

A surgical management of articular disc injury in temporomandibular Joint: A compiled case series of two cases with articular disc tear managed with surgical intervention

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ABSTRACT

Articular disc injury in the temporomandibular joint (TMJ) can lead to significant pain and limited jaw movement. We present two cases in this case series of articular disc injuries in the TMJ and elaborate on their etiology, clinical presentation, diagnostic modalities, and treatment provided with follow-up reviews. Case 1 involved a 50-year-old female with a history of pain and clicking in the left TMJ for 10 years, wherein imaging studies revealed a discal tear. Case 2 involved a patient who presented with trauma and was diagnosed with a displaced disc with a disc tear when the patient was screened for mandibular fractures. The patients underwent surgical intervention, and the disc tear was repaired, following which both showed marked improvement. Our cases highlight the importance of early diagnosis and necessary surgical management of articular disc injury in the TMJ for better clinical outcomes.

Key words: Articular disc injury, Case series, Discal tear, Surgical intervention, Temporomandibular joint

The temporomandibular joint (TMJ) is a synovial joint located in the craniofacial region that is critical for mastication, speech, and overall quality of life. It is a complex joint composed of the condylar process of the mandible, the temporal bone, and an articular disc that serves to absorb shock and distribute the load during jaw movement. The articular disc also helps to maintain joint stability and prevent bone-on-bone contact, which can lead to degenerative changes [1].

Articular disc injury is a common condition that affects the TMJ and can result from a variety of factors such as internal derangement, trauma, and degenerative changes. Internal derangement can occur due to disc displacement, adhesions, and degeneration of the articular surfaces of the joint, whereas trauma can cause fractures, dislocations, and other structural abnormalities. Degenerative changes can result from aging, chronic microtrauma, and other factors that lead to progressive loss of joint function [2-4]. The clinical presentation of articular disc injury is typically characterized by pain, clicking or popping sounds during jaw movement, and limited jaw movement. Diagnosis is made through a combination of patient history, physical examination, and diagnostic imaging modalities such


as magnetic resonance imaging (MRI) or computed tomography (CT) scans. Treatment options include conservative measures such as rest, physical therapy, and medication, as well as, more invasive interventions such as arthrocentesis, arthroscopy, and joint replacement surgery [2,3-5].

Here, we present a case series of two cases of articular disc injury of the TMJ to discuss their etiology, clinical presentation, diagnostic modalities, treatment provided, and overall clinical outcome. Through the presentation of these cases, this case series aims to highlight the importance of accurate diagnosis and appropriate treatment for achieving favorable clinical outcomes in patients with articular disc injury of the TMJ.

CASE SERIES

Case 1

A 50-year-old female patient presented to our department with a chief complaint of excruciating pain, gradual in onset, pricking in nature, and radiating to the right ear for the past 10 years, which had progressed to involve bilateral pre-auricular region. Clinical examination on inspection showed mild facial asymmetry, normal swallow pattern, and no swelling/deformation, or cervical spine disposition. On palpation, mild tenderness over the pre-auricular

Access this article online	
Received- 25 March 2023 Initial Review- 08 April 2023 Accepted- 25 April 2023	Quick Response code 
DOI: 10.32677/ijcr.v9i4.3961	

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area on the left side, and clicking sounds bilaterally while opening and closing the jaw were felt. Mild tenderness was present in relation to the muscles of the mastication-masseter on the right side. Intraoral examination revealed a reduced and painful mouth opening of approximately 23 mm.

Initially, pharmacotherapy and conservative management with occlusal splints were attempted. A CT examination revealed a decreased joint space in the left TMJ region with mild erosion in the left head of the condyle (Fig. 1a). MRI examination revealed a decreased joint space in relation to the left TMJ with evidence of a discal tear (Fig. 2a). The patient underwent surgical intervention, and a left modified pre-auricular incision was made to skeletonize the articular disc. The disc tear was identified and sutured using vicryl 3–0. The patient experienced relief from pain and a marked reduction in clicking sounds after the surgery. The patient was followed up for 3 months, wherein the outcome was uneventful. The patient complained of no pain/restriction in mouth opening or performing jaw exercises.

Case 2

A patient reported to the Department of Accident and Emergency following a road traffic accident. On clinical examination, the patient had facial asymmetry, a laceration over the chin region, tenderness with step in relation to the symphysis region, and restricted mouth opening with pain over the pre-auricular region. The patient had no cervical spine injury. Intraoral examination revealed the mouth opening to be reduced and painful, measuring 10 millimeters. The CT scan revealed a fracture in the symphysis region and a fracture of the left head of the condyle (Fig. 1b), and the MRI showed an anteriorly displaced left disc with evidence of disc tear (Fig. 2b).

The patient underwent surgical intervention, and the symphysis fracture was reduced and fixed with titanium plates and screws through an existing laceration. A left pre-auricular incision was used to expose the head of the condyle, and a disc tear was identified and repaired using vicryl (3–0) sutures (Fig. 3). Postoperatively, the patient's condition improved and over a period of 3-month follow-ups, the patient reported no pain and normal jaw functioning.

DISCUSSION

Articular disc injury in the TMJ is a vexing and multifaceted condition that engenders a plethora of debilitating symptoms, including pain, limited jaw movement, clicking sounds, and reduced quality of life. The etiology of articular disc injury is a conundrum that has yet to be fully elucidated; however, it is believed to be provoked by a cluster of factors, such as improper occlusion, habits, joint hypermobility, muscle dysfunction, trauma, and degenerative changes in the joint.

Prompt and accurate diagnosis of articular disc injury is imperative to optimize the management of this condition. A comprehensive clinical assessment, which includes a meticulous

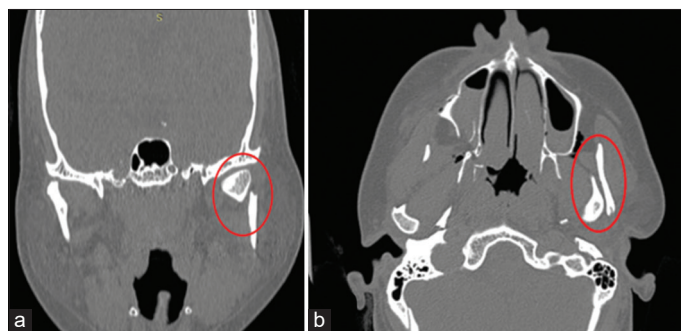


Figure 1: Computed tomography sections showing the condylar head fractures in (a) case 1 and (b) case 2

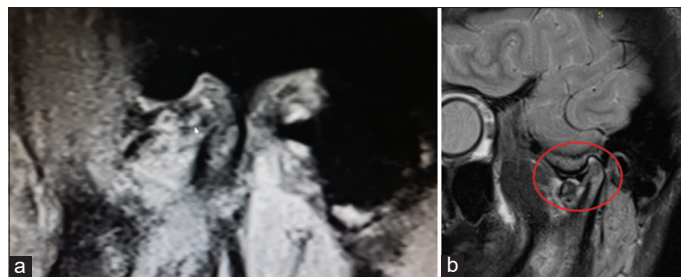


Figure 2: Screening magnetic resonance imaging (MRI) showing the tear in the articular disc. MRI of (a) case 1 and (b) case 2

history, a thorough physical examination, and an evaluation of jaw function and movement, is crucial in diagnosing the injury. In addition, imaging modalities such as CT and MRI are valuable in corroborating the diagnosis, assessing the extent of the injury, and guiding treatment planning.

Non-surgical treatment options, such as pharmacotherapy, physical therapy, and occlusal splints, can be efficacious in managing articular disc injury. Nonetheless, when conservative management fails, surgical intervention is often warranted. The surgical approach depends on the type and extent of the injury and may include disc repair or removal, condylotomy, or arthroscopy.

Recent studies have explored various surgical management options for articular disc injury in the TMJ, revealing promising outcomes. A prospective study by Magnusson *et al.*, [1] investigates the outcomes of treatment for temporomandibular disorders (TMD) in adolescents over a 5-year period, providing insights into the long-term effects of different treatment approaches, including conservative and surgical management options for articular disc injury in the TMJ, whereas, a systematic review and meta-analysis by Al-Baghdadi *et al.*, [3] in their systematic review provided an overview of various management options for disc displacement with a reduction in the TMJ, including conservative and surgical approaches, and discusses their effectiveness in improving symptoms and function. Nitzan [6] in their article discussed the process of evidence-based diagnosis and management of internal derangement of the TMJ, including the role of clinical examination and imaging studies in accurate diagnosis, as well as conservative and surgical management options. A prospective study by Guarda-Nardini *et al.*, [7] evaluates the effectiveness of flat occlusal splint therapy in managing disc displacement with a reduction in the TMJ over a 2-year follow-up period, providing

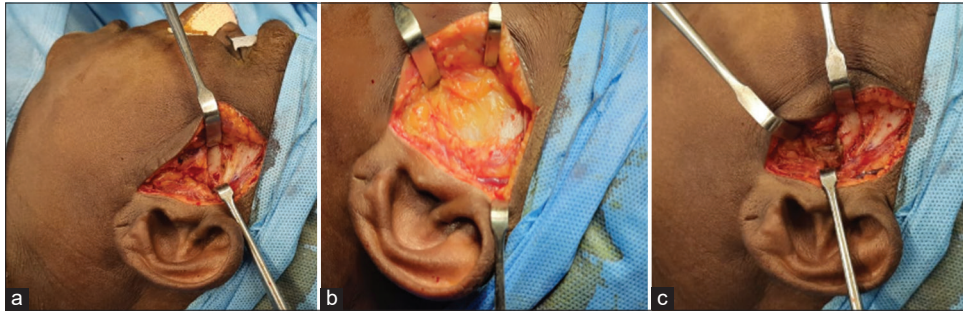


Figure 3: (a) Incision and exploration of the right temporomandibular joint space; (b) Temporomandibular joint exploration; (c) Discal tear visualised

insights into the long-term outcomes of this conservative treatment approach. Another retrospective study by Liedberg and Evers [8] examines 141 cases of internal derangement of the TMJ to investigate the clinical characteristics, management, and outcomes of this condition, providing valuable retrospective data on the topic. A systematic review by Melis *et al.*, [9] focused on the use of arthroscopy for the surgical treatment of internal derangement of the TMJ, providing evidence of its effectiveness in improving symptoms and function. Soares *et al.*, [10] investigated the clinical and MRI findings of internal derangements of the TMJ, providing valuable prospective data on the diagnostic and imaging features of this condition. Sihvonen *et al.* [11] evaluate various surgical interventions for disc displacement in the TMJ, including disc repair, disc repositioning, and arthroplasty and highlight significant improvements in pain, function, and quality of life with surgical approaches. The prospective study by Al-Hassiny *et al.*, [12] evaluates the clinical and radiographic features of TMD, including articular disc injury, providing insights into the diagnostic and imaging aspects of this condition. Eshghpour *et al.* [13] documented successful results following disc repositioning surgery for the treatment of anteriorly displaced discs. A systematic review by Sihvonen *et al.* [14] found that surgical interventions such as disc repair, disc repositioning, and arthroplasty can result in noteworthy improvements in pain, function, and quality of life. Eshghpour *et al.*, [15] explored the outcomes of disc repositioning surgery for the treatment of anteriorly displaced discs in the TMJ, providing evidence of successful outcomes with this surgical intervention.

The two cases presented in this case series underscore the salience of early and accurate diagnosis and appropriate management of articular disc injury in the TMJ for optimal outcomes. Case 1 highlights the successful surgical management of a disc tear using a modified preauricular incision and vicryl (3-0) sutures, whereas Case 2 demonstrates the management of a complex injury involving both a fracture and a displaced disc tear using a combination of surgical techniques.

Articular disc injury in the TMJ is a complex and vexatious condition that can profoundly affect a patient's quality of life. Precise diagnosis and proper management are imperative for optimal outcomes, and surgical intervention may be necessary when conservative measures fail. Recent studies have shed light on promising surgical interventions, and continued research is

warranted to advance our understanding and management of this enigmatic condition.

CONCLUSION

It is important to note that both cases in this case series required a comprehensive clinical examination and advanced imaging techniques such as CT and MRI to accurately diagnose the TMJ disorder. Surgical intervention was carried out to address the specific pathology found during the examination and investigations. The use of standard surgical protocols and techniques ensured successful outcomes in both cases. Overall, this case series highlights the importance of early diagnosis and appropriate surgical intervention in the management of TMJ disorders. A multidisciplinary approach involving oral and maxillofacial surgeons, radiologists, orthodontists, and other health-care professionals can improve the accuracy of diagnosis and the success of treatment.

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Funding: None; Conflicts of Interest: None Stated.

How to cite this article: Sinha D, Seetaram M, Ramakrishnan K, Narayanan V, Juliet M. A surgical management of articular disc injury in temporomandibular joint: A compiled case series of two cases with articular disc tear managed with surgical intervention. *Indian J Case Reports*. 2023;9(4):89-92.