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(CASE REPORT)

Giant intramuscular thigh lipoma: A case report and review of literature

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Abstract

Introduction: Lipomas represent the most frequent type of soft tissue tumor. A giant lipoma is typically defined as a lesion measuring ≥10 cm in at least one dimension or weighing more than 1000 g.

While these tumors are often asymptomatic, they may occasionally produce compressive symptoms, including neuropathic pain or motor impairment, particularly when located in areas that affect gait or mobility.

Presentation of case: We report the case of a 48-year-old woman with no relevant past medical history who presented with a nine-year history of a progressively enlarging, painless mass on the right thigh. The lesion had gradually increased in size, leading to discomfort and limitation of daily activities. Magnetic resonance imaging (MRI) revealed a well-defined intramuscular , adipose mass measuring 26.5 × 12.5 × 6 depending on the rectus femoris muscle, well defined and encapsulated, with the same signals as fat.

Its lower pole reaches the myotendinous junction of the quadriceps, and its upper pole reaches the trochanteric massif.. Complete excision with clear margins was achieved while preserving the affected musculature. The postoperative course was uneventful, and the patient demonstrated a satisfactory functional recovery.

Discussion: Lipomas are common benign tumors originating from adipose tissue. Their considerable size or deep extension can pose challenges in surgical management. Although malignant transformation is rare, careful excision is warranted. Close collaboration between radiologists and surgical pathologists is essential, particularly in assessing muscular involvement and identifying any infiltrative growth patterns.

Conclusion: Giant lipomas should always prompt consideration of potential malignant transformation. Radiological assessment usually provides sufficient information to determine the necessity of a biopsy, thereby preventing unnecessary invasive procedures. During surgical excision, maintaining a margin of approximately 1 cm of healthy tissue is recommended to minimize the risk of local recurrence.

Keywords: Lipoma; Lipocytes; Lipoblasts; Tumors

1. Introduction

Lipomas represent the most common type of soft tissue tumor, accounting for approximately 16% of all mesenchymal neoplasms [1]. They are generally classified as either subcutaneous or subfascial, with the latter further divided according to depth into intermuscular and intramuscular types.

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Intermuscular lipomas typically develop between large muscle groups, forming a central mass that may secondarily infiltrate adjacent musculature. In contrast, intramuscular lipomas arise within muscle bundles, expanding along the intermuscular septa and invading neighboring muscle fibers [2,3].

Although lipomas may occur in virtually any region of the body, they are most frequently observed in the trunk and upper limbs. They usually present as small, soft, and mobile masses; however, in some instances, they may exhibit a firmer consistency and reach considerable dimensions [4].

Because adipose tissue distribution is greater in females, lipomas tend to be more prevalent among women, particularly between the ages of 40 and 60 years [5,6].

Giant lipomas are defined as lesions exceeding 10 cm in at least one dimension or weighing more than 1000 g [7]. While typically asymptomatic, they may occasionally produce compressive symptoms, including neuropathic pain and gait disturbances, due to mass effect on surrounding neurovascular structures [8,9].

Only a limited number of giant lipoma cases have been documented in the literature (Table 1). This report follows the SCARE criteria for surgical case reports [10].

Table 1 Large giant lipomas in French/English-language literature (>10 cm and >1000 g).

	Reference	Year	Localization	Pathology	Size (cm)/weight (kg)
1	Current case	2025	Lower limb	Lipoma	26.5 × 12.5 × 6/1.95
2	Litchinko et al [15]	2017	Gluteal	Unknown	30 × 60/20
3	Emegoakor et al [16]	2017	Lower limb	Unknown	22 × 17/??
4	Mascarenhas et al [17]	2017	Gluteal	Liposarcoma	17/??
5	Guler et al [18]	2016	Back	Unknown	38 × 22 × 21/3.575
6	Grimaldi et al [19]	2015	Back	Unknown	36 × 40 × 24/5.75
7	Dabloun et al [20]	2015	Back	Unknown	25 × 25 × 18/??
8	Silistreli et al [21]	2004	Back	Unknown	??/12.350
9	Brandler et al [22]	1994	Back	Unknown	??/22.7
10	Martin et al [23]	1928	Neck	Unknown	??/12.5

2. Presentation of case

We report the case of a 48-year-old woman with no relevant medical history who presented with a nine-year history of a progressively enlarging, painless mass on the posterior aspect of the right thigh. The patient sought evaluation for both aesthetic and functional concerns due to the lesion's progressive growth and interference with daily activities. On physical examination, a well-defined, mobile, non-tender, and firm mass was palpable along the entire posterior compartment of the right thigh.

Magnetic resonance imaging (MRI) revealed a well-defined intramuscular, adipose mass measuring 26.5 × 12.5 × 6 depending on the rectus femoris muscle, well defined and encapsulated, with the same signals as fat.

Its lower pole reaches the myotendinous junction of the quadriceps, and its upper pole reaches the trochanteric massif. (Fig. 1)

Given the characteristic clinical and radiological findings, the decision was made to proceed with complete surgical excision after prior percutaneous biopsy reaveling a Lipoma. Tumor resection was performed with clear margins while preserving the involved musculature (Fig. 2). A longitudinal approach was selected to facilitate adequate exposure and tension-free flap closure.

The postoperative course was uneventful, and the patient was discharged on the third postoperative day. Histopathological examination confirmed the diagnosis of intramuscular lipoma composed of mature adipocytes without lipoblasts, cellular atypia, or vascular invasion—findings consistent with a benign lipoma

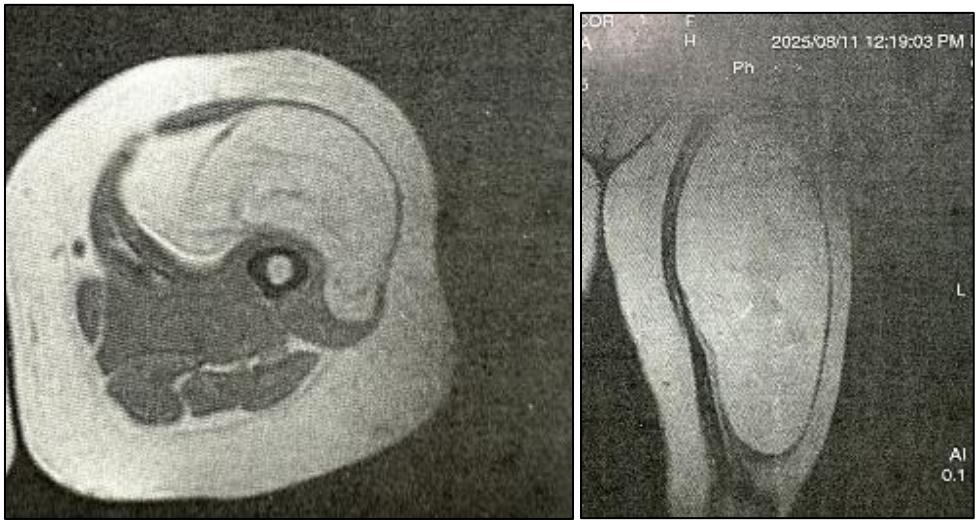

Figure 1 MRI showing the intramuscular Lipoma

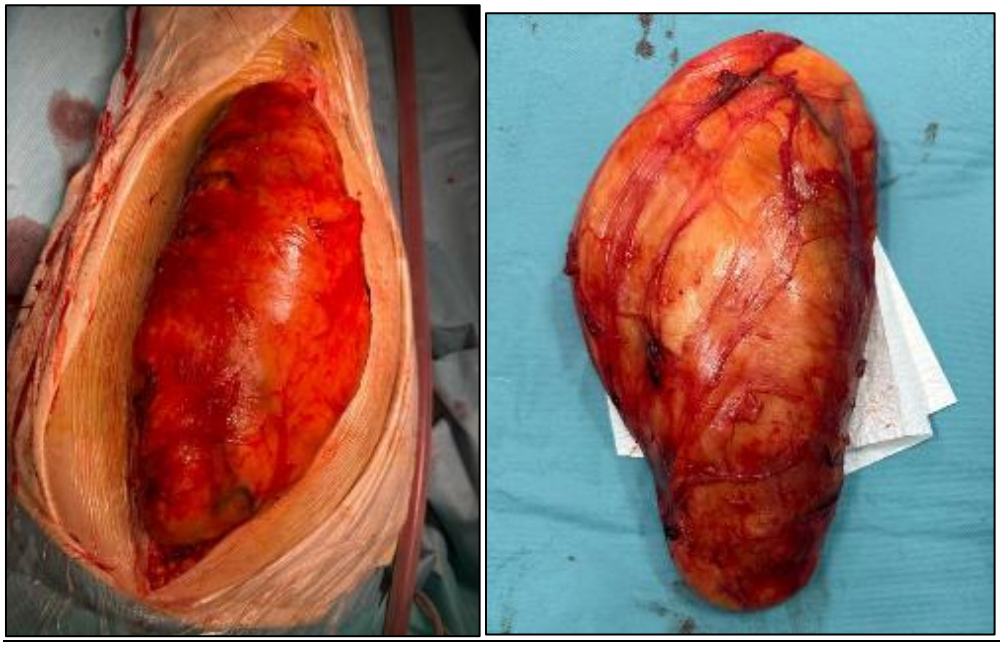

Figure 2 Gross appearance of giant lipoma during surgery and mass excised with 1 cm margin

3. Discussion

Lipomas are common benign soft tissue tumors that arise from fatty tissue, which may challenge surgical management due to their extension and dimensions. Lipomas often require delicate surgical intervention due to their potential risk of malignant transformation.

Lipomas can be managed conservatively or excised. Lipomas are removed for the following reasons; cosmetic motives, evaluation of histology, mainly when liposarcomas must be ruled out, when they cause symptoms or when they grow and become larger than 5 cm. Indications for biopsy include a firm, rapidly enlarging mass [6]. Other treatments include liposuction in non-giant lipomas [11]. In this case, we decided to excise the tumor with wide margins since benignity cannot be assured, due to the large size of the mass, despite benign findings in the MRI. We concluded that primary

excision in giant lipomas with benign ultrasound and MRI findings such as thin septa, homogenous echogenicity, and well-defined capsule limits are sufficient to plan a resection without prior core biopsy. This is also stated by Kransdorf et al. [12], who remarks that although there are CT or MRI features that distinguish between lipomas and liposarcomas, suspicious characteristics such as large size, heterogeneity, irregularly thickened septa, high degree of vascularity, and low-fat content all warrant an initial biopsy. However, if local recurrence, positive margins, or final pathology reports malignancy, immediate referral to oncology should be made to start radiotherapy as soon as possible.

Liposarcomas are reported to comprise 7 %–27 % of soft tissue sarcomas, and they may occur wherever fat is present; however, it now seems that their true incidence is much lower, mainly because of the recognition of the myxoid variant of malignant fibrous histiocytoma as a separate entity [13,14].

Highlights

- Surgical management of lipomas should be performed with precision, as these lesions, although typically benign, carry a potential risk of malignant transformation.
- Clinical or radiological findings such as substantial size, internal heterogeneity, irregular septations, or increased vascularity should raise suspicion and warrant a preoperative biopsy.
- Radiological assessment generally provides sufficient diagnostic guidance to determine the need for tissue sampling, thereby minimizing unnecessary invasive procedures.
- Complete excision with approximately a 1 cm margin of surrounding healthy tissue is recommended to reduce the risk of local recurrence.

4. Conclusion

In conclusion, soft tissue tumors larger than 10 cm or heavier than 1000 g should always raise awareness of malignant transformation. Radiological guidance should provide enough evidence to decide whether to do a biopsy or not; hence, saving the patient an extra invasive procedure. We recommend taking at least 1 cm of border margin while removing these tumors to avoid local recurrence. Due to the extension of dissection of these giant lipomas, we also recommend always leave a drain to prevent complications such as hematoma or seroma. We also believe surgical pathologists and radiologists must draw attention to muscle involvement and infiltrative patterns.

It is important to note that not all patients with giant lipomas seek medical attention with typical symptoms and may instead attend physicians due to cosmetic reasons.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

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