Supine Counterstrain Technique for Posterior Rib Tenderpoints

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CLINICAL PRACTICE

Abstract

Seated counterstrain techniques for the treatment of posterior rib tenderpoints are common and can be found in literature. At times, it can be extremely inconvenient or impossible to treat certain patients in a seated position. A supine treatment position could easily address these concerns; however, there is no literature that illustrates how to utilize a counterstrain technique in a supine position for posterior rib tenderpoints. This article describes how to diagnose and treat posterior rib tenderpoints with a patient in the supine position through the application of a counterstrain technique. The importance of addressing posterior rib tenderpoints is discussed along with a brief list of additional somatic dysfunctions that should be addressed in a supine patient experiencing a thoracic cage somatic dysfunction.

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Introduction

There are several somatic dysfunctions that involve the ribs, subcategorized into structural and respiratory dysfunctions.[1-4] Tenderness found on rib angles can be classified as posterior rib tenderpoints. These posterior rib tenderpoints are often correlated with respiratory dysfunctions, posterior ribs, or strains of the muscles attaching to the rib angles. Rib somatic dysfunctions are important to address due to their effect on not only the respiratory mechanism and surrounding tissues of the thoracic rib cage, but also the impact on arterial, venous, and lymphatic circulation.[1-3]

A posterior rib tenderpoint can also be referred to as an "elevated rib" due to its corresponding position of ease as described by Lawrence H. Jones.[3-4] This tenderpoint is an important aspect of rib somatic dysfunctions that should be addressed to fully resolve respiratory somatic dysfunctions and ensure the ribs are freed of restrictions, allowing the lungs to fully expand and exhale.[1]

According to the literature,[1-2] posterior rib somatic dysfunctions can arise from a variety of scenarios. For example, coughing, poor posture, increased thoracic kyphosis, excessive physical activity, and even pulmonary pathologies can all contribute to the development of a posterior rib somatic dysfunction. Due to an underlying muscular strain, posterior rib tenderpoints can hold the corresponding rib in an inhaled position, restricting the exhalatory motion.[1,3] Patients with obstructive lung pathologies will often present with these elevated rib tenderpoints as the body tries to mechanically dilate the airways to compensate for the disease process.[3]

Treating posterior rib tenderpoints helps to address a patient's impaired respiration and circulation.[2-3] Restoring the proper rib mechanics allows for improved function of the diaphragm and enhanced return of venous and lymphatic fluid.[3] The autonomic system can also be balanced since the sympathetic chain lies anterior to the rib heads. By addressing posterior rib tenderpoints, a patient can experience improvement in their circulation, pulmonary disease management, musculoskeletal discomfort, and overall healing.

Current literature for the treatment of posterior rib tenderpoints include a seated counterstrain technique as well as a prone facilitated positional release.[1-2,4] However, up until this article there has been no literature to discuss the utility of treating these somatic dysfunctions supine while applying the principles of counterstrain.

The basic principles of counterstrain established by Jones[4] involves identifying painful spots within a muscle by noticing tissue texture abnormalities. Monitoring this point with a finger as the patient's body is taken into a position of ease, defined as notable tissue softening and significant decrease in tenderness upon pressing the muscle, the physicians holds the position of ease for a minimum of 90 seconds. During these 90 seconds, the physician can assess for increased blood flow through the presence of tissue warmth or tissue pulsation. The physician then passively returns the patient to a neutral position and reassesses for decreased tenderness at the

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original point.[4] In summary, a tender or strained tissue is passively taken into a position of ease, marked by no longer being tender. That position is held for 90 seconds and then returned to a neutral position.

Remaining in an upright seated position can be challenging for some patients. However, this article describes a new technique that allows a patient to remain in the supine position while a physician diagnoses a posterior rib tenderpoint along the rib angles. The position of ease for a supine posterior rib tenderpoint was inferred. The physician applies lateral traction to the patient's arm which helps to move the scapula away from the rib angles, allowing them to be palpated. The lateral traction also sidebends the thoracic spine to the contralateral side. This mimics the position of ease for treating a posterior rib tenderpoint in a seated position as described by Jones.[4] Next, the physician horizontally extends the arm off the table which allows the pectoralis minor and serratus anterior to bring the rib into a more posterior position—ultimately relaxing the muscles that are pulling the rib in the posterior direction.

After the physician has passively moved the patient's arm, the physician tests the rib for improved ease of motion with posterior to anterior pressure. The patent's arm is maneuvered until their rib is more easily moved with posterior to anterior pressure and the patient reports significantly reduced tenderness. While in the treatment position, the patient should be asked if their arm is becoming numb or beginning to tingle, and the physician should be diligent in keeping the elbow passively bent to decrease the possibility of neural tension signs. Utilizing this supine counterstrain treatment, a large number of posterior rib somatic dysfunctions have been resolved by the author and Des Moines University OMM fellows.

Figure 1. *Physician passively horizontally adducts the patient's ipsilateral arm to slide their hand beneath the supine patient's rib angles and assesses for areas of tissue texture changes or hypertonicity.*

Methods

Diagnosing a supine posterior rib tenderpoint

Depending on the reference, there are various ways to diagnose a posterior rib tenderpoint. According to Greenman,[2] a patient is seated as the physician palpates the posterior convexity of the thorax in the upper, mid, and lower regions assessing for hypertonicity and tenderness at the rib angle. Jones[3] depicts the rib angles as the location for posterior rib tenderpoints but does not explicitly state the assessment is in a seated position; however, he does emphasize the patient is seated during the treatment set-up.

For patients unable to remain in a seated position, assessing for a posterior rib tenderpoint can be done supine. After obtaining consent to touch the patient, have them move to the lateral edge of the treatment table. The physician is seated at the side of the treatment table and passively horizontally adducts the patient's ipsilateral arm across their chest. The physician slides their hand beneath the supine patient's rib angles and assesses for areas of tissue texture changes, hypertonicity, prominent rib angle, or restriction of posterior to anterior motion compared to the surrounding ribs. The physician presses their finger against the rib angle and determines if those areas are tender (Figure 1). The physician keeps their hand on the tenderpoint to mark the location without adding any pressure to the tissue.

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Figure 2. *Physician brings the arm into approximately 90 degrees of abduction with lateral traction (indicated by the white arrow) followed by horizontal extension.*

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Correcting a supine posterior rib tenderpoint

The patient should remain in the supine position. The patient is asked to move laterally on the treatment table toward the ipsilateral side of the tenderpoint to allow the patient's arm to come off the table. Then the physician brings the adducted arm into approximately 90 degrees of abduction with lateral traction which sidebends the thoracic spine and ribs to the contralateral side, mimicking the position of ease for a posterior rib tenderpoint. The physician then brings the ribs into a more posterior position by pulling the ribs posteriorly through the pectoralis minor and serratus anterior muscles through passive horizontal extension of the patient's arm, which also retracts the scapula. To maintain passive elbow flexion, the patient's forearm should rest directly on the physician's thigh as seen in *Figure 2* or on a pillow. The physician will re-assess for tenderness. If the tenderness is not 75%-100% improved the physician can fine tune for tissue softening with external or internal rotation, as well as adduction or abduction. The patient should move laterally on the treatment table toward the ipsilateral side of the tenderpoint if the physician is unable to horizontally extend the patient's arm to a point of ease. The physician will keep the patient in this position of ease for at least 90 seconds, taking note of any tissue texture changes, increased tissue warmth, or tissue pulsation.

Re-evaluating a supine posterior rib tenderpoint

The arm is passively brought back to adduction across the patient's chest and the posterior rib is re-assessed for tenderness (Figure 1).

Discussion

This modified posterior rib tenderpoint treatment allows osteopathic physicians to more easily treat their patients who do not tolerate seated positions. It also reduces the need to change treatment positions, contributing to increased efficiency of office visits, and easy application to hospitalized patients. Due to the minimal instructions patients must follow, it is a simple and versatile technique that can have a profound impact on patients' respiratory, circulatory, and autonomic functions.

Relative contraindications to this gentle treatment technique are important to consider. If a patient has the inability to follow instructions to relax, a shoulder replacement, a history of hypermobile shoulders, prior anterior dislocations, or a positive apprehension test, it is best to consider utilizing a different treatment modality.[3] Effects of this treatment may include reduction in symptoms, improved respiratory function, or transient post-treatment soreness.

If a posterior rib tenderpoint does not resolve, there may be a few explanations. Ribs that have slipped posterior may also elicit tenderness upon palpation but require a different treatment modality such as high-velocity low amplitude (HVLA) or Still techniques to bring the rib back to a neutral position.[2] Other muscle strains (serratus posterior superior, intercostal muscles, iliocostalis thoracis) may be keeping the rib in an inhalation somatic dysfunction and require muscle energy or HVLA to address the corresponding muscles and ligaments.

Some patients may experience recurrent posterior rib tenderpoints. Physicians should keep in mind that posterior rib tenderpoints may be the result of distant somatic dysfunctions. For example, if a patient has a forward head posture or rounded shoulders, their posterior rib tenderpoints can be perpetuated by the presence of the following somatic dysfunctions: backward sacral torsions, flexed cervical spine dysfunctions, anterior rib tenderpoints, decreased mobility of the scapula, and tight or strained pectoralis muscles.

Conclusions

Addressing a posterior rib tenderpoint impacts the body as a whole through improved respiration, balanced autonomics, diminished musculoskeletal discomfort, and enhanced arterial, venous, and lymphatic circulation. Applying this counterstrain technique has minimal contraindications, is an effective way to resolve a posterior rib tenderpoint with little movement, and can be easily applied to supine hospitalized patients.

References

1. Digiovanna EL, Amen CJ, Burns DK, *An Osteopathic Approach to Diagnosis and Treatment*. 4th ed. Philadelphia: Wolters Kluwer; 2021: 312-319, 328, 331.
2. Greenman PE, *Principles of Manual Medicine*, Lippincott Williams & Wilkins; 2003: 261-307.
3. Seffinger DM, *Foundations of Osteopathic Medicine: Philosophy, Science, Clinical Applications, and Research*. 4th ed. Lippincott Williams and Wilkins; 2018: 632-643; 864-884; 923-945; 1245-1252, 1444.
4. Jones LH, *Strain and Counterstrain*. Newark, Ohio: The American Academy of Osteopathy, 1981: 28-29, 61, 63.■