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Talar beak-induced intermittent ischemia of the foot

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ABSTRACT

A 44-year-old man presented with symptoms of intermittent ischemia of the right foot. Computed tomography scanning of the right foot revealed a talar beak that had a close anatomic relation with the dorsalis pedis artery. Duplex ultrasound performed during a symptomatic episode confirmed ischemia induced by severe vasospasm of the dorsalis pedis artery that normalized 30 minutes later. The talar beak was removed by open surgery that resulted in complete resolution of the patient's symptoms. A talar beak should be considered in intermittent ischemic complaints of the foot in patients without atherosclerosis. (*J Vasc Surg Cases and Innovative Techniques* 2020;6:118-20.)

Keywords: Talar beak; Intermittent ischemia; Dorsalis pedis artery; Talus; Bone compression

The term *talar beak* refers to a flaring of the superior aspect of the talar head as observed on lateral radiographs.¹ A talar beak occurs in 1% to 2% of the adult population and can be diagnosed using conventional radiography of the foot. Most talar beaks are asymptomatic, but in the presence or as a sign of a tarsal coalition or osteoarthritis, symptoms of pain and stiffness of the foot have been described.² To our knowledge, this article presents the first case of talar beak-induced intermittent ischemia of the foot. The patient's informed consent was obtained for this publication.

CASE REPORT

A 44-year-old man presented to our outpatient clinic with symptoms of intermittent ischemia of the right foot for 6 months. The episodes mostly started at rest and occurred initially every month, but in the last months, frequency increased up to every fortnight. During such an event, symptoms started with periarticular swelling of the right ankle and itching. After about a minute, patchy purple discoloration of the skin occurred (Fig 1), which coincided with intense pain in the foot. After about 15 minutes, the skin color normalized and symptoms spontaneously resolved.

The patient was a passionate sportsman playing soccer in his teens and intensively trained on a road bike in the last 15 years. There was no clear relation with physical activity such as cycling, external compression of the foot, or position of the

foot with the occurrence of symptoms. His medical history was unremarkable. Physical examination, when performed in the absence of pain and discoloration, revealed no specific abnormalities. The neurovascular examination findings were normal, including normal dorsalis pedis and posterior tibial pulses. Ultrasound examination of the right foot revealed a talar beak in close anatomic relation with the dorsalis pedis artery that had a thickened wall at the side of the talar beak (Fig 2, A). No other abnormalities, like arthritis, synovitis, or tendinitis, were seen.

Duplex ultrasound performed during a symptomatic episode confirmed ischemia induced by severe vasospasm of the dorsalis pedis artery and resulting in low perfusion pressure in the hallux, which normalized 30 minutes later. The toe-brachial index (TBI) was measured in rest and during an episode of ischemia. In rest, the TBI at the hallux was 1.0; during the episode of ischemia, the TBI was 0.38. In rest, peak systolic velocity and acceleration at the distal dorsalis pedis artery were 0.40 m/s and 9.6 m/s², respectively. At the level of the hallux, peak systolic velocity and acceleration were 0.13 m/s and 12.7 m/s², respectively. During an episode of ischemia, there was no flow in the dorsalis pedis artery at the level of the talus, whereas reversed flow was observed in the distal dorsalis pedis artery, and acceleration at the level of the hallux was 0.7 m/s². Further evaluation with computed tomography with the foot in plantar flexion clearly demonstrated the tarsal coalition and its close relation with the thickened dorsalis pedis artery (Fig 2, B). No stenotic lesions, vascular anomalies, or signs of atherosclerosis were observed, and the pedal arch was intact in both feet.

The talar beak (1.5 × 0.5 cm) was removed by open surgery. Since then, the patient remained asymptomatic. Duplex ultrasound performed at 1 month after surgery did not reveal substantial abnormalities of the dorsalis pedis artery, with a peak systolic velocity of 0.51 m/s and acceleration of 10.6 m/s².

DISCUSSION

A talar beak is an osseous excrescence from the dorsal surface of the talus. A talar beak can be a secondary sign of tarsal coalition, but it can also arise from abnormal stress, especially seen in athletes

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Fig 1. Patchy purple discoloration of the right foot during an episode of intermittent ischemia of the right foot.

The most well known other clinical syndrome in which bone compression causes vascular injury is the thoracic outlet syndrome, in which the subclavian artery, subclavian vein, or brachial plexus is compressed at the thoracic outlet, the area between the clavicle and the first rib.⁴ Another clinical syndrome of arterial compression by a bone structure is the bow hunter syndrome, in which the vertebral artery is compressed by one of the cervical vertebrae during neck rotation.⁵

The question arises as to why local compression of the dorsalis pedis artery in our patient resulted in substantial ischemia in the presence of an intact pedal arch, as illustrated by the reversed flow in the distal dorsalis pedis artery. We hypothesize that the ischemia in the forefoot relates to severe vasoconstriction and subsequent hypoperfusion of the downstream microcirculation in response to injury of the dorsalis pedis artery. This microvascular vasoconstriction might be due to a disturbed crosstalk between the autonomic nervous system and the local release of vasoconstrictors.⁶ Although no specific imaging to assess the microcirculation was performed in this case, we speculate that severe dysfunction of the microcirculation was responsible for the insufficient tissue perfusion and not solely the dorsalis pedis artery compression itself.

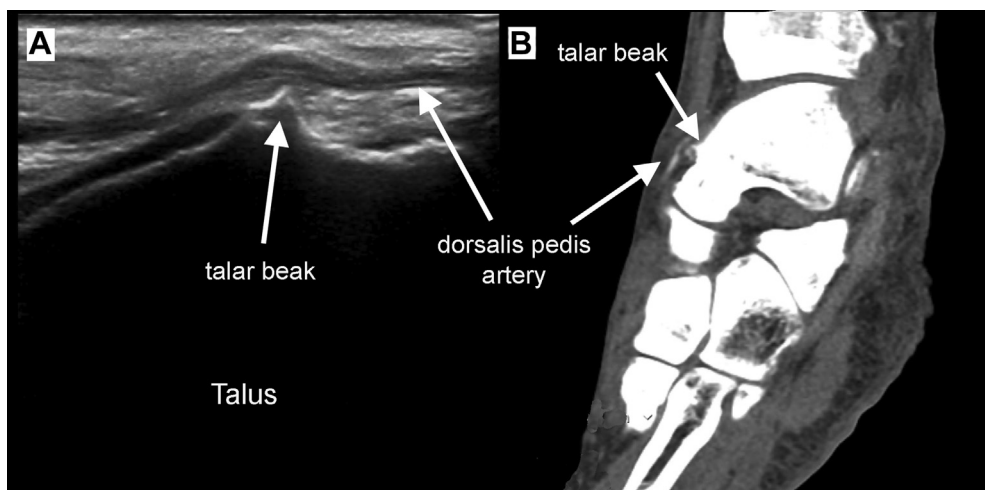


Fig 2. Ultrasound image (A) and computed tomography scan (B) of the right ankle showing talar beak and its close relation with the dorsalis pedis artery.

and dancers. Diffuse idiopathic hyperostosis and osteoarthritis of the talonavicular joint are other risk factors for the development of a talar beak.³ A talar beak is frequently asymptomatic but can be accompanied by pain and stiffness of the ankle in cases of tarsal coalition or osteoarthritis. To the best of our knowledge, this is the first report of talar beak-induced ischemic complaints of the foot due to compression of the dorsalis pedis artery.

CONCLUSIONS

A talar beak should also be considered in intermittent ischemic complaints of the foot in patients without atherosclerosis.

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