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AN INCIDENTAL DOUBLE TAKE: SYNCHRONOUS ILIOPSOAS AND GLUTEAL INTRAMUSCULAR LIPOMAS WITH A DIAGNOSTIC TWIST

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ABSTRACT

Intramuscular lipomas are uncommon, accounting for less than 1% of all lipomas. We report two synchronous intramuscular lipomas incidentally found on CT enterography in a 45-year-old woman: one in the left iliacus-iliopsoas (160 mm long axis, single 5-mm septum) and one in the ipsilateral gluteus medius (58 × 60 × 30 mm, no septa). Both showed fat density without enhancement, but the iliopsoas lesion's size and septal thickness exceeded thresholds reported for atypical lipomatous tumor/well-differentiated liposarcoma. This case highlights the rarity of multifocal intramuscular lipomas and the limits of imaging-based risk stratification when individual criteria conflict with otherwise benign morphology.

KEYWORDS

Intramuscular lipoma, Iliopsoas muscle, Gluteus medius muscle, Atypical lipomatous tumor

MAIN ARTICLE

INTRODUCTION

Lipomas are the most common soft tissue tumor encountered in clinical practice; however, their intramuscular subtype is rarely characterized radiologically, and synchronous involvement of two distinct muscles is exceptionally uncommon. Intramuscular lipomas represent a rare subtype, accounting for less than 1% of all lipomas^[1,2]. They most commonly involve large proximal muscles of the trunk and lower extremity, typically presenting as solitary lesions in patients between 40 and 70 years of age^[1,3]. Multifocal involvement of separate muscle groups is exceedingly uncommon. We report such a case, discovered incidentally during abdominal imaging performed for an unrelated indication.

CASE PRESENTATION

A 45-year-old woman with no significant medical history presented with left flank pain. Clinical examination was unremarkable, with no palpable abdominal or pelvic mass. Laboratory investigations were within normal limits.

A contrast-enhanced CT enterography was performed to investigate the abdominal pain and rule out an inflammatory bowel process. No bowel wall thickening or other digestive abnormality was identified. However, imaging incidentally revealed two well-circumscribed, oval soft tissue masses of fat density.

The first lesion arose from the left iliacus muscle and extended into the adjacent iliopsoas muscle, measuring $70 \times 45 \times 160$ mm, with regular contours and a single internal septum measuring 5 mm in thickness. The second lesion was located within the ipsilateral (left) gluteus medius muscle, measuring $58 \times 60 \times 30$ mm, also well-defined with regular margins, homogeneous, and without internal septa.

Both masses demonstrated homogeneous fat attenuation on non-contrast sequences, with no soft tissue nodularity, and showed no enhancement following intravenous contrast administration (Figure 1).

Given the overall reassuring morphological features—regular margins, homogeneous fat attenuation, absence of nodularity, and absence of contrast enhancement—but taking into account the large size and septal thickness of the iliacus-iliopsoas lesion, a decision was made

to pursue close-interval radiological follow-up rather than immediate biopsy, with the option of histological sampling reserved for any interval change.

DISCUSSION

Intramuscular lipomas are classified into infiltrative and well-circumscribed subtypes. The infiltrative type accounts for approximately 83% of cases and is characterized by muscle fibers intermingled within the fatty lesion, whereas the well-circumscribed type, as observed in our patient, has a distinct capsule clearly separating it from adjacent muscle^[1,2]. This distinction carries clinical relevance, as infiltrative and well-circumscribed subtypes have been reported to carry local recurrence rates of 19% and 0% respectively^[1], underlining the importance of subtype recognition for surgical planning when excision is considered.

On cross-sectional imaging, a benign intramuscular lipoma typically appears as a well-defined, homogeneous mass of fat density on CT or fat signal intensity on MRI, isodense/isointense to subcutaneous fat, without significant enhancement^[3]. The presence of internal septa is a well-recognized but non-specific feature. According to established imaging criteria, a fatty tumor composed entirely of fat signal with only thin septa can be diagnosed as a lipoma, whereas septa measuring 2 mm or more in thickness are suggestive of an atypical lipomatous tumor (ALT)^[4]. This threshold has been further supported by pathological correlation studies: septa thicker than 2 mm have been shown to be more prevalent in lipomatous tumors located in deep somatic regions, such as intramuscular or intermuscular compartments, compared with thin or absent septa more typically seen in subcutaneous lesions^[5].

Other MRI features associated with malignant transformation include older patient age, larger lesion size exceeding 10 cm, decreased fat composition, and nodular or globular areas of non-fat signal within the lesion^[6]. In a comparative series, septal structures were identified on MRI in 91.6% of ALT cases compared with only 20.8% of lipomas, and contrast enhancement was significantly more frequent in ALT (81.2%) than in lipomas (18.8%)^[7], reinforcing septal characteristics and enhancement pattern as key discriminating features.

In our case, the gluteus medius lesion demonstrated features that were unequivocally benign: small size, homogeneous fat density, regular margins, and absence of internal septa or enhancement. The iliacus-iliopsoas lesion, however, posed a greater diagnostic challenge. Its long-axis diameter of 16 cm exceeded both the 10-cm threshold proposed by Kransdorf et al.^[6] and the 12.8-cm cutoff more recently reported^[4], and its single septum, measuring 5 mm in

thickness, exceeded the 2-mm threshold associated with an increased likelihood of ALT^[4,5]. Taken in isolation, these two features would raise concern for an atypical lipomatous tumor rather than a simple lipoma.

Nonetheless, several other features favored a benign process: the lesion contained only a single septum rather than multiple or nodular septa, showed no non-fat nodular component, and demonstrated no contrast enhancement—the latter being a particularly discriminating feature, as enhancement has been reported in up to 81.2% of ALT cases compared with only 18.8% of lipomas^[7]. This composite imaging picture—large size and a thick septum in an otherwise homogeneous, non-enhancing, non-nodular fatty mass—illustrates a well-recognized diagnostic grey zone in which no single imaging criterion is sufficient, and management decisions must weigh the overall constellation of findings rather than any single discordant feature^[4].

The synchronous occurrence of intramuscular lipomas in two anatomically distinct muscle groups, as observed here, is rarely documented in the literature, the majority of reported cases describing solitary lesions^[1,8]. This multifocality raises the question of an underlying predisposition to lipomatous proliferation, although no clinical or familial features suggestive of a lipomatosis syndrome were present in this patient.

CONCLUSION

This case illustrates an unusual presentation of multifocal intramuscular lipomas involving the left iliopsoas and gluteus medius muscles, discovered incidentally during unrelated abdominal imaging. It underscores that individual “red-flag” imaging criteria, such as large size or septal thickness, must be interpreted within the overall constellation of findings rather than in isolation, and highlights the role of close radiological follow-up in indeterminate cases where biopsy is not immediately pursued.

FIGURES:

Figure 1: Contrast-enhanced CT of the two synchronous intramuscular lipomas

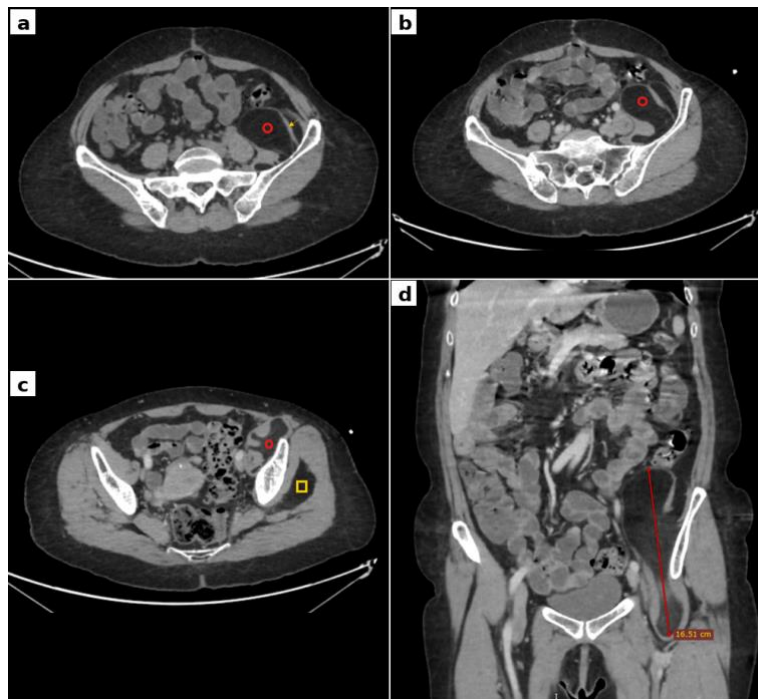


Figure 1. Contrast-enhanced CT of the two synchronous intramuscular lipomas. (a) Non-contrast axial CT showing the left iliopsoas lipoma (circle) with a single internal septum (arrow). (b) Contrast-enhanced axial CT at a corresponding level demonstrating absence of enhancement within the iliopsoas lipoma (circle). (c) Axial CT at a more caudal level showing both lesions simultaneously: the simple left gluteus medius lipoma (square) and the iliopsoas lipoma (circle). (d) Coronal reformatted CT demonstrating the large craniocaudal extent of the iliopsoas lipomatous mass (16.51 cm).

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