



RESEARCH ARTICLE

TREATING TMJ ANKYLOSIS: A NEPAL EXPERIENCE

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ABSTRACT

Introduction: Although temporomandibular joint (TMJ) ankylosis is one of most commonly encountered condition it is also the most overlooked and under managed conditions in dental practice. TMJ forms the cornerstone of cranio-facial integrity and hence its ankylosis adversely affects the growth and development of the jaws and occlusion. Impairment of speech, difficulty in mastication, poor oral hygiene, rampant caries and acute compromise of the airway are the consequences of ankylosed TMJ.

Aim: The aim of this article is to present review of cases of TMJ ankylosis seen in Nepal. The various management strategies and their applications are discussed herewith.

Materials and methods: The authors present here the surgeries of TMJ ankylosis carried out at different hospitals of Nepal during a period of 7 years (2003-2010) with a mean follow up period 5 years. The total numbers of patients were 20 and the total numbers of joints operated were 28. Al kayat Brahmley incision was used and aggressive post-operative mouth opening exercises for minimum of 6 months were done in all the cases.

Results: Out of the 28 joints involved: 20 were bony, 5 fibro-osseous and 3 were fibrous. The Al kayat Brahmley incision was used in all the cases. Different surgeries done were involving temporalis fascia, temporalis myofascia, silastic block and dermis. The mouth opening was increased in all cases, post operative complications were noticed in seven cases and no case of recurrence was reported.

Conclusion: The authors have shared their experiences of TMJ surgeries and tried to create awareness of the clinical signs and symptoms of TMJ ankylosis, to allow early diagnosis and treatment.

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INTRODUCTION

The ankylosis of the temporomandibular joint (TMJ) means bony or fibrous adhesion of the anatomical components of the joint and their ensuing loss of function (Valentini, 2002). The adhesion can be between the condylar head of the mandible and the glenoid fossa of the temporal bone, or between any tissue component of the lower jaw (hard and soft) and the maxilla, zygoma, or the base of the skull. Ankylosis can result in difficulty in mastication, digestion, speech, appearance, and oral hygiene and is a disabling condition (Vasconcelos, 2006). Ankylosis can be either true or pseudo type (Spijkervet, 1994). True ankylosis is an intra-articular pathology caused by adhesion of the mandibular condyle to the glenoid fossa. Pseudo ankylosis can be due to extra-articular causes that could follow hyperplasia of the coronoid process, fracture of the zygomatic arch, radiation-induced fibrosis of the temporalis muscle.

TMJ ankylosis can be bony or fibrous, unilateral or bilateral. The causes of ankylosis can be trauma, infection, systemic disease such as ankylosing spondylitis, rheumatoid arthritis, or psoriasis (McFadden, 2001). Variety of surgical treatment of ankylosis have been proposed out of which interpositional arthroplasty is considered to be the most appropriate treatment. Various materials such as autogenous graft, allogenic grafts have been used as interpositional materials. We present here our experience of treating TMJ ankylosis with variety of materials used for interpositioning.

MATERIALS AND METHODS

The surgeries of TMJ ankyloses were carried out at different hospitals of Nepal during a period of 7 years (2003-2010) with a mean follow up period 5 years.. The total numbers of patients were 20 and the total number of joints operated were 28. The number of male patients were 14 (70%) and females were 6 (30%). The mean age of patient was 21.6 ±4.21 years (range 14-29). The most common etiology was trauma (80%)

followed by infection (20%). Out of the 20 patients, 12 patients had unilateral involvement of joint (12 joints) whereas in 8 patients, bilateral joints (16 joints) were involved. Out of the 20 patients, 6 cases were recurrent cases who were previously treated with gap arthroplasty. Out of the 28 joints involved, 20 were bony, 5 fibro-osseous and 3 were fibrous. In 28 joints, 3 were grade I, 7 were grade II and 18 were grade III. The type of surgeries we performed is summarized in following table. Al kayat Brahmley incision was used in all the cases and aggressive post-operative mouth opening exercises for minimum of 6 months were done in all the cases.

Table 1. Showing the joint involvement and TMJ ankylosis surgeries done in the study

Number of cases	Joint involvement		Type of surgery
	Unilateral	Bilateral	
8	4	4	Temporalis fascia
7	3	4	Temporalis myofascia
2	2	0	Silastic block
3	3		Dermis

RESULTS

In this study, total number of subjects was 20 and the total number of joints operated was 28. There was increase in mouth opening post surgery in all the cases. The mean pre-operative mouth opening was 5 mm while post-operative mean mouth opening was 35 mm. The post-operative complications in our series were as summarized in following table. In the mean follow up period of 5 years, we had no cases of recurrence.

Table 2. Showing post op complications

Complications	Number of cases	Percentage
Facial nerve weakness	2	10
Anterior open bite	3	15
Infections	1	5
Graft displacement	1	5

DISCUSSION

Ankylosis of the temporomandibular joint (TMJ) is a major distressing disease that is mainly caused by trauma, infections, and systemic disorders such as arthritis and otitis, among others (Sidebottom, 2013). Accordingly, early interventions are necessary once the condition is recognized. These treatments include three different surgical modalities (Khadka et al., 2012).

- Gap arthroplasty
- Interpositional gap arthroplasty
- Joint reconstruction

Gap arthroplasty (GA) with simple osseous resection was first advocated by Abbe in 1880 (Parker, 1948). However, this surgery has been reported to have various complications and is associated with a high recurrence rate (Al-Moraissi, 2015). Joint reconstruction (AR) with autologous or alloplastic techniques is also an alternative treatment for TMJ ankylosis, especially in end-stage TMJ disease (Voiner et al., 2011). Nevertheless, due to its technical limitations, higher cost and unpredictable complications, AR is not considered as a routine treatment in some countries (Mercuri et al., 2003). Recently, interpositional gap arthroplasty (IPG) has been developed and has become the primary surgical management of TMJ ankylosis¹¹. Different interpositioning grafts have been

introduced, including autogenous materials (temporalis myofascial flap, fascia lata, auricular cartilage, dermis and fullthickness skin), alloplastic materials (gold foil, tantalum foil, Silastic and Proplast) and xenografts (Pogrel et al., 1990).

This comparative research was performed with the following objectives:

- To compare the effectiveness of different surgical procedures in treating TMJ ankylosis
- To evaluate the recurrence rate of these procedures

In this study we compared surgeries with temporalis fascia, temporalis myofascia, silastic block and dermis. Post operative complications were seen in seven cases and recurrence was not observed in any case. According to Chossegras, the temporalis muscle flap has been reported with a satisfactory success rate, especially in children (over 83%), due to its rich blood supply and close proximity to the temporal site (Chossegras, 1990). TMJ reconstruction is necessary for patients with extensive osteotomy and consequently insufficient ramus height (Al-Moraissi, 2015 and Voiner et al., 2011). Reconstruction may be performed with costochondral grafts, clavicular osteochondral grafts, iliac crest grafts, coronoid process grafts and alloplastic condylar implants. However, problems including technical limitations, high cost and potential complications (graft fracture, infection, over growth, donor site morbidity foreign body reaction, and dystrophic bone formation) make this surgery an irregular treatment.

Conclusion

Thus to conclude interpositional gap arthroplasty (IPG) showed a preponderance in treating TMJ ankylosis followed by joint reconstruction (AR) and gap arthroplasty (GA).

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