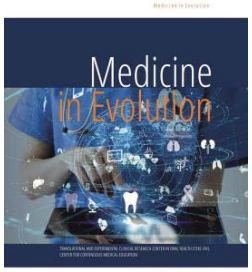
Fracture of the Angle of the Mandible. Case Report



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Abstract

One of the most frequently fractured site of the mandible is the angle. The most common cause of mandibular angle fractures are:accidents or trauma involving a blow to the face.This may be the result of a motor vehicle accident, industrial accident, recreational or sports injury, battle grounds or iatrogenic injury.Patients who are referred to the emergency room with facial trauma need a rigorous intraoral and extraoral examination centering the head and neck region.Computed tomography with 3D reconstruction is an essential tool for precise diagnostics.After the correct diagnosis is confirmed the physician will evolve the correct treatment plan.

Keywords: Mandible fracture, trauma, angle fracture, fracture of the angle of mandible

INTRODUCTION

One of the most common fractures is the mandibular angle fracture which represents approximately 20%-30% of all mandibular fractures [1]. Most angle fractures are simple or complex and involve the terminal molar. The presence of the impacted third molar may be considered a weak point. According to Moore [2], the change in the direction of the bone where the horizontal body of the mandible meets the vertical ramus, is also considered a weak point and multiplies the possibility to fracture. Mandibular fractures are typically result of trauma. A fall directly onto the chin or a an assault, a direct hit a punch from the side. In rare cases mandibular fracture can occur in pathological bone and may refer to osteonecrosis or tumors. The severity of the force, the direction and the impact influence fracture patterns [3]. Mandible fracture causes vary by the time period and the region. Assaults, road traffic accidents, battle grounds, iatrogenic complications of third molar removal may be considered principal causes [4,5]. Symptoms of mandibular fractures include pain, swelling, malocclusion, lower lip paesthesia, loose teeth crepitation while performing palpation [6]. Angle fractures with displaced fragments and diastasis can rarely be reduced only by maxillomandibular fixation alone [7-8]. Open reduction with internal fixation, osteosynthesis is the therapy of choice that should be performed.

MATERIAL AND METHODS

We present the case of an 18-year-old patient with a mandible fracture of the angle with post-traumatic malocclusion, focal swelling and tenderness over a segment of the mandible. Other symptoms included trismus, anesthesia in the left distribution of the inferior alveolar and mental nerve. Cause of the fracture was an assault at the club. Routine blood investigations were carried out and all the values were in normal limit. The computed tomography confirmed the angle fracture (Figure 1).

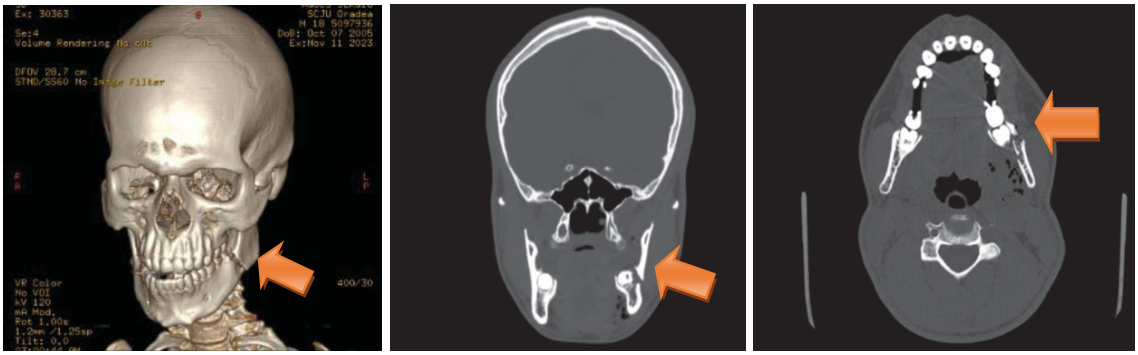

Figure 1. Fracture of the angle of mandible with diastasis, 3D reconstruction, coronal and axial

Discontinuity of the angle of the mandible can be seen. Antibiotic and antiinflamatory therapy was started. The first step of the treatment was the fixation of the maxillary and the mandible with Erich arch bars and interdental wiring (Figure 2). The maxillo-mandibular fixation (MMF) was performed with guiding elastics. The second step of the treatment was the opened reduction with internal fixation under general anesthesia with nasal intubation. Two titan plates with eight screws were placed with optimal reduction (Figures 3, 4).

Figure 2. Erich arch bars with fixation of the occlusion

Figure 3. Exposure of the fracture

Figure 4. Bone plating

RESULTS

Evolution of the patient was favorable, he respected the indications but the compliance was a little bit difficult because of the age. The parents were compliant and helped a lot in the positive outcome of this case. Patient had a good healing. Pain and discomfort after the procedure were managed with medication. Mentally he was optimistic and understood the need of the MMF (maxilla-mandibular fixation) which in this case was performed with guiding elastics for three weeks. Although there are hazards when using elastics for MMF in this case this was the best option because the patient couldn't withstand the rigid MMF. Postoperative x-rays are taken within the first days after surgery. Follow-up x-rays are taken after 3-4 weeks. Patient was examined approximately 1 time per week postoperatively to check the stability of the occlusion, to check for infection of the surgical wound and for replacement of the intermaxillary elastics (Figure 5). During each visit, we evaluated the patient's ability to perform oral hygiene. Patient tolerated quite well the liquid diet.

Figure 5. Orthopantomography 3 months after opened reduction with internal fixation with two plates and eight screws

DISCUSSIONS

The goal of fracture management is to restore occlusion, mechanical strength of the fractured area, and to achieve maximum normal masticatory muscle function. Integration of the fracture is one of the main targets for successful treatment other than occlusion. Although there are many classification schemes for the oral and maxillofacial trauma in the literature each case is considered particular and there isn't a globally accepted pattern between practitioners.Our department is following the AO surgery reference for the field of oral and maxillofacial trauma.The AO (CMF) Craniomaxillofacial is a worldwide network of clinicians from the field of oral and maxillofacial surgery, plastic surgery, ENT head and neck surgery ophtalmology and neurosurgery.The section covers the following topics: trauma, sequela, orthognatic, reconstruction and congenital deformities.The mandible trauma classification : parasymphysis and symphysis simple and complex fracture;body of mandible simple and complex fracture; angle of mandible simple and complex ,ramus and condyle fracture. The fracture of the angle of the mandible is influenced by the forces of the muscles of mastication. [2,6,9]. Regarding the presence of the third molar in the line of the mandibular fracture. Approximately 50% of fractures of the mandible occur in teeth bearing area and whether teeth situated in the line of fracture should be extracted or retained has always been a subject of heated debate [10]. Consistent extraction of teeth in the line of mandibular fracture has no scientific basis and has distinct disadvantages. Extraction of tooth entails further trauma to bone tissue and also presents technical difficulties when the fragments are highly mobile. Extraction of the tooth also increases the risk of the contamination of the fracture through the empty alveolus, which may sometimes be difficult to suture [11,12]. Our department preffers to wait. We consider the extraction of the third molar in the line of the fracture only if the tooth is symptomatic.

CONCLUSIONS

Mandibular angle fractures are common fractures in the oral and maxillofacial area but it can sometimes represent a provocation for the surgeons.Depending on the complexity of the fracture the key to success is proper diagnosis,fracture simplification with adequate three-dimensional fragment reduction and proper alignment of the alveolar segments to restore preoperative occlusion (habitual occlusion).Complete history regarding the events

that lead to the trauma along with a rigurous intraoral and extraoral examination of the head and neck region together with proper radiographic evaluation, the gold standard, computed tomography with 3D reconstruction are the main elements in the diagnosis and treatment plan of these fractures.A distinctiveness of the angle fractures is the action of the muscles of mastication which may mobilize the bone fragments.The displaced fragments usually require open treatment with internal fixation.Whether the physician decides to use a single plate at the linea obliqua (Champy's principle), two plates with transbuccal trocar instrumentation or a large reconstruction plate for comminuted fractures, the goal is to achieve proper fixation of the mandible and preoperative occlusion.

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