Temporomandibular disorders (TMD) is a collective term that includes a large spectrum of clinical problems of the joint and the muscles of the orofacial area, variety of etiologies which causes TMD include congenital defects and growth abnormalities, arthritic conditions, intra articular soft tissue abnormalities, tumors, trauma, chronic dislocations and infections.  

These dysfunctions are characterized mainly by pain, sounds in the temporomandibular joint (TMJ) and irregular or limited function of the jaw.

Internal derangement involves the actual joint apparatus. It usually presents with forward displacement of the articular cartilaginous disc overlying the condyle of the temporomandibular joint (TMJ). The two common clinical entities are 1) Disc displacement with reduction (DDWR) and 2) Disc displacement without reduction (DWOR).

By scientific definition, disc displacement without reduction is a condition in which the original disc is moved from its position between the condyle and the articular fossa to a forward, medial or lateral position, and is associated with limitation of mouth opening.

By scientific definition, disc displacement with reduction is a condition in which the original disc is moved from its position anterior to condylar head resulting in pain during translation, associated with reciprocal clicking.

Description of internal derangement of TMJ have appeared in literature since 1887 when Annandale reported two cases.

Some authors have reported TMJ ID itself as a primary cause of growth disturbance, including mandibular asymmetry (Ricketts, 1966; Hans et al., 1992; Schellhas et al., 1993).

Predisposing factor of TMJ ID are - Occlusal instability, midline discrepancy, right – left differences in molar relationship, and inclination of the frontal
occlusal plane (FOP) (Solberg et al., 1986; Fushima et al., 1999). Differences in the heights of the right and left rami, have also been suggested as important skeletal problems associated with TMJ pathology (Inui et al., 1999; Trpko et al., 2000).

**PATHOGENESIS**

Nitzan et al. proposed that there was a reversible restriction in gliding movements of the disc caused by its adherence to the fossa. Such adherence may arise from a number of possible causes such as fibrous adhesions, severe friction between damaged rough surfaces, stickiness that may be a direct result of an increase in synovial fluid viscosity, or a vacuum effect. A vacuum effect or alteration in synovial fluid consistency may create the environment for a suction effect of the disc to the fossa, restricting gliding movements and therefore resulting in displacement of the disc.

**CLASSICAL TREATMENT FOR INTERNAL DERANGEMENT**

DDWR without pain often requires no intervention. Treatment for the painful type of DDWR and DDWOR is similar to those in myofascial pain. Instruction of a soft diet and jaw rest is given as is the prescription of NSAIDs and muscle relaxants (valium). Failure of these methods requires the addition of a splint to attempt to reposition the condyle. The purpose is to reposition the condyle into a more favorable position in relation to the disc. Clicking is usually not eliminated, but it may be reduced to a soft pop with reduced pain. If repositioning with a splint fails, arthroscopic or open surgical repair is recommended. The purpose of these procedures is to surgically remove adhesions and to reposition the disc into a favourable position.

TMD ID presents with pathognomonic signs and symptoms: History of significant mouth opening limitation; Maximum mouth opening without aid of 35 mm or less; Maximum mouth opening with aid of 4 mm or less in relation to opening without aid; Limited opening with shift without correction of the jaw to the side of the affected TMJ; Absence of joint sounds. Pain in the pre-auricular region during jaw function and mastication of hard food, radiating to fore head and nape of neck. Pain on palpation and during functional joint tests on the affected TMJ.

This article presents the case of a middle aged female patient who sought treatment at our institute on outpatient basis with the chief complaint of intense pain on the right TMJ and mouth opening limitation for the past 2 years. She was diagnosed as having nonreducing disc displacement with mouth opening limitation based on the clinical signs and symptoms and radiographic investigations.

**CASE PRESENTATION**

An 32-year-old female patient came to oral and maxillofacial surgery department of K.L.E institute of dental sciences Bangalore with complaints of extreme pain in the right preauricular region, limitation of mouth opening (maximum interincisal opening of 25 mm) and jaw movement with deviation to the right side. The pain was spontaneous in origin, severe in intensity and radiating to forehead, post auricular region and some times to nape of neck and supra scapular region. The pain aggravated on chewing hard food, yawning and during continuous speech. The patient reported having suffered from these conditions for the past 2 years. A pulsating and twinge pain was described on the right ear with a frequency of 7 days a week. It used to begin in the morning and lasted the whole day until the end of the night.

History revealed RTA (Road Traffic Accident) 4 years ago with left para symphysis fracture. She was treated using mini plate which was four holed with gap at lower border of mandible. Superior border was stabilized by arch bar fixation. Patient had been on soft diet for the past 2 yrs. Patient started experiencing pain in the preauricular region once she swapped back to her regular diet.

She was treated for the same with muscle relaxants by private dental practitioners. Diagnostic OPG at our institute revealed impingement of the inferior alveolar bundle by the deeply seated,
horizontally impacted third molar on the ipsilateral side. Surgical removal of the involved third molar was performed. Patient continued with the painful symptoms post operatively.

After a detailed clinical interview, a diagnostic hypothesis of nonreducing disc displacement with mouth opening limitation was established. The proposed treatment consisted of intra-joint infiltration with anesthetic agent with steroid in the right TMJ followed by jaw manipulation to recapture the articular disc, which was impeding the complete translation movement of the affected TMJ. The patient was infiltrated with 2% lignocaine with dexamethasone Astra in a 1.8 mL disposable non aspirating syringe with a long needle. The applied technique consisted of a modification of the arthrocentesis technique proposed by Nitzan, et al. (1991), the tragus line was delimited by the edge of the eye and the first demarcation was done 10 mm distant from the tragus and 0.5 mm below the drawn line. The patient was kept with the mouth opened during the whole procedure in such a way that the anesthetic solution could be introduced into the upper compartment of the joint cavity, which remained empty, and then the condyle was positioned forward. After the anesthetic procedure, the jaw was manipulated to recapture the articular disc that was in an anterior position and without reduction. A passive manipulation was performed with anti-clockwise movements.

Patient was asymptomatic only for two days following intra articular injection. Patient was put on IMF screws and low traction elastics to restrict mouth opening. Visual analog scale for pain showed decrease from 9 to 7, but on same visit patient also gave history of bruxism. Anterior positioning splint of 3 mm thickness was fabricated using biospar material. Follow up after 1 week showed significant improvement in mouth opening with out pain and VAS decreased to 4.
Treatment for TMDs, careful description of the patient population is necessary to understand the treatment response of specific TMD diagnoses to specific treatments. The major problem is a lack of specific, reliable diagnostic criteria for each disorder.  

The rate of clenching and/or bruxism among patients with TMJ IDs is very high. The disc and retrodiskal tissue are subjected to compression during clenching. Stress in the retrodiskal tissue is approximately five times greater in the symptomatic joint and stress relaxation does not occur compared to the asymptomatic joint. Stabilizing splints are used to reduce bruxism, stress and loading on the joint structures. Stabilizing splints actually do not induce an increase in joint space during closing and clenching in the joints with anterior disc displacement without reduction. 

The presence of a displaced disk significantly decreased the success rate of the stabilization splint therapy. Success rates of 70% to 90% have been reported for stabilization splint therapy often accompanied by occlusal adjustments and restorative dental treatment. Several studies have reported success rates from 33% to 55% for closed lock patients with the stabilization splint. However, requirements for success may have been more rigorous than previously reported. 

Over the past 10-20 years, the conceptual basis for using oral appliances in treating temporomandibular disorders has been dramatically redefined. This has happened largely as a consequence of extensive research conducted around the world during that period, which has led to new understandings of these conditions. Currently, oral appliances are still regarded as useful adjuncts for treating certain kinds of TMD patients, but the emphasis is entirely on their conservative application. Evidence derived from clinical studies suggests that oral appliances are more effective for treating myogenous TMD problems than they are for intracapsular conditions, but they can be helpful for both in properly selected patients. Rather than trying to establish new horizontal or vertical jaw relationships, oral appliances today should be viewed as “oromandibular crutches,” which are analogous to back braces or ankle support orthotics because

Discussion

TMJ ID is a complicated phenomenon involving inflammation, changes in the articular cartilage, alteration in joint pressures and synovial fluid, biochemical mediators and inflammatory substances, as well as disc derangement.
they provide symptomatic relief while patients are recovering. Thinking about oral appliances this way will enable clinicians to use oral appliances as they treat TMD patients conservatively and reversibly, as long as they avoid full-time wear or specific designs that lead to permanent occlusal changes; the worst-case outcome should be nothing more than a failure to relieve symptoms. As for treating sleep bruxism, there is no question that oral appliances can provide protection against excessive attrition of patients’ teeth. They do not stop people from performing parafunctional activities at night, but they may diminish the duration, frequency, or intensity of those activities for some patients and for variable amounts of time. The only negative possibility is development of motion. The use of guiding elastics as a form of isometric exercise along with a splint helped to aid in chronic temporomandibular joint disorder (internal derangement) so that the patient can lead a pain free life. However, long term follow up of the patient is necessary to delineate the complete effect of above mentioned treatment modality & the long term success.

CONCLUSION

In the case presented in this paper, the treatment approach was successful with improvement of the symptomatology associated with internal TMJ derangement and increase of the mandibular range of motion. The use of guiding elastics as a form of isometric exercise along with a splint helped to aid in chronic temporomandibular joint disorder (internal derangement) so that the patient can lead a pain free life. However, long term follow up of the patient is necessary to delineate the complete effect of above mentioned treatment modality & the long term success.

REFERENCES