

SURGICAL AUDIT OF 86 PATIENTS OF TM JOINT BONY ANKYLOSIS TREATED AT A TERTIARY CARE HOSPITAL IN SRINAGAR

¹SHABEER AHMAD WANI, MBBS, MS, Mch (Plastic Surgery), MRCS (Glasgow)

²SAJAD AHMAD SALATI, MS, MRCS

³ADIL HAFEEZ, MS, DNB

⁴M INAM ZAROO, MS, Mch

⁵SHABIR IQBAL, MS, Mch

⁶M ASHRAF DARZI, MS, Mch

ABSTRACT

The authors present a review of 86 patients with bony ankylosis of Temporomandibular joint treated between Jan 1990 and Dec 2005 at a tertiary care referral hospital in Srinagar. Childhood trauma was the leading cause of ankylosis. For initial 50 patients of the series, acrylic spacer was used as interpositional material, and for the rest of patients, silicone block was used. Follow-up evaluation ranged from 14 months to five years (average 31 months). Recurrence was observed in 5 patients (all in acrylic group). There was statistically no significant difference in post operative mouth opening and other complications between the two groups. The aim of the study was to analyze the treatment outcome of the patients with TMJ ankylosis.

Key words: Temporomandibular joint, Childhood trauma, Acrylic spacer, Silicone block

INTRODUCTION

Ankylosis of Temporomandibular joint (TMJ) is an affliction which occasions much misery for the unfortunate victim, interfering with mastication and digestion of food, denying the body benefits of balanced diet, and preventing participation in the pleasures traditionally associated with the culinary arts. The condition develops in childhood, facial deformity brings psychological stress which adds to the physical handicaps, thus disrupting family life and creating emotional disturbance. The treatment of TMJ ankylosis is surgical.¹ There are different surgical approaches to TMJ ankylosis ranging from chondroosseous grafts to polymer glenoid fossa prosthesis. Nevertheless achieved results are similar.²

METHODOLOGY

Eighty six patients with TMJ ankylosis were treated between Jan 1990 to Dec 2003 in the Plastic Surgery

wing at SKIMS in Srinagar. All these cases were studied in detail. The diagnosis was based on history, clinical examination, and radiology. A thorough history and physical examination was made to determine the cause and degree of ankylosis, dental occlusion, facial asymmetry and maximal inter-incisor opening. Mothers of patients were asked about any trauma in the childhood or use of forceps during delivery. Majority of patients were in the age range of 11-20 years (60.7%). Youngest patient was 5 year old boy and oldest was a 22 year old girl. Male to female ratio was 1:1.5. In patients with unilaterally affected joints, there was roundness and fullness of face with facial asymmetry, mid point of chin and mandibular dentition were deviated towards affected side and movements at joint were very slight or none. Right side was affected in 53.6% of the patients and left side involvement was 42.8%, while bilateral ankylosis was found in 3.6% of patients. All these 86 patients had bony ankylosis. Preoperative

¹ Asst Consultant in Plastic Surgery, Department of Surgical Specialities, King Fahad Medical City, PO Box: 59046, Riyadh 11525 – Saudi Arabia, e-mail: wanidrshabir@readiffmail.com

² Asst Consultant

³ Asst Professor

⁴ Associate Professor

⁵ Additional Professor

⁶ Professor & Head of Department

mouth opening as indicated by distance between incisors after voluntary attempt at opening the mouth was less than 0.5 cm in 43 patients, 0.5-1 cm in 28 patients and 1-1.5 cm in 15 patients. Besides routine investigations, radiographic analysis including special views for TMJ and tomograms were done. Direct coronal CT scans were undertaken in patients who could afford this investigation.

Patients were given general anaesthesia by an experienced anesthetist with special training in difficult airway management. In all cases exposure was through a right angled incision with its vertical limb situated just in front of pinna and extending downward from the level of tragus.³ The incision was deepened avoiding injury to the superficial temporal vessels and auriculotemporal nerve. This exposes the ramus in the region of joint, the bony block and the zygomatic arch. The dissection was extended anteriorly and posteriorly to expose the anterior and posterior limits of bony block. Surgical treatment consists of creation of transversely elliptical gap between the two bony components of joint using a neurosurgical perforator and bur and a chisel. After creation of gap, it was filled with acrylic cylinder (in 50 cases) or silicone block (in 36 cases). The range through which the mouth opened immediately after operation was only 1.5-2.5 Cms. It increased in postoperative period with introduction of increased number of ice cream sticks one over the other between the molars on subsequent days. The patients were followed up monthly in follow-up clinic for assessment of results or complications. No patient underwent any postoperative orthopantomogram or cephalogram for assessing growth disturbances as no patient was ready to undergo any kind of orthognathic intervention in postoperative period. Preoperative and postoperative interincisor distance was the main criteria in the assessment of results. Patients were enquired regarding implant related problems and were examined for postoperative complications.

RESULTS

The present study comprised of 86 cases of bony ankylosis treated by authors over 13 years. Trauma was found to be the commonest cause of ankylosis (63.3%) while in 19.6% of patients, no cause could be established (Table 1).

Difficulty in opening the mouth was the main complaint in all 86 patients while facial asymmetry was the second most common complaint (Table 2).

Range of mouth opening immediately after surgery varied from 2.5-4 cms. In majority of our patients, good results were obtained in the immediate postoperative period with postoperative mouth opening of 3.0-3 cm (Table 3).

Movements of the mandible were free. In cases where there was progressive decrease in the mouth

TABLE 1: ETIOLOGY OF TMJ ANKYLOSIS

Cause	No of patients	Percent-age
Trauma	55	64.3
Infection	14	16.1
Undetermined	17	19.6
Total	86	100.00

TABLE 2: PRESENTING COMPLAINTS

Complaint	No of patients	Precent-age
Difficulty in opening mouth	86	100.00
Facial asymmetry	76	88.37
Pain	64	74.41
Speech distortion	40	46.51
Micrognathia	05	05.81
Poor nutrition	04	4.65

TABLE 3: MOUTH OPENING AFTER SURGERY

Maximum Inter-incisor opening	No of patients	Precent-age
<2.5 Cm	0	0
2.5-3.0 Cm	17	19.76
3.0-3.5 Cm	40	46.52
3.5-4.0 Cm	5	5.81
Total	86	100.0

TABLE 4: COMPARISON BETWEEN ACRYLIC GROUP AND SILICONE GROUP

Criteria for comparison Statistical Significance	Acrylic group (n=50)	Silicone group (n=36)	P.value	
Wound infection	3	1	>.01	N.S
Extrusion	2	1	>.01	N.S
Recurrence	5	0	>.01	Significant

opening in the follow-up period, the results were considered to be poor. Vigorous jaw exercises ensued by using increased number of ice cream sticks kept one over the other. That gave encouraging results in the form of gradual increase in mouth opening, however recurrence was observed in 5 patients (5.86%). These 5 patients were reoperated at the same institute but were excluded from the study.

In the follow-up which ranged from 14 months to 5 years, no significant complication was noticed during or after surgery. Traction facial nerve paresis because of traction on wound edges was seen in 3 patients. Wound infection was noted in 4 patients, which was managed by daily dressings and antibiotics. Acrylic spacer extrusion was observed in 2 patients, while silicon block extrusion was seen in one patient.

Acrylic spacer was used in 50 patients, with wound infection in 3 patients while in 36 patients, where silicone block was used, there was only a single case of wound infection. However, this difference was statistically insignificant ($P>.01$). The recurrences were seen only in acrylic group. This difference was statistically significant (Table 4). There was no difference in post-operative mouth opening between two groups (Table 4).

DISCUSSION

Ankylosis of TMJ has secondary effects. These secondary changes were cosmetically important, but the overriding surgical significance was the problem of post-operative reankylosis and presentation of adequate range of motion in the affected joint. The fusion of coronoid process with zygomatic arch is not often seen. Sharma and Dave reported that the presence of contracted temporalis muscle makes removal of coronoid process mandatory in every case of TMJ arthroplasty. Excision of coronoid process increases the range of motion of mandible immediately after surgery.⁵ In the

cases reported by Rowe et al⁶ coronoidectomy was done in some cases with good results. Removal of periosteum from outer aspect, resection of bony bridge, completely disconnecting the two bony components of the joint and creating a gap of at least one cm, detachment of bony components, its maintenance by interposition of implants and encouraging the early active and vigorous movements of new joint promote non union and prevent recurrence. Hartwell⁷ used silicone rubber replacement with good results while Tajima⁸ used free perichondrial grafts as interpositional material. Sawhney⁹ found acrylic spacer safe, simple and cheap material that can be fabricated locally. We have found silicon block superior to acrylic cylinders, as it has low morbidity and reankylosis. Silicone is freely available and the use of acrylic cylinders was stopped. Implantation of great toe or toe joint to the mandibular fragment was not found feasible because of difficulty in fixing it to the mandibular fraction. We agree with Aggarwal¹⁰ et al that coronal CT fully characterize the TMJ ankylosis at an acceptable radiation exposure. Balaji¹¹ found that submandibular anchorage discharge of the broad temporalis muscle flap prevents reankylosis by inhibiting flap contraction and decreases need for vigorous physiotherapy. Souza¹² et al⁵ used silicone block in older patients while he managed young patients with costochondral grafts. Saeed¹³ did interpositional arthroplasty at all ages but it is advisable to defer the operation until the age of 5 years because younger children do not cooperate in the immediate postoperative period and are reluctant to do jaw exercises for fear of pain, thereby increasing the chances of recurrence.

The results of using silicone block were excellent as there was no re-ankylosis and extrusion so we stopped using acrylic spacers as an interpositional material. This property of silicone is due to its more bio-compatibility and tissue friendly nature.

The result were excellent in majority of cases. The recurrences which were seen, were considered to be due to marked recession of mandible and consequent considerable mechanical disadvantage to which the depressors of mandible were subjected.

Other reason was disuse atrophy of depressors of mandible and reluctance on the part of patients to do vigorous jaw exercises which resulted in poor mobilization of new joint in the postoperative period.

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