

Bedside Musculoskeletal Ultrasonography

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KEYWORDS

- Soft tissue ultrasound • Tendons • Muscles • Bones • Lipomas • Pilonidal cysts
- Cellulitis • Abscess

KEY POINTS

- Musculoskeletal sonography has been useful in point-of-care patient management for many years. Recent technologic advances have brought these applications into mainstream patient care for providers in many fields.
- The superficial location of many musculoskeletal structures lends itself to detailed and accurate depiction of anatomic and pathologic conditions affecting the musculoskeletal system.
- Structures easily portrayed on musculoskeletal ultrasound (US) images include subcutaneous fat, muscle, tendons, ligaments, and joints.
- The image resolution and diagnostic power of US exceeds that of CT and MRI of the musculoskeletal system for many conditions.
- Musculoskeletal US is indispensable in guiding many bedside procedures, including abscess diagnosis and drainage, vascular access, superficial biopsies, tendon and joint injections, and aspirations.

INTRODUCTION

The value of US in evaluating the musculoskeletal system has been recognized for more than 50 years.¹ Recent advances in technology have made this tool indispensable for evaluating patients with soft tissue and extremity complaints. There are many

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benefits to adding US to the physical evaluation.^{2,3} Portable, compact units allow physicians to scan patients at the bedside, and enable physicians to use US as an extension of the physical examination.

Using point-of-care US can expedite patient evaluation and treatment.^{2,4,5} When a musculoskeletal issue is addressed, CT or MRI is commonly included in the evaluation. Bedside US allows physicians to diagnose common causes of musculoskeletal ailments in a matter of minutes and can be performed easily in patients who cannot be transported for CT or MRI. Furthermore, bedside US examinations can be repeated to monitor progression or resolution of the disease process without exposing patients to additional radiation.^{4,5}

The natural resolution provided by US of the musculoskeletal system frequently often makes contrast-enhanced CT unnecessary. Although CT delivers exquisite detail of musculoskeletal pathology, a careful US of the region can deliver the same information in a faster and more cost-effective manner (**Fig. 1**).² Obtaining a contrast-enhanced musculoskeletal CT not only exposes patients to the risks of radiation but also requires intravenous insertion and laboratory analysis of renal function

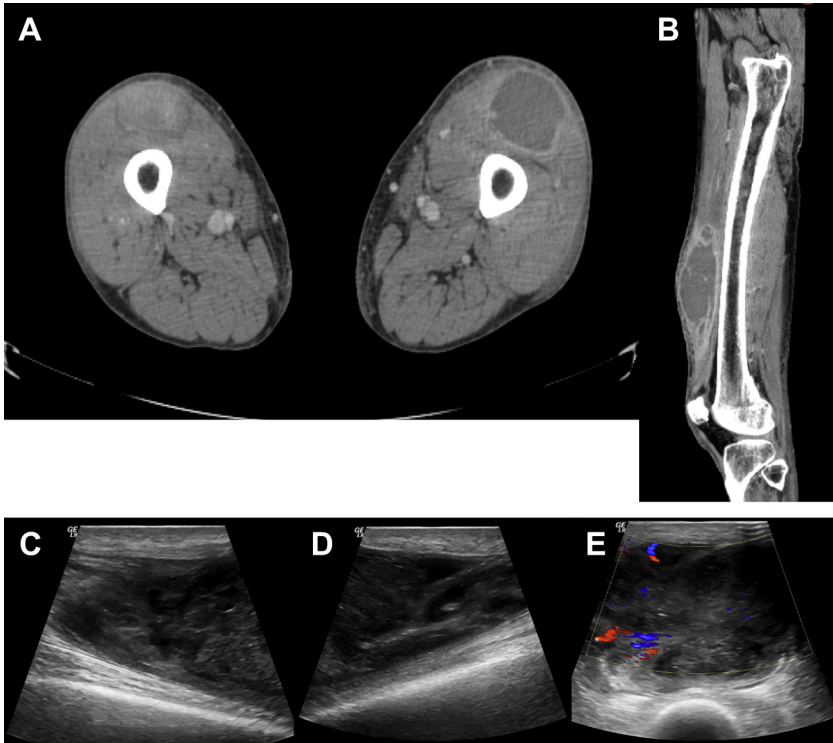


Fig. 1. Axial (A) and sagittal (B) contrast-enhanced CT images of an intramuscular abscess in the distal right quadriceps. C and D represent superior (C) and inferior (D) portions of the same area on a split screen gray scale ultrasound image, again demonstrating an intramuscular complex fluid collection anterior to the distal right femur. Note the muscle fibers separated by the fluid collection. (E) Short-axis US image of the same fluid collection, with color flow imaging, demonstrating mild peripheral hyperemia. This correlates with the CT finding of rim enhancement. Although the CT provides exquisite detail of the pathology, the same information is identified with US.

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