Case Report

JRAD Journal of Research and Advancement in Dentistry

J Res Adv Dent 2018;8:1:52-55.

Management of Pediatric Mandibular Fracture: A Case Report

Vivek Saxena[1*] Deepika Jauhari[2] Chaitali Kundu[3] Aroon K. Bengani[4]

[1]Senior Lecturer, Department of Oral and Maxillofacial Surgery, Daswani Dental College and Research Centre, Kota, Rajasthan, India.
[2]Senior Lecturer, Department of Pediatric and Preventive Dentistry, Daswani Dental College and Research Centre, Kota, Rajasthan, India.
[3]Post Graduate Student, Department of Oral and Maxillofacial Surgery, Daswani Dental College and Research Centre, Kota, Rajasthan, India.
[4]Post Graduate Student Department of Oral and Maxillofacial Surgery, Daswani Dental College and Research Centre, Kota, Rajasthan, India.

ABSTRACT

Background: Mandibular fractures are most common type of pediatric trauma out of which condylar fracture accounts for the most. Closed reduction still holds the key treatment for reduction of such fractures. In this case report a 3 year old girl was treated with closed reduction by gunning splint. The main aim of the treatment was to achieve the pre injury state of occlusion and functions.

Keywords: Mandibular fractures, pediatric trauma, gunning splint, closed reduction.

INTRODUCTION

Management of maxillofacial trauma particularly in children has evolved gradually and progressively since last century.1 Mandibular fractures are more commonly seen than any other facial fractures in pediatric population out of which unilateral condylar fractures are more common followed by symphyseal fractures.2 Trauma in children less than 5 years are less when compared with adult trauma since the children are protected by the parents and hence less chance of exposure is seen to the occupational hazards, violence, and traumatic accidents. However falls may account for large number of traumas in these patients. As the child grows, sports injury is also one of the leading etiology for trauma and in teenage, assault holds the primary number for the same.3

There are various treatment modalities for treating these patients which ranges from conservative treatment or closed reduction to open reduction. However open reduction is less favoured in children as due to periosteal stripping and break in periosteal envelope which may affect growth.4 Consideration of anatomical landmarks plays a key role for establishing a successful treatment and long term results. It is very essential to protect the anatomical landmarks and developing tooth buds during plate and screw fixation in open reduction.

A 3 year old female child, had reported to the department of Pedodontics and Preventive Dentistry in Daswani Dental College and Research Centre with a chief complaint of pain and swelling in lower part of face since 2 days. Patient's parents gave history of alleged fall from stairs before 2 days following which mild bleeding was noticed from mouth. Lacerations were seen on the chin region and also below the lower lip. The bleeding stopped of its own and the patient was taken to the nearby dentist where primary care was done by debriding and suturing the wound and prescribing medications.

On presentation, extraoral examination revealed sutured lacerations and swelling in lower third of face, after removal of the bandage. Patient was having difficulty in speech and mastication. Mouth opening was reduced to 7mm and deviation was seen on mouth opening towards right side. Patient's parents also complaint of continuous pain which did not subside with the prescribed medications and gets aggravated on opening the mouth or touching the lower part of face. On palpation, crepitus and pain was felt on the left side chin region.

Received: Feb. 21, 2018: **Accepted**: Apr. 7, 2018
*Correspondence Dr. Vivek Saxena.
Department of Oral and Maxillofacial Surgery, Daswani Dental College and Research Centre, Kota, Rajasthan, India.
Email: Not Disclosed

pISSN 2278-0076
eISSN 2321-9270

Fig 1: Preoperative profile.

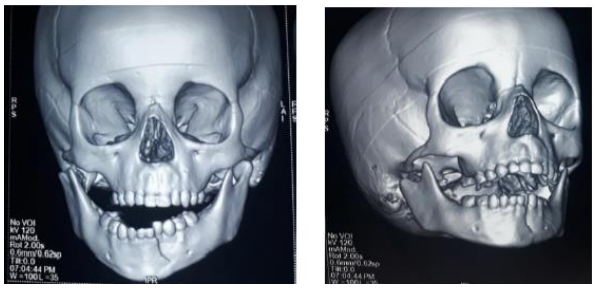

Fig 2: Preoperative CT Scan.

Fig 3: Cast for mock surgery.

Preauricular tenderness was present on the right side and right temporo mandibular joint was not palpable. On intraoral examination, posterior displacement of the left side fragment seen from 72 region and spacing was seen between 71 and 72 and 81 and 82. Occlusion was deranged. Tenderness and crepitus with mild step felt on buccal cortex distal to 71. CT scan revealed fracture line running distal to 71 downward and backward and terminating apical to 72 approximately 6 mm superior to the inferior border of mandible and not separating it. It also reveals mild overriding of the right fragment over the left fragment. CT scan also reveals fracture of condylar head on right side.

Fig 4: Fabricated splint.

Fig 5: Intraoperative Splint Stabilisation.

Fig 6: PA View.

Fig 7: Postoperative arch alignment and mouth opening.

After obtaining informed consent from patient's father, impression was made with alginate under conscious sedation and cast was fabricated using dental stone. Mock surgery was performed on the cast and then the separated fragments were placed and fixed on the desired position and a splint was fabricated with self cure acrylic. The gunning splint was then finished and polished and retained for further use. Under general anesthesia, the mandibular segments were reduced by digital manipulation and fixed with the pre fabricated acrylic gunning splint which was retained by circum-mandibular wiring. PA skull was done on third post-operative day and it showed well reduced fracture. Patient was reviewed for every week and the patient had no fresh complaints. The splint was removed after four weeks. The teeth of the mandibular arch were well aligned after the splint removal. Mouth opening was increased as the patient was advised mouth opening exercises.

DISCUSSION

Almost half to three fourth of all pediatric facial trauma leads to fracture of mandible due to various etiologies.5 Condylar fractures are more commonly seen in these patients. These fractures rarely need any surgical correction. These fractures can be treated with maxilla-mandibular fixation ranging from 7 to 14 days. However aggressive physiotherapy should be done for improving and maintaining the range of motion which can be accomplished with large lollipop for younger children and the use of stacked ice-cream sticks for increasing the incisor opening for older children.2

Management of symphyseal, parasymphyseal, and body fractures of mandible ranges from conservative approach to open reduction based on severity and displacement of the fracture.2,4 Minimally displaced fractures may be treated conservatively by soft diet and medications. Although in young patients healing is prolonged due to inability to follow post operative instructions carefully due to lack of co-operation from the child. In such cases use of gunning splint is done for overcoming such problems.6

Recently Open reduction and internal fixation (ORIF) of these fractures with single plate and bio resorbable plate had gained popularity. Although ORIF poses better stability in three dimensional fashion, it also pose many complications when compared to closed reduction. However in pediatric patients, the rate of complication is minimal when compared to adult patients due to greater osteogenic potential of the child.

Non union of the fracture may be seen in cases of systemic diseases leading to inadequate bone healing.7 Nixon and Lowey8 proposed that the eruption of the permanent tooth may fail in mixed dentition period if the fracture line is reduced by open reduction. In pediatric patients, many factors are essential for an effective treatment plan which includes patient's age, duration of trauma and treatment, extent of the injury, root formation, presence of tooth buds, periodontal health etc. Many a times conservative approach with follow up gives the best result however close monitoring should be done for such patients as it may lead due facial deformities.5 Schiller et al.9 had concluded that trauma occurring in children between 0 to 3 years leads to disturbance in the formation and mineralisation of the permanent teeth. These children have more potential for developing ankylosis in high condylar fractures or intracapsular fractures. In our study, the deciduous teeth were well aligned with a period of one month follow up.

CONCLUSION

The treatment of pediatric trauma thus requires immense knowledge and understanding of the anatomy and physiology of the bone and the surrounding soft tissues. Technical expertise is very much essential for applying and succeeding in various approaches for various patterns of trauma. The main aim of the treatment should be to establish pre injury state in occlusion, facial symmetry, esthetics and contour. As already discussed, conservative approach and long term

post operative follow up still holds the key of the treatment for identifying the future complications.

CONFLICT OF INTEREST

No potential conflict of interest relevant to this article was reported.

REFERENCES

1. Miloro Michael, Block M. S. Peterson's Principles of Oral and Maxillofacial Surgery Volume I. Third Edition. 2012;527.

2. Wolfswinkel E.M., Weathers W.M., Wirthlin J.O., Monson L.A., Hollier L.H., Khechoyen D.Y. Management of pediatric mandible fractures. Otolaryngol Clin N Am.2013;46:791-806.

3. Marano R., Neto P.O., Sakugawa K. O., Zanetti L.S.S., Moraes M. Mandivular fractures in children under 3 years:A rare case report. Rev Port Estomatol med Dent Cir Maxilofac. 2013;54(3):166-170.

4. John B., John R.R., Stalin A., Elango I. Management of mandibular body fractures in pediatric patients: A case report with review of literature. Contemporary Clinical Dentistry. Oct- Dec 2010;1(4):291-296.

5. Aboelgheit M. Management of mandibular fracture in pediatric patient: A case report. Asian Pacific Journal of Health Sciences. Oct-Dec 2017;4(4):81-83.

6. Saini M., Srivastava M, Singh R., Masih U. Management of pediatric mandibular fracture: A case report. Journal of pediatric oral health research. 2017;1(1):20-22.

7. Agnihotri A., Agnihotri D., Dwivedi D., Dwivedi V. Management of pediatric mandibular fracture using acrylic cap splint & circum-mandibular wiring- A report of12 cases. International journal of orthopaedics traumatology and surgical sciences. 2015;1(1):16-19.

8. Nixon F., Lowey M.N. Failed eruption of the permanent canine following open reduction of a mandibular fracture in a child. Br Dent J. 1990;168(5):204-205.

9. Schiller E., Bratu E., Bratu C., Talpos M. Traumatic injuries to the primary teeth and their impact on permanent teeth. Timisoara Medical Journal. 2003:2-5.