

Temporomandibular Joint Ankylosis In Children: A Case report And Litrature Review

Dr. Gopal Jee

3rd Yr Pg

Oral And Maxillofacial Surgery Sudha Rustagi College Of Dental Science, Faridabad, Haryana, India

Dr. Ashish Gupta

(MDS)

Proffessor And Head -Oral And Maxillofacial Surgery
Sudha Rustagi College Of Dental Science, Faridabad, Haryana, India

Dr.Pankaj Bansal

MDS

Professor -OMFS
Srcdsr, Faridabad

Abstract

Temporomandibular joint ankylosis is one of the most complicated craniomaxillofacial pathological conditions characterized by replacement of normal architecture of temporomandibular joint with fibrous or bony tissue , common in the paediatric population which .often presents as reduced mouth opening to no mouth opening after history of fall affecting both cosmetic and function .It may or may not be associated with obstructive sleep apnoea. Different surgical approaches and respective and reconstructive technique and various protocol have been discussed having merits and demerits over each other. success lies in long term physiotherapy ,clinical follow up and proper counselling .(1)

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I. Introduction

Temporomandibular joint ankylosis is one of the most complicated craniomaxillofacial pathological conditions characterised by replacement of normal architecture of temporomandibular joint with fibrous or bony tissue.It is most commonly associated with trauma (13–100%), local or systemic infection (10–40%), systemic diseases (10%) such as ankylosing spondylitis, rheumatoid arthritis, psoriasis and previous TMJ ankylosis surgery..

Temporomandibular joint ankylosis affects quality of life AEITEOLOGY-Apart from trauma ,infection, systemic disease ,and spondylitis gene mutation rs202090603 (p.E33K), rs140782326 (p.V281 M), rs11573942 and gene polymorphism (rs2073618 and rs2228568) has also reported to be associated with temporomandibular joint ankylosis.(3)

CLASSIFICATION- TMJ ankylosis classified as unilateral or bilateral, fibrous or bony, complete or incomplete, Based on radiographic features as seen using cross sectional imaging (CT & MRI) ankylosis has been classified as follows: Type I/A1., Type II/A2., Type III/A3. Type IV/A4.

Investigations- a. CT, b. MRI C. OPG D .Lateral Cephalogram etc are of prime importance. Polysomnography in case of obstructive sleep apnoea should be performed. Appropriate medical specialities e.g., ENT, Rheumatology, Psychology, Dietician, Physiotherapist, Paediatrician and Anaesthetist should be consulted before operating . Mouth opening less than 25 mm for more than 2 months [without significant improvement from jaw opening exercises] can be considered as a baseline indication for surgical intervention(1)

II. Case Report

A 7 years old child patient reported to the department of Oral and Maxillofacial surgery with chief complain of inability to open her mouth providing history of trauma at the age of 3 years to her chin .At the age of 7 she reported to dept of OMFS at SRCDSR,HOSPITAL where she advised CT scan and OPG.she reported to the department but by that time her mouth opening reduced to nil .After examination case was planned using piezo surgery under general anaesthesia

III. Treatment

Treatment was planned in accordance with **kaban's** protocol under general anaesthesia. Surgical approach consisted of Alkayat Bramley preauricular incision, full thickness myo-facial flap was reflected and the ankylotic mass was exposed. The section consist of two horizontal osteotomy and coronoidectomy using piezoelectric device. Aggressive early mobilization of the jaw by creating forceful mouth opening of about 38mm using mouth gag at the time of surgery. Temporalis fascia flap harvested from the same surgical site and rotate over the zygomatic arch over the whole of the glenoid fossa and sutured with 3.0vicryl. (6) Followed by physiotherapy

IV. Discussion

Temporomandibular joint ankylosis in children results in significant adverse consequences if left untreated. Hence planned inter positional gap arthroplasty and coronoidectomy using piezo surgery under general anaesthesia.

Variable results have been reported with gap arthroplasty, inter positional arthroplasty and excision and joint reconstruction with alloplastic or autogenous materials.

Inter positional gap arthroplasty has been prevailing since decades for management of TMJ a (Dimitroulis, 2004) because of the less aggressive treatment and the interposition of tissue, which prevents re ankylosis. Re-ankylosis is most commonly caused by incomplete excision of bony and fibrous mass.

It is critical to have adequate surgical access to expose and fully resect the ankylotic mass and to perform the ipsilateral coronoidectomy. Once the ankylotic mass has been removed the joint must be lined with vascularized tissue

TMJ ankylosis results in significant adverse complication like facial asymmetry worsen as of hypo mobility, abnormal muscle function, short ramal height, reduced mid face growth.

So it is better to treat as soon as possible and with the aim to achieve mouth opening up to 35mm. (1)

A study by kaban in 2009 w.r.t TMJ ankylosis in children reveals the result with mean MIO of 37.5 +/- 3.90 mm at 1 year in 14 patients with 18 affected joints. The mean preoperative MIO was 16.5 +/- 9.06 mm. In a more recent retrospective analysis of 11 children younger than 16 years of age treated by this protocol, 8 patients had ankylosis secondary to trauma, 1 had hemifacial microsomia, one reported with infection, and 1 congenital ankylosis. In 2 patients, both joints were affected. The ramus condyle unit was reconstructed with either a CCG (n = 6) or DO (n = 5). The patients were followed for a period of 4 to 74 months (mean 24.8).

The mean preoperative MIO was 11.5 mm (range 1 to 23). Postoperatively, the mean MIO was 38.2 mm (range 15 to 49). Ten of 11 patients had an MIO greater than 30 mm after the operation and 1 had to have fibrous ankylosis release 6 years after the first operation. When we compare with our result with 18 months follow up, MIO found to be 35mm which is in line with this study as a result of strict protocol followed. According to another study by Spinelli G et al in 2016 the mean total blood loss for the piezoelectric group was 103 ml (SD = 23, 95% CI = 85.1–120.0, range = 76–132). The intraoperative bleeding with traditional surgery was 130 ml (SD = 27, 95% CI = 110.8–149.7, range = 89–165). The mean length of the operation with a piezoelectric device was 101 min (SD = 13, 95% CI = 91–112, range = 82–121)(3). Conversely, the mean duration of the surgical procedure using a traditional burr was 88 min (SD = 7, 95% CI = 83–93, range = 77–98). The mean overall hospital stay was 2.6 days (range 2–4 days)

While in this case because of piezo electric device there was minimal bleeding and overall hospital stay was 3 days, however we did not report any severe bleeding from the pterygoid plexus or maxillary artery. Operating time was longer in the piezoelectric but osteotomy was easier and more precise. Piezo surgery uses ultrasonic vibrations to make clean and safe osteotomies. Piezoelectric

devices have demonstrated better clinical results when compared with traditional instruments, including precision during the cut, reduced intraoperative blood loss, and lower incidences of postoperative nerve impairment, swelling, and hematoma (Beziat et al., 2007).

Little has been written regarding ultrasonic systems for temporomandibular joint ankylosis (TMJa) (Landes et al., 2008; Olate et al., 2014). The mean length of operation was 120 min vs 101 min as we were operating using piezoelectric device first time, so time elapsed in changing and selecting proper tips. But the biggest advantage was minimal blood loss as we did not experienced any hazard of damaging vessels. (7)

There was lower incidence of post operative hematoma and swelling following piezo osteotomy. In our experience, piezosurgery is a reliable method that ensures satisfying results in terms of surgical outcomes, reduced hospital stay of patient. Although the time of the procedure and the learning curve are lengthened by the use of the ultrasound device, it offers precise bone cutting while minimizing adjacent soft-tissue injury. Piezoelectric bone removal for the release of ankylosis of the TMJ is associated with minimal bleeding and few postoperative complications. It is a possible alternative to traditional surgery due to the clinical benefits demonstrated. (8)

