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 Melanie A. Hopper and Philip Robinson
- Acute or repetitive trauma to the ankle can result in painful restriction of movement caused by impingement of soft tissue and osseous structures. Ankle impingement syndromes are classified according to their anatomic relationship to the tibiotalar joint. This article reviews the relevant anatomy, etiology, and clinical features of ankle impingement syndromes, and demonstrates the potential imaging findings and discusses management of each for these conditions.
- MR Arthrography of the Ankle: Indications and Technique** 973
 Luis Cerezal, Eva Llopis, Ana Canga, and Alejandro Rolón
- MR arthrography has become an important tool for the assessment of a variety of ankle disorders. MR arthrography permits more sensitive imaging of suspected intra-articular pathology in cases in which conventional MR imaging is either insufficient or inadequate for diagnosis or treatment planning. The main indications for MR arthrography are the evaluation of ligamentous injuries, impingement syndromes, cartilage lesions, osteochondral lesions of the talus, loose bodies, and several synovial joint disorders. Indirect MR arthrography can be a useful adjunct to conventional MR imaging and may be preferable to direct MR arthrography in those cases in which an invasive procedure is contraindicated or image guidance is not available.
- Osteochondral Lesions About the Ankle** 995
 Ketan N. Naran and Adam C. Zoga
- Osteochondral lesions (OCLs) about the foot and ankle often manifest clinically as prolonged joint pain after trauma, often an ankle sprain, which is refractory to conventional, conservative therapeutic treatment. Noncontrast MR imaging is the standard of care imaging modality for diagnosing and classifying osteochondral lesions, but equivocal or difficult lesions can be assessed more specifically with direct MR arthrography or in conjunction with multidetector CT. Once an OCL has been identified, the imager should make every effort to determine whether it is stable or potentially unstable.
- Postoperative Imaging of the Total Ankle Arthroplasty** 1003
 Joseph M. Bestic, Laura W. Bancroft, Jeffrey J. Peterson, and Mark J. Kransdorf
- Promising results reported with currently available total ankle arthroplasty designs have led to an increased use of such devices as an alternative to ankle arthrodesis.

Despite recent improvements in implant design and surgical technique, complications associated total ankle arthroplasty devices continue to be reported. Postoperative evaluation of total ankle arthroplasties relies on a combination of clinical and radiologic assessment. Familiarity with commonly used current total ankle arthroplasty devices and appropriate postoperative imaging techniques is imperative for effective characterization of the expected postoperative imaging appearances of such devices and facilitating detection of potential postoperative complications.

Imaging of Tarsal Coalition

1017

Julia Crim

A coalition is a congenital bony, cartilaginous, or fibrous connection (called a bar) between two or more bones. Coalitions are clinically significant because they prevent normal joint motion. Tarsal coalition may be difficult to identify on clinical and imaging evaluation. Given the high prevalence of coalition, radiologists must be alert to the often subtle imaging findings.

Ultrasound of the Hindfoot and Midfoot

1027

David P. Fessell and Jon A. Jacobson

Ultrasound has demonstrated great utility and accuracy for imaging the hindfoot and midfoot. Its advantages include its capacity to allow evaluation during dynamic maneuvers, imaging of patients who cannot undergo MR imaging, and real-time evaluation of the symptomatic site. It can also reveal abnormalities that are not apparent during static imaging. This article makes the case that radiologists should continue to be experts in all aspects of musculoskeletal imaging, including ultrasound or the business will be taken over by other specialties. If musculoskeletal ultrasound is lost, additional modalities such as MR imaging may be lost as well. Radiologists, with their expertise and years of training, are uniquely suited to apply this versatile modality to foot and ankle pathology.

Imaging of Lisfranc Injury and Midfoot Sprain

1045

Stephen Hatem

Injuries to the tarsometatarsal joint and of the Lisfranc ligament present a challenge. They are difficult to diagnose and outcomes worsen as diagnosis is delayed. As a result, radiologists and clinicians must have a clear understanding of the relevant nomenclature, anatomy, injury mechanisms, and imaging findings.

MR Imaging and Ultrasound of Metatarsalgia—The Lesser Metatarsals

1061

Julie M. Gregg, Timothy Schneider, and Paul Marks

Metatarsalgia is a common problem for many in the community. The condition includes many different entities, such as interdigital neuroma, synovitis or metatarsophalangeal joint instability, Freiberg infarction, stress fractures, and systemic disorders. Many patients presenting with metatarsalgia have a combination of

diagnostic abnormalities. The key is to establish the principal pathology and from there construct an appropriate treatment regimen.

Imaging of Painful Conditions of the Hallucal Sesamoid Complex and Plantar Capsular Structures of the First Metatarsophalangeal Joint 1079

Timothy G. Sanders and Sharik Kabir Rathur

Numerous injuries and pathologic conditions can involve the hallucal sesamoid complex and plantar capsular structures of the first metatarsophalangeal joint. Although clinical history and presentation are important in developing a reasonable differential diagnosis, there is often considerable overlap in the clinical presentation and physical findings between various pathologic entities. Imaging plays an important role in narrowing the differential diagnosis and in directing appropriate therapy. This article reviews the normal anatomy of the hallucal sesamoid complex and the plantar capsular structures of the first metatarsophalangeal joint. Typical clinical presentations are discussed for various pathologic entities that involve this area of the hallux, followed by a summary of the various imaging findings that occur when using conventional radiography, nuclear medicine bone scan, CT and MR imaging. Finally, general treatment guidelines are discussed for each entity.

Imaging of Soft Tissue Lesions of the Foot and Ankle 1093

Laura W. Bancroft, Jeffrey J. Peterson, and Mark J. Kransdorf

Differential diagnosis of soft tissue lesions of the foot can be narrowed with imaging. The cystic nature of ganglia, synovial cysts, and bursitis can be confirmed with MR imaging or sonography. Location and signal characteristics of noncystic lesions can suggest Morton's neuroma, giant cell tumor of tendon sheath, and plantar fibromatosis. Synovial-based lesions of the foot and ankle can be differentiated based on presence or absence of mineralization, lesion density, signal intensity, and enhancement pattern. Knowledge of the incidence of specific neoplasms of the foot and ankle based on patient age aids in providing a limited differential diagnosis.

Current Concepts in Imaging Diabetic Pedal Osteomyelitis 1105

Andrea Donovan and Mark E. Schweitzer

Diabetic pedal osteomyelitis is primarily a manifestation of vascular insufficiency with resultant tissue ischemia, neuropathy, and infection. Nearly all cases of pedal osteomyelitis arise from a contiguous ulcer and soft tissue infection. MR imaging is the modality of choice to assess for the presence of osteomyelitis and associated soft tissue complications, to guide patient management, and to aid in limited limb resection.

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