

Ultrasound verification of palpation-based dry needling

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Problem

- Dry needling is a treatment technique used in physical therapy to address myofascial pain
- The technique involves inserting a sterile, monofilament needle through the skin and into the targeted muscle tissue
- In physical therapy practice, the needle is guided “blindly”, meaning without imaging guidance
- The needle placement is based on palpation or feeling for anatomical surface landmarks
- The accuracy of these palpation methods has not been validated in the shoulder rotator cuff muscles

Goal

- Explore the feasibility of using ultrasound to identify small-gauge needles in the rotator cuff muscles
- Determine if the palpation method resulted in accurate and safe needle placement
- Improve the accuracy, safety, and effectiveness of dry needling in physical therapy practice

Strategy

- Participants were recruited from the physical therapy department
- Each participant had a needle placed in two rotator cuff muscles, infraspinatus and supraspinatus
- The needle was placed by a physical therapist and guided only using the palpation method
- After needle placement, an orthopedic physician then attempted to visualize the needle within the targeted muscle tissue using ultrasound
- Successful needle visualization occurred if the needle tip was located on ultrasound
- If the needle tip resided in the targeted muscle tissue, it was considered an accurate placement

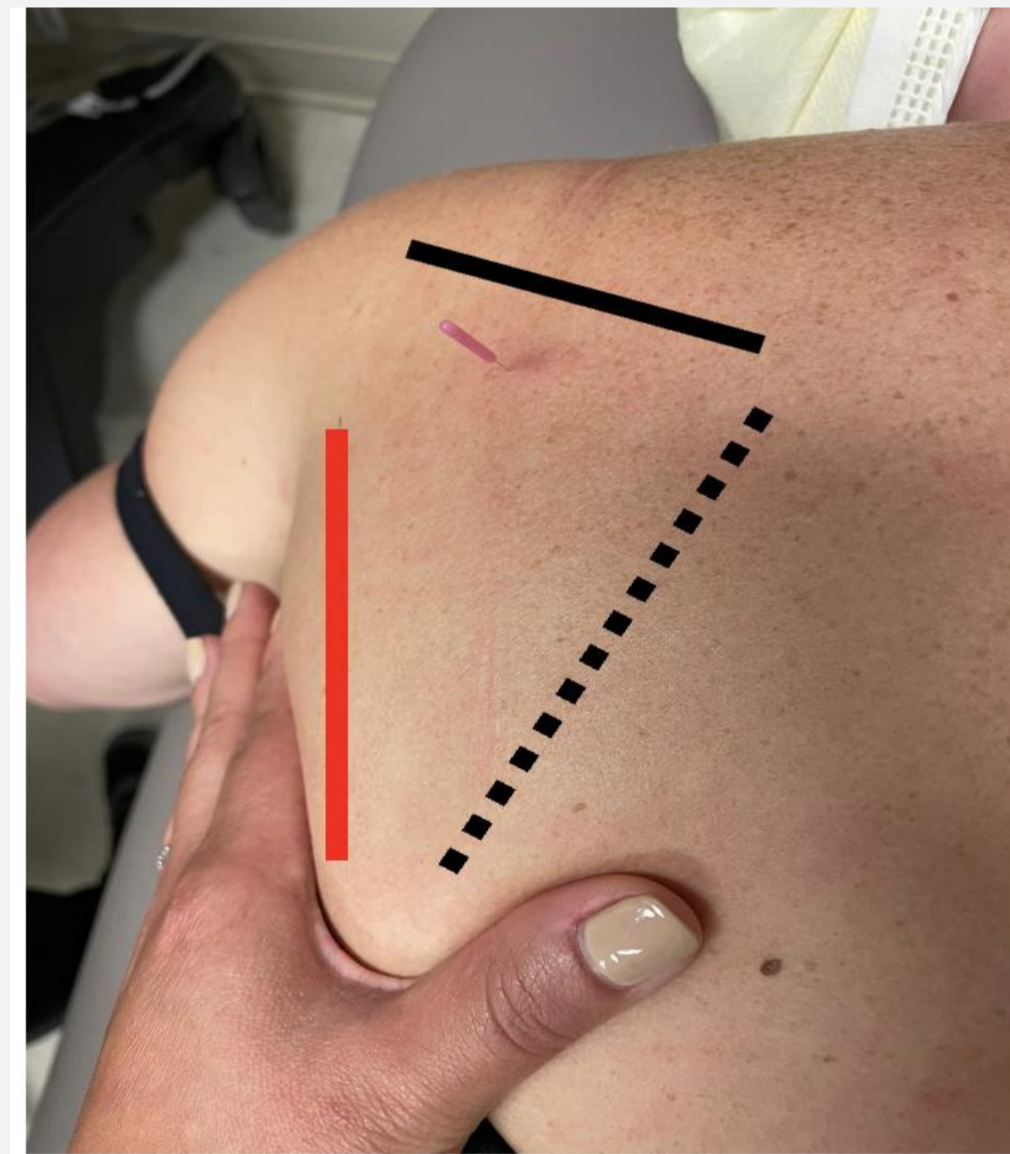


Figure 1. Infraspinatus needle palpation landmarks. Posterior view of the left scapula shows scapular landmarks; medial border (dotted line), lateral border (red line), and scapular spine (solid black line) with pink needle located inferior to scapular spine

Results

- The needle tip was successfully visualized on ultrasound in 19/20 cases
- The needle tip was accurately placed in the targeted muscle in 19/20 cases



Video 1. Ultrasound verification of needle tip placement using the oscillation technique. The needle tip can be seen moving within the infraspinatus muscle belly

Lessons Learned

- Ultrasound imaging guidance is not widely available in physical therapy practice, therefore it is important to validate the accuracy of palpation-based needling techniques
- Despite their narrow size, physical therapy dry needles can be visualized consistently on ultrasound imaging in the muscles of the rotator cuff
- It was often useful to oscillate the needle in order to help with visualizing the tip
- This palpation-based dry needling technique proved to be accurate and safe in guiding needles into the targeted muscles

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