

Differential Diagnosis of Acute, Post-traumatic Ankle Pain

Cause	Clinical Features	Imaging Findings	Collected Cases
Distal tibia, fibula, or combined tibia and fibular fracture with or without ankle dislocation	Pain and tenderness along the fracture site(s); swelling; MOI: twisting injury or fall.	Discontinuous cortex and displaced bone fragment on XR, CT, and MR; abnormal marrow signal on MR.	13 tib-fib fxs; 4 fx/dislocations
Talus fracture	Pain and tenderness along the fracture site; MOI: “foot on the brake” during MVA.	Discontinuous cortex and displaced bone fragment on XR, CT, and MR; abnormal marrow signal on MR.	
Ankle sprain	Pain and tenderness along the injured ligament; swelling; MOI: usually inversion with lateral ankle sprain, infrequently eversion with medial ankle sprain.	(Usually not performed.) Soft tissue swelling on XR, CT, and MR; discontinuous ligament on MR.	7 ankle; 1 hindfoot
Tendon tear	Pain of the involved tendon; palpable gap in the tendon; MOI: twisting injury or “pushing off” (Achilles).	Soft tissue swelling on XR, CT, US, and MR; swelling, abnormal SI, or discontinuous tendon on US and MR.	2 Achilles; 1 PTT
ABBREVIATIONS			
CT = computed tomography; MOI = mechanism of injury; MR = magnetic resonance; MVA = motor vehicle accident; PTT = posterior tibial tendon; SI = signal intensity; US = ultrasound; XR = plain film radiography			

Differential Diagnosis of Ankle Pain (Not Acute, Post-traumatic)

Cause	Clinical Features	Imaging Findings	Collected Cases
Bone Abnormalities			
Stress fracture	Overuse syndrome; history of osteoporosis.	Focal periosteal reaction or lucency on XR, CT, and MR; abnormal marrow SI on MR.	5
Hypertrophic pulmonary osteoarthropathy	Bilateral pain; associated lung tumor.	Bilateral periostitis on XR, CT, and MR; abnormal marrow SI on MR.	2
Intra-articular Tissue Abnormalities (ankle, subtalar, talonavicular)			
Osteoarthritis	Pain with motion alleviated by rest; tenderness over the joint; prior trauma; osteoarthritis of other joints.	Osteophytes, joint space narrowing, subchondral sclerosis or cysts, joint effusion on XR, CT, and MR; focal articular cartilage defects on MR, CT-arthrography, and MR-arthrography.	4
Rheumatoid arthritis	Loss of ankle motion; positive RF; positive anti-CCP; rheumatoid arthritis of other joints.	Loss of joint space, erosions on XR, CT, and MR; abnormal marrow SI MR.	
Crystal arthropathy	Loss of motion; swelling; crystals on joint aspiration; arthropathy of other joints.	Chondrocalcinosis on XR, CT; secondary osteoarthritis on XR, CT, and MR	
Osteochondral lesion of the talar dome	Focal pain along the talus.	Contour abnormality or focal lucency on XR and CT; abnormal SI on MR.	4
Infectious arthritis	Swelling; fever and elevated WBC, ESR, or CRP.	Swelling from joint effusion, loss of joint space, periostitis (with osteomyelitis) on XR, CT, and MR; abnormal marrow SI on MR	3
Juxta-articular Tissue Abnormalities			
Tendinopathy including chronic tendon tear	Pain of the affected tendon (e.g., posterior tibial tendon, peroneal tendons); loss of function from the	Swelling on XR, CT, US, and MR; swelling, abnormal fibers, or discontinuity of the tendon and/or peritendinous fluid on MR and US.	4 Achilles; 2 anterior tibial tendon; 2 peroneal tendons; 1 posterior tibial tendon

	tendon.		
Bursitis	Pain and swelling at the location of the bursa; relief of pain with bursal injection.	Soft tissue swelling on XR, CT, US, and MR; focal fluid collection on US and MR.	1 retrocalcaneal
Sinus tarsi syndrome	Anterolateral ankle pain; sensation of foot instability.	Normal XR and CT; replacement of sinus fat and obliteration of ligament definition on MR	1
Reflex sympathetic dystrophy (CRPS)			1
Ganglion			1
ANKLE PAIN WITH NO IMAGING FINDINGS ON ANKLE IMAGING STUDIES			
Lumbar spine disease (e.g. disc herniation, spinal stenosis); referred knee pain; tibia or fibular stress fracture proximal to the field of view; aortoiliac insufficiency.			
ABBREVIATIONS			
CCP = cyclic citrullinated peptide; CPPD = calcium pyrophosphate dehydrate crystal deposition disease; CRP = c-reactive protein; CRPS = complex regional pain syndrome; CT = computed tomography; ESR = erythrocyte sedimentation rate; MR = magnetic resonance imaging; RF = rheumatoid factor; US = ultrasound; WBC = white blood cell count; XR = plain film radiography;			

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