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Case Report of an Intermuscular Thenar Lipoma with a Literature Review

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Summary. *Lipomas are the most common benign tumors found in the hand, with those exceeding 4 cm in size classified as giant lipomas. However, large lipomas in the hand are rare due to their visibility and limited subcutaneous tissue in this area. When they do occur, they can interfere with hand function. Typically, lipomas in the dominant hand are detected early and surgically removed. We present a case of a giant lipoma in the hand, notable for its unusually large size and the fact that it remained asymptomatic until the time of presentation.*

Keywords: *lipoma; hand; thenar.*

Introduction

Lipomas can be found anywhere in the body, with the majority located in the head and neck region, as well as the back and abdomen. Lipomas are one of the most common benign mesenchymal neoplasms. They may progress in size over time and can be painful. They can be superficial or deep. Deep soft-tissue lipomas of the hand are rare, and among them, thenar intermuscular lipomas are very rare.

A lipoma is a benign tumor composed of adipose tissue and is the most common benign soft-tissue tumor [1]. Lipomas are commonly found in adults aged 40 to 60 years, but they can also be found in younger adults and children. According to the 2002 World Health Organization's Committee for the Classification of Soft-Tissue Tumors [2], they are categorized into nine types, including lipoma, lipomatosis, lipomatosis of nerve, lipoblastoma, angiolipoma, myolipoma of soft tissue, chondroid lipoma, spindle cell/pleomorphic lipoma, and hibernoma. Benign lipomatous lesions affecting bone include intraosseous lipoma, parosteal lipoma, and liposclerosing myxofibrous tumor. Benign lipomatous lesions may also affect joints and tendon sheaths, either focally, as in the case presented below, or diffusely [3-6].

Thenar intermuscular lipoma is a rare lesion that has been described in several case reports [3, 6, 7]. These lesions originate inside the muscles and usually present with a slowly growing, painless mass that sometimes restricts the range of motion. The overlying skin is normal and not adherent to the mass. MRI or ultrasound can be used to confirm the diagnosis [4]. Surgical excision is the treatment of choice for thenar intermuscular lipomas [5, 8, 9]. In most reported cases, surgical excision of the lipoma resulted in full functional recovery. Due to its rarity, the recurrence rate is unclear. We are reporting a case of thenar intermuscular lipoma.

Case Report

A 54-year-old female patient presented with complaints of swelling in the left hand for the past 5 months. There were no complaints of pain or loss of function. The swelling was slow-growing and gradually increased to its current size. There was no sensory neurological deficit in the thumb. The patient was able to perform her daily tasks without any difficulty.

On examination, there was a well-defined lobular mass measuring 4×4 cm, occupying the entire left thenar eminence. It was firm and non-mobile. Thumb movements were intact. With some difficulty the patient was able to oppose the thumb to other fingers, but she could not achieve a firm grip. A clinical diagnosis of lipoma was made.

An MRI study of the left hand was conducted, revealing a large, well-defined, multilobulated T2- and T1-hyperintense mass lesion measuring 4.1×3.9×2.7 cm (43.17 cm3). The mass involved the subcutaneous tissue in the palmar aspect and thenar eminence of the left hand, extending into the first interdigital space and abutting the adjacent flexor tendon. There was no evidence of invasive features, sarcomatous degeneration, or bony involvement [Fig. 1, 2].

Surgery was performed under intravenous anesthesia and supraclavicular block with tourniquet control. Upon exploration, a firm, multilobulated yellowish tumor was found between the thenar muscles. The flexor pollicis brevis muscle was

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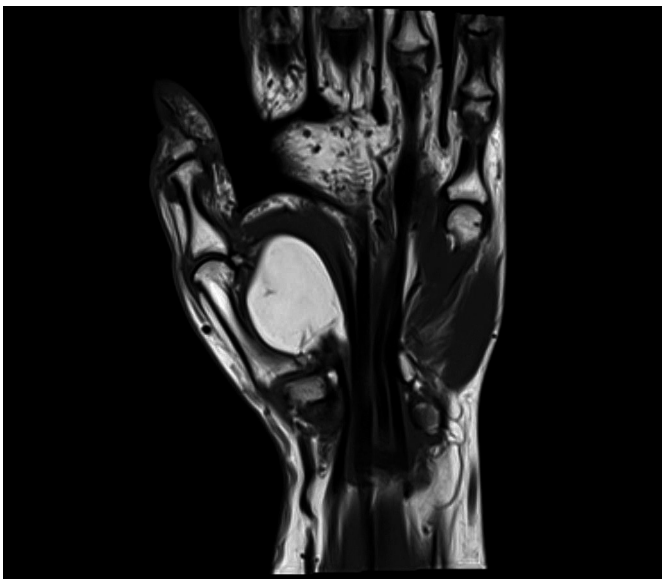

Fig. 1. The coronal MRI shows that the tumor is independent of the first and second metacarpals and the periosteum of these bones is normal.

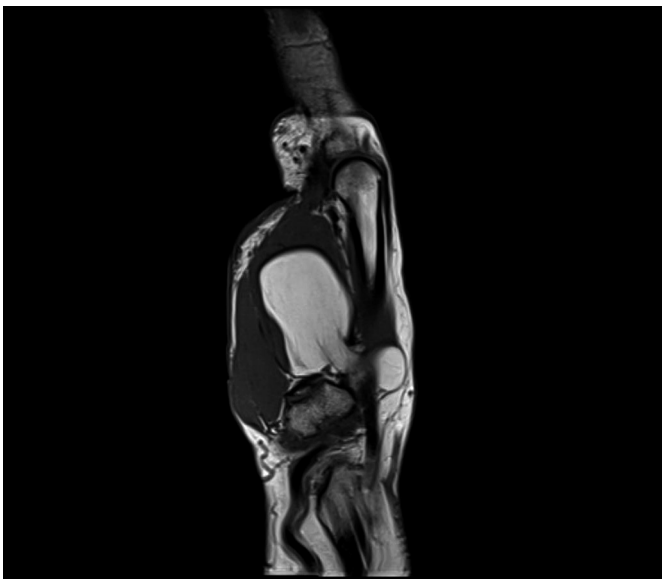

Fig. 2. The sagittal MRI shows that the tumor is located in the first intermetacarpal space.

stretched, with an indentation of the tumor beneath it. There is an intraoperative photo showing the giant lipomatous mass 4.1×3.9×2.7 cm [Fig. 3].

The thenar muscles were found to be atrophied, and the nerves were stretched. Careful dissection using magnification was performed to preserve the muscles and neurovascular pedicles. Excess skin was removed, and the wound was closed in layers after placing a suction drain [Fig. 4].

The specimen was sent for histopathological examination. Hematoxylin and Eosin (H&E) stained multiple sections, showing a benign mesenchymal neoplasm composed of lobules of fat cells separated by thin fibrous septa, suggestive of a lipoma [Fig. 5].

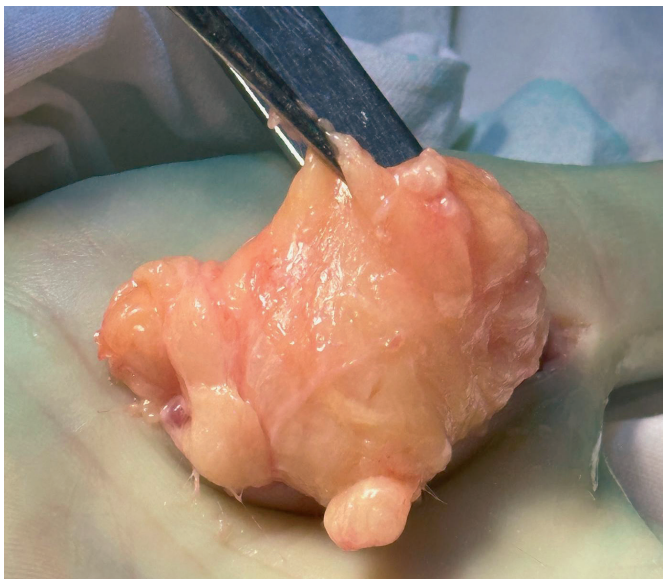

Fig. 3. Intraoperative photo showing the giant lipomatous mass of 4.1×3.9×2.7 cm.

Fig. 4. The wound on the day after surgery after drain removal.

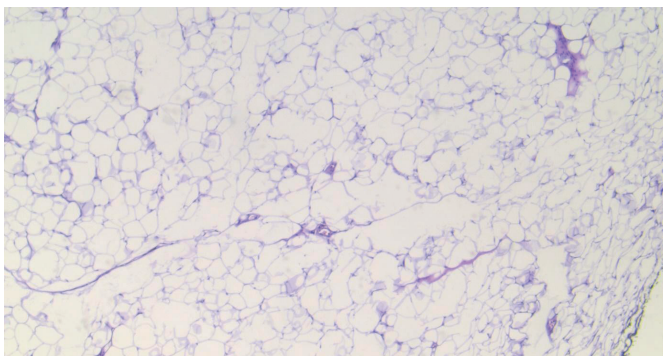

Fig. 5. Histological picture that reveals a well-differentiated mature adipose tissue with no evidence of any malignancy.

Postoperatively, thumb function was fully restored and active, with no neurovascular deficit observed. The patient was able to oppose her fingers without difficulty and could make a complete fist. Grip strength was also improved.

Short Literature Review

Lipomas can arise in any part of the body, as fat is present throughout. They are often referred to as ubiquitous or universal tumors. The etiology of lipomas is unclear. Genetic abnormalities are found in two-thirds of cases, with possible contributing factors including trauma, obesity, liver diseases, and alcohol abuse.

Lipoma is the most common soft tissue tumor of the hand. Lipomas can be either superficial or deep. Deep lipomas are located beneath the deep fascia and are further subdivided into intermuscular and intramuscular types. Intermuscular lipomas are well encapsulated and exhibit expansile growth, whereas intramuscular lipomas are irregular and infiltrative. A lipoma of the hand larger than 4 cm is termed a giant lipoma [10-12].

Lipomas are usually insidious in onset and slow-growing. Some patients may experience symptoms such as pain, paresthesia, sensory deficits, reduced range of motion, decreased grip strength, muscle paralysis, muscle atrophy, and trigger finger [13, 14]. A lipoma can interfere with finger movements, cause pain due to nerve entrapment, and, if long-standing, may induce muscle atrophy and paralysis. Malignant changes can occur in large and intramuscular lipomas.

Differential diagnoses include neurofibroma, sebaceous cysts, abscesses, giant cell tumors of the tendon sheath, hemangiomas, fibromas, schwannomas, malignant fibrous histiocytomas, rhabdomyosarcomas, and liposarcomas [15].

Lipomas are often asymptomatic and may be operated on due to pain, fear of cancer, functional deformity, or cosmetic reasons. Small asymptomatic lipomas may be monitored without immediate intervention.

Diagnostic imaging such as ultrasound, CT scan, and MRI are used to investigate lipomas. Key factors to note during imaging include the location of the lipoma (e.g., deep to fascia), its relation to muscles (intermuscular or intramuscular), and its infiltrative nature. Ultrasound is cost-effective and non-ionizing but is highly operator-dependent and less effective at defining tissues. CT scans provide detailed information on tumor infiltration, necrosis, and tumor planes, but involve radiation exposure. MRI offers superior anatomical details, especially regarding nerves and tendons, which is useful for decision-making and surgical planning [16].

The risk of malignancy increases when a lipoma is larger than 5 cm and intramuscular [17]. Adequate and representative sampling is essential for accurate diagnosis.

According to Ivan Chernev and Amanda Norwood, «many of the giant lipomas have well-differentiated liposarcomatous components, which are difficult to differentiate from their benign counterparts» [18]. Cytogenetic testing can aid in distinguishing doubtful cases of lipoma from a well-differentiated liposarcoma. Intramuscular lipomas are quite rare [19-21]. In the described case, the lipoma was identified as intermuscular. Literature reports include giant lipomas of the hand up to 12×10×8 cm (960 cc) [22], which is the largest intermuscular thenar lipoma reported to date. Lipomas in the thenar muscles are rare, and it is recommended that any lipoma larger than 4 cm in the thenar region be considered a giant lipoma [23]. Table 1 lists the giant intermuscular thenar lipomas reported so far [12, 15, 22, 24, 25].

Table №1

Case reports	Size	Volume in cc	Year
Mohad I., Sermoes J. [24]	5x5 cm	125	2008
Yadav S.P. et al. [12]	9.5x4.5x4 cm	171	2013
Lisenda L. et al. [22]	10x12x8 cm	980	2013
Yildiran G. et al. [15]	5x3x2 cm	30	2015
Cemboluk O. et al. [25]	2.5x5.9x6.2 cm	91	2017

Conclusions

Thenar intermuscular lipoma is a rare benign tumor of the hand. It can be diagnosed through clinical examination and imaging and is usually amenable to marginal excision. The size of the lipoma alone is not a major factor in deciding the management of a giant lipoma of the hand. Other features, such as the plane of the tumor, its relation to surrounding structures, and histological diagnosis, are more important than size in planning the treatment. Achieving a bloodless surgical field using a tourniquet and performing careful dissection with magnification are crucial for successful outcomes.

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Клінічний випадок ліпоми м'язевого підвищення 1 пальця кисті та огляд літератури

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Резюме. *Ліпома є найпоширенішою доброякісною пухлиною. Ліпома на кисті розміром більше 4 см класифікується як гігантська ліпома. Ліпома більших розмірів на кисті зустрічається дуже рідко через доступність огляду і меншу кількість підшкірної жирової тканини. Велика ліпома заважає функції кисті. Ліпома домінантної руки зазвичай виявляється рано і підлягає операції. Ми повідомляємо про цей клінічний випадок, оскільки розмір ліпоми був великим і безсимптомним до моменту появи.*

Ключові слова: *ліпома, кисть, м'язеве підвищення 1 пальця кисті.*