

Transfascial Muscular Hernias Diagnosis by dynamic ultrasonography

*Xavier Fustà-Novell, Daniel Morgado-Carrasco, Pilar Iranzo, Priscila Giavedoni

الفتق العضلي عبر الجاهية
التشخيص بواسطة الموجات فوق الصوتية الديناميكية

كزافييه فوستا نوفيل، دانييل مورجادو كاراسكو، بيلار إيرانزو، بريسيليا جيافيدوني

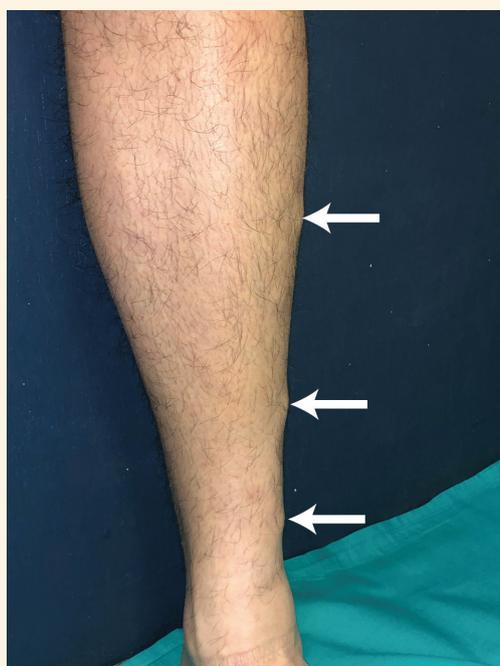


Figure 1: Photograph of the left leg of a 28-year-old male patient showing subcutaneous nodules on the anterior and lateral sides appearing in a standing position (arrows).

A 28-YEAR-OLD MALE PATIENT PRESENTED TO the Department of Dermatology of the Hospital Clínic de Barcelona, Barcelona, Spain, in 2018 with a seven-year history of skin-coloured soft nodules on the anterior and lateral sides of the legs that appeared when standing and disappeared with pressure release [Figure 1]. The lesions were asymptomatic but became painful after hours of standing or during physical exercise. The patient had performed weightlifting in the past and denied any previous trauma in the areas where the nodules appeared. A skin biopsy and a musculoskeletal magnetic resonance imaging (MRI) scan, performed at another institution, reported no pathological findings. An ultrasonographic examination with an 18-MHz probe (MyLab™ Class C, Esaote, Genoa, Italy)

of the lateral side of the left leg at rest was performed with no pathological findings [Figure 2A]. The examination was repeated with the patient in a standing position, revealing thinning and partial discontinuity of the fascial layer resulting in muscular protrusion to the subcutaneous tissue [Figure 2B]. These findings were evident due to the increase in muscle pressure while standing. Furthermore, in the Doppler mode, blood vessels going through the muscle *fascia* at the sites of muscular protrusions were observed [Figure 2C]. The patient was diagnosed with transfascial muscular hernias of the lower extremities. He was conservatively managed and the lesions had not progressed at the one-year follow-up.

Department of Dermatology, Hospital Clínic de Barcelona, Barcelona, Spain

*Corresponding Author's e-mail: fusta@clinic.cat

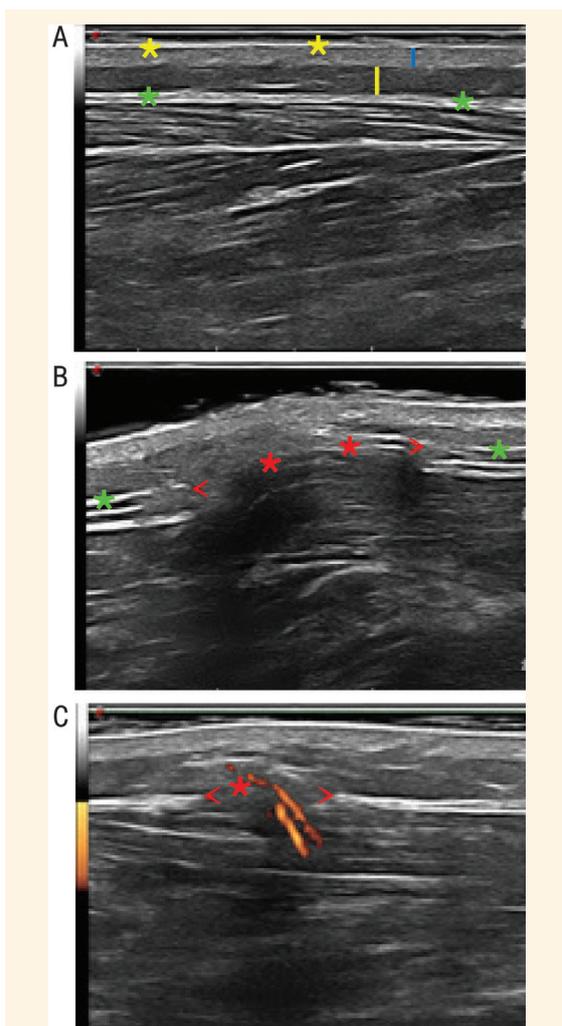


Figure 2: A: Ultrasound image of the lateral side of the left leg of a 28-year-old male patient in a sitting position with no pathological findings showing the epidermis (yellow asterisks), dermis (blue line), subcutaneous tissue (yellow line) and muscle fascia (green asterisks). B: Ultrasound image of the same patient in a standing position showing a disruption in the integrity of the fascia (red arrows), resulting in a muscular herniation through the fascial plane (red asterisks). The normal muscle fascia can be seen beyond the hernia (green asterisks). C: Doppler mode ultrasound image of the same patient in a standing position showing blood vessels (red asterisk) going through the fascial plane at the sites of muscular herniation. Red arrows indicate the margins of the hernia.

Comment

Muscular hernias are frequently found during traumatology and orthopaedic consultations, yet they are still unknown by many physicians from other medical specialties. Few cases have been reported of this entity, resulting in misdiagnosis and unnecessary diagnostic tests.^{1,2}

A *fascia* is a band of connective tissue beneath the skin that attaches, stabilises and separates muscles and other internal organs. There are three main types of *fascia*: 1) the superficial *fascia* which is located in the subcutaneous tissue and blending with the reticular layer of the dermis; 2) the deep *fascia* which interpenetrates and surrounds muscles, bones, nerves and blood vessels; and 3) the visceral *fascia* which wraps around internal organs. In this article, the terms “fascial layer” and “muscle *fascia*” refer to the deep *fascia* that surrounds the muscle.

Muscular hernias are focal protrusions of muscle tissue through fascial defects.¹ These defects can be due to a congenital defect of the muscle *fascia* or an acquired lesion, usually secondary to trauma.² The legs, particularly the tibialis anterior muscle, are most frequently affected.³ The typical clinical presentation consists of young athletic males who present with subcutaneous soft nodules in the legs that appear with muscle contraction (when standing or during physical exercise) and disappear when muscles relax.^{1,3} Although the lesions are asymptomatic, they may cause discomfort or become painful with physical exercise.³ It is not uncommon for these patients to be referred to a dermatologist, raising the differential diagnosis with vascular malformations, haematomas or soft tissue tumours.³

Ultrasound scans are used in the diagnosis of many musculoskeletal diseases and can be a valid alternative to MRI scans, which are the gold standard for most of these entities.⁴ Ultrasound investigations are fast, safe, painless, well-tolerated, widely accessible and less expensive than other methods; in addition, patients are not exposed to ionising radiation. On the other hand, this technique has some limitations. Ultrasonography is highly operator-dependent whereby adequate training in obtaining and interpreting the images is essential.⁴ However, trans fascial muscular hernias can be easily diagnosed and confirmed with ultrasonography. A dynamic study will show a discontinuity in the muscle *fascia* resulting in a muscular protrusion that will become more evident with muscular contraction.⁵ In Doppler mode, vessels penetrating the *fascia* at the site of the hernia can be visualised. Although many cases of trans fascial muscular hernias have been reported in the literature, cases in which MRI scans have been falsely negative are scarce. The present case highlights that these lesions can go completely unnoticed in any imaging technique if a dynamic study is not performed with the patient standing.⁵

Treatment of asymptomatic hernias is not necessary. For painful lesions or for cosmetic reasons, surgical treatment may be considered. Longitudinal fasciotomy is the most frequently used surgical technique.³ Simple fascial repair is not recommended due to the risk of developing compartment syndrome.¹

In the current case, the patient was diagnosed with transfascial muscular hernias by using a dynamic ultrasound study; this diagnosis could not be confirmed even after an MRI scan or histopathological studies. Physicians should be familiar with this entity to avoid invasive and unnecessary tests, such as in the current case.

References

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