

# Simple Closed Reduction as an Emergency Treatment for Bilateral Condylar Fracture: A Case Report

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**Abstract:** ***Introduction:** Condylar fractures can cause clinical symptoms of facial asymmetry and difficulty opening or closing the mouth. Overall mandibular movements are usually more restricted, if the condyle is displaced bilaterally, shortening of ramus occurs resulting in derangement of occlusion. Overriding of the fractured segments result in anterior open bite. **Case Report:** A 24years old patient came to Padjadjaran university dental hospital emergency department presented with complaints of unable to open his mouth after falling from a motorcycle accident. On clinical examination, it was found that there was limited mandibular movement with open bite occlusion. Schedel AP lateral and Panoramic X - ray examination showed bone discontinuities in the right mandibular area and the left and right mandibular condyles. The patient was diagnosed with the patient was diagnosed with bilateral condyle fracture, the right body of mandibular fracture, dento alveolar fracture of tooth 34 with 1/3 of the cervical crown, and post - suturing at the chin region. **Result:** In this case, the patient was successfully treated until the initial treatment with a closed reduction technique and showed good results. At forty - days control, the opening of the patient's mouth was  $\pm 3$  cm, and the occlusion was normal. **Discussion:** The late management in mandibular fracture can cause complications, such as ankylosis. If it was not treated immediately surgery or open reduction is the best choice of treatment when the long - standing fracture has persisted, and ankylosis occurred. **Conclusion:** The management of mandibular condyle fracture must be treated immediately and based on the accurate diagnosis, it can reduce and eliminate the possible complications.*

**Keywords:** Emergency treatment, bilateral condyle fracture, closed reduction

## 1. Introduction

The fracture can be defined as the loss of discontinuity of the bone. Fractures in the facial area are one of the most frequently injured fractures in other areas of the body; on the other hand, mandibular fractures account for 23 - 97% of all facial fractures. The mandibular is a bone that moves from the facial skeleton, and there has been a significant increase in the number of cases in recent years.<sup>1</sup> Fracture of the mandibular is the most common fracture after nasal fractures.<sup>2</sup>

Classification of mandibular fractures based on their anatomical location can occur in the condyle, coronoid, ramus, mandibular angle, mandibular body, symphysis, parasymphysis, and dentoalveolar. Fractures of the mandibular condyle occur in about 10 - 40% of the mandibular area.<sup>3</sup> The temporomandibular joint is a complex anatomical structure associated with mastication, swallowing, speech, and head posture. This joint consists of the condyle process, a moving part that articulates with articular eminence that forms the anterior aspect of the glenoid fossa. Among these bone structures are the articular meniscus (articular disc) formed from avascular, non - innervation fibrous connective tissue.<sup>4</sup>

Fractures of the condyle are associated with pain, reduced mouth opening, and mandibular deviation. With suboptimal treatment, temporomandibular joint (TMJ) ankylosis and internal disturbances may occur.<sup>5</sup> In chronic and recurrent dislocations, different treatment options may be preferred,

namely conservative non - surgical treatment and indirect or direct surgical treatment. Gottlieb (1952) states that only 3 of the 24 cases were successfully managed by manual reduction. Adekeye et al. made a manual reduction in 4 of 24 patients. Despite these efforts, most cases are responsive to surgical treatment procedures (open reduction). This can lead to the onset of prolonged chronic dislocation. Surgeons have limited experience due to the drawback of this condition, and there was no essential guide to evaluating or carrying out the treatment until Ruttan et al. and Caminiti later did it. The goals of surgical treatment should include the following, reduction, functionality - normal occlusion, minimizing morbidity and sequelae (risk of ankylosis), and zero recurrences. The following procedure is an indirect open procedure that can be done by using a bone hook to apply traction through the sigmoid notch or by traction using a wire through a hole drilled at the mandible angle.<sup>6</sup>

The longer the dislocation occurs, the more difficult it is to reduce the condyle. Although there is limited experience with long - term dislocation (more than three months) treatment, the literature suggests open reduction as the best treatment for dislocation for 4 - 12 weeks. The literature suggests that surgical procedures may be needed to correct dislocations that have occurred for more than three months. To restore TMJ function and anatomy, the number of joint substitutions must be considered when treatment has failed in a chronic, prolonged case, especially in cases related to joint dysfunction disease. This is the most critical stage of treatment. Pseudo - joints will form in cases with dislocations that persist for a long time, and the patient may

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have adequate functional movements. As a result, some patients often refuse further intervention, causing the articular fossa to be filled with fibrous tissue, eventually preventing the condyle from being in its normal position.<sup>7,8</sup>

The TMJ dislocation treatment is largely divided into non-surgical and surgical methods. Non-surgical methods include TMJ arthroplasty, physical therapy, occlusal therapy, therapy using occlusion stabilization devices, drug therapy, intermaxillary fixation or sclerotherapy. The surgical method must be performed if non-surgical therapy fails or is recurrent or chronic. According to Speissl and Schroll, condyle fractures are divided into several types based on their fracture lines: (i) neck condyle fractures without deviation; (II) low condyle neck fractures with deviation; (III) high condyle neck fractures with deviation; (IV) low condyle neck fracture with dislocation; (V) high condyle neck fracture with dislocation; (VI) intracapsular condyle head fracture.<sup>9, 10</sup>

This case report describes the emergency management of condylar fractures in the Emergency Unit of the Padjadjaran University Dental Hospital.

## 2. Case Report

A 24-year-old patient came to Padjadjaran university dental hospital emergency department complaining of being unable to open his mouth. Forty-eight hours before admission, when the patient was riding a motorcycle in the Nagreg area at medium speed, suddenly, a motorbike from the opposite direction hit the patient. Hence, the patient lost his balance and fell with the mechanism, his face hitting the asphalt first. Extra oral examination showed swelling and edema at the bilateral mandibular region. Intraoral examination showed limited movement of the mandibular. (Figures 1 and 2.)



Figure 1: Clinical examination there was extra oral swelling on the both side of face.



Figure 2: Intraoral examination showed there was slightly open bite anterior (a), post situational suturing from previous private clinic (b).

Schedel AP lateral and Panoramic X-ray examination showed bone discontinuities in the right mandibular area and the left and right mandibular condyles. (Figure 3)

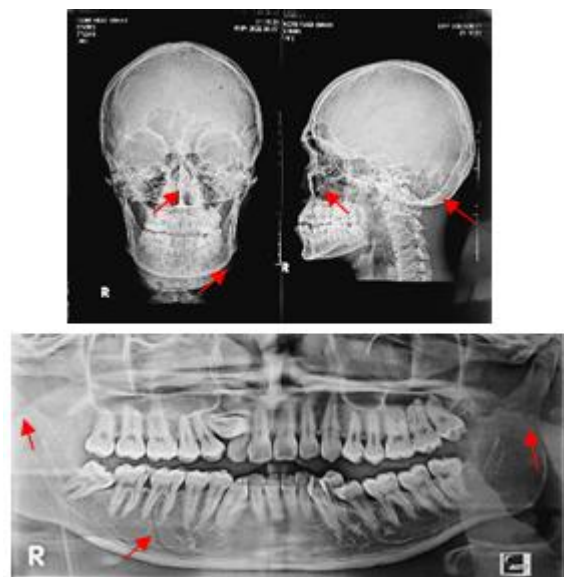


Figure 3: AP Lateral and Panoramic X-ray

The patient was diagnosed with bilateral condyle fracture, the right body of mandibular fracture, dentoalveolar fracture of tooth 34 with 1/3 of the cervical crown, and post-suturing at the chin region. Emergency management was performed with interdental wiring (IDW) on the upper jaw from tooth 16 to tooth 26 and on the lower jaw from tooth 36 to tooth 46. (Figure 4). After 40 days, an evaluation was performed by measuring the opening of the mouth opening to evaluate the success rate of the treatment. (Figure 5)



Figure 4: Post treatment showed improvement in patient's occlusion.



Figure 5: Extra oral and intraoral clinical photos after 40 days with measuring opening of the mouth ( $\pm 3$  cm).

### 3. Discussion

Condylar fracture cases are pretty common in the maxillofacial area. Lohita et al. said the incidence ranged from 20 – 33% of the incidence of mandibular fractures, while according to Sriraam et al. occurs in 10 - 40% of the total incidence of mandibular fractures.<sup>1</sup> In this case, the patient was 24 years old, and his age was still categorized as an adult, according to WHO. This is by Sriraam et al. 's statement that condylar fractures have a high incidence in adults, namely 40 - 67% of cases compared to children patient.<sup>1</sup>

Condylar fractures usually occur due to an indirect mechanism, preceded by trauma to the mandibular. This is supported by Choi et al., which stated that this fracture was caused by an indirect force sent to the head of the mandibular condyle. The most common external causative factor is physical trauma, car accidents, violence, industrial hazards, falls, sports, and gunshot wounds.<sup>9</sup> In this patient, the trauma was caused by a collision caused by a traffic accident which caused the patient's face to hit the asphalt and caused a fracture or bilateral fracture in the patient's condyle area.

According to Prickell et al., condylar fractures usually present with preauricular pain, malocclusion, or deviation of the chin with the opening and closing of the mandibular. These fractures are often associated with symphysis/parasymphysis/ body of mandibular fractures.<sup>10</sup> In patients with bilateral condylar fractures, premature contact of the posterior teeth causes the classic anterior open - bite deformity. The patient had facial deviation and asymmetry and was diagnosed with bilateral condylar fractures accompanied by a body of mandibular fracture.<sup>10</sup> This is consistent with the clinical signs found in this patient.

Wound closure at the extraoral areas to control bleeding. According to Lim and Sirichai, laceration closure is usually done after splinting, and fixation is complete. The exception is in the case of large lip lacerations with associated bleeding, where some initial sutures to manage hemostasis can be placed as an initial step. The final sutures can be completed after the fracture's reduction and fixation.<sup>3</sup> For this patient, suturing was already performed at the previous clinic. IDW was then performed on the maxilla from tooth 16 to tooth 26 and on the lower jaw from tooth 36 to tooth 46 using an arch bar. After the procedure, the patient was instructed to undergo a soft diet, giving Cefadroxil 3 x 500 mg PO, Ibuprofen 3 x 400 mg PO, and Omeprazole capsules 2 x 40 mg PO with outpatient treatment.

Treatment for mandibular fractures is divided into three stages: emergency (preliminary), definitive, and rehabilitative care. Emergency treatment is performed to treat things more dangerous than the fracture, including airway obstruction, bleeding, or brain injury. Definitive treatment is carried out after emergency care has been handled. Definitive treatment is carried out by first assessing several things, such as choosing the type of fracture treatment, fracture location, fracture type, the position of the fragments and their relationship to each other, number of remaining teeth, occlusion load, muscle condition of the

fracture fragment, duration of fracture and consideration of age and general condition of the patient.<sup>12, 13</sup> Then, the definitive treatment is determined as surgical or non - surgical intervention. Rehabilitative treatment was then considered after definitive treatment was completed.<sup>14</sup> In this patient, the emergency procedure was successfully done, and the patient showed positive results despite an anterior open bite with difficulty opening the mouth. A follow - up was performed on the 40th postoperative day.

The late management of condylar fracture could cause complications, such as ankylosis if it is not treated immediately. Surgery or open reduction is the best choice of treatment when the long - standing fracture has persisted and ankylosis occurred.<sup>14, 15</sup> Treatment of condyle and body fractures mandible with closed reduction using easy arch bar, eyelet wires or splint conducted. Regular monitoring to see masticatory function instability, deviation at the time of mouth opening, increased pain, and clinical and radiographic evaluation.<sup>16</sup> In this patient, management of bilateral condylar fractures accompanied by fracture of the body of the mandible with closed reduction with functional therapy is a relatively safe treatment. No injury of nerves and blood vessels occurs during the treatment, and no postoperative complications such as infection or scar occur.<sup>17, 18, 19, 20</sup>

The overall prognosis for patients with mandibular fractures is satisfactory, especially without other associated injuries. While the perioperative complication rate in patients undergoing open reduction internal fixation is relatively high due to the complexity of the repair (~20%), the long - term outcome is good, with only 7% of patients reporting long - term complications, such as abscess, malunion/nonunion, and hardware exposure.<sup>18, 19, 20</sup>

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