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Simplified Surgical Management of Complete Bony Temporomandibular Joint Ankylosis in an Adolescent: Gap Arthroplasty without Interposition and Early Functional Recovery

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Abstract | **Case Report**

Background: Temporomandibular joint ankylosis is a disabling condition leading to severe restriction of mandibular movement. The optimal surgical strategy remains debated, particularly regarding the use of inter positional material. ***Case Presentation:*** *We* report the case of a 15-year-old adolescent presenting with progressive complete bony Temporomandibular joint ankylosis following a history of complicated acute otitis media associated with facial cellulitis. Surgical management consisted of ankylotic block resection combined with ipsilateral coronoidectomy through a preauricular approach without inter positional graft. ***Results:*** Immediate intraoperative mouth opening improved from 0 cm to approximately 3 cm. A surgical gap estimated at 2 cm was achieved without residual bony contact. Early postoperative evolution was favorable with initiation of physiotherapy. ***Conclusion:*** Simplified gap arthroplasty without interposition may represent an effective surgical option in selected cases when adequate resection and early rehabilitation are ensured.

Keywords: Temporomandibular joint ankylosis, Gap arthroplasty, Coronoidectomy, Bone resection, Adolescent, Tracheostomy.

1. INTRODUCTION

Temporomandibular joint (TMJ) ankylosis is characterized by restriction of mandibular movement due to fibrous or bony fusion of the joint structures, leading to significant functional impairment, particularly in growing patients [1,4]. Although trauma represents the most common etiology, infectious origins remain less frequently reported. Various surgical techniques have been described, including gap arthroplasty, interpositional grafting, and joint reconstruction, with ongoing debate regarding the optimal approach [1–3].

We report a case of progressive complete bony TMJ ankylosis in an adolescent managed by ankylotic block resection associated with ipsilateral coronoidectomy without interpositional material, resulting in significant functional improvement.

2. CASE PRESENTATION

A 15-year-old adolescent presented with progressive limitation of mouth opening evolving since the age of eight. The patient reported a history of complicated acute otitis media following an intra-auricular foreign body, associated with facial cellulitis. No history of facial trauma was noted.

Clinical examination revealed a complete absence of mouth opening (0 cm interincisal distance) (Figure 1), severely affecting oral intake and hygiene. Computed tomography (CT) scan demonstrated complete bony ankylosis of the left temporomandibular joint, characterized by osseous fusion between the mandibular condyle and the temporal bone, with obliteration of the joint space (Figure 1 bis). Preoperative evaluation suggested complete bony temporomandibular joint ankylosis, and surgical management was indicated.

Figure 1: Complete absence of mouth opening (0 cm interincisal distance)

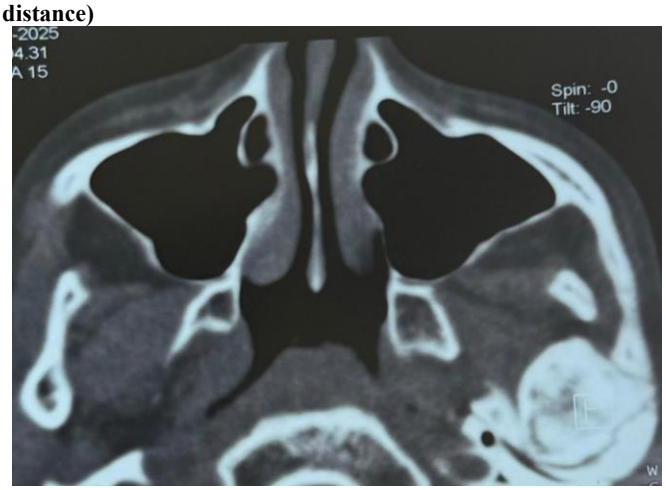

Figure 1 bis: CT scan demonstrating complete bony ankylosis of the left temporomandibular joint, with fusion between the mandibular condyle and the temporal bone

3. Surgical Technique

The patient was positioned supine under general anesthesia. Due to the complete limitation of mouth opening, conventional orotracheal intubation was not feasible. A tracheostomy was therefore performed initially to secure the airway under safe conditions. A preauricular approach with a 45-degree temporal extension was performed (Figure 2). Strict subcutaneous dissection was performed (Figure 3), followed by subfascial dissection with careful identification and preservation of the facial nerve branches to avoid iatrogenic injury. Deep exposure was then achieved through the pretragal region toward the zygomatic arch, and periosteotomy along the zygomatic arch allowed adequate exposure of the ankylotic mass (Figure 4).

Figure 2: Preauricular surgical approach with temporal extension allowing exposure of the zygomatic arch and access to the ankylotic mass

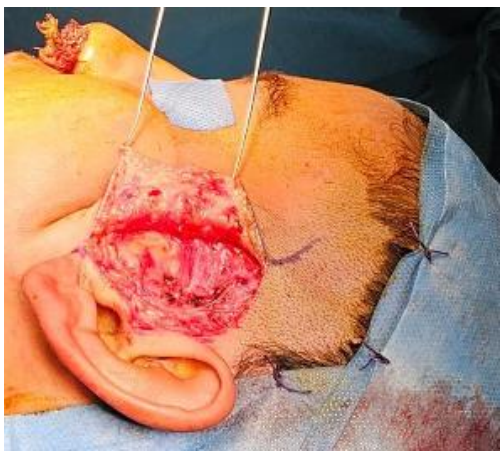

Figure 3: Intraoperative view showing subcutaneous dissection during the preauricular approach

Figure 4: Intraoperative view showing complete exposure of the ankylotic bony block prior to resection

A large bony ankylotic block was identified and carefully resected under direct visualization (Figure 5). An ipsilateral coronoidectomy was subsequently performed to improve mandibular mobility. A surgical gap of approximately 2 cm was intentionally created between the mandibular ramus and the temporal bone to prevent re-ankylosis, ensuring complete absence of bony contact (Figure 6).

At the end of the procedure, intraoperative mouth opening improved from 0 cm to approximately 3 cm. No interpositional material was used, as no residual bony contact was observed after resection.

Figure 5: Intraoperative view showing resection of the ankylotic bony block under direct visualization

Figure 6: Intraoperative view after resection demonstrating the created surgical gap between the mandibular ramus and the temporal bone, with no residual bony contact

Figure 7: Postoperative mouth opening showing functional improvement to approximately 3 cm

4. RESULTS

Complete resection combined with coronoidectomy resulted in immediate functional improvement. An estimated surgical gap of approximately 2 cm was achieved between the mandibular ramus and the temporal bone with no visible osseous contact (Figure 6). Early postoperative monitoring in the intensive care unit was uneventful, and physiotherapy was initiated early to maintain functional recovery. Postoperative mouth opening reached approximately 3 cm.

5. DISCUSSION

Management of TMJ ankylosis remains challenging due to the risk of recurrence and functional limitation [1,3]. While interpositional arthroplasty is frequently advocated to reduce re-ankylosis [5], several authors have reported satisfactory outcomes with simplified gap arthroplasty when adequate resection and soft tissue release are achieved [2].

In the present case, ipsilateral coronoidectomy played a key role in improving mandibular mobility by reducing muscular restriction. The absence of interpositional material was justified by the achievement of an adequate surgical gap and the absence of residual bony contact. Early physiotherapy remains a critical factor in maintaining postoperative mouth opening and preventing recurrence [1,3].

This case supports the feasibility of a simplified surgical approach in selected patients with complete bony ankylosis.

6. CONCLUSION

Resection of the ankylotic block associated with ipsilateral coronoidectomy without interpositional graft can provide satisfactory immediate functional outcomes in selected cases of complete TMJ ankylosis. Adequate gap creation and early rehabilitation remain essential to optimize results.

Ethics, Consent and Declarations

Ethical approval: Ethical approval was not required for this case report according to institutional guidelines.

Consent: Written informed consent was obtained from the patient and legal guardian for publication of this case report and accompanying images.

Conflict of interest: The authors declare no conflict of interest.

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Author Contributions

All authors contributed to the surgical management and manuscript preparation.

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