

Case Description

- 43-year-old woman presented to outpatient musculoskeletal ultrasound clinic with seven months of right shoulder pain after falling down steps and stopping herself by sticking her arm through a railing
- This caused excessive external rotation and abduction of the humerus, and immediate pain

Imaging and Workup

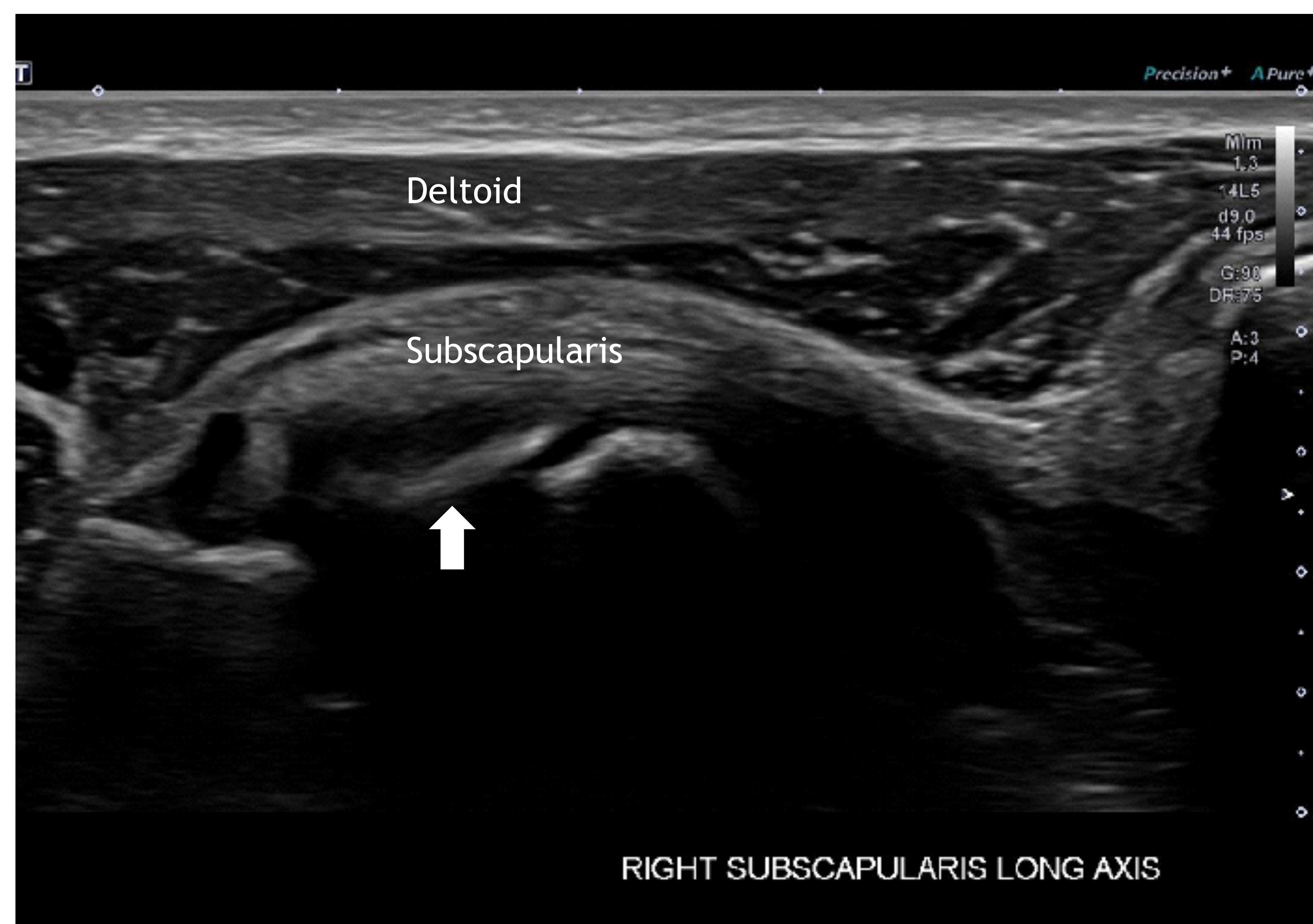
- Physicians seen: Primary care, orthopaedics, and an outside rehab group
- Prior Imaging: Radiograph and magnetic resonance imaging revealed no pathology

Prior Treatment

- No improvement with physical therapy, acupuncture, or electrical stimulation
- Minimal temporary relief with meloxicam and prednisone
- Pain somewhat improved independent of treatment modalities

Ultrasound Evaluation

- 1.2mm non-displaced cortical defect with rounded edges on the lesser tuberosity at the footprint of the subscapularis, consistent with a subacute lesser tuberosity avulsion fracture (arrow)
- Grossly normal rotator cuff and glenohumeral joint
- Mild biceps tendon sheath fluid without subluxation and normal echogenicity of both heads of the bicep tendons and muscles
- Mild sonographic signs of subacromial impingement



Discussion

- Isolated fracture of the lesser tuberosity is an unusual phenomenon in children¹ and is extremely rare in adults²
- Anteroposterior radiographs may miss lesser tuberosity fractures (more common with small fractures and/or when an axillary view is not obtained³)
- Ultrasound has become a reliable tool to examine suspected fractures not detected on radiographs⁴
- While large avulsion fractures are typically surgically fixed² with mixed success,⁵ small avulsion fractures such as this likely do not require surgical fixation and can be managed conservatively
- Rapid diagnosis of these fractures would lead to more appropriate early targeted therapeutic interventions.
- Ultrasound is a useful tool for diagnosing fractures missed on radiograph and if obtained early in the diagnostic process, can prevent excess costs.

References

- 1 Levine B, Periera D, Rosen J. Avulsion fractures of the lesser tuberosity of the humerus in adolescents: review of the literature and case report. *J Orthop Trauma*. 2005; 19: 349-52
- 2 van Laarhoven HA, te Slaa RL, van Laarhoven EW. Isolated avulsion fracture of the lesser tuberosity of the humerus. *J Trauma*. 1995; 39: 997-9
- 3 Ross GJ and Love MB. Isolated avulsion fracture of the lesser tuberosity of the humerus: report of two cases. *Radiology*. 1989; 172: 833-4
- 4 Avci M, Kozaci N, Tulubas G, et. Al. Comparison of point-of-care ultrasonography and radiography in the diagnosis of long-bone fractures. *Medicina*. 2019; 55: E355
- 5 Earwaker J. Isolated avulsion fracture of the lesser tuberosity of the humerus. *Skeletal Radiol*. 1990; 19: 121-5

