

## Preauricular Approach Versus Retromandibular Approach in Management of Condylar Fractures-A Comparative Study

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### Abstract:

**Aim:** The aim of the study is to compare the two extra oral approaches to the TMJ viz preauricular and retromandibular approach in management of condylar fractures of mandible.

**Methods and Materials:** Patients with fractured dislocation and displacement of mandible condyle in medial direction were managed by preauricular approach. Patients with lateral displacement of mandibular condyle were managed by retromandibular approach. OPG, & Reverse townes view, were taken in all the cases prior to surgery to assess the pattern of displacement.

**Results:** In our study both approaches have given excellent access and visibility to the condylar fractures but with limitations in each technique. Minimal intraoperative and postoperative complications were encountered in both approaches. The duration of the procedure for preauricular approach was much longer when compared with retromandibular approach. Facial nerve weakness was common in patients treated with preauricular approach, which improved over a period of time and had complete recovery. Postoperative scar was imperceptible in all cases and good cosmetic results were seen with both approaches. Mouth opening, mandibular movements and occlusion were more or less same in both the approaches while pain and clicking was common in preauricular approach.

**Conclusion:** Both approaches have good results in managing condylar fractures with retromandibular approach having ease of access and ease of fixation. So one can always give preference to retromandibular approach over preauricular approach in managing the condylar fracture except in some cases where preauricular approach is the only option like anteromedial dislocation or complete medial dislocation of condylar segment.

**Keywords:** Preauricular approach; Retromandibular approach ;TMJ approaches

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### I. Introduction

Fractures of the mandible are more common type of fractures occurring in maxillofacial region (57%) [1] Of the maxillofacial fractures acquired while playing sports, about one-third are mandibular fractures [2] .Among mandibular fractures, condylar region is the most frequent site accounting for almost 18-57% of cases [1-2].. Apart from fractures with rupture of the exterior auditory canal, these are normally simple fractures. Injury to condylar region deserves special consideration apart from rest of the mandible because of anatomical differences and healing potential [4]. Disturbance of occlusal function, deviation of the mandible, internal derangements of the temporomandibular joint, and ankylosis of the joint with resultant inability to move the jaw are all sequelae of this injury [5]. The rationale for open reduction and internal fixation in selected cases is that it allows accurate anatomical reduction of the fractured condylar process [6, 7], restoration of the ramal length, avoidance of long term sequelae like clicking and late arthritic changes and an earlier return to normal function without the need for inter maxillary fixation. There are various approaches to the condyle as explained in the literature. When choosing between them the simplest approach among them, should be the treatment of choice provided all else is equal. Preauricular approach, the most commonly used is useful when treating high condylar fractures, but when it comes to treating low condylar fractures and exposure of the angle, it has its own limitations. The retromandibular approach was first described by Hinds and Girotti in 1967 and modified by Koberg and Momma in 1978. When compared to the other methods the retromandibular approach offers greater advantage because of shorter working distance from the skin incisions to the condyle, great access to the posterior border of the mandible and sigmoid notch, less conspicuous facial scar and easy reduction. Recently this approach is studied more and has become a preferred approach for many oral and maxillofacial surgeons all over the world.

## **II. Materials And Methods**

Eighteen patients were selected who visited the department of oral & maxillofacial surgery from 2014 to 2016 with condylar fractures with or without associated mandibular fractures. All patients were treated on in-patients basis. All patients were treated and observed by the same surgeon. The patients selected for the study were requested to sign consent form if conscious and adult or by his/her attendant/guardian if minor.

## **III. Inclusion Criteria & Exclusion Criteria:**

All patients with age greater than 16 years, Unilateral subcondylar or condylar neck fractures

Condylar head fractures, Insufficient dentition to reoroduce normal occlusion, medically compromised patients, associated midface fractures, history of temporomandibular dysfunction.

## **IV. Methodology**

Patients were operated under general anesthesia via preauricular and retromandibular approaches. Patients with fractured dislocation and displacement of mandible condyle in medial direction were managed by preauricular approach (Fig 1& 2). Patients with lateral displacement of mandibular condyle were managed by retromandibular approach. Titanium mini plate system was used in all cases for fixation of condylar fracture (Fig. 3). Clinical evaluation in terms of intraoperative (Time, Accessibility, Hemorrhage, and Occlusion) and Postoperative presence of infection, sinus/fistula or dehiscence was noted at the surgical site, signs of Frey's syndrome, parotid fistula formation, facial nerve palsy, surgical scar, discrepancy in occlusion, and radiological evaluation of the reduction of fractured bone fragments and inadequate stability was checked in terms of fractures of miniplates, loosening of screws, and resorption by taking ortho-pantomograph, reverse townes view of skull at the following intervals of time. Immediate, 1 week, 3 months, 6 months post operatively. The present study was conducted on 18 patients, who sustained mandibular condylar fractures and were treated by open reduction and internal fixation using preauricular approach in 9 patients and retromandibular approach in 9 patients and were assessed clinically and radiographically. Mean average time for preauricular approach taken was 90 min and for retromandibular was 70 min. None of the patient suffered from Hemorrhage intraoperatively. Postoperatively sign of infection was observed in two patients (preauricular approach) at 1 month (Fig 4) and one patient (retromandibular approach) at 1 month. Facial nerve functions were assessed in terms of forehead wrinkling, eye closure, facial symmetry while smiling, and mouth blowing. Surgical scar was imperceptible in all the cases. Mouth opening increased in all the patients with time. Sign of condylar resorption was seen in one case after 3 months and complete resorption after 6 months in preauricular approach(Fig 5), whereas none in retromandibular approach

## **V. Discussion**

A patient who has had a condylar fracture cannot be considered cured until he is able to masticate easily with contralateral side of the dentition, which implies the recovery of the condylar excursion. There can be few aspects of maxillofacial trauma management that generate more controversy than the management of a fracture involving the condylar process of the mandible. Traditionally managed by closed treatment methods, this type of fracture has not escaped the attention of clinicians attempting to achieve improved and more predictable outcomes by techniques of open reduction and internal fixation Dahlstrom L[8]. Overtime, however, the concept of rigid internal fixation has been increasingly applied to the injured craniomaxillofacial skeleton. With development of improved materials for fixation and refinement of surgical techniques, a paradigm shift has occurred, with acceptance and even reliance on rigid internal fixation by both the surgeon and the patient Virendra singh[9]. The open reduction and rigid internal fixation allows for good anatomic repositioning, restoration of the ramal length, avoidance of long term sequelae like clicking and late arthritic changes and an earlier return to normal function without the need for inter maxillary fixation [6]. Because of this early return to function the chances for ankylosis is greatly reduced. Due to all these reasons and advantages there is an increase in the interest among majority of the surgeon to manage condylar fracture by ORIF. Over the years, number of surgical approaches to TMJ has been developed to attain the goal of successful reduction and fixation, and attainment of adequate function. The Various surgical approaches for exploration of the TMJ used for management of condylar fractures are: intraoral, preauricular, endaural, retroauricular, submandibular, retromandibular, rhytidectomy, and endoscopic approach. Each approach has its own advantages, disadvantages, and complications. These approaches are preferred from each other on grounds of better access, greater visibility of the fracture site, ease of manipulation of the soft tissues within the joint and relative ease for placement of fixation devices. Preauricular Approach has been the mainstay for many years for approaching the TMJ and has been constantly modified for not only to have better access and visibility but also to protect facial nerve branches. Among modifications of preauricular approach, Rowe (1972) modification and Alkayat and Bramley (1979) modification has been very popular and is now also most widely used. This

protects branches of facial nerve and provides good access to the condylar process but the area of ramal exposure is extremely limited, which makes the plate fixation technically difficult. Retromandibular approach provides better access as it exposes the entire ramus from behind and is therefore useful for procedures involving the area on or near the condylar neck/head, or the ramus itself [10]. This approach is also useful for reducing a condylar segment that has been distracted Anteromedially from the pull of the lateral pterygoid muscle [10]. The disadvantages being scarring, sensory loss, Frey's syndrome, etc. Retromandibular approach exposes the entire ramus from behind the posterior border. The distance from skin incision to the area of interest is reduced [11]. It is found to be minimally invasive, provided good access and allowed direct visual alignment of the fracture fragments [12]. Facial scar produced is in less conspicuous location. There is no need to use transcutaneous trocar because the tissues can be retracted superiorly and anteriorly to the level of the sigmoid notch with this approach [13]. The disadvantages being reduced accessibility to medially displaced condyles, and damage to retromandibular vessels. In our study both approaches have given excellent access and visibility to the condylar fractures but with limitations in each technique. Temporary paralysis of facial nerve was seen in 2 patients treated via preauricular approach (Fig6) while as no patient treated via transparotid approach showed facial nerve paresis. According to Baker et al [14] in a study the preauricular approach was used by 70% of the surgeons, the submandibular by 47% of the surgeons, and the retromandibular by 36% of the surgeons and incidence of facial nerve palsy varies from 8% to 17% for the retromandibular approach and is roughly to 22% for the preauricular approach According to Vasconcelos et al [15] facial nerve damage is caused chiefly by compression and/or stretching of nerve fibres, which resulted in neuropraxia, and was caused by excessive or heavy handed retraction. One patient in open group treated via retromandibular transparotid approach developed parotid fistula (Fig 7) after surgery & closure of this fistula in 4 days was attributed to warm hypertonic saline injections. Follow up was done for 5 months with no morbidity seen Rao [16].

## VI. Conclusion

Thus it can be concluded that both approaches have good results in managing condylar fractures with retromandibular approach having ease of access and ease of fixation. So one can always give preference to retromandibular approach over preauricular approach in managing the condylar fracture except in some cases where preauricular approach is the only option like anteromedial dislocation or complete medial dislocation of condylar segment. Situations where patients who reported very late for the surgery with resultant scarring of the tissue, in those cases preauricular approach is the only option.

## References

- [1]. Iida S, Kogo M, Sugiura T, Mima T, Matsuya T: "Retrospective analysis of 1502 patients with facial fractures". *Int J Oral Maxillofac Surg.* 2001 Aug;30(4):286-90
- [2]. Maladière E, Bado F, Meningaud JP, Guilbert F, Bertrand JC: "Aetiology and incidence of facial fractures sustained during sports: a prospective study of 140 patients". *Int J Oral Maxillofac Surg.* 2001 Aug;30(4):291-5.
- [3]. Christian krenkal: "biomechanics and osteosynthesis of condylar neck fractures".1994; 14-15
- [4]. Norman Lester Rowe: "Rowe and Williams' Maxillofacial Injuries".1994
- [5]. Edward Ellis: "Complication of mandibular condyle fracture". *Int JOMFS* 1998; 27: 255-259.
- [6]. Zide MF, Kent JN (1983) Indications for open reduction of mandibular condyle fractures. *J Oral Maxillofac Surg* 41:89
- [7]. Fernandez JA, Mathog RH (1987) Open treatment of condylar fractures with biphasic technique. *Arch Otolaryngol Head Neck Surg* 113:262-266
- [8]. Dahlstrom L. et al: "15 years followup on condylar fractures". *Int J Oral and Maxillofac Surg.* 1989 ; 18 : 18-23
- [9]. Singh V, Bhagol A, Goel M, Kumar I, Verma A: " Outcomes of open versus closed treatment of mandibular subcondylar fractures: a prospective randomized study". *J Oral Maxillofac Surg.* 2010 Jun; 68(6):1304-9
- [10]. Ellis E III, Dean J (1993) Rigid fixation of mandibular condyle fractures. *Oral Surg Oral Med Oral Pathol* 76:6
- [11]. Wu CY, Shi XJ, Li Y (2004) Retromandibular incision and miniplate rigid fixation for condylar and subcondylar fractures. *Shanghai Kou Qiang Yi Xue* 13(1):20-22
- [12]. Chossegros C, Cheynet F, Blana JL, Bourezak Z (1996) Short retromandibular approach of subcondylar fractures. Clinical and radiographic long term evaluation. *Oral Surg Oral Med Oral Pathol Oral Radiol* 82:248-252
- [13]. Ellis Edward III, Throckmorton GaylordS, Palmieri Celso (2000) Open treatment of condylar process fractures: assessment of adequacy of repositioning and maintenance of stability. *J Oral Maxillofac Surg* 58:27-34
- [14]. Baker AW, McMahon J, Moos KF: " Current consensus on the management of fractures of the mandibular condyle. A method by questionnaire". *Int J Oral Maxillofac Surg* 1998;27:258-66.
- [15]. Belmiro Cavalcanti do Egito Vasconcelos: "Prospective Study of Facial Nerve Function After Surgical Procedures for the Treatment of Temporomandibular Pathology". *Journal of Oral and Maxillofacial Surgery* Volume 65, Issue 5, May 2007, Pages 972-978
- [16]. Rao JK, Gehlot N, Laxmy V, Siwach V: "Management of parotid fistula using hypertonic saline". *Natl J Maxillofac Surg.* 2011;2:177-180



**Fig 1. Preauricular approach**



**Fig 2. Retromandibular approach**



**Fig 3. Miniplate fixation**



**Fig 4. Preauricular infection**



**Fig 5. Condylar resorption**



**Fig 6. Facial nerve palsy**





**Fig 7. Parotid fistula**