



An Osteopathic Approach to Symptomatic Scapular Dyskinesia



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Objective

- Identify an Osteopathic treatment approach to the neurologic, circulatory, and musculoskeletal symptoms of scapular dyskinesia.

Introduction

- The scapula is an underrecognized contributor to common shoulder conditions: impingement, loss of motion, and pain.¹
- Scapular dyskinesia is the inappropriate position or motion of the scapula during shoulder movement that often occurs secondary to shoulder injuries.^{1,2}
- An important role of the scapula is to elevate the acromion during abduction to create space for the subacromial structures (Image A). Limitation of this action, as in scapular dyskinesia, is a well-known cause of subacromial impingement.^{1,2}
- Some evidence exists for the association between scapular dyskinesia and thoracic outlet syndrome (TOS), in the case of winged scapula,³ but a general pathophysiology of how scapular dyskinesia may contribute to TOS has yet to be determined.⁴
- While significant evidence exists for using Osteopathic Manipulative Therapy (OMT) to treat common shoulder conditions,⁵ little evidence of OMT for scapular dyskinesia exists.

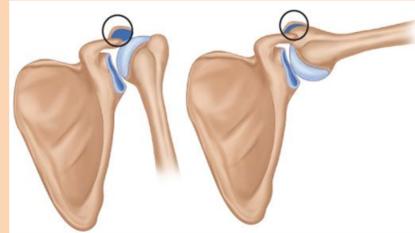


Image A: The subacromial space is compressed during abduction. This is exacerbated by insufficient scapular elevation.

Treatment Plan

- Three visits for OMT to resolve dysfunctions & release the scapula for muscular retraining
 - Myofascial release of the scapula (B), Balanced Ligamentous Tension of the clavicle (C), Counterstrain of the Supraspinatus (D) & Pectoralis minor (E), Muscle Energy of the clavicle (F) & shoulder internal rotation (G)
- Home exercises & stretches
 - Lengthen scapular protractors & elevators
 - Strengthen scapular retractors & stabilizers



All demonstration photos above were taken 02/24/2020 and are not the actual patient.

Figure 1: Range of Motion Pre- & Post-Tx

As indicated by the green bars, the patient's ROM significantly improved after treatment (Tx), especially with internal rotation.

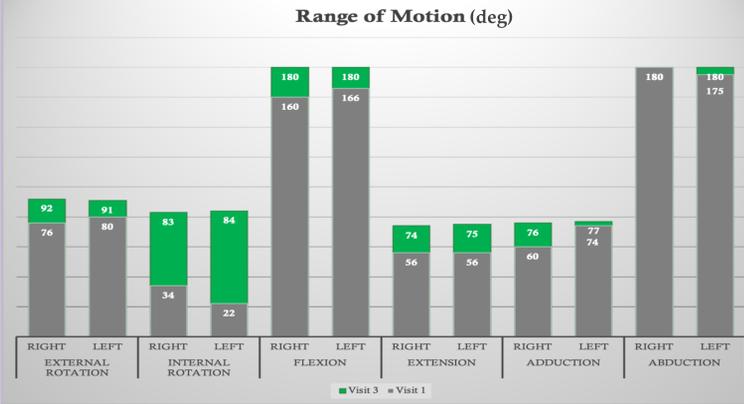
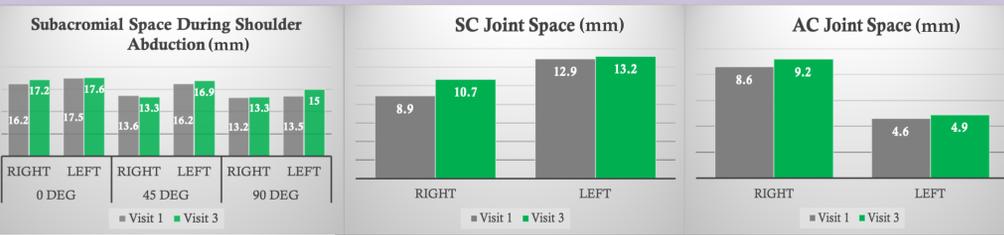


Figure 2: Joint Spaces Pre- & Post-Tx

Ultrasound measurements of subacromial, sternoclavicular (SC), and acromioclavicular (AC) joint spaces showed mild increases post-Tx, as indicated by the green bars.



All images above were taken 12/08/2020 and are used with the patient's consent.

Figure 3: Scapular Dyskinesia Pre- & Post-Tx

Post-Tx findings included improved elevation of the scapulae during shoulder shrug, reduced scapular winging, and increased symmetry of the scapulae and shoulder heights with internal rotation.



All photos above are used with the patient's consent. "Before" photos were taken 11/17/2020. "After" photos were taken 12/08/2020.

Discussion

- I propose that the scapula can contribute to thoracic outlet syndrome through two of its anatomical relationships: the clavicle and the Pectoralis minor.
- Anterior tilt of the scapula with protraction drives the lateral clavicle inferiorly,⁵ which decreases the space for the neurovasculature to pass between the clavicle and the first rib.
- Chronic protraction of the scapula maintains the coracoid process in an anterior and medial position, which can lead to adaptive shortening of the Pectoralis minor muscle.⁶ This reduces the space for the neurovasculature to pass between the Pectoralis minor and the rib cage, especially during abduction of the arm.

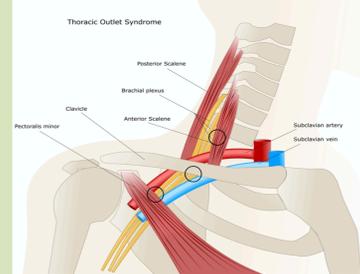


Image H: The anatomical relationships of the scapula with the clavicle and Pectoralis minor muscle allow scapular motion to affect the size of the neurovascular passageways near these two structures.

Case Presentation

- A.D., a 24-year-old male, presented to the clinic with a one-year history of bilateral shoulder grinding during active circumduction and shoulder retraction. He reported bilateral arm paresthesia with internal rotation and cyanosis of the fingers with exposure to cold.
- Physical Exam:
 - Globally reduced shoulder range of motion (ROM)
 - (+) Hawkins, Neer, and Adson's tests
- Osteopathic Exam:
 - Somatic dysfunction of the cervical spine, thoracic spine, ribs, and upper extremities
- Diagnosis:
 - Scapular dyskinesia
 - Subacromial impingement syndrome
 - Thoracic outlet syndrome
 - Somatic dysfunction of cervical, thoracic, rib, and upper extremity regions

Conclusion

- OMT directed to the scapula resolved scapular dyskinesia and treated the associated symptoms of subacromial impingement and thoracic outlet syndrome in our patient.
- Limitations of this study include a lack of generalizability to the greater population and inter-user reliability of ultrasound.
- Further research is needed to illustrate the benefits of OMT for scapular dyskinesia in restoring neurologic, circulatory, and mechanical functioning of the shoulder.

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