



MANAGEMENT OF BILATERAL PAEDIATRIC CONDYLAR FRACTURE USING AN EFFICIENTLY QUICK AND NOVEL METHOD: A CASE REPORT

Paediatric Surgery

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ABSTRACT

Background: The temporomandibular joints (TMJ) are paired maxillofacial joints that connect lower jaw to your skull. It acts as a significant factor in the mandible's growth, both in length and height, as a result of endochondral ossification at the mandibular condylar cartilage's deep surface. Hence, care must be taken to this joint during the growing phases of children. Any injury to the joint can hamper the normal function and growth of the facial skeleton. **Case Description:** A 13-year-old male patient had reported to the department with chief complaint of Pain and inability to open mouth. Upon clinical and radiographic examination, a diagnosis of Bilateral Condylar fracture was made. A novel method of treatment was opted based on the age and nature of illness. The patient was freed of his complaints within 1 week. **Conclusion:** The pattern of craniomaxillofacial fractures seen in children and adolescents vary from that of adults due to difference in the skeletal anatomy and socioenvironmental factors. It is essential to recognise the differences between children and their adult counterparts while considering treatment of paediatric maxillofacial fractures such as long-term aesthetic and functional facial rehabilitation as effect of injury. This article highlights an effective, novel and faster mode of treatment for bilateral condylar fractures in a Paediatric patient

KEYWORDS

Temporomandibular Joint, Paediatric, Condylar fracture, Case report

INTRODUCTION

Temporomandibular joints (TMJ) are formed by the articulation of mandible and the temporal bone of the cranium. It acts as a significant factor in the growth of the maxillofacial skeleton as a result of endochondral ossification at the mandibular condylar cartilage's deep surface. Hence, care must be taken to this joint during the growing phases of children.

Mandibular fractures are the most commonly reported Paediatric maxillofacial trauma with 19-52% involving the condyle. [1] Conventionally, Paediatric Condylar fractures can be treated similar to adults, with conservative modalities, closed reduction or open reduction based on the severity and need. Regardless of the treatment, complications such as pain, restricted mandibular movement, muscle spasm, malocclusion, and pathological changes in the TMJ are associated with it. [2]

Bilateral condylar fractures lead to severe derangement of occlusion thereby affecting the form and function of the patient. New bone formation following injury to hard tissues takes place in about 2-3 weeks in paediatric patients and hence need early intervention and apt treatment procedure.

The use of orthodontic elastics for temporary maxilla-mandibular fixation have been noted over the years provided good guided occlusion in fracture patients, but over a period of 3-4 weeks. [3] Here, we propose an effective, novel and faster method of treatment of bilateral condylar fractures using Power chains.

CASE REPORT

A 13-year-old Male patient reported to the department of Oral and Maxillofacial Surgery with complaints of pain and difficulty to chew food. On eliciting the history, it was noted that the patient had a self-fall from cycle upon which he sustained injuries to the face. There was no underlying medical history reported by the patient. Primary Multiple abrasions over the lip and chin along with laceration over the lower lip was noted. Intraorally, Avulsion of maxillary anterior teeth were noted and occlusion was deranged. Thorough wound debridement and suturing of the lacerated wound was done under aseptic conditions. Patient was advised for orthopantomography for evaluation of fracture (Figure 1). The OPG revealed bilateral fracture of the condyle along with displacement of the head. The patient and his attenders were informed regarding the various treatment options available and based on the clinical presentation, radiographic findings and patients' growth phase, conservative mode of treatment was opted with the additional use of Novel Power chains in adjunct with elastics. Arch bar fixation

was done over the maxillary and mandibular arches under local anaesthesia (2% lignocaine with 1:80,000 adrenaline) and the power chains were incorporated on either side, alternative to the regular elastics (Figure 2). It was noted that the fracture reduction occurred over a period of 5-7 days (Figure 3) along with temporisation using Kruber appliance (figure 4) when compared to the longer duration of 2-4 weeks with the use of normal elastics or steel ligature wires. [4]



Figure 1: Pre operative OPG showing Bilateral Condylar fracture with missing maxillary central incisors.



Figure 2: Maxillomandibular fixation using Erich arch bar technique with elastics & power chains and composite block on the mandibular 1st molars.

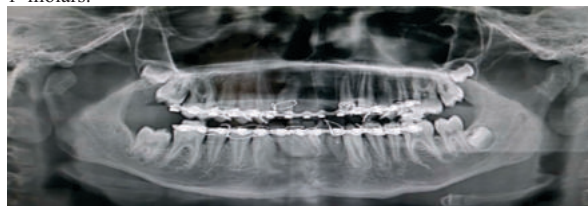


Figure 3: Post operative OPG showing reduction of Condylar heads to anatomic position.



Figure 4: 1 week Post operative occlusion with prosthetic rehabilitation (Kruber Appliance).

DISCUSSION

Power chains are strings of connected elastomeric O-rings and have been widely used in the Field of Orthodontics to help close spaces between teeth. In comparison to the traditional elastics, these exert more pressure, under physiological limits, thereby speeding up the treatment process. Despite the known physical properties that the power chain possesses, their use in the field of Maxillofacial surgery has not been reported. [5,6]

The uniform, controlled force generated with the use of Power chains in Maxillo-mandibular Fixation, guides the displaced condylar head into normal anatomical position, thereby restoring the form and function of the patients Temporomandibular Joints. [4] Due to its faster mode of action in comparison to the normal guiding elastics used for MMF, it is preferred to use in paediatric patients, thereby providing an efficient treatment even during prime growth phases.

CONCLUSION

The advantages of this novel method are simple non-invasive procedure, cost efficiency, shorter treatment phase, ability to deliver accurate tractional forces and adjustability to patient needs. It proves to be an efficient alternative treatment modality for closed reduction of condylar fractures. There still exists the need for replacement of the power chains, if they wear out during the course of treatment.

DECLARATION

-Ethical Approval and consent to participate: Patient and guardians were explained regarding the method of treatment and consent was obtained prior to initiation of treatment.

-Consent for Publication: No personal details of the patient breaching the consent have been disclosed.

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-Availability Of Data And Materials: Not Applicable

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