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REINFORCED OPEN CAP SPLINT WITH CIRCUM-MANDIBULAR WIRING FOR MANAGEMENT OF PEDIATRIC MANDIBULAR PARASYMPHYSIS FRACTURE– A CASE REPORT

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Abstract:

Pediatric facial injuries of the mandible are uncommon as compared to that of adults. When they occur there will be potential growth disturbance of the jaw and permanent tooth bud disturbance. This case report describes the management of parasymphysis fracture of the mandible in a 12-year old boy and also evaluated the reinforced open acrylic splint with circum-mandibular wiring and lower border miniplate in reduction of parasymphysis fracture. The splint was removed after 3 weeks. The patient had no complication. The clinical outcome in the present case indicates the management of pediatric parasymphysis fractures using reinforced open acrylic splint with circum-mandibular wiring and lower border mini plate placement.

Keys words: Pediatric, parasymphysis fracture, Circum-mandibular wiring, reinforced open acrylic splint

Introduction

Dental traumas in children cause serious dental public health problem[1]. Trauma in children causes permanent successors defect in mineralization or tooth morphology, change in coloration and enamel defect [2]. Pediatric facial injuries particularly below the age of 5 year incidence ranging from 0.6%-1.2% [3] which is very negligible. Typical causes of pediatric facial fracture are fall (64%), traffic incident (22%) and sports related incident (9%) [4]. In facial fracture among children nasal fracture are the most common and second most common fracture are mandible [5]. Boys are affected twice than girls in pediatric facial fracture.[6,7] In children symphysis and body fracture are undisplaced because of elasticity nature of mandible and embedded tooth buds that prevents displacement of fragments “like glue”.[8, 9] In management of these fracture aim is to achieve proper bone architecture to its pre-injury position with stable fixation with minimal cosmetic and occlusal impairment.[10] This case report will review the triage, evaluation and management of mandibular fracture in children .It highlights the function of open cap splint with the use of circum-mandibular wiring technique and placement of lower border miniplate in management of mandibular parasymphysis fracture in a 12-year-old child.

CASE REPORT

A 12-year-old male patient presented to the outpatient department of oral and maxillofacial surgery, Saveetha dental college and hospital Chennai, India with a history of fall while playing .The patient was well orientated and conscious. No history of loss of consciousness, bleeding in ear, nose was reported. There was no history of vomiting and convulsions. Intraoral bleeding was evident. Hematological parameters were found to be within normal limit viral markers were negative. On extra oral examination child had swelling on the left parasymphysis region and deviation of face towards left side with limited mouth opening difficulty in mastication and speaking. The patient showed spontaneous pain, when touched in left chin region. There was no pain when the temporomandibular joint was examined. Intra orally sublingual hematoma, step deformity and 73 and 74 avulsed. OPG revealed a radiolucent line in mandibular left primary canine region up to inferior border of mandible with minimal 2 mm displacement of the segments (fig 1).

Procedure

Under local anesthesia, upper and lower arch alginate impression with dental stone cast was made .The fracture site was marked on mandibular cast and splint was marked on mandibular cast and splint was made using saw, mock surgery was performed the cast were held in their reduced position with occlusion, with the opposing maxillary cast was verified with the help of sticky wax. Later clear acrylic splint leaving occlusal surface open were prepared involving lingual and buccal flanges (Fig 2). Under general anesthesia naso-endotracheal tube no-5 intubated and anesthesia was achieved. Standard scrubbing and draping procedure followed. Vestibular incision placed from 72 to 74 regions. Muco-periosteum flap reflected, fracture site identified (Fig 3) and reduced by bi-digital pressure with the guidance of the surgical splint (Fig 4), lower border 4 holes with gap 1.3 mm single miniplate fixed using 4x1.3x4 screws (Fig 5). A small stab incision was placed at the inferior border of the mandible in the left side. A William Kelsey fry awl was introduced through the incision. It was entered lingually along the parasymphysis of the mandible piercing lingual mucosa .A 26 gauge stainless steel wire was fed to all. Once wire is secured to awl it was withdrawn to reach the lower border of mandible and carefully passed through buccal sulcus along the parasymphysis region of mandible care should be taken not to injure mental neurovascular bundle occlusion splint was held in position, both buccal and lingual ends of wire were held together and ironing were done, splint was stabilized by twisting the wire in clockwise direction. Same procedure was carried out on right side (Fig 6). Occlusion and stability of splint verified. Intraoral incision closure done in two layers using 3-0 vicryl. Post operative OPG shows wire properly secured to bone and plate are properly fixed. A postoperative antibiotic was given for 1 week. Soft diet and antibacterial mouth rinse were prescribed. Postoperative monitoring was performed on a weekly basis. Open cap splint were removed after 3 weeks and postoperative orthopantomogram taken (Fig 7).

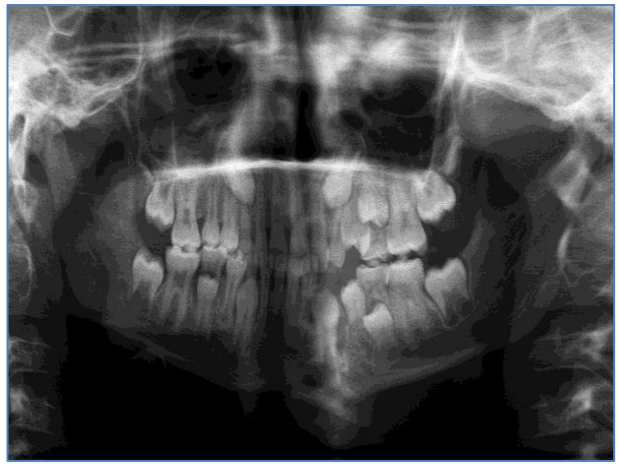

Fig 1: Preoperative Orthopantamogram

Fig 2: Reinforced Open acrylic splint

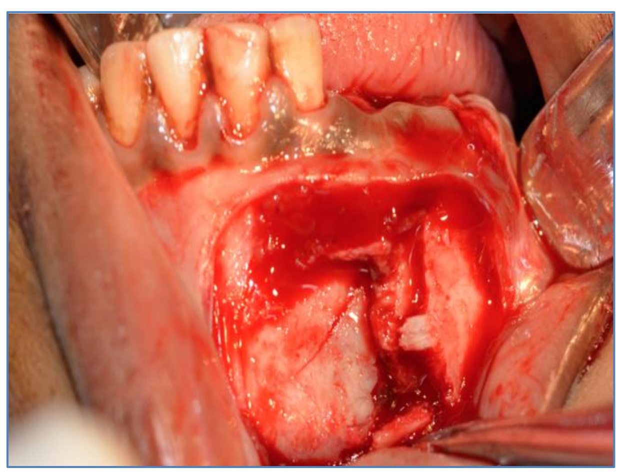

Fig 3: Parasymphysis fracture

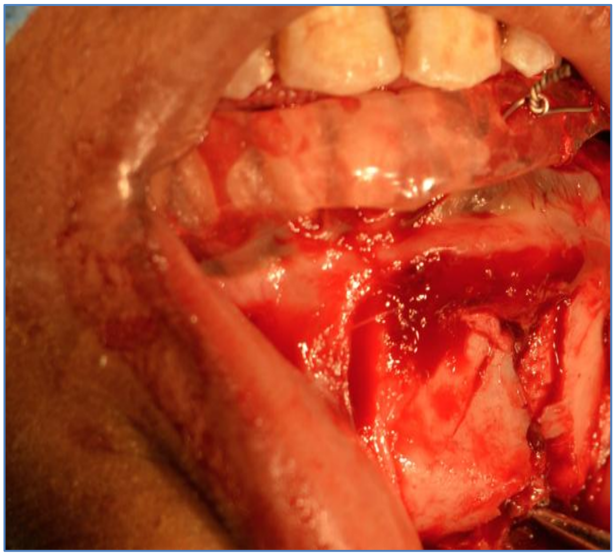

Fig 4: Placement of reinforced open acrylic splint

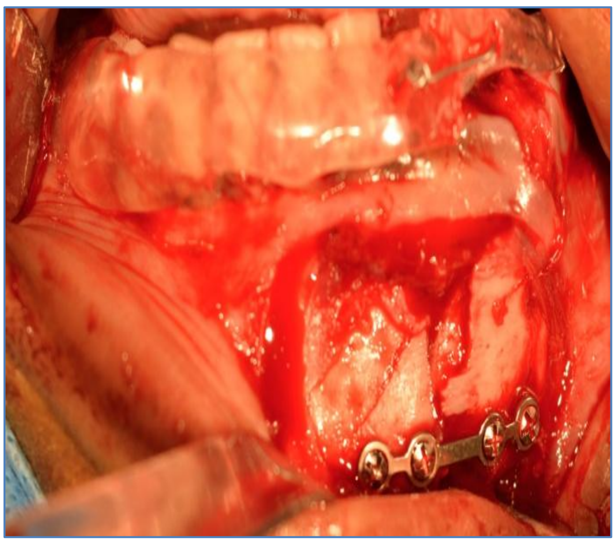

Fig 5: Placement of lower border miniplate

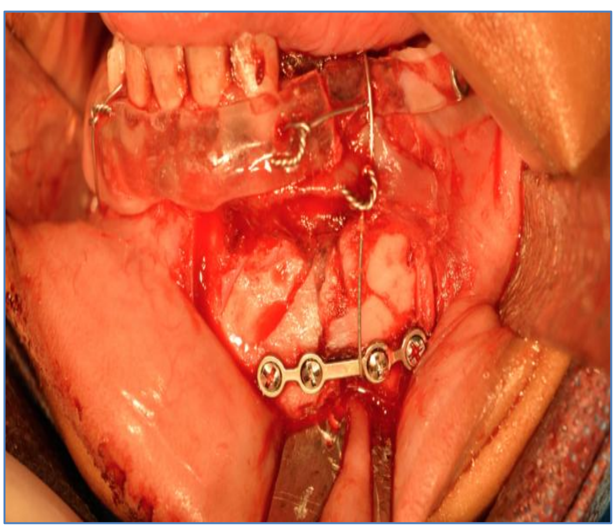

Fig 6: Circummandibular wiring

Fig 7: Postoperative Orthopantamogram

DISCUSSION

The incidence in pediatric mandibular fracture are highest in condylar region (31-45%) are more common than parasymphysis fracture (13-26%) because of high vascular nature of condyle region and thin cortices are least resistant to impact forces during fall.[11,12,13] Factors to be considered in the treatment of dent alveolar injury are:

- Age and co operation of the patient
- Duration between trauma and treatment
- Location or extent of the injury
- Injury to primary or permanent dentition
- Stages of root development
- Presence of fracture
- Periodontal health of remaining teeth [14].

Most important factor in pediatric patient they have high metabolic rate, high osteogenic capacity and high rate of healing, We should reduce time of immobization to 2-3 weeks as a chance of developing ankylosis are much higher. In this case report open cap splint with lower border miniplate used for minimal displaced parasymphysis fracture. Open cap splint is easy to fabricate simple and reliable method for reduction of segment, ease of application and removal, less time consumption, Cost effectiveness and minimal trauma to surrounding tissue.

CONCLUSION

Mandibular fracture in children most commonly occurs in the condyle region following parasymphysis and angle region. Open cap splint for treatment of pediatric mandibular parasymphysis reliable fixation technique for reduction, stability during healing period, ease of application and removal, minimal trauma to adjacent anatomic structure and ease to maintain oral hygiene.

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