

Clinical History

28 year-old man with right leg fractures following a car accident, treated with tibiofibular ORIF.

Common peroneal nerve (CPN) palsy developed 2 months following injury, with foot drop and numbness at the anterolateral leg and foot.

An ultrasound (US) of the leg was requested to evaluate the CPN.



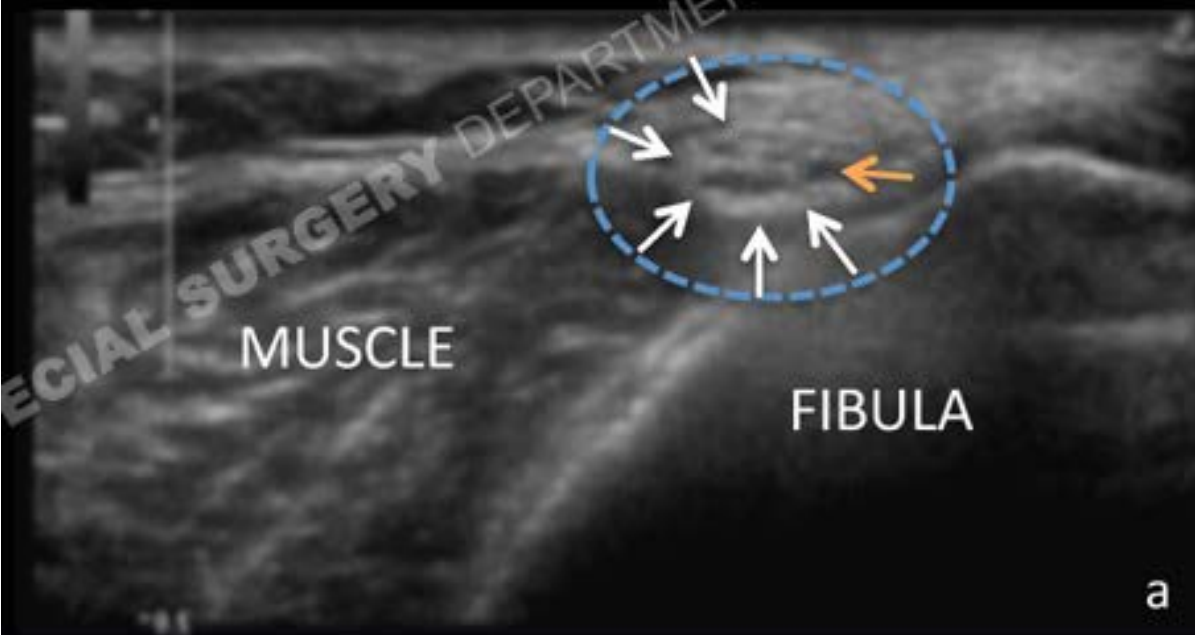


Figure 1: Normal appearance of the CPN on US (a) and MRI (b) at the fibular head. US image (a) at the fibular head demonstrates the adjacent CPN with peripheral echogenic/bright epineurium (white arrow) and internal hypoechoic/dark fascicles (orange arrow), a normal appearance.

Corresponding axial MR image (b) depicts the CPN at the same level (blue circle), with normal internal signal intensity similar to the muscles in the proximal leg.

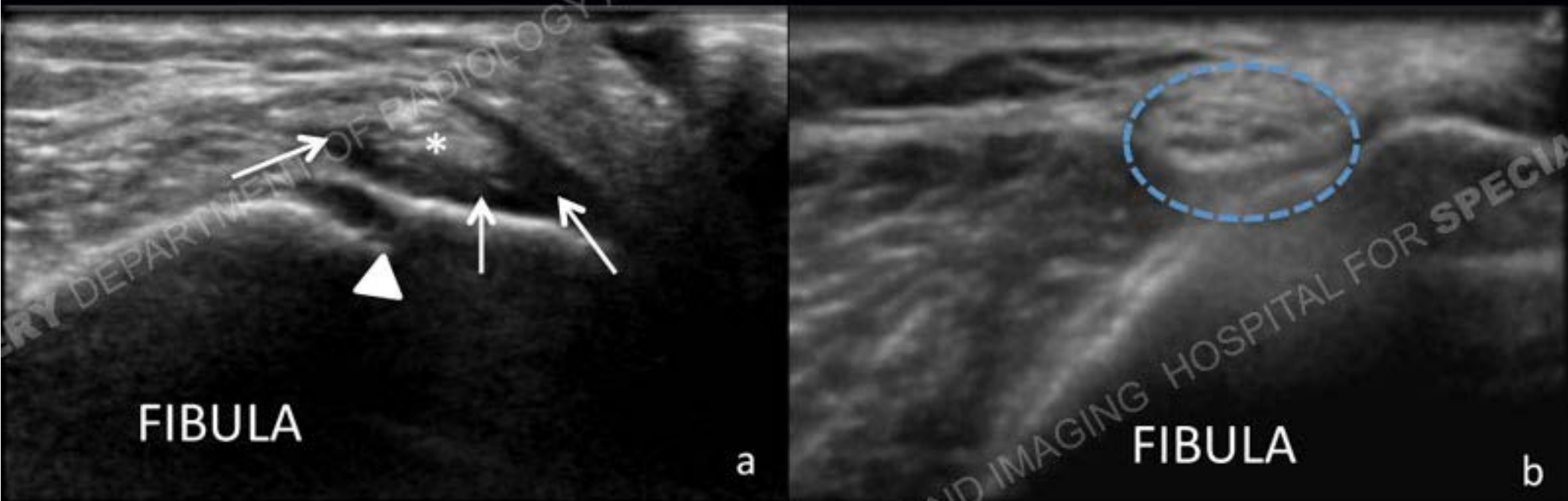


Figure 2: US appearance of the CPN at the fibular head in the patient with CPN palsy. (a) Hypoechoic scar tissue (arrows) surrounds the CPN (*) at the fibular head, consistent with scar encasement. The internal nerve fascicles are abnormally effaced and not seen. The known fibular head fracture is also visualized (arrowhead).

The normal US appearance of the CPN in an asymptomatic patient is again demonstrated (b), for comparison.

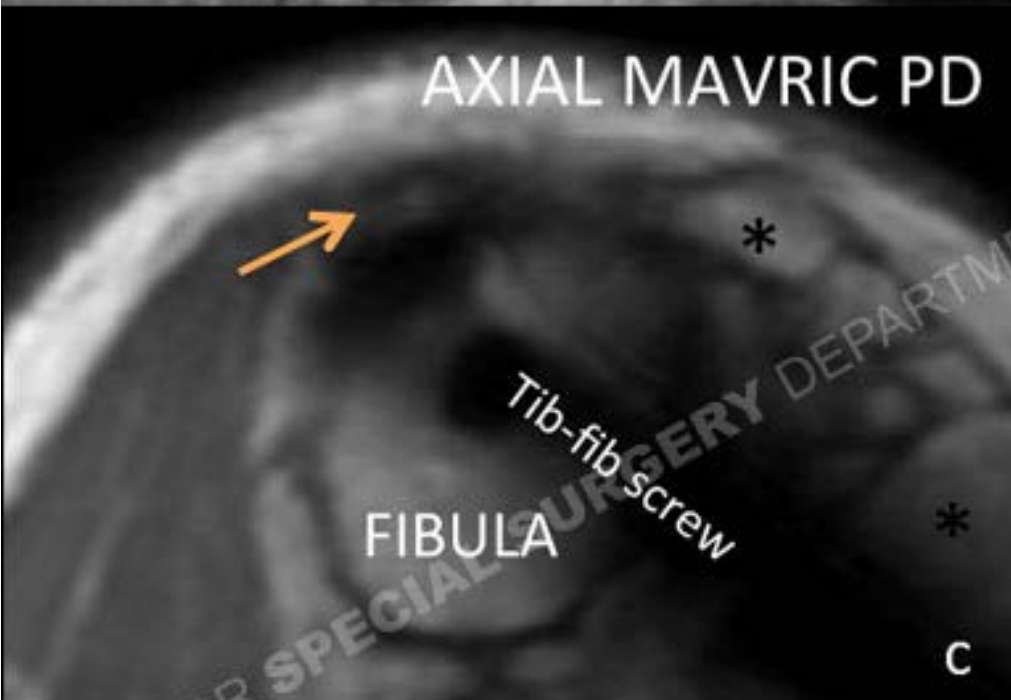
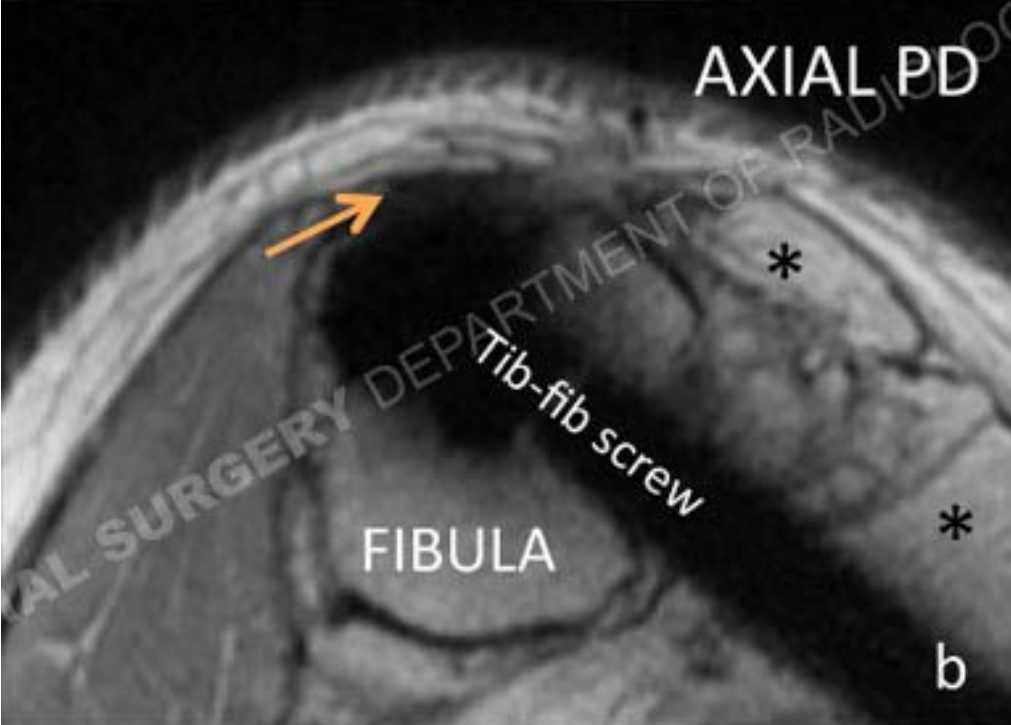
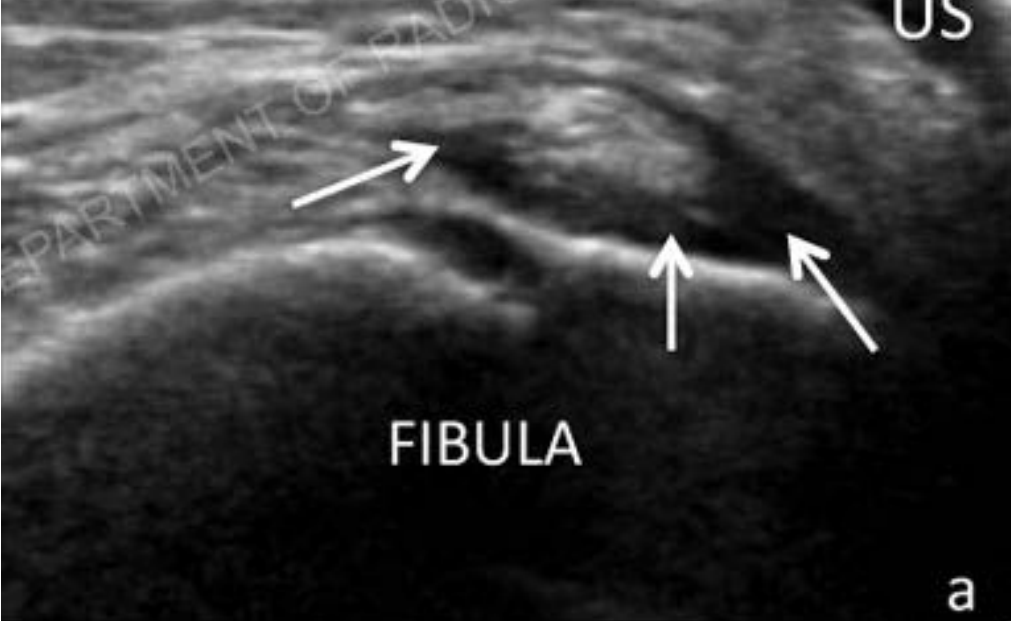


Figure 3: US image of the CPN (a) and corresponding axial MR images (b, c) in the same patient with CPN palsy. The scar-encased CPN is well seen on US (a) but poorly seen in the MR images (b, c, orange arrows) due to the adjacent tibiofibular screw, despite metal artifact reduction technique (c).

This demonstrates a limitation of MR imaging of nerves near metallic hardware. Note that MRI was able to better identify muscle denervation in the anterolateral leg (b, c, *).

Diagnosis: Common peroneal nerve scar encasement

Discussion

Trauma is the most common cause of acquired peripheral neuropathy, occurring as either direct injury to the nerve (e.g. laceration, contusion) or indirect injury (e.g. scar encasement, entrapment).

Peripheral nerves have a characteristic appearance on US which helps in their identification.

Scar tissue usually appears as hypoechoic/dark tissue on US, and can cause encasement or entrapment of adjacent nerves.

US is useful in the evaluation of peripheral nerves, particularly when there is adjacent metallic hardware that can limit MRI evaluation.

