

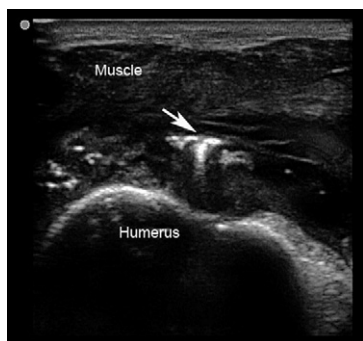
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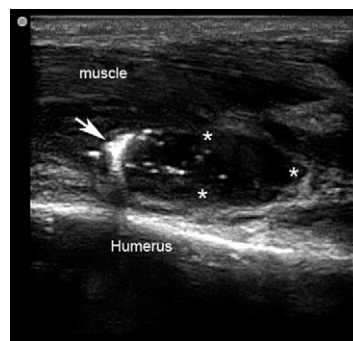
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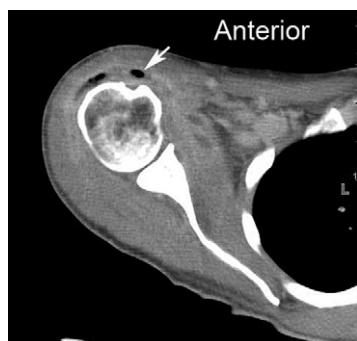
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**Figure 1.** A transverse ultrasonographic image of the proximal humerus, showing a comet-tail artifact just above the bicipital groove.



**Figure 2.** A longitudinal ultrasonographic image over the proximal humerus.



**Figure 3.** Axial CT scan through the shoulder.



**Figure 4.** Sagittal CT scan through the shoulder. Used with permission of William T. Hosek, MD, Emergency Department, Johns Hopkins Bayview Medical Center, Baltimore, MD.

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A 44-year-old woman with a history of opiate dependence presented with right shoulder pain and redness 3 days after injecting heroin into her right deltoid. On physical examination, she had a temperature of 37.9°C (100.3°F), blood pressure of 130/70 mm Hg, pulse rate of 80 beats/min, respiratory rate of 18 breaths/min, and a room air oxygen saturation of 98%. Erythema was observed over the medial aspect of her right shoulder, but there was no evidence of fluctuance or crepitus. She had full range of motion of her shoulder joint. The rest of her physical examination results were unremarkable. Radiographs of the shoulder showed no soft tissue foreign body, gas, or bony abnormality. Her basic metabolic panel result was normal, and CBC count revealed a mild increase in her WBC count ( $11 \times 10^9/L$ ). Bedside ultrasonography (Figures 1 and 2) was performed to evaluate for the possibility of an occult abscess. Figures 3 and 4 are from the patient's shoulder computed tomography (CT) scan, performed as a result of her ultrasonographic findings.

*For the diagnosis and teaching points, see page e2.*

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## IMAGES IN EMERGENCY MEDICINE

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### DIAGNOSIS:

*Abscess with gas deep to the deltoid muscle.* The ultrasonographic images (Figures 1 and 2) show an area of increased echogenicity, casting a bright, white tail located deep to the muscle and just above the bone (arrows). This is a classic ultrasonographic artifact called the “comet-tail” and can be caused by subcutaneous gas. Figure 2 shows an anechoic mass adjacent to the comet tail, suggestive of an abscess (stars). Figures 3 and 4 are from a subsequent CT, which confirmed the ultrasonographic findings before definitive treatment. In the operating suite, the abscess was located deep to the deltoid muscle, extending into the glenohumeral joint. Cultures from the wound indicated a polymicrobial, anaerobic infection caused by *Enterobacter cloacae*, *Prevotella melaninogenica*, and *Eikenella corrodens*.

The location of the abscess and gas deep to the muscle contributed to a lack of findings on physical examination. This patient was initially thought to have an uncomplicated cellulitis and without the ultrasonography would have been prescribed oral antibiotics and discharged. Bedside soft-tissue ultrasonography has been found to change management in up to 48% of patients presenting with cellulitis and a low clinical suspicion for abscess.<sup>1</sup>

### REFERENCE

1. Tayal VS, Hasan N, Norton HJ, et al. The effect of soft-tissue ultrasound on the management of cellulitis in the emergency department. *Acad Emerg Med.* 2006;13:384-388.