

# The Importance of Diagnosis and Treatment of Patients with TM Dysfunction



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The American Dental Association estimates that 34% of the population have some signs and symptoms of TM dysfunction. The ADA also stated that dentists have the prime responsibility in the diagnosis and treatment of TM dysfunction to the limit of their ability. The problem is that most dental schools do not offer courses to dental students that would give them enough confidence to either diagnose or treat patients with TM dysfunction.

In my opinion, our profession has done an excellent job of teaching dentists how to deal with teeth and supporting structures, but not in the area of the temporomandibular joint. TM dysfunction is a serious problem for many patients. Signs and symptoms may include headaches, neck pain or stiffness, ear aches, congestion or ringing in the ears, clicking, popping or grating noises when opening or closing the mouth, dizziness and fainting, difficulty in swallowing, pain behind the eyes, limited mouth opening, discomfort on opening, numbness in the hands, shoulders and back pain. It would seem to me, since many of



Fig. 1: Anterior deprogrammer contact MD incisors



Fig. 2: Anterior deprogrammer, posterior open bite

these symptoms are due to TM dysfunction caused by either intra-capsular or extra-capsular problems, that we have a moral and ethical responsibility to try and help these patients.

Many members of the medical profession are unprepared to treat patients with TM dysfunction. If the jaw is not in the correct position which causes the disc to be dislocated, only a dentist utilizing an intra-oral splint or orthotic can recapture the disc and stabilize the jaw. Only a physician can fix a dislocated shoulder and only a dentist with proper training can fix a dislocated jaw. The medical profession is trained to treat the symptoms of TM dysfunction with muscle relaxants, pain medication, anti-inflammatories and even anti-depressants. Indeed, some of my patients are depressed due to constant headaches, neck aches, etc. prior to treatment. However, once the jaw has been stabilized successfully and the problems solved, the patients have no more need for medication. Medical doctors can treat the symptoms but the dental profession has the ability to treat the cause of the TM dysfunction.

The key to successful treatment of a patient suffering from TM dysfunction is *making the proper diagnosis*. The clinician must first determine if the patient is suffering from extra-capsular or intra-capsular problems. Patients with extra-capsular or muscle related problems usually have the condyle in a physiologically correct position in the glenoid fossa (downward and forward). When the condyle-disc relationship is normal, there is no noise, no clicking, or crepitus.

Extra-capsular problems can be caused by occlusal interferences in lateral or protrusive movements or parafunctional habits such as clenching or bruxing. The solution would be to wear an appliance at night called an anterior deprogrammer to help to eliminate the parafunctional habits. The anterior deprogrammer has an anterior biteplate with the only contact during swallowing being the lower central and lateral incisors. When the posterior teeth do not touch, the temporalis and masseter muscles are unable to contract excessively and this eliminates the habits such as clenching and grinding as well as the resultant headaches.

Flat plane splints are effective in patients who suffer acute injuries. These are worn for a short period of time and help to unload the joint to allow healing to take place and then are no longer necessary. These splints could be utilized in cases where patients do not have an internal derangement (dislocated disc).

Flat plane splints are not effective in preventing either clenching or bruxism since patients will simply continue to clench and brux on the posterior acrylic pads of these splints.



Fig. 3: Maxillary splint night only



Fig. 4: Flat plane maxillary splint did not relieve symptoms

Rather than eliminate the parafunctional habits, these splints frequently encourages more clenching and grinding.

If the diagnosis is that the muscle spasms are being caused by occlusal interferences, then occlusal adjustments will be the treatment of choice to eliminate the extra-capsular problems.

In patients with intra-capsular problems, the disc is usually anteriorly or antero-medially displaced in relation to the condyle, which is usually posteriorly or superiorly displaced. TM dysfunction is a progressive disorder. If not treated early, it can progress to a much more serious problem with increasing painful symptoms.

Patients basically progress through five stages of internal derangement (disc displacement) ranging from clicking, more clicking, intermittent jaw locking, chronic closed lock, early degenerative joint disease, and advanced degenerative osteoarthritis (crepitus).

The treatment of choice for an internal derangement (dislocated disc) is to utilize the mandibular repositioning splint. The objective of this repositioning splint is basically to put the condyle in the proper position in the glenoid fossa so that the disc is restored to its proper position in order to act as a shock absorber between the condyle and temporal bone during all opening and closing movements. Then the patient can open and close normally with no clicking or popping noises.

In patients who have internal derangements the condyle is often posteriorly displaced which causes compression of the nerves and blood vessels distal to the condyle (bilaminar zone). The purpose of the repositioning splint which is indexed to move the lower jaw forward to prevent further compression of the

nerves and blood vessels every time the patient swallows (approximately 1,000 times each day).

Numerous research articles have indicated that the indexed repositioning splint is much more effective at reducing the signs and symptoms of TM dysfunction in patients with dislocated discs than the flat plane maxillary splint. The clinician must find the position at the correct vertical height and antero-posterior position where the patient stops clicking when opening and closing in centric occlusion. The lower repositioning splint must be fabricated to stabilize the jaw in that position to allow the muscles of mastication to relax and for damaged nerves and blood vessels to regenerate and heal distal to the condyle.

Most dentists that I have met during my last 24 years of teaching in North America and overseas have been taught in dental school to treat TM dysfunction problems with maxillary flat plane splints at night only. These splints do not solve intra-capsular or extra-capsular problems and cause the mandible to become more retruded. When the mandible retrudes, the condyles become posteriorly displaced and impinge on the nerves and blood vessels distal to the condyle. When the condyle distalizes, the disc becomes anteriorly or antero-medially displaced. This is called an internal derangement. I have treated many patients whose jaw locked shut due to the wearing of a flat

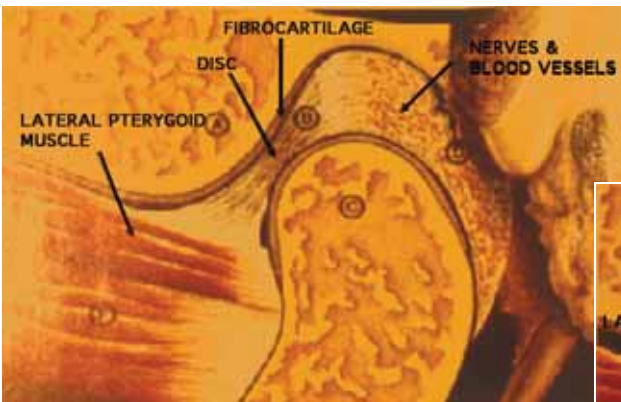


Fig. 5: Normal TMJ

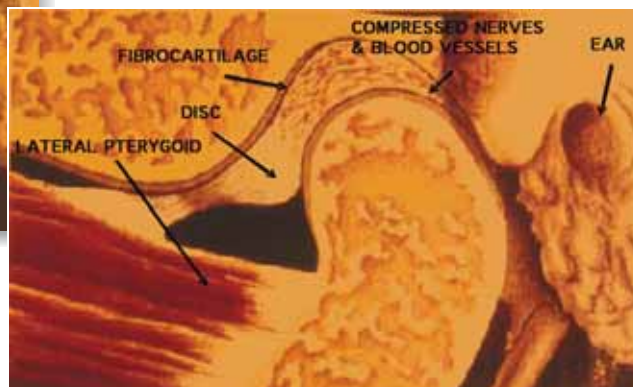


Fig. 6: Posteriorly displaced condyle, anteriorly displaced disc



Fig. 7: Mandibular diagnostic splint



Fig. 8: Maxillary incisors torqued lingually

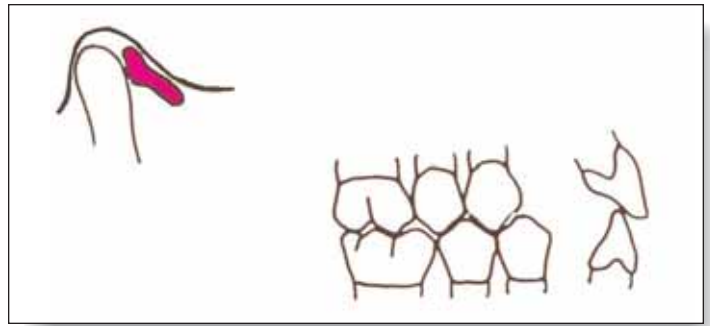


Fig. 9: Posteriorly displaced condyle, anteriorly displaced disc



Fig. 10: Mandibular diagnostic splint

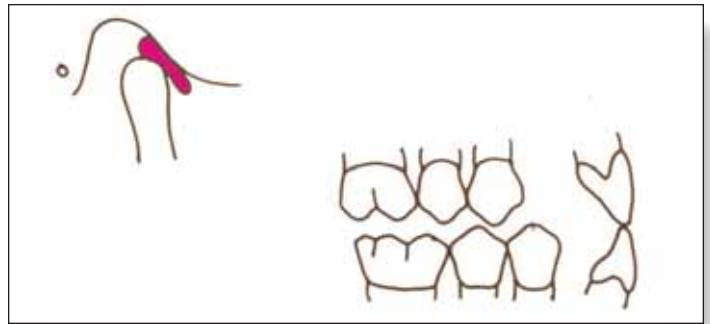


Fig. 11: Condyle forward, disc recaptured, posterior open bite

plane maxillary splint when their jaw was clicking prior to treatment. This was caused by the condyle going posteriorly and the disc getting stuck in front of the condyle. When this occurs, the pain is much more intense.

The majority of clinicians who treat internal derangements now agree that the correct position of the condyle in the fossa is downward and forward (Gelb 4/7 position). In dental school, most of us were taught that there were two methods to correct TM dysfunction: flat plane splints and occlusal equilibration.

In this article, I have indicated the clinical situations where both these would be effective. However, the vast majority of patients suffer from internal derangements and they need repositioning splints and extra-capsular problems which require anterior deprogrammers. Again, I cannot stress enough the importance of taking complete records for treating these patients which will ensure that the correct diagnosis is made and the correct treatment plan is selected, which will significantly improve your clinical result.

The objective of Phase I is to correct the structural problem within the TM joint by repositioning the mandible so that it is properly related to the maxilla transversely, antero-posteriorly and vertically. Ideally, the treatment should reduce the signs and symptoms of TM dysfunction, improve the range of motion,

reduce the muscle spasms, recapture anteriorly displaced discs, and establish a normal disc-condyle relationship.

Patients who have acute injuries or are in the beginning stage of internal derangements can sometimes be weaned off the splint (flat plane or repositioning) after 4 months. All patients should be given the opportunity to be weaned off the splint. However, in my clinical experience, with the more severe cases of internal derangement, these patients cannot be weaned and require something between their posterior teeth to support the TMJ and put the condyle in the correct downward and forward position in the glenoid fossa. These patients will require a Phase II treatment consisting of orthodontics, crown and bridge, overlay partials, or new complete or partial dentures to help stabilize the TMJ.

The objective of Phase II is to hold the position that was obtained with the splints and functional appliances in Phase I. Once the correct position has been obtained and normal disc-condyle-fossa relationship has been established and the structural problem has been corrected, it is vital that treatment be initiated to hold that position. Otherwise, the signs and symptoms of TM dysfunction will surely return.

Following Phase I splint therapy, the patient is frequently left with a posterior open bite. Many inexperienced clinicians think that this posterior open bite has been caused by an intrusion of

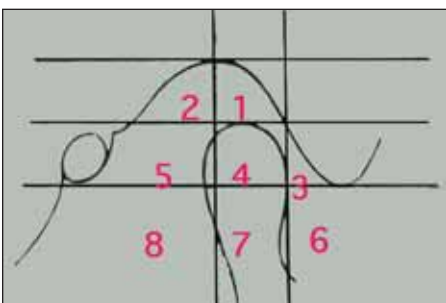


Fig. 12: Gelb 4/7 position



Fig. 13: Original tomograms, condyles posteriorly displaced



Fig. 14: Tomograms with splint condyles centered in fossa

the posterior teeth due to the wearing of the mandibular repositioning splint for 4 months.

The posterior open bite is actually the result of the condyle moving downward and forward away from the painful nerves and blood vessels in the bilaminar zone located posterior to the condyles. To permanently resolve this intra-capsular problem, it is now necessary to hold the mandible in the correct position while the posterior open bite is closed, either orthodontically, restoratively or prosthetically.

## Conclusion

During the last 24 years of offering courses to general dentists in orthodontics and TM dysfunction, my observation has been that most dentists were not adequately trained or motivated to want to treat patients with TM disorders. Most feel inadequate to either diagnose or treat these patients.

This is a serious problem since approximately 40 million people in North America suffer from this disorder that can cause numerous symptoms including headaches, neck pain, earaches, congestion or ringing in the ears, pain when chewing, dizziness and fainting, difficulty swallowing, pain behind the eyes, and shoulder and back pain.

I firmly believe that the dental schools have to add this to the curriculum so that graduating dentists will be competent to diagnose and treat their patients. If the dentist is not trained to help these patients, then the patients could get worse. TM disorder is a progressive condition that gets more serious over time.

To permanently solve the problem, the clinician must first diagnose the problem and then treat it accordingly. The dental profession must be the primary care provider for TM

dysfunction and be trained to diagnose and treat intra-capsular as well as extra-capsular problems.

I would advise all general dentists and specialists that, prior to any restorative, orthodontic or prosthetic treatment, to diagnose and treat TM dysfunction first.

Contractors would never consider constructing a new roof on a house unless it first had a stable foundation. I think the dental profession should treat similarly. Other professions must wonder how the dental profession, which holds the key to the elimination of so many "medical" symptoms, could fail to properly diagnose and treat a condition that affects 40 million people in North America.

It is time for the entire dental profession to step up to the plate and rectify this situation and take responsibility for the temporomandibular joint. Our profession must work with other health care professionals in helping to eliminate TM dysfunction and craniofacial pain that affects so many of our patients. Most dentists entered the profession with the desire to help patients. We now have an opportunity to not only improve the oral health of our patients, but also to significantly improve their quality of life by improving their overall health.

## About the author

*Dr. Brock Rondeau, D.D.S., I.B.O., D.A.B.C.P., has an extremely busy practice where he exclusively treats patients with orthodontic, orthopedic, TMD and sleep disorders. He has been lecturing for 24 years, approximately 100 days per year, and over 17,000 dentists have attended his courses and study clubs in the U.S., England, Australia, Canada, Poland and China. Dr. Rondeau is a Diplomate of the International Board for Orthodontics and a Diplomate of the American Board of Craniofacial Pain. He has published over 28 articles and has a series of DVDs on all phases of orthodontics.*