



Fractures of the mandibular condyle – Open versus closed – A treatment dilemma



Muhammed Shiju^a, Sanjay Rastogi^{b,*}, Prashant Gupta^c, Sumedha Kukreja^d, Roy Thomas^e, Amit Kumar Bhugra^b, Mahendra Parvatha Reddy^a, Rupshikha Choudhury^f

^a Oral and Maxillofacial Surgery, Jaipur Dental College, Jaipur, Rajasthan, India

^b Oral and Maxillofacial Surgery and Oral Implantology, Institute of Dental Sciences, Bareilly, UP 243001, India

^c Private Practice, Palwal, Haryana, India

^d Private Practice, New Delhi, India

^e Private Practice, Kerala, India

^f Post-Graduate, ITS-Dental College, Murad Nagar, Ghaziabad, UP, India

ARTICLE INFO

Article history:

Paper received 14 October 2014

Accepted 21 January 2015

Available online 29 January 2015

Keywords:

Condylar fractures

Open reduction

Closed reduction

Rigid fixation

ABSTRACT

Purpose: The aim of this prospective randomized controlled study was to evaluate the superiority of open method of treatment of mandibular condylar fracture over closed method of treatment by comparing them.

Methods and patients: Out of a total of 50 randomized patients fractures of the mandibular condylar process completed the study and were evaluated. All fractures were displaced, being either angulated between 10° and 45°. The follow-up examinations 1st day, 2nd day, 1st week, 2nd week, 6th week, and 6 months following treatment included clinical evaluation of functional and subjective parameters including visual analogue scale for pain and the interincisal mouth opening, malocclusion, deviation of mouth, range of motion, radiographic measurements were done.

Results: No significant difference was found between the two groups in the maximal interincisal opening, range of movements and TMJ pain. However statistically significant difference was seen in the anatomic reduction of condyle, shortening of ascending ramus, occlusal status and deviation on mouth opening on immediate postoperative phase.

Conclusion: Both treatment options for condylar fractures of the mandible yielded acceptable results. However, a statistically significant difference was seen in the anatomic reduction of the condyle and there was no deviation on maximum mouth opening in patients treated with open reduction and internal fixation which suggests its superiority over closed method.

© 2015 European Association for Cranio-Maxillo-Facial Surgery. Published by Elsevier Ltd. All rights reserved.

1. Introduction

Fractures of the mandible are the most common fractures of the facial bone. Lindhal, 1977 demonstrated that the Mandibular condyle represents 18–57% of all mandibular fractures. The most common cause of mandibular condyle fracture is a road traffic accident. Other causes are assault, stumbling, sports accidents, falls from heights, and industrial accidents.

The clinical features of the mandibular condylar fracture includes malocclusion, open bite, swelling, tenderness over the joint, loss of mandibular function, deviation of chin, crepitus and

laceration of the skin. Treatment options for mandibular condylar fractures vary from open reduction to closed reduction.

Treatment of mandibular condylar fracture depends on clinical and radiological evidence for the presence of the fracture, extent of the injury which can be unilateral or bilateral, level of the fracture, degree of displacement or dislocation.

Traditional teaching in Great Britain has favoured a conservative approach to condylar injuries maintaining that the functional results are on the whole satisfactory and the dangers of surgical intervention outweigh the possible advantages. The protagonists of open reduction however advocate the basic fracture principles of anatomical realignment and skeletal fixation as the best means of achieving an optimal result.

Complication resulting from a condylar fracture treatment includes, intraoperative haemorrhage, or postoperatively infection,

* Corresponding author. Tel.: +91 8439783274.

E-mail addresses: mohdshiju@yahoo.co.in (M. Shiju), docos79@gmail.com (S. Rastogi), prashant_drgupta@gmail.com (P. Gupta), roydrthomas@gmail.com (R. Thomas), docmahen78@gmail.com (M. Parvatha Reddy).

auriculotemporal nerve paresthesia, malocclusion, loss of ramus height, related facial and mandibular asymmetry, Frey syndrome, unsightly scar (Dunaway and Trott, 1996), ankylosis occurring in 0.2–0.4% of the condylar fractures, anterior open bite, chronic pain, joint pain, reduced mandibular function, crepitation, hypomobility occurring in 0.8–0.10%, deviation on mouth opening, facial nerve injury (Lindhal, 1977). The present study is to compare the open versus closed reduction of condylar fractures in order to resolve the controversy of the treatment options.

2. Materials and method

The controlled, parallel group randomized trial was conducted to compare the open reduction internal fixation with closed reduction of unilateral displaced subcondylar and condylar neck fracture management. The patients reporting to the department of oral & maxillofacial surgery with the history of facial trauma were selected irrespective of sex, religion, socio-economic status. After the primary care, postero-anterior (PA) view of skull and Orthopantomogram (OPG) radiographs were taken. The patients diagnosed with isolated unilateral displaced subcondylar or condylar neck fracture with degree of deviation between the condylar fragment and the ascending ramus of 10°–45° either medially or laterally on the postero-anterior view of the mandible were included in the study.

Total 50 patients were included. Patients having age less than 18 years, any kind of systemic disease, condylar head fractures, and insufficient dentition to reproduce normal occlusion, inability to undergo general anaesthesia, any associated midface fractures, any history of temporomandibular joint (TMJ) dysfunction were excluded from the study.

The study protocol was reviewed and approved by the Institutional Ethical Committee. The treatment plan was explained to all the study participants, and their consent was obtained.

The patients were randomly and equally divided into Group 1 and Group 2. Each group comprised of 25 patients. Randomization was done by lots draw using closed envelopes.

Group 1 patients were treated with Open Reduction and Internal Fixation using 1 or 2 titanium miniplates using retromandibular or submandibular approach followed by elastic maxillomandibular fixation (MMF) for 1 or 2 weeks.

Group 2 patients underwent closed management with rigid MMF using Erich's arch bar for 2 weeks followed by guiding elastics for 1 or 2 weeks.

After the removal of MMF, patients were instructed to perform physiotherapy three times a day for 2–3 months or until a mouth opening of 40 mm or more is achieved in the midline with full range excursion.

The patients were followed up for a period of 6 months at regular time interval. The various functional parameters such as maximal interincisal opening, movement of jaw towards ipsilateral side, movement of jaw towards contralateral side, protrusive movement, pain (assessed on the basis of Visual Analogue Scale), malocclusion, angulation of fractured condyle, shortening of ascending ramus, deviation on mouth opening were recorded between the two groups were compared statistically postoperatively at 1st day, 2nd day, 1st week, 2nd week, 6th week, and 6 months, using various tests as Independent t test, Chi square or Innova, Mann Whitney test.

The method used for measuring the degree of displacement of the fracture was as following: The angle between the vertical axis of the displaced condylar fragment and the axis of the original position of the condylar fragment as mirrored from the contralateral side in the frontal plane was traced on OPG and AP view of the mandible, and was measured. Furthermore the vertical height of

the ascending ramus from the condylar surface to the level of the lower border of the horizontal ramus was measured on both sides. The amount of shortening of the fractured side was recorded.

For the evaluation of occlusion, standardized photographs of the patient's occlusion were obtained at preoperatively, 6 weeks, 6 months after treatment. Three photographs were taken (frontal, right and left lateral). One surgeon examined all the sets photographs. Occlusion was rated on linear scale of 1–10. Malocclusion was considered only if the patient complained of occlusal discrepancies postoperatively.

For the evaluation of lateral excursive movement the patient was instructed to slightly open mouth from his physiological rest position and move the mandible as far as possible toward the right or left, movement was measured by millimetre ruler from the labioincisal embrasure between the maxillary central incisors to the labioincisal embrasure of the mandibular incisor.

For protrusive movement, the patient was instructed to move the mandible from his physiologic rest position to the anterior without tooth contact. The distance from the incisal edge of maxillary central incisor to the incisal edge of the mandibular central incisor was measured in this position. The horizontal overlap was also measured and then added to the distance between the upper labial surfaces to the lower edge.

3. Results

Evaluation of mouth opening, pain in TMJ, movement of jaw towards ipsilateral and contralateral side, protrusive movement of jaw, occlusion status of Group 1 and Group 2 was done at 2nd day, 1st week, 6th week and 6th month postoperatively. The comparative values of the two groups were found to be statistically insignificant.

Evaluation of angle of fractured condyle was done and found that the comparison of immediate post operative period has significant *p* value as 0.02 while at 6th month the *p* value was found to be 0.04 which is insignificant. The decrease of angulation of fractured condyle over period of time in group 1 and group 2 was statistically significant with *p* value less than 0.01. The post hoc comparison revealed that there is significant decrease of angulation of fractured condyle from pre operative to immediate post-operatively with *p* value as 0.001 in group 1 and non significant *p* value in group 2 as 0.134. There was significant decrease of angulation from pre-operative to 6 month post-operative time period in both groups with *p* value as 0.001 in group 1 and in group 2 with *p* value as 0.015 [Tables 1A and B].

Evaluation of shortening of ascending ramus was done and on comparison at the immediate post operative period *p* value of 0.03 was found which is statistically significant. At 6 month interval, value was found to be insignificant with *p* value as 0.04 on

Table 1A
Evaluation of angle of fractured condyle in degrees.

Group	Preoperative	Immediate post op	6 months post op	<i>p</i> value
1	23 (15–45)	10 (8–16)	8 (5–14)	0.000
2	17.5 (10–33)	17 (9–33)	17 (9–32)	0.000
<i>p</i> value	0.128	0.02	0.04	

Table 1B
"Significance" Post hoc comparison of angle of fractured condyle.

Group	Immediate post op vs. pre-op	6 months post op vs. pre-op
1	0.001	0.001
2	0.134	0.015

Download English Version:

<https://daneshyari.com/en/article/3143177>

Download Persian Version:

<https://daneshyari.com/article/3143177>

[Daneshyari.com](https://daneshyari.com)