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Case Report

Open Reduction and Internal Fixation of Fracture of Right Parasymphysis, Left Body and Conservative Management of Sagittal Split Right Condylar Head of Mandible in a 12 Year Old Female Due to Road Traffic Accident – A Case Report

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Abstract: Multidisciplinary approach is required for the management of paediatric mandible fractures. Any fault in the treatment might lead to asymmetry of the mandible followed by temporomandibular joint (TMJ) ankylosis. Etiology links to road traffic accidents, fall, sports injuries and interpersonal violence. Condyle is most commonly involved followed by symphysis, body and angle of the mandible. Treatment options include conservative management, closed reduction and open reduction-internal fixation. In this scientific article, we present a case report of a 12 year old female with fracture of right parasymphysis and left body of the mandible managed by open reduction-internal fixation - intermaxillary fixation whereas the right sagittal split of condylar head managed conervatively.

Keywords: mandible, symphysis, body, condyle, open reduction, internal fixation

INTRODUCTION

Scientific literature states that paediatric emergency constitutes 11.3% of facial injuries, of which mandible – 55%, orbit – 30%, dentoalveolar – 23%, midface - 17%, nasal – 15% and cranial – 6%.

Most commonly involved bone is mandible, of which condyle followed by symphysis, body and angle of the mandible. Etiology includes road traffic accidents, fall, sports injuries and interpersonal violence. Multidisciplinary approach is required for the management of paediatric mandible fractures. Mismanagement of the fractured site might lead to asymmetry and temporomandibular joint (TMJ) ankylosis. Treatment options include conservative management, closed reduction and open reduction-internal fixation [1-3]. In our case, a 12 year old female presented with fracture of right parasymphysis and left body of the mandible managed by open reduction and internal fixation – intermaxillary fixation whereas the right sagittal split of mandibular condyle by conservative management.

CASE REPORT

A 12 year old female reported to the Department of Dentistry and Faciomaxillary Surgery with swelling of left lower one third of the face with extraoral sutures done outside (Fig-1). Thorough history elicited the etiology as road traffic accident. Patient was conscious, oriented and afebrile. Clinical examination revealed oedema, restricted mouth opening, abrasion, laceration, bleeding, deviated mouth opening and malocclusion.3D facial computed tomography revealed mildly displaced fracture of right parasymphysis, displaced fracture of left body and sagittal split of right condylar head of the mandible (Fig-2, 3, 4, 5, 6, 7). Prior fitness was obtained from paediatrician, paediatric anesthetist to plan for open reduction with internal fixation under general anesthesia (nasal intubation) followed by intermaxillary fixation. Fracture sites in relation to left body of the mandible and right parasymphyseal was approached via intraoral incision. Right sagittal split condylar head was managed conservatively. The displaced fracture segments were reduced and fixed with 1.5 mm titanium plates and screws (Fig-9). 3-0 Vicryl was used for intraoral closure. As per paediatrician opinion, antibiotics and analgesics were prescribed. The recovery was uneventful (Fig-8). Suture removal was done after a week. Removal of the plates and screws were planned after 4 months.

Fig-1: Preoperative clinical view

Fig-2: 3D facial CT

Fig-3: 3D facial CT

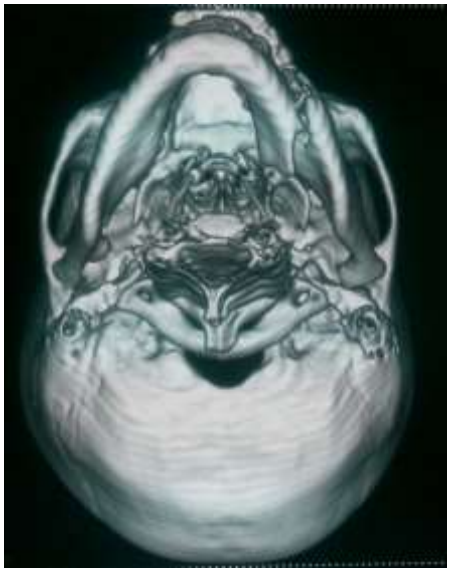

Fig-4: 3D facial CT

Fig-5: Axial CT view

Fig-6: Axial facial CT

Fig-7: Axial facial CT

Fig-8: Postoperative clinical view

Fig-9: Postoperative radiographical view

DISCUSSION

Most common cause of facial fractures in paediatric population is due to road traffic accidents, fall, sports injuries and interpersonal violence. In the mandible, condyle is the most commonly involved region followed by symphysis, body and angle of the mandible. Due to higher surface-to-body volume ratio, oxygen requirements, cardiac output and basal metabolic rate, stroke volume and total blood volume is less when compared to adults. Hypothermia, hypotension and hypoxia following hemorrhage is increased in children [4, 5]. Majority of the involved facial bone fractures might be displaced minimally due to the fact that elastic bones are covered by adipose tissue and incomplete fusion of suture lines. Better stability is observed due to the lack of sinus pneumatization and presence of tooth buds. Spontaneous occlusal readjustment when exfoliation of decidous teeth and eruption of permanent teeth occur in sequence and less susceptibility to fracture might be due to the large size of the cranium. Conventionally, closed reduction with or without splints was practised. In modern times, open reduction and internal fixation is preferred due to three dimensional stability which helps in reducing the treatment duration and primary bone healing. Oral hygiene, postoperative outcome, nutritonal status and respiratory care are influenced by above mentioned factors [6,7]. Inspite of the controversy regarding the impact of open reduction and internal fixation on the tooth buds, craniofacial growth, the technique provides a better stability and successful outcome. In our case, sagittal split of right condylar head was treated conservatively. Open reduction-internal fixation was mainly meant for the displaced fracture segments in relation to the left body of the mandible and mildly displaced fracture of right parasymphysis of the mandible. Plates and screws were removed after 4 months. Usually early complications includes malocclusion, infection, nonunion or malunion whereas late complications include TMJ dysfunction, damage to permanent tooth bud and growth retardation [8-10]. In our case, long term follow up of 2 – 5 years proved successful outcome.

CONCLUSION

Paediatric mandibular fractures which are of displaced manner are better stabilised via open reduction and internal fixation. Follow up even upto longer period might be sugggested for further research.

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