

## CASE REPORT

### AN UNUSUAL CASE OF BURIED BROKEN EXODONTIA INSTRUMENT IN INFERIOR ALVEOLAR CANAL

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#### ABSTRACT

Exodontia is a routine procedure in dental practice. Despite of adequate effort to perform the procedure with proper technique, some mishap may happen when defective or substandard instruments are used. This article reports a symptomatic case of lip paresthesia since 1 month who had undergone attempted surgical extraction of third molar in remote dental hospital. On examination there was presence of retained fractured third molar with exodontia instrument tip in inferior alveolar canal and is very uncommon surgical complications and not much reported in literatures. Patient was not aware of the condition till Orthopantomogram (OPG) was done which revealed presence of approximately 1.5 cm instrument tip in inferior alveolar canal. Third molar and instrument tip were successfully retrieved from canal under local anesthesia. Rarely, instruments breakage may occur during surgical procedures. It is the duty of every operating dental surgeon to check surgical instruments for signs of breakage and be prepared to solve a possible emergency. Retained fragments should be carefully studied prior to attempt of removal.

#### INTRODUCTION

Extraction of teeth is one of the commonest procedures performed by dental surgeons in day to day practice in which third molar extraction needs surgical removal most often. Fracture of instrument during surgical extraction depends on improper technique by operator intraoperative and quality of surgical instruments. Manufacturer should follow the optimum standards guidelines, particularly in the case of dental, medical and surgical instruments which could cause serious injuries to patients.<sup>1</sup> Despite adequate effort to perform extraction of tooth carefully, some mishaps may occur when substandard instruments are used with inadequate knowledge. Diagnosis of these cases is often made accidentally on radiographic examination or may be associated with pain, paresthesia and sign of inflammation with purulent discharge.<sup>2,3</sup>

Although breakage of surgical instruments is an unusual intraoperative complication, dental and oral surgeons should be particularly aware when dental instruments are used with strong force in poorly visible area. If an unexpected accident take place during surgical procedure the patient should be informed in accordance with ethical code, and suitable measures should be implemented to resolve the problem.<sup>1</sup>

The aim of this paper was to present an unusual referred case of fractured instrument with severe postoperative complications during extraction and its management.

#### CASE REPORT

A 38 years old male patient was referred to Department of Oral and Maxillofacial Surgery, UCMS College of Dental Surgery, Bhairahawa, Nepal by a dental surgeon working in remote area with chief complain of paresthesia over left side of chin and lower lip area since 1 month. On past dental history, patient had been attempted for surgical extraction of left lower third molar for an hour but was not completed. On examination, inflamed gingival tissue were noticed around 38. There was no pus discharge present. Mouth opening was adequate and bilateral occlusion were intact. On palpation, tenderness over left angle of the region was present. Patient was advised for Orthopantomogram (OPG). OPG revealed fractured 38 with radiolucency surrounding it. In addition, approximately 1.5 cm radiopaque mass with pointed end was present at the apex of 38 with obliteration of inferior alveolar canal as shown in Figure 1.



**Figure 1: Preoperative OPG showing splitted 38 with radiolucency surrounding it and radiopaque mass of approximately 1.5 cm below root apex and obliteration of inferior alveolar canal**

After clinico-radiological correlation we came to a final diagnosis of fractured 38 with broken instruments inside IAN canal. Patient was informed about the condition according to Code of Ethics set by Nepal Medical Council and planned for extraction of teeth along with retrieval of broken instrument under local anesthesia. Under strict aseptic condition, 2% lignocaine HCL (1:200000 adrenaline) was administered and Ward's incision was given. Full thickness mucoperiosteal flap was raised and distobuccal bone guttering was done with the help of rotary instruments as shown in Figure 2.



**Figure 2: Intraoperative clinical photograph showing fractured 38 with abundant of granulation tissue inside socket.**

Extraction of the offending tooth was done accordingly. Socket was irrigated thoroughly with normal saline and was explored. Finally, broken instrument tip was retrieved with the help of curved hemostat from distal root socket as shown in Figure 3.



**Figure 3: Postoperative clinical photograph showing extracted 38 and removal of broken exodontia instrument piece from inferior alveolar canal**

Then, socket was irrigated and closed primarily. Post-operative OPG was done to confirm complete retrieval of instrument as shown in Figure 4.



**Figure 4: Post-operative OPG revealing empty 38 socket and absence of instrument tip**

Patient was prescribed antibiotics and NSAIDs and recalled after a week for suture removal. Wound healing was uneventful and suture was removed during follow up. But there was no improvement in paresthesia of left lower lip and chin region. Patient was counselled that the situation will improve within 3 to 6 months and is under subsequent follow up.

#### DISCUSSION

Breakage of an instrument during extraction is the result of excessive force or improper use of instrument during luxation of the tooth. The incidence is high when one involves the end of the blade of various elevators. Also, needle breakage during local anesthesia or bur may break during the removal of the bone surrounding the impacted tooth or root.<sup>4</sup>

Intraoperative accidental mishaps occurs due to number of factors which includes improper operator technique and compromised quality of surgical instruments.<sup>1</sup> Some of the possible causes of intraoperative breakage of burs, elevators and other dental instruments include stress, defective manufacturing, metal fatigue of used instruments, rust or poor handling. Operating surgeons should avoid excessive and incorrect sterilization. Use of the autoclave without the anticorrosive pretreatment adversely affects the integrity of stainless steel dental instruments. Dry heat (180 °C) sterilization can be the possible cause of the breakage of dental instruments.<sup>1</sup>

Foreign objects left inside may produce chronic inflammatory reactions and become a potent source of pain and infection.

Piece of elevator or bur can be oxidized. The oxidization could be one of the important reasons for pain and infection. Foreign bodies are considered as misadventure and is associated with several legal problems. So, its identification and removal in time is often necessary.<sup>2</sup>

The retrieval of the broken instrument may be easy for operating surgeon if the breakage part remains accessible. But, objects dislodged into the inferior alveolar canal or lingual pouch which gain access to the submandibular and parapharyngeal spaces easily are difficult to localize and retrieve. Effective localization and early removal of the foreign body is desirable.<sup>5</sup>

Foreign objects should be identified and localized. Conventional plain radiographs, Orthopantomogram (OPG), Cone beam computed tomography (CBCT), Ultrasonography (USG), Magnetic Resonance Imaging (MRI) are useful tools to confirm the exact location and identification of foreign object in any maxillofacial region.<sup>2,6</sup> The metal detector can also help in localization of any metallic objects by the production of different tones depending on which side of the probe the object lies. The detector can also distinguish between different metals (steel, brass, aluminum, lead) by emitting different signals which could also prove to be useful in a clinical situation.<sup>5</sup>

The retrieval of broken instruments during exodontia is not a common problem in day to day dental practice. In the literature, only few papers were found to be associated with breakage of exodontia instruments.<sup>1,2,5-9</sup> These reported cases involved elevators, hinge pin, tips of forceps, broken round bur and drill bur. All reported cases were associated with extraction of permanent teeth except one, which was associated with extraction of deciduous molar.

Foreign body retrieval during third molar surgery pose a very challenging task to the operating surgeon. Its localization always increases the risk of damage to adjacent anatomical structures.<sup>2</sup> So the site, size of broken instrument, possible intra operative complication and post-operative consequence should be determined before attempting for removal of broken instrument piece.

Every operating surgeons must pay attention especially when

instruments are used in poorly visible areas. Check-up of instruments and materials after procedure is also very important step of surgery. Use of routine postoperative screening radiographs help us in conclusion after every surgery.<sup>2</sup> Due to financial constraints, like in underdeveloped and developing countries, it creates additional financial burden to patients and thus is not done in every cases. Instrument breakage is unavoidable but can be prevented by various ways shown in Table 1.<sup>1</sup>

**Table 1: The various ways of prevention of instrument breakage**

1	Instruments should be kept dry to avoid corrosion which ultimately weakens the instrument.
2	Standard Autoclave machine should be used for autoclaving. Strict autoclaving principles should be followed.
3	Quality instruments approved by standardizing bureau of a particular nation should be used.
4	Instruments should not be repaired or manipulated once any defect is detected.
5	Substandard or degraded instruments should not be used.
6	Principles of elevator must be followed strictly.
7	Uncontrolled force should be avoided.

## CONCLUSION

All practicing dental practitioner should always be careful while using instruments during dental procedures, especially the surgical ones. It is always advisable to afford reliable trademarks and products with quality control. It is duty of clinician to check the surgical instrument for any sign of breakage before and after the surgical procedure. If an untoward accident happens, dentists should take the proper measures to solve the issue without further injury to the patient.

Although it is impossible for clinician to prevent the mishaps, it is the duty of clinician to inform the patient about the incidence and proper management should be done by them or refer to higher center for needful. If patient is not informed and proper management is not done, it will be dealt according to the different laws adopted by different countries.

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