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John D. Logue

Understanding of the adult acquired flatfoot deformity (AAFD) continues to grow, as does the sophistication of orthotics and braces used to treat this disorder. This article reviews these advances and some of the devices commonly used to treat patients who have AAFD. Additionally, the recent proliferation and potential implications of mass-manufactured products is discussed.

Posterior Tibial Tendon Rupture: A Refined Classification System 233
Eric M. Bluman, Craig I. Title, and Mark S. Myerson

Since Johnson's and Strom's classification system in 1989 an increasingly complex array of deformities of the foot has been recognized in association with PTTR. This wide spectrum of deformity is not completely addressed by the current classification system, nor does it leave sufficient room for variation within a given treatment stage. Taking into account ankle and hindfoot valgus, forefoot supination, forefoot abduction, and medial column instability we present and discuss a refined classification for PTTR. Potential treatments for each stage are provided.

The Flexible Flatfoot in the Adult 251
Eric Giza, Gerard Cush, and Lew C. Schon

The adult acquired flatfoot deformity is characterized by flattening of the medial longitudinal arch with insufficiency of the supporting posteromedial soft tissue structures of the ankle and hindfoot. While the etiology of this deformity can be arthritic or traumatic in nature, it is most commonly associated with posterior tibial tendon dysfunction (PTTD). By one estimate, PTTD affects approximately five million people in the United States. The clinical presentation of adult flatfoot can range from a flexible deformity with normal joint integrity to a rigid, arthritic foot.

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Matthew DiPaola and Steven M. Raikin

Posterior tibial tendon dysfunction (PTTD) has been approached with a multitude of surgical techniques. This article outlines the current understanding of the flexor digitorum longus transfer and flexor hallucis longus transfer in the context of various osteotomy techniques for the correction of stage II PTTD. Pertinent clinical literature and scientific evidence will also be compared and analyzed.

Medial Column Procedures in the Acquired Flatfoot Deformity 287
Bruce E. Cohen and Field Ogden

This article focuses on the medial column procedures for the treatment of the acquired flatfoot. When performing a medial column procedure alone, in combination with soft tissue reconstruction, or with concomitant lateral bony procedure, the deformity being addressed should include significant abduction or collapse through the talonavicular (TN), naviculocuneiform (NC), or tarsometatarsal (TMT) joints. The procedures covered in this article include arthrodesis of the TN, NC, and metatarsocuneiform (MTC) joints, together or in isolation. Osteotomies of the cuneiforms will also be addressed.

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Andrew K. Sands and Joseph P. Tansey

The guiding principle behind the lateral column lengthening is to bring the forefoot and midfoot out of abduction while using the foot's natural bony architecture to drive the hindfoot into inversion and dorsiflexion. This correction effectively negates the loss of

normal biomechanics created by the loss of the dynamic function of the posterior tibial tendon. The purpose of this article is to review the lateral column lengthening procedure through a detailed explanation of the operation, the postoperative care, and the pitfalls and complications of the procedure.

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Cedric J. Tankson

Stage II posterior tibial tendon dysfunction (PTTD) is characterized by an incompetent posterior tibial tendon that results in a flexible pes planovalgus deformity. As the hindfoot drifts into valgus, compensatory varus develops in the forefoot. Alternatively, in some cases medial column instability can result in primary forefoot varus that drives the hindfoot into valgus. Recently, there has been increasing awareness of the importance of forefoot varus in PTTD.

Management of the Rigid Adult Acquired Flatfoot Deformity

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Rommel Francisco, Christopher P. Chiodo,
and Michael G. Wilson

The optimal management of the adult acquired flatfoot requires careful assessment of the deformity. Although it is essential to recognize the location and degree of malalignment, it is of equal importance to appreciate whether the deformity is flexible or rigid. For patients undergoing surgery for a flexible flatfoot, various soft tissue procedures and bony osteotomies may be used to restore alignment while preserving joint motion. However, for patients undergoing surgery for a rigid deformity, such procedures are indicated less often, and arthrodesis is usually necessary.

Subtalar Arthroereisis: A New Exploration of an Old Concept

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Lew C. Schon

Subtalar arthroereisis as an adjunct procedure may hold promise for patients who have mild and more severe variants of posterior tibial tendon dysfunction (PTTD). The biomechanics of the implant function have not been fully elucidated, and questions remain about the best clinical indications for the device. This article reviews the limited existing literature and describes the author's personal experience testing subtalar arthroereisis in the laboratory and using the implant clinically for correction of adult flexible flatfoot.

Stage IV Posterior Tibial Tendon Rupture

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Eric M. Bluman and Mark S. Myerson

Adult acquired flatfoot deformity progresses through well defined stages as set out by Johnson and Strom. Myerson modified this classification system with the addition of a fourth, more advanced stage of the disease. This stage describes the involvement of the tibiotalar joint in addition to the hindfoot malalignment seen in stages II and III. This most advanced stage is comprised of a hind-foot valgus deformity, resulting from degeneration of the posterior tibial tendon, with associated valgus tilting of the talus within the mortise. The deformity at the tibiotalar joint may or may not be rigid. Although rigid deformities are still best treated with fusions of the ankle and hindfoot, supple tibiotalar deformity may be treated with joint sparing procedures involving reconstructive procedures of the foot and deltoid ligaments.

The Role of Isolated Gastrocnemius and Combined Achilles Contractures in the Flatfoot

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Christopher W. DiGiovanni and Phillip Langer

In the absence of bony deformity, ankle equinus is generally the result of shortening within the gastrocnemius-soleus complex. Restriction of ankle dorsiflexion as a proxy for equinus contracture has been linked to increased mechanical strains and resultant foot and ankle pathology for a long time. This entity has many known causes, and data suggest it can manifest as either an isolated gastrocnemius or combined (Achilles) contracture. Numerous disorders of the foot and ankle have been linked with such "equinus disease", and although some of these relationships remain controversial, a reasonably convincing relationship between equinus contracture and the development of flatfoot exists. What is still perhaps most misunderstood is the temporal association between these two pathologies, and hence higher levels of evidence are needed in the future to define more precisely the interplay between flatfoot deformity and gastrocnemius-soleus tightness.

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