

FUNCTIONAL AND ESTHETIC OUTCOME OF CONSERVATIVE MANAGEMENT OF CONDYLAR FRACTURES

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ABSTRACT

Objective: To evaluate functional and esthetic outcome of conservative management of condylar fractures.

Material and Methods: Patient with condylar fractures presenting to department of Oral and Maxillofacial Surgery at Khyber College of Dentistry Peshawar with history of trauma from fall, road traffic accident or assault having age 2 year to 55 years were included in the study. They were assessed immediately after trauma and then 6 months post-operatively. Data was collected on specifically designed proforma and was analyzed using SPSS 17.

Results: A total of 200 cases were included in the study with a male (60%) predominance. Majority (93%) of the patients had normal occlusion on follow-up examination. Facial asymmetry was noted in 9% of the patients. Only 1% of the patients had limited mouth opening while pain on mastication was reported by 7.5% patients.

Conclusions: Conservative management of the condylar fractures is the preferred treatment option as satisfactory aesthetic and functional outcomes are obtained and the morbidity of surgical approach is avoided.

Key words: Condylar fractures, Aesthetic and functional outcome, Conservative management

INTRODUCTION

Condylar fracture are common facial fractures which are 17.5 to 50% of all mandibular fractures. They are the most controversial fractures regarding the diagnosis and management. They are either caused by direct trauma or by indirect impact. Their displacement depends upon direction, amount of force, state of dentition and occlusal position. There are two types of condylar fractures, Intra capsular and extra capsular. Anatomically condylar fractures are divided into three types which are condylar head fractures, condylar neck fractures and sub-condylar fractures¹.

Managing condylar fractures in children is a debate. It has been suggested that these fractures can create complications including pain, restricted mandibular movement, muscle spasm and deviation of the mandible, malocclusion, pathological changes in the Temporomandibular Joint (TMJ), osteonecrosis, facial asymmetry and ankylosis irrespective of whether

treatment was performed or not^{2,3}. They may also include fracture of the tympanic plate, mandibular fossa of temporal bone fracture, with or without displacement of the condylar segment into the middle cranial fossa, damage to cranial nerves, vascular injury such as bleeding and arteriovenous fistula, and may disturb the balance in the masticatory muscles⁴.

Management of fracture condyles can be either by close reduction or by open approach. Researchers favor close reduction due to avoiding of scar, injury to facial nerve, vessels and infection while other prefer open reduction to avoid TMJ pain, arthritis and mouth opening limitation. Selection of open versus closed technique is still controversial but depends upon displacement, severity and fracture site³. According to Kloth and Landy and Windmark et al open reduction should be considered if condyles are severely displaced and closed reduction should be considered for old and pediatric patients, if open reduction is not possible under general anesthesia, no other facial fracture is present and if occlusion is stable^{5,6}.

The most commonly recommended treatment for children is non-surgical. Normal occlusion is achieved with or without intermaxillary fixation followed by physiotherapy⁷. In conservative treatment

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functional rehabilitation relies on remodeling capacity of condyle especially in children⁸.

This study was conducted to assess the aesthetic and functional outcome of conservative management of condylar fractures. This will provide us with local data on the issue and will help us determine whether similar results could be obtained with conservative management while avoiding the morbidity of surgical approach.

METHOD AND MATERIALS

This cross sectional study was conducted in the Department of Oral and Maxillofacial surgery at Khyber College of Dentistry after approval of Ethical Review Committee of the hospital. A total of 200 patients with mandibular condylar fractures from January 2014 to December 2015, were included in this study. This study was carried out to determine the aesthetic and functional outcome of conservative management of condylar fractures. Data was collected on specifically designed proforma. Informed consent was taken from all patients/guardians. The patients were examined immediately after trauma and were recalled for a follow up visit 6 months post-operatively. On follow-up visit the patients were evaluated for occlusion, facial asymmetry, mouth opening and pain during mastication. The results were analyzed using SPSS 17.

RESULTS

Most of the patients in our study were males (120, 60%) with a male to female ratio of 1.5 : 1. Their ages ranged from 2 years to 55 years with a mean of 21.5 + 13.5.

Majority of the patients had no occlusal discrepancy on follow-up examination after 6 months. Only 14 patients (7%) were found to have occlusal derangement while 186 (93%) had normal occlusion.

Facial asymmetry was noted in 18 (9%) of the patients on follow-up examination while 182 (91%) had normal facial appearance

Majority of the patients had normal mouth opening on examination. Only 2 patients (1%) had limitation of mouth opening .

Pain on mastication was reported by 15 (7.5%) of the patients while the rest of the patient had no complaint.

DISCUSSION

The definitive management of condylar fractures in children and adults have been a controversial subject for long. In the present study majority of the patients who reported with condylar fracture were males, depicting that males are more involved in outdoor activities leading to traumatic injuries. This finding is in accordance with those of other international studies which report that males are more commonly involved in facial fractures^{9,10}.

The age range of patients who presented in our department with condylar fractures was between 2 years to 55 years with a mean age of 21.5. This figure is almost constant around the world. Renato Sawazaki¹¹ had a mean age of 21.5 years. A study done in India¹² also reported the incidence of mandibular condylar fracture occurring most commonly between the ages of 21 and 30 years.

A great number of studies have been done all around the world^{4,5} comparing the results of open versus closed treatment of condylar fractures. In the present study 200 patients having condylar fractures were treated closely. Patients were examined for occlusion disturbance, Facial asymmetry, mouth opening limitation and pain on mastication as these complication are most common complications following condylar fractures in post-operative period after 6 months.

In our study when we clinically examined the post-operative occlusion only 7% patients complained of occlusal discrepancies. This is also comparable to the study of Foroughi¹³ who concluded that about 95.83% of the patients were satisfied from the quality of mastication when treated with methods of closed reduction.

In this study 91% of patients had normal facial appearance while only 9% of the patients had some degree of facial asymmetry. Ellis and Throckmorton¹⁴ compared vertical measures of mandibular and facial morphology after open or closed treatment for fractures of the mandibular condyle. The patients whose condylar process fractures were treated by closed methods had significantly shorter posterior facial and ramus heights on the side of injury, than patients whose fractures were treated by open methods. Most of the

asymmetry in patients treated by closed methods was present by 6 weeks after injury. The patients treated by closed methods developed asymmetries characterized by shortening of the face on the side of injury. It is likely that loss of posterior facial height on the side of fracture in these patients is an adaptation that helps reestablish a new temporomandibular joint¹⁴.

The results of our study depicted a very low incidence of limited mouth opening i.e, only 1% which is in accordance with a study done by Foroughia¹³ which showed that 95.38% patients treated conservatively had normal mouth opening with only one patient having less than 35mm mouth opening. In addition, in a meta-analysis executed by Nussbaum¹⁵ 13 studies were reviewed, and the mean of the maximum mouth opening in all of them was normal. Research¹³ shows that maximum mouth opening was just slightly less favorable in patients after fracture than other people.

In our study 7.5% of patients complained of pain on mastication. In a meta-analysis¹⁶ comparing surgical and non-surgical treatment of mandibular condylar fracture done in 2014 it was concluded that there was no statistically significant effect on post treatment TMJ pain. This may be explained by the fact that both treatments causes certain degree of post op pain. In case of closed treatment it is because of the muscle spasm resulting from MMF while in the case of surgical treatment there is pain due to invasive surgical procedure.

There has been discussion on the factors most likely to be responsible for post op complications of condylar fractures. Some authors argue that Malocclusion, chronic pain, limited mobility and asymmetry are occasionally associated with closed reduction¹⁷⁻¹⁹ regardless of the type of fracture. They felt that there is no relationship between the severity of displacement and the outcome of closed reduction. Others feel that closed treatment for more displaced condylar fractures is more prone to produce suboptimal results (in particular, deviation on mouth opening, loss of ramus height, and malocclusion). They also feel that the frequency of these complications is proportional to the severity of fragment displacement^{20,21}.

CONCLUSION

When we look at the overall results of patients treated with closed reduction techniques there is a minimum amount of post-operative complications and

without the added morbidity of surgical scar, damage to the branches of facial nerve and intraoperative bleeding. Closed reduction with functional therapy is regarded as an overall safe treatment option. There are no chances of injuries to nerves and blood vessels during the treatment, and no postoperative complications such as infection or scar formation.

RECOMMENDATIONS

- Conservative management of condylar fractures should be preferred over surgical management to avoid the morbidity associated with surgical approach, except where there is an absolute indication present for surgical management.
- In children, conservative management should be considered the better treatment option owing to the excellent remodeling capability of the temporomandibular joint.

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