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A case report

Condylectomy for Treatment of Neglected Bilateral Mandibular Condyle Fracture : A Case Report

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Abstract:
Fractures of the mandibular condyle have been estimated up to 27–50% of all mandibular fractures. Although there is a growing trend towards internal fixation over closed reduction, the evidence is still limited. Treatment depends on the type and location of the fracture, associated facial injuries, and concomitant diseases. Oral surgeon is faced with decision of conservative treatment, such as removal of the fragments by condylectomy. The principle of condylectomy is the surgically removing the fractured of condyle as it was obstructing mandibular function Purpose: Interdisciplinary care is needed to complement surgical treatment so that the patient's condition can return to normal both in terms of function and esthetics. The following case report aims to explain the management plan for bilateral mandibular condyle fractures. Case(s): A 17 years old male patient with complaints his mouth couldn't close tightly and limited mouth opening. He fell from a motorcycle about a month before. There was anterior openbite, radiographic examination showed discontinuity in bilateral mandibular head condyle. He has been diagnosed with Neglected fracture at the bilateral condyle region, treated with bilateral condylectomy with the result posterior intact occlusion and wider mouth opening Case Management: The patient performed bilateral condylectomy under general anesthesia. Conclusion: The management of bilateral mandibular condyle fractures with condylectomy in this case was chosen because the condyle fracture leads medially which causes a limited mouth opening, and this treatment resulted in an intact occlusion and mouth opening becomes wider.

Keywords: Bilateral condyle fracture, Neglected fracture, Condylectomy

Introduction

One of the more prevalent and often occurring diseases in the oral and maxillofacial region is facial trauma, and considerable percentages of these injuries have craniomaxillofacial injuries additionally. Although maxillofacial injuries have a common treatment strategy with other systemic injuries, they also have

distinctive features, treatment options, and anatomically distinct facial locations. Based on the Patiguli et al, the mandible (31.97%) was the most common site of fracture followed by the zygoma (25.3%) of 2492 patients with maxillofacial trauma.1–3 Maxillofacial trauma includes soft tissue that covers the hard tissue of the face and can also include hard tissues such as the head bone consisting of the nasal bone, the zygomatic arc bone, the mandibular bone, the maxillary bone, the ocular cavity bone, the tooth, and the alveolar bone. A fracture of bone or cartilage tissue is a fracture that occurs due to direct trauma, muscle fatigue, or medical conditions such as bone degeneration or osteoporosis. Mandibular fractures are very common, as the angle of mandible and the condyle are the weakest parts of the mandible (27-50%), so there are often fractures in that area.4,5

Understanding of the anatomy and physiology of the stomatognathic system is therefore essential in understanding and managing fractures of the condylar region as the clinical presentation of condylar/subcondylar injuries may either be very obvious or quite subtle. An awareness of the mechanism of potential injury, as well as the specific signs and symptoms that should raise the index of suspicion is helpful to the clinician. Condylar fractures can be described as a fracture line above the mandibular foramen that runs from the posterior border of the ramus to sigmoid notch or the head condyle. Literature mentions numerous classifications of condylar fractures. Most classifications described the fracture based on the anatomical site, displacement, and fracture level, inclined towards close reduction.6 The symptoms of a mandibular fracture usually result in constant pain, oral bleeding, changes in function, swelling, cryptosis, sepsis in an open fracture, and deformity. If this fracture affects the mandibular body, abnormal movements will be seen at the site of the fracture, so that the movement of the Mandibular becomes limited and the arrangement of the teeth becomes irregular. Most mandibular fractures occur without opening the bone or causing damage to hard or soft tissue.7

Condylar fracture management typically uses open reduction and internal fixation. Cases of bilateral condyle fractures, fairly severe dislocations, unsuccessful closed reductions, foreign objects such as firearm fractions, and condyle dislocation into the center of the cranial fossa are the main indications for open-ended reduction treatment in fracture of condyle. Some

surgeons also perform closed reductions if there is a problem with surgical access to the condyle area, a problem with proxy fragment reposition, or a closed intracapsular fracture. Oral surgeon is faced with decision of conservative treatment, such as removal of the fragments by condylectomy. The principle of condylectomy is the surgically removing the fractured of condyle as it was obstructing mandibular function.8–10

Treatment options for condylar fractures must be considered depending on fracture height, patient adaptability, the patient's masticatory system, impaired occlusal function, and mandibular deviation. Surgical treatment is common. Because, through it, the anatomy can resemble normal, so that optimal conditions can be achieved, and recovery of joint function and surrounding soft tissue are better than other treatments. It should also be noted that there are complications of condyle fractures, which can be in the form of pain, limited opening of the mandible, muscle spasms and deviation of the mandible, malocclusion, pathological changes in the temporomandibular joint, osteonecrosis, facial asymmetry, and ankylosis. Nerve damage is one of the complications of surgery.11,12 Interdisciplinary care is needed to complement surgical treatment so that the patient's condition can return to normal both in terms of function and esthetics.13 The following case report aims to explain the management plan for bilateral mandibular condyle fractures.

CASE(S)

A 17 years old male patient came with the complaint that his mouth was unable to close and had limited opening. The patient felt from a motorcycle about a month ago. The patient was driving a medium speed motorcycle when suddenly the vehicle appeared from the opposite direction and struck him, then he lost his balance and fell down with mechanism his face hit the asphalt first. The patient didn't wear a helmet. There was a history of loss of consciousness about five minutes, and there was also bleeding from the mouth and ears. There was no history of nausea, vomiting, bleeding from the nose, or alcohol intoxication. The patient was taken to the clinic in Subang area, was performed wound debridement, and then he was referred to the public hospital at Subang area for further examination. The patient was performed Skull AP- Lateral x-rays, and then referred to Hasan Sadikin General Hospital.

On extraoral examination (Figure 1), patients found the condition of the face asymmetric and scars of seams on the region of the jaw. A CT scan results in visible fractures at bilateral condylar processes.

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

Figure 2: Skull ragiographs show radiolucent images in the mandibular bone corpus bilaterally

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

Figure 4: Installation of interdental wiring on the maxilla and mandible before surgery

CASE MANAGEMENT(S)

The patient performed surgery under general anesthesia. The first action was aseptic, then performed the operation on the bilateral preauricular region (Figure 5), only it was injected in local anesthesia, and carried out the insection of the preauricular region, dissection action, then found the presence of discontinuity in the condyle of mandible (Figure 6). Cut the condyle on the left and right sides. Continued blood control. Figure 7 is a patient after surgery with incision closure.

Figure 5: Marking before insition

Figure 6: Presence of discontinuity at the condyle of mandible and condylectomy

Figure 7: Post operation

Patient was given an intraoral spooling with NaCl 0.9% twice a day. On the third day of the postoperative procedure, the patient is given ikamycetin, which is applied in the form of an ointment on the regio. The patient is asked to practice opening the mouth cover. Bleeding is also always observed, and the function of the nerve VII is checked. Patients are consulted with physiotherapists. On the 7th day after surgery, No complications were found, and the patient was able to open his mouth bigger than before.

Discussion

The head region, condylar neck, and condylar base are the three fracture levels that make up the condylar process. Condylar head fractures present typical fracture lines either medially to the pole zone, which typically doesn't affect the vertical condyle-to-fossa relationship, or lateral to the pole zone, which may result in loss of vertical height. The presence of minor or major fragmentation, the vertical apposition of fragments at the plane of the head fracture, the displacement of the condylar head with respect to the fossa, including a potential distortion of the condylar head congruency resulting in dystopic condyle-to-fossa relations, and the presence

Figure 7: Post operation

or absence of a loss of vertical ramus height are additional characteristics that describe the morphology of condylar head fractures.14

A specific vertical fracture pattern extending from the head to the neck or base subregion is considered. Fractures of the condylar neck and base can be differentiated according to a newly introduced one-third to two-thirds rule with regard to the proportion of the fracture line above and below the level of the sigmoid notch and are basically subdivided according to the presence or absence of displacement or dislocation. In both condylar neck and base fractures, the classification is again based on the above mentioned parameters such as fragmentation, displacement of the condylar head with regard to the fossa, including dystopic condyle to fossa relations and loss of vertical ramus height, that is, according to the measurement of the condylar process.14

To confirm the diagnosis, a variety of radiological techniques can be used to obtain an accurate diagnosis and determine the location of the condyle injury. Radiological technicians can also know the structure and condition of the TMJ. Photography techniques used in the treatment of condyle fractures include conventional radiography (orthopantomography) and lateral oblique mandibula. OPG becomes a standard photo that can see the entire mandible and is done with an open mouth. Lateral oblique is used if there is no OPG facility, with a focus on the vertical frame. Tomography can be used without manipulating the patient's face, which is usually difficult to do in trauma patients. This is usually coronary or sagittal tomography. The CT scan shows the

connection of the condyle with the fossa mandibula more accurately.15,16

For condylar fractures, conservative treatment and surgical surgery are the two main treatment options. Numerous authors have praised conservative treatment for being secure, non-invasive, simple, and affordable, but they have also discussed its drawbacks, which include dental health issues, gingivitis, facial deformities, TMJ dysfunction, and even TMJ ankylosis.17,18 Additionally, surgical procedures include drawbacks such as high costs, scarring, intraoperative bleeding, facial nerve damage, and others.19,20 With the adoption of modern technologies and a better understanding of fracture management in recent years, the majority of surgical treatment problems have been reduced or even avoided.21

Additionally, numerous studies have demonstrated that surgical intervention can lead to improved morphological and functional outcomes since it speeds up the process of anatomic reduction, rigid internal fixation, and functional restoration. In research by Schneider et al.22 involving 66 patients with displaced condylar fractures, the functional outcomes were better in the individuals who received open reduction and internal fixation as opposed to conservative treatment. Similar to the previous study, Mohammed et al.23 found that surgical treatment

produced better results in terms of deviation in mouth opening, occlusal status, and anatomic reduction of the condyle when comparing the results of various parameters after open reduction with internal fixation versus nonsurgical treatment. The recommended method for treating condylar fractures by many surgeons is open reduction and internal fixation.

The first and most important step in the surgical process is to carefully select the surgical approach in order to minimize the risk of procedural problems such as facial nerve damage and significant bleeding. Any surgical technique used must allow for direct visualization of the fractured section, sufficient accessibility for reduction and the insertion of fixation materials, minimal intrusiveness, and minimal postoperative problems.23

The type of fracture and its location are the major factors in determining the surgical method that will be employed to treat the condylar fracture. Several significant anatomical components, such as the parotid gland, blood vessels, and nerves, must also be taken into account. Preauricular, retromandibular, post-auricular, and submandibular techniques have all been mentioned as ways to treat condylar fractures. The preauricular and retromandibular methods are the two that are most frequently used among these.24,25

In this case report use preauricular approach. The preauricular approach was first described by Thoma in 1945 and is commonly preferred for condylar head and neck fractures. This approach is especially useful for medially displaced condylar fragments. Its advantages include excellent access to the fractured stump, convenient manipulation of the fractured segment, and minimal or invisible scar formation. The main risk associated with this approach is facial nerve injury. 21

The decision influencing open reduction and internal fixation versus closed reduction is based on the ability to restore function and esthetics. Absolute indications for ORIF in cases of condylar region/subcondylar injury are, firstly, limitation of function secondary to the following: (i) fracture into middle cranial fossa (ii) foreign body within the joint capsule (iii) lateral extracapsular dislocation of condylar head (iv) other fracture dislocations in which a mechanical stop is present on opening, which is confirmed radiographically. Secondly, inability to bring the teeth into occlusion for closed reduction25,26. The goals here are the restoration of both normal range of motion and a stable occlusion.27

However, we advise removing the broken condylar segment if it is tiny but still restricts the mouth opening and makes it difficult to obtain the ideal occlusion. The proximal section is surgically removed during this procedure, and the mouth opening is then evaluated. If there is an occlusal disparity, it is then treated with elastic traction on the previously installed arch bars.

In order to achieve full mandibular motion, the patient engages in postoperative physical therapy. They also train to rectify any deviations for which preoperative counseling is advised. Complications that can be encountered in patients with condilectomy are 7th nerve injury and mandibular instability. However, Sergio et al.'s research stated that condilectomy is a safe procedure with minor mobility. For this patient, the potential complications are related to the temporal branch of the facial nerve and not to mandible dynamics or pain after surgery. After condylectomy, function is generally poor, but during the process of opening the mouth, the mandible usually deviates towards the surgical site. Occasionally, the tilted mandible results in traumatic occlusion and an open bite on the opposite side. To overcome this, therapy must be carried out immediately after surgery, if necessary with prosthetic correction. Bilateral condylectomy may cause rearward movement of the mandible with tilting, leading to an

anterior open bite and malocclusion. 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. 15 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. The patient was also given Chloramphenicol, which functions to treat infections caused by bacteria. Chloramphenicol works by inhibiting the formation of proteins needed by bacteria to form bacterial cell walls; this causes damage to bacterial cells.

After the operation was performed on the patient, he was able to open his mouth wider than before (Figure 8). And the value is found without any complications. This indicates that the management given to the patient is appropriate.

Figure 8: Post operation day-1

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