

## A SERIES OF CASE REPORT: RETROMANDIBULAR APPROACH FOR CONDYLAR FRACTURE

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### ABSTRACT:

The management of condylar fracture has undergone a monumental change and percentage of cases being treated by open reduction has increased significantly. The greatest fear of using the open reduction techniques continues to be the injury to the facial nerve.

This paper presents the transparotid retromandibular approach for the management of condylar neck and subcondylar fracture. A series of cases operated will be presented along with a review of implant options. The approach and its modifications, intraoperative care and closure are presented in lucid manner.

**Key words:** Retromandibular, Condyle, Fracture

### INTRODUCTION:

Mandible is a unique bone having a complex role in esthetics of face and occlusion, because of the prominent position of the lower jaw, mandibular fractures are most common fractures of facial skeleton. Despite the fact that it is the largest and strongest facial bone. It is the tenth most often injured bone in the body. Fractures involving the mandibular condyle are the only facial bone fractures which involve a synovial joint. The incidence as high as 35.6%. The main objective of the treatment of the mandibular condyle fractures is the functional restoration of the temporomandibular joint, the occlusion and also the facial contour. Low subcondylar fractures defined as fracture of condylar neck situated below horizontal line drawn from right to left sigmoid notch on OPG.<sup>[1-10]</sup>

### Treatment Options:

**Closed reduction:** Maxillo-mandibular fixation for 4 to 6 weeks

### Open Reduction & Fixation:

#### Early Methods

Transosseous wiring  
External fixation  
Kirshner's wire

#### Current Methods

Miniplate osteosynthesis  
Dynamic compression plating  
Lag screws  
3D plates  
Resorbable plates

#### Various Approaches to Condyle

**Preauricular-** 'Inverted Hockey Stick' in 1936 incision over the zygomatic arch

,which gave easy access and better visibility and also facilitated exposure of the arch along with condylar area.

**Al-Kayat & Bramley** – In 1979 described a modified preauricular approach to TMJ and zygomatic arch considering the main branches of the vessels and nerves in the vicinity.

**Rhytidectomy-** It is described as a preauricular incision under the lobe of the ear that extended postauricularly on the posterior surface of the auricle. This approach can provide greater exposure to the high level condylar fractures providing excellent cosmesis, but it requires additional time for closure.

**Submandibular approach (Risdon)-**Here the incision is taken about 1cm below the angle of the mandible. It extends forward, parallel to the lower border of the mandible and curves backward slightly behind the angle. Approach to the neck of the condyle and ramus is achieved by sharply incising through the pterygomassetric sling – reflecting the masseter muscle laterally to expose the neck of the condyle and the sigmoid notch. Poor access to the condylar head region. Procedures involving the articular portion of the head and the meniscus cannot be performed by this approach.

For low subcondylar fracture, submandibular is too low and preauricular is too high so we considered and preferred mostly retromandibular approach.

## **RETROMANDIBULAR HISTORY**

## **APPROACH:**

- Hinds & Girotti (1965): Vertical subcondylar osteotomies.
- Chossegros et al 1996: Tail of parotid lifted without identifying marginal mandibular.
- Widmark et al 1996: Dissection proceeds through cervical fascia & platysma identifying marginal mandibular anterior to gland,

Retromandibular Approach (fig 1) described by Hinds & Kent ,Gives best access to fracture of condylar neck. It is associated with significantly less injury to the marginal mandibular branch, temporal and zygomatic branches of the facial nerve(fig 2).The incision is placed in the resting tension lines in the lateral neck & the incision is typically 2-3 cm in length & placed 1 cm inferior and posterior to the angle of the mandible. The incision is placed close to the mandible .

## **Important related structures: fig 2 and fig 3**

- Parotid gland
- Facial nerve
- Retromandibular vein
- Facial Artery

## **CASE DETAIL:**

Six Patient of series with condylar fracture attended after having suffered automobile accident with trauma in the 4 on left side and 2 on right side of the face.

Presenting facial asymmetry, excoriations and bruises in the buccal area, complaining about occlusal alteration, limitation of mouth opening and pain in the left preauricular area.

In the physical exam, it was observed exacerbated pain and edema in the preauricular area, and also the absence of bone crackling in the mandibular body area. In the intra-buccal exam, pain was observed during buccal opening with deviation of the mandible for the either side, and also premature contact in the same side area.

In the radiographic exam, OPG and lateral oblique ray shows condylar fracture. With Towne projection modified for condyle, some anatomical contour loss in the mandibular condyle area was.

The proposed treatment was the surgical reduction of the mandibular condyle with rigid fixation. The patient's preoperative preparation was accomplished with the complete haemogram, followed by the preanesthetic evaluation.

The surgical intervention happened six days after the injury. At the hospital, the patient was submitted to a general anesthesia, with nasotracheal intubation and, after the correct antisepsis, the surgical procedure began with retromandibular approach, After correct condyle repositioning in relation to the mandibular fosse with the occlusal re-establishment with Ivy eyelets and a maxillomandibular blockade, the fixation of the fracture lines with titanium 4 hole

gap 2mm plate and 8 mm screws occurred, The suture was accomplished with vicryl 3-0 and mersilk 3-0 thread was used with simple stitches.

The medicinal therapeutics accomplished in the preoperative was an antibiotic. In the postoperative care an antibiotic therapy was maintained associated to anti-inflammatory and analgesics, all orally, and also mouthfuls with chlorhexidene 0,12% twice a day. The patient was informed to take liquid and pasty diet for 90 days.

In the seventh-day postoperative, a good mouth opening, an absence of the mandibular deviation and a stable occlusion were observed. The Ivy strings were maintained for the use of rubber bands and, the patient referred an absence of the symptomatology, paralysis absence, and also facial paresthesia.

#### **Technique:**

#### **Marking:**

Extraoral Retromandibular Incision with submandibular extension, 3-4cm incision just below the ear lobe (fig-7), skin, subcutaneous tissue, platysma. SMAS & Capsule of parotid seen and incised (fig-8). Hemostat inserted and blunt dissection parallel to anticipated direction of nerve. Marginal mandibular Nerve if seen dissected free and retracted superiorly or inferiorly (fig-9). External jugular or retromandibular vein: vertical here if encountered ligation. Dissection till periosteum on Pterygomassetric sling Pterygomassetric sling divided, Masseter

stripped. **Transosseous wire:** At angle of mandible to pull mandible down during reduction of fractured segments (fig-10). Fracture site exposed and reduced. Intraoperative MMF done. **Reduction & Internal Fixation:** with Cosmotec titanium 4 hole plate (11). Postoperative scar and radiograph (fig-12 &13)

**Advantages:-**1.Shortest distance of skin to the area, 2.Rarely branches of facial nerve encountered. If does then usually marginal mandibular, 3. Scar more inconspicuous, 4. Posterior border exposed completely so mediolateral position of condyle easily assessed, 5.Easy to retrieve medially displaced condyle.

**Disadvantages:**

In dislocated fractures if disc is detached then preauricular also required

**Complications:**

1. Facial nerve paralysis

Modified retromandibular- transient paresis 11- 30% resolve within 3months

Submandibular or Risdon approach 13-37%, 2.Sialocele, 3.Greater auricular nerve palsy.

**DISCUSSION:**

**Busuito MJ et al (1986)** reviewed 307 patients sustaining mandibular fractures between 1980 and 1984. The patient population consisted of 79% males, with precipitating events usually being fist fights (47%) and assaults with a blunt object (18%). The most common fracture involved the body (30%), followed by the

angle (21%) and the condyle (19%). Intermaxillary fixation (IMF) was the preferred method of treatment (42%). Despite the large number of patients were treated using internal fixation procedures, the complication rate was relatively low (18%). This review suggests changing trends in mandibular fractures [2]. Condylar fractures were by far the most common of the mandibular fractures (67%) [5]. Sports were the most common cause of fractures (31.5%) and the most common site was subcondylar region of mandible [8]. Short retromandibular approach of subcondylar fractures treated 38 patients with displaced but not dislocated condyle and found that patients did not complain of fatigue or pain on chewing and there was no change in pre traumatic and post-operative occlusion. He concluded that the retromandibular approach is an effective and safe technique, especially for displaced subcondylar fracture [3]. Ellis and dean said that the risks must be weighed against the benefits, if one has already decided the treatment as open reduction the surgeon must consider the types of internal fixation desired and the risks of particular approach against potential benefits. In his experience the retromandibular approach is the most reliable for plate and screw fixation [4].

**CONCLUSION:**

When open reduction with internal fixation of subcondylar fracture is indicated, the retromandibular approach is an effective and safe technique providing good access and functional

patient outcome with low morbidity and excellent patient satisfaction.

Out of six patient 2 patient suffered from transient nerve paralysis and had in good function within 2 months. Else all had good healing occlusion, extraoral healing without any infection and scar.

With multiple techniques available, there is still controversy over the best treatment for each type of mandible fracture.

The decision is a clinical one based on patient factors, the type of mandible fracture, the skill of the surgeon, and the available hardware. Further studies are in progress.

Taking note of all the above discussed criteria, little doubt exists that the subject of condylar injury and its management will continue to spark controversies. Many new ideas and older ones require further investigation & clinical research to continually advance our understanding of this complex & relevant.

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**FIGURES:**

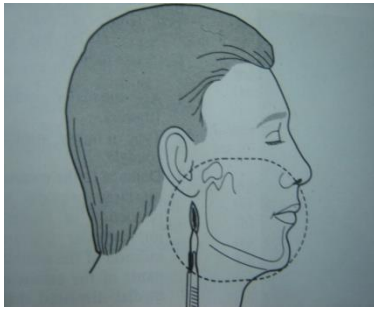


Fig 1

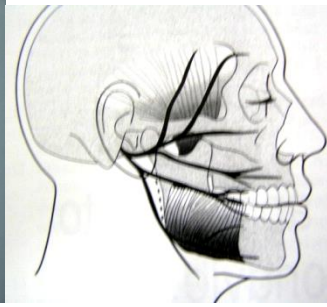


Fig 2

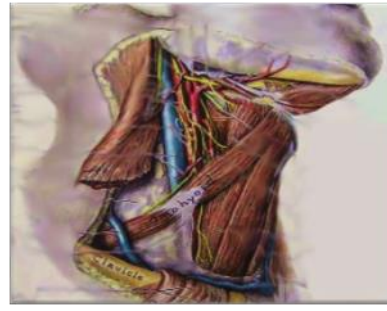


Fig 3

**Radiographic Examination:**



Fig-4

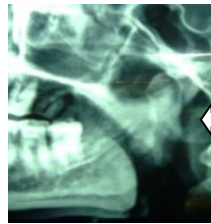


Fig-5



Fig-6



Fig-7



Fig-8



Fig-9



Fig-10



Fig-11



Fig-12



Fig-13