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Laterally Displaced Condylar Fracture Of Mandible –An Early Intervention To Prevent Late Complications

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Abstract

Condylar fractures account for 20% to 62% of all mandibular fractures. Given the unique geometry of the mandible and temporomandibular joints (TMJs), these fractures can result in marked pain, dysfunction, and deformity if not recognized and treated appropriately. There is continued debate on whether condylar fractures should undergo surgical or conservative management. This paper reports the case of a 43 years old male patient injured in the submental region leading to restricted mouth opening. CBCT revealed subcondylar fracture of left condyle of mandible, showing displacement of condylar fragment out of glenoid fossa with lateral overlap. Early diagnosis and appropriate management aided in alleviating the symptoms of the patient.

Keywords

Subcondylar fracture, lateral displacement, Absolute indication, ORIF, miniplate, Maxillofacial trauma.

Introduction

The first description of mandibular fractures dates to the 17 th century BC in the "Edwin Smith papyrus" brought by Smith in Luxor in 1862 and later translated by Breasted. Mandibular fractures are one of

the most common facial fractures, and of these, fractures of the subcondylar and condylar region are generally clinically challenging. Condylar fractures account for 20% to 62% of all mandibular fractures [1] . Most common age group affected with mandibular fractures is 21-30 years with male preponderance and the most common cause detected is road traffic accidents. The anatomic location and proximity of these fractures to the temporomandibular joint can have long-term functional implications if proper anatomic relationships are not accurately re-established. The important requirements of management of mandibular fractures are an accurate anatomical reduction of fracture or dislocated segments, and retention of these segments in alignment by osteosynthesis.

Case Report

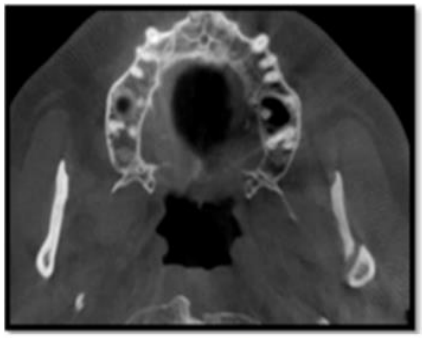
A 43-year-old male patient reported with the chief complaint of difficulty in mouth opening and pain in front of the left ear with an alleged h/o RTA 2 days back. Patient had h/o Diabetes Mellitus and is under medication since 5 years. Extraoral examination revealed multiple abrasions over face, restricted mouth opening of 21 mm, tenderness and crepitus over left preauricular region and a sutured wound over chin. Intra oral examination revealed sutured wound over lower lip, premature occlusal contact on left side and open bite on right side. Hence it was provisionally diagnosed as left condylar fracture of mandible.

The CBCT scans confirmed the diagnosis of laterally displaced left low sub condylar fracture of the mandible. Arch bar fixation was done pre operatively and open reduction and internal fixation was done under GA. Retro mandibular approach (transparotid approach) was used for the exposure of the fracture site. Displaced condylar segment was anatomically reduced and held in position till the completion of the miniplate fixation. Internal fixation was done with a 2mm 4 hole with gap Titanium miniplates (2 nos) and 2 x 6 mm Titanium screws (8 nos). Hemostasis was achieved and layered closure of the surgical wound was done. A post-operative OPG was taken to confirm the position of the condyle and stability of fixation. Postoperative mouth opening was 37 mm and satisfactory occlusion was achieved.

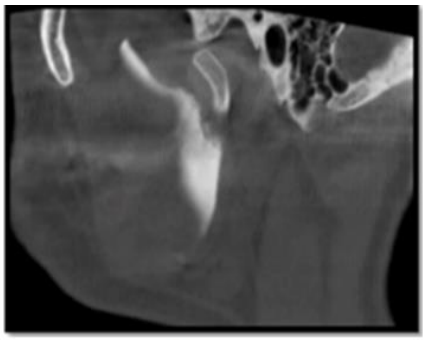
Panoramic View

3D View

Coronal



Axial



Sagittal

Marking for retromandibular incision

Retromandibular incision placed

Fracture site exposed

Miniplate fixation

Post operative OPG

Post operative occilusion

Post operative mouth opening

Discussion

The condylar fracture in adults can be treated by either closed or open reduction. Management of mandibular condylar fractures remains an ongoing matter of controversy in maxillofacial surgery. This controversy is reflected in the wide variety of opinions and proposed treatment modalities offered in the literature [2] .For decades closed treatment (CT) has been the preferred treatment [3] because treatment is easier and less invasive. However, CT may employ varying periods of intermaxillary fixation (IMF) (0 to 6 weeks) followed by aggressive physiotherapy. Also, long-term complications like pain, arthritis, malocclusion, deviation of the mandible on opening and closing movements, temporomandibular joint (TMJ) dysfunction, facial asymmetry, and ankylosis may occur in condylar injuries treated closed[3,4]. If there is severe displacement or dislocation, surgical management seems to be preferred [5-7]. Open reduction and internal fixation (ORIF) allows anatomical repositioning and immediate functional movements of the jaw.

Indications for Open Reduction of Condyle Fractures By Zide and Kent [8]

ABSOLUTE INDICATIONS	RELATIVE INDICATIONS
1. Displacement into the middle cranial fossa.	1. Bilateral condylar fractures in an edentulous patient when a splint is unavailable or when splinting is impossible because of alveolar ridge atrophy.
2. Impossibility of obtaining adequate occlusion by closed reduction.	2. Unilateral or bilateral condylar fractures when splinting is not recommended for medical reasons or where adequate physiotherapy is impossible (patients with seizure disorders, psychiatric problems etc)
3. Lateral extra capsular displacement of the condyle.	3. Bilateral condylar fractures associated with comminuted midfacial fractures,
4. Invasion by a foreign body (e.g., gunshot wound).	4. Bilateral condylar fractures and associated gnathological problems, such as retrognathia or prognathism, open bite with periodontal problems or lack of posterior support etc

Selection of Surgical Technique

The following factors influence the selection of a method for open reduction [8]

1. Position of condyle
2. Location of fracture
3. Age of fracture,
4. Character of patient,
5. Amount of edema
6. Location of incision,
7. Type of fixation.

To reach the condyle area, different approaches are used, e.g., the transoral approach or different extra oral approaches, such as the periangular, submandibular, preauricular, retro- mandibular and retroauricular [9] .In this case we have adopted transparotid approach through retromandibular incision. In cases of condylar fractures, the transparotid approach allows for direct and easy visualisation of the fracture line, thereby ensuring a possibility of proper fracture reduction and osteosynthesis, with a low risk of facial nerve paresis. According to the study conducted by Yang and Patil (2012) the complications encountered through transparotid approach in the treatment of condylar base fractures on 42 patients were: occlusal disturbances in 3 cases (7%), post-operative haematoma in 2 cases (4.8%), a salivary fistula in 3 cases (7%), and transient paresis of the facial nerve in 8 patients (19%)

Different methods of fixation have been used for condylar fracture treatment. These includes fixation systems like single 4-hole mini adaptation plate, double fixation with the same plates, single 4-hole mini dynamic compression plate (DCP), Eckelt lag screw system, Wurzburg lag screw plate system and double 4-hole biodegradable miniplates made of poly L-lactide (PLLA) [13-14]and delta plates. Various studies have shown that two miniplates (double-plate technique) are the most reliable because these neutralize tension and pressure forces best and produce greater stability [10-12] . In this case we have used double-plate technique.

Wound closure was done in layers and pressure packing was given. Precise wound closure in layers, especially of the parotid capsule, allows avoidance of a salivary fistula – a complication typical for this approach [15].

It should be noted that the post operative period of patient was uneventful and no complications were encountered during 1 year post operative follow up.

Conclusion

Mandibular condyle fractures represent one of the most controversial issues in the relevant literature. There is a wide array of designs for the fixation system that can be used for ORIF of condylar fractures. Use of double-plate system seems to be a simple, effective and reliable alternative for condylar fracture management. Open reduction with internal rigid fixation of subcondylar fractures can be performed employing different surgical approaches. Among these, the Transparotid approach can be recommended for its reliability and low rate of complications, since it provides the most direct access possible to the fragments and the possibility to avoid excessive traction of the retractors on facial nerve branches. Early intervention and management of laterally displaced condylar fractures reduces post-operative complications like facial asymmetry, residual pain, temporomandibular joint and articular imbalance and malocclusion.

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