

## Idiopathic Pseudoaneurysm of the Dorsalis Pedis Artery Mimicking Pigmented Villonodular Synovitis

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### ABSTRACT

**Pseudoaneurysm of the dorsalis pedis artery is uncommon and is usually associated with a history of trauma to the vessel. Without such a history, the diagnosis may be challenging, because the mass may be confused with other common soft tissue masses in the foot. This case report describes a 67-year-old man with an idiopathic pseudoaneurysm of the dorsalis pedis artery that mimicked pigmented villonodular synovitis.**

### INTRODUCTION

Pseudoaneurysm of the dorsalis pedis artery is an uncommon condition that is usually caused by a traumatic injury or iatrogenic intervention.<sup>1-3,5-7</sup> When it presents as a nonpulsatile soft tissue mass without a specific antecedent event, it can introduce a difficult diagnostic dilemma.<sup>4,9</sup> This report describes an unusual case of an idiopathic pseudoaneurysm of the dorsalis pedis artery that mimicked pigmented villonodular synovitis (PVNS).<sup>8</sup>

### CASE REPORT

A 67-year-old man presented with swelling on the dorsum of his foot that had been present for 2 months. The nonspecific mass was slowly enlarging and painful. Pain was worse after activity and at the end of the day. There was some relief with elevation, but the foot always remained more swollen than the other side. The patient reported suffering an ankle fracture on the same side 20 years earlier, but he specifically denied any recent history of trauma or injury to the foot. He denied any increase in activity or change in lifestyle. Past medical history was unremarkable; he did not have diabetes mellitus, heart disease, or peripheral vascular disease.

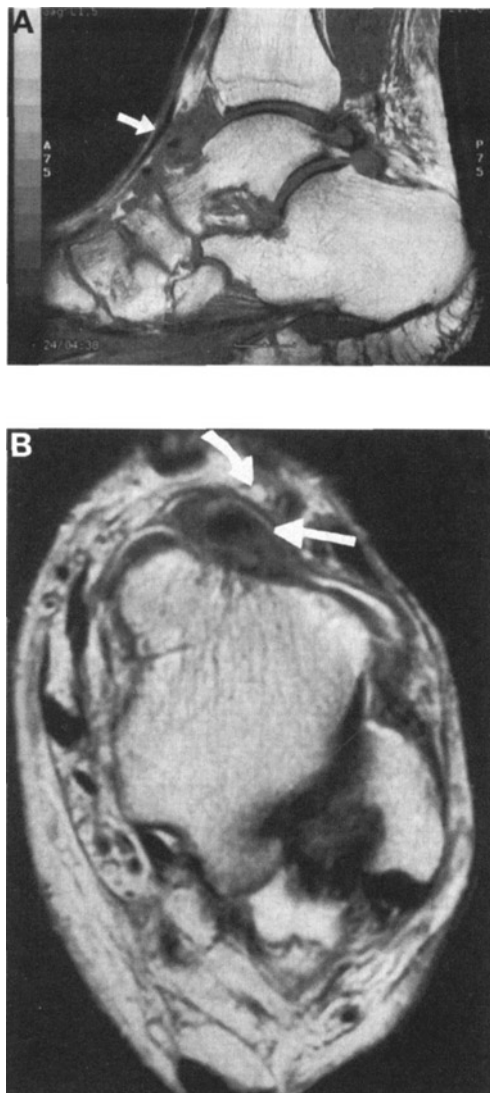
At physical examination there was diffuse swelling

and pain without focal tenderness. Full ankle and subtalar motion were present. A nonpulsatile fullness, which was tender, was present anterolaterally on his foot. A dorsalis pedis pulse was present. Neurovascular examination was intact distally. Radiographs demonstrated soft tissue swelling anteriorly but no bony involvement. Magnetic resonance imaging demonstrated a complex, extracapsular soft tissue mass of mixed-signal intensity at the anterior margin of the tibiotalar joint (Fig. 1). The mass was posterior to the tibialis anterior and extensor hallucis longus (EHL) tendons and did not appear infiltrative. The presence of low signal on the T2-weighted images suggested a hemosiderin content, similar to that seen in PVNS.

With a working diagnosis of PVNS, the decision was made to perform an excisional biopsy. Under regional anesthesia and thigh tourniquet, an anterior extensile incision was made over the mass. The anterior tibial and EHL tendons were identified and retracted. There was no infiltration by the mass. The retinaculum was split, and a large bluish mass was identified under the ankle capsule. The capsule was opened and a large organized hematoma with thrombus was evacuated. Pulsatile bleeding was encountered, and it became apparent that the mass was in continuity with the dorsalis pedis artery. Dissection was carried out to its base at the lateral aspect of artery. The diagnosis of pseudoaneurysm was made, and, after careful exploration, the dorsalis pedis artery was found to have an 8-mm × 3-mm perforation. The ankle joint was explored thoroughly, and no other pathologic condition was found. The artery was then isolated both proximally and distally. The mass was excised, and the artery was repaired primarily with 5-0 nonabsorbable sutures. The ankle was thoroughly irrigated, and the tourniquet was deflated. No active bleeding was noted. A visual and palpable pulse was noted in the repaired artery. The wound was closed in standard fashion, and the patient was placed in a short leg cast for 2 weeks. Sutures were removed at 2 weeks, while the postoperative course remained uneventful. At 6-month follow-up, the patient had complete resolu-

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**Fig. 1.** A, Sagittal T1-weighted and B, axial T2-weighted magnetic resonance images of the ankle demonstrating a 2- × 3-cm heterogeneous extracapsular soft tissue mass (straight arrows) anterior to the anterior recess of the tibiotalar joint. The focal nodule, located just posterior to the tibialis anterior and EHL tendons, has low signal intensity on the T2-weighted sequence, which probably reflects the hemosiderin content (B). Note the high signal intensity in the adjacent vein (curved arrow, B). There are associated effusions of the ankle and subtalar joints. No connection between the dorsalis pedis artery and the mass could be demonstrated on any view.

tion of symptoms, no recurrence of the swelling, and a palpable dorsalis pedis pulse.

## DISCUSSION

Pseudoaneurysms of the dorsalis pedis artery are rare.<sup>1,3,6,7,9</sup> Most cases occur after penetrating injury, injection, aspiration, or surgical intervention.<sup>1,5-7</sup> In the patient who presents with a pulsatile, painful mass and an appropriate history of injury, the diagnosis may be

relatively apparent. However, when such clues are not present, soft tissue masses on the dorsum of the foot can be difficult to differentiate. The differential diagnosis is broad and includes both benign and malignant processes. This patient presented with spontaneous swelling in the ankle that was worse at the end of the day, without focal findings. Clinical signs and symptoms, together with the magnetic resonance imaging (MRI), were consistent with PVNS, which commonly affects synovial joints of the foot or ankle.<sup>8</sup>

Imaging studies may or may not be helpful. In this case, plain films confirmed the soft tissue mass, and MRI suggested PVNS. If there had been clinical suspicion of a vascular lesion and the MRI signal characteristics were nonspecific, specialized vascular sequences could have been performed. Although MRI is considered extremely sensitive, we were unable to demonstrate the connection between the pseudoaneurysm and the dorsalis pedis artery, even in retrospect.

Treatment options for pseudoaneurysms include ligation,<sup>3</sup> repair, or reconstruction.<sup>1,5</sup> Some authors have described ligating the dorsalis pedis artery, because many consider it nonessential.<sup>3</sup> However, recent advances in small-vessel arterial reconstructive techniques have made repair or reconstruction a reasonable option,<sup>2</sup> and we believe that, when feasible, preservation is the best option.

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