



ASCUPEDIA

## 2 Cases of tibial vessel post-traumatic pseudoaneurysm: Still space for Surgery?

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# Post-traumatic tibial vessel pseudoaneurysms

Uncommon condition

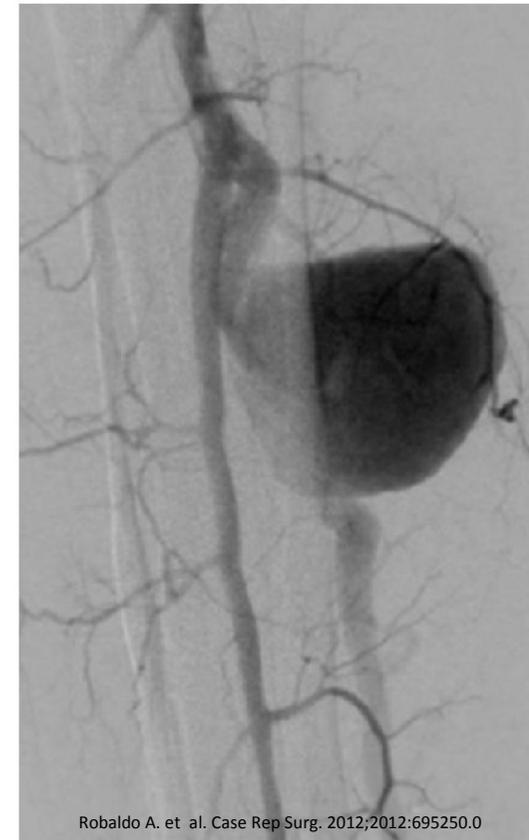
Usually secondary to:

- blunt or penetrating trauma
- iatrogenic injury (often orthopedic surgical interventions)
- infection

The signs and symptoms include, pain, swelling, a pulsatile mass, audible bruit, hemorrhage, distal embolization and neurologic deficit.

The time for the diagnosis varies from hours to years, depending on the location of pseudoaneurysm and clinical conditions.

Urgent treatment is advocated if bleeding, ischemic and neurological symptoms develop



Robaldo A. et al. Case Rep Surg. 2012;2012:695250.0

- Håkan Charles-Harris H. Anterior Tibial Artery Pseudoaneurysm: A Case Report and Literature Review. The Journal for Vascular Ultrasound 39(3):138–141, 2015
- Ghaffari S. et al. Pseudoaneurysm of the Posterior Tibial Artery following Removal of Tibial Plate- A Rare Case. J Orthop Case Rep. 2016 Jul-Aug; 6(3): 46–49.
- Suri T. et al. Pseudoaneurysm of the anterior tibial artery: A rare complication of proximal tibial steinman pin insertion Indian J Orthop. 2011 Mar-Apr; 45(2): 178–180.

# Treatment options

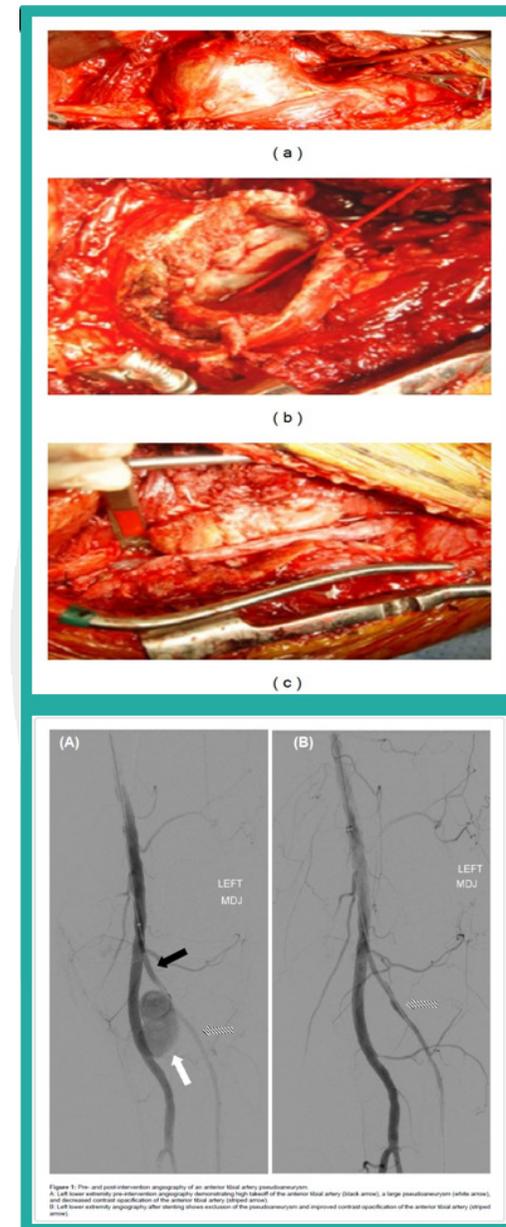
Conservative management with US-guided compression and bandage

**Surgical repair** was the traditional standard of practice:

- Autogenous vein bypass grafting
- End- to-end anastomosis
- Artery direct suture
- Artery ligation can be a second option in case of adequate collateral circulation (It may produce symptoms of chronic exertional compartment syndrome in high-demand patients)

**Endovascular repair**, as technology progresses, continues to gain popularity and may become a durable option, especially in high-risk patients:

- US-guided thrombin injection
- Coil embolization
- Covered stenting (no large experience in the infrapopliteal stents)



- Williams DM et al. Pseudoaneurysm in a High Takeoff Anterior Tibial Artery with Endovascular Repair. Angiol 2:120.
- Ghaffari S. et al. Pseudoaneurysm of the Posterior Tibial Artery following Removal of Tibial Plate- A Rare Case. J Orthop Case Rep. 2016 Jul-Aug; 6(3): 46-49.
- Jones A. Et al. Successful Stenting of Iatrogenic Anterior Tibial Artery Pseudoaneurysm. EJVES Short Reports Volume 30, 2016, Pages 4-6

# Case 1°

29 yrs-old

No comorbidities

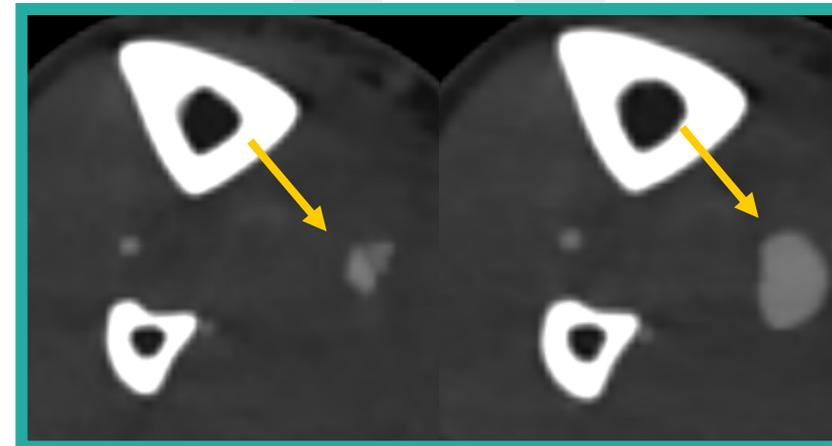
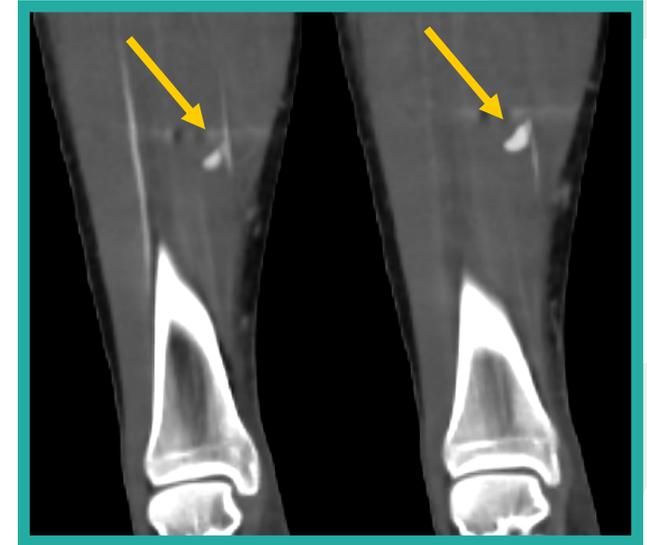
Referred to the Emergency Room for pain of the right lower limb due to penetrating trauma (hatchet splinter)

No fever was detected. The CPR and blood culture results were negative.

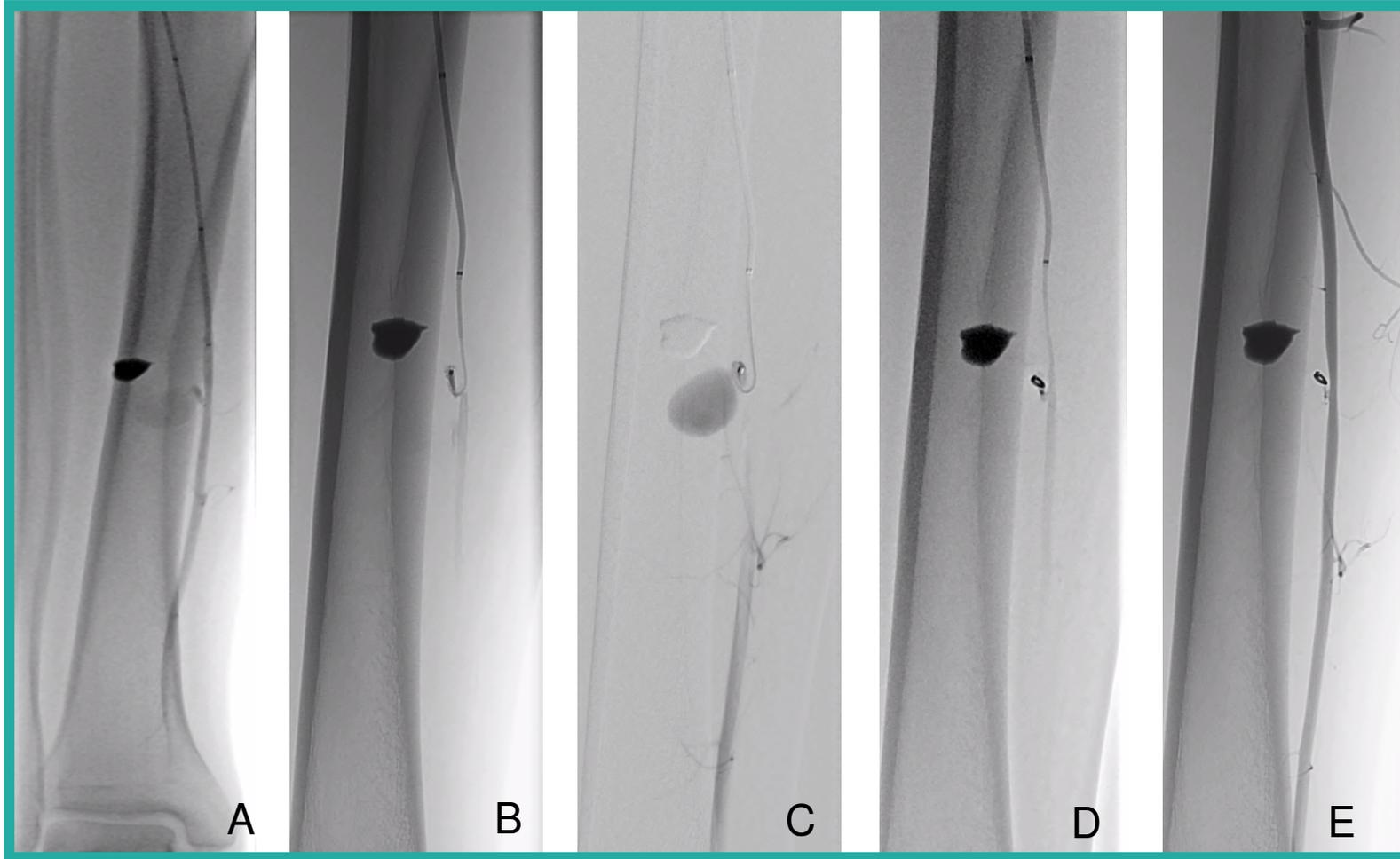
**Duplex scan** showed patency of posterior tibial artery (PTA), but was inconclusive for hemorrhage or pseudoaneurysms.

**CT scan** detected:

- a small pseudoaneurysm (**ø 15 mm**) of the PTA
- presence of a foreign body.
- No abnormalities of the bones, namely, sharp spikes that could damage the tibial artery, were recognized.



# Case 1°: treatment



**Transcatheter Coil embolization (3x25 mm - Vortex, Boston Scientific) of small collateral vessel of PTA**

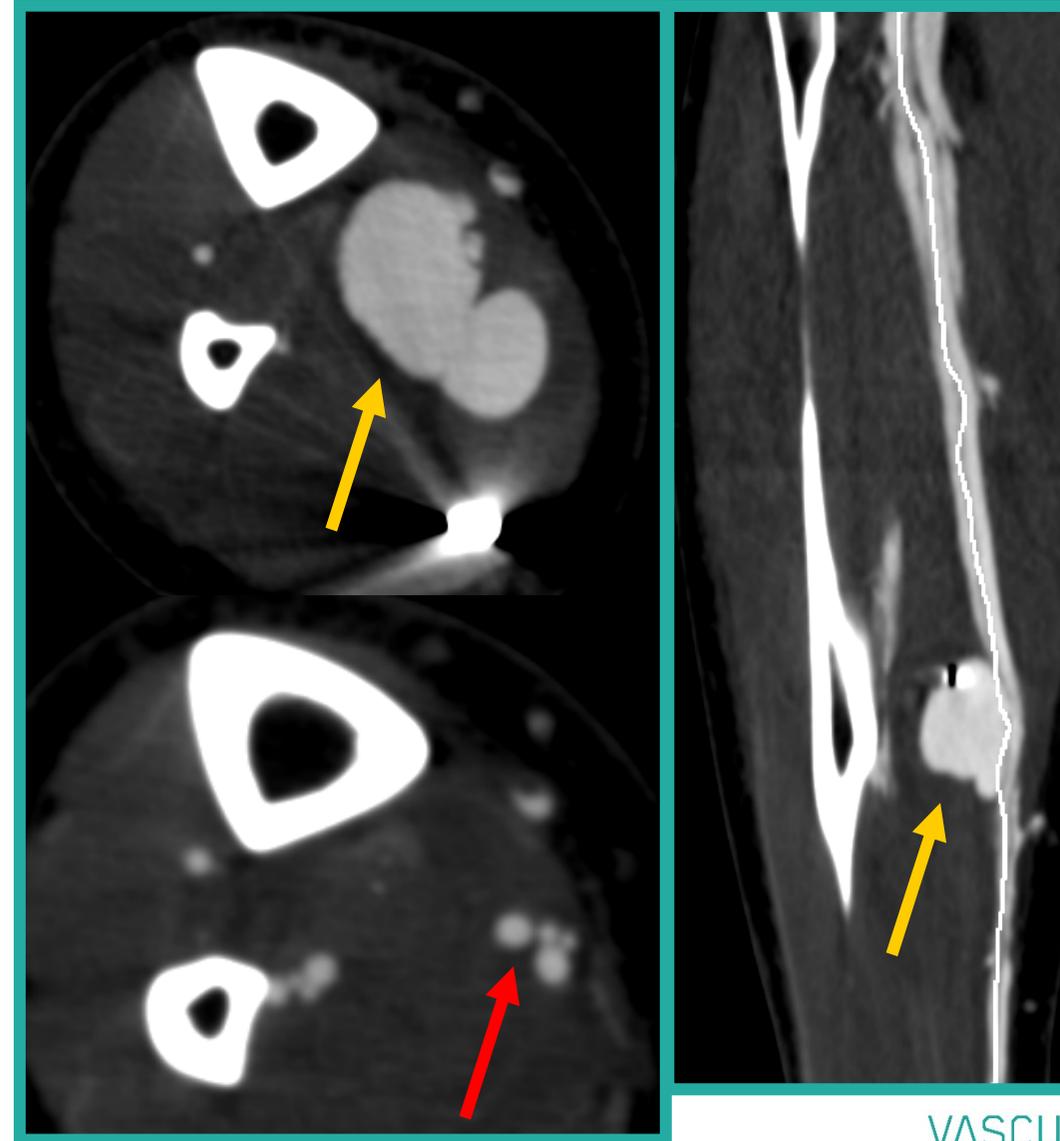
# Case 1°: 15 days after the procedure

New access to the ER for a persistent pulsatile painful mass of the right lower leg with .

Duplex scan and CT-scan revealed a voluminous pseudoaneurysm of the PTA ( $\varnothing$  45 mm – yellow arrow) with a arteriovenous fistula (red arrow).

Pain and onset of neurological deficit

Patient underwent urgent repair



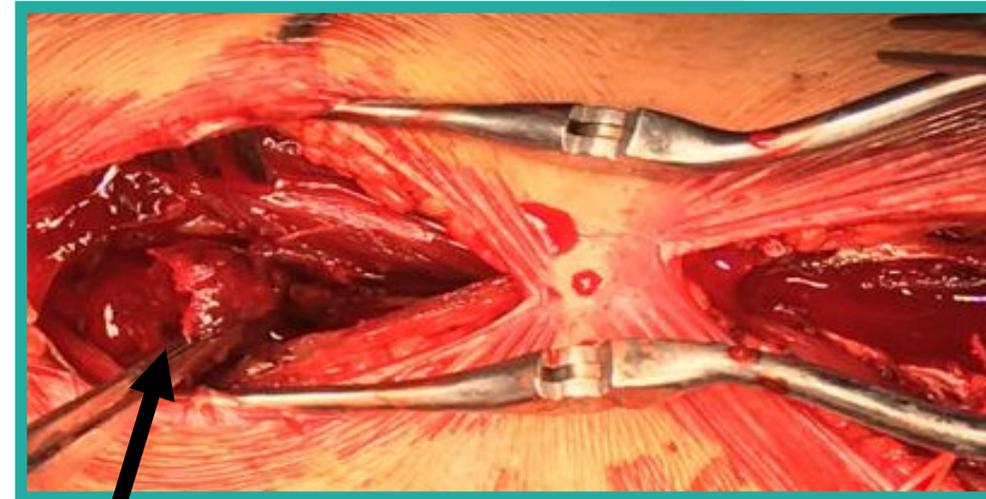
# Case 1°: Treatment and follow-up

**Surgical repair:** Lateral access + aneurysmectomy (black arrow) + end-to-end anastomosis of PTA

uneventful postoperative recovery

**At discharge,** good general condition with a complete pain relief, regular pulse, no neurological deficit and 3 months-antiplatelet therapy (acetylsalicylic acid 100 mg)

**At the 3-month follow-up,** no foot or digital ischemia, complain of paresthesias, pain, discomfort, or walking limitation has been observed. Duplex scan showed a good patency in the absence of stenosis, pseudoaneurysms, or recurrent aneurysms.



# Case 2°

61 yrs-old

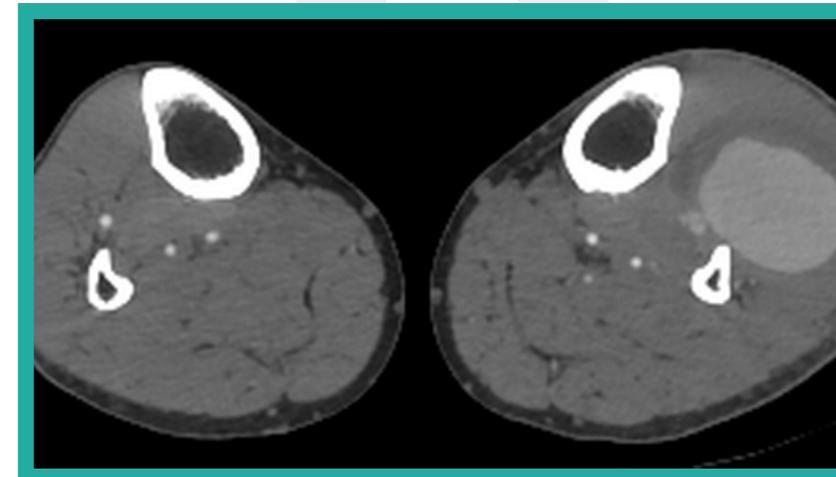
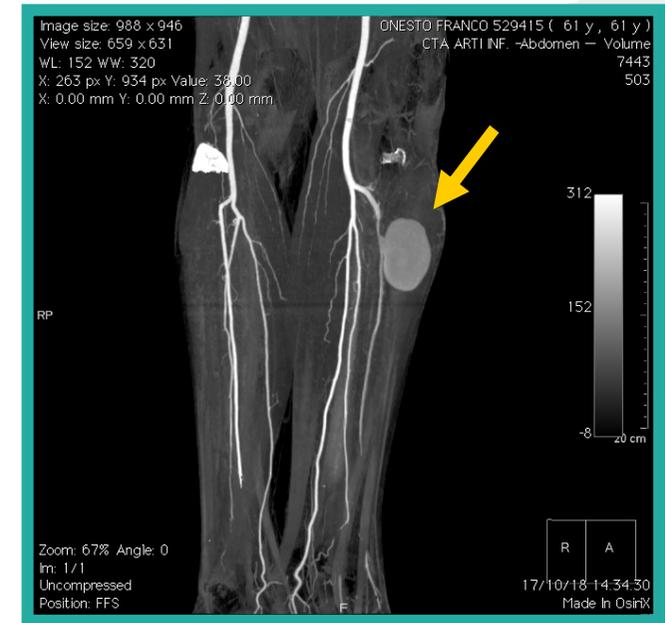
good clinical conditions, no medications

Patient, with history of blunt trauma (sharp bamboo reed) occurred 3 months earlier, was referred to the ER for a pulsatile painful mass of the left lower leg. An incomplete neurological deficit of external popliteal sciatic nerve was detected.

**Duplex scan and CT-scan showed:**

- a giant pseudoaneurysm ( $\emptyset$  ..... mm – yellow arrow) of the anterior tibial artery (ATA)
- No abnormalities of the bones, namely, sharp spikes that could damage the tibial artery, were recognized.

**Patient underwent urgent repair**





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# Conclusion

*Tibial vessel pseudoaneurysm is a rare pathology which can be cause of serious complications.*

*Treatment should be individualized time by time by evaluating patients' comorbidities and aneurysm conformation.*

*In those reported cases, considering the large dimension of the aneurysm, we preferred surgical option to excise the aneurysm sac which determined a compartment pain in the leg and to prevent endovascular embolization in the tibial vessels.*



# Questions to Vascupedians

*Do you agree with the chosen therapeutic strategy in those cases ?*

*Should endovascular or hybrid approach be the first line of treatment for giant tibial vessel pseudoaneurysms ?*

*In healthy patients with no peripheral artery disease, the theoretic advantage of maintaining vessel patency has to be taken into consideration?*