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Case Report

Effects of Kinesio Taping in Combination with Cervical Mulligan's Traction in Patients with Mechanical Neck Pain- A Case Study

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Abstract

Background: Mechanical neck pain is one of the most prevalent musculoskeletal problems. It is most often due to poor posture, overuse, or biomechanical dysfunction. It is characterized by localized discomfort and stiffness in the cervical region, frequently impacting daily activities and reducing quality of life.
Case Description: A 24-year-old female presented with a primary complaint of persistent neck pain for four months, localized to the posterior cervical region. The pain was aggravated by prolonged sitting, computer use, and neck movements, leading to a significant reduction in daily functional activities.
Intervention: Two weeks of physiotherapy sessions were given to the patient for 50 minutes, which included a moist heat pack, Interferential therapy (IFT), Kinesio taping, and Cervical Mulligan's traction.
Outcome Measures: The Numeric Pain Rating Scale (NPRS) was used to assess the pain level of mechanical neck pain. Neck Disability Index (NDI): A validated questionnaire used to measure the level of functional disability caused by mechanical neck pain. The Compression Test, Palpation of Cervical Spine and Facet Joints were used to assess mechanical neck pain. All four tests were found positive on the day one assessment. After two weeks of personalized training, there was significant improvement in the mechanical neck pain, and the patient's neck pain after two weeks; all special test was found to be negative.
Discussion: This case supports the use of Kinesio taping in combination with cervical mulligan's traction to decrease the mechanical neck pain and dysfunction in patients.

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KEYWORDS: Mechanical neck pain, Kinesio taping, cervical Mulligan traction, moist heat pack, Interferential Therapy (IFT), Neck Disability Index

INTRODUCTION

One of the major musculoskeletal dysfunctions is considered to be mechanical neck pain, which is one of the common areas of pain and discomfort. However, there has been immense advancement in treatment techniques and literature related to spinal disorders. Mechanical neck dysfunction is one of the most prevalent and expensive health concerns throughout the world, with a complex etiology and having variety of associated factors [1]. Mechanical neck dysfunction may result from postural dysfunction, trauma, or may be of insidious onset (Fraser,2009). There is irrefutable evidence of an association between mechanical neck pain and dysfunction of the muscles of the cervical spine (O'Leary and Falla, 2009). Mechanical

dysfunction of the cervical spine can be the primary cause of recurrent neck pain in adults. (Hellstenius,2009) [2].

Neck posture can be affected by sedentary lifestyles such as long hours sitting in front of a computer, long screen watch hours, watching television, electronic games like video games, and office work [3].

Kinesio Tape is mostly applied over muscles to reduce inflammation and pain [4].

Kinesio taping is a treatment technique used in clinically managing pain. It was established by Kenso Kase in the 1970s, but in recent years its application has become more common. It has been theorized that Kinesio taping may yield its effects in reducing pain via (a) improvement in circulation of blood; (b) oedema reduction by improving lymphatic blood flow; (c) Muscle relaxation training to deliver proper joint alignment; and (d) providing joint support and muscle balance without affecting the range of motion (ROM) [5]. Kinesio taping has positive effects on shoulder pain reduction, patellofemoral pain syndrome, pain during sports injury, low back pain, and neck pain. This fact is proved by many studies [6]. Manual Mulligan Traction (MMT) interventions are an appropriate treatment strategy for patients with cervical pain. The purpose of manual traction is to alleviate pain and enhance cervical spine function, typically lasting between 15 and 60 seconds [7]. Moist heat can be applied using a moist heating pad, a damp towel warmed in a microwave, a hot shower, or a hot bath. Physical therapists typically use moist hot packs wrapped in multiple layers of towels and place them directly on the treatment area at a temperature of 75-80°C for about 10 minutes [8]. Interferential therapy (IFT) is a widely used treatment modality for mechanical neck pain in clinical settings. It works by crossing two medium-frequency currents to produce a low-frequency beating effect, which penetrates deep tissues to help reduce pain, improve circulation, and promote muscle relaxation [9]. Interference therapy is applied. Interferential therapy (IFT) is administered transcutaneously through electrode pads, using either a bipolar or quadripolar application. While the precise mechanism of action for IFT in pain modulation remains unclear, it is widely utilized for pain relief [10]

CASE PRESENTATION

A 24-year-old female presented with a primary complaint of persistent neck pain for four months, localized to the posterior cervical region. The pain was aggravated by prolonged sitting, computer use, and neck movements, leading to a significant reduction in daily functional activities. The patient reported a gradual onset of neck pain, which initially started after prolonged periods of sitting at her desk but progressively worsened as time passed. Pain intensity fluctuates between moderate to severe, leading to difficulty performing routine ADLs such as driving, working, and carrying out household tasks. No history of trauma or injury to the neck. She rated pain intensity ranging from 6 out of 10, with the highest pain intensity experienced after prolonged periods of computer work or poor posture. She had no history of diabetes mellitus or hypertension.

Physical Examination

During physical examination, we palpate of cervical spine and facet joints. Tenderness was noted in the upper trapezius and levator scapulae muscles bilaterally. Palpation of the cervical spine revealed tenderness along the C4-C6 levels and mild discomfort over the facet joints. No signs of radiculopathy or upper motor neuron involvement. Patient rated 6 out of 10 on the numeric pain rating scale (NPRS). Some specific tests were performed to assess neck disability. On the Neck Disability Index (NDI), the patient scored 30%, indicating moderate disability affecting daily functional activities (e.g., work, driving, and household tasks). The Compression Test was positive.

Physiotherapy Management

A week's treatment protocol for mechanical neck pain is done using Cervical Mulligan Traction, Kinesio taping, Interferential therapy (IFT), and a Moist heat pack.

Kinesio Taping- Before applying kinesio tape (KT), a sensitivity test was conducted. A small piece of Kinesio taping (KT) was applied to the inner side of the arm for 24 hours before starting the intervention protocol, and the area was checked for any allergic reactions to the adhesive. The Kinesio taping (KT) used in this study was porous, air-permeable, waterproof, and adhesive, with a width of 5 cm and a thickness of 0.5 cm. The application of Kinesio taping (KT) was performed while the patient was seated. The posterior neck area was cleaned with water and shaved to ensure proper adhesion of the tape. The first layer of tape, a 15 cm Y-strip, was placed over the posterior neck muscles, starting from the lower cervical region (T1–T2) and extending to the upper cervical region (C1–C2) with a paper-off tension of approximately 15–25% stretch. The tail ends of the Y-strip were applied while the patient's neck was positioned in contralateral side flexion and rotation, allowing better coverage of the posterior region. A second 10 cm I-shaped strip was applied perpendicular to the Y-strip at the C3–C6 level with moderate tension, with the cervical spine in flexion. The tape was reapplied every other day [1]. Session lasting approximately 20-30 minutes [1].

Table 1: Treatment protocol with exercise details, repetitions, and duration

Treatment Protocol	Exercise	Repetition or time
Kinesio taping	……..	3 Times per week for two weeks
Cervical Mulligan's Traction	Cervical Mulligan traction involves applying a gentle, sustained force to the neck	30 seconds hold with 10-second rest for 10 minutes.
IFT	……..	15 Minutes.
Moist Heat Pack	……..	10 minutes

OUTCOME MEASURES

Outcome measures are used, specifically a numerical pain rating scale, to assess the pain levels during rigorous activities performed by patients. The Neck Disability Index (NDI) is used to assess neck disability and overall ADLs. The structure of a two-week protocol for mechanical neck pain.

Figure 1: Kinesio Taping

Figure 2: Cervical Mulligan's Traction

Table 2: Pre-And Post-Test Measures

S. No	Outcomes measure	Pre-Test	Post-Test
1	Numeric pain rating scale (NPRS)	6/10	0/10
2	Neck Disability Index (NDI)	30%	0%

Numeric Pain Rating Scale (NPRS): 0: no pain, 10: worst pain, Neck Disability Index (NDI): 0-4%: No disability, 5-14%: mild disability, 15-24%: moderate disability, 25-34%: severe disability, 35-50%: complete disability.

Sr No.	Special Test	Pre assessment	Post assessment
1.	Compression Test	Positive	Negative
2.	Palpation of Cervical Spine and Facet Joints	Positive	Negative

DISCUSSION

This study aimed to evaluate the combined effect of Kinesio taping and Cervical Mulligan's traction on mechanical neck pain. One key factor considered was the patient's workload, which could be a contributing factor to mechanical neck pain. Due to prolonged working hours, an intervention was needed that would provide a sustained effect on both structural and soft tissue components while also ensuring mechanical correction of the cervical spine [1]. Neck pain can also affect students who are actively participating in the community. A study on this topic found that the prevalence of cervical pain among the Spanish adult population was 19.5%. The incidence of both neck and lumbar pain was higher in females (26.4% and 24.5%, respectively) compared to males (12.3% and 15.1%) [8]. In recent years, the growing interest in the Kinesio taping and cervical mulligan's traction has generated an increase in studies on the combined effect of Kinesio taping and cervical mulligan's traction for reducing pain in mechanical neck pain [11]. The numeric pain rating scale (NPRS) is reliable, feasible tools that align with multi-item patient-reported outcome measures. However, further refinement is needed in assessing responsiveness and interpreting change scores. NPRS can complement more detailed multi-item measures in neck pain research and practice [12]. It is possible that the number of male subjects was insufficient to significantly impact the NDI scores in cases of mechanical neck pain [13]. The results indicate a decrease in NDI scores following the treatment compared to the initial scores. This suggests that the combined treatment protocol, including Kinesio taping, cervical Mulligan's traction, moist heat pad, and IFT, was effective in reducing neck disability. The application of Kinesio taping may have provided support and improved muscle function, while Cervical Mulligan's traction likely contributed to pain relief and mobility enhancement. Additionally, the use of a moist heat pad and IFT may have helped in muscle relaxation and pain reduction. These findings highlight the effectiveness of this multimodal approach in improving neck disability [14]. Most clinicians believe that moist heat is more effective than dry heat in penetrating deep tissues, particularly when treating mechanical neck pain [15].

In summary, a 24-year-old female presented with a primary complaint of persistent neck pain for four months, localized to the posterior cervical region. The pain was aggravated by prolonged sitting, computer use, and neck movements, resulting in a significant reduction in daily functional activities. Kinesio

taping, cervical Mulligan's traction, interferential therapy (IFT), and a moist heat pack were administered to the patient for six days per week over two weeks, leading to an improvement in mechanical neck pain and dysfunction.

The limitation of this study is the short duration of the two-week protocol. Better results may be achieved with an extended treatment period, and a two-month follow-up is recommended. The benefits observed from this new approach to mechanical neck pain treatment provide a foundation for future, more comprehensive studies.

CONCLUSION

This case study demonstrates the effectiveness of combining Kinesio taping and cervical Mulligan's traction for treating mechanical neck pain. After a two-week treatment protocol, significant improvements were observed in pain reduction and functional mobility, as evidenced by the positive outcomes on the Numeric Pain Rating Scale (NPRS) and the Neck Disability Index (NDI). The multimodal approach, which also included Interferential Therapy (IFT) and moist heat, helped alleviate discomfort and improve neck function, leading to a notable reduction in the patient's disability and pain levels.

REFERENCES

1. Patni H, Tiku R. The effect of Kinesio taping in combination with muscle energy technique in patients with mechanical neck pain – a case study. 2023.
2. Mahgoub MS, Abd El-Aziz HG, Saleh AM, Hegazy MO. Efficacy of Kinesio taping versus phonophoresis on mechanical neck dysfunction. Int J Recent Adv Multidiscip Res. 2013;1(12):128-34.
3. Ali MF, El-wardany SH, Alduraibi SK. Effect of Kinesio taping in patients with mechanical neck dysfunction. Med J Cairo Univ. 2015;83(1):867-73.
4. Romano V, Smith K, Hanes-Romano K, Chambers J. Kinesio tape 14-day application cycle: a case study. Integr J Med Sci. 2021;8:1-5.
5. Abd-Eltawab AE, Ameer MA. Effect of Kinesio taping versus mechanical cervical traction combined with a physiotherapy program on chronic neck pain in young female university students. Hong Kong Physiother J. 2024;44(1):69-78.
6. El-Gendy AM, Ali OI, Hamada HA, Radwan R. Effect of Kinesio taping on chronic mechanical neck pain: a randomized controlled trial. Bull Fac Phys Ther. 2018;23:101-7.
7. Arul Pragassame S, Mohandas Kurup VK, Sivashanmugam V. A study on the effectiveness of manual Mulligan traction compared to intermittent electrical traction in patients with cervical spondylosis. Asian J Pharm Res Health Care. 2019;11(1):1-9.
8. Gull MAHM, Khalil WAJID, Jaffar MUNEED, Ara JAHAN, Mustansar ALISHBA, Laique TALHA. Prevalence of mechanical neck pain among university students: an observational study. Pak J Med Health Sci. 2021;15(6):1963-5.
9. Albornoz-Cabello M, Sanchez-Santos JA, Melero-Suarez R, Heredia-Rizo AM, Espejo-Antunez L. Effects of adding interferential therapy electro-massage to usual care after surgery in subacromial pain syndrome: a randomized clinical trial. J Clin Med. 2019;8(2):175.
10. Sutariya N, Shukla Y. Effect of interferential therapy versus shortwave diathermy on pain and function in mechanical neck pain – a comparative study. Int J Sci Healthc Res. 2020;5:279-83.
11. Rodríguez-Fuentes I, De Toro FJ, Rodríguez-Fuentes G, de Oliveira IM, Meijide-Faílde R, Fuentes-Boquete IM. Myofascial release therapy in the treatment of occupational mechanical neck pain: a randomized parallel group study. Am J Phys Med Rehabil. 2016;95(7):507-15.
12. Modarresi S, Lukacs MJ, Ghodrati M, Salim S, MacDermid JC, Walton DM. A systematic review and synthesis of psychometric properties of the numeric pain rating scale and the visual analog scale for use in people with neck pain. Clin J Pain. 2022;38(2):132-48.
13. Abdelmegeed M, Shewail F, Abdelmajeed S, Farouk M. Relationship between pain, function, and pressure algometry in college students with chronic mechanical neck pain. Egypt J Hosp Med. 2022;89(2):6323-8.
14. Zoting MR, Patil S. Effectiveness of a six-week multimodal physiotherapy program on the interconnected nature of forward head posture, vertigo, and neck pain. Cureus. 2024;16(7):e65038.
15. Petrofsky J, Berk L, Bains G, Khowailed IA, Hui T, Granado M, et al. Moist heat or dry heat for delayed onset muscle soreness. J Clin Med Res. 2013;5(6):416-25.