



INTERNATIONAL JOURNAL OF RESEARCH SCIENCE & MANAGEMENT

KINESIOLOGY TAPING AND NEURAL GLIDING EXERCISE IN CARPAL TUNNEL SYNDROME

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DOI: <https://doi.org/10.29121/ijrsm.v7.i7.2020.2>

Keywords: Carpal tunnel syndrome, kinesiology taping, neural gliding exercise.

Abstract

Introduction: Carpal Tunnel Syndrome (CTS) is a condition of neuropathy caused by median nerve entrapment, which is related to repetitive injury mostly due to workload. Some people have occupation that require a lot of repetitive wrist movement such as cigarette factory workers. Kinesiology taping and neural gliding exercises are conservative interventions, which can be performed on people with CTS.

Case: This case report showed that there was improvement symptom of carpal tunnel syndrome treated with kinesiology taping and neural gliding exercise. The patient was female, 43 years old, a cigarette factory worker. She had complains of tingling sensation on her palms, moreover on finger 1, 2 and 3 since 2 weeks before. The physical examination revealed positive test of carpal tunnel syndrome such as Phalen, Pressure Provocation and Tinel test. Boston Carpal Tunnel Questionnaire (BCTQ) was also performed. The diagnose was confirmed with nerve conduction studies result. Kinesiology taping was applied on this patient and reapplied weekly until 4 weeks. Patient was also taught about neural gliding exercise and was asked to do it every day for 4 weeks. BCTQ was evaluated weekly and improved every week. While nerve conduction studies was evaluated in 4 weeks and there was also improvement in the result.

Conclusion: The improved outcome occurring in this case shows that kinesiology taping and neural gliding exercise can be considered as management of carpal tunnel syndrome, but of course further research is needed to prove its significance.

Introduction

Carpal Tunnel Syndrome (CTS) is a condition of neuropathy caused by median nerve entrapment, which is related to repetitive injury mostly due to workload. Some people have occupation that require a lot of repetitive wrist movement such as cigarette factory workers.¹

Most cases of CTS are of unknown causes, or idiopathic. This syndrome represents the most prevalent neural injury in the general population with prevalence of between 1.3 and 4.9% of general population and workers at risk (15-20%), those requiring repetitive movements of the wrist and fingers such as typing, nursing, and cleaning, whose tendency to become chronic patients has an economic impact because of work absences and surgical treatments required to improve the condition. CTS is commonest in people between the ages of 45 - 65 and common in women more than men (3:1), dominant more than non dominant hand.²

Currently, diagnosis of CTS is based on clinical examination and various symptoms. However, this method is useful for initial diagnosis, but it cannot provide objective information about degree of demyelination and loss of axon. Therefore, electrophysiological examination using electromyogram is very useful because it provides accurate information on nerve function evaluation and nerve damage in median nerve.³

The representative method of conservative therapy is to fix wrist movement using splinting and taping or control symptoms using local corticosteroid injection. It's effective in reducing edema and pain in the short term but not persistent. In addition, specific females related side effects have been reported. The taping, which serves as a support for the wrist, pulls around the wrist to reduce excessive pressure on the carpal tunnel and induce proper relaxation.²

Recently, several studies reported optimum results with the use of neurodynamic mobilization as a conservative treatment, with neural slipping helping nerve mobilization in relation to musculoskeletal tissue. The



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biomechanical effect of the treatment would restore neural mobilization by decreasing the edema and adhesion in the carpal tunnel.³

Kinesiology taping and neural gliding exercises are conservative interventions, which can be performed on people with CTS.^{3,4}

Case

The patient was female, 43 years old, a cigarette factory worker. She had complains of tingling sensation on her palms, moreover on finger 1, 2 and 3 since 2 weeks before. The physical examination revealed positive test of carpal tunnel syndrome such as Phalen, Pressure Provocation and Tinel test. Boston Carpal Tunnel Questionnaire (BCTQ) was also performed, a standardised patient- based outcome measure of symptom severity and functional status for which there is good evidence on validity, reliability and responsiveness.⁵ The diagnose was confirmed with nerve conduction studies result. The result showed moderate CTS.

Tape with a width of 5 cm and a thickness of 0.5 mm was used. I Strip was measured from elbow to fingertips and cut. It was folded approximately two blocks from the end and cut into two triangles on the fold. The third and fourth fingers were slipped through holes and tape was applied on the dorsum of the hand with no tension. The position of elbow extension, wrist extension, and radial deviation was provided, and tape was applied from hand to medial epicondyle with 15%–25% tension and ended at medial epicondyle with no tension. The second I Strip was measured for wrist size and cut. It was applied to the carpal tunnel region with 25%–35% tension. This technique is a space correction and neural technique described by the Kase et al.⁶ Subjects were taped by a doctor certified to apply kinesiology taping.

Patient was also taught about neural gliding exercise and was asked to do it every day for 4 weeks. The procedures was as described in figure 2. BCTQ was evaluated weekly and improved every week with Symptom Severity Scale decreased from 27 to 13 and Functional Status Scale decreased from 11 to 9. While nerve conduction studies was evaluated in 4 weeks and there was also improvement in the result became mild CTS (Figure 3).



Figure 1. Taping application for CTS⁸

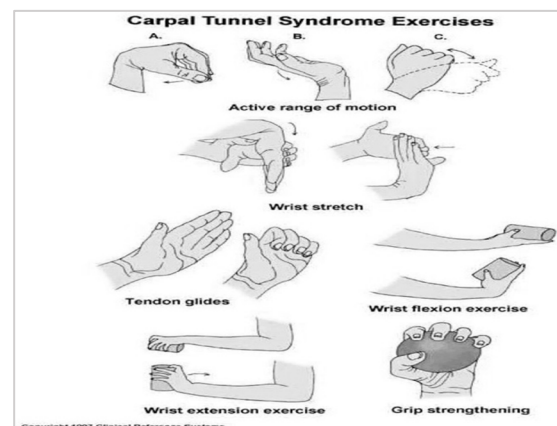


Figure 2. Carpal Tunnel Syndrome Exercise⁹

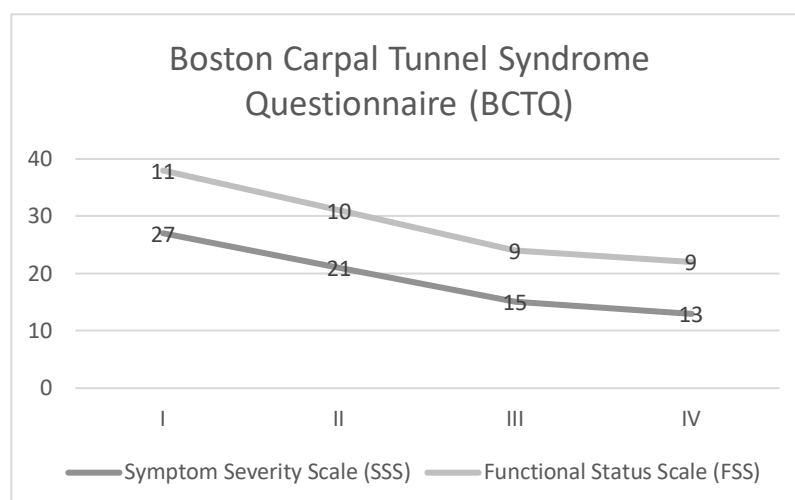


Figure 3. Boston Carpal Tunnel Syndrome Questionnaire evaluation

Discussion

This case report showed that there was improvement symptom of carpal tunnel syndrome treated with kinesiology taping (Figure 1) and neural gliding exercise (Figure 2). The reasons for the clinical and electrophysiological improvements can be explained as follows: (i) create a space underneath in order to reduce the pressure and direct the ligament to the desired area, (ii) decreasing the stress and pressure on such structures as ligaments, tendons, and nerves as well as reducing tension and increasing proprioception by forming a kind of inhibition in these tissues, (iii) reducing the irritation caused by the chemical receptors when applied to the area of pain and inflammation leading to a reduction in pain and an improvement in circulation, in addition to the effect of the gate control mechanism in reducing the pain.⁷ Study by Park et al also stated that taping therapy for carpal space expansion resulted in electrophysiological change by reducing the pressure of the carpal tunnel and improving the damaged median nerve.³ The biomechanical effect of neural gliding exercise would restore neural mobilization by relation to musculoskeletal tissues by decreasing the edema and adhesion in the carpal tunnel. It also has neuromodulator effects such as the decrease in nociception of the median nerve; reduction in algogenic and pro-inflammatory substances; and reversibility in the pain pathways previously modified. Consequently, peripheral and central sensitization may decrease and descending pain modulation might occur.⁴

Conclusion

The improved outcome occurring in this case shows that kinesiology taping and neural gliding exercise can be considered as management of carpal tunnel syndrome, but of course further research is needed to prove its significance.

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