



A RARE CASE OF TEMPOROMANDIBULAR JOINT ANKYLOSIS DUE TO BURN INJURY IN CHILDHOOD

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ABSTRACT

Ankylosis of the temporomandibular joint (TMJ) is an extremely disabling affliction. TMJ ankylosis is most commonly associated with trauma (13-100%), local or systemic infection (10-49%), or systemic disease (10%). We are presenting 13 yr old female unilateral TMJ ankylosis due to burn injury at age of four years treated conservatively. Burn injury at early age and lack of jaw physiotherapy with subsequent fibrosis and contracture favoured development of ankylosis.

Key Words: Temporomandibular, Trauma, Radiotherapy, Clavicular osteochondral grafts

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 the glenoid fossa". Ankylosis of the temporomandibular joint (TMJ) is an intracapsular union of the disc-condyle complex to the temporal articular surface that restricts mandibular movements, including the fibrous adhesions or bony fusion between condyle, disc, glenoid fossa, and eminence (1). It causes disturbances of facial and mandibular growth, and acute compromise of the airway invariably resulting in physical and psychological disability [2]. TMJ ankylosis is most commonly associated with trauma (13-100%), local or systemic infection (10-49%), or systemic disease (10%), such as ankylosing spondylitis, rheumatoid arthritis, and psoriasis. Trauma, radiotherapy, surgical excision of TMJ tumors, infection, and systemic disease can all result in mandibular hypomobility [4]. The treatment of TMJ ankylosis poses a significant challenge. Proponents of interpositional arthroplasty have used a variety of materials. Chossegros et al [5] have reported good results with full-thickness skin grafts and temporalis muscle flaps and poor results with homologous cartilage. Wonderful results with costochondral grafting have been reported [3].

CASE REPORT

We are presenting a case of 13 year old female who reported to our department with complaint of inability to open the mouth. On examination maximum mouth opening 4mm, condylar movements were absent on right side condyle, asymmetric face and deviation towards right side. Examination reveals burn mark on right side temporal region and around temporomandibular joint with a history of burn injury on right side face at age of 4 years fig 1. Patient has no history of trauma during childhood or ear discharge/infection or any other bone and joint diseases or any autoimmune condition. OPG reveals absence of joint space and bony union between condyle and glenoid fossa. CT reveals bony union and graded as type 2 according to Sawhney's classification fig 2. Burn injury was treated by conservative means. Treatment plan formulated as interpositional gap arthroplasty and ipsilateral coronoidectomy. The surgical exposure was by means of a preauricular incision Alkayat and Bramely combined with an extended temporal incision. When the ankylosed joint was exposed fig 3, liberal resection of the ankylosed joint and coronoid process and burring of the glenoid fossa created a gap of at least 15 mm between the roof of the fossa and the mandible fig 4. Surgical resection of ankylosed mass [gap arthroplasty] and placement of interposition material temporomandibular flap and also coronoidectomy of ipsilateral side

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MMO =36mm achieved intra operatively fig 5. Jaw exercises began as early as 24 hours postoperatively and advised to follow jaw exercise physiotherapy strictly and with periodic follow up. Patient has 2 year followup without recurrence.

DISCUSSION

The main causes of TMJ ankylosis are trauma and infection (2,3). Estimates of a traumatic origin range from 26% to 75% and of infection from 44% to 68% [2]. Rare causes of ankylosis are systemic disease, rheumatoid arthritis, psoriatic arthritis, Mariestumpell disease and burn. In burn injury deep as well as subcutaneous tissues in the vicinity of burns are subjected to severe damage. Soft-tissue fibrosis is a common problem and may be followed by calcification and ossification. Patients with burns from thermal or electrical injury may develop bony ankylosis. This bony ankylosis may result either from bridging extra-articular heterotopic ossification with preservation of the underlying joint or from intra-articular fusion due to joint destruction. Untreated TMJ ankylosis in children results in significant adverse consequences.

Interpositional arthroplasty with autogenous or alloplastic material at the osteotomy site is a mechanism for preventing recurrence (3,9,10). Various materials have been used such as skin, dermis, flaps of the temporal muscle/fascia (2), silicone (9,10,) and cartilage. TMJ reconstruction may be necessary for patients with extensive osteotomy and consequently insufficient ramus height, and can be performed with costochondral grafts, clavicular osteochondral grafts, iliac crest grafts, coronoid process grafts and alloplastic condylar implants (3,9). Aggressive physiotherapy should be recommended in order to disrupt and prevent adhesions, prevent soft-tissue contractions and redevelop normal muscle function. Regardless of the surgical approach used to gain access to the TMJ, the final dissection places the facial nerve at risk for damage (11,12). A loss of function of the frontalis and orbicularis oculi muscles is always a possibility (11). The incidence of complications such as permanent injury of the facial nerve is 1.5 to 32% (12), usually disappearing within 6 months.

CONCLUSION:

Usually the cause of ankylosis is trauma and infection around temporomandibular joint but it was rare case of anky-

losis due to burn injury at an early age, that result in contracture and subsequently decreased movements and hypomobility of condyle, predisposing the temporomandibular joint to ankylosis [mmo=4mm]. Treated by interpositional gap arthroplasty using temporomyo-fascial flap as glenoid fossa lining to prevent recurrence and ipsilateral coronoidectomy done to achieve mouth opening of 35mm, followed by aggressive physiotherapy. Patient has 2 year followup without any complication.

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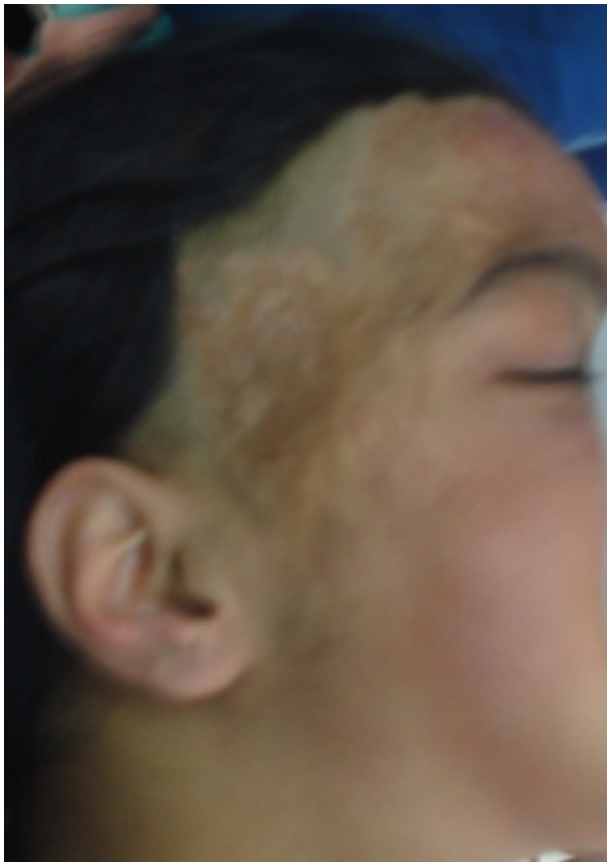


Figure 1: Burn mark on temporal and infratemporal region



Figure 3: Exposure of ankylosed joint mass

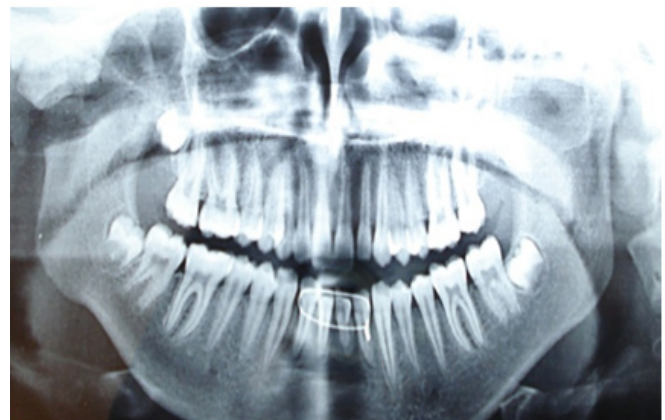


Figure 4: Gap of 10 mm created by resection of ankylosed mass

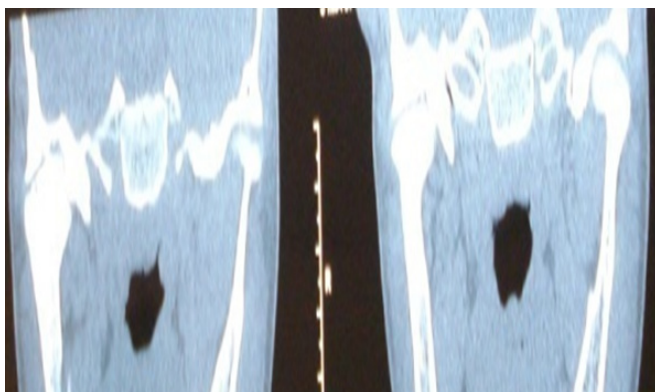


Figure 2: CT revealing bony union between condyle and glenoid fossa



Figure 5: Post operative MMO =34mm

Table 1: Causes of TMJ ankylosis

TRAUMA	INFECTION	RARE CAUSES
Forcep delivery	Otitis media	Rheumatoid arthritis
Hemarthrosis(Direct/indirect trauma)	Parotitis	Septic arthritis
Condylar fracture - Intracapsular/Extracapsular	Tonsillitis	Prolonged trismus
Glenoid fossa fracture	Furuncle	Burn
	Abscess around joint	Bifid condyle