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Research Article

**A PROSPECTIVE STUDY TO EVALUATE TEMPORALIS
MUSCLE FLAP AND TO IDENTIFY COMMON CAUSES
BEHIND THE OCCURRENCE OF TEMPOROMANDIBULAR
JOINT ANKYLOSIS**¹Dr. Haroon Arif, ²Dr Ayesha Shabeer, ³ Dr Farrah Azam, ⁴Saad Javaid¹Punjab Dental Hospital Lahore²THQ Hospital Shakargarh³WMO, THQ Hospital Pindi Bhattian⁴House Officer, Nishtar Hospital Multan

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Abstract:

Objective: The objective of this research was to evaluate temporalis muscle flap as an inter-positional arthroplasty material among temporomandibular joint ankylosis patients; moreover, it also aimed to identify repeated causes of temporomandibular joint (TMJ) ankylosis.

Patients and Methods: This prospective research was carried out on a total of 50 patients of different age group at Jinnah Hospital, Lahore from September 2017 to August 2018. On the fifth postoperative day, we documented first postoperative MIO (Maximal Incisal Opening). Follow-up was continued for eighteen months for final documentation of MIO.

Results: Trauma was the basic etiologic reason among 46 TMJ ankylosis patients (92%); whereas, three patients were observed with infection as a common factor of TMJ ankylosis. In the course of eighteen months follow-up there was no case of limited mouth opening relapse.

Conclusion: Temporalis muscle is one of the successful inter-positional material as it has proved its worth with reduced complications and morbidity for the management of TMJ ankylosis.

Keywords: Temporalis Muscle Flap, Temporomandibular Joint (TMJ), Trauma, Ankylosis, Material, Inter-Positional and Infection.

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INTRODUCTION:

TMJ ankylosis is a severe psychological and physical disability which refers to a state in which condyle fuses to glenoid fossa through fibrous tissue or bone. Conditions like infections, trauma, systemic diseases and congenital anomalies incline to onset of TMJ ankylosis [1, 2]. It affects patients' speech, mastication, appearance, dental hygiene and may compromise air passage as well [3, 4]. Various clinical manifestations are also involved depending on onset time, age, both joints involvement and anatomical location. Its mild form may happen in the form of limited mouth opening and severe state causes anatomical alterations incapacitation in the facial outlook and appearance [5].

TMJ ankylosis is difficult to manage due to technical difficulties and increased reoccurrence rate. It is managed through various treatment strategies such as surgical interventions including gap arthroplasty and costochondral grafting [2, 6, 7]. Chossegrors reported better outcomes with full thickness temporalis muscle and skin grafts; whereas, poor outcomes with materials like alloplastic [8]. Temporalis muscle has enjoyed a better repute in the recent past with reduced complications and morbidity [9, 10]. Studies have also targeted the treatment of TMJ ankylosis both nationally and internationally [11, 12].

The objective of this research was to evaluate temporalis muscle flap as an inter-positional arthroplasty material among temporomandibular joint ankylosis patients; moreover, it also aimed to identify repeated causes of temporomandibular joint (TMJ) ankylosis.

METHODOLOGY:

This prospective research was carried out on a total of 50 patients of different age group at Jinnah Hospital, Lahore from September 2017 to August 2018. On the fifth postoperative day, we documented first postoperative MIO (Maximal Incisal Opening).

Follow-up was continued for eighteen months for final documentation of MIO. We did not include the patients of pseudo ankylosis, improved MIO fibrous ankylosis patients and patients with improved mouth opening. Patients who underwent TMJ surgery were also asked for a detailed history. Physical examination determined the cause, type and extent of ankylosis. Vernier callipers were used for the measurement of MIO. Frontal and lateral view photography helped in the review and assessment of facial profile. A radiographic assessment was also carried out for every patient.

Jaw exercises included chewing fingers and gums postoperatively and after being stable the exercise was started with wooden spatulas. Proper procedure of exercise was also demonstrated. We discharged the patients after recording MIO after the fifth postoperative day. During follow-up, the patients requiring orthodontic treatment were extended further treatment. SPSS software was used for data analysis.

RESULTS:

In the course of eighteen months follow-up there was no case of limited mouth opening relapse. Among fifty patients there were 27 females (54%) and 23 males (46%). Enrolled patients were in the age bracket of four to thirty-five years. The mean age of the patients was 14.5 years and mean ankylosis duration was 6.5 years which was in the range of two to nineteen years. Forty-two patients had unilateral ankylosis (84%); whereas, 8 patients had bilateral ankylosis (16%). Preoperative mean MIO was (2.6 ± 1.4) mm. Fifth postoperative day mean MIO was (31.3 ± 2.03) mm (P -Value < 0.001). Trauma was the basic etiologic reason among 46 TMJ ankylosis patients (92%); whereas, three patients were observed with infection as a common factor of TMJ ankylosis.

Detailed outcomes about etiological factors, surgical outcomes, preoperative and postoperative outcomes are given in the tabular and graphical presentation.

Table – I: Etiological Factors Proportion

Aetiology	Number	Percentage
Trauma	46	92
Chronic Infection	3	6
TMJ Dislocation	1	2

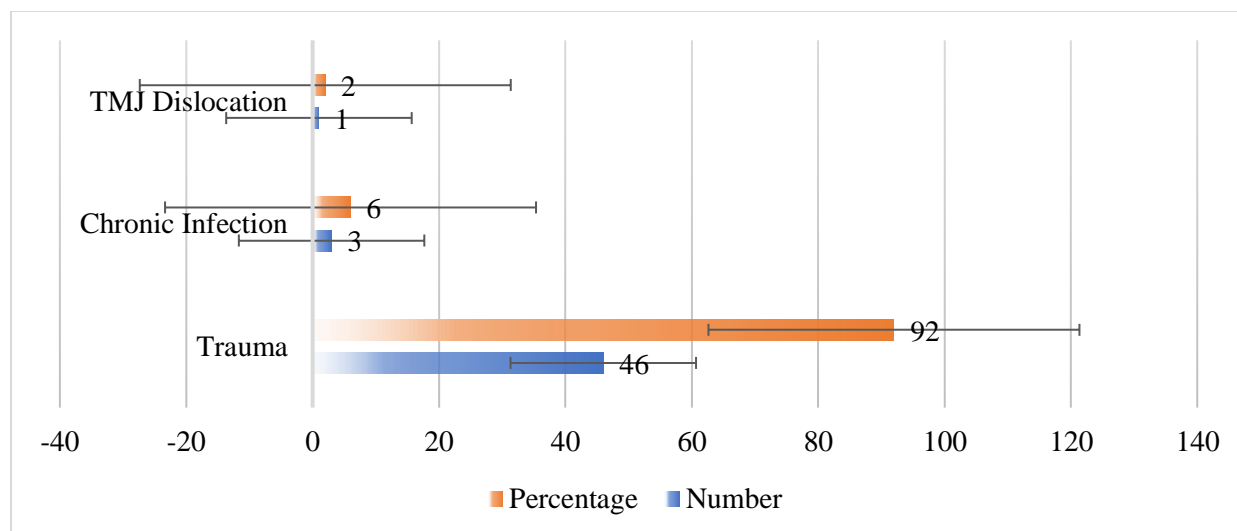


Table – II: Preoperative and Postoperative Assessment

Assessment	Minimum	Maximum	Mean	± SD	P value
Preoperative	0	6	2.6	1.14	< 0.0001
Fifth Postoperative Day	29	36	31.26	2.03	

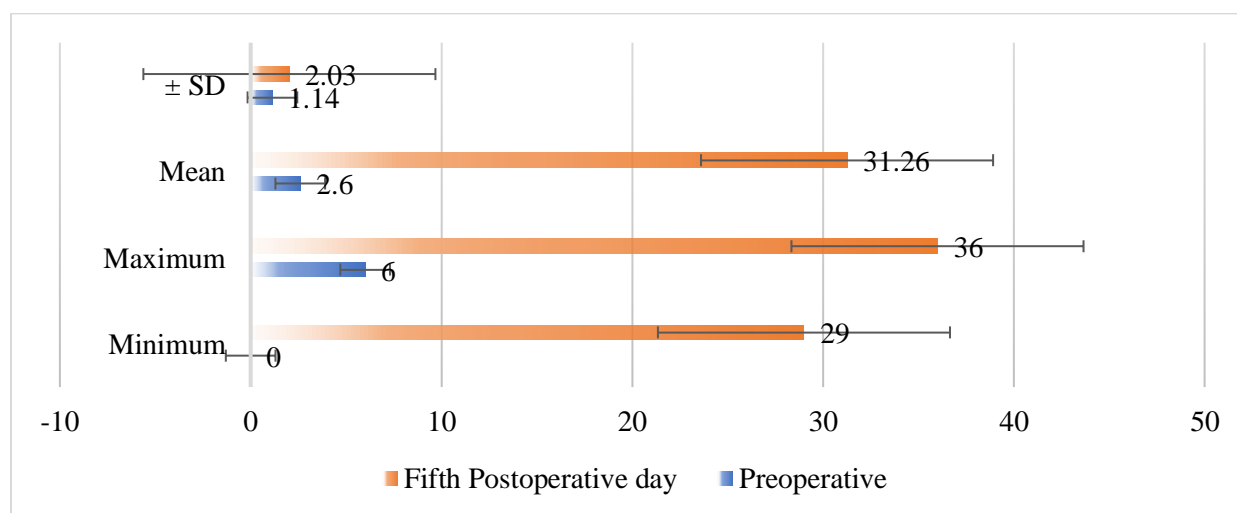
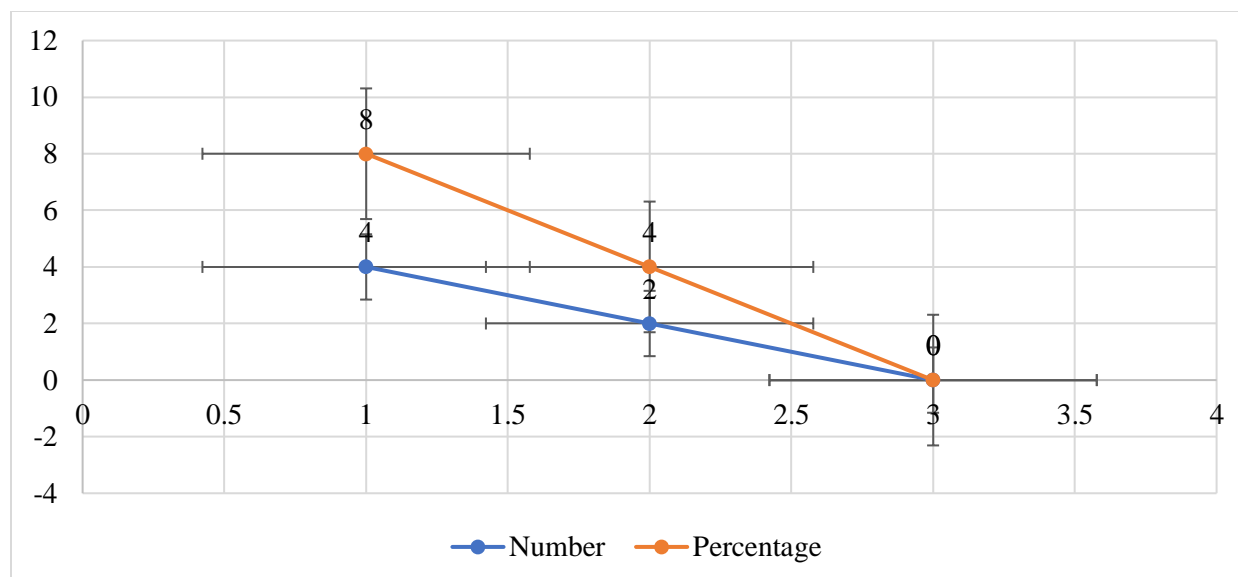


Table – III: Surgical Outcomes

Surgical Outcomes	Number	Percentage
Temporary Facial Nerve Palsy	4	8
Anterior Open Bite	2	4
Recurrence	0	0



DISCUSSION:

Trauma is a dominant reason behind the occurrence of TMJ ankylosis. According to Abbas, trauma caused 91.7% onset of ankylosis; whereas, another reported it as 77.7% [11, 15]. Higher frequencies of ankylosis are attributed to improper management of condylar fractures along with other reasons of poor dental service utilization, non-availability of surgical experience and remoteness of the areas. Moreover, socioeconomic status and reduced awareness also prevent individuals from proper treatment until the situation becomes difficult to handle and grave [2].

Izumi is of the view that intra articular hematoma is an outcome of intraarticular damage which causes fibrosis, hemarthrosis and bone formation with resultant ankylosis and hypomobility. TMJ ankylosis is dominant in childhood and in case of non-management of condyle fracture the growth of ankylotic mass in juxta-articular tissue is obvious. About 6.5% of patients of our study also palpated this bony mass in the pre-auricular area which indicates an excessive growth of lateral bone joint.

Different surgical interventions have different outcomes but better outcomes are possible through gap arthroplasty which is also advocated by the surgeons [17]. Elgazzar does not agree with the efficacy of gap arthroplasty [18]. At present, the most popular intervention is inter-positional arthroplasty which utilizes different alloplastic or autogenous materials. Alloplastic materials may also pose issues like abrasion, giant cell reaction and infection. It may also hinder the rehabilitation process and support ankylosis. This situation leads to increased use of

autogenous grafts such as subcutaneous fat, dermis fat, temporalis fascia & muscle and auricular cartilage [19]. Temankylosis pectoralis muscle is a reliable autogenous material muscle flap with the foreseeable supply of blood [9, 10]. Moreover, this flap is local and causes reduced hospitalization and surgical morbidity [12, 20].

CONCLUSION:

The temporalis muscle is one of the successful inter-positional material as it has proved its worth with reduced complications and morbidity for the management of TMJ ankylosis. A significant better state of mouth opening just after the surgery was noticed along with no relapse sign in the follow-up of eighteen months. An early diagnosis will ultimately help the overall management of the patients. More maxillofacial surgeons are required at tertiary healthcare centres for improved oral health management.

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