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## Adult Acquired Flatfoot Deformity: Anatomy, Biomechanics, Staging, and Imaging Findings

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### Abstract

Adult acquired flatfoot deformity (AAFD) is a common disorder that typically affects middle-aged and elderly women, resulting in foot pain, malalignment, and loss of function. The disorder is initiated most commonly by degeneration of the posterior tibialis tendon (PTT), which normally functions to maintain the talonavicular joint at the apex of the three arches of the foot. PTT degeneration encompasses tenosynovitis, tendinosis, tendon elongation, and tendon tearing. The malaligned foot is initially flexible but becomes rigid and constant as the disorder progresses. Tendon dysfunction commonly leads to secondary damage of the spring ligament and talocalcaneal ligaments and may be associated with injury to the deltoid ligament, plantar fascia, and other soft-tissue structures. Failure of multiple stabilizers appears to be necessary for development of the characteristic planovalgus deformity of AAFD, with a depressed plantar-flexed talus bone, hindfoot and/or midfoot valgus, and an everted flattened forefoot. AAFD also leads to gait dysfunction as the foot is unable to change shape and function adequately to accommodate the various phases of gait, which require multiple rapid transitions in foot position and tone for effective ambulation. The four-tier staging system for AAFD emphasizes physical examination findings and metrics of foot malalignment. Mild disease is managed conservatively, but surgical procedures directed at the soft tissues and/or bones become necessary and progressively more invasive as the disease progresses. Although much has been written about the imaging findings of AAFD, this article emphasizes the anatomy and function of the foot's stabilizing structures to help the radiologist better understand this disabling disorder. *Online supplemental material is available for this article.* ©RSNA, 2019.

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