Carpal Tunnel Syndrome
And Osteopathy
Kim C. Sanchez Aldana Camacho
National Academy of Osteopathy
DOMP Accelerated
Abstract

The Carpal Tunnel Syndrome is a frequently pathology of the Medial Nerve in the Peripheral Nerve System, having a prevalence of one in ten people as reported by Fernández, Ortega, de la Llave, Martínez, Fahandezh, Martínez, Pareja, (2015). The conventional treatment depends on the severity of the symptoms and the degree of functional daily limitations. If few limitations are present, splinting or corticosteroid injections are preferred. Surgical interventions are reserved for the more severe conditions resulting in significant disability. Similar or better efficacy has been reported with the use of Osteopathic Manual Therapy which is a non-invasive treatment and without secondary reactions or complications. The author also reviews the relevant anatomy involving CTS and the clinical efficacy of osteopathic manipulative medicine in the management of this disorder.
Keywords: carpal tunnel syndrome, osteopathy, manual therapies.
Carpal Tunnel Syndrome
And Osteopathy

Numerous studies have been conducted on Carpal Tunnel Syndrome and the different treatments to solve this condition. The conventional treatment that can include the use of medication and a chirurgical procedure has been used for many years. A new approach to the manual therapies according to Fernández, et al. (2015) has showed that in early stages the Osteopathy is even more effective in comparison with the conventional treatment options. This paper examines the conventional treatments method in comparison with the Osteopathy to treat Carpal Tunnel Syndrome.

Literature Review

Carpal tunnel syndrome is a neurological disorder characterized by paresthesias, pain and numbness in the hands due to lesions or dysfunction of the median nerve derivated of any condition that causes pressure on the median nerve at the wrist level. Fernandez et al. (2015) reported “a prevalence ranging from 6.3% to 11.7%.”. And Patijn, Vallejo, Janssen, Huygen, Lataster, Van Kleef, Mekhail (2011) reported a higher prevalence in female in comparison with male. Also reported as risk factors are “obesity, diabetes, pregnancy, menopause, ovariectomy, and hysterectomy. CTS is frequently accompanied by hypothyroidism and rheumatoid arthritis” Carpal tunnel syndrome can be associated with any excessive or repetitive movement of the wrist, for example in jobs such as secretary, typewriter, mechanic, stylist, etc. Other causes can include external factor such as tumors or malformations.

The Median Nerve originates from the medial and lateral cords of the brachial plexus, and proceeds from ventral roots of C5-C8 & T1. The motor innervation include the flexors and pronator muscles of the forearm and part of the tenar region. Patijn et al. (2011) described that at the level of the wrist the median nerve is surrounded on three sides by the carpal bones “and its roof by the ligamentum carpi transversum.” Any small reduction or decrease in the size of the canal, can ends up pressing and damaging the median nerve. Patijn et al. (2011) states that “The nervus medianus may become trapped in the carpal tunnel as a result of edema, inflammation of synovial sheaths, tumors or the deposition of metabolic products” However, Patijn et al. (2011) describe the usually the cause is “unknown”, and even the “the pathophysiology of this disorder is also unclear”. However, the CTS is one of the most frequent occupational neuropathies.

The diagnostic can be made through the clinic history and with a test that involves the pressure on the median nerve at the wrist, produced by bending the wrist, tapping on the nerve or simply pressing on the nerve, a positive Phalen and Tinnel’s sign. In the actuality additional studies as nerve conduction can be helpful to diagnostic CTS.

Traditional Treatment

The purpose of the traditional treatment is reducing the pain and recovers the functionality of the wrist. In the first stage the purpose is limited the mobility. According to Patijn et al. (2011) “exercises and anti-inflammatory drugs are prescribed; in some cases surgery is necessary.” Also the use of ergonomics has been introduced with the purpose to reduce the
number of CTS related to work activity. Siu G, Jaffe JD, Rafique M, Weinik MM. (2012) states that “Standard treatment for patients with Carpal Tunnel Syndrome includes rest, wrist immobilization with a splint, avoidance of provocative activities, and modification of physical behaviors in conjunction with as-needed nonsteroidal anti-inflammatory drugs. Conservative therapies are effective in approximately 80% of patients; however, symptoms can recur in up to 80% of these patients after 1 year.” This higher recurrence led usually to another step in the CTS traditional treatment, Siu et al. (2012) describe that “after failure of conservative therapy, the use of local anesthetics and corticosteroid injections for the management of CTS resulted in improved symptoms in 56% to 73% of patients.” The therapy with corticosteroid has limit because there are side effects that can cause pathologies. The last step of the traditional treatment in case of persistence of the pain, involves the use of surgery to relieve the carpal tunnel pressure. Siu et al. (2012) describe the” incision of the TCL increases the volume of the carpal canal and has been postulated to alter the kinematics of the carpus, but this procedure includes the risk of bowstringing the flexor tendons, which can compromise grip strength. Complications of surgical procedures are low, approximately 1% to 2%, and include nerve, tendon, and blood vessel injury, infection, scarring, chronic tenderness of the surgical site, pain, hematoma, complex regional pain syndrome, and the potential need for additional surgical procedures.” The principal complication is a painful scar, with a variable incidence of 19-61%. As conclude by Fernández, et al. (2015) “Treatment of this condition may consist of conservative or surgical approaches, but scientific evidence for each therapeutic option is conflicting.”

Osteopathic Manipulative Treatment

Osteopathic manipulative treatment or OMT as mentioned by The American Osteopathic Association “is hands-on care. It involves using the hands to diagnose, treat, and prevent illness or injury.” The Osteopathic manual techniques “will move your muscles and joints using techniques including stretching, gentle pressure and resistance.” The Osteopathic approach is based on past medical history and examination to determine treatment and management. Generally treatment is aimed at reducing pressure on the nerve through direct treatment to the wrist and also treatment to the elbow, shoulder, neck and general body. According to Fernández, et al. (2015) Manual therapies targeting anatomical sites of potential entrapment of the median nerve to desensitize central nervous system pain circuits. (A) Soft tissue manipulation of the anterior scalene muscle; (B) soft tissue manipulation of the bicipital aponeurosis; (C) soft tissue stretching of the transverse carpal ligament; (D) tendon and nerve gliding interventions to the median nerve. A most detail approach is described by Siu et al. (2012) “When osteopathic structural examination reveals somatic dysfunction associated with CTS, osteopathic manipulative treatment may be used to manage the somatic dysfunction. Specifically, OMT may be used to stretch soft tissues, release tissue adhesions, eliminate restricted motion of carpal and metacarpal bones, increase the length of the TCL to enlarge the carpal tunnel and lower intratunnel pressure transmitted to the median nerve, increase range of motion, strengthen muscles, and reduce edema. Resultant improvements in circulation and joint function will allow for normalization of nerve function. According to Siu et al.(2012) in the Osteopathic Manual treatment is necessary perform:

1. Myofascial release technique.
   - Myofascial wrist retinaculum (transverse carpal ligament) release.
• Interosseous membrane and forearm muscles myofascial release (bilateral thumb pressure technique).

2. Opponens roll maneuver.
• This technique involves the Thenar and Carpal Ligament. “This maneuver involves lateral and axial rotation of the thumb, which creates substantial traction on the attachment of the opponens pollicis muscle. The muscle originates from the transverse carpal ligament and tubercle of the trapezium bone. This maneuver stretches the muscle and transverse carpal ligament, releasing pressure within the carpal tunnel and unloading pressure on the median nerve.”

3. Mobilizations.
• Carpal mobilization
• Metacarpophalangeal joint mobilization
• Carpometacarpal joint mobilization
• Radius and Ulna mobilization

4. Muscle energy technique
• Pronation dysfunction
• Supination dysfunction

Discussion

According to Gunay & Alp (2015) their investigation showed that the use of Osteopathic Manual Therapies as stretching, gentle pressure and resistance of the patients with CTS resulted in a decrease of the symptomology, therefore OMT “can be recommended as an inexpensive, noninvasive, and effective treatment modality” for those who present this pathology. In general the different authors mentioned the importance to fully understand the anatomy and physiology, the factor involved around of the daily activity of the patient with the purpose to treat better this syndrome. According to Fernández, et al. (2015) one of the principal advantage of the Osteopathic Manual Therapy versus the traditional treatment is the benefit of non-side effects of the OMT and an integral recovery of the patient. They also mentioned that “conservative treatments such as nocturnal splinting had already failed”. Another authors Fernández, et al. (2015) discussed the limits of the studies such as “Among the limitations, we recognize that multicenter studies would help to better generalization of the results. Multicenter studies controlling for site and clinician effects (cluster effects) in subsequent trials might enhance the generalizability of our results. Second, patients and clinicians were not blinded to the treatment intervention. Third, we did not consider the role of some psychological variables, including depression, anxiety, mood, or sleep disorders, because we excluded individuals with depressive symptoms. One great disadvantage mentioned by Siu et al. (2012) in the traditional or conservative treatment is the higher incidence to recurrence of 4 of 5 patients in a period of one year; this recurrence is then solved in 6 of 10 patients with the use of corticosteroids that implies possible side effects. According to Fernández, et al. (2015) Osteopathic Manual Therapies "including desensitization maneuvers of the central nervous system was more effective at 1 and 3 months, but equally effective at 6 and 12 months, than surgery for improving pain and function in women with CTS.” However, Fernández, et al. (2015) support the use of conservative treatment, as the first management option for patients with CTS before
considering surgery because both interventions are equally effective in the long term.”, without consider the side effects or complications.

Conclusions and Future Study

In order to gain a complete understanding of Carpal Tunnel Syndrome’s true efficacy on both traditional treatments versus osteopathic manual treatment, it is necessary to conduct a study that examines all aspects of CTS. More studies using Osteopathic Manual Therapy are required for the fact that these techniques are “generally underused and overlooked in the management of CTS”. Although there are multiple causes of CTS, using OMT in the diagnosis and management of CTS may ultimately prevent or delay surgical intervention in patients with this condition.

Osteopathic Manual Therapy is not a panacea for either acute or chronic carpal tunnel syndrome. However, considering the widespread nature of the condition, the socioeconomic expense and the side effects, the medical literature supports the position that Osteopathic Manual Therapy is a reasonable treatment alternative noninvasive, effective, tested, and that don’t involve secondary consequences.
References


www.osteopathic.org/osteopathic-health/treatment/Pages/default.aspx