

# Emergency Department Evaluation and Treatment of Acute Hip and Thigh Pain



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## KEYWORDS

- Hip pain • Hip fracture • Hip dislocation • Emergency medicine • Ultrasound
- Avascular necrosis • Tourniquet

## KEY POINTS

- Ultrasound guidance for hip aspirations and femoral nerve blocks is safe and efficient for emergency department use.
- High index of suspicion is necessary for often missed diagnoses such as occult femoral neck fracture and those diagnoses associated with high morbidity such as compartment syndrome of the thigh.
- Application of tourniquets for massive extremity hemorrhage is safe and life saving.

## INTRODUCTION

Hip and thigh pain are common presentations to the emergency department (ED). Etiologies range from benign to life threatening, and disposition varies from outpatient follow-up to emergent operative management. Hip fractures resulted in 306,000 hospital visits in 2010. Although the incidence of hip fractures is decreasing, the overall prevalence continues to increase because of an aging population. People older than 65 suffer fractures at a rate of 0.6% per year, a rate that increases to 2% per year for persons older than 85.<sup>1-3</sup> One in 5 patients suffering a hip fracture will die within a year.<sup>4</sup> Additionally, the emergency physician (EP) must consider entities such as avascular necrosis (AVN), compartment syndrome, and muscular disruption. This article reviews patterns and complications of acute hip and thigh injuries and clinically relevant diagnostic, anesthetic, and treatment options that facilitate timely, appropriate, and effective ED management.

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Disclosures: None.

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## APPROACH

The differential diagnosis for hip pain is broad, and suspicion for specific disease is critical. History should include past surgeries, typical function and activity, recent lifestyle changes, and mechanism of injury. Physical examination should be diligent with specific muscle group and sensory testing. For atraumatic pain, the differential diagnosis includes degenerative and chronic mechanical, autoimmune, infectious, anatomic, and vascular etiologies; neoplastic etiologies; overuse; and occult trauma. Special attention should be paid to often missed entities such as stress and occult fractures, Lyme arthritis, AVN, prostatitis, and psoas abscess and “can’t miss” diagnoses such as septic arthritis. Imaging will typically identify the cause after a traumatic event, but elderly and vulnerable populations may report or exhibit vague complaints.

The diagnosis may not involve the hip itself. Pain may refer to the hip from pelvic sources such as prostatitis or prostate cancer, urinary tract infections, pelvic inflammatory disease, or a psoas abscess.<sup>5,6</sup> Knee pain also frequently refers to the hip, particularly in children and the elderly, and conversely traumatic knee pain necessitates a close evaluation for hip pathology.<sup>7,8</sup>

## TRAUMA

### *Epidemiology and Mechanism*

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Hip fractures and dislocations are common entities in the ED. The presence of one injury should raise suspicion for the other. Fractures of the femur may include the femoral head, neck, trochanters, or shaft. Timely identification is important, as delayed diagnosis is associated with increased mortality, surgical intervention, duration of hospitalization, or nursing home residency and dramatically decreased functionality. A delay in treatment of just 2 days doubles the mortality rate, and a missed occult fracture can convert necessary treatment from percutaneous fixation to open hemiarthroplasty. As always, the most commonly missed fracture in the ED is “the second one,” and the EP should not cease investigation at the obvious injury.<sup>9–11</sup>

Leading mechanisms of injury vary by age. A younger patient requires a significant mechanism such as a fall from height or motor vehicle collision. Elderly or chronically ill patients may present after a more subtle insult. Vulnerable populations such as those suffering from deconditioning, osteoporosis, poor nutrition, vision impairment, or decreased balance all are more likely to sustain an injury and with it the increased risk of morbidity and complications.<sup>12</sup> Patient vulnerability or a suspicious mechanism should prompt advanced imaging, as up to 11% of patients with suspected fractures and negative radiographs will have delayed diagnosis of an injury.<sup>13,14</sup> A low threshold for the use of computed tomography (CT) or MRI is therefore warranted.

### *Relevant Anatomy*

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The femoral neck and head articulate the axial force of weight from the shaft of the femur into the axis of the pelvis. With its angle and compression, the femoral neck is a uniquely vulnerable point focusing at Ward’s triangle, where femoral neck fractures most commonly occur. It is formed by a paucity of strain-bearing trabeculations. The medial and lateral circumflex arteries arise from the profunda femoris artery and anastomose around the femoral neck. They are particularly vulnerable to disruption, which causes an AVN. The femoral head runs anteromedially to the femoral nerve and the sciatic nerve runs posterior to it. Posterior dislocations may be complicated by sciatic nerve injury. Femoral nerve injury will present with quadriceps weakness and diminished sensation to the anterior thigh and medial shin.

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