CASE REPORT

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Management of mandibular fracture in pediatric patient: A case report

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ABSTRACT

Incidence of maxillofacial injuries in children is less than the adults which may be attributed to the protection provided to them by the parents. However, such injuries still occur. Of them, mandibular fracture is very common which may occur due to many reasons, of which the most common one is fall from height or sport-related injuries. The effect of trauma in pediatric patients differs from an adult as they may lead to growth disturbance of the jaw. Further management may be affected by developing dentition within the traumatized jaw. Therefore, choice of treatment option depends on multiple factors. In the present case report, we have discussed our own approach of treatment of mandibular fracture in a child and discussed significance of splints with the circumferential wiring in select cases.

Key words: Acrylic splint, circummandibular wiring, circumferential wire, pediatric mandibular fracture

INTRODUCTION

There are many reports which have mentioned that mandibular fracture is the most common fracture of facial skeleton in pediatric patients.[1-6] This is less frequently occur than adult,[7] not only due to their unique anatomy but also due to social care of children,[8] which makes them less exposed to trauma. The preferred method of treatment is to use minimally invasive procedures to avoid post-operative functional or growth related disturbance. The treatment options in pediatric mandibular fractures range from conservative treatment by advising soft diet, dental splints, intermaxillary fixation with eyelets or arch bars, circumferential wiring to open reduction and internal fixation (ORIF) using resorbable or non-resorbable bone plates, but closed procedures are still considered as most suitable options due to safe procedures and minimal post-operative complications. In this paper, we have discussed the significance of splints in mandibular fractures.

CASE REPORT

An 11-year-old male child, not known to have any medical illness, presented to oral and maxillofacial outpatient clinic with chief complaints of pain and difficulty during chewing of food after falling. The detailed history revealed that he sustained some injury in his lower jaw after a fall during playing about a week back. There was no history of loss of consciousness, convulsion, or vomiting. He was conscious and well oriented.

Clinical evaluation revealed extraoral tender swelling over the chin and right side of mandibular ramus with the painful limitation of mouth opening. Intraoral examination revealed blood clot in labiolingual crestal wound distal to lower left permanent lateral incisor [Figure 1]. Anterior cross-bite was also evident [Figure 2]. A provisional diagnosis of fracture of mandible was made. C.T was advised to confirm the diagnosis which revealed discontinuity defect in left mandibular parasymphysial region [Figure 3] and right mandibular subcondylar fracture (Figure 4].

After thorough evaluation of clinical findings and radiograph, the treatment using acrylic splint, circumferential wiring, and intermaxillary fixation was decided. Alginate impression was taken, mandibular acrylic splint with the embedded arch bar was constructed on the stone plaster cast after realignment of occlusion by model surgery [Figure 5]. In the maxilla, the fixation of arch bar was done by stainless wires, and in the mandible, the acrylic splint was fixed by circumferential wiring using bone Awl [Figure 6], but after reduction of the fractured mandible. OPG was taken postoperatively [Figure 7] to ensure the proper reduction, fixation and positioning of the circumferential wiring. Maxillomandibular fixation was achieved by elastics, which were kept for 3 weeks. After 3 weeks the fixation was opened, and acrylic splint was removed. The healing of the bone was uneventful. There was no mobility, no cross bite and no mobility in the bone segments.

[Figure 8] however, a traumatic ulcer [Figure 9] in inner side of lower lip was evident which was due to irritation from the splint and embedded arch bar, but it healed after removal of the splint without leaving any scar.

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Figure 1: Clinical pre-operative intraoral photo

Figure 2: Anterior crossbite

Figure 3: Left mandibular parasymphyseal fracture

DISCUSSION

Approximately half of all pediatric facial fractures occur in the mandible,[9] and it occurs commonly due to trauma of various origin.[10] Difference between adult and pediatric mandibular fractures is attributed to varied anatomy,

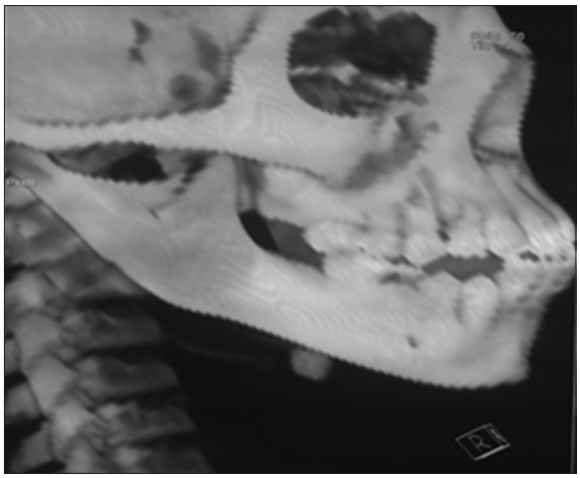

Figure 4: Right mandibular subcondylar fracture

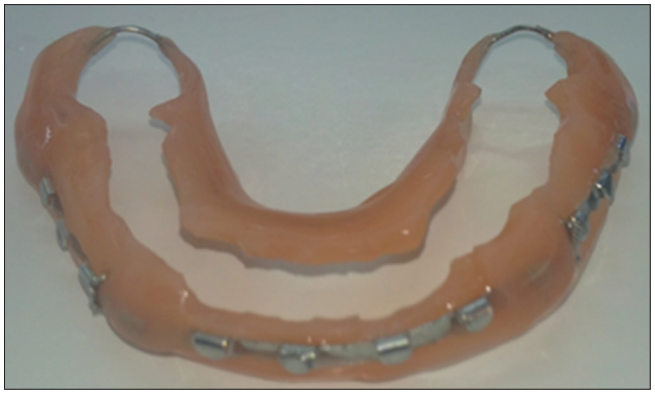

Figure 5: Surgical acrylic splint

Figure 6: Intraoperative photo

rapid healing, cooperation of the patient, and continued pediatric mandibular growth.[11] The factors which affect the treatment plan include patient age, duration between trauma and treatment, location and extent of injury, stage of root formation, the presence of bone fracture, periodontal health of the remaining teeth and however primary, or permanent teeth are affected.[12,13] Sometimes conservative follow-up is the treatment of choice,[14] but Neglected or unrecognized mandibular fracture in pediatric patient may lead to a high incidence of future deformities which need correction

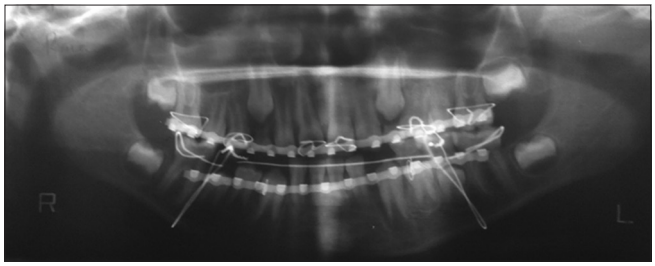

Figure 7: Panoramic X-ray show circummandibular wiring

Figure 8: Post-operative photo

Figure 9: Lower lip traumatic ulcer

later by orthognathic surgery. ORIF provide better stability and controlled reduction of fractured mandible in three dimensional fashion, but the main disadvantages of (ORIF) are destruction of tooth roots and follicles during drilling to fix plates and screws, growth disturbance and the need to another surgery to remove the metallic hardware although biodegradable plates and screws solved this problem. Hence, conservative techniques, like closed reduction and using of splints fixed with circummandibular wiring[15] is considered a good solution in pediatric mandibular fracture cases to avoid the disadvantages of surgical intervention during ORIF.

CONCLUSION

Conservative management of fractured pediatric mandible is cost-effective, safe and a minimally invasive procedure with good prognosis and almost complication free outcome, which are more commonly seen in invasive surgical treatment plans.

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