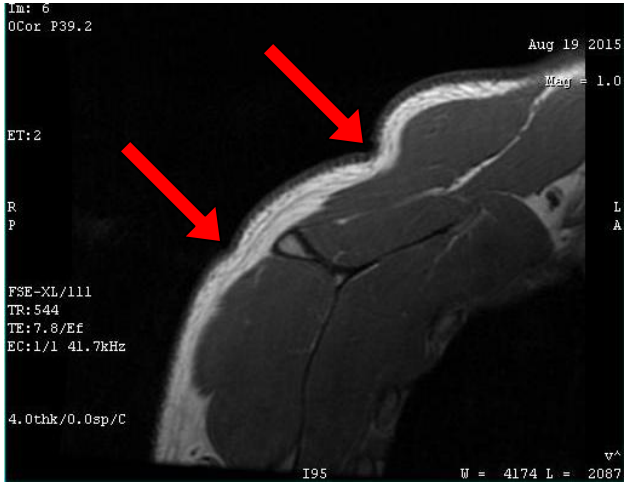
Effects of Soft Tissue Mobilization With Negative Pressure Device on the Shoulder, Using MR Imaging. Christopher DaPrato, DPT, SCS, Assistant Professor, UCSF

Mechanical interventions, such as dry needling, functional mobilization, and instrument assisted soft tissue mobilization (IASTM), are often used to target muscle and connective tissue pathologies[1,3]. These modalities are often compressive in nature. The use of negative pressure devices with ROM activities is one form of IASTM which may also alter blood flow and metabolic exchange in affected tissues. To date, no high quality MRI studies examining the specific effects of negative pressure IASTM performed during or after intervention on soft tissues have been published[6]. The objective of this case was to evaluate the effects of soft tissue mobilization using negative pressure devices on myofascial structures with MR imaging.

The subject was a 29 y/o asymptomatic right hand dominant male with no previous history of shoulder or neck pathology, and a BMI of 22.1. T1-weighted coronal-oblique FSE MR images were acquired with the subject in prone using a Pron Pillo® with a 3 channel phased-array shoulder coil and a 3-Tesla GE MRI 750 magnet, under three conditions: 1) device in place with no pressure applied, 2) vacuum pressure applied, and 3) device in place after pressure is released.

We observed distinct changes in skin, fat, fascia, and muscle trajectories of the upper trapezius and supraspinatus fibers with the application of the myofascial decompression technique (Figure 2). Future studies should compare the effects of negative pressure devices to other forms of manual therapy in promoting soft tissue changes in normal controls and subjects with actual pathology.



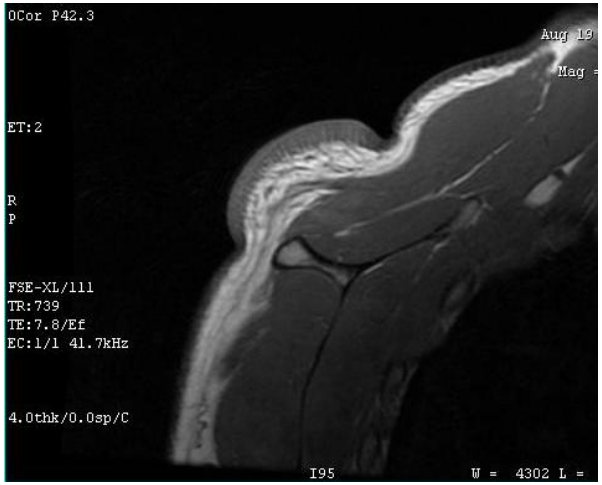


FIGURE 1. T1, sagittal view of the scapula and upper shoulder, showing the upper trapezius, supraspinatus, and spine of the scapula with the apparatus set, before vacuum pressure is applied. FIGURE 2. negative pressure force maximized inside the vessel. FIGURE 3. Tissue effect after all pressure has been released, and the shoulder coil still on the patient.

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