

Musculoskeletal Ultrasound Curriculum Development for Sonographers and Radiologists

Purpose

- To develop a curriculum that will train sonographers and radiologists without previous exposure to musculoskeletal ultrasound to perform an ankle and shoulder sonographic exam.

Methods and Materials

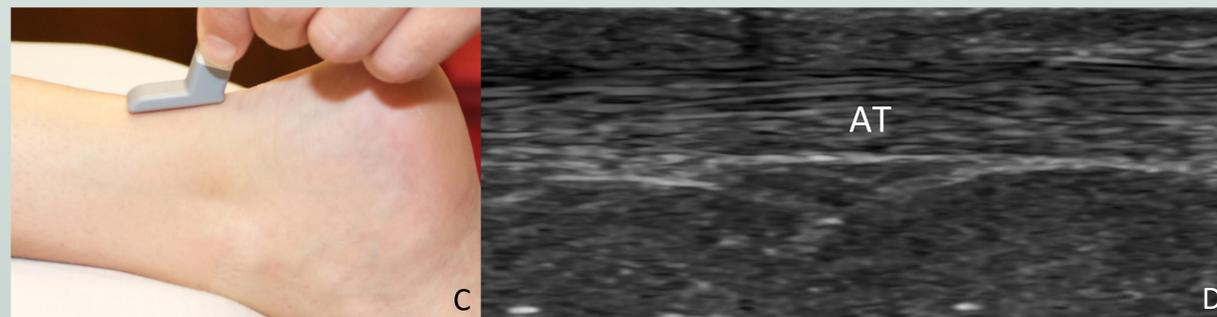
- A continuing medical education course (CME) was created that demonstrated correct patient positioning, probe placement, representative sonographic images, and a voice-over guiding the viewer through the course step by step.
- Participants completed the CME course prior to attending the ultrasound workshop.
- Participants were split into pairs during the workshop, one sonographer was the model and the other performed the scan.
- A lead physician demonstrated each exam on a volunteer, which was projected on a large screen. The remaining educators rotated among the groups, providing guidance.
- Participating sonographers swapped roles, ensuring that every sonographer completed a full shoulder and ankle examination at least once.
- Protocols were created describing each structure to be visualized during each ultrasound exam, which included images demonstrating correct probe and patient positioning for clarification.
- Once training was complete, the internal marketing department increased awareness of the new service to ordering physicians, specifically the MSK radiology service's top 20 referring physicians.

Supraspinatus Tendon Scanning



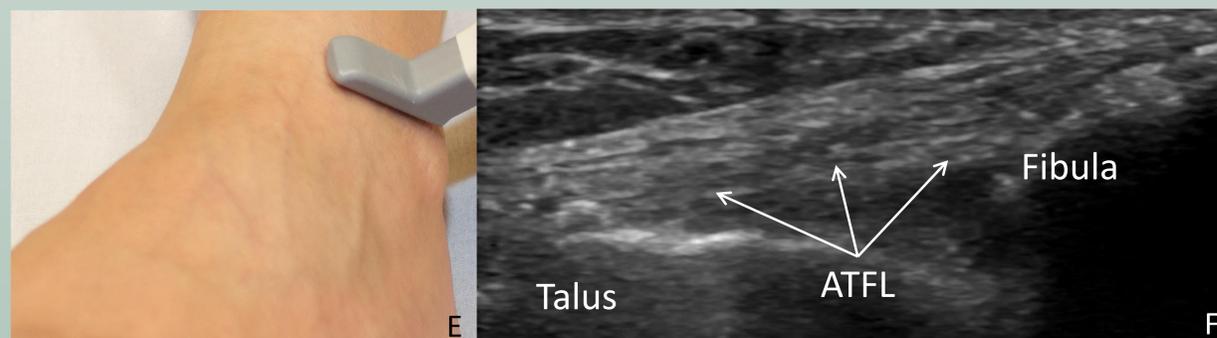
Figures A and B: Sample image demonstrating patient positioning, the Modified Crass position, probe placement (left), and a representative sonographic image of the supraspinatus tendon (SS) and the greater tuberosity of the humerus (GT) (right).

Achilles Tendon Scanning



Figures C and D: Sample image demonstrating patient positioning, probe placement (left), and a representative sonographic image of the longitudinal Achilles tendon (AT) (right).

Anterior Talofibular Ligament Scanning



Figures E and F: Sample image demonstrating patient positioning, probe placement (left), and representative sonographic image of the anterior talofibular ligament (ATFL), talus, and fibula (right).

Protocol

Sample protocol outline for shoulder exam

Equipment/Preparation
Protocol Exam
Have Participant Visualize:
1. Biceps tendon
2. Subscapularis tendon
3. Subcoracoid impingement
4. Supraspinatus tendon
5. Subacromial impingement
6. Acromioclavicular joint
7. Infraspinatus tendon
8. Posterior glenohumeral joint
Review Images
Release Patient

Table 1: Example of a protocol outline for a complete sonographic exam of the shoulder.

Results

- In total, 12 sonographers were trained, who cover six unique imaging sites.
- As providers are becoming aware of the new service we are providing, we are seeing consistently increasing weekly referral volume.

Discussion

- The demand for musculoskeletal ultrasound is increasing in the United States due to its distinct advantages over MRI and other musculoskeletal imaging modalities.
- We outlined a method of training sonographers and radiologists with no prior experience to be able to perform a complete exam of the ankle and shoulder.
- This method of training can be used to further develop a musculoskeletal ultrasound protocol for any muscle, tendon, ligament, or joint of interest.