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<p>The complexity of its anatomy coupled with the biomechanics of the Achilles tendon may explain the frequency of injury to this structure. Its unique characteristic of the muscle crossing three joints (knee, ankle, and subtalar joints) makes it more susceptible to injury than muscles that span a single joint. A better understanding of the contributing pathologic conditions associated with functional shortening of the gastroc-soleus complex and its effects on the normal biomechanics of the foot and ankle may improve the treatment of the many and varied pathologies that occur within the tendon itself and the associated abnormalities that occur with a tight Achilles tendon.</p>	
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<p>Contracture of the gastrocnemius-soleus complex with equinus deformity is a common hindfoot condition. In children, it is frequently associated with neuromuscular conditions such as cerebral palsy. In the adult population, it is linked to numerous pathologies such as adult-acquired flatfoot, diabetic neuropathic ulcers, and plantar fasciitis. With the medial column reduced, failure to achieve 10° of passive ankle dorsiflexion with the knee flexed and extended suggests a contracture. This article reviews the anatomical and evolutionary basis for human foot structure, implications of tight gastrocnemius, and specific disease states. Operative releases for lengthening, including proximal gastrocnemius recession, tendo-Achilles lengthening, and endoscopic recession, are detailed.</p>	
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<p>Insertional Achilles tendinopathy can be a painful debilitating condition that should initially be treated non-operatively. If pain becomes chronic and debilitating, despite appropriate conservative treatment, debridement of the diseased portion of the Achilles tendon and removal of the impinging calcaneal prominence and transfer of the flexor hallucis longus through a single incision can be a reliable pain relieving procedure with relatively high patient satisfaction.</p>	

Surgical Treatment of Non-Insertional Achilles Tendinitis

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G. Andrew Murphy

Noninsertional Achilles tendinitis is a distinct clinical entity, frequently characterized by swelling, pain, and lower limb dysfunction. This condition can be frustrating to treat, for the patient and the physician alike, as reflected in the various treatments, both conservative and surgical, that have been described. Although many patients with Achilles tendinitis can be successfully treated with nonoperative methods, persistent symptoms require surgical treatment, such as tenotomy, debridement, or repair.

Conservative Treatment of Achilles Tendinopathy: Emerging Techniques

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Jason E. Lake and Susan N. Ishikawa

Achilles tendinopathy is a painful condition that occurs commonly in both active and inactive individuals. It seems that this condition is painful as a result of ingrowth of neural structures and neovessels leading to poor healing, rather than from inflammatory mediators. Traditional conservative measures are often successful. There is a subset of patients who fail to respond to these measures, however, and this has led to the investigation of newer conservative techniques. This article provides a review of many of the emerging techniques in the treatment of Achilles tendinopathy.

Non-Surgical Management of Achilles Ruptures

675

Giselle Tan, Brian Sabb, and Anish R. Kadakia

Incidence of Achilles tendon injury has increased as people continue to be active in their later years. Although acute rupture of the Achilles tendon is most commonly diagnosed using history and physical examination, improvements in magnetic resonance and ultrasound imaging have led to their routine use in evaluating these injuries. Non-operative versus operative management of acute Achilles tendon ruptures has been the subject of much controversy in the current literature, especially in light of non-operative treatment with functional bracing. This article highlights the current controversy and outlines the rationale for nonsurgical treatment of acute Achilles tendon ruptures.

Minimal Incision Techniques for Acute Achilles Repair

685

Mark S. Davies and Matthew Solan

This article reviews minimal incision techniques in the treatment of acutely ruptured Achilles tendon and the results that can be anticipated from these methods. However, lack of robust prospective randomized studies on the treatment of Achilles tendon rupture makes it impossible to draw conclusions on optimal treatment strategies. The bulk of the evidence available suggests that surgical repair reduces rerupture rates compared with non-operatively treated tendon ruptures. Surgery does have potential

complications, but as outlined in the article, using a mini-open or percutaneous technique of repair might result in highly satisfactory outcomes with acceptably low complication rates.

Open Repair of Acute Achilles Tendon Ruptures 699

Seth Rosenzweig and Frederick M. Azar

Although the Achilles tendon is the strongest in the body, it also is the most often ruptured. Achilles tendon rupture most often occurs during sports activities in middle-aged men. Operative repair of a ruptured Achilles tendon can be accomplished with a variety of techniques, ranging from open repair, to minimally invasive technique, to endoscopic-assisted repair. This article focuses on open repair of acute Achilles tendon rupture. Surgical techniques, rehabilitation protocol, and the authors' preferred method are described.

Chronic Achilles Tendon Ruptures 711

Thomas G. Padanilam

Chronic Achilles ruptures present a significant challenge for the treating physician. These patients often have marked impairment of functional activities and usually require surgical treatment to optimize outcome. This article reviews some of the methods that have been described to treat the chronic or neglected Achilles tendon rupture. The methods that have been used include gastrocnemius advancement, fascial turndown flaps, local tendon transfers, free tissue transfer, and use of synthetic grafts. There are no comparative data to guide evidence-based decision making in regard to choosing between treatment options.

Tendon Transfers for Achilles Reconstruction 729

Johnny L. Lin

Tendon transfers are commonly used in the foot and ankle to restore function in neglected ruptures, reconstruct degenerated tendons, and correct deformity. The Achilles tendon is commonly afflicted by these problems because of the dominant role it plays in the mechanics of gait and running and its inherently poor blood supply. This article discusses the general principles of tendon transfers with regard to Achilles tendon function, the surgical techniques involved, and published results using these techniques. The goal is to provide the orthopedic foot and ankle surgeon with a wide variety of techniques to solve both the straightforward Achilles tendon problem as well as the difficult revision case.

Complications of the Treatment of Achilles Tendon Ruptures 745

Andy Molloy and Edward V. Wood

Since the first reports in the medical literature of treatment of the Achilles tendon, complications have been recognized from both non-operative and

operative techniques. These include tendon rerupture, sural nerve morbidity, wound healing problems, changes in tendon morphology, venous thromboembolism, elongation of the tendon, complex regional pain syndrome, and compartment syndrome. This article delineates the incidence for each of these complications, with differing techniques, methods of avoiding these complications and treatment methods if they occur.

Posterior Calf Injury**761**

John T. Campbell

Acute injuries of the Achilles tendon are common among athletes and non-athletes alike. Injuries of other posterior calf muscles are far less common but should be considered in the differential, to ensure proper diagnosis and treatment of patients with calf injuries. This article focuses on these calf injuries, including injuries of the gastrocnemius, plantaris, soleus, and flexor hallucis longus, which may occasionally be mistaken for Achilles tendon disorders.

Achilles Tendon Rehabilitation**773**

Adam C. Strom and Mark M. Casillas

The operative management of acute Achilles tendon rupture marks the beginning of a comprehensive rehabilitation program. The goals of the rehabilitation program start with the reduction of pain and swelling and the recovery of ankle motion and power. They conclude with the restoration of coordinated activity and safe return to athletic activity. The rehabilitation protocol is directed by the injury and the quality of the repair, along with the patient's age, medical and social history, and athletic inclination. The protocol is dynamic and responsive to changing clinical findings.

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