogenic fracture of the mandible during dental extraction, wherein a pre-operative radiograph was not taken; however, following extraction of the tooth and management of the fracture mandible, the histopathology report of the extracted tooth was suggestive of ankylosis of the tooth.

KEYWORDS: Dental extraction, iatrogenic fracture, mandible, microphotograph, preoperative radiograph

She had visited a private dental clinic for the extraction of a mandibular left first molar as she was suffering from dental pain in relation to the tooth. After taking medication, when the dental pain was reduced and the patient was considered for dental extraction under local anesthesia, she revealed that the dentist experienced difficulty during the extraction procedure. After struggling to extract the tooth, the patient said that the dentist stopped the extraction procedure abruptly and got a radiograph done, which revealed that there was a fracture of the lower jaw [Figure 1a]. The patient was informed by the dentist about the complication, and consultation was sought by the dentist with an

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oral surgeon for further management. Examination of the patient revealed tenderness in the body region of the mandible and an obvious step deformity in the mandibular left molar region. Mouth opening of the patient was restricted. An orthopantomogram brought by the patient revealed a displaced fracture of the left side of the body of the mandible and the mandibular left first molar in the fracture line. The patient was counselled and the narrative of the incident as given by the patient was heard with attention. The patient was reassured that due measures would be taken to ensure that the injury to the jaw would be treated. The patient was hospitalized and medications were started to control the dental pain and swelling. Informed consent of the patient was taken. Following optimization of the patients' general condition, the patient was treated under general anesthesia supplemented with local anesthesia (2% lignocaine hydrochloride +1: 1,00,000 adrenaline) for "surgical removal of the mandibular left first molar followed by open reduction direct internal fixation of fracture left body of the mandible" [Figure 1b]. The extracted tooth was sent for histopathological examination. The wound was closed primarily with resorbable sutures. Patient was discharged on the 5th postoperative day following improvement in the interincisal opening. The histopathological report of the extracted tooth revealed that the mandibular left first molar was ankylosed to the jaw bone [Figure 1c]. The arch bars were removed under local anesthesia after 6 weeks, and the miniplate fixed was removed after a few years. The patient was followed up again after almost 14 years, which revealed that the wound in the mandible had healed well [Figure 1d-f]. Also, it was found that the patient wanted to get her remaining dental treatment done at our institute owing to her past experiences.

DISCUSSION

Dental extractions are the most commonly performed procedures in routine dental practice. While using the dental elevators to luxate the tooth, the clinician needs to pay attention to the magnitude and direction of force being applied. Uncontrolled and heavy forces applied during luxation can cause serious complications.

The joint between the tooth and the alveolar bone is a fibrous type of joint (gomphosis). The stiffness of a joint due to abnormal adhesion and rigidity of the articulating elements of the joint is termed ankyloses. It may be the result of an injury or disease. The incidence of ankyloses in deciduous teeth is reported to be between 7% and 14%.^[4] Luxation injuries are more likely to cause ankyloses of the permanent teeth.^[5] An acceptably reliable clinical sign of ankylosis has been found to be infraocclusion.^[6] Ankylosis has also been the cause of fracture of the maxillary tuberosity during extraction of maxillary third molars or the buccal plate during extraction of maxillary first molars.^[7,8]

A number of factors increase the difficulty index of extraction of a tooth, like the density of bone around the roots of the tooth, unfavorable root configuration, and proximity of roots to vital structures like nerves and blood vessels. The difficulty in extraction increases many fold when the tooth is ankylosed, thereby further increasing the chances of jaw fracture. The danger of an immediate jaw fracture can be avoided by means of proper instrumentation and by applying optimal force during the luxation of a tooth. Sectioning of the tooth should be considered to minimize the extent of bone removal and forces required to luxate the tooth. Preoperative radiological diagnosis of any local pathology and systemic disease, having information on medications being taken by patients that may impair

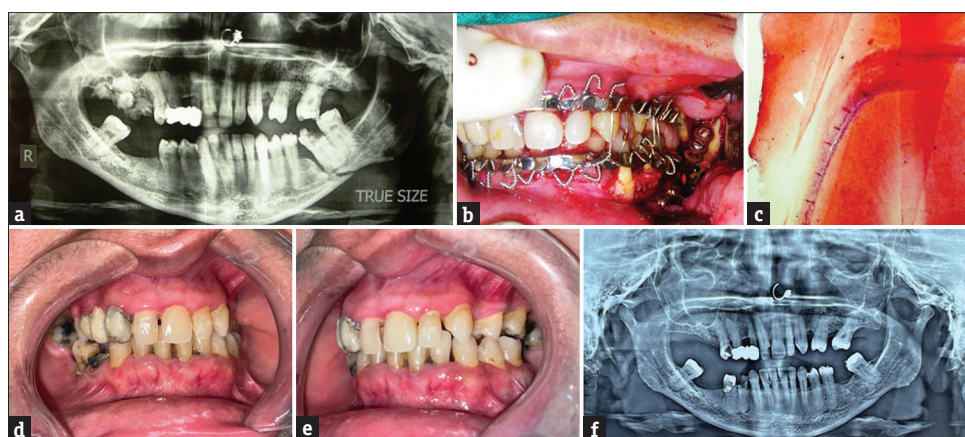


Figure 1: (a) Digital orthopantomogram showing the fracture in the left body region of mandible. (b) Intraoperative view of the fractured fragments reduced and immobilized by miniplate fixation. (c) Microphotograph of the mandibular left second molar which was removed intraoperatively and appreciate the union between the bone and the cementum. (d and e) Occlusion of the patient 14 years following the surgery. (f) Orthopantomogram 14 years following the surgery

bone strength or lead to osteoporosis in female patients, can be helpful in the prevention of iatrogenic fractures of the jaw bones.^[9] Intra-operative fractures are more frequent among females (M:F - 1:1.3).^[10]

In this current era of consumer satisfaction, dentists are increasingly facing legal challenges from dissatisfied patients. As defined by Alderson, “Negligence is the omission to do something which a reasonable man, guided upon those considerations which ordinarily regulate the conduct of human affairs, would do, or doing something which a prudent and reasonable man would not do”.

What should a dentist do in cases of alleged negligence? When something untoward happens following a diagnostic or therapeutic procedure, or when a patient or relative makes a complaint, the dentist must take appropriate steps, some of which may be:

1. Complete the patient’s record and recheck the written notes.
2. Be frank enough and inform clearly of the mishap. Show that you were genuinely concerned. Answer all the queries of the patients/relatives and do not mind their repeated questioning, harsh attitude, and at times, even abusive language.
3. After these initial responses, the dentist should contact some other doctor/protection organization to seek advice. The dental associations can form groups/cells to advise and assist in such situations.

Also, it is important for the dental surgeon to send any tissue, normal or diseased, removed from the human body, for histopathological examination. Patients may demand the histopathology report anytime in the future and so, as clinicians, we need to develop this habit of carrying out histopathological examination with serial sectioning of the tissues removed from the patients’ body. A light micrograph, or photomicrograph, is a micrograph prepared using a light microscope, a process referred to as photomicroscopy. Photomicrographs can be of help in medicolegal cases.

CONCLUSION

A pre-operative consultation with the patient to explain about the planned dental surgery and address queries in the patients’ mind to reduce his/her ‘fear of the unknown’ is an important step in the surgical process that will help establish a good doctor-patient relationship and reduce the anxiety of the patient. Also, an empathetic approach

on the part of the dental surgeon, along with the demonstration of surgical skills during the procedure, is valued by the patient. Good communication skills are essential for developing a good practice and avoiding any complications in surgical practice affecting the career of the professional.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published, and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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