Case Report

Use of Suture as an Alternative to Stainless Steel Wire for Stabilisation of Open Cap Splint in Paediatric Mandibular Fractures

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Abstract

The presence of ongoing mandibular growth and tooth buds make it challenging for the treatment of mandibular fracture in paediatric. Most common and widely used method is the use of occlusion splint which are secured with the help of circumandibular wiring. The aim of this technical note was to describe a new method for the treatment of paediatric mandibular fracture in which the occlusion splint was used and stabilized with the help of suture so as to prevent minimal trauma to the soft tissue. Management of paediatric mandibular fracture is challenging and is different then that of adult. Usually this fracture in children are manage with conventional close reduction technique because of the presence of tooth buds and developing stage of mandible. Open reduction and internal fixation is rarely used so as to prevent harm to the developing teeth it is used only if the fracture is severely displaced.

Keywords: Circum-mandibular suturing, close reduction, paediatric mandibular fractures

Introduction

Management of paediatric mandibular fractures is challenging due to the presence of mixed dentition and progressive growth patterns.[1] Usually, these fractures are managed with conventional close reduction techniques. In case of severely displaced fractures where open reduction and internal fixation are indicated, bioresorbable plates and screws are a good alternative to the traditional metallic plating system to prevent harm to the developing dentition.[2] However, high cost and unavailability limits its use. The most common and widely used method is the use of occlusion splint secured with circummandibular wiring.[3,4]

Our aim is to describe a new method for the treatment of paediatric mandibular fracture in which the cap splint was stabilised with the help of circummandibular suturing using polyglactin absorbable suture (Vicryl 2-0 Ethicon; Division of Johnson and Johnson India Ltd., Maharashtra, India) as an alternative to circummandibular wiring.

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Figure 1: Extraoral profile photograph

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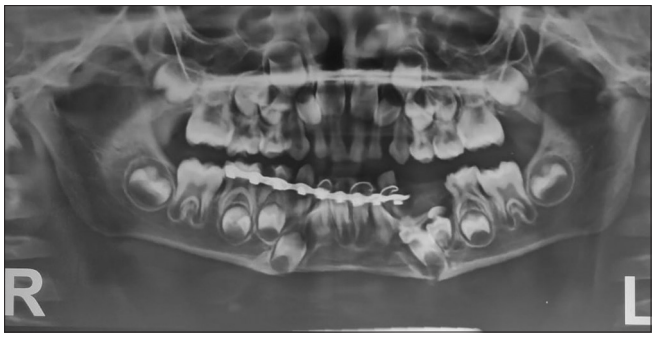


Figure 2: Pre-operative radiograph



Figure 4: Occlusal splint secured with 2-0 Vicryl

Case Report

A 7-year-old male child reported to the Department of Oral and Maxillofacial Surgery at our institute with a chief complaint of pain and difficulty in chewing for 1 month. Patient gave a history of falls on the chin while playing. The patient had visited a peripheral dental care centre at the time of injury, where an arch bar was placed. On examination, the face was grossly symmetrical with no sign of swelling [Figure 1]. Obliteration of the buccal vestibule was noted in the 74 region. On intraoral palpation, this region was found to be hard and non-tender. An orthopantomogram [Figure 2] was done, which revealed a complete bilateral parasymphysis fracture with left condylar head fracture and intruded 74. The lower arch bar was removed, and impression was taken to fabricate acrylic cap splint.

Under nasoendotracheal intubation, a crevicular incision was made from 71 to 75 regions, flap was reflected and 74 was extracted. The fractured segments were reduced manually and stabilised using a cap splint which was secured by circummandibular suturing technique using bone awl and 2-0 vicryl instead of wire [Figures 3 and 4; video 1]. Thus, the splint was further stabilised to the adjacent mucosa using sutures for additional reinforcement. Post-operative physiotherapy for the condylar head fracture and a soft diet was advised. (Post operative radiogragh showed adequate reduction [Figure 5]). The patient was put on weekly follow-up.

The cap splint was adequately stable at the end of 6 weeks with all sutures intact. The patient was comfortably eating

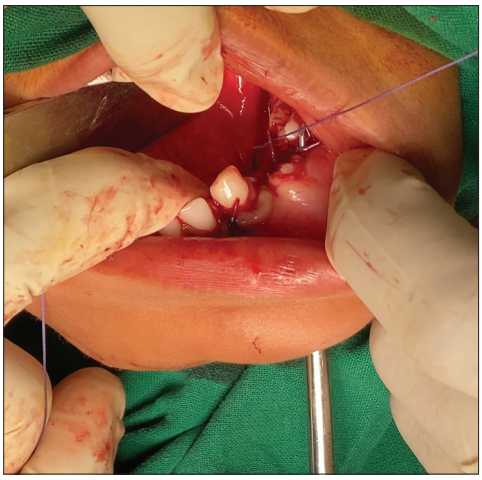


Figure 3: Use of bone awl for circummandibular suturing

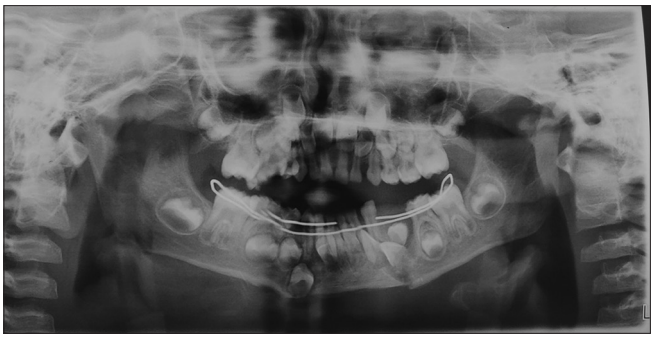


Figure 5: Post-operative radiograph

during this phase with no pain or discomfort, after which the cap splint was removed.

Discussion

The mandible in paediatric is unique with less dense cortex and the presence of developing tooth buds.[2] Recently usage of biodegradable plate and screws have become popular in paediatric fractures; because of the high cost and non-availability, its usage is limited. The use of sutures instead of the traditional wire has the advantage of excellent patient compliance due to painless removal even without the use of anaesthesia. Furthermore, there is no damage to the developing tooth buds and if any remnants are left during the process of removal it will resorb on its own. Although Vicryl shows less tissue reactivity and good tensile strength, it tends to lose 50% of its tensile strength after 35 days.[5] Our experience with this innovative technical modification of using sutures instead of stainless steel has given us satisfactory results to advocate its use in paediatric mandibular fractures.

Summary

Our aim is to describe a new method for the treatment of paediatric mandibular fracture, in which the cap splint was stabilised with the help of circummandibular suturing using

polyglactin absorbable sutures as an alternative to traditional circummandibular wiring.

This is the novel study of using suture instead of stainless steel wire and a satisfactory result was obtained.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Nil.

Conflicts of interest

There are no conflicts of interest.

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