Case Report

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Fracture of Mandible During Tooth Extraction of Third Molar: A Case Report

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ABSTRACT

The surgical procedure for third molar extraction is one of the most frequent in dental practice, and therefore several accidents and complications may arise during surgery, including dental and bone fractures, bleeding, nerve injuries, and the most common of all, alveolitis. Mandibular fracture is a severe and less frequent complication, and the present study aims to report such an incident that occurred during the extraction of tooth 48, in which a mandibular fracture was diagnosed. The chosen treatment was intermaxillary fixation with Erich bars for 45 days, which proved to be effective and sufficient to resolve the problem.

Keywords

Mandibular fractures, Third molar surgery, Mandibular block.

Introduction

The surgical removal of third molars is very common in dental practice and generally occurs due to a high number of pathological conditions, infectious processes, caries, neurogenic pain, or orthodontic reasons. Complications may occur during third molar extraction, such as dental fracture, bleeding, alveolitis, injury to the inferior alveolar or lingual nerve, and fractures. Although rare, mandibular fracture may occur during or after the extraction of third molars and is often associated with poor surgical planning, excessive force, inadequate instruments, or improper technique [1-11].

However, there are situations that may increase the risk of mandibular fracture, even when all surgical precautions are taken. The multifactorial risk factors include age, sex, dentition, third molar position and angulation, severely atrophic mandibles, pathological lesions, or highly impacted teeth are more vulnerable, and minimal force may be enough to cause a fracture. Additionally, the patient's systemic condition plays a key role in assessing the

risk of trauma during surgery. Chronic or severe infections can cause bone demineralization; osteoporosis is also a predisposing factor that may explain mandibular fracture during third molar extraction, even when proper surgical planning has been followed [1-9].

Once the fracture is diagnosed, the patient must be informed, and reduction should take place as early as possible. After reduction, the fractured segments must be positioned to obtain functional occlusion with the maxillary arch. Maintenance of these segments can be achieved through various methods, such as rigid internal fixation or maxillomandibular fixation [1-9].

This case aims to report a case of mandibular fracture during the extraction of the lower right third molar, treated immediately through maxillomandibular fixation using Erich bars.

Case Report

Patient with 35-year-old white female, was referred for extraction of teeth 38 and 48 due to severe pain on the right side of the mandible. During anamnesis, the patient reported having previously undergone extraction of tooth 28 due to intense pain, and she reported being diabetic and hypertensive, both under medical management. Additionally, she reported being allergic to aspirin, as well as using contraceptives and insulin.

During the initial consultation, all pre and post-operative instructions were provided, analysis of the panoramic radiograph revealed tooth 38 classified as Winter Class II, position B, according to Pell and Gregory, and tooth 48 as Winter Class I, also in position B, with close relation to the inferior alveolar nerve (Figure 1).

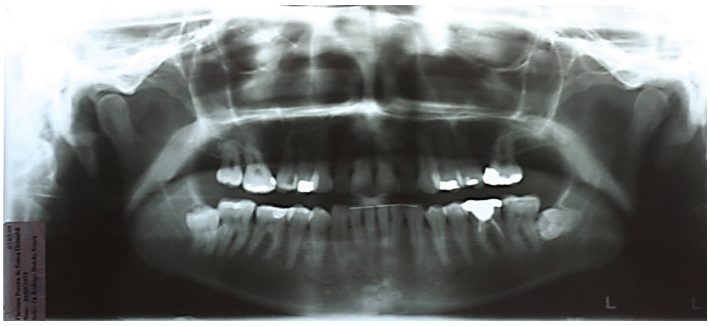

Figure 1: Initial panoramic radiograph showing teeth 38 and 48, Winter Class II and I respectively, both impacted and in position B, according to Pell and Gregory.

The surgery was performed under local anesthesia with nitrous oxide and during extraction of tooth 48, mandibular fracture occurred. While waiting for sterilization of the fracture management instruments, extraction of tooth 38 was performed. The fracture was then reduced, followed by maxillomandibular fixation using Erich bars and the patient was referred for panoramic radiographs, which confirmed the mandibular fracture and adequate positioning of the bone segments (Figure 2).

Figure 2: Post-extraction panoramic radiograph confirming the mandibular fracture, showing minimal bone displacement.

The event was communicated to the patient's endocrinologist, considering her diagnosis of Diabetes Mellitus, in ordeR to ensure an improved postoperative course. A referral to a nutritionist was also suggested for dietary guidance.

Initial medication prescribed included amoxicillin 500 mg + clavulanic acid 125 mg and the patient returned after two days reporting occasional pain and excellent hygiene. Tramadol hydrochloride 100 mg was added for pain control as needed. After 45 days, all wires were removed; prophylaxis was performed and cone-beam CT was requested (Figure 3). The patient showed reduced edema, no pain, and required insulin adjustment due to hypoglycemia.

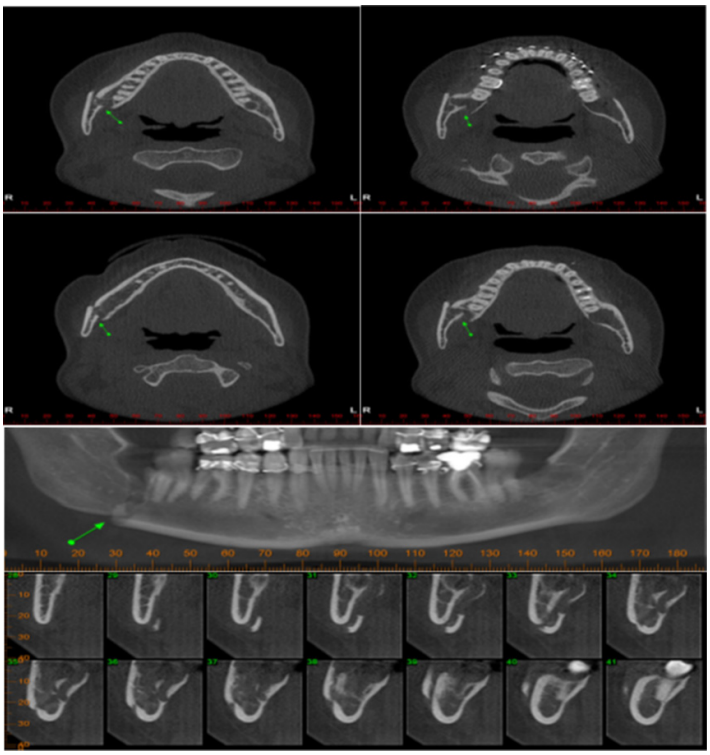

Figure 3: Cone-beam CT scan obtained 45 days after maxillomandibular fixation.

New dietary guidance was given and the patient returned after 75 days with a new panoramic radiograph (Figure 4), showing excellent postoperative recovery. 195 days later, an additional cone-beam CT was taken (Figure 5), with the patient reporting complete recovery of paresthesia. Mandibular mobility and sensitivity tests were negative.

Figure 4: Panoramic radiograph 75 days after the fracture, showing excellent recovery.

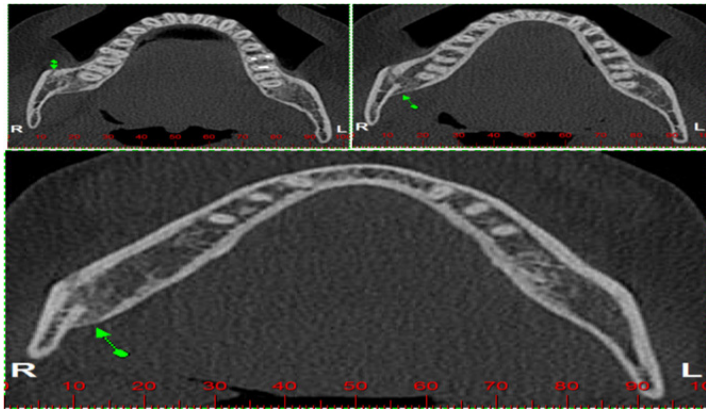

Figure 5: Cone-beam CT 195 days after the fracture, showing good bone healing.

Discussion

The patient was referred for third molar extraction and suffered an uncommon incident—mandibular fracture—which, once identified, was immediately treated through closed reduction and maxillomandibular fixation using Erich bars and steel wires [1-9].

The growing demand for third molar extractions is increasingly evident. Infectious processes, diseases, preventive reasons, and orthodontic needs are the main contributing factors [3,7,8]. Acknowledging the risk of complications, as stated by Mottl et al., all precautions were followed, including proper planning and choosing the most appropriate technique essential factors for success [3,7].

Although preoperative radiographs showed no pathological or infectious lesion in the mandibular region, authors such as Silva et al. associate fractures with preexisting factors or biomechanical characteristics of the mandible, such as bone density, mass, and architecture. The complication may also be related to the patient's systemic conditions [6,7,9].

Although oral and maxillofacial surgery has other treatment options for mandibular fracture, such as open reduction maxillomandibular fixation with Erich bars was chosen to restore bone structure and functional occlusion without the need for a second surgery [10].

There is ongoing debate regarding the best treatment for mandibular fractures. Most authors debate the best treatment method for mandibular fractures. Depending on how the fracture occurred, treatment can be done in several ways, as in the case of Maisa et al., where surgical plates were used to stabilize the fracture, which allows for more precise reduction, increased stability, and immediate restoration of mandibular function, or as shown in the review by Mendonça et al., where maxillomandibular fixation can be used, as reported in the case above [3,5,11].

Reasons for choosing this conservative treatment include the absence of segment deviation, which supports the indication of closed reduction, as reported by Mendonça et al., who highlights its simplicity, closed manipulation, and lower infection risk [10,11].

Although advantageous, this technique generally requires a hospital environment and general anesthesia. The authors also describe the conservative method used in this case as effective in restoring mandibular continuity through proper reduction, immobilization, and stabilization—allowing osteogenic cells from bone marrow and periosteum to rebuild the fractured area [8,9,10].

Final Considerations

Treatment should always aim to restore masticatory function by reestablishing functional occlusion and mandibular continuity. The presented case involved a mandibular fracture during extraction of the lower right third molar, immediately treated with intermaxillary fixation using Erich bars. The conservative treatment was effective and safe, ensuring proper stabilization of the fractured area and restoration of functional occlusion.

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