Management of Bilateral Temporomandibular Joint Ankylosis in a Pediatric Patient – A Case Report

Swati Sakhuja, Hemant Bajpai

ABSTRACT

Temporomandibular joint (TMJ) ankylosis involves fusion of the mandibular condyle to the cranial base, which can lead to inability to open the mouth from partial to complete. The treatment of TMJ ankylosis poses a significant challenge because of technical difficulties and a high incidence of recurrence. This case report describes the surgical management of a bilateral bony TMJ ankylosis in an 11-year-old boy with interpositional arthroplasty followed by vigorous physiotherapy.

Keywords: Temporomandibular joint Ankylosis; Costochondral Graft.

Introduction

Ankylosis is a Greek terminology meaning “stiff joint”. It can be defined as “inability to open mouth due to either a fibrous or bony union between the head of the condyle and glenoid fossa”. When the pathosis affects both the joints it completely inhibits the movements of the mandible, making chewing, swallowing and speech very difficult. The facial development is impaired resulting in retarded growth of the mandible. Since the condyle of the mandible is the growth centre for the mandible, any disturbance in this region provokes a change in the development of the mandible. This case report describes the surgical management of a bilateral bony TMJ ankylosis in an 11-year-old boy with interpositional arthroplasty followed by vigorous physiotherapy.

Case Report

An 11-year-old patient reported with the complaint of inability to open mouth for last 1 year. History revealed that the patient had an impact on the chin due to a fall while playing. No bleeding from mouth or face was noted at the time of injury. Swelling appeared in front of both ears subsequent to the trauma, which resolved in due course of time. After the resolution of swelling, mouth opening started reducing gradually, for which the patient consulted a local doctor who seemed to misdiagnose and could only prescribe some medication of unknown nature. But as the mouth opening continued to decrease gradually, Clinical examination shows mouth opening less than 5mm (Figure 1). An old scar on chin was present and both the temporomandibular joints were tender on palpation. Though the condyles were not palpable, there was no apparent deviation of the mandible. However, signs of retrognathism and a budding bird-face deformity as well as slightly prominent anti-gonial notch were present. Radiographic examinations were comprised and orthopantomogram revealed a lack of structural organization and obliteration of TMJ space bilaterally. Based on these findings, a diagnosis of bilateral bony TMJ ankylosis was confirmed. After complete evaluation, a bilateral interpositional TMJ arthroplasty with interposing costochondral graft and temporalis myofascial flap was planned under general anesthesia followed by aggressive physiotherapy.

Procedure for gap arthroplasty: The patient was intubated using a fiber-optic endoscope. Under aseptic precautions, a Heister’s jaw opener at the time of surgery. An 11-year-old patient reported with the complaint of inability to open mouth for last 1 year. History revealed that the patient had an impact on the chin due to a fall while playing. No bleeding from mouth or face was noted at the time of injury. Swelling appeared in front of both ears subsequent to the trauma, which resolved in due course of time. After the resolution of swelling, mouth opening started reducing gradually, for which the patient consulted a local doctor who seemed to misdiagnose and could only prescribe some medication of unknown nature. But as the mouth opening continued to decrease gradually, Clinical examination shows mouth opening less than 5mm (Figure 1). An old scar on chin was present and both the temporomandibular joints were tender on palpation. Though the condyles were not palpable, there was no apparent deviation of the mandible. However, signs of retrognathism and a budding bird-face deformity as well as slightly prominent anti-gonial notch were present. Radiographic examinations were comprised and orthopantomogram revealed a lack of structural organization and obliteration of TMJ space bilaterally. Based on these findings, a diagnosis of bilateral bony TMJ ankylosis was confirmed. After complete evaluation, a bilateral interpositional TMJ arthroplasty with interposing costochondral graft and temporalis myofascial flap was planned under general anesthesia followed by aggressive physiotherapy.

Procedure for gap arthroplasty: The patient was intubated using a fiber-optic endoscope. Under aseptic precautions, a Heister’s jaw opener at the time of surgery. An 11-year-old patient reported with the complaint of inability to open mouth for last 1 year. History revealed that the patient had an impact on the chin due to a fall while playing. No bleeding from mouth or face was noted at the time of injury. Swelling appeared in front of both ears subsequent to the trauma, which resolved in due course of time. After the resolution of swelling, mouth opening started reducing gradually, for which the patient consulted a local doctor who seemed to misdiagnose and could only prescribe some medication of unknown nature. But as the mouth opening continued to decrease gradually, Clinical examination shows mouth opening less than 5mm (Figure 1). An old scar on chin was present and both the temporomandibular joints were tender on palpation. Though the condyles were not palpable, there was no apparent deviation of the mandible. However, signs of retrognathism and a budding bird-face deformity as well as slightly prominent anti-gonial notch were present. Radiographic examinations were comprised and orthopantomogram revealed a lack of structural organization and obliteration of TMJ space bilaterally. Based on these findings, a diagnosis of bilateral bony TMJ ankylosis was confirmed. After complete evaluation, a bilateral interpositional TMJ arthroplasty with interposing costochondral graft and temporalis myofascial flap was planned under general anesthesia followed by aggressive physiotherapy.

Procedure for gap arthroplasty: The patient was intubated using a fiber-optic endoscope. Under aseptic precautions, a Heister’s jaw opener at the time of surgery. An 11-year-old patient reported with the complaint of inability to open mouth for last 1 year. History revealed that the patient had an impact on the chin due to a fall while playing. No bleeding from mouth or face was noted at the time of injury. Swelling appeared in front of both ears subsequent to the trauma, which resolved in due course of time. After the resolution of swelling, mouth opening started reducing gradually, for which the patient consulted a local doctor who seemed to misdiagnose and could only prescribe some medication of unknown nature. But as the mouth opening continued to decrease gradually, Clinical examination shows mouth opening less than 5mm (Figure 1). An old scar on chin was present and both the temporomandibular joints were tender on palpation. Though the condyles were not palpable, there was no apparent deviation of the mandible. However, signs of retrognathism and a budding bird-face deformity as well as slightly prominent anti-gonial notch were present. Radiographic examinations were comprised and orthopantomogram revealed a lack of structural organization and obliteration of TMJ space bilaterally. Based on these findings, a diagnosis of bilateral bony TMJ ankylosis was confirmed. After complete evaluation, a bilateral interpositional TMJ arthroplasty with interposing costochondral graft and temporalis myofascial flap was planned under general anesthesia followed by aggressive physiotherapy.
A careful surgical technique and subsequent meticulous attention to long-term physiotherapy are both considered essential to achieve a satisfactory result. Kaban et al proposed a seven-step protocol for treatment of TMJ Ankylosis, which includes, complete excision of the ankylosic mass; ipsilateral coronoidectomy; contralateral coronoidectomy when necessary to achieve complete mobility; lining of the TMJ with native disc, when possible, or a temporalis myofascial flap; reconstruction of the ramus-condyle unit with a costochondral graft; early mobilization of the jaw; and aggressive physical therapy. Use of the autogenous costochondral interposition graft is an effective procedure for the prevention of re-ankylosis following the surgical release of TMJ ankylosis. In case of growing child the interpositional material should not only fill the gap but should also reduce the facial deformity and induce normal growth potential of the mandible.

Various growth centre transplants have been used but costochondral junction graft has been found to be the material of choice as an interposition in ankylosis in growing children. The rib cartilage has capabilities similar to that of the condylar cartilage and when a costochondral graft is used to replace TMJ apparatus and subjected to functional movements; it can function as a replacement for the mandibular condyle both histologically and physiologically. The cartilaginous portions of such grafts adapts well to the function of the reconstructed TMJ and to the ramus vertical dimension by reproducing condylar morphology. According to MacIntosh, the advantages of this graft are its biological compatibility, workability and functional adaptability. The growth potential of the costochondral graft makes it the ideal choice in children. This graft has also the advantage of a predictable behavior. However, there is a possibility of excessive growth of the graft, resulting in deviation of the chin and mandibular prognathism years later.

Abul Hassan concluded that deep temporal fascia is supplied by middle temporal artery, a constant branch of superficial temporal artery. Temporalis fascia flap is a locally available axial pattern flap, easy to elevate and available in all clinical situations. This vascularized flap has fewer chances of subsequent absorption and fibrosis. Use of a Costochondral graft to reconstruct a TMJ affected by ankylosis yields a functional condyle with growth potential.

In conclusion use of a costochondral graft for the reconstruction of a TMJ in ankylosis gives good prognosis. In this patient, there has been a significant improvement in the anteroposterior position of the mandible and a noticeable increase in mouth opening since the release of the ankylosis. The net result has been a high degree of patient satisfaction.

**References**


How to cite this article

Address for Correspondence
Dr. Swati Sakhuja BDS, Graduate Student, Maharana Pratap Dental College and Hospital, Kanpur, Uttar Pradesh, India. Email: drswati101@gmail.com

Source of Support: Nil
Conflict of Interest: None Declared