

TREATMENT OF INTERNAL DERANGEMENT OF THE TEMPOROMANDIBULAR JOINTS

For many years, medical and dental clinicians have been debating the causes and treatment for TM (temporomandibular) dysfunction. Dr. Hans Selye, MD, of the Canadian Institute of Stress, University of Montreal, Canada, wrote numerous articles and textbooks starting in 1936 about the negative effects of stress on patients' health. This had a profound effect on the medical profession's view of this disorder and many patients have told me that their family doctors told them their headaches and other symptoms were mainly psychological in origin. One of the other reasons attributing to that conclusion is the fact many of these chronic pain patients suffer from depression. The medical profession responds with prescribing antidepressants, pain medication, muscle relaxants and anti-inflammatory drugs for their patients. They are treating the symptoms but not the cause of the problem.

The dental profession holds the key, and indeed, the responsibility to treat these patients. TM dysfunction is not caused by stress: it is a structural problem. The mandible is not in the correct relationship to the maxilla: transversely, antero-posteriorly or vertically. The condyle is not in the correct position in the glenoid fossa. The disc is not related properly to the head of the condyle. This is a structural problem.

Unless this problem is rectified, patients will continue to have chronic pain and suffer needlessly. Once the structural problem has been rectified, the chronic pain, headaches and other symptoms, including depression, disappear and the patient no longer requires medication.

Dr. A. C. Fonder, a dentist who wrote two excellent books, *The Dental Physician* and *Dental Distress Syndrome Quantified*, convinced Dr. Selye later on in his career, that TM dysfunction was not caused by stress, but rather by an incorrect condyle-disc-fossa relationship, many times as a result of a malocclusion. Dr. Fonder stressed the importance of proper vertical dimension and showed numerous cases where he changed head postures, reduced scoliosis, and eliminated symptoms of TM dysfunction by establishing the correct vertical dimension and correct mandibular-maxilla relationships for his patients.

Clinicians who treat TM dysfunction know that a patient who is overclosed vertically (short lower face height) routinely has the condyles posteriorly displaced and the discs anteriorly displaced (internal derangement). This results in compression of the nerves and blood vessels in the bilaminar zone distal to the condyle with resultant headaches and ear symptoms such as stuffiness, itchiness

or ringing in the ears (tinnitus). Clinically, the patient will click upon opening and closing in centric occlusion. These vibrations can be picked up and analyzed by a device called the Joint Vibration Analysis (JVA). There are basically five stages of internal derangement (disc displacement) and the JVA can identify for the clinician whether each TM joint is normal, or what stage of pathology exists in each joint prior to treatment.

There are basically 5 stages of internal derangement:

- Stage I Clicking with no pain.
- Stage II More clicking, intermittent locking of the jaw, pain. Patients complain that their jaw gets stuck but they can unlock it by moving the jaw constantly.
- Stage III Chronic closed lock. The disc gets stuck in front of the condyle and the patient has limited interincisal opening. This is extremely painful.
- Stage IV Early degenerative osteoarthritis, painful.
- Stage V Advanced degenerative osteoarthritis, (crepitus) painful.

In Stage I and II of internal derangement, the disc is usually anteriorly displaced and the condyle is posteriorly displaced. The normal function of the disc is to act like a shock absorber at all times between the head of the condyle and the temporal bone of the glenoid fossa. When the disc is anteriorly displaced, the condyle goes over the posterior rim of the disc when the patient opens and a click or pop sound is heard. This is not normal. If this problem is not diagnosed and treated, the patient could progress to Stage III, IV and V which are extremely painful.

Many clinicians believe that a high percentage (perhaps even 90%) of headaches are caused by internal derangements (anteriorly displaced disc) due to the condyle being posteriorly or superiorly displaced or by extra-capsular problems (outside TM joints) such as clenching and bruxing. It is the dental profession's responsibility to help these patients who suffer daily from headaches, neck aches, ear problems such as ringing or buzzing in the ears, dizziness, fainting, inability to sleep due to chronic pain, pain behind the eyes, shoulder and back pain.

If there is a structural problem within the joint, such as the condyle located too far posterior, then I believe it is our responsibility to move it to the correct position, utilizing anterior repositioning splints or functional orthopedic appliances. We need to offer patients a permanent solution to their TM Dysfunction.

There have literally been hundreds of articles written about the benefits of anterior repositioning appliances including anterior repositioning splints or functional appliances that advance the mandible, including Twin Block, MARA, Rick-A-Nator and Herbst Appliances. For clinicians who are interested in learning more about this subject, I would recommend a recently published book entitled, "Craniofacial Pain: A Handbook for Assessment, Diagnosis and Management" by the American Academy of Craniofacial Pain, edited by Dr. Clifton Simmons.

One article confirming the efficacy of anterior repositioning splints is a research paper written by H. Lundh, P. L. Westesson, S. Jisander and L. Eriksson from the University of Lund, Sweden, entitled, "Disc Repositioning onlays in the treatment of temporomandibular joint disc displacement. Comparison with a flat occlusal splint and with no treatment."

Sixty-three patients were divided into 3 groups:

- Group 1 Silver onlays cemented on their teeth similar to an anterior repositioning splint that moved the lower jaw forward. Arthrograms revealed that all patients were Stage II disc displacement with reduction when occluding in centric occlusion and all 21 patients' discs were recaptured with the treatment. Discs were in the normal position at the end of treatment and TMD symptoms were reduced in all 21 patients.
- Group 2 Patients received flat plane splints. Arthrograms revealed that none of the discs were recaptured and there was no reduction in symptoms.
- Group 3 Patients received no treatment and obviously there was no reduction in symptoms.

In another study entitled, "Anterior Repositioning Appliance Therapy for TMJ Disorders: Specific Symptoms Relieved and Relationship to Disk Status on MRI" by Clifton Simmons and Julian Gibbs (Journal of Craniomandibular Practice, April 2008). Forty-eight patients with internal derangements (anteriorly displaced discs, Stage II) were treated with anterior repositioning splints. Each patient was assessed on 86 symptoms. When treated with anterior repositioning appliances this resulted in absence of or improvement of 95% of symptoms present before treatment.

The most predictable treatment results are obtained when the repositioning splints are fabricated in a position where the patient does not click when they open and close. This usually necessitates moving the mandible forward and fabricating the splint with an interincisal opening of 1-3mm. Obviously, the lower splint must be indexed so that patients can only occlude in the one position where they do not click upon opening and closing.

Surely, as clinicians, our responsibility is to fix the structural problem which is the anteriorly displaced disc and to reduce the patient's symptoms. I would strongly urge clinicians who treat patients in Stage II of internal derangement (anteriorly displaced discs and posteriorly displaced condyles) not to utilize a flat plane maxillary splint. I have observed many patients referred to my office with chronic closed locks (Stage III) as a result of their splints which frequently cause the condyle to be further displaced posteriorly with the disc becoming stuck in front of the condyle resulting in increased discomfort. The treatment for these patients is a referral to a clinician who routinely treats these patients and uses laser therapy, iontophoresis or manually unlocks these patients as soon as possible. Following this procedure an anterior repositioning splint must be inserted or the patient will lock again.

My treatment plan for patients with internal derangements of the TM joints is as follows:

Phase I	Jaw Stabilization	Temporary Solution	4-6 months
	Daytime	Anterior Repositioning Splint to recapture anteriorly displaced discs	
	Nighttime	Anterior Deprogrammer to prevent bruxing and clenching and solve extra-capsular problems	
Phase II	Treatment Phase	Permanent Solution	
	Orthodontics	to erupt the posterior teeth and finalize the occlusion	
	Restorative	Crown and bridge, Implants	
	Prosthetic	Overlay partial denture, Complete or Partial dentures	

The objective of Phase II Treatment is to stabilize the patient's occlusion once the TMJ has been stabilized and the condyle-disc (maxillo-mandibular) relationship has been restored to normal.

The American Dental Association stated that 34% of the population is suffering from one or more signs or symptoms of TM dysfunction. This is a serious problem and one, I believe, that the dental profession must play a vital role in helping their patients.

I must re-emphasize that it is extremely important to treat patients properly in Stage II of internal derangement who have numerous painful symptoms so they do not progress to even more serious problems in Stage III, IV and V of internal derangement, as mentioned previously.

In my opinion, it is the responsibility of the dental profession to thoroughly understand how to diagnose and treat temporomandibular joint problems. It is imperative that the TMJ be stabilized and non-symptomatic prior to any restorative, orthodontic or prosthetic procedures. This subject is extremely controversial and many clinicians have different treatment plans in order to try and help their patients.