

Clinical Image

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Rotator cuff injuries: improving identification with bedside ultrasound

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In May 2021, a 53-year-old woman reported falling off her sofa and injuring her right shoulder 4 h before arrival in the emergency department (ED). Since her injury, she has been unable to utilize or raise her right arm. Physical examination demonstrated that the patient was holding her shoulder in an internally rotated position, with limited active and passive range of motion of the shoulder due to pain. The patient was unable to participate in shoulder maneuvers, such as the Empty Can Test, due to pain. The rest of the neurovascular examination of her upper extremity was within the normal limits. An X-ray and bedside ultrasound utilizing a linear probe was performed. For the sonographic image, the patient was sitting upright with her elbow extended and her shoulder

internally rotated. The linear probe was placed inferior to the acromion with the marker faced to the anterior and then again to the cephalad. Findings are found in Figure 1. The patient was subsequently diagnosed with a supraspinatus tendon rupture and sent for outpatient MRI and orthopedic follow-up. Because her orthopedic surgeon's outpatient and procedure notes are unable to be seen from the ED's electronic medical record, there is no information on her follow-up.

Rotator cuff injuries can be difficult to definitely diagnose within the ED without MRI capabilities. Point-of-care ultrasound (POCUS) is a valuable tool to accurately determine the presence of full-tendon ruptures, with high sensitivity and specificity of over 90 % [1, 2]. Hypo-echoic fluid disrupting the tendon, which was seen in two different ultrasound orientations, suggests full-thickness tears [3]. These hypo-echoic defects need to disrupt the hyper-echoic tendon fibers through the entire muscle [4].

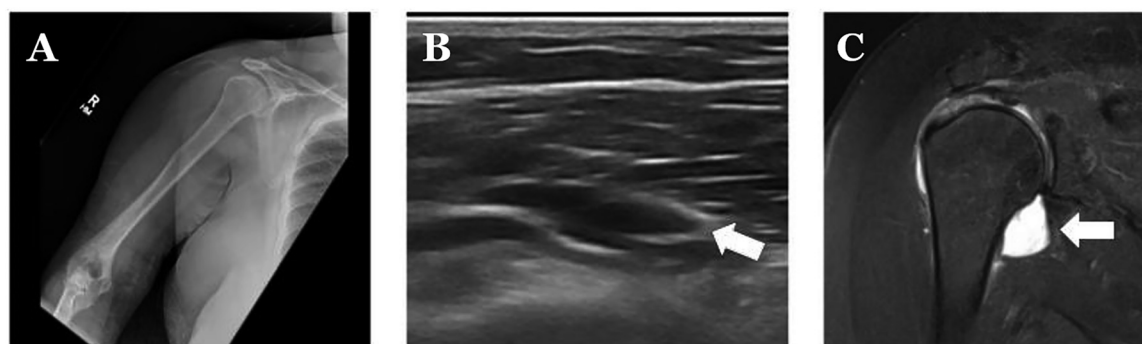


Figure 1: Radiographic evaluation of the right shoulder. (A) Normal X-ray without bony or soft-tissue abnormalities. (B) Abnormal point-of-care ultrasound (POCUS) evaluation of the right shoulder, with the arrow demonstrating tendon deficit. (C) Fluid MRI results, with the arrow showing rupture of the supraspinatus tendon with 1.8 cm stump retraction.

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The patient was placed in an arm sling, and the outpatient MRI occurred 6 days later, which confirmed the diagnosis. If the physical examination suggests a tendon tear, a diagnostic ultrasound should be performed because patients with positive findings can be prioritized for further characterization by MRIs prior to appropriate surgical consultations [3].

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