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Letter to the Editor

# Dynamic and interactive ultrasound examination for muscle hernia: 'Here it comes again !'

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A 32-year-old male (Physical medicine and rehabilitation specialist) was followed for multiple bilateral small mass lesions in the legs for the last 10 years. The patient described that the masses were asymptomatic and not apparent during rest but were accompanied by local tenderness and cramps after activities. The patient denied any trauma, and the medical history was unremarkable. Physical examination revealed two lesions on the anterolateral side of the right leg (1.3×1.5 cm and 2×2 cm) and one on the anterolateral side of the left leg (2×2.2 cm). They were soft and compressible when palpated in the fencer's lunge position (Video 1). Dynamic ultrasound (US) examination was also performed in the same position using a 5-13 MHz linear probe (Logiq P5; GE Medical Systems, Gyeonggi-Do, Korea). The herniated muscle through the fascial defect (Figure 1) disappeared with sonopalpation, more specifically, probe compression (Video 2). The masses became more prominent in forced plantar flexion and vanished in forced dorsiflexion of the foot during physical and US examinations. Power Doppler imaging was negative.

Muscle hernia is a rare condition frequently observed in the lower extremities, most commonly affecting the tibialis anterior muscle. A fascial defect or weakness is commonplace and allows dynamic protrusion of a part of the muscle.[1] Multiple hernias within the same muscle and bilateral (typically symmetrical) involvement have been reported in the


**Video 1.** Clinical examination of the legs. Note that the masses become prominent during plantar flexion and disappear during dorsiflexion.

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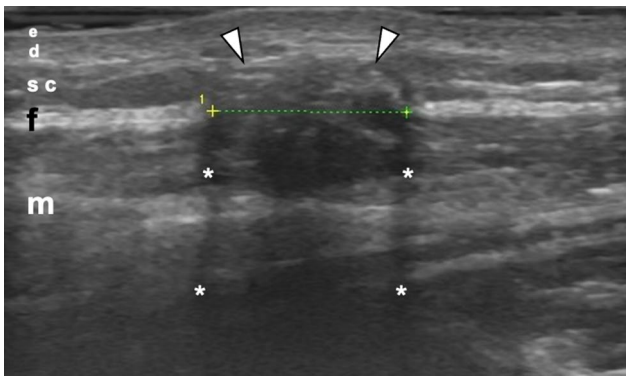


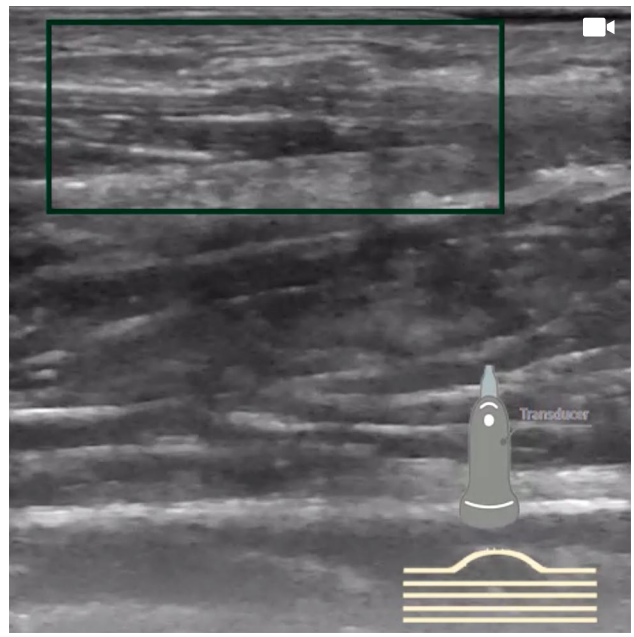

**Figure 1.** Longitudinal ultrasound image of the anterolateral side of the right leg in the forced plantar flexion position. The mushroom-shaped protruding part (arrowheads) of the tibialis anterior muscle (m) through the defect (caliper) in the fascia (f) is visualized. The anechoic linear artifacts (asterisks) on both sides of the herniation make its round structure easily recognized. e: epidermis; d: dermis; sc: subcutaneous fat.

leg.[2] Herewith, the diagnosis might be challenging since the mass cannot be palpated during rest. Therefore, in the presence of relevant medical history, examination while straining the muscle is crucial.[1] Dynamic US examination is paramount for prompt diagnosis as well as avoiding unnecessary patient anxiety or biopsy.[3,4] Additionally, US is inexpensive, noninvasive, fast, and easily accessible. The convenient and interactive use of this patient and physician friendly method in any position is invaluable.

The characteristic US findings include focal elevation/bulging of the thin echogenic fascia when it is intact or protrusion of the underlying muscle "like a mushroom" through the defect when it is not intact.[4] Of note, using a generous amount of gel, optimizing the settings, and avoiding unnecessary compression with the probe are a few technical hints for the US examination. While positive Doppler signals could support the theory that muscle herniation occurs in areas of weakness where vessels enter the fascia,[4] the use of three dimensional imaging or elastography can also be noteworthy in small or doubtful lesions.[5]

**Patient Consent for Publication:** A written informed consent was obtained from the patient.

**Data Sharing Statement:** The data that support the findings of this study are available from the corresponding author upon reasonable request.




**Video 2.** Dynamic ultrasound examination of the muscle hernia. Note that sonopalpation (with probe compression) causes the disappearance of the herniation (together with the artifacts).

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## REFERENCES

1. Sharma N, Kumar N, Verma R, Jhobta A. Tibialis anterior muscle hernia: A case of chronic, dull pain and swelling in leg diagnosed by dynamic ultrasonography. Pol J Radiol 2017;82:293-5.
2. Nguyen JT, Nguyen JL, Wheatley MJ, Nguyen TA. Muscle hernias of the leg: A case report and comprehensive review of the literature. Can J Plast Surg 2013;21:243-7.
3. Hullur H, Salem Y, Al Khalifa J, Salem A. Tibialis anterior muscle hernia: Rare but not uncommon. BMJ Case Rep 2016;2016:bcr2016217569.
4. Beggs I. Sonography of muscle hernias. AJR Am J Roentgenol 2003;180:395-9.
5. Drakonaki EE, Sudoł-Szopińska I, Sinopidis C, Givissis P. High resolution ultrasound for imaging complications of muscle injury: Is there an additional role for elastography? J Ultrason 2019;19:137-44