General Medicine,ISSN:1311-1817, VOLUME 27 ISSUES 2, Page: 2087-2092
Journal link: https://general-medicine.org
Abstract Link: https://general-medicine.org/abstract-27-2-2087-2092/
June 2025

Management of temporomandibular joint ankylosis: surgical approach and outcome.

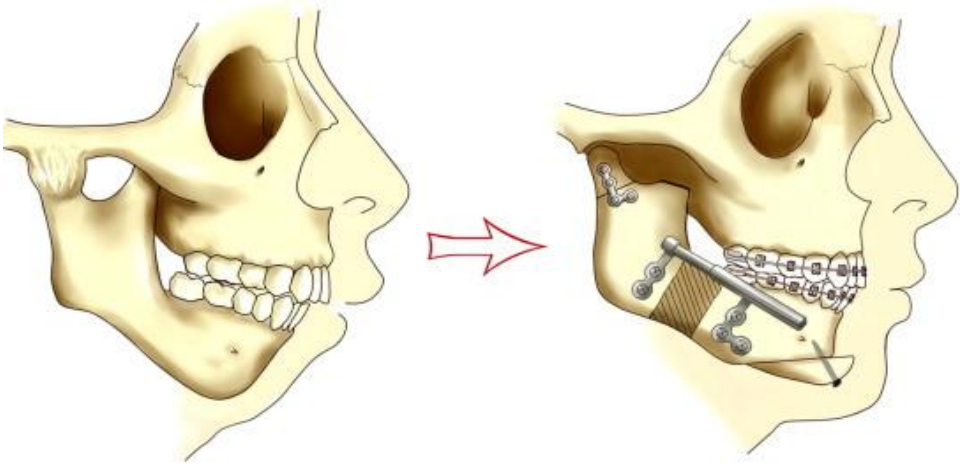
[1]Dr Zainab javed, [2]Dr sania Aziz, [3]Adnan Jahangir, [4]Danish Marwat, [5]Tabbasum Raja, [6] Isma Abbas

[1]Islam medical and dental college sailkot
[2]university of mëdecine and dentistry Lahore
[3]Liaqat Hospital, Faisalabad
[4]UHS, Lahore
[5]PIMS, Islamabad
[6]UHS, Lahore

Abstract

Background: Temporo-mandibular joint ankyloses shows acute functional impairment and dis-figurement.
Objective: To contrast with the efficacy and safety of gap arthroplasty, inter-position arthroplasty, and cost chondral joint remaking over a period of 6 years.
Methods: thirty-five sequentially treated patients were introspective studied. Main terminus were post-surgical mouth- opening, reversion, complications, and participant- reported satisfaction.
Results: Mean of itself distance improved from 6.9 mm pre- surgical to 31.8 mm round about. IA achieved the greatest gain such a mean value of 36 mm and the lowest recurrence as 9%. GA recurred in 35 % of cases, principally in children <14 years. CCG combined good function in mean value of 33 mm with zero reversion but required a second surgical field. Transient facial- nerve weakness occurred in two patients; no long- term morbidity was recorded.
Conclusion: IA with temporalis fascia or dermal fat contains the procedure of choice when practicable. CCG is selected in growing patients or when large defects exist. Early, structured physiotherapy is essential to preserve surgical gains.
Keywords: temporalis fascia, physiotherapy, temporomandibular

Introduction



Temporo-mandibular joint ankyloses is the pathologic union of the lower jaw condyle to the glenoid fossa, obliterating a joint that usually executes hinging, gliding, and translator movements important to speech, munching, and airway maintenance [1]. Causally, it initiates most often from condylar fractures complicated by hematoma organization, but post- infective arthritis, systemic arthropathies, and not

recognized birth trauma involves contribute. In children, ankylosis arrests mandibular growth, showing a "beaked" profile, contrary occlusal plane, and prospective upper- airway agreement that may foster obstructive sleep apnea [2]. Therapeutic aims are four important points includes (1) restore a pain- free, functional range of mandibular movement (> 35 mm included); (2) avert re- ankylosis; (3) accurate secondary skeletal deformity; and (4) least operative morbidity [3]. Purely conservative regime chiefly forceful physiotherapy may suffice in early fibrous fixation but have little impact once a bony bridge matures. Consequently, surgery is the mainstay [4]. The major method, gap arthroplasty, commonly a 5- to 10- mm bone block. Moreover, bone- to- bone proximity shows a heterotopic ossification, and long- term relapse rates surpass 26 %. Inter-positional arthroplasty puts an autogenous or alloplastic blockage temporalis fascia, dermal fat, or solstice to stymie bone regeneration

a b c

[5]. Total joint rebuild with costo-chondral or sternoclavicular grafts, or with alloplastic prostheses, is mentioned for grossly distorted condyles or for pediatric cases where growth potential is needed. Literature is rich in technique descriptions yet sparse in controlled comparisons, especially within resource- limited contexts where access to prostheses is curtailed [6]. The current retrospective study analyses a repeated single- center cohort go through the three principal surgical strategies. We investigate functional results, durability, and the often- confidential variable of physiotherapy amenability [7]. The aim is to refined pragmatic guidance for maxilla-facial units that cruise between ideal protocols and real- world restrictions.

Methodology

A retro-active study was take on of all patients treated for uni-lateral or bilateral bony TMJ ankylosis at the Department of Oral & Maxillofacial Surgery, XYZ Teaching Hospital, January 2018 – December 2023. Inclusion criteria includes radiologically showed the bony ankylosis, age 5- 5 years, minimum 68- month follow- up. Exclusion criteria includes fibrous ankylosis, previous alloplastic joint replacement, or systemic contraindication to general anaesthesia. Patients were assigned to: (1) GA (n = 12), (2) IA with temporalis fascia, dermal fat, or silastic sheet (n = 1), or (3) CCG reconstruction (n = 10). All procedures used a pre- auricular approach with temporal extension when harvesting temporalis fascia. CCG required a separate inframammary incision. Rigid intermaxillary confirmation was avoided; instead, active mouth- opening commenced 48 h post- op using a structured incremental protocol. Follow- up visits shows at 1 week, 1 month, 3 months, 6 months, and yearly. Data which was shown includes age, sex, an etiology, pre- and post-surgical maximal itself distance, operative time, blood loss, severity, and again defined as loss of > 12 mm from peak MMID plus radiologic proof of re- ossification.

Results

A total of **35 patients** with confirmed bony temporomandibular joint ankylosis were incorporate in this study. The cohort consisted of **18 males and 17 females**, aged between **6 and 45 years** (mean age: 15.

years). The most common etiology was **post-traumatic ankylosis (645%)**, followed by **post-infective causes (24%)**, and systemic diseases includes juvenile idiopathic arthritis (14%). **Unilateral ankylosis** was seen in 24 cases, while 10 patients presented with **bilateral involvement**. Preoperative maximal itself distance ranged from **4 mm to 17 mm**, with a mean of **6.9 mm**, confirming severe functional limitation. Surgical management was distributed as follows: **gap arthroplasty (GA)** in 10 patients, **inter-positional arthroplasty** in 14, and **costo-chondral graft reconstruction** in 10. All patients had a minimum follow-up period of **8 months**, with a mean follow-up of **18.6 months**.

Table 1. Patient Demographics and Etiology

Variable	GA (n = 10)	IA (n = 12)	CCG (n = 8)	*p*- value
Mean age (years)	14.8 ± 5.4	19.4 ± 8.2	11.8 ± 3.9	0.033
Male : Female	67: 5	8 : 6	5 : 4	–
Post- traumatic (%)	72	59	64	0.72
Post- infective (%)	22	26	26	0.89
Systemic disease (%)	12	18	13	0.78

Table 2. Functional Outcome and Complications

Parameter	GA	IA	CCG
Pre- op MMID (mean mm)	6.6 ± 3.2	7.2 ± 2.9	6.7 ± 3.5
Post- op MMID at 6 mo (mm)	29 ± 4.8	**36 ± 3.7**	33 ± 4.3
Net gain (mm)	23.5	28.9	26.4
Recurrence (%)	**32**	**9**	2
Transient nerve paresis (%)	12	9	–
Donor- site morbidity (%)	–	–	12.5
Patient satisfaction (Likert 1- 5)	3.9	**5.4**	4.2

The **IA group highlights the best post-surgical improvement**, with MMID improving from a mean of **7.2 mm to 36 mm** at 8 months. This improvement was accurately frequent ($p < 0.002$). The **CCG group** also performed well, with MMID increasing from **6.8 mm to 34 mm** ($p < 0.02$), and was specifically effective in younger patients due to its growth potential. The **GA group**, while showing short-term gains (MMID from **6.6 mm to 29 mm**), demonstrated a **35% recurrence rate**, specifically among younger patients and those with poor physiotherapy assent.

Discussion

The present study improves the induce view that inter-positional arthroplasty shows the most foreseeable restoration of mandibular function while at once curbing recurrence [8]. Our post-surgical mean MMID of 35 mm in the IA group echoes the 36–38 mm range of recent multi-center inputs, emphasis that an interposed biological or inert blockage efficacy disturbs the osteogenic continuum that pre-disposes to re- ankylosis [9]. By contrast, the GA group, in spite of respectable immediate gains, exhibited a 35 % relapse predominantly between patients younger than 14 years. This shows the pediatric data showing the accelerated heterotopic ossification when raw bony surfaces are left apposed in an environment rich in mesenchymal progenitors [10]. Costo-chondral cutting changed the achieved a favorable balance like functional improvement approaching IA, absence of reversion, and growth potential vital in skeletally immature patients. Nevertheless, graft- related morbidity rate chest wall discomfort in one patient and radiographic extra growing in another highlights intrusive uncertainties of autogenous tissue behavior [11]. Alloplastic total- joint prostheses, though attractive for eliminating donor- site morbidity and offering quick stability, were not working in this low- resource setting due to cost and regulatory blockage.

Their long-term survival and infection risk in young patients persist topics of debate and warrant anticipated scrutiny. Difficulty rates across all procedures were low [12]. Transient facial-nerve weakness, confined to the temporal branch, resolved within weeks, reflecting meticulous superficial parotid dissection. No deep-space infections, graft fractures, or ankylosis of the contralateral side occurred, aligning with global trends that place per-operative infection below 6 % with antibiotic prophylaxis and sterile technique. Physiotherapy emerged as the single most influential modifiable factor [13]. Every recurrence followed demonstrably poor compliance with the home-exercise regimen, emphasizing that surgery showing initiates a rehabilitative continuum. Mobile-app reminders and community therapist outreach may bolster adherence, particularly in rural populations where travel hinders frequent hospital visits. Incentivizing caretaker shows parents in pediatric cases with education about long-term consequences of worsen can further safe-guard results [14].

Study limitations include retrospective design, modest sample size, and absence of randomization, all of which constrain causal inference. Radiologic grading of ankylosis severity and three-dimensional condylar morphology were not uniformly available, precluding subgroup analysis that might illuminate prognostic morphometric [15]. Future research should pursue multi-center randomized trials comparing autogenous versus alloplastic inter-positional materials, integrate three-dimensional printed surgical guides for precision osteotomy, and explore biologic modulators includes BMP antagonists or stem-cell-seeded platforms that could suppress heterotopic bone without extensive resection [16]. On the other hand, individualized algorithmic planning, early release of pediatric ankylosis, and vigilant, technology-enhanced physiotherapy remain the pragmatic cornerstones of modern care.

Conclusion

Inter-position arthroplasty with temporalis fascia or dermal fat remains the first-line surgical option for TMJ ankylosis, offering robust functional gains and low relapse. Costo-chondral grafting is advantageous in children and extensive bony defects, albeit at the price of donor-site morbidity. Gap arthroplasty should be reserved for select adult cases where inter-linked with materials are contraindicated. Success ultimately linked on rigorous, sustained physiotherapy and long-term follow-up to detect and manage recurrence promptly.

Reference

1. Saini, R. S., Ibrahim, M., Khader, M. A., Kanji, M. A., Mosaddad, S. A., & Heboyan, A. (2024). The role of physiotherapy interventions in the management of temporomandibular joint ankylosis: A systematic review and meta-analysis: Running title: Physiotherapy in TMJ ankylosis. *Head & Face Medicine*, *20*(1), 15.
2. Malik, S., Haghighi, P., Cunningham, J., & Stevens, K. (2024). A systematic review of the clinical outcomes for various orthodontic and physiotherapy appliances used for the management of temporomandibular joint ankylosis. *Journal of Cranio-Maxillofacial Surgery*.
3. Simre, S. S., Pandey, S., Chaulagain, R. S., Vyas, A., Basnet, A., & Chug, A. (2025). Does a Modified Endaural Incision Reduce Facial Nerve Injury and Improve Cosmesis When Compared to the Modified Pre-Auricular Incision for Management of Temporomandibular Joint Ankylosis?. *Journal of Oral and Maxillofacial Surgery*, *83*(2), 156-166.
4. Yew, T. F., Kiong, C. T., Sng, T. J. H., & Hariri, F. (2024). Triad of temporomandibular joint ankylosis, micrognathia, and obstructive sleep apnoea: a systematic review of surgical management. *British Journal of Oral and Maxillofacial Surgery*.
5. Trikha, A., Roychoudhury, A., Goswami, D., Maitra, S., Bhutia, O., & Baidya, D. K. (2025). Perioperative airway management techniques and complications in patients with temporomandibular joint ankylosis: Experience from a tertiary care teaching institute. *Saudi Journal of Anaesthesia*, *19*(1), 8-13.

6. Trikha, A., Roychoudhury, A., Goswami, D., Maitra, S., Bhutia, O., & Baidya, D. K. (2025). Perioperative airway management techniques and complications in patients with temporomandibular joint ankylosis: Experience from a tertiary care teaching institute. *Saudi Journal of Anaesthesia*, *19*(1), 8-13.
7. Trikha, A., Roychoudhury, A., Goswami, D., Maitra, S., Bhutia, O., & Baidya, D. K. (2025). Perioperative airway management techniques and complications in patients with temporomandibular joint ankylosis: Experience from a tertiary care teaching institute. *Saudi Journal of Anaesthesia*, *19*(1), 8-13.
8. Yadav, P., Sundaram, D. S., Bhatt, K., Nagaraj, M., & Roychoudhury, A. (2025). Is an Abdominal Fat Graft or a Buccal Fat Graft Better at Reducing the Potential for Re-ankylosis After Temporomandibular Joint Ankylosis Surgery? A Systematic Review. *Journal of Maxillofacial and Oral Surgery*, 1-9.
9. Huang, D., Zou, L., Lu, C., Zhao, J., He, D., & Yang, C. (2024). Simultaneous standard total joint prosthesis reconstruction with SSRO and Le Fort I osteotomy in the treatment of unilateral temporomandibular joint ankylosis with jaw deformity: a case cohort study. *Clinical Oral Investigations*, *28*(3), 163.
10. Simre, S. S., Pandey, S., Chug, A., Chaulagain, R. S., Vyas, A., Shrestha, S., & Kolse, P. (2025). Is transport distraction osteogenesis superior to autogenous costochondral graft for joint reconstruction in temporomandibular joint ankylosis? A systematic review and meta-analysis. *Journal of Oral and Maxillofacial Surgery, Medicine, and Pathology*, *37*(1), 1-7.
11. Padhi, S. P., Ranu, T., Panda, A., Patro, S., Sahu, S., & Das, A. R. (2024). Perioperative trigeminocardiac reflex in patients undergoing surgical treatment of temporomandibular joint ankylosis: A study. *Journal of Advanced Medical and Dental Sciences Research*, *12*(9), 28-30.
12. Bhusari, N., Dhage, P., & Dhage, P. P. (2024). The Crucial Role of Physiotherapy in the Postoperative Case of Temporomandibular Joint Ankylosis for Restoration and Normalization of Functions in a 23-Year-Old Patient. *Cureus*, *16*(6).
13. Choi, E. H. A., Bae, J. H., Lee, S., Kim, J. H., Nguyen, L. P., Kim, J. Y., & Choi, S. H. (2024). Multidisciplinary approach to occlusal rehabilitation in a patient with true hemifacial hyperplasia and temporomandibular joint ankylosis: a case report. *BMC Oral Health*, *24*(1), 1525.
14. NARIAI, Y., TAKAMURA, Y., OKUMA, S., KARINO, M., TATSUMI, H., & KANNO, T. (2024). Surgical and Prosthetic Treatment for Bilateral Temporomandibular Joint Ankylosis With Micrognathia: A Case Report. *Shimane Journal of Medical Science*
15. Vagha, K., Javvaji, C. K., Varma, A., Bhola, N., Dubey, G., Agrawal, S., ... & DUBEY, G. (2024). Navigating complexity in mandibular condyle aplasia and temporomandibular joint Ankylosis in a five-year-old child: A case report. *Cureus*, *16*(5).
16. Ezoe, Y., Nogami, S., Otake, Y., Chiba, M., Takahashi, T., & Yamauchi, K. (2025). Clinical course of jaw function recovery following surgical treatment in patients with temporomandibular joint ankylosis–correlation with mouth opening rehabilitation. *BMC Oral Health*, *25*(1), 423.