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Case report

Non-surgical management of bilateral mandibular condyle fracture: Six-year follow-up. A case report

Paulo Domingos Ribeiro-Junior[a], *Luis Eduardo Marques Padovan*[b], *Nataira Regina Momesso*[a], *Gabriel Lucio Calazans Duarte*[a,*], *Ana Carolina Ficho*[a]

[a] *Oral and Maxillofacial Surgery and Traumatology, University of Sagrado Coração, Bauru, SP, Brazil.*
[b] *Stricto Sensu Post-graduate Program in Dentistry with Concentration Area Implantology, Latin American Institute for Research and Dental Education (ILAPEO), Curitiba, PR, Brazil*

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ABSTRACT

The mandibular condyle is the area most frequently affected by mandibular fractures. These fractures may be treated non-surgically, with closed reduction, or with open reduction and fixation with miniplates and screws. This study reports the treatment selected for a patient affected by three mandibular fractures: a symphyseal fracture and two bilateral subcondylar fractures after facial trauma. The mandibular symphyseal fracture was treated with open reduction and internal fixation. The subcondylar fractures were treated non-surgically. (Rev Port Estomatol Med Dent Cir Maxilofac. 2018;59(1):44-48)

* Corresponding author.
E-mail address: gabriel7duarte@gmail.com (Gabriel Lucio Calazans Duarte).
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Tratamento não-cirúrgico de fratura bilateral de côndilo mandibular: Seis anos de acompanhamento

Palavras-chave:
Tratamento conservador
Côndilo mandibular
Fratura mandibular

RESUMO

O côndilo mandibular é a área mais frequentemente afetada em fraturas mandibulares. O tratamento destas fraturas pode ser não cirúrgico, através da redução fechada, ou por redução aberta e fixação com mini-placas e parafusos. Este estudo relata o tratamento selecionado para uma paciente com três fraturas mandibulares, sendo uma fratura em região de sínfise mandibular e as outras fraturas nas regiões subcondilares bilateralmente após trauma facial. A fratura de sínfise foi tratada com redução aberta e osteossíntese. Já as fraturas subcondilares foram tratadas pelo método não-cirúrgico. (Rev Port Estomatol Med Dent Cir Maxilofac. 2018;59(1):44-48)

Introduction

The mandibular condyle (MC) is the area most frequently affected by mandibular fractures.[1] The most common etiologies of this type of fracture are interpersonal violence, accidents with motor vehicles and falls. Frequently, one of the most affected bones in facial trauma is the mandible, and 25-40% of mandibular fractures involve the condyle.[2]

Malocclusion, open bite, swelling, tenderness over the joint, loss of mandibular function, deviation of the chin, crepitus and laceration of the skin of the chin are clinical signs of this type of fracture.[3]

The treatment of mandibular condylar fractures depends on their extension, which may be unilateral or bilateral, the level of the fracture (condylar head, condylar neck or subcondylar fractures) and the degree of displacement[3]. The treatment of these fractures may be conservative, with closed reduction, or with open reduction and fixation with miniplates and screws. Some complications may occur after open reduction, such as paresthesia or paralysis of the facial nerve, infections, dysfunction of the auriculotemporal nerve, Frey syndrome and unsightly scars.[4] On the other hand, the conservative or non-surgical treatment usually does not lead to such complications and has been effectively performed with good functional and esthetic outcomes.[5]

The aim of this study is to report the treatment selected for a patient affected by three mandibular fractures: two bilateral subcondylar fractures and a symphyseal fracture.

Case Report

The patient was a victim of a motorcycle accident and presented with polytrauma affecting the face. Clinical examination revealed a contused lacerated wound on the chin area, bilateral preauricular edema, bone crepitation, and preservation of mandibular movements yet limited by pain. Image exams exhibited a mandibular fracture on the chin area, a subcondylar fracture on the right side and a sagittal fracture of the condyle and condylar process on the left side, both medially displaced (Figures 1 and 2).

Initially, the symphyseal fracture was temporarily stabilized by tooth synthesis. After five days, transoperative intermaxillary fixation (IMF) and surgical reduction and fixation of the symphyseal fracture were performed with miniplates and

Figure 1. Panoramic radiograph exhibiting mandibular symphyseal fracture and bilateral mandibular condyle fracture.

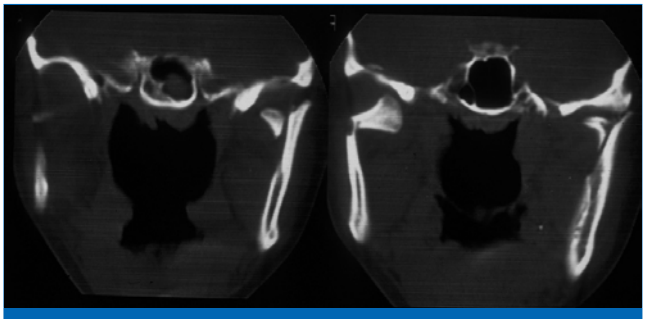

Figure 2. Coronal computerized tomography demonstrating a subcondylar fracture on the right side with a 90° displacement in the medial direction and a sagittal fracture of the condyle and condylar process on the left side, in the medial direction.

screws of the 2.0-mm system by intraoral access; the bilateral subcondylar fractures were conservatively treated.

The patient was kept without IMF for 24 hours. After this period wearing the orthodontic appliance and tooth syntheses, two rubber appliances with nearly 5-mm height were placed on the posterior occlusal region bilaterally, and IMF was performed with elastics involving primarily the anterior teeth. This fixation associated with posterior support was kept for two days.

After this period, the patient returned to the dentist's office and the posterior support was removed. The intermaxillary fixation with elastics was kept for seven days further.

After removal of the intermaxillary fixation, the patient was referred to postoperative physiotherapy, including opening, bilateral laterality and protrusion exercises, of which the last two were performed with the help of manual force. The number of repetitions of the exercises was 40 times for opening, 20 times for laterality for each side and 20 times for protrusion. Physiotherapy was performed for 90 days.

The patient presented satisfactory postoperative evolution. A new CT scan obtained at 13 months postoperatively revealed remodeling of the mandibular condyles to reach the ideal position in the mandibular fossa (Figure 3). At the six-year follow-up, the patient did not report symptomatology, presented 47 mm of mouth opening and preservation of laterality and protrusion movements (Figures 4, 5, 6 and 7).

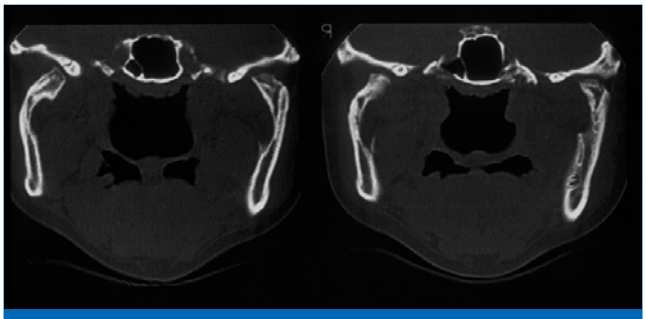

Figure 3. Process of the bilateral bone remodeling on the mandibular condyle region 13 months after treatment.

Figure 4. At the six-year follow-up, the patient did not report symptomatology and presented 47 mm of mouth opening.

Figure 5. At the six-year follow-up, the patient did not report symptomatology and preserved the protrusion movement.

Figure 6. At the six-year follow-up, preservation of the laterality movements to the right.

Figure 7. At the six-year follow-up, preservation of the laterality movements to the left.

Discussion

The treatment options for MC fractures are quite controversial in the literature. It is believed that the particularities and functional and aesthetic characteristics of each case should be evaluated before the treatment is selected. The procedures used during the closed treatment of condylar fractures are not adequately described in the literature. There is no consensus when it comes to indications, treatment protocols, and lengths of treatment.[6] Conservative treatment is profitable and scientifically grounded. It may be performed using intermaxillary fixation modalities (arch bars, interdental wirings or orthodontic appliance).[7]

Several studies have grouped precise clinical indications for the surgical management of MC fractures. An author reported two clinical indications for open treatment, namely condylar displacement laterally or superiorly to the zygomatic arch and condylar intrusion into the cranial fossa.[8,13]

The authors of a study compared the mandibular and facial symmetry of 146 patients with condylar fractures after undergoing conservative treatment with reduction and surgical fixation of the fracture. They concluded that patients treated with the conservative approach developed asymmetries characterized by a reduction in posterior facial height on the affected side, which may result from an attempt to reestablish the new position of the temporomandibular joint. However, some patients did not notice this asymmetry.[9]

In another study with 20 patients with subcondylar fractures, 10 were submitted to conservative treatment and 10 to the surgical approach. After a six-month follow-up, the authors did not observe statistically significant differences between groups regarding mouth opening, laterality and protrusion movements, deviation in mouth opening and occlusion[5], and pain in the TMJ.[10] These results are consistent with the present case report.

A study that compared performing the open reduction with internal fixation with the closed reduction for the management of a unilateral displaced subcondylar and condylar neck fracture in 50 patients found no clinical differences in terms of functional movements and pain in the temporomandibular joints.[3]

The conservative treatment of MC fractures may involve absolute rest of the joint by following a liquid diet, and may be performed by intermaxillary fixation for 7 to 14 days or by intermaxillary fixation with posterior support for 12 to 48 hours followed by conventional intermaxillary fixation.[11]

Researchers observed some differences, even if statistically irrelevant, between the surgical and conservative treatments when evaluating mouth opening. These differences were probably due to the surgical trauma, which may be an additional factor for mouth opening restriction.[12]

In a comparative study of treatments with open and closed reduction with a follow-up period of six months, the angulation and height of the mandibular branch improved in both groups. This result was probably due to the influence of the functional forces, and no statistical differences with respect to the angulation and height of the mandibular branch were found. Occlusal alterations can be recovered if appropriate care is taken.[10]

The treatment option for condylar fractures should allow the least morbidity with stable and predictable functional and esthetic outcomes. The clinical evaluation of mandibular movements and type of displacement are the most important parameters for this decision. During initial planning for conservative treatment, if the occlusion between the arches is not ideal, the most indicated treatment would be an open reduction with internal fixation. In the present case report, despite the displacement observed in image exams, this displacement occurred in a medial direction, and the clinical signs of the patient did not allow a surgical management.

Conclusion

Based on the present case report, it can be concluded that non-surgical treatment may be adequate even in cases of severe bone displacement of MC fractures, especially if the mandibular function is preserved.

Ethical disclosures

Protection of human and animal subjects. The authors declare that no experiments were performed on humans or animals for this study.

Confidentiality of data. The authors declare that no patient data appear in this article.

Right to privacy and informed consent. The authors declare that no patient data appear in this article

Conflicts of interest

The authors have no conflicts of interest to declare.

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