

# Case Presentation

JUAN PABLO GHISI, MD 

*Argus Diagnóstico Médico*

*Chief of MRI Department, Hospital General de Agudos “Dr. Juan A. Fernández”,  
Ciudad Autónoma de Buenos Aires, Argentina*

ZULMA ABRAHAM, MD

*Staff member at MRI Department*

*“Dr. Juan A. Fernández”, Ciudad Autónoma de Buenos Aires  
Argus Diagnóstico Médico*

ADRIAN TRACHE, MD

*Staff member at MRI Department*

*“Dr. Juan A. Fernández”, Ciudad Autónoma de Buenos Aires  
Argus Diagnóstico Médico*

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Forty-five years-old male patient undergoing diagnostic procedure due to persistent pain on his left sole and walking impairment. He has history of traumatism in motorcycle crash 10 days before as most remarkable event, when he suffered a 5 cm-length sharp wound on the medial aspect of his leg distal third. He gets antibiotic coverage (levofloxacin) for 7 days and prescription of rest with elevated limbs.

Once the antibiotic scheme has ended, his orthopedic doctor indicates walking restart with walker. After 24 hours of weight-bearing, sole pain remains and it even increases with leg and foot swelling and wound suppuration added; therefore, the patient receives changes in antibiotic scheme (amoxicillin/clavulanic acid). Due to these bad outcomes, the patient is prescribed MRI, whose findings promote the indication of Doppler US. The patient does not have history of risk factors for cardiovascular disease (no smoke, no diabetes, no HBP, no thrombophilia), and no family history of interest. He does report long-term history of two previous surgeries (appendectomy and resection of vocal chords papilloma).

## Findings and interpretation of imaging studies

Ankle and both feet AP and lateral simple X-ray images (Figures 1 and 2) do not show significant changes in bone structure. We can see a radiolucent area in the soft tissues of the medial aspect of the distal leg in touch with the aforementioned dermal wound.

In MRI images there is moderate thickening of the lateral sole vein, with inflammatory changes in peri-venous soft tissues, also with the sole muscle compartment, depicted by diffuse increase in signals in assessment modalities sensitive to fluids (Figure 3-6). The other relevant finding in MRI is a filling defect within the vein lumen.

Doppler US confirms the finding suspected by MRI (Figures 7 and 8). It shows widening of the lateral sole vein and lack of Doppler US flow, as well as impossibility to reduce the vessel lumen by compression.

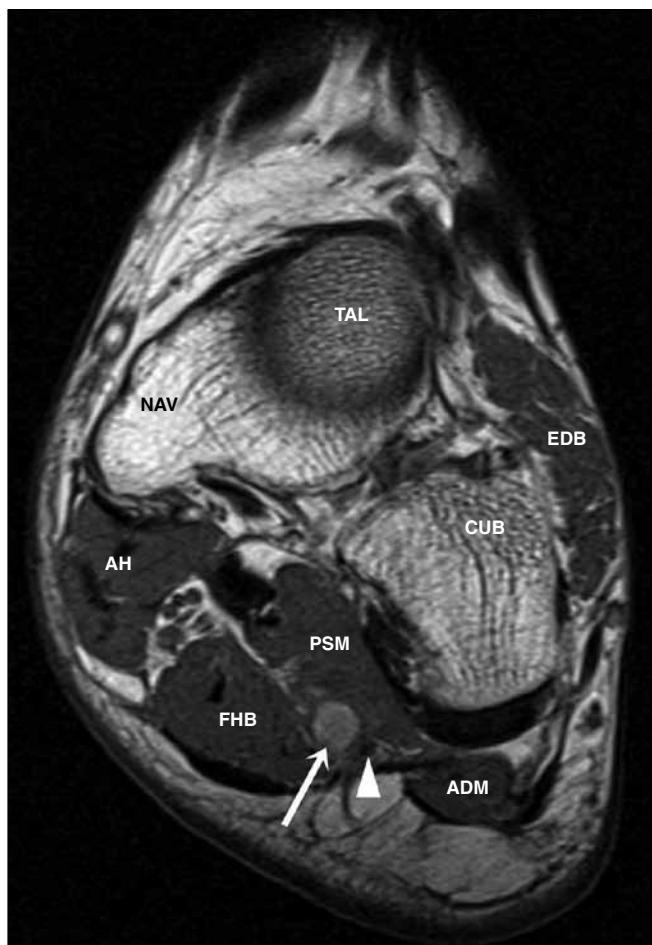
*Resolution of the case on page 214.*



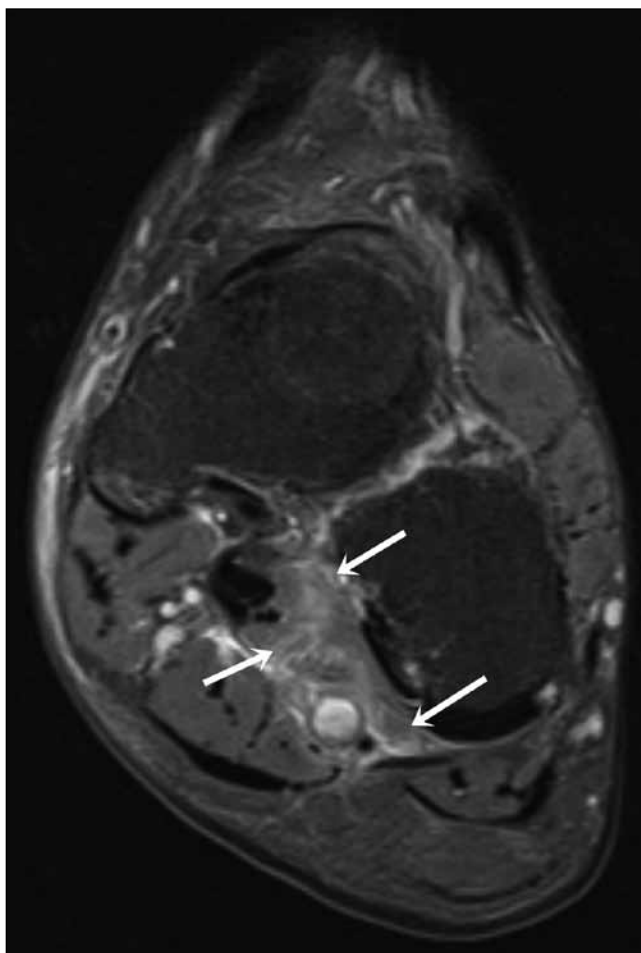
▲ **Figure 1.** AP and lateral ankle X-rays. There is no bone injury. There are just radiolucent lineal images in soft tissues on the medial aspect of the leg distal third (*white arrows*) which coincide with the topography of a sharp skin wound suffered in a motorcycle crash.



▲ **Figure 2.** AP and oblique foot X-rays. There is no evidence of radiographic anomalies in bone structures, joints or soft tissues.



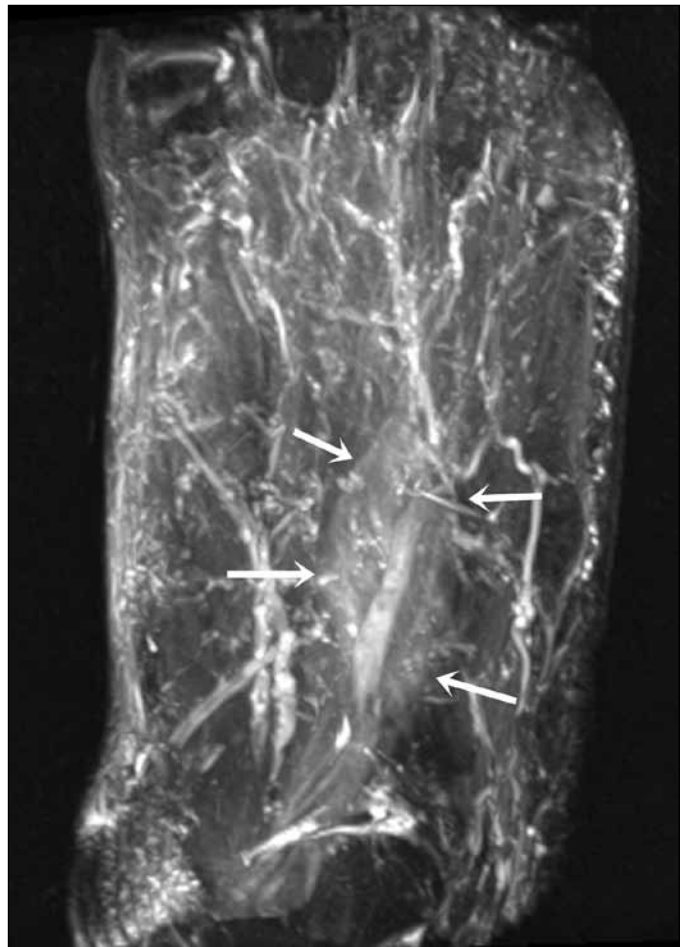
◀ **Figure 3.** Coronal section MRI of mid-foot, T1 sequence (TR 471/TE 12). There is an image of filling defect in the lateral sole vein (*white arrow*). There is normal signal void in the lateral sole artery (*arrow tip*). NAV= navicular bone; TAL= talus bone; CUB= cuboid bone; EDB= Extensor digitorum brevis muscle; AH= Abductor hallucis; FHB= Flexor hallucis brevis; PSM= Plantar square muscle; ADM= Abductor digiti minimi.



▶ **Figure 4.** Coronal section MRI of mid-foot, fat-suppressed proton-density-weight sequence (TR 3940/ TE 34). There is edema in soft tissues next to the pedicle of the lateral sole vein, especially in the muscle fibers of the plantar muscle square (*white arrows*).

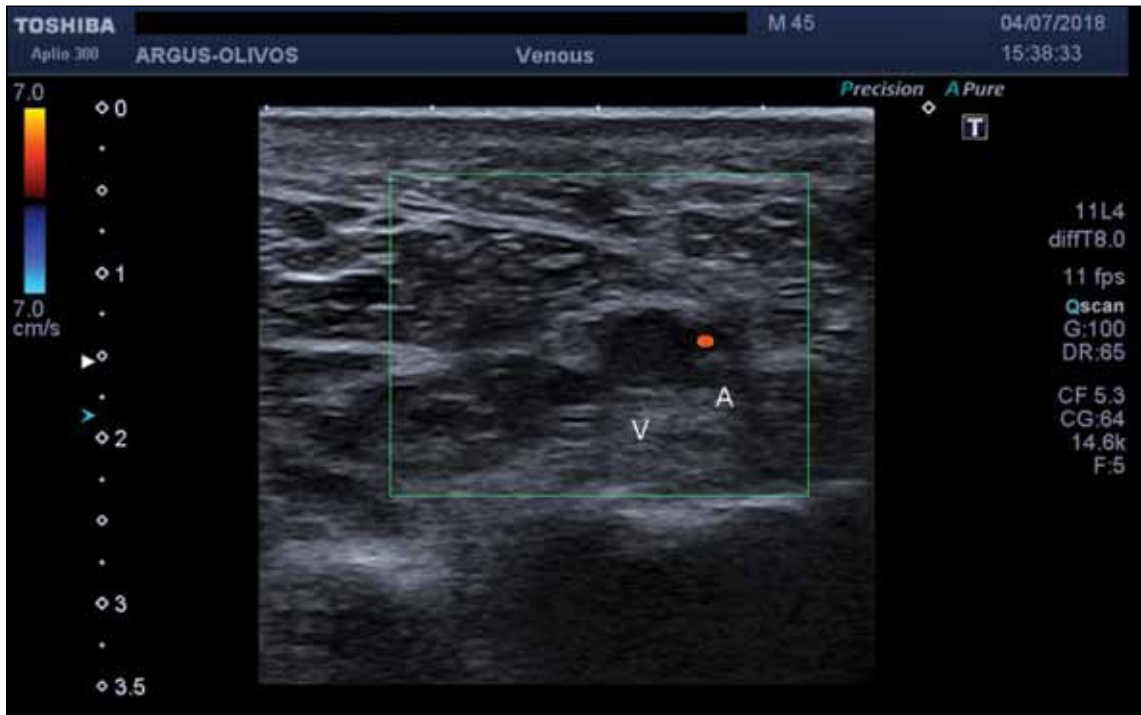


◀ **Figure 5.** Sagittal section MRI of hind- and mid-foot, fat-suppressed proton-density-weight sequence (TR 2630/ TE 34). There is thickening of the lateral sole vein (*white arrow tip*) with edema in peri-vascular sole soft tissues. 2CU= second cuneiform bone; NAV= navicular bone; TAL= talus; CAL= calcaneus bone; AT= Achillean tendon; PSM= plantar square muscle; PF= plantar fascia.



**Figure 6.** STIR transverse section MRI (TR 5180/ TE 41/TI 150) with reconstruction with projection algorithm of maximal intensity (MIP). The “phlebographic” effect of the reconstruction highlights the widening of the affected vein, with images of filling defect and peri-vascular edema (*arrows*). ▶





▲ **Figure 7.** Transverse section color Doppler US. Widened lateral sole vein (V) with hypoechoic contents, non-collapsible and with no color Doppler signal—the adjacent artery (A) has color Doppler US flow.



▲ **Figure 8.** Longitudinal section Power Doppler US. It confirms the lack of flow (thrombosis) in the lateral sole vein.