Facilitating Value-Based Care

A story about how point of care ultrasound can provide immediate diagnoses, leading to expedited care.

A Case Study by

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It has been reported that 1 in 2 adult Americans live with a musculoskeletal condition; as many as those with cardiovascular and chronic respiratory diseases combined. Musculoskeletal disorders are second only to respiratory conditions as the most common reason for seeking health care.

Meanwhile, the U.S. healthcare industry is trending toward value-based care (VBC) and away from fee-from-service care. VBC reimbursement models represent a shift toward less expensive, more effective care for patients. In fact, over the past eight years, the number of U.S. states and territories that have implemented VBC programs has spiked, rising from 3 states in 2011 to 48 as of 2018.

Point of care ultrasound (POCUS) is a technique to provide immediate diagnostic answers to expedite treatment or therapy. Ultrasound has a reported high sensitivity and accuracy of diagnosis of extra-capsular soft tissue and tendon pathology and is therefore emerging as one such mechanism for VBC application in physiatry. An example follows.

Case History

A 53-year-old male presented with acute onset, sharp right anterior arm and shoulder pain after lifting a heavy outdoor grill. He reported there was extensive bruising around the right arm and elbow following the incident. On examination, the patient's strength, sensation and reflexes were normal. No palpatory tenderness, range-of-motion limitations or signs of shoulder/elbow instability were exhibited. He reports mild discomfort with resisted biceps flexion and forearm supination.

Imaging Exam

An ultrasound exam of the right shoulder and upper arm was performed in office when symptoms were reported. Using the Musculoskeletal preset at a depth of 4cm, the shoulder and proximal forearm were interrogated in both sagittal and transverse planes.

Figs 1 and 2 show the long head of biceps brachii (LHB) with a signal void in the muscle, deep to the pectoralis major tendon at the lateral crest of the humerus. This is distant from its usual location of the myotendinous junction of biceps long head.

Fig 3 shows a hyperechoic signal within the LHB muscle, representing a dense, retracted muscle with surrounding mixed hypoechoic signal and loss of muscle “starry night” appearance. This suggests edema and/or blood.

The biceps short head muscle appeared normal, as did the humerus, rotator cuff and shoulder/elbow joints.

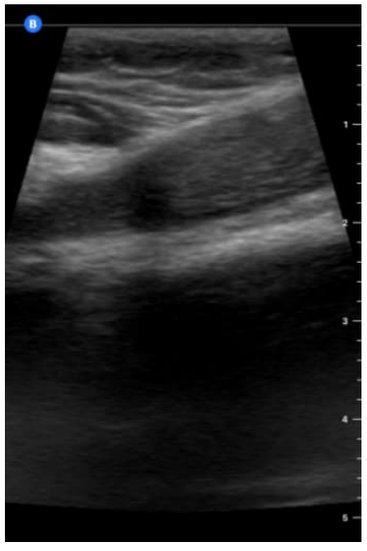


Fig.1: Long axis mid arm

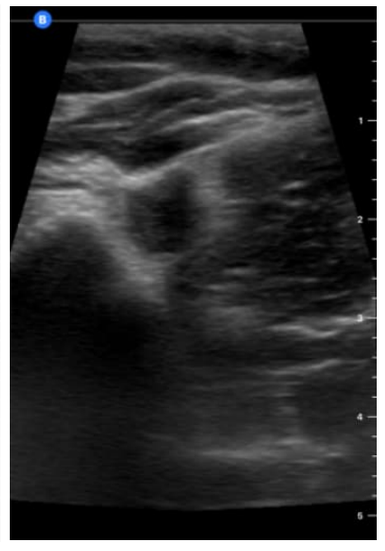


Fig.2: Short axis mid humerus

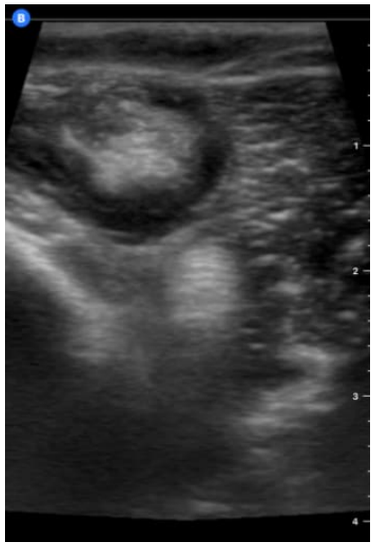


Fig. 3: Short axis distal arm

In conjunction with a physical exam, these findings are diagnostic of a ruptured biceps brachii long head with moderate muscle retraction. There was no need for further diagnostic imaging and no delay in prescribing non-surgical treatment.

Key Takeaway

“With point-of-care ultrasound, we were able to provide value-based care by offering a diagnosis immediately, obviating the need for more expensive tests or surgery.“

References

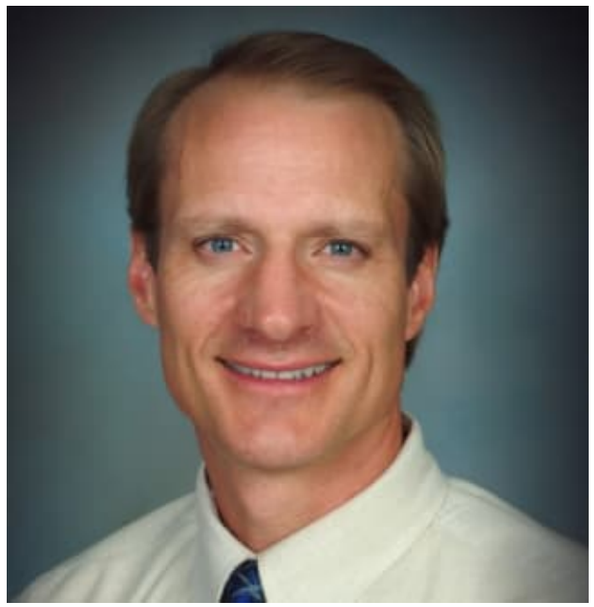
The Impact of Musculoskeletal Disorders on Americans — Opportunities for Action

http://www.boneandjointburden.org/docs/BMUSExecutiveSummary2016.pdf
Bone and Joint Initiative USA. 2016.

The National Research Council (US) and Institute of Medicine (US) Panel on Musculoskeletal Disorders and the Workplace. Washington (DC): *National Academies Press (US);* 2001.

Read J & Perko M Shoulder ultrasound: Diagnostic accuracy for impingement syndrome, rotator cuff tear, and biceps tendon pathology J Shoulder Elbow Surg 1998;7:264-71.

The author



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