

Muscle Memories

The Pectoralis Minor Story

BY JOSEPH MUSCOLINO, D.C.

When I was given an opportunity to write a column on my favorite muscle, how could I refuse? I have come to appreciate pectoralis minor as the most fascinating muscle in the human body, and for the role it plays in postural distortion patterns and thoracic outlet syndrome. So, let's take a closer look at it!

Attachments and Actions

The pectoralis minor is located in the pectoral region and is smaller than the pectoralis major, hence its name. It is located entirely deep to the pectoralis major and attaches superiorly to the coracoid process of the scapula, and then divides into three slips that attach to ribs 3 through 5. Attaching to the scapula and the ribcage, the pectoralis minor has the ability to move both of these attachments. We usually think of the scapula as the more mobile attachment, and in fact, when the ribcage is fixed and the pectoralis minor contracts and shortens (i.e., concentrically contracts), the muscle has the ability to pull the scapula toward the costal (cost means rib) attachment. This means that it can protract, depress, and downwardly rotate the scapula at the scapulocostal (scapulothoracic) joint. It can also laterally and upwardly tilt the scapula. When the scapula is fixed and the pectoralis minor concentrically contracts, it pulls ribs 3 through 5 up (elevation of these ribs at the sternocostal and costospinal joints). Elevation of ribs is an important component of inspiration. Therefore, the pectoralis minor also functions as an accessory muscle of inspiration.

Palpation

To be able to accurately work the pectoralis minor, one needs to accurately determine its location by palpation. Even though the pectoralis minor is deep to the pectoralis major, palpating it through the pectoralis major is extremely easy. Have the client seated with the hand in the small of the back; the therapist stands behind and to the side of palpation. Locate the concavity in the lateral end of the clavicle and then drop inferiorly from there to the coracoid process of the scapula (figure 1a); from there, drop just off the coracoid process inferiorly and you will be on the pectoralis minor. To engage the pectoralis minor so that it becomes palpably firmer and easy to distinguish from the pectoralis major, simply ask the client to move the hand away from the small of the back (figure 1b). This motion causes extension of the arm at the shoulder joint, which in turn requires downward rotation of the scapula at the scapulocostal joint (these joint actions are coupled together). Because the pectoralis minor is a downward rotator of the scapula, it will contract and can then be palpably felt. Strum perpendicular to the pectoralis minor to clearly outline the entire location of this muscle (figure 1c). Once you have located the pectoralis minor using this method, have the client relax the pectoralis minor and you can assess the baseline tone of this muscle to determine if it is tight and requires treatment. Cross-fiber stroking (similar to the perpendicular strumming of palpation shown in figure 1c) is an effective approach to treating a tight pectoralis minor.

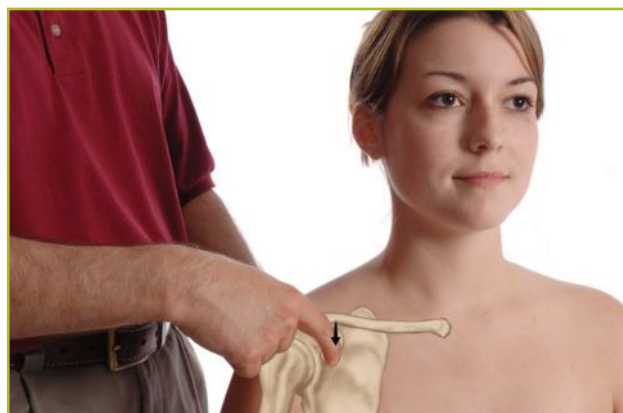


figure 1a

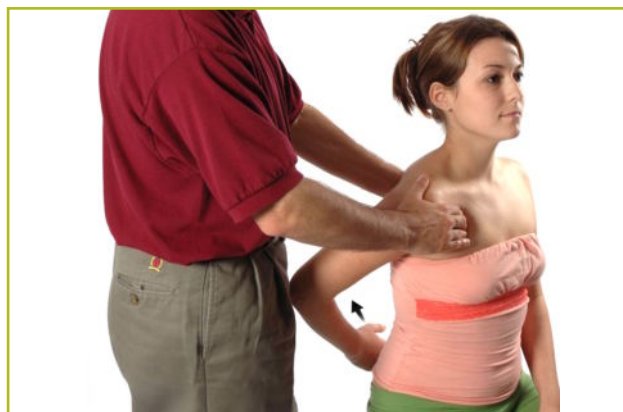


figure 1b

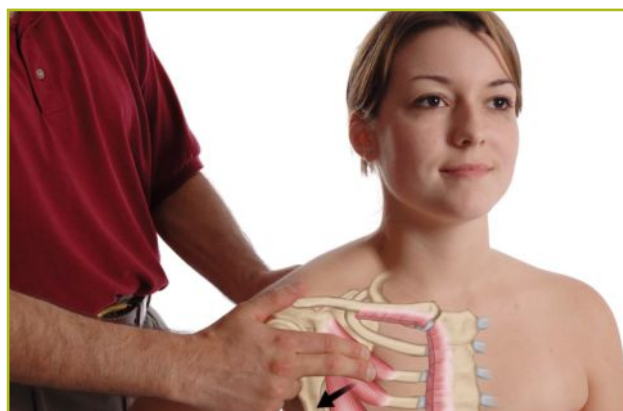


figure 1c

Role in Posture

The pectoralis minor often plays a major role in posture. Given that the majority of our activities are usually performed down and in front of us, protraction of the scapulae as part of a posture of rounded shoulders tends to become a prevalent postural distortion pattern. In this posture, the pectoralis minor muscles shorten, and by adaptive shortening, tend to become short and tight. At the same time, the antagonistic muscles that do retraction of the scapulae (primarily the rhomboids and middle trapezius) tend to become lengthened and weakened. Indeed, this pattern is so common that the tone of these muscles is part of what is known as the upper crossed syndrome. Massage therapists, bodyworkers, ►



figure 2



figure 3

◀ and trainers are the ideal therapists to address this problem. Treatment consists of two steps: loosen the tight muscles anteriorly (pectoralis minor and major) and strengthen the weak muscles posteriorly (rhomboids and middle trapezius). Loosening the pectoralis minor can be accomplished very nicely by a combination of massage and stretching (figure 2). An easy home exercise for strengthening the scapular retractors is Brugger's exercise, which essentially employs a pinching of the scapulae together. Of course, giving appropriate postural advice to our clients is another necessary part of the treatment regimen.

Role in Thoracic Outlet Syndrome

The pectoralis minor also plays a role in one of the three types of thoracic outlet syndrome (TOS) given its relationship to the brachial plexus of nerves and the subclavian artery and vein. Indeed, this type of TOS is called pectoralis minor syndrome and occurs when the brachial plexus and/or the subclavian vessels are compressed against the ribcage by a tight pectoralis minor muscle. Given that these structures give all nerve and blood supply to the upper extremity, symptoms of pectoralis minor syndrome may include symptoms of sensory nerve impingement (e.g., pain, tingling, or numbness), symptoms of motor nerve impingement (e.g., weakness of the affected musculature), symptoms of arterial impingement (e.g., blanching and cyanosis), and/or symptoms of venous impingement (e.g., congestion and swelling). Usually impingement upon the brachial plexus of nerves is more common and more serious than vascular impingement. Assessment of this condition is accomplished by applying

Wright's test, which is done by assessing the client's radial pulse first in anatomic position and then after having passively brought the client's arm up and back (figure 3). This position stretches the pectoralis minor taut against the ribcage, further compressing the brachial plexus and subclavian vessels. This test is considered to be positive for pectoralis minor syndrome if the radial pulse is weakened in strength, indicating that the subclavian artery is impinged by a tight pectoralis minor. The assumption is that if the subclavian artery were impinged with this maneuver, then the brachial plexus of nerves would be impinged as well.

Conclusion

I think it is clear that the pectoralis minor muscle is one of the more important muscles to the field of massage and bodywork. For this reason, I heartily recommend that you become familiar with its structure, function, and relationship to posture and TOS. Once you are comfortable with palpating and assessing the tone of this muscle, you will find that it is extremely responsive to massage and bodywork treatment. While I like to employ deep tissue work and stretching for a tight pectoralis minor, any effective massage and bodywork technique that you use in your practice is appropriate. I believe that the more you investigate the pectoralis minor muscle in your clients, the more you will appreciate why it is my favorite muscle! 🎵

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photos by Yanik Chauvin, illustrations by Frank Forney

Touchpoints

Jamaican Massage: "The Special Touch"

BY BOB KING

What makes for a truly outstanding massage experience? Skillful hands? Specialized training? Tableside rapport? All of the above?

Some of the most consistently outstanding massage sessions my wife and I have ever received were from the staff at Couples Negril, a Jamaican resort hotel. Why are these massages so exceptional? I think the answer lies within improvisational jazz.

There was a reliable structure and format to the sessions we received. Body parts were addressed in an orderly and systematic fashion, but then an improvisational integration of compressions, petrissage, wringing, shaking, and stretching took place. My mind began to follow the rhythm of the sequence, and chuckling to myself, I marveled at the intuitive blending and transitioning of strokes. The basic chords and bass notes were laid down, and off it went with improvisational mixtures of technique variations, combined with profoundly effective tissue ▶