

Ultrasound-Guided Hip Arthrocentesis

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Ultrasound is a useful tool to evaluate and initiate diagnostic and therapeutic measures for patients presenting with hip pain suspicious for effusion.

Hip ultrasound has long been considered an effective diagnostic and interventional tool to identify hip effusions and perform guided arthrocentesis in patients with suspected septic arthritis.

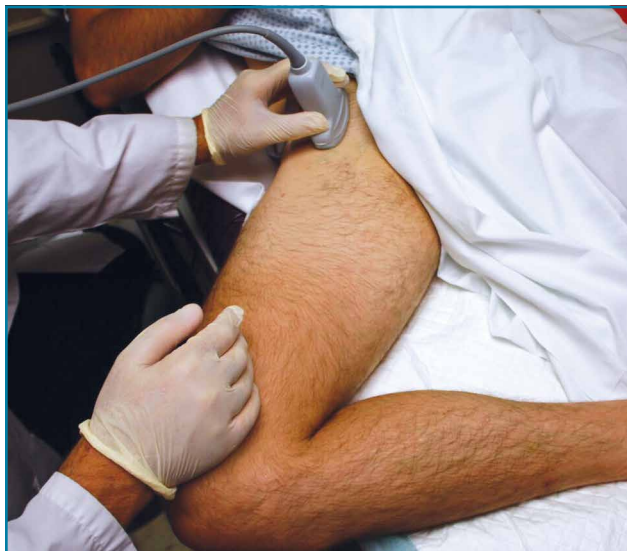


Figure 1. Photo demonstrates the frog leg position for visualizing the hip joint. The curvilinear probe should be angled obliquely toward the umbilicus at a 30° to 45° angle.

Although imaging and interventional techniques are typically performed by interventional radiologists, several case reports support the use of these techniques by the emergency physician (EP) in both pediatric and adult patients presenting with hip pain.^{1,2}

Hip ultrasound permits rapid visualization of the joint space to assess the presence of a hip effusion, and provides the opportunity for the clinician to quickly perform hip arthrocentesis and to obtain synovial fluid for analysis—the current gold standard of diagnosis. The current literature shows treatment of effusion in the adult hip via ultrasound-guided interventional methods to be more convenient and less painful than traditional fluoroscopic-guided techniques, and to have the same procedural success rate.³ With the increasing utilization of point-of-care (POC) ultrasound in the ED, ultrasound-guided hip arthrocentesis has become a powerful tool in the EP's armamentarium to aid in evaluating and treating patients in the ED presenting with hip pain.

Imaging Technique

To perform an ultrasound-guided arthrocentesis, the patient should be placed in the supine position, with both knees bent and the hips externally rotated in the frog leg position (**Figure 1**). A curvilinear probe is then

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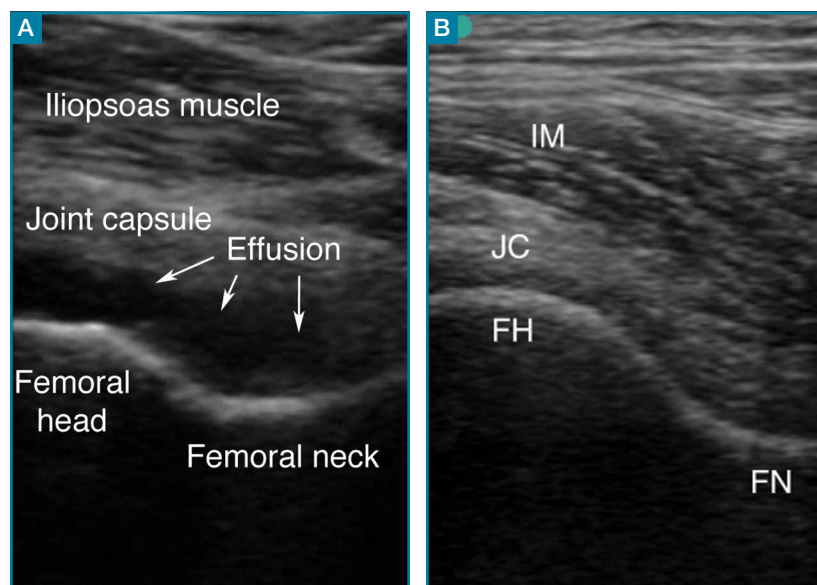


Figure 2. (A) Ultrasound image of a right hip displays the femoral head, femoral neck, iliopsoas muscle, and joint capsule with a concurrent effusion. (B) Ultrasound image visualizing normal hip anatomy.

placed on the skin anterior to the hip, just inferior to the inguinal ligament, lateral to the femoral vessels, and angled approximately 30° to 45° toward the umbilicus. Placement of the probe in this manner should allow visualization of the femoral neck in the long axis, revealing the joint capsule. An effusion will present as a hypoechoic area underneath the capsule of the hip that will appear as a dense hyperechoic fibrous structure (**Figure 2a**); the synovial fluid is typically not visible (**Figure 2b**).

Arthrocentesis

When an effusion is present, arthrocentesis is warranted. To perform this procedure, the femoral vessels should be identified inferior to the inguinal ligament and avoided laterally. The hip should be prepared in a sterile fashion and a lubricated probe should be

placed in a sterile dressing with a cord cover. The effusion should be visualized again, and the area should be anesthetized superficially and deeply with local anesthetic, aspirating prior to infusing at the deeper levels. An 18-gauge spinal needle affixed to a 20-mL syringe should be introduced and advanced while aspirating under direct visualization through the capsule of the hip into the effusion. The fluid is then aspirated and sent for laboratory analysis.

Summary

A delayed diagnosis of hip effusion and failure to initiate prompt treatment are the most common causes of late complications of septic arthritis.⁴ Point-of-care diagnostic and interventional ultrasound of the hip permit instant visualization and implementation of immediate diagnostic and therapeutic

measures, which decrease morbidity in adult patients with septic arthritis. Hip arthrocentesis with subsequent synovial fluid analysis, the gold standard of diagnosis, has traditionally been performed by radiology services. Recent literature, however, has shown performance of these ultrasound-guided techniques by EPs to be safe and efficient, facilitating time to treatment.

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