Two Wrongs Make a Right: The Importance of Clinical Correlation

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A 66-yr-old obese man with no significant medical history was referred to the physiatry clinic for a pes anserine bursa injection. The patient complained of 2–3 wks of insidious right medial knee pain. The pain was sharp, located on the proximal tibia, exacerbated with weight-bearing, and 8/10 in severity. A preprocedural physical examination yielded exquisite point tenderness proximal to the pes anserine, with negative special testing. Previous radiographs revealed mild right tricompartmental narrowing. An in-office ultrasound was negative for pes anserine tendinopathy or bursitis. It revealed cortical discontinuity distal to the medial joint line at the area of maximal tenderness, concerning for a fracture (Fig. 1). A magnetic resonance imaging was ordered, which demonstrated osteopenia and subchondral signal intensity at the medial tibial condyle with reactive edema, suggesting an insufficiency fracture (Fig. 2). Upon comparing with the magnetic resonance imaging, it was determined that the cortical discontinuity on ultrasound was likely an osteophyte, as the fracture was too deep within the joint to be visualized on ultrasound. The patient was made nonweight-bearing for 4 wks. At his 4-wk follow-up, the patient was pain-free, his magnetic resonance imaging showed fracture healing, and he progressed to weight-bearing as tolerated.

Insufficiency fractures arise when normal or excessive loads occur on abnormal bone. They commonly present with pain upon activity, point tenderness, and occur in the lower limbs 95% of the time. The most common risk factor is osteoporosis. Early diagnosis is critical to help prevent remodeling, nonunion fractures, and loss of function. Initial x-rays are common; however, they miss up to 85% of stress fractures early on. Magnetic resonance imaging has 100% sensitivity and 85% specificity, but they are expensive and inaccessible. Ultrasonography is accessible, cost-effective, and can detect superficial fractures of the tibia at a sensitivity of 90% and specificity of 96%. The hallmark findings on ultrasound include surrounding tissue hyperchogenicity, periosteum thickening, cortical irregularity, and increased periosteal color Doppler flow. Cortical irregularities must be differentiated from physeal plates, cortical erosions, posterior acoustic shadowing from sesamoid bones, ossicles, osteophytes, and postsurgical changes.

This case highlights the importance of a preprocedural clinical examination, as palpation and ultrasound helped avoid unnecessary intervention. Ultrasound is a useful clinical tool for detecting fractures, yet we must be cautious when interpreting cortical irregularities, as other structures appear similarly. Ultimately, when clinical uncertainty exists, multiple imaging modalities and a good physical examination help attain the correct diagnosis and provide optimal care.

REFERENCES


FIGURE 1. Ultrasound imaging of the suspected fracture in the long axis. Arrows indicate the cortical discontinuity, which is likely an osteophyte.
FIGURE 2. Initial coronal magnetic resonance imaging. Arrows indicate the subchondral lucency at the medial tibial condyle with reactive edema.