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Buried teeth extraction, a case report

Case Report

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Abstract

Introduction: The teeth spontaneously erupted into excellent positions without surgical procedures. A permanent teeth fails to erupt and is often displaced into ectopic positions in the upper and lower jaw in the maxillofacial region. We report a rare case of an impacted right secnd and third molar of mandibular. The buried teeth were embedded in the mandibular molar area. This raises important questions concerning the possible treatment options for such teeth as well as the timing of any interceptive treatment.

Tooth extraction is a very common procedure in oral surgery. There are many complications in tooth extraction, especially Inferior Alveolar Nerve (IAN) injury and Iatrogenic Fracture of Mandible (IFM). This case report describesthe third molar close to the IAN and the crown under the first molar, showing that it is important to protect the INA and molar.

Case presentation: A 22-year-old man was referred to the Department of Implantology, Stomatology Center, Central South University Xiangya School of Medicine Affiliated Haikou Hospital with a chief complaint of the molar miss in the right side.He had no significant past medical history, social, environmental, family and employment history. He does not smoke, and/or consume alcohol.The temperature, pulse, blood pressure and temperature are normal on admission. A dental check revealed absence of right mandibular third molar, Mesial impaction of right mandibular second molar with mesial caries. CBCT revealed that the tooth was found in the apex of first molar and near the inferior alveolar nerve canal. Diagnoses were #47 #48 impacted wisdom teeth. The Wisdom teeth were removed by precise surgery. The wound healed well without infection or nerve damage. There was no complaint.

Conclusion: The impacted wisdom tooth described in this case report was close to the IAN. We evaluated the relationship between tooth and IAN with CBCT. Then impacted teeth were safe to be removed by precise surgical procedure under CBCT guidance.

Keywords

CBCT; impacted tooth; extraction; case report

Abbreviations

CBCT: Cone beam computed tomography; IAN: Inferior alveolar nerve; MC:Mandibular canal; IFM: Iatrogenic fracture of mandible; CHX: Chlorhexidine gel; LA: Local Anesthesia

Background

Impacted teeth is well known topic of oral surgery. Normally it refers to only one tooth:#18, #28,#38,or #48. It is rare that twoteeth are impacted at same time. It is difficult to know the position of the tooth in the bone; therefore,extracting a deeply impactedtoothis a high risk procedure [1]. CBCT, it is easy to damage a nerve and cause postoperative complications. Thus, it is highly demanded for dentists to be able to cope with these risks.

Case presentation

A 22-year-old man was referred to the Department of Implantology, Stomatology Center, Central South University XiangyaSchool of Medicine Affiliated Haikou Hospital with a chief complaint of a molar miss in the right side.He had no significant past medical history. Intraoral examination revealed the absence of right mandibular third molar. Mesial impaction of right mandibular second molar with mesial caries. CBCT revealed that the tooth was found in the apex of the first molar and near inferior alveolar nerve canal (Figure 1). The patient was admitted for surgery under Local Anesthesia (LA) after thorough physical examination and routine blood investigations. Prior to the surgery a signed written informed consent was obtained from the patient. A full thickness mucoperiosteal flap was reflected. The posterior part of the buccal wall of the #47 tooth was breached by rosette round bur over teeth #47and#48.The lateral wall was also resected until the posterolateral wall was approached. Guttering of the bone was done around the tooth, the distal retractor was used, and the #47tooth was retrieved along with the help of a curette. Since the #48tooth was found in the apex of first molar and near the inferior alveolar nerve canal, the vertical and buccal bone of the #48tooth was to be removed carefully with piezosurgery.The#48tooth was discovered and split in the neck, retaining the cementum of the #48tooth close to the IAN. After the root was removed, the crown was divided into two pieces then extracted from beneath the #46 tooth. Finally, the socket was filled with BioOSS and PRF, and the wound was sutured (Figure 2). Post-operative recovery was uneventful; the patient was prescribed analgesics and antibiotics. He was followed up for three months and was found to have no complaint.

Discussion

The biggest risk factor for the occurrence of postoperative neurological damage is contiguity between IAN and the root of the third molar. The relationship between the third molar and the MC is not accurately evaluable preoperatively. Radiographs are effective for identifying the actual position of MC, revealing the relative position of the root and channel, the presence of cortical bone around the IAN. The observation of X-ray before operation is helpful to protect the inferior alveolar nerve canal and bone tissue.

Tooth extraction is a very common procedure in oral surgery [2]. The complications include inferior alveolar nerve (IAN) injury, hemorrhage, surgical site infection [3,4], pain, dental fracture, the displacement of teeth or fragments, iatrogenic damage or luxation of the second molar [5], soft tissue damage, subcutaneous emphysema, trismus, swelling, and iatrogenic mandibular fracture. Above all, how can these problems be prevented?

The incidence of IAN injury reported in literature ranges from 1.3% to 5.3%, depending mainly on the presurgeryposition of the impacted tooth in relation to the inferior alveolar canal. If there is close proximity between the IAN and the roots, the incidence may be as high as 19% [6,7] and may cause temporary or permanent injury [8]. Therefore, proper presurgical planning is required to reduce the risk of injury to the IAN [9,10].

The minimally invasive extraction operation, originally described in the late 1900s, approaches the anterior wall of the maxillary sinus by making a full thickness flap [11]; however, in the present case we had to modify this approach.As the tooth was located posteriorly to the inferior alveolar nerve canal, minimally invasive extraction [12] of mandibular impacted wisdom tooth proved better than the traditional method. Therefore, a vestibular incision was given from tooth #46 distally to tooth #48. The use of a surgical navigation system [13], together with an interocclusal splint, enabled the retrieval of an impacted wisdom tooth in close proximity to the mandibular canal in a safe and minimally invasive manner without damaging the surrounding vital structures. Removal of the deeply impacted tooth using the described techniques was safe with regard to mandibular nerve injury and neurologic damage.

Iatrogenic Fracture of Mandible (IFM) as related to the removal of teeth is a rare complication [14]. Likewise, subcutaneous emphysema is not very common [15]. The use of piezosurgery can accurately remove the bone wall and effectively preserve the thickness of the mandible, thereby reducing iatrogenic fractures [16]. And because the piezosurgery does not require high pressure gas as a driving force, it can also prevent the occurrence of emphysema. The antibiotic administration showed a decrease in pain suffered by patients but a higher incidence of gastro-intestinal side effects. Chlorhexidine gel CHX is superior to a placebo in reducing the incidence of alveolar

osteitis after mandibular third molar extraction. There were no significant differences in soft tissue closure at any point in timeto provide any additional benefit to enhance the soft tissue closure of extraction sockets [17].

In this case, the position of the mandibular canal (MC) in CBCT [18,19] was close to the #48tooth with an absence of cortical bone between the root of the #48tooth and MC; the minimum distance between the MC and the third molar is 0 mm, and the actual distance was <0.5 mm. The crown of the #48tooth was proximally connected to the distal apex of first molar, the #47 tooth was upon it and there are caries in the mesio-crown. Under the guidance of CBCT, the resistance from bone tissue and the adjacent tooth was carefully removed with piezosurgery, with #47 and #48 removed by precise surgical procedure. It was safe to extract teeth without any complications.

Conclusions

With the development of high resolution imaging technology, we can clearly understand relationship between the impacted tooth and the surrounding tissue; moreover, the blindness of extraction can be reduced through the use of CBCT accurate guidance. The impacted wisdom teeth were removed safely by precise surgical procedure.

Consent

Written informed consent was obtained from the patient for publication of this case report and any accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal.

Ethics approval

Not applicable.

Author's contributions

The Dr xiao-quan Mao wrote the manuscript.

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Competing interests

The author declares that he has no competing interests.

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Availability of data and materials

Data sharing is not applicable to this article, because no datasets were generated or analyzed during the current study.

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