

Myofacial Pain and Temporomandibular Joint Disorder Associated with Bridging Plate Osteosynthesis: A Rare Case Report

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Received Date: July 24, 2025 **Accepted Date:** July 08, 2025 **Published Date:** July 11, 2025

Citation: Dr Saniya Zia (2025) Myofacial Pain and Temporomandibular Joint Disorder Associated with Bridging Plate Osteosynthesis: A Rare Case Report. J Dent Oral Health 12: 1-8

Abstract

Background: Mandibular reconstruction using bridging plate osteosynthesis is commonly employed in resource-constrained settings. However, this approach can lead to rare but significant complications, including temporomandibular joint disorders (TMD) and myofascial pain syndromes.

Case Presentation: We report the case of a 27-year-old male with a history of segmental mandibulectomy and plate-only reconstruction for ameloblastoma. Four years postoperatively, the patient developed chronic right-sided facial pain, jaw deviation, clicking, and sleep disturbances. Conservative therapies, including pharmacologic management and psychiatric consultation, provided only temporary relief. Imaging revealed anterior condylar displacement due to hardware-related malposition. Non-surgical interventions such as maxillomandibular fixation and autologous blood injections failed to alleviate symptoms.

Management and Outcome: Definitive management involved surgical removal of the original reconstruction plate and replacement with a 2.0 mm locking plate while repositioning the condyle into the glenoid fossa. Postoperatively, the patient remained symptom-free for one year with normal occlusion, pain resolution, and improved facial aesthetics.

Conclusion: This case highlights a rare but severe complication of bridging plate osteosynthesis, emphasizing the need for precise plate adaptation during mandibular reconstruction. In selected cases, simple hardware revision may offer a curative solution to complex TMD presentations.

Keywords: Temporomandibular Joint Disorder; Myofascial Pain; Mandibular Reconstruction; Bridging Plate; Condylar Displacement; Case Report



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Introduction

The goal of mandibular reconstruction is the restoration of speech, swallowing, breathing, recovery of appearance of face following resections¹. In the early 1980's a method of reconstruction for continuity defects is the use of a reconstruction plate with or without the use of osseous reconstruction. Plate only reconstructions reduces the intraoperative time, reduces the donor site morbidity associated with vascularized or non-vascularized osseous flaps, less technique sensitive and beneficial for patient in resource constraint setups. However, such primary bridging osteosynthesis have disadvantages like plate exposures, plate infections, plate fractures, screw loosening etc. In our case report, we observed a unique and very rare complication associated with a plate reconstruction that was done for a segmental continuity defect of mandible. The clinical scenario that we have presented in our case report is quite unique and very few literatures exist for the same². Most articles post cases of condylar sag with minimal symptoms such as pain or malocclusions. Our case report presents us with a spectrum of disorders of the TMD.

Case Report

Patient aged 27 years male reported to Department of Oral and Maxillofacial Surgery in King George's Medical University, Lucknow on December 2024. Patient complained of pain in the right pre-auricular region which radiated to the head and neck region. On checking past records of the patient, it was noted that patient was an operated case of Ameloblastoma of right mandible for which he was operated by segmental mandibulectomy followed by plate-only reconstruction for the defect in our department itself. Patient was asymptomatic since the last 4 years till he started noticing pain of such nature for the past one year. Initially the pain was dull, intermittent, radiated to temporo-parietal region of scalp and to the neck region and there were no initiating / aggravating/relieving factors. As a result of such chronic pain, patient had difficulty in sleeping. On clinical examination and evaluation, it was noted, there was clicking sounds, pain on palpation of pre-auricular region, and slight jaw deviation. Normal mouth opening was noted. There was also tenderness of SCM and temporalis muscle of the right side. Intraorally there was good occlusion of the contralateral side (Figure 1). VAS scale rating of 4 pointed by the patient.



Figure 1: Patient present to the department. Clinically the reconstruction plate can be seen upon inspection. Also, there is normal mouth opening.

A provisional diagnosis of TMD was made taking into all the factors and treatment was started with psychiatric consultation and conservative therapy from our side.

Psychiatric Consultation

Patient was suffering from insomnia and stress from his condition so patient was referred to psychiatric consultation where he was advised a single dose of alprazolam before sleep for 7 days. This helped the patient however his symptoms did not resolve. He was also advised stress free protocols by the consultant psychiatrist.

Conservative Therapy

Initially we employed the pharmacologic therapy. We advised muscle relaxants and chondroitin sulphate + glucosamine combination for 15 days. Mild relieve of symp-

toms were noted and patient got relief for two months. Patient was also advised soft diet and hot fomentation of the right pre-auricular region.

However, following two months of conservative therapy patient returned to our department with recurring symptoms. Hence the patient was advised a CBCT. CBCT showed continuity defect with a reconstruction plate which

has displaced the condyle anteriorly (Figure 2). On re-evaluation of the condylar motion, it was noted that the right-side condyle moved outward laterally with function. This was not observed before on initial examination. Also, patient complained that on jaw function his symptoms aggravated and pain intensity have increased in nature. VAS scores rates increased to 6 by the patient. Hence patient was planned for non-surgical invasive therapies.

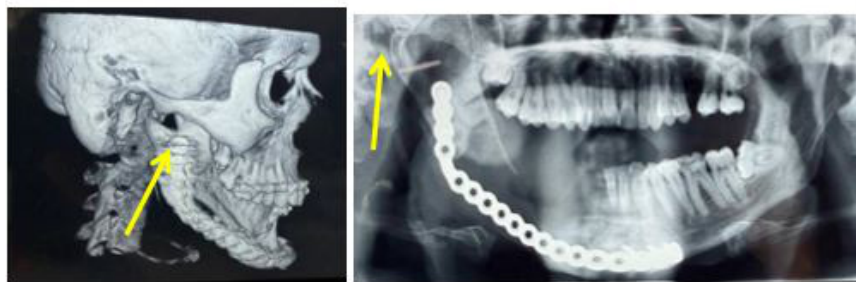


Figure 2: Arrows showing the displacement of the condyle anteriorly in CBCT & OPG

Maxillo-Mandibular Fixation

Arch bar was tied to remaining teeth and patient was placed on guiding elastics to seat the condyle back into the glenoid fossa. Class two elastics were given to give a posterior and superior force to the mandible. Patient's symptom did not aggravate. However, even after one month of MMF therapy his symptoms did not resolve.

Autologous Blood Injections

This was done simultaneous with the use of maxillomandibular fixation. However, there was no benefit to the patients.

Following 4 months of non-surgical therapies patient reported to our department with a severe episode of pain for which he had to be admitted in the Department of OMFS. During his hospital stay regular VAS charting was done and patient gave scores of 7 or above. During this time, it was noted that patient had multiple paroxysms of painful episodes, during which he would become agitated, anxious and hold the right side of his face tightly. Often, he

would lose consciousness for a few seconds and then he would regain consciousness following which he would say symptoms are less. Such attacks were managed with IV infusion of tramadol in 500 ml of saline along with a combined mandibular nerve block with auriculotemporal nerve block given bedside Neurosurgical and Neurological consultations were done hence. It was advised that there was no intervention needed from their side. Hence patient was planned for surgery under GA by our center.

Surgical Intervention

Change of hardware was planned for the patient. Patient was given the option of reconstruction plating with free fibula graft as well as patient specific implant. Patient didn't want a major surgery so he didn't give consent for free fibula grafting. Patient was not affordable for patient specific implant and hence he declined the other treatment plan as well. So, the only option remained was removal of the old plate and placement of a new plate while seating the condyle back into the glenoid fossa with the use of MMF. Surgical site was exposed and plate removal was done (Figure 3).



Figure 3: Exposure of plate and its removal

The stump ends were recontoured with a surgical rosette bur (Figure 4). Following which a 2.0mm locking plate was adapted carefully, while the condyle was seated

back into the glenoid fossa and occlusion of the contralateral side was established via wired MMF (Figure 5). Closure was done in layers and the patient was kept on MMF for 45 days.



Figure 4: Bone stumps were recontoured

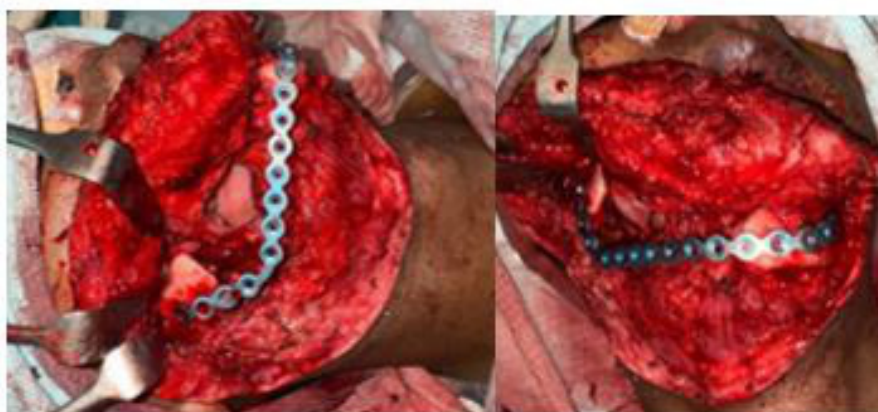


Figure 5: 2.0 mm reconstruction locking plate was adapted to the defect while seating the condyle into its glenoid fossa

Follow up - Patient has been asymptomatic for the next 1 year. There was not a single episode of acute pain, neither any chronic persistent. Jaw deviation, clicking were absent. Occlusion was satisfactory and mouth opening was normal. Condylar movement showed no anomaly. Post-op-

erative radiographs showed good plate adaptation and condylar position (Figure 6). There was also improved esthetic of the patient as seen from his post-operative profile photographs (Figure 7). Sleep and diet both improved for the patient.



Figure 6: Post-operative CBC and OPG showing improved position of condyle in glenoid fossa



Figure 7: Improved Facial aesthetics following proper plate fixation

Discussion

Our study presents a unique spectrum of complications where we observed TMD, myofascial pain and spasm along with condylar sag. The case presents to us with symptoms similar to TMD which is a common disorder involving the masticatory muscles, temporomandibular joints and

other associated tissues³. In this case report we observe progressive increase of the symptoms for which we employ conservative to surgical treatments. Initially we employed a pharmacological approach with psychiatric counselling and medications. Painful temporomandibular disorders (TMD) have showed higher psychosocial disorders than TMD-free individuals⁴. Patient in our case report was suffering from

depression and insomnia due to his ailment. Hence for better sleep at night psychiatric counselling was done along with a prescription of single nightly dose of alprazolam.

For managing the suspected TMD we prescribed our patient with chondroitin sulphate and glucosamine. A metanalysis by Ruiz-Romero et al have shown the benefits of such therapy⁵. Along with this we prescribed a muscle relaxant called Tizanidine. Tizanidine is a centrally acting muscle relaxant with alpha-2 adrenergic agonist properties. It prevents the release of amino acids by suppressing polysynaptic excitation of spinal cord interneurons. Manfredini et al have shown efficacy of Tizanidine in TMD patients⁶. Home care therapy was advised by mainly reducing the masticatory actions such as less talking, yawning with chin support, reducing maximal mouth openings and use of hot or cold fomentation. Patient was also advised a soft diet plan for a period of one month⁷.

Above therapies resolved most of the patient symptoms however he ended up facing the similar symptoms again along with increase in severity. Hence focus was placed on Nonsurgical invasive procedure such as Arthrocentesis, Immobilisation of the TMJ using MMF and use of Autologous blood injections. Arthrocentesis reduces the pain by flushing out inflammatory cells from the joint space. It also improves joint mobility.

Condylar sag of the TMJ was noted on the CBCT which was believed to be the primary cause for the patient symptoms. The condyle was markedly displaced from the glenoid fossa. We hypothesize that this could be due to improper plate adaptation between the distal and proximal stumps. Or it can also be due to functional motion of the plate system during mastication combined with unequal force distribution on both sides. As a result of this, the asso-

ciated muscles went into a state of chronic pain and spasm which progressively worsened along with TMD. Thus, patient started suffering from paroxysms of acute attacks of severe myofascial pain. Thus, we modified our therapy and started to place the patient on MMF with guiding elastics of Class two type so that a posterior and superiorly directed force is able to push the proximal stump back into the glenoid fossa. Simultaneously while the patient was placed on the MMF therapy we decided to inject Autologous Blood in the joint site to induce fibrosis of the joint. Hence via these two approaches we planned to resolve the issue of abnormal hardware movements that caused such symptoms to the patient.

However, there was no success hence we planned to remove the cause. The non-locking 2.5mm reconstruction plate was removed, the bone stumps were recontoured and a new 2.0mm locking reconstruction plate was adapted properly and fixed with bicortical screws. Following this surgical intervention, even after one year of surgery patient remained symptom free. Thus, it was possible to solve the TMD dysfunction and other associated masticatory muscle disorders with removal of etiology.

Plate only reconstructions often present with a wide range of complications. The complication presented in our report is unique and was quite challenging to manage. Such cases are rare in literature as well. This case report shows that any foreign material introduced into our system often have adverse consequences no matter how much biocompatible it is. In resource constraint setups often, the simplest form of treatment such as plate removal is the best choice for the patient. Patient became symptom free following the surgical management which points to the fact that improper plate placement and adaptation was the probable cause of such spectrum of TMD.

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