
CASE STUDY

Resolution of Chronic Temporomandibular Disorder in a 36-Year-Old Female Following Chiropractic Care: A Case Study

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ABSTRACT

Objective: The objective of this study is to discuss the positive health outcomes following chiropractic in a woman suffering from temporomandibular disorder (TMD).

Clinical Features: 36 year old female presented with chronic TMJ pain aggravated by movement, sleeping, and straining. The pain began several years prior following trauma. Examination revealed postural distortions and spinal subluxations.

Intervention & Outcome: Quantum Spinal Mechanics³ technique was utilized. The patient's posture was restored and as a result she experienced resolution of her TMD pain after the first QSM³ treatment. She has not had a reoccurrence of the pain in the several months of ongoing QSM³ care that followed to maintain and stabilize her correction.

Conclusion: This case suggests the need for more research in utilizing conservative chiropractic care to manage TMD by correcting postural breakdown and subluxation with QSM³.

Key Words: *chiropractic, adjustment, subluxation, Quantum Spinal Mechanics 3, QSM³, myofascial release, TMJ, TMD, temporomandibular joint, temporomandibular dysfunction, temporomandibular disorders, fascia, temporomandibular pain, treatment, nerve entrapment*

Introduction

The purpose of this study is to discuss a conservative chiropractic approach to manage temporomandibular disorders by correcting postural misalignment using Quantum Spinal Mechanics³ (QSM³) to remove obstructions to muscle, nerve, and vascular supply.

Temporomandibular Disorders (TMD) refers to dysfunctions of the temporomandibular joint (TMJ) that can cause discomfort and pain in and around the TMJ, headaches, abnormal movement of the joint, and clicking noises upon movement of the TMJ.^{1,2} TMD has been estimated to affect

up to 30% of the adult population.³ Females are seeking care more than men at approximately a 3 to 1 ratio and range in age from 25 to 44 years old.⁴ The diagnosis and management of TMD has remained challenging due to the complexity and multifaceted pain that is manifested by this disorder.⁵

Fascia refers to the fibrous connective tissue in the human body. The breadth of structures that are defined as fascia varies due to different perspectives by various groups such as the International Fascia Research Congress (FRC) and the Federative Committee on Anatomical Terminology (FCAT).⁶

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Myofascia refers to the connective tissue that surrounds and bundles together muscle tissue.⁷

Myofascial release (MFR) is a manual therapy that uses directed pressure applied to myofascial tissue for a period of time which can cause changes in length of the tissue, reduce pain, and restore proper function to regions of the human body.⁸

Quantum Spinal Mechanics³ (QSM³) is a tonal based chiropractic method that utilizes MFR in the cervical region to restore optimal healthy posture in order to improve nervous system function of the entire body.⁹

A majority of the potential treatments for TMD are considered conservative. Manual therapies include: joint mobilization, trigger point soft tissue techniques, cervical spine treatment, postural corrections, and exercises. Other physical therapies include: shortwave diathermy, therapeutic ultrasound, and low level laser. Psychological approaches include: cognitive-behavioral therapy, education, biofeedback, relaxation training, and stress management. Needling therapies include: acupuncture, botulinum toxin type A, and dry needling. Orthopedics include: stabilization splints and hard stabilization appliances.⁵ In some severe cases surgical restoration of the joint may be used.²

The Activator protocol is the most commonly documented chiropractic technique that has been used to treat TMD.^{4,10,11,12} Also documented is Chiropractic BioPhysics® (CBP®) which utilizes mirror image® exercises, adjustment techniques and traction methods to restore proper alignment of the spine and posture.³

This case study adds to the body of evidence for the effectiveness of QSM³ in resolving TMD. This case study demonstrates the correction of a patient's postural misalignment using QSM³, which resulted in the resolution of TMD.

Case Report

History

The patient in this case study is a 36-year-old female. She was 65 inches tall and weighs 145lbs. She was married with three children, a stay-at-home mom, and a vegetarian.

She reported having left sided TMJ pain of unknown origin. She described the pain as deep, sharp, and heavy, but did not radiate. The intensity of the pain was 7 out of 10 at rest and 9 out of 10 with activity on the Numeric Rating Scales (NRS). The pain was constant, and she said it was getting worse. It was aggravated by movement, sleeping, and straining. She received some relief by taking an NSAID.

She hit herself on the jaw while lifting weights a few years prior and broke a few teeth. This caused pain in her jaw, but not at the TMJ.

Examination

The patient presented with an anterior head position, a slight

left head tilt, a high left shoulder, and leaned to the right. Her left TMJ was tender when palpated.

Her cervical ROM was within normal limits, but expressed pain with flexion, right and left lateral flexion, and right rotation. Jackson's compression and shoulder depression test were positive on the right with local pain at the cervicothoracic (CT) junction. The cervical distraction test provided some relief of the TMJ pain. O'Donoghue test was positive with pain at the base of the skull on active resisted right lateral bend.

Supraspinatus empty can test was reported positive with pain. Muscle strength tests were within normal limits. Slump's test was positive with pain at the right sacroiliac (SI) joint. Yeoman's was positive bilaterally, but worse on right for SI joint pain. All cranial nerves tested within normal limits.

The initial exam did not produce justification to take X-rays on this patient. Based on the patient's history and exam findings, the final clinical impression was TMD secondary to the disrupted mechanics of her TMJ caused by mandibular injury, vertebral subluxation and postural dysfunction.

Intervention

The patient was treated with diversified chiropractic adjustments the first week and then once a week after that for a total of eight sessions. On the 7th and 8th visits, instrument assisted soft tissue manipulation was applied to the patient's left masseter and the right sternocleidomastoid (SCM) in addition to the adjustments. The soft tissue work was utilized in an attempt to relax the musculature and try to free up fascial restrictions.

At that point, the patient had not shown any improvement in the TMJ pain levels and she complained of "bad pain after eating almonds". It was decided to try a different chiropractic approach utilizing QSM³ and request an orthodontic consultation for the patient.

On the 9th visit, a postural analysis of the patient was performed to set a baseline of her posture to allow us to monitor the changes made by QSM³. She had a right low hip and shoulder, was leaning to the right with her weight shifted 20 pounds to the right. She had a left leaning neck and head. Her shoulders were rotated 11 millimeters posterior on the right and her hips were rotated 7 millimeters anterior on the right.

Based upon the QSM³ listing and protocol, the patient was laid on her right side and a QSM³ adjustment was performed on the left side of her cervical region where fascial tension was found. After the QSM³ adjustment, her posture was re-analyzed and showed her left hip was low and her right shoulder was low, she leaned slightly to the left with a weight shift of three pounds to the right, her neck was to the right, and her head was slightly to the left. Her shoulders were rotated 3 millimeters to the posterior on the right and her hips were rotated 1 millimeter to the posterior on the right. Overall, her posture had become untwisted, she was standing more upright and her weight was more balanced. She did not express any immediate noticeable change, except that her sinuses were

draining.

She returned five days later and reported that she had been eating some almonds each of the past three days without pain. Her posture was analyzed and corrected with her 2nd QSM³ adjustment. She expressed that she felt like she was standing up straighter.

QSM³ adjustments were applied six times over the next nine weeks to maintain and stabilize her posture. At the 7th QSM³ adjustment, the patient reported that she had started wearing an orthodontic appliance that would help stabilize her TMJ. At the 9th QSM³ appointment, her posture was found to be holding and no QSM³ adjustment was applied.

Outcomes

The patient received diversified chiropractic adjustments for eight weeks without relief of her TMJ pain. After the first QSM³ adjustment, the patient reported that the TMJ pain was gone with occasional minor soreness as she returned to eating normally. With ongoing QSM³ adjustments, the pain did not return.

On the patient's first visit, the Quadruple Visual Analogue Scale (QVAS) and the Numeric Rating Scale 0-10 (NRS-11) were used as outcome assessment tools. On 6/5/19, QVAS was measured at 60, which is a high intensity and NRS-11 was a 9 out of 10. The final QVAS score was measured on 12/4/19 at 20 but was associated with her orthodontic appliance that was subsequently adjusted to alleviate the discomfort. The final NRS-11 was measured on 11/20/19 at 0 out of 10 most of the time and its highest being a 2/10 at the end of a stressful day.

Discussion

Differential diagnoses for TMD include upper cervical misalignment, sprain/strain, and pterygoid hamular bursitis.

Chiropractors have utilized diversified adjustments in the cervical spine on patients with TMD and have reported positive outcomes, but peer-reviewed articles are hard to find for this topic.⁴ The patient in this case was treated with diversified 8 times over 7 weeks without any change or resolution of the TMJ pain.

Dysfunction of the muscles and ligaments in the neck and those associated with the temporomandibular joint can lead to TMD.² The cervical distraction test provided relief of pain and muscle strength tests were normal, which ruled out concerns of a strain. The O'Donoghue test ruled out sprain concerns, but did result with pain at the base of the patient's skull on active resisted right lateral bend. This pain resolved during the first few weeks of diversified care..

Pterygoid hamular bursitis is a rare condition that causes referred pain, which may mimic TMD.¹³ No abnormalities were detected, which ruled out this type of bursitis.

Orofacial pain is often caused by myofascial TMD pain, which is related to conditions in the masticatory muscles that move the mandible and affect the TMJ.⁵ Tenderness upon

palpation of these masticatory muscles is a common clinical sign of myofascial TMD.⁵ The masticatory muscles are part of the Deep Front Line (DFL), as identified by Thomas Myers in his book, "Anatomy Trains".⁷

Thomas Myers identified several fascial plane lines of interconnected muscle and fascia in the body. Instead of muscles operating independently of each other, he interprets each muscle as operating in conjunction with other muscles that are connected by fascia. Thus, a change made at any point along fascial line will cause changes throughout the line.⁷

The convergence of the DFL, the superficial front and back lines, the lateral line, the spiral line, the deep and superficial back arm lines in the cervical region is a powerful switch point that provides impressive proprioceptive release. Contracture within the plane lines influence muscular tone, respiration capabilities and endurance leading to postural breakdown. Postural breakdown can be felt as abnormal lines of tension during palpation of the patient's cervical region. These abnormal lines of tension cause excessive stress on the associated structures, which can manifest in muscle, nerve, and vascular supply entrapment, loss of function, and pain.

Through the use of QSM³, abnormal lines of tension are released in the cervical region, manifesting changes throughout the patient to restore her posture. This restoration reduces excessive stress placed on the associated structures, which can remove the entrapment and pain, and restore functionality.

In this case, the restoration of her posture resulted in removal of the excessive stress placed on the structures supporting the TMJ, which resolved the entrapment and TMD pain.

A wide range of treatments have been used in attempts to address TMD over a period of more than 70 years with mixed results and without agreement on treatment.⁵ In the review article, "Reported concepts for the treatment modalities and pain management of temporomandibular disorders", the authors did a search for documents about TMJ, TMJ disorders, occlusal splint, and TMJ surgery using the PubMed, SCOPUS and CINAHL databases for documents published between 1994 and 2014.²

They looked for papers that had clinical relevance and regarded TMD management.² They also looked for papers that had precise descriptions of the treatment procedures and detailed information about the treatment outcomes.² They started with 11467 papers and narrowed it down to 66 papers.²

There were several different methods of treatment described in the papers including:

- Therapeutic exercises – used in an attempt to balance out the muscles of mastication on both TMJs. Patients were instructed to perform exercises 2 to 3 times a day over several weeks.²

- Occlusal splint therapy – this is a dental appliance that the patient wears to “restore the static and dynamic symmetry of the stomatognathic system”. In one paper, the researchers found that the splint could improve spine alignment. It took about 3 weeks to see improvement and at least 3 months to get the most benefit.²
- Massage therapy – massage of the muscles of mastication was used to restore proper flexibility and restore balance in the muscles. The recommended Tx was twice a week for 30 minutes for at least 8 sessions. For long term impact, Tx could include changing food, extreme movements of the mandible, behavioral therapy, stress management, etc.²
- Manual therapy – similar to massage, but focused on stimulating trigger points through mobilization and the muscle energy technique (MET).²
- Other – including biofeedback, lamp exposure, iontophoresis, ultrasound, transcutaneous electrical nerve stimulation (TENS), heat, cryotherapy, Kinesio Taping, Pharmacotherapy, Acupuncture, and surgery.²

The authors concluded that conservative care should be considered first due to small chance of side effects, but in severe cases there may be a need for more invasive procedures.²

In a cross-sectional case study, “Temporomandibular Joint Disorders’ Impact on Pain, Function, and Disability” in the *Journal of Dental Research*, 614 cases of TMD were studied looking for a correlation between the TMJ intra-articular status and pain associated with TMD.¹ No association was found. The authors concluded that “treatments focusing on TMJ intra-articular disorders, such as surgery, may have limited impact on patient-reported outcomes”.¹

Both of these studies favor the use of conservative care or at least discourage the use of more invasive procedures, such as surgery for treating TMD.

Studies that involve conservative chiropractic care often involve the use of the Activator method. One case study was of a 38-year-old black female that went to a chiropractor for care of jaw pain, tinnitus, headaches, and neck and shoulder soreness she had experienced for 8 months.¹⁰ She was diagnosed by an otorhinolaryngologist with left TMD and was sent her to see a dentist. Her dentist referred her for chiropractic care and co-management.¹⁰

The dentist utilized an anterior repositioning splint on the mandible and a splint for the maxillary to be worn at night.¹⁰ Both were expected to pull the mandible forward.¹⁰

Chiropractic treatment included Activator technique for the pelvis and the thoracic and cervical spines, manual therapy on the mandible, post isometric relaxation on the trapezius, suboccipital, and masseter muscles, and myofascial release on the lateral pterygoid.¹⁰ These treatments happened twice a week for 3 weeks.¹⁰

This combination of chiropractic and dental care resulted in the patient having “increased mouth opening, decreased pain rating, improved Kinnie-Funt visual index, and an increased

cervical lateral flexion range of motion.”¹⁰ The author concluded that collaboration between a dentist and a DC may provide a patient a quick resolution of suffering from TMD, headaches, and myalgia.¹⁰

A second study involving the use of the Activator method was a prospective case series of nine adult volunteers who had TMD for at least six months duration from the practice of the treating DC.⁴ There were seven women and two men ranging in age of 21-47.⁴

Treatment consisted of full spine and TMJ adjusting following the Activator protocol.⁴ They were typically seen three times per week for two weeks and then patient dependent for six more weeks.⁴ The Activator was set at a low thrust with the DC’s thumb placed between the tip of the Activator and the point of contact on the patient.⁴

The authors found that the outcome measures improved with the use of Activator method with clinical significance, which they felt warranted further investigation of this type of chiropractic treatment for TMD.⁴ Visual Analog Scale (VAS) and a measurement of active mouth opening were used as outcome measures.⁴

A third study involving the use of the Activator method was a retrospective case series of 13 adults and one child who had TMD signs and symptoms.¹¹ Twelve of these patients were chiropractic patients prior to the manifestation of TMD signs and symptoms.¹¹ The other two started care with TMD as their primary complaint.¹¹

The treatment consisted of using the Activator on the patient’s TMJ and suprahyoid muscles as determined by the Activator protocol.¹¹ The number of visits ranged from 3 - 30 with an average of 13.6 ± 8.2.¹¹ They used the verbal numeric pain scale for pre and post adjustment assessments and saw an average of 80.9% reduction in pain.¹¹ The authors’ conclusion was that by adding the suprahyoid muscles to the treatment resulted in a reduction of TMD symptoms for these patients.¹¹

These three studies based upon the use of the Activator method provide evidence of the positive results conservative chiropractic care can have for patients with TMD. Two of the studies included soft tissue treatments along with SMT. The final study focused on correcting the patient’s posture to address TMD through soft tissue and SMT treatments.

Another case study involved a 24 year old female with chronic right TMJ pain and clicking.³ Her posture was analyzed and determined to have “a prominent right lateral head translation posture”.³ She had a history of thoracic spine pain, headaches and asthma. She had been under traditional chiropractic care all of her life.³

The patient in this case study was managed with Chiropractic BioPhysics® (CBP®), which utilizes “mirror image® exercises, adjustment techniques and traction methods to restore proper alignment of the spine and posture”.³ The protocol requires that they take a set of x-rays specific to CBP® to determine the extent of the postural breakdown.³ Through exercises, adjustments, and traction they attempt to restore the patient’s posture.³

After 36 treatments, the patient reported that most of her jaw pain was gone and that it rarely bothered her.³ Follow-up x-rays showed the head translation has been reduced to a minimal amount.³ Her dentist confirmed the TMJ alignment was now normal.³

The author concluded that abnormal head and neck posture may be the source of the TMD.³ Even though multiple treatments were used, the author points to the CBP® as the difference, since the patient had been under traditional chiropractic care all her life and had not resolved the TMD.³ The author expressed that further research is needed.³

The patient in this case study is also a female suffering from TMD and had tried traditional chiropractic methods. Although, CBP® was not used with this patient and the treatment methods are quite different, the concept of restoring the patient's posture to remove muscle, nerve, and vascular supply entrapment and provide symptom relief is the same.

This study is unique in utilizing QSM³ to restore a patient's posture to resolve TMD. For the patient in this study, one treatment provided relief of her symptoms. CBP® was focused on posture restoration but did not utilize MFR or QSM³ and positive results were reported after 36 treatments.³

Conservative care is recommended by all the studies referenced in this study, which include several that are not associated with chiropractic care.^{1,2} Surgery is presented as a last resort.^{1,2} While other types of conservative care have been helpful for TMD, the focus is on treating symptoms. While the treatment may help, it often misses the root cause and is a temporary fix. Chiropractic care focuses on the root cause of the entrapment that is causing the patient's symptoms, which not only addresses the symptoms, but restores optimal functionality for the patient.

Study Limitations

This study is limited as TMD has many causes and this is a single case. The patient has continued to be under care at the time of this case study without the TMD pain returning, but there has not been long-term follow-up. The fact that a single treatment resulted in resolution of symptoms minimizes the chances of confounding factors influencing the end results but should not be considered the norm.

Further research is needed, starting with additional case studies of the same approach. Following additional case studies, a randomized controlled trial would be warranted to provide support for the anecdotal evidence.

Conclusion

The patient in this case study showed resolution of TMD pain after one visit of QSM³ as a conservative chiropractic method and has not had a reoccurrence after several months of ongoing care. The treatment was unique as it utilized QSM³ to correct postural misalignment and remove associated muscle, nerve, and/or vascular supply entrapment.

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