Restoration of Full Shoulder Range of Motion After Application of the Fascial Distortion Model

Joshua D. Boucher, DO; Jose Figueroa, DO

From the Des Moines University College of Osteopathic Medicine in Iowa.

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Address correspondence to Joshua D. Boucher, DO, 756 Herrington Dr, Grovetown, GA 30813-4239.

Email: joshua.d.boucher@dmu.edu

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Decreased active and passive range of motion (ROM) accompanied by pain in the shoulder is a common presentation for patients with frozen shoulder, and it can be difficult to restore normal function. Through the fascial distortion model, physicians can apply a manual technique to rapidly and effectively increase ROM and decrease pain. A 28-year-old man presented 18 months after sustaining a shoulder hyperextension injury. On active and passive ROM examination, he had approximately 90° of shoulder abduction and moderately reduced internal rotation associated with 8/10 pain. After 2 applications of the fascial distortion model, his shoulder restored to full abduction and internal rotation with no pain.

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The fascial distortion model (FDM), founded in 1991 by Stephen Typaldos, DO, is relatively new to traditional medicine. This model suggests that musculoskeletal injuries are the result of an alteration to the fascia.[1] The FDM is a hands-on technique that can be a fast, quantifiable, and efficacious method for treating patients with a variety of injuries, such as fractures, sprained ankles, and frozen shoulders.[2] Within this model are 6 different proposed fascial distortions or diagnoses, as follows[1,2]:

- **triggerband (TB):** most common; results in a band of wrinkled fascia
- **folding distortion (FD):** result of pressure or traction that pulls, pushes, twists, or contorts the fascia
- **herniated triggerpoint (HTP):** soft tissue pushes through the fascial plane
- **continuum distortion:** alteration of fascia between 2 different tissue types
- **cylinder distortion:** tangled coiling of the fascia
- **tectonic fixation:** fascia cannot glide in its plane

Diagnoses are made by how the patient describes and indicates his or her pain.[1,2]

Pain in the shoulder joint accompanied by chronically decreased active and passive range of motion (ROM) is a common presentation for frozen shoulder and has a prevalence of 2% to 5% in the general population.[3] Frozen shoulder is managed conventionally with nonsteroidal anti-inflammatory drugs, physical therapy, intra-articular injections, manipulation with administration of anesthesia, and, rarely, surgery.[3-5] For many patients, symptoms will persist for 18 to 36 months and sometimes resolve spontaneously, but not always completely.[3-5] The FDM is a logical alternative treatment that can relieve pain,

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restore physiologic ROM, and improve quality of life. In the present report, we describe the use of FDM to treat a patient with a hyperextension injury of the shoulder. The first 3 fascial distortions (TB, FD, and HTP) are discussed in this case.

Report of Case

Presentation

A 28-year-old man presented to one of the authors (J.D. B.) in a nonclinical setting. He reported that he had an 18-month history of decreased ROM and 8/10 pain in his right shoulder. The symptoms started after he was holding onto a taut rope that was pulled, forcing his arm into hyperextension. Pain had been constant since the injury, and ROM had worsened over time. He reported difficulty playing with his children, working as a correctional officer, and pulling his shirt over his head. The patient underwent magnetic resonance imaging after the injury, but results were negative for rotator cuff tear. The patient self-treated with nonsteroidal anti-inflammatory drugs and at-home exercises with no benefit. To indicate the location of his pain, he pointed with his index finger at the base of the skull on the right and drew a line down his neck and over the right shoulder to the acromioclavicular joint. He stopped at the supraclavicular region and pushed his fingers into the soft tissue; he then grabbed his shoulder over the deltoid with one hand and stated, "This is where it hurts." The patient reported mild weakness in the right shoulder but denied "catching" of the shoulder, numbness, tingling, fever, and unexplained weight loss. His medical history was significant for a childhood concussion and seizures from ages 11 to 16 years. He reported no other history of trauma or pertinent operations.

Physical and Osteopathic Structural Examinations

Physical examination findings were significant for mild atrophy of the right supraspinatus and trapezius muscles. Active and passive ROM was reduced to approximately 90° in abduction (supraspinatous) (**Figure 1**) and moderately reduced in internal rotation (subscapularis). Shoulder external rotation (infraspinatous and teres minor), elbow flexion, and elbow extension were without gross deficits bilaterally. Neck ROM was moderately reduced in left rotation and mildly reduced in right rotation; sidebending, flexion, and extension were all without gross deficits. The patient's light touch sensation in C5-T1 dermatomes was intact bilaterally. He had 4/5 strength in right shoulder abduction (supraspinatous) and internal rotation (subscapularis); otherwise, his upper extremities (infraspinatous, teres minor, biceps femoris, deltoid) and neck strength were without gross deficits bilaterally. Empty can test was positive for pain on the right. Slow adduction of the shoulder was negative for arm drop. Reflexes were not tested initially, but later were 2/4 at the triceps, brachioradialis, and biceps.

On osteopathic structural examination, the T1 and T3 vertebrae were rotated and sidebent right, the third rib was posterior on the left, the first rib (inlet) was rotated and sidebent right, the C5 vertebra was rotated and sidebent left, the right innominate bone was anterior, and the sacrum had unilateral flexion. He had strains (tender points) of the levator scapulae, trapezius, supraspinatus, and pectoralis minor on the right.

Figure 1.
Abduction before application of the fascial distortion model. The patient had sustained a hyperextension injury of his right arm 18 months before presentation.

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Clinical impressions were that the shoulder pain resulted from the hyperextension injury, leading to significantly decreased ROM and affecting activities of daily living; frozen shoulder was present; fascial distortions (HTP, TB, and FD) of the shoulder were present; and somatic dysfunctions of the cervical spine, upper extremities, thoracic spine, ribs, innominate bones, and sacrum existed.

Initial Treatment

The somatic dysfunctions were treated with osteopathic manipulative treatment (OMT) techniques. Strain-counterstrain was used on the tender points over the levator scapulae, trapezius, supraspinatus, and pectoralis minor. Muscle energy was used to treat the sacrum and the inlet. High-velocity, medium-amplitude was used to treat the cervical and thoracic vertebrae, posterior ribs, and innominate. Soft tissue was applied to the neck. On reexamination, the somatic dysfunctions were resolved; however, there was minimal improvement in shoulder ROM (5° to 10° by visual estimation), and pain remained 8/10.

The author explained that an HTP, TB, and FD were present based on the body language the patient had used to indicate the location of pain. The FDM methods, contraindications (bleeding disorders, cancer, cellulitis, edema, open wounds), and potential adverse effects (bruising, pain during treatment, stroke, phlebitis)[2] were discussed with the patient, and he consented to treatment.

The patient had pushed his fingers into his supraclavicular region to indicate the location of pain, which is typical for someone with HTP.[2] The author palpated the patient's right supraclavicular region and found an irregularity in the tissue that felt smaller than an almond. The author applied direct and firm pressure with the tip of his thumb over the irregularity until he felt a reduction in the tissues. Two other HTPs that were found in the right supraclavicular region and 1 in the left supraclavicular region were treated likewise.

The author asked the patient to re-draw the line of pain that started on his right occiput—body language that signifies a TB.[2,6] The author palpated along the line and felt a small defect in the fascia. He then applied firm pressure with the tip of his thumb starting at the acromioclavicular joint and followed the line to the occiput. Pressure was applied in the opposite direction to add more force throughout the TB line.

On reevaluation, the patient improved to 140° ROM in right shoulder abduction, mild internal rotation deficit, and symmetric neck rotation. He had substantial pain during the treatment; however, on completion, his pain quickly decreased to 3/10. The patient had skin erythema due to the direct force applied to the skin, but no bruising was visible. At this point, the patient was satisfied with the improvement, and he was asked to return for follow-up in 2 weeks.

Follow-up Treatment

At 2-week follow-up at the medical clinic, the patient had maintained his improvements in ROM and pain. He had no bruising or erythema. The author performed an osteopathic structural examination and treated the same somatic dysfunctions as those found during the first visit. The same OMT techniques were applied, and no improvements in ROM or pain were noted.

At this visit, the patient indicated his pain by holding his left hand over the right shoulder joint; this body language is consistent with an FD.[2] The author actively pulled the arm into extension and abduction, similar to the direction of the injury 18 months prior. The author pulled in multiple planes until the patient stated he no longer felt pain, only tightness. The author monitored the tension in these planes and tugged the arm with moderate velocity and low amplitude. The patient experienced no pain during the treatment. Immediately after the treatment, the patient took control of his right arm and moved it in full ROM and 180° abduction with 0/10 pain (**Figure 2**). Repeated shoulder examination revealed no significant findings. Shoulder exercises were demonstrated and encouraged to strengthen the shoulder.

Three months later, the patient followed up with the author. He maintained 180° in shoulder abduction bilaterally, had no deficits in shoulder internal rotation or neck rotation, had visual improvement of atrophy, and

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had 0/10 pain. Osteopathic structural examination showed that the patient was in the common compensatory pattern. He stated that he was able to pick up his children, get dressed, and work without pain or limitations.

Discussion

In 2 visits, a young man who had 18 months of 8/10 pain and limited ROM in shoulder abduction and internal rotation was able to obtain optimum results of full shoulder ROM and no pain after correct application of the FDM. These outcomes correlated with the author's knowledge and expectations of the FDM. The patient's pain during treatment of an HTP and TB along with skin irritation were expected. The author had mild thumb pain and fatigue. The adverse effects of treatment may deter some patients from receiving and physicians from applying this method.

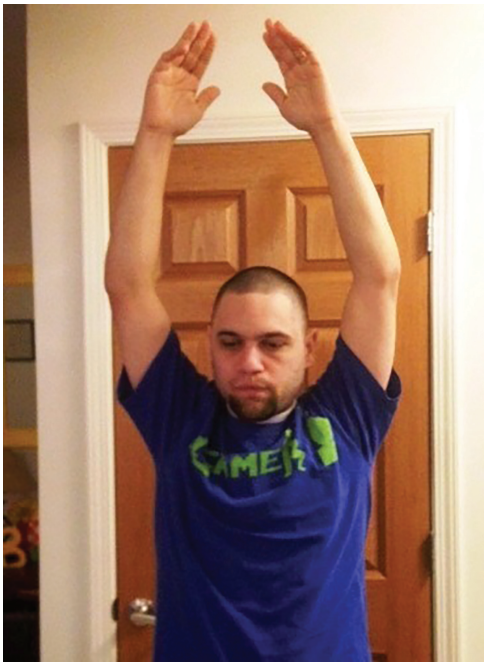

Figure 2.
Abduction after the second treatment using the fascial distortion model, 2 weeks after the initial presentation and treatment. The patient had sustained a hyperextension injury of his right arm 18 months before presentation.

As previously noted, frozen shoulder can resolve spontaneously, fully or partially, at 18 to 36 months.[3-5] We acknowledge that this patient had entered this time frame, but the results immediately after the application of the FDM were clinically significant and quantifiable. Therefore, we believe his recovery resulted from the FDM rather than from time.

Physicians can apply this manual technique without the need for specialized equipment. Information about FDM training, treatments, contraindications, and adverse effects can be found at the American Fascial Distortion Model Association website (https://afdma.com/).

Conclusion

The FDM is a noninvasive and alternative method of managing musculoskeletal injuries such as frozen shoulder. Further research will be necessary for widespread acceptance and use of the FDM. A randomized controlled double-blinded clinical trial could promote more interest, exposure, and additional investigation. A study that correlates each proposed fascial distortion with imaging would further support the FDM.

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