

Original research article

A Randomised Comparative Study of Management of Subcondylar Fractures of Mandible-Conservative V/S Operative

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Abstract

Background: Mandible is also known as lower jaw or jaw bone. It is the largest and the strongest bone of our facial skeleton. It also holds the lower row of teeth in oral cavity. It is the only movable skull bone.

Objectives: If the patient is very sick due to trauma or due to other way, we prefer to do IMF only. But if the patient is stable onethen we do IMF followed by ORIF in the same case.

Material and Methods: we observed the patients with mandible fractures admitted through emergency and opd PMCH, Patna. Study duration of Two Years. Our study is focussed on the patients with history of RTA or assault or fall down with facial injury involving subcondylar fracture of mandible. The aforesaid patients undergo either conservative or operative management on random selection basis. These patients usually come from Patna as well as all districts of Bihar.

Conclusion: When we talk about the conservative approach it is only partially reliable for fractures of sub condyle of mandible. If the fracture is displaced or with dislocated TM Joint of that side, we should approach via operative one, while in undisplaced simple fractures conservative is enough.

Keywords: Fracture of Sub Condyle of Mandible, TM Joint, Orif, RTA.

Introduction

Mandible is also known as lower jaw or jaw bone. It is the largest and the strongest bone of our facial skeleton. It also holds the lower row of teeth in oral cavity¹. It is the only movable skull bone. Parts of mandible: - Mandible is apparently formed by the fusion of two half bones on each side and the fusion site is known as symphysis. Mandible fracture is one of the most common fracture associated with multiple etiology: Road traffic accident, Fall down, Assault cases Isolated fracture of Mandible is apparent in 20% cases while in 80% cases it is associated with maxillofacial fractures. Parts of mandible involved in fractures are as below.

Most common site to least common site :

Angle > Condyle > Symphysis

Para symphyseal fracture is a common as the roots of canine bones go more deeper in bone and so

make the bone more weaker one. Condyle is the part which makes joint with temporal bone (TMJ) ² and it has following parts:

Head, Neck, Body

The neck is the part lying below head part. Condylar fracture: It involves the joint part of the condyle i.e capsular one and fracture leads to haem-arthrosis and its fate is ankylosis of TMJ.

CLASSIFICATION OF CONDYLAR FRACTURE:

High and Low Deep condylar Diacapitular fracture subcondylar fracture: In this fracture the part involved is below the attachment of the joint capsule, and so it is devoid of ankylosis.

The fracture line runs obliquely downwards from the semilunar indentation to the back edge of the ramus of the mandible. These can be further divided into complete, incomplete and greenstick varieties. The conservative approach consists of application of IMF/IMMF only. However the operative one will consist of IMF plus open surgery (ORIF).³

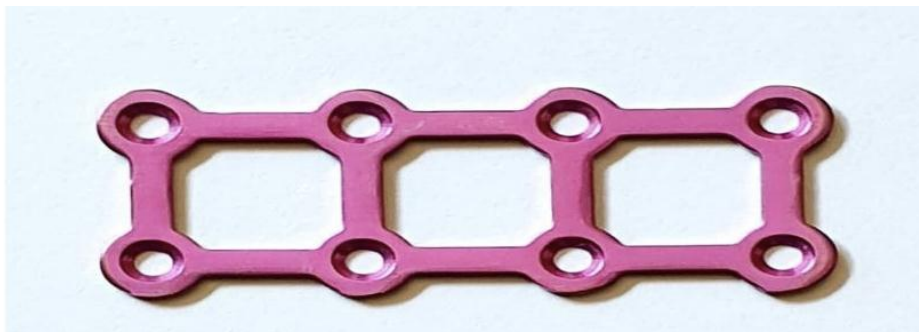
Objectives

There are various ways to treat fracture sub condyle of mandible. In our study we mainly compare the IMF and ORIF by using plates. The way of treatment is suggested by the type of fracture, the actual need of patient and over all the present health status of the patient. If the patient is very sick due to trauma or due to other way, we prefer to do IMF only. But if the patient is stable one then we do IMF followed by ORIF in the same case.

Material and methods

The study is a single centre based prospective and comparative observational study. We observed the patients with mandible fractures admitted through emergency and opd PMCH, Patna Bihar. Our study is focussed on the patients with history of RTA or assault or fall down with facial injury involving subcondylar fracture of mandible. The aforesaid patients undergo either conservative or operative management on random selection basis. These patients usually come from Patna as well as all districts of Bihar. Study duration of Two years. **SAMPLE SIZE** : 50 patients were studied. Out of 50 patients 25 were undergo conservative (IMMF etc.) treatment while rest 25 cases treated through operative (IMMF+ORIF) one on random selection basis. **STUDY DESIGN** : From all selected 50 cases detailed history of trauma, assault or fall down taken properly. All routine as well as required radiological investigations done on regular basis. After the result of all aforementioned investigations the patient is selected on random basis for either conservative or operative approach of management.

Materials used are:





Oral cavity is packed with long gauze roll to protect oral cavity and laryngeal spaces to prevent blood or any fluid dribbling. If patient have IMF with loops in situ, we have to remove the loop before consideration of induction of G.A to provide adequate mouth opening.

Results

When we study a total 50 cases, 25 under conservative treatment and another 25 under operative one, it provide a perception that operative is always better than conservative except in special circumstances like head injury, unavailability of operative basic requirement. In study it also ruled out that most cases were male and maximum were with RTA.

DISTRIBUTION ACCORDING TO PATIENT IN EACH GROUP:

Table 1:

GROUP	NO.OF CASES
CONSERVATIVE	25
OPERATIVE	25
TOTAL	50

In the study period of 18 months a randomised and comparative study was done on 50 patients. Patients were randomly kept into two group of conservative group and operative group.

DISTRIBUTION ACCORDING TO AGE:

Table 2:

AGE(IN YRS)	NO.OF PATIENTS
10-20	18
21-30	17
31-40	07
>40	08

In this study,50 patients ranging in age from 10-60 years were included, and the greatest no fall in age group of 10-12years. Very few one(2) are only elderly .

DISTRIBUTION ACCORDING TO SEX:**Table 3:**

GROUP	MALE	FEMALE	TOTAL
CONSERVATIVE	24	01	25
OPERATIVE	23	02	25
TOTAL	47	03	50

There were 47 men in total, including 24 in conservative group and 23 in operative group. Out of 03 women ,01 was in the conservative group and 02 were in the operative group

DISTRIBUTION ACCORDING TO MODE OF INJURY:**Table 4:**

MODE OF INJURY	NO. OF PATIENTS
RTA	38
ASSULT	05
FALL DOWN	07

It is observe that all the cases taken in study are maximum from road traffic accidents(38), few with history of fall down(7)and least have history of assault (5).

DISTRIBUTION OF PATIENTS ACCORDING TO SIDEOF FRACTURE:**Table 5:**

SIDE	NO. OF PATIENTS
RIGHT	19
LEFT	22
BILATERAL	09
TOTAL	50

In study we find that left side (22) is more evenly involved than right (19) side. Bilateral subcondylar fractures are seen in very few (09) cases.

COMPLICATIONS:

Three of the all patients treated by operative approach were complain of sinus discharge from loosly fitted screws over plates.In such cases the plates were removed by us intoto. There were few patients with IMF insitu need again tighteningof steel wire over the arch bar. Sequale: patients complaining of minimal or no mouth opening were managed by physiotherapy and use

of mouth openers and the same improved gradually with time.



Pre-Auricular Approach for ORIF



IMF Screws Fixation and Rubber Application

Discussion

Treatment of sub condylar fractures of mandible can follow two different modalities;- conservative or closed and surgical open. Previously the conservative management of sub condylar fracture was favored due to lack of open techniques and also due to the unavailability of different size of plates and screws to fix the mandible fracture site.⁵ The accuracy of fracture reduction and the stability of fixation were assessed post operatively by local x-ray after 1m and 6m respectively.⁵ The range of movement was assessed by maximal mouth opening, protrusion and lateral excursion.⁶ Today many surgeons prefer open reduction and internal fixation due to good anatomic repositioning and immediate functioning.⁷ The pre-dominant surgical indication for adults is dislocated or displaced sub condylar fractures outside the mandibular fossa, as it is generally impossible to attain anatomic reduction via a conservative approach. The concept of rigid internal fixation has been increasingly applied to the injured cranio-maxillary facial skeletons.⁸ The intended aim of surgical treatment regarding the sub-condylar fractures is to restore the pre-existing anatomical relationship with acceptable functions by means of stable osteosynthesis. The stability of osteosynthesis is influenced by the mechanical strains arising in the condylar region during mastication due to action of muscle acting on the mandible. A biomechanical study has shown that tension and compression forces are developed on mandibular condylar region during normal mouth opening exercises and then these strains correlate with the action of the muscles of mastication.¹⁰ The Throckmorton and Meyer's study on pattern of compression and tensile forces imply a need of plating in proper way.¹¹ In the closed or conservative approach cases, shortening of ascending ramus and the angulation of the fragments remained unchanged even after 6 months of procedure. These two above criteria improve when the same patients will be treated as open surgery technique.¹²

For most functional parameters, a significantly better outcome was observed in the patients of open treated cases. In open cases also less amount of pain and discomfort. In facial nerve injury and parotid gland injury cases we experience a better outcome with conservative approach, as the operative treatment further enhance the primary injury more and more. Bilaterality of subcondylar fractures were mostly associated with road traffic injuries.¹³ Most patients had associated upper limb & lower limb injuries but in assault cases the fracture was remains the only injury. The recovery near normal and pain relief by open techniques always better than IMF/IMMF.¹⁴ Earlier the surgeons only believe on IMF, but since 90th decades we are approaching for ORIF, i.e gold standard treatment of subcondylar fractures of mandible.¹⁵ When the subcondylar fractures were un displaced in variety we can prefer IMF, but in displaced fractures ORIF is become the rule. When we talk about the ORIF, titanium plates are used more in comparison of steel one. The reason behind the preference is –very low complications with titanium plates and no need of 2nd time surgery for removal of plates when compared with steel one. When we compare the functional outcome-like mouth opening, smoothness of mandible margin, occlusion – ORIF was better but in cases with IMF and early physiotherapy was make possible, results are very near. Lateral excursion, angulation of subcondylar fractured parts, anterior protrusion of mandible is more with IMF.¹⁷ The associated facial injuries and parotid gland injury increase morbidity of the patient and so we need help of another medical expert for the same. In paediatric age group we try to avoid ORIF, due to facial growing age. In these cases IMF or IMF screws plus rubber application is enough one. ORIF.¹⁸ In bilateral cases of subcondylar cases of mandible fractures it is prefer to use IMF in place of golden standard ORIF, as it is more cumbersome to doctors, patients and expensive to the relatives.¹⁹

Conclusion

When we talk about the conservative approach it is only partially reliable for fractures of sub condyle of mandible. If the fracture is displaced or with dislocated TM Joint of that side, we should approach via operative one, while in undisplaced simple fractures conservative is enough. In our study with 50 cases of fracture sub condyle of mandible, each 25 in conservative and operative, we found better comfortability, occlusion status and mouth opening in follow up duration of 1 month, 3 months and 6 months. Whatever the our approach the most important thing is the anatomical alignment of the fracture site with relief from discomfort and lastly should provide best functional outcome.

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