Ultrasonographic imaging for sural nerve injury after Achilles tendon repair

Hsien-Po Chang¹, Chueh-Hung Wu¹, Levent Özçakar²

¹Department of Physical Medicine and Rehabilitation, National Taiwan University Hospital, College of Medicine, National Taiwan University, Taipei, Taiwan, ²Department of Physical Medicine and Rehabilitation, Hacettepe University Medical School, Ankara, Turkey

To the Editor,

A 52-year-old man suffered a right Achilles tendon rupture while running. He had undergone surgical tendon repair but reported persistent right heel pain and swelling around the wound. Numbness and a tingling sensation on the lateral side of the right ankle had developed post surgery. During physical examination, a non-healed operation wound over the right heel (approximately 0.5 cm in diameter) with some blood-tinged discharge was observed.

Musculoskeletal ultrasound with sterile acoustic gel surrounding the wound was performed to determine whether an abscess existed. No abscess was detected; we found only the postoperative changes in the right Achilles tendon, that is, active inflammation with a healing rupture. Additionally, because of focal swelling of the right sural nerve near the wound (fig 1), sural nerve neuropathy was suspected. No disruption of the nerve was observed; thus, surgical intervention was not indicated. Because the patient refused electrodiagnostic studies and sural nerve hydrodissection, he was followed up with a conservative treatment. The wound healed approximately 3 months post surgery. The swelling, tingling, and numbness on the lateral side of his right ankle became less distressing. At the control visit 6 months later, his symptoms had subsided, and he can jog on the treadmill at approximately 4.5 km/h.

Sural nerve injury is not uncommon after repair of Achilles tendon ruptures; the complication rate ranges from 11% to 60% depending on the type of surgery and the surgeon [1,2]. The anatomical distance between the Achilles tendon and sural nerve should be ascertained preoperatively. Because it possesses several advantages (e.g., it is convenient and cost-effective and provides superior resolution without radiation exposure), ultrasound imaging can be used either preoperatively or intraopera-

Fig 1. Ultrasonographic images of the injured sural nerve in transverse (a) and longitudinal (b) views. While the nerve is quite normal superficially (arrow), it displays an irregular contour with hypoechoic appearance (arrowheads) as it courses deeper. Power Doppler imaging in the longitudinal view also shows increased vascularity around the nerve (c).
Nerve ultrasound in emergency room: a case of traumatic ischiatic nerve neurotmesis

Nicola Romano1, Jeries P. Zawaideh1, Aldo Fischetti1, Caterina Lapucci2, Sergio Gennaro3, Alessandro Muda4

1Department of Radiology, University of Genoa, 2Department of Neuroscience, Rehabilitation, Ophthalmology, Genetics and Maternal and Child Health (DINOGMI), University of Genoa, Ospedale Policlinico San Martino IRCCS, 3Department of Neurosurgery and Neurotraumatology, Polyclinic San Martino, 4Department of Radiology, Polyclinic San Martino, Genoa, Italy

To the editor,

A 22 years-old-man was admitted to emergency after hitting himself against a shop window while drunk. He suffered multiple deep cuts on his left leg. The deepest was on the posterior surface of the thigh. Life conditions were stable and no important vessel were severed. He complained of lack of touch sensibility on the posterolateral leg below the cut and wasn’t able to flex the leg nor to have foot dorsiflexion.

A lesion of the ischiatic nerve was suspected, and an ultrasound (US) evaluation was requested. The study was conducted in the emergency room using a linear ultrasound transducer of 6-15 MHz, covered with a sterile sheath, gently placed proximally to the open wound (a); long axis ultrasound images show the proximal trunked end of the ischiatic nerve (b, yellow highlighted in c); post-reconstructive surgery image demonstrating the end-to-end neurorrhaphy (d).

Fig 1. Ultrasound examination was conducted using a linear ultrasound transducer of 6-15 MHz, covered with a sterile sheath, gently placed proximally to the open wound (a); long axis ultrasound images show the proximal trunked end of the ischiatic nerve (b, yellow highlighted in c); post-reconstructive surgery image demonstrating the end-to-end neurorrhaphy (d).

References

Grade V) [1] (fig 1). The proximal end had retracted up to about 3 cm from the edge of the wound. The distal end could not be appreciated. End-to-end neurorrhaphy with the suture of the perineurium was performed by the neurosurgeon. The post-operative course was uneventful, and the patient was discharged and started physiotherapy. After four months of follow-up, patient showed slightly improved leg muscle strength, further follow up was lost, since the patient referred to another institution.

Ultrasound (US), due to its high spatial resolution and its time- and cost-effectiveness, can be considered by the physician in the emergency room as a very important tool to characterize peripheral nerve lesions such as complete or partial transections, nerve lacerations, epineural hematoma and neuroma formation [2].

When peripheral nerve injuries occur after trauma, over half of them require surgical intervention. The precise localization of the site and the extension of the injury may remain uncertain after physical examination and electrodiagnostic tests [3]. In our case, nerve US was useful in determining the complete transection of the ischiatic nerve and in establishing the position of the proximal retracted end of the nerve, which was a very useful information for the neurosurgeon. US can identify all main nervous trunks in the upper and lower limb; however, knowledge of the nervous US anatomy and of the course is needed in order to obtain good diagnostic results [2,4].

References