

Temporomandibular Joint Disorder:

Differing professional treatment options reviewed in two case reports. A speculative Case Series

Scott Cuthbert

Narrative: The comprehensive chiropractic TMJ examination must include the mandible's motion by the muscles of mastication, the dental occlusion, the joints including its articulating disc, and their effects upon the motor nerves of the body. TMJ dysfunction can be caused or perpetuated by disturbance in any of the links in the closed kinematic chain of the 'stomatognathic system'.

The muscle organisation within the chain is examined in chiropractic applied kinesiology by having jaw motion evaluated in opening, closing, lateral sway and teeth clenching during manual muscle testing of related muscles. It may also be evaluated with swallowing, talking, and with the head in different positions.

Three differing chiropractic and dental treatments in two cases of TMD (temporomandibular disorders) are compared in this case series review.

Indexing Terms: Chiropractic; AK; Applied Kinesiology; Temporomandibular Joint Disorder; TMJ.

Introduction

Chiropractic clinicians face patients with temporomandibular disorder (TMD) every single day, whether they are recognised or not. In the Philippines alone, there are 6 million people (out of a population of 120 million) who admit to having 'jaw pain'. The number of functional TMJ disorders is likely to be far higher. (1)

In certain types of temporomandibular joint dysfunction the symptoms are obvious. TMD is a collective term encompassing a number of clinical signs and symptoms that involve the masticatory muscles, TMJs, and other adjacent structures of the stomatognathic system. (2)

There may be severe pain, limitation of motion, or popping and cracking; obviously under those circumstances the area should be examined. On the other hand, dysfunction in this structure may cause severe health problems in a remote area of the body, giving no indication for TMJ examination unless the physician is aware of the many ways in which this structure can cause remote problems. (3)

Unfortunately both within the chiropractic profession and without, it is quite common to ignore the TMJ and its muscles unless there are obvious symptoms relating to it. In attempting to determine if a patient has a TMJ

... Patient outcomes are dependent on the clinical decision-making of the practitioner. The issue is, every practitioner has their own ideas and in this paper Dr Cuthbert describes 2 recent cases from his Dauin clinic and offers 3 different care plans for each, highlighting the importance to always seek to correct the cause...'

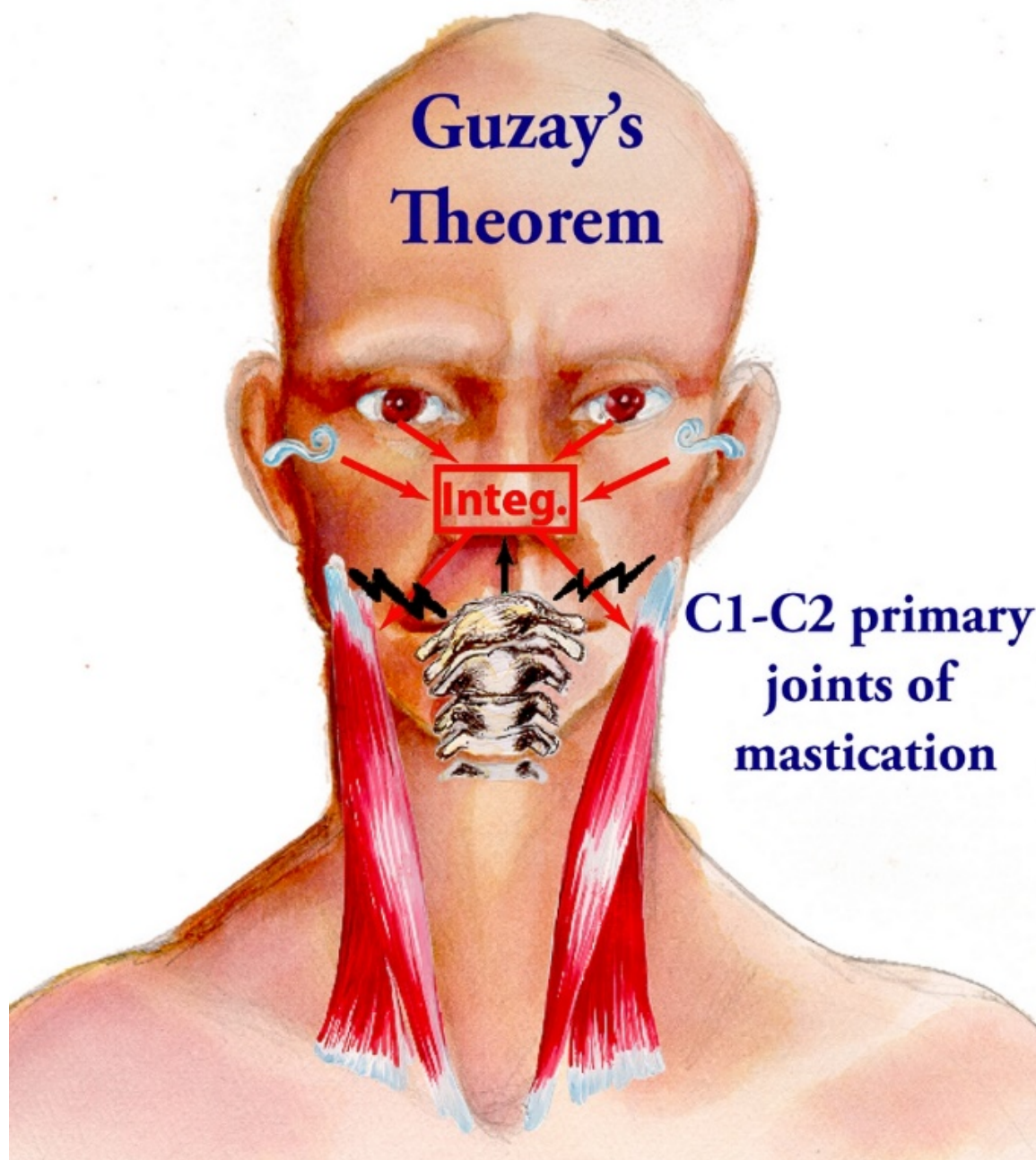


problem we should not ask the patient, 'does your jaw joint hurt'? (3)

Objective evaluation of the masticatory and TMJ mechanism should be done regardless of the symptomatic pattern; it must be recognised that serious dysfunction can often be present in the absence of localised or admitted symptoms on the part of our patients.

One of the early masters of the interactions between the TMJ and whole body function was Aelred Fonder BA, DDS, who in his masterpiece 'The Dental Physician' suggested that only 5% of people in the world have normal dental occlusion, TMJ function, and a mandibular axis of rotation at C1-C2. (4)

Essential to the chiropractic contribution to the management of patients with TMD is the fact that the atlanto-axial joint is the primary joint of mastication, this is known as 'Guzay's Theorem', long established as a golden rule in dental orthopaedics. The TMJ and the atlanto-axial joint interact continually to provide optimum stomatognathic system function. (5)



Cases



Patient #1

In the initial description of her complaint, Ms Obanana relates that she has suboccipital headaches that are almost always present and sometimes extremely severe. She frequently has visual and digestive disturbances. On questioning by the doctor she states that these health problems do not necessarily coincide with her headaches, and that the visual problem occasionally includes double vision. She can usually bring the diplopia into single vision by holding her head in a certain position. Her physician asks her to demonstrate this activity and observes masseter muscle contraction when she assumes the head posture that relieves the diplopia. Further questioning by the physician seems to rule out a weight-bearing problem since she does not gain relief when lying down, is not worse at the end of the day, and often has the problem upon awakening in the morning.

When the physician questions Ms Obanana about a history of motorcycle accidents, it is revealed that these symptoms developed soon after a motorcycle accident, a very common injury in most of SE Asia. She was the passenger behind her husband, and she fortunately hit her head on the sandy shoulder of the road. The motor scooter she was riding rear-ended a car that was stopped at a light. She was thrown forward; her knees were lacerated on the shoulder of the road and her head hit the temporal-parietal bones on the right side. The only injury related to the motorcycle accident was to her scalp and knees, which were examined and treated at the hospital by a general practitioner on the day of the motorcycle accident. They have since healed satisfactorily and there seems to be no residual problems. She does not relate her headaches to the motorcycle accident.

Ms Obanana's consultation and history reveal some additional symptoms relating to the cranial nerves and cervical spine dysfunction. On specific questioning she states, *'My jaw doesn't feel right and I have a lot of tension in this area'*. (She indicates the temporalis and masseter muscles on the right side).

In the Philippines, the type of treatment Ms Obanana receives is often dictated by the type of physician she consults. The case history and consultation indicate disturbance in the cervical spine, cranial primary respiratory mechanism, and temporomandibular joint and its muscles. Three different physicians may develop totally different case plans and obtain results. Before

looking at how various physicians might approach her condition, let's see what has happened in this situation.

The ethology is trauma from the motorcycle accident where Ms Obanana's head hit the sandy shoulder of the road, creating cranial injuries. Ms Obanana does not relate her symptoms specifically to the motorcycle accident since the headaches didn't begin until about three weeks later. This delayed reaction is not uncommon with cranial dysfunctions. The reason for the delay is speculative; but it may be that the cranial nerves are capable of resisting the early stages of peripheral entrapment from cranial dysfunctions. Symptoms may not develop unless the stomatognathic system dysfunctions further. This includes the closed kinematic chain, represented in this case by the masticatory muscles and the neck flexors, including her low back, pelvis and knees.

Thorough evaluation by the physician knowledgeable in the total stomatognathic system reveals that Ms Obanana has several cranial dysfunctions, bilaterally weak *sternocleidomastoid* muscles, imbalance of the muscles of mastication, hypertonicity of the cervical extensors, and *hyoid* muscle imbalance. The suboccipital headaches are secondary to the weak *sternocleidomastoid* muscles, which are causing the unopposed *suboccipital* muscles to become hypertonic almost to the point of spasm. Muscle hypertonicity reduces the blood supply to the muscles, causing pain; it may also impinge upon the greater and lesser occipital nerves with resulting neuralgia.

Because of the muscular imbalances present, cervical subluxations and/or fixations have developed, causing additional symptoms. Cranial dysfunctions, in addition to creating the *sternocleidomastoid* weakness, have caused the masticatory and hyoid muscles to be out of balance, resulting in malocclusion and symptoms in the masseter and temporalis muscles. The cranial injuries have also caused imbalance in the extraocular muscles, resulting in diplopia. Since Ms Obanana has additional visual disturbances there may be distortion of the bony orbit of the eye, causing pressure on the eye or peripheral entrapment of CN II. Cranial dysfunctions are probably responsible for her digestive disturbances, which could develop as a result of disturbance to the vagus nerve (CN X).

Comparative Professional Management of Patients with TMJ Disorders

Care Plan One

Developed by a chiropractor who quickly observes the cervical subluxations and/or fixations and proceeds to treat the condition with cervical manipulation. The care plan may also include electro- or physiotherapy to the hypertonic *suboccipital* muscles and other support to the cervical spine. This approach breaks into the vicious circle of events causing the symptomatic pattern from which Ms Obanana is seeking relief.

The *sternocleidomastoid* and *upper trapezius*, as well as the intrinsic muscles of the upper cervical area, can be disturbed by vertebral subluxations and fixations. Improved balance of these muscles which pull into the cranium may relieve enough stress on the cranial primary respiratory mechanism to allow the body to correct itself in its own self-correcting, self-maintaining way. With this assist from the body's own natural abilities, this case plan proves successful in correcting the condition.

Hopefully, this is the course of events. The successful illustration given depends on the *sternocleidomastoid* and *trapezius* imbalance being due to vertebral subluxations and fixations that are somehow secondary to imbalance of the closed kinematic chain of the stomatognathic system.

This care plan, on the other hand, may actually create additional problems. If the weakness of the *sternocleidomastoid* muscles was primarily due to cranial dysfunctions entrapping CN XI at

the jugular foramen, there would be no improvement in their function. Manipulation of the upper cervical region in this case could correct the condition only by accidentally placing strain on the dura mater attached to the upper cervical vertebrae, which would luckily pull into the cranial primary respiratory mechanism to unlock the cranial dysfunctions. More likely, the manipulation to the upper cervical area would put additional stress into the already compromised structures.

Care Plan Two

Care plan 2 was developed by a dentist Ms Obanana consulted because of the constant tension in her jaw. Malocclusion is quickly observed on examination and related to the imbalance in the closed kinematic chain of the stomatognathic system. The care plan is to first reduce stimulation to the periodontal ligament receptors by providing a bite plane.

Soon after the appliance is installed and equilibrated, Ms Obanana feels relief of the jaw tension. The dentist continues to equilibrate the bite plane as the muscles of mastication relax and function in a more balanced manner. With their improved balance they direct force into the cranium, activating the mechanism; again, in the body's own self-correcting, self-maintaining manner, they unlock the cranial primary respiratory mechanism and release peripheral entrapment on the cranial nerves.

With return of balanced function the bite plane is removed; the dentist finds minimal malocclusion, unless he attempts to equilibrate to centric relation in the most retruded superior condylar position. Fortunately, the care plan included the initial use of a bite plane. If the care plan had directed initial effort toward equilibration, Ms Obanana would probably have gotten no relief; worse, the cranial dysfunctions would have been locked in because the more stable mandible was made to fit the imbalanced but flexible maxillae.

Care Plan Three

The third care plan is developed by a physician knowledgeable in the cranial primary respiratory mechanism. The first clue is that most of Ms Obanana's symptoms relate to cranial nerve dysfunction. The second clue is that Ms Obanana can relieve her diplopia by tilting her head to a specific position. This is emphasised as the physician observes masseter muscle contraction in the position in which Ms Obanana gains relief. Contraction of the jaw closer muscles brings the lower dental arch into intercuspation with the upper one.

Since Ms Obanana had a good occlusion prior to the motorcycle accident, the solid mandible forces the distorted maxillae into an improved position, causing the diplopia to return to single vision. The aetiology of trauma to the head is the third clue that the primary problem is in cranial function. If the physician can evaluate the cervical spine, cranial primary respiratory mechanism, and the occlusion, he can probably quickly confirm the cranial mechanism as primary. His examination of the three areas reveals cranial dysfunctions, muscle imbalance associated with the malocclusion and upper cervical subluxations.

Since care plan three is developed by a physician knowledgeable in all three areas, he can examine them simultaneously. In this examination, an effort is made to determine if challenge to the cervical spine will affect the TMJ and cranium, or whether the TMJ and its muscle balance will affect the cervical spine and cranium, or whether the cranium will affect the cervical spine and TMJ.

In this case it is found that the cranium is primary to the temporomandibular joint and cervical spine dysfunction. The TMJ and its muscle balance are examined with various phases of respiration typical in applied kinesiology evaluation of the cranial primary respiratory mechanism. When the patient holds a particular phase of respiration, the positive TMJ tests become negative. When the patient holds the same phase of respiration, challenge to the cervical

vertebrae also turns negative. This is almost 100% indication that the cranial dysfunctions are primary.

The physician finishes his examination of the cranium and makes corrections, then re-examines the temporomandibular joint and cervical spine; they now test negative with no therapy applied.

This example illustrates how important it is to find the primary condition. Good evidence that the primary problem has been found is when its correction simultaneously eliminates many other positive findings. Excellent feedback to the third physician is the spontaneous correction of the temporomandibular joint and cervical spine following the cranial correction.

Patient #2

An example of a different aetiology and primary condition is supplied in the case of Mr Teves. During consultation, he describes chronic sinus trouble that causes severe pain. He points to the maxillary area and describes the pain as being so severe that it sometimes feels like there is a hot poker behind his eye. Occasionally the pain is in the frontal area, but more often it is in the maxillary area.

This problem has gotten progressively worse over the past five years. He has sought the services of several physicians, and has tried some home remedies involving diet change and nutrition and Filipino herbals. Over the years he has used numerous decongestants and analgesics, received antibiotic treatment, and had surgical drainage on two occasions. He has eliminated dairy products from his diet, gone on a low carbohydrate diet, and used voluminous amounts of vitamins C and A. He believes he may be allergic to some proteins since he develops digestive gas upon their ingestion.

When the physician asks questions about other types of health problems, little additional information is obtained. Specific questions relating to weight bearing, such as fatigue at the end of the day, foot or low back problems, worsening of symptoms after standing for prolonged periods, or relief upon lying down, reveal only that leg cramps may develop if he is on his feet for a prolonged time. Mr. Teves strikes the physician as one who complains little about his health and tends to overlook problems about which others would complain.

Specific questions regarding his dental health are answered with *'Oh, my teeth are in excellent condition. I spent about 26,000 Philippine Pesos (US\$445) on them recently and the dental hygienist cleans them once a year'*. Additional questions reveal that he had four crowns placed five years previously. He notes that he is having some discomfort in his back teeth, but it is getting close to time to go to the dentist anyway. Observation reveals periodontal problems developing in the lower posterior quadrants.

Mr Teves's consultation and history again show dysfunction of the cranial-sacral primary respiratory system to be the cause of his sinus disturbance, and two ways in which the cranial dysfunctions could be responsible for the sinusitis. The first is direct disturbance to the sinuses, which often results from cranial dysfunction. Misalignment of the cranial bones can disturb sinus drainage and interfere with the nerve supply to the sinuses. The second is shown in Mr Teves's body language that indicates probable hypochlorhydria, relating with the digestive gas after eating protein foods (especially lechon, a Filipino favourite) and possibly with the leg cramps as a result of calcium deficiency. Protein digestion and calcium absorption both depend upon an adequate amount of hydrochloric acid. In applied kinesiology, hypochlorhydria and calcium deficiency are related with allergic reactions which could be the cause of Mr Teves's sinus problems. (6)

To understand how Mr Teves will respond to different therapeutic approaches, it is necessary to know how his problem developed. During his extensive dental procedures five years

previously, two third molars were extracted and four crowns were placed as reconstruction procedures. The crowns were poorly equilibrated and encroached on the freeway space, changing the vertical dimension. The increase in vertical dimension may have been done as a result of the dentist's philosophy, which indicated a greater vertical dimension was necessary, or it may simply have been the result of a poor case plan. Because of the resulting malocclusion, the muscles of mastication pulled on the cranium in an imbalanced manner, creating the cranial dysfunctions responsible for Mr Teves's symptoms. The repeated trauma of the malocclusion has now resulted in periodontal disease, evidenced in the lower posterior quadrants.

Again, let's speculate about the three different case plans developed by different doctors and the resultant effects on Mr Teves's condition.

Comparative Professional Management of Patients with TMJ Disorders

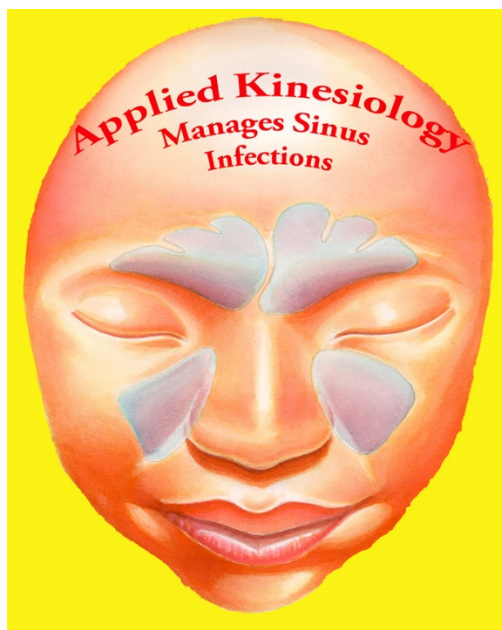
Care Plan One

Developed by a chiropractor to whom Mr Teves was referred because one of his friends obtained good results for a sinus condition. Examination reveals imbalance in the muscles of the cervical spine; motion palpation of the vertebrae reveals several areas of aberrant movement. This is very common when any area of the stomatognathic system is involved because the closed kinematic chain becomes imbalanced.

Shortness of a leg is observed when the patient is supine, the pelvis appears imbalanced, and there are subluxations of the lumbar vertebrae. The chiropractor's care plan includes an orthotic for the apparent short leg and spinal manipulation of the areas of vertebral subluxation indicated by motion palpation and x-ray misalignment. He also includes hydrochloric acid supplementation for the muscle cramping and for protein digestion.

The results of this treatment depend on luck. It is possible (though not probable) that manipulation in the cervical and lumbar spines, and change of general spinal and pelvic balance as a result of the orthotics, will structurally change the balance within the stomatognathic system sufficiently to change the cranial dysfunctions, or perhaps even clear them. If the cranial dysfunctions are simply changed to a different type the sinus condition may improve, but new and probably unrelated symptoms may eventually develop from the different peripheral nerve entrapment resulting from new cranial dysfunctions.

It is fortunate for the doctor that he will receive credit for correcting the sinus condition and won't be blamed for new symptoms unless they seem to be specifically related, such as low back pain, etc.



Care Plan Two

Developed by a physician knowledgeable in the cranial-sacral primary respiratory mechanism but unaware of its close relation with the TMJ, occlusion, and muscles of mastication. Treatment is directed to the cranial dysfunctions and the doctor's examination, whether by palpation or muscle testing, indicates improved cranial function. Unfortunately, when the patient returns for subsequent visits the cranial dysfunctions have also returned.

With the continuing cranial manipulation there may be sufficient change in the mechanism to bring at least temporary relief from the sinus condition, or the cranial dysfunctions may be shifted to a different type and relieve the sinus condition completely but bring new symptoms, as happened in case plan one.

Here again, the doctor may receive credit for improving the sinus condition and not have the new symptoms related to his treatment.

Care Plan Three

Developed by a dentist Mr Teves is consulting for the first time. The change of dentists is the result of Mr Teves having a job transfer to a different city. The very obvious periodontal disease causes the dentist to evaluate for traumatic malocclusion, which is quickly apparent. The case plan includes a mandibular bite plane constructed to splint the lower teeth. It stabilises the teeth and eliminates stimulation to the periodontal ligament proprioceptors, allowing the adaptive engram to be reduced. The crowns are subsequently equilibrated for proper freeway space and occlusion, and Mr Teves's periodontal problem subsides. Because of the balanced occlusion and normal vertical dimension, the cranial primary respiratory mechanism is no longer under stress; the cranial dysfunctions self-correct and the sinus condition subsides.

There is an irony to this case plan and the results of the third hypothetical situation. Mr Teves obviously will be very grateful to the dentist for the improvement in the periodontal problem; however, neither Mr Teves nor the dentist may ever understand why the sinus condition 'spontaneously' subsided after five years. The dentist may not even be aware that Mr Teves had a sinus condition.

Conclusion

These two patients are representative of the interplay taking place within the stomatognathic system and how important it is to find the primary condition rather than treat the symptoms. In some instances the examining doctor is the appropriate one to manage the patient's total treatment; in other cases it may be necessary to refer the patient to a practitioner of a different discipline for optimal results. In many chronic conditions it is necessary for the patient to be treated by two or more physicians in different disciplines to obtain the optimal correction. The combined types of examination available in applied kinesiology help delineate the primary cause of the health problem.

Both of these hypothetical cases are examples of involvement of the total stomatognathic system with only one area being primary. The trilogy could be completed by creating a hypothetical case that has trauma to the cervical spine, such as a whiplash injury, as the initiating factor. (7) Three physicians could develop case plans for correction. Two of them might or might not relieve the condition by disrupting the vicious circle of events, and one could have the right approach of correcting dysfunction in the cervical spine.

Key point

This interaction of the stomatognathic system demands that a physician be aware of the body language of dysfunction in all areas of the system, and how those areas interrelate with each other. Whenever there is body language of cranial dysfunction, hyoid muscle imbalance, or

cervical spine dysfunction, the TMJ, muscles of mastication, and the occlusion should be thoroughly evaluated. They will frequently be involved, either on a primary or a secondary basis.

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