

## Prevalence, evaluation, and management of temporomandibular joint internal disc derangement in north Gujarat population

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### Abstract

**Background:** Internal derangement is an intra-articular condition in which there is a disruption in the normal relationship of the articular disc of the TMJ. The present study was conducted to assess the prevalence and evaluation of the management of TMJ internal disc derangement. **Materials & Methods:** 78 patients having TMJ abnormality of both genders were enrolled. All underwent palpation of the TMJ and muscles of mastication for pain, palpation of joint sounds, and measurement of the range of motion. The diagnosis of anterior disk displacement with reduction was given to the patient after the following clinical signs were seen in the patient as pain is precipitated by joint movement, deviation during movement coinciding with a click, reproducible joint noise, usually at variable positions during opening and closing of the mandible and no restriction in mandibular movement. **Results:** Out of 78 patients, males were 48 and females were 30. Out of 78 patients, 52 (66.7%) had internal disc derangement. The type was disc displacement with reduction in 28, disc displacement with the reduction with intermittent locking in 10, disc displacement without reduction with the limited opening in 6, disc displacement without reduction without limited opening in 3, and posterior disc displacement in 5. The treatment given was medicinal (NSAIDs) in 42, physiotherapy in 20, and arthroscopic surgery in 16. The difference was significant ( $P < 0.05$ ). **Conclusion:** Maximum patients had internal disc derangement. Medicinal treatment was employed in most of the patients.

**Keywords:** Arthroidal, TMJ, internal disc derangement

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### Introduction

The TMJ allows mandibular movements in a hinge-like, or ginglymoid fashion. Roughly half of the maximum opening is achieved by this motion. The TMJ condyle also slides, in an arthroidal movement. The sliding motion allows the roughly second half of maximum opening, as well as the lateral, protrusive, and retrusive movements. This combination of hinge-like and sliding movements classifies the TMJ as a ginglymo- arthroidal joint[1].

Intracapsular derangement of temporomandibular joint (TMJ) is common. Anatomically intracapsular derangements are characterized by a modified disk-condyle relationship and this lack of union could be called disunion of the disk-condyle complex rather than disk displacement[2]. Disunion may be associated with the alteration of condylar position, bone abnormalities, and/or adhesions. Internal derangement (ID) of the Temporomandibular joint (TMJ) is accepted as the most common form of Temporomandibular Joint Disorder (TMD)[3]. Internal derangement is an intra-articular condition in

which there is a disruption in the normal relationship of the articular disc of the TMJ to the articular eminence and the condyle when the joint is at rest or in function. MRI is the preferred examination for soft tissue pathology[4]. The studies reported that the accuracy of MRI with respect to disc position is up to 97%. However, the diagnostic quality of disc examination can vary depending on the experience level of both the technologist and the radiologist who interpreted the MRI examination, as well as the field strength of the magnet, surface coil, and software of the MR imager itself[5]. The present study was conducted to assess the prevalence and evaluation of the management of TMJ internal disc derangement.

### Materials & methods

The present study comprised of 78 patients having TMJ abnormality of both genders. All were enrolled with their written consent.

All underwent palpation the TMJ and muscles of mastication for pain, palpation of joint sounds, and measurement of the range of motion. The diagnosis of anterior disk displacement with reduction was given to the patient after the following clinical signs were seen in the patient as pain is precipitated by joint movement, deviation during movement coinciding with a click, reproducible joint noise, usually at variable positions during opening and closing of the mandible and no restriction in mandibular movement. All underwent MRI of TMJ using 0.5-tesla magnetic field. Field of view (FOV) was 12 cm and 4 slices per TMJ was obtained. Results were tabulated for statistical analysis. P-value less than 0.05 was considered significant.

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**Results**

**Table I Distribution of patients**

Total- 78		
Gender	Males	Females
Number	48	30

Table I shows that out of 78 patients, males were 48 and females were 30.

**Table II Prevalence of internal disc derangement**

Total	Number	Percentage
78	52	66.7

Table II shows that out of 78 patients, 52 (66.7%) had internal disc derangement.

**Table III Type of internal disc derangement**

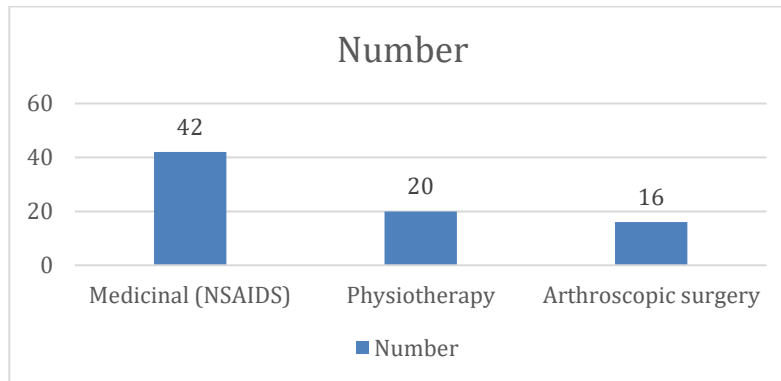
Type	Number	P value
Disc displacement with reduction	28	0.03
Disc displacement with reduction with intermittent locking	10	
Disc displacement without reduction with limited opening	6	
Disc displacement without reduction without limited opening	3	
Posterior disc displacement	5	

Table III shows that type was disc displacement with the reduction in 28, disc displacement with reduction with intermittent locking in 10, disc displacement without reduction with the limited opening in 6, disc displacement without reduction without limited opening in 3, and posterior disc displacement in 5. The difference was significant (P<0.05).

**Table IV Different treatment modalities in patients**

Treatment modality	Number	P-value
Medicinal (NSAIDS)	42	0.021
Physiotherapy	20	
Arthroscopic surgery	16	

Table IV, the graph I show that treatment given was medicinal (NSAIDS) in 42, physiotherapy in 20, and arthroscopic surgery in 16. The difference was significant (P<0.05).



**Fig I Different treatment modalities in patients**

**Discussion**

Temporomandibular disorders (TMD) are a collection of disorders involving the temporomandibular joint, the soft-tissue structures within the joint, and the muscles of mastication[6]. These TMD conditions as a group are one of the more common chronic painful disorders of the face and jaws. For several years, considerable controversy has existed concerning the etiology of TMD, over the series of investigations required for the assessment and diagnosis of TMDs, and even greater controversy has existed regarding treatment approaches[7]. Most interest concerning Temporomandibular Joint Disorders has been laid down on the articular disc derangement of the TMJ. Internal derangement is an organic disease and attempts have been made to identify clinical symptoms indicative of TMJ disc displacement. Many studies have been done to identify the exact clinical signs and symptoms that were predictive of the status of the joint[8]. Various diagnostic imaging techniques have been performed which contributed to the proper diagnosis of TMJ disorders. With the advent of newer advanced modalities like MRI, both soft tissues can now be viewed in nearly any desired plane of reference with

considerable accuracy[9]. The present study was conducted to assess the prevalence and evaluation of management of TMJ internal disc derangement. In the present study, out of 78 patients, males were 48 and females were 30. Out of 78 patients, 52 (66.7%) had internal disc derangement. Giraudeau et al[10] in their study clinically symptomatic subjects underwent a thorough evaluation by magnetic resonance imaging (MRI). The mean percentage of disk-condyle disunions in the asymptomatic group was 13% and all disunions were only partial on all MRI slices. There was no degenerative change. In the symptomatic group, the mean percentage of disunion was 65.8%, the mean percentage of disunion with reposition was 31.6% and the mean percentage of disunion without reposition was 34.2%. With regard to disunion with reposition, the mean percentage of partial disunion was 79.2%. The mean prevalence of degenerative changes was 23% and degenerative change was linked with disunion without reposition.

We found that treatment given was medicinal (NSAIDS) in 42, physiotherapy in 20, and arthroscopic surgery in 16. The type was disc displacement with the reduction in 28, disc displacement with

reduction with intermittent locking in 10, disc displacement without reduction with the limited opening in 6, disc displacement without reduction without limited opening in 3 and posterior disc displacement in 5. Schiffman et al[11] compared four treatments strategies for temporomandibular joint (TMJ) disc displacement without reduction with limited mouth opening (closed lock). In this parallel-group RCT, 106 patients with magnetic resonance imaging (MRI)-confirmed TMJ closed lock were randomized between medical management, non-surgical rehabilitation, arthroscopic surgery, and arthroplasty. Surgical groups also received rehabilitation post-surgically. Clinical assessments at baseline and follow-up (3, 6, 12, 18, 24, and 60 months) included intensity and frequency of TMJ pain, mandibular range of motion, TMJ sounds, and impairment of chewing. TMJ MRIs were performed at baseline and 24 months, and TMJ tomograms at baseline, 24 and 60 months. Most IAOMS recommended outcome measures improved significantly over time ( $P \leq 0.0003$ ). There was no difference between treatment strategies relative to any treatment outcome at any follow-up ( $P \geq 0.16$ ). Patient self-assessment of treatment success correlated with their ability to eat, with pain-free opening  $\geq 35$ mm, and with reduced pain intensity. Given no difference between treatment strategies, non-surgical treatment should be employed for TMJ closed lock before considering surgery.

Displaced discs that are painful do require management. Recall that the two aspects of TMD that require management are pain and dysfunction. The pain in this particular TMD is due to inflammation within the joint, and both pain and inflammation are usually adequately managed with nonsteroidal anti-inflammatory drugs (NSAIDs). Any limitation in range of motion (dysfunction) in a reducing displaced disc would be secondary to pain since by definition a reducing disc does not physically block condylar movement. Therefore, the use of NSAIDs will also address the dysfunction. NSAIDs are generally effective for such pain. NSAIDs can even be effective in a topical medium. When insufficient, steroids can be used for a limited time[12].

#### Conclusion

The authors found that maximum patients had internal disc derangement. Medicinal treatment was employed in most of the patients.

**Conflict of Interest: Nil**

**Source of support: Nil**

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