

Posterior tibial tendon integrity can be screened using plain anteroposterior foot radiography

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Introduction/Purpose: Posterior tibial tendon's condition has traditionally been evaluated using ultrasonography or magnetic resonance imaging, but recent advancements in radiography have increased the resolution of radiographic soft tissue images. We performed this study to examine whether the posterior tibial tendon could be screened using anteroposterior foot radiographs, based on interobserver agreement and accuracy.

Methods: We retrospectively evaluated consecutive patients who underwent weight-bearing foot radiography and ultrasonography based on a suspicion of posterior tibial tendinopathy. The integrity of the posterior tibial tendon was evaluated by two orthopaedic surgeons (8 years and 3 years of experience) using foot radiographs, and scored as having normal or abnormal tendon integrity (Fig). We evaluated interobserver agreement between the two surgeons, and the ultrasonography and radiography findings were compared to evaluate diagnostic accuracy.

Results: We included 21 patients with a mean age of 51.5 ± 15.7 years (5 men and 16 women). Ultrasonography revealed 4 patients with normal tendon integrity, 6 patients with tenosynovitis and no tendinopathy, 8 patients with tendinopathy and tendon continuity, and 3 patients with loss of tendon continuity. The surgeons provided consistent radiographic findings for 81.0% of the patients (17/21; kappa = 0.576, $p = 0.007$). Based on the ultrasonographic findings, the surgeons provided accuracies of 76.2% (16/21) and 61.9% (13/21).

Conclusion: The results indicate that weight-bearing anteroposterior foot radiography can be used to evaluate posterior tibial tendon integrity, which may allow physicians to predict the prognosis of patients with PTTD, to determine the extent of surgical treatment, and to evaluate the postoperative tendon integrity.



Figure. Abnormal posterior tibial tendon integrity on plain weight-bearing anteroposterior foot radiograph. A: A wavy pattern of soft tissue (arrows) medial to the talar head on the right foot, corresponding to the posterior tibial tendon. Intact density of the posterior tibial tendon (arrowheads), which inserts on the navicular bone, can be identified on the left foot. B: Compared with the well delineated soft tissue shadow (arrowheads) of right posterior tibial tendon, left tendon shadow (arrows) is not well delineated. C: More severe pes planovalgus deformity of the right foot and a different thickness of soft tissue density just proximal to the navicular insertion. Compared with the left side (arrowheads), the right side shows thin and low-density soft tissue (arrows) along the posterior tibial tendon near the navicular insertion.