

# Treatment of Neglected Fracture of the Bilateral Mandibular Body and Left Condyle: A Case Report

Carel Vere Mahardo<sup>1\*</sup>, Andrianus Sudarmono<sup>2</sup>, Endang Sjamsudin<sup>3</sup>, Asri Arumsari<sup>4</sup>

<sup>1</sup>Resident of Oral and Maxillofacial Surgery, Faculty of Dentistry, Universitas Padjadjaran, Bandung, Indonesia  
Corresponding Author Email: [drg.carelveremahardo@gmail.com](mailto:drg.carelveremahardo@gmail.com)

<sup>2</sup>Resident of Oral and Maxillofacial Surgery, Faculty of Dentistry, Universitas Padjadjaran, Bandung, Indonesia

<sup>3</sup>Staff of Department of Oral and Maxillofacial Surgery, Faculty of Dentistry, Universitas Padjadjaran, Bandung, Indonesia  
E mail: [endang.sjamsudin@unpad.ac.id](mailto:endang.sjamsudin@unpad.ac.id)

<sup>4</sup>Staff of Department of Oral and Maxillofacial Surgery, Faculty of Dentistry, Universitas Padjadjaran /RSUP Dr. Hasan Sadikin, Bandung, Indonesia

**Abstract:** ***Introduction:** Maxillofacial fractures are injuries that are often followed by head injuries. The severity of maxillofacial fractures varies, with some involving a single bone and others involving a complex of several bones, depending on the degree of impact force to the facial area. Late and inappropriate management of maxillofacial trauma can cause defects that cause aesthetic and functional disturbances. Purpose This case report describes the management and discusses a neglected fracture of the bilateral mandibular body and condyle. **Case report:** A 16 - year - old male patient came to the emergency room of RSUP Dr. Hasan Sadikin Bandung, complaining of his jaw being unable to close tightly due to a motor accident two months before. Physical examination reveals facial asymmetry and malocclusion. The lateral AP skull radiographic examination and CT scan results showed a fracture line image of the bilateral mandibular bone corpus and the left condyle. The diagnosis, in this case, is a neglected fracture of the bilateral mandibular body and left condyle. The patient had refracturing of the mandibular corpus fracture and open reduction intermaxillary fixation (ORIF) as the final treatment. **Conclusion:** Neglected fracture of the bilateral mandibular body and left condyle with refractory and open reduction intermaxillary fixation (ORIF) and continued with masticatory muscle physiotherapy will result in optimal masticatory function and good aesthetic appearance.*

**Keywords:** Neglected fracture, Maxillofacial, mandibular body, condyle, erichbar

## 1. Introduction

Many patients seen in the emergency department have facial trauma. Maxillofacial trauma often causes injuries to soft tissue, teeth, and bony components, including the mandible, maxilla, zygoma, ethmoid, supraorbital, and naso - orbital complex. Facial fractures vary in severity, some involving one bone or several complex bones, depending on the degree of force on the face. Facial fractures can result in facial deformities and loss of facial function, which affect the patient's social life. In some patients, the main findings may be missed because of multiple trauma, the physician's inability to perform a thorough physical examination, the patient's unwillingness to cooperate, and severe facial swelling. This case can be a challenge for the trauma surgeon.<sup>1,2</sup>

Causes of maxillofacial trauma vary, including traffic accidents, physical violence, falls, sports, and firearms - related trauma. Trauma to the face often results in respiratory tract obstruction, bleeding, soft tissue injury, loss of support for bone fragments, and pain. The most common cause is traffic accidents. The use of head protection (helmets) in motorcycle accidents can prevent possible fractures and brain injuries due to accidents.<sup>3,4</sup>

Maxillofacial trauma that causes fractures to the facial bones needs to be treated immediately because it can cause functional and aesthetic disturbances. A neglected fracture is a discontinuity in the facial bone structure that is not treated

or treated correctly, resulting in a delay in treatment accompanied by injury to the surrounding tissue. Factors that may be involved in the neglected state are the completeness of hospital facilities, the remote location of the hospital, and the patient's refusal to seek treatment. Lack of awareness by hospital staff of maxillofacial trauma can lead to misdiagnosis during the initial evaluation, resulting in delays or inappropriate treatment of facial fractures. Complications arising from neglected maxillofacial fractures include chronic pain, sensory abnormalities, facial deformities, trismus, malocclusion, dental and speech disabilities, and ophthalmological disabilities such as eye defects, vision loss, diplopia, and retrobulbar hematoma.<sup>3,5</sup> Purpose This case report describes the management and discusses a case of neglected fractures of bilateral mandibular bodies and condyles resulting from a motorcycle accident.

## 2. Case Report

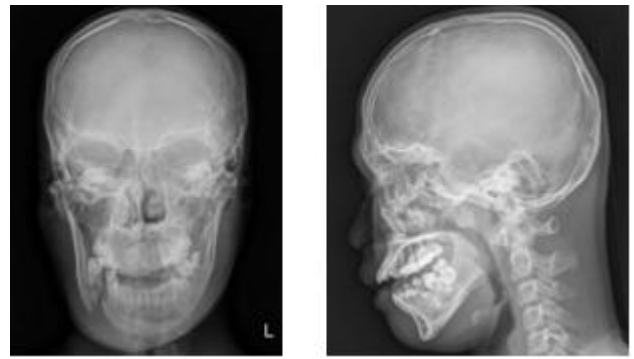
A 16 - year - old male patient with complaints of a fracture of the mandible About two months earlier, the patient was riding a motorcycle and was riding pillion in the Bekasi area when suddenly another motorbike rider appeared from the opposite direction and hit the patient's motorcycle, causing the patient to fall with the mechanism hitting his face on the asphalt first. The patient was taken to the Bekasi Cibitung Hospital and underwent an infusion, a panoramic X - ray, and a CT scan. After experiencing difficulty opening his mouth about a week after SMRS, the patient visited the

RSHS oral surgery polyclinic, where a blood lab examination was performed, and a chest photo was taken. Systemic disease history (-) Drug and food allergies in the past (-) History of regular medication use (-) History of operations (-) COVID vaccine history (plus) two doses.

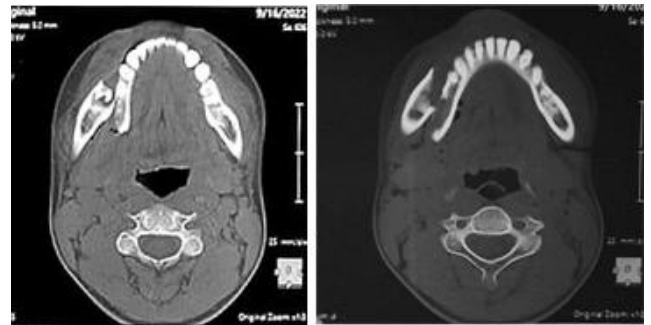
The extraoral clinical examination revealed an asymmetrical face, while the intraoral examination revealed an anterior open bite (Figure 1). Lateral AP skull radiographs and a 3D CT scan of the patient show bilaterally continuity in the mandibular ramus and discontinuity in the left condyle (Figs.2 and 3).



**Figure 1:** The patient's extraoral region has an asymmetrical face.



**Figure 2:** Skull AP Lateral radiographs show radiolucent images in the mandibular bone corpus bilaterally.



*korpustulang mandibula bilateral*



**Figure 3:** 3D CT - scan radiographic image of the patient, showing continuity in the bilateral mandibular ramus and discontinuity in the left condyle

The diagnosis, in this case, is a neglected fracture of the bilateral mandibular body and left condyle. The patient signs informed consent for treatment actions and publication of scientific activities. The treatment for this case is mandibular corpus fracture and ORIF. Prior to surgery, the maxillary and mandibular arch bars were wired (figure 4). The operation begins by performing general anesthesia on the patient first and then marking the operating area in the vestibule of 33–35 teeth regions. An incision is made using blade No.15 on the side that has been marked, and then the mucosal tissue is dissected. Intermaxillary fixation was performed to maintain bone stability, and then an incision was made in the vestibule of the teeth 42 - 45 regions.

Refracturing was carried out in the mandibular corpus region bilaterally using a chisel and mallet, and the callus was

removed using a curette. Internal fixation was carried out using a straight plate with six holes and screws with sizes of 8 mm and 11 mm on the mandibular corpus, and then suturing was carried out using silk thread to close the surgical area. (figure 5). Postoperatively, the patient was given ceftriaxone injections of 2 x 1 gram, ketorolac injections of 2 x 30 mg, omeprazole injections of 2 x 40 mg, and methylprednisolone injections of 3 x 125 mg for three days. On the first postoperative day, IMF Rubber was carried out, along with the installation of a periodontal pack in the postoperative area. On the second postoperative day, the IMF wire was placed. Patients were also given chloramphenicol zalf in the extraoral post - suturing area as a topical antibiotic to reduce exposure to microbial contaminants after surgical procedures.



: Installation of interdental wiring on the maxilla and mandible before surgery



Gambar 5: Intra operation



Gambar 6: Post operation day 1



Gambar 7: Post operation day 2



Gambar 8: Post operation day 30

In the control group, 30 days postoperatively, the patient had no complaints, the postoperative wound had healed, and the occlusion was intact (figure 8). The interdental wiring was then removed.

### 3. Discussion

Neglected maxillofacial fracture is defined as a discontinuity of the facial bone structure that is not treated or handled

properly, resulting in a delay in treatment, usually accompanied by injury to the surrounding tissue.1 Patients who experience maxillofacial fractures are often accompanied by head injuries, such as intracranial bleeding and skull base fractures, as well as decreased consciousness, which impacts damage to the central nervous system. This condition needs to be treated immediately to avoid complications in the form of infection, osteomyelitis, nonunion, malunion, wound dehiscence, and death.2' 3, 4

Several studies with large sample sizes have shown that delays in treating maxillofacial fractures as early as three days after the trauma lead to an increased post-operative infection rate. Delay in handling facial fractures causes complications as well as chronic pain, sensory abnormalities, facial defects, trismus, malocclusion, dental and speech defects, nonunion and malunion, malocclusion, impaired temporomandibular joint function, and eye defects such as eye defects, loss of vision, diplopia, and retrobulbar hematoma.<sup>4, 5, 6</sup>

The diagnosis of a neglected fracture of the bilateral mandibular corpus and the left condyle is established based on diagnostic examinations, namely evaluating the patient's occlusion, asking the patient whether the bite feels normal, and a radiological examination. Subjective reports of malocclusion by patients should be documented and compared with occlusion prior to the injury.<sup>3, 7</sup> A bimanual palpation of the fracture site is important to check the mobility of the fragments. Low mobility indicates a stable fracture that allows conservative management if there is no change in occlusion. Intraoral lacerations, soft tissue injuries, and hematomas at fracture sites are also important to observe because they can lead to an increased risk of infection.<sup>3, 8</sup> Radiographic assessment when examining patients with maxillofacial trauma is also important. CT radiographic retrieval has 100% sensitivity for diagnosing maxillofacial fractures.<sup>3, 9</sup> In this case, the results of a CT examination revealed a discontinuity in the bilateral mandibular ramus and a discontinuity in the left condyle, which confirmed the diagnosis in this patient.

Treatment of maxillofacial fractures requires an optimal environment for bone healing to occur, such as adequate blood supply, immobilization, and proper alignment of the fracture segments, so most fractures require reduction and fixation to allow primary or secondary bone healing.<sup>3, 4, 10</sup> Secondary bone healing occurs when the fractured bone segment is reassembled and stabilized by allowing micromotion without significant devascularization of the bone segment. Bone healing occurs through callus and ossification. This form of fixation can be done with intermaxillary or maxillomandibular fixation (IMF or MMF) with an Erich arch bar. Erich arch bars provide a much greater level of IMF/MMF stability, alignment, and control. The Erich arch bar itself has become the standard of care for IMF/MMF treatment because it can provide additional structure for fixative support besides the teeth.<sup>3, 10</sup>

Open reduction and internal fixation (ORIF) was chosen because the technique allows for direct visualization and reduction of fractured bone segments and restoration of occlusion before patient injury without maxillary and mandibular fixation. This allows for bone healing in less time, which can then restore jaw function more quickly.<sup>6, 10</sup> The ORIF maxillofacial technique was introduced in 1975. This technique is considered simple because it uses compression to create stability for fractured bone fragments. Restoring the anatomical position and supporting structures is key to fracture reduction. Anatomical reduction of thin bones should also be performed, especially those that form one of the walls of the orbit. Reduction anatomy can serve as a reference frame that guides the replacement of misaligned

bone fragments into a parallel position.<sup>2</sup> ORIF allows immediate reduction followed by rapid postoperative improvement of function.<sup>11</sup> Rapid recoveries of normal function tend to result in good bone remodeling to avoid further complications.<sup>11, 12</sup>

The operating area is then covered with a periodontal pack with the aim of creating a physical barrier at the surgical site to protect the wound from mechanical trauma and stabilize the surgical site during the healing process, thereby reducing patient pain.<sup>13</sup> Installing a periodontal pack also makes it possible to prevent post-operative hemorrhage and infection and can protect blood clots from force when speaking or chewing.<sup>13, 14</sup>

After surgery, the patient was also prescribed 2 x 1 gram of ceftriaxone injection, 2 x 30 mg of ketorolac injection, 2 x 40 mg of omeprazole injection, and 3 x 125 mg of methylprednisolone injection for three days. Ceftriaxone is given to reduce the risk of infection. Ketorolac is a non-steroidal anti-inflammatory drug that functions to reduce postoperative pain, while *Methylprednisolone* is prescribed to prevent inflammation.<sup>15</sup> Patients are given education about consuming a liquid diet and dental and oral health to be able to maintain oral hygiene during the healing period. The wound area was to be cleaned twice a day by spooling with 0.9% NaCl, according to the instructions. Patients are also given hyaluronic acid gel (HA) in the post-intraoral suturing area as supportive therapy to reduce postoperative pain, reduce infection, and improve healing.<sup>16</sup> HA is proven to stimulate fibroblast proliferation and collagen fiber deposition, which reduces the healing time and accelerates wound closure, especially in the late stages of wound healing.<sup>16</sup>

#### 4. Conclusion

Delayed treatment of fractures will lead to complications and difficulties in definitive treatment. Neglected fracture of the bilateral mandibular body and left condyle with refractory and open reduction intermaxillary fixation (ORIF) and continued masticatory muscle physiotherapy will result in optimal masticatory function and good aesthetic appearance.

#### References

- [1] Khairiza R, Setyarto MR. Neglected Fracture in Maxillofacial: Case Series. *J Plast Rekonstr.* 2020 Sep 30; 7 (2): 51–8.
- [2] Nurfuadah P, Sjamsudin E, Yuza AT, Adiantoro S, Arifin MZ. Management Of Multiple Maxillofacial Fracture With Mild Head Injury. *Int J Med Biomed Stud [Internet].* 2022 Jan 24 [cited 2023 Jan 21]; 6 (1). Available from: <https://ijmbs.info/index.php/ijmbs/article/view/2388>
- [3] Pickrell B, Serebrakian A, Maricevich R. Mandible Fractures. *Semin Plast Surg.* 2017 May 9; 31 (02): 100–7.
- [4] Silva JB, de Souza Batista Fr. Abordagem Intraoral Para As Fraturas De Mandíbula. *Revista Ibero-Americana de Humanidades, Ciências e Educação.* 2022 Oct 31; 8 (10): 1133 - 42.

- [5] Riswanda M, Priyanto W, Yuza AT, Putri FA. Surgical Management of 2/3 Facial Neglected Fracture: A Case Report. *Int. J. of Multidisciplinary and Current research.*2022 Mar; 10.
- [6] Jha SK, Dhamali D, Roy D, Chakroborty S. Mal - united Mandible fracture - a case report and literature review. *Online Journal of Otolaryngology.*2016; 6 (1).
- [7] Arai D, Yasue A, Horiuchi S, Tanaka E. A Multidisciplinary Approach to Malocclusion Caused by Facial Multiple Fracture. *Macan D, editor. Case Rep Dent.*2022 Mar 3; 2022: 1–8.
- [8] Romero H, Guifarro J, Díaz F, Umanzor V, Pineda M, Cruz C, et al. Management of Mandibular Fractures: Report of Three Cases. *Dent Res Manag.*2021 Apr 16; 17–22.
- [9] Sobrinho Sangalette B, Pavoni RF, da Silva Emídio T, Levatti T, Capelari M, Pastori CM, et al. Treatment of Complex Mandibular Body Fractures and Functional Reimplantation of the Maxillary Alveolar Fragment. *Case Rep Surg.*2020 Sep 26; 2020: 1–7.
- [10] Koshy JC, Feldman EM, Chike - Obi CJ, Bullocks JM. Pearls of Mandibular Trauma Management. *Semin Plast Surg.*2010 Nov; 24 (4): 357–74.
- [11] Higgs N, Jenkyn I, Singh RP. Management of mandibular fracture in a one - year - old child: A case report. *Adv Oral Maxillofac Surg.*2021 Jan; 1: 100023.
- [12] Schenkel JS, Obwegeser J, Zemmann W, Rostetter C, Tandon R, Metzler P. Outcome of Comminuted Mandibular Fracture Repair Using an Intraoral Approach for Osteosynthesis. *J Craniofac Surg.*2014 Nov; 25 (6): 2033–7.
- [13] Baghani Z, Kadkhodazadeh M. Periodontal Dressing: A Review Article. *J Dent Res Dent Clin Dent Prospects.*2013; 7 (4): 183–91.
- [14] Soheilifar S, Bidgoli M, Faradmal J, Soheilifar S. Effect of Periodontal Dressing on Wound Healing and Patient Satisfaction Following Periodontal Flap Surgery. *J Dent Tehran Iran.*2015 Feb; 12 (2): 151–6.
- [15] Payami A, Montazem AH. Management of Penetrating Maxillofacial Trauma as a Result of Industrial Accident: Report of an Unusual Case. *Craniofacial Trauma Reconstr Open.*2020 Jan 1; 5: 247275122094941.
- [16] Effect of 0.2% Hyaluronic Acid Gel Topical Application on Healing Period of Oroantral Fistula Treated with Buccal Flap | Open Access Macedonian Journal of Medical Sciences.2020 Dec 1 [cited 2023 Jan 21]; Available from: <https://oamjms.eu/index.php/mjms/article/view/5157>