

The Vanishing Leg Swelling: A Rare Case of Muscle Herniation

Abstract

Muscle hernias of the lower limb are rare clinical conditions resulting from focal defects in the deep fascia, permitting herniation of the underlying muscle. They are often underdiagnosed due to nonspecific presentation and rarity. We report the case of a 34-year-old male who presented with an intermittently painful and visible swelling over the left leg, which became prominent on standing and during muscle contraction and reduced at rest. Clinical examination, supported by dynamic ultrasonography, confirmed a muscle hernia involving the anterior compartment of the left leg. The patient was managed according to symptom severity with a favorable clinical outcome. This case underscores the need for heightened clinical awareness among general surgeons when evaluating leg swellings and highlights the utility of dynamic imaging in establishing the diagnosis and guiding appropriate management.

Keywords: Muscle hernia; Lower limb; Leg swelling; Fascial defect; Dynamic ultrasonography.

Case Report

Introduction

Muscle hernia of the lower limb is a rare condition caused by a defect in the deep fascia, allowing protrusion of the underlying muscle through the fascial defect. It most commonly involves the anterior compartment of the leg, particularly the tibialis anterior muscle. Due to its rarity and intermittent presentation, it is frequently misdiagnosed as a soft tissue tumor, varicosity, or lipoma. Dynamic ultrasonography plays a crucial role in confirming the diagnosis. We report a case of a 34-year-old male presenting with left shin swelling diagnosed as a muscle hernia and managed surgically.

Case Presentation

A 34-year-old male presented to the general surgery outpatient department with complaints of an intermittent swelling over the anterior aspect of the left leg for six months, associated with mild discomfort during physical activity. The swelling became prominent on standing, walking, and dorsiflexion of the foot, and reduced completely at rest. There was no history of trauma, surgery, or similar complaints in the past.

On physical examination, a soft, non-tender, reducible swelling measuring approximately 3×2 cm was noted over the left shin. The swelling became more prominent on dorsiflexion of the ankle and while standing. Overlying skin was normal, with no signs of inflammation. Distal neurovascular examination was unremarkable.



Figure 1: Clinical photograph showing left shin swelling on standing.

Investigations

Routine laboratory investigations were within normal limits. Static ultrasonography performed at rest did not reveal any abnormality. However, dynamic ultrasonography during dorsiflexion and standing demonstrated a focal defect in the deep fascia of the anterior compartment with herniation of underlying muscle fibers, consistent with a muscle hernia.

Diagnosis

Based on clinical examination and dynamic ultrasonographic findings, a diagnosis of muscle hernia of the left anterior compartment of the leg was made.



Figure 2: Dynamic ultrasound image during muscle contraction demonstrating muscle herniation through the fascial defect

Management and Outcome

Considering the patient's symptomatic presentation and cosmetic concern, surgical intervention was planned. Under regional anesthesia, a longitudinal incision was made over the swelling. Intraoperatively, a fascial defect measuring approximately 2 cm was identified in the deep fascia of the anterior compartment, with protrusion of muscle fibers during contraction.

The herniated muscle was reduced, and the fascial defect was closed using 2-0 Prolene sutures in an interrupted manner, ensuring a tension-free repair. Hemostasis was achieved, and the wound was closed in layers.

Postoperative recovery was uneventful. The patient was advised limb elevation and gradual return to activity. On follow-up at three months, the patient was asymptomatic with no recurrence of swelling.



Figure 3: Intraoperative image showing fascial defect

Discussion

Muscle hernias of the leg are uncommon and often underdiagnosed causes of anterior leg swelling. They may be congenital due to inherent fascial weakness or acquired following trauma or chronic exertion. The tibialis anterior muscle is most commonly involved owing to its superficial location.

Dynamic ultrasonography remains the investigation of choice, as static imaging may fail to demonstrate the defect. Surgical management is indicated in symptomatic cases, those with cosmetic concerns, or when conservative treatment fails. Fascial defect closure using non-absorbable sutures provides good outcomes with low recurrence rates.

Muscle herniation in the lower limb is rare but should be considered when intermittent swelling that accentuates with activity is present. The tibialis anterior muscle is most commonly involved due to its superficial location and fascial vulnerability. Diagnostic confirmation frequently relies on dynamic ultrasonography, which demonstrates fascial discontinuity and herniation during muscle contraction or weight-bearing maneuvers.

Surgical Options:

Once symptomatic or cosmetically concerning, surgical intervention may be indicated. A systematic review indicates several operative strategies, each with

specific indications and outcomes: direct fascial repair, fasciotomy, synthetic mesh repair, and autologous graft repair.

Direct repair: Simple closure of the fascial defect can be effective, especially for smaller defects, as was performed in this case. However, it may carry a risk of recurrence or, in rare instances, compartment syndrome if excessive tension is applied.

Fasciotomy: Either open or minimally invasive fasciotomy decompresses the compartment and is particularly advocated in congenital hernias or when larger fascial defects exist. Minimally invasive techniques have shown good mid-term outcomes with high return-to-activity rates and low complication profiles.

Mesh repair: Synthetic mesh placement has been used successfully for larger defects, especially in athletes, providing structural support and reducing recurrence risk.

Autologous grafts: Tissue grafts (e.g., fascia lata) can also be harvested for defect closure, particularly where synthetic materials are contraindicated.

No single technique has been universally accepted as the gold standard; choice depends on defect size, patient activity level, and surgeon preference.

Conclusion

Muscle hernia, though rare, should be considered in patients presenting with intermittent leg swelling. Dynamic ultrasonography is a valuable diagnostic tool. Surgical repair with fascial defect closure offers definitive treatment in symptomatic cases, with excellent clinical outcomes.

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