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Giant Lipoma of the Palm: A Case Report

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Abstract

Although lipomas are the most common benign form of soft tissue tumor in the body, giant lipomas of the hand, defined as more than 5 cm in diameter, are extremely rare. The most common clinical presentation is a gradually progressive, soft and non-tender mass. They have the potential to invade into surrounding areas and cause a multitude of symptoms due to the compression and proximity of underlying structures. Magnetic resonance imaging is particularly useful for pinpointing the exact location and size of the lesion in preparation for surgical excision. Histopathological diagnosis is the gold standard in diagnosing these lesions to accurately differentiate it to other more aggressive soft tissue tumors. We present a case report of a painless giant lipoma of the left hand of a 61year old female patient who underwent wide resection.

Keywords

Giant Lipoma, Hand Tumors, Lipoma, Wide Resection

1. Introduction

Soft tissue tumors (STTs) are a type of mesenchymal tumor that include lipomatous tumors, fibrohistiocytic and fibrous tumors, vascular tumors, and nerve sheath tumors. The incidence of benign tumors is 3000 cases per 1 million population and 50 cases per 1 million population for malignant ones. Age-related incidences vary but like almost all other malignancies, STTs become more common with increasing age and the median age at diagnosis is 65 years [1].

Lipomas are the most common tumors in the body. These benign soft tissue neoplasms usually develop between the 5th and 7th decades of life and are rarely seen in children. Although they are commonly found on the upper extremity, their occurrence in the hand is rare [2] [3]. Giant lipomas of the hand, defined as >5 cm in diameter, are extremely rare [4] [5]. The most common sites of in-

volvement of intramuscular lipomas are the large muscles of the extremities, especially those of the thigh, shoulder, and upper arm, while the hand location is extremely rare [6]. Histologically, lipomas are almost identical to normal adipose tissue. They are primarily composed of mature adipocytes, with lesions that are uniform in shape and size, well-circumscribed, and typically encased in a capsule. This capsule surrounds a soft, yellow to orange, lobulated mass. Although their histological appearance resembles mature adipose tissue, lipomas originate from mesenchymal preadipocytes rather than mature adipocytes [7]. Additionally, certain variants of lipomas contain a diverse mix of other mesenchymal-derived tissues.

2. Case Report

A sixty one year old female presented with left palmar mass. Symptoms started seven months prior to consultation, the patient noted a soft, movable, non-erythematous mass on the palmar aspect of her left hand. During the interim, the patient noted a slow but gradual progression in size of the mass, with no other associated symptoms such as pain, limitation in range of motion of fingers and wrist. This prompted consultation in another institution where diagnostic workup was done revealing a reading of: "Giant palmar liposarcoma with associated wrist joint effusion, to rule out liposarcoma versus synovial sarcoma". Patient then decided to seek consultation at our institution for further workup and evaluation. Her past medical history reveals her having a Hypercholesterolemia, in which she is maintained on Rosuvastatin 10 mg/tablet, one tablet once a day. Family history, and Personal and Social history were both unremarkable.

On physical examination, there is noted 4 × 6 cm movable, soft, non-tender, non-erythematous mass on the palmar aspect of the left hand. Upon neurovascular assessment, patient is able to do finger flexion, extension of wrist and MCP joints, finger abduction and adduction, and thumb flexion at interphalangeal joint and flexion of index finger at distal interphalangeal joint with no sensory deficit noted (**Figure 1**).

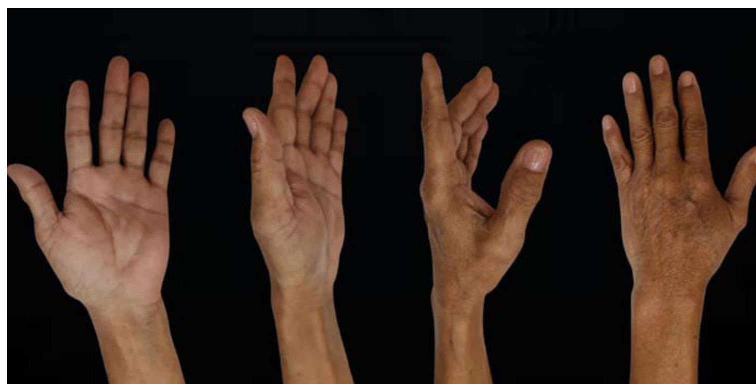

Figure 1. 4 × 6 cm movable, soft, non-tender, non-erythematous mass on the palmar aspect of the left hand.

MRI of the left hand (Figure 2) showed a 4.80 × 6.30 × 2.45 cm (CC × T × AP) thin-walled, septated, and multicompartmental lesion exhibiting hypointensity on fat-suppressed studies located on the palmar aspect of the left hand, immediately beneath the palmar aponeurosis. It elicits mass effect upon flexor digitorum superficialis and profundus tendons and extends into the deep palmar space, between the tendons. Laterally, the lesion abuts the flexor pollicis longus and brevis medially the abductor and flexor digiti minimi, with associated minimal muscular thickening and fat standing in the latter. The lesion encases the median and ulnar nerves.

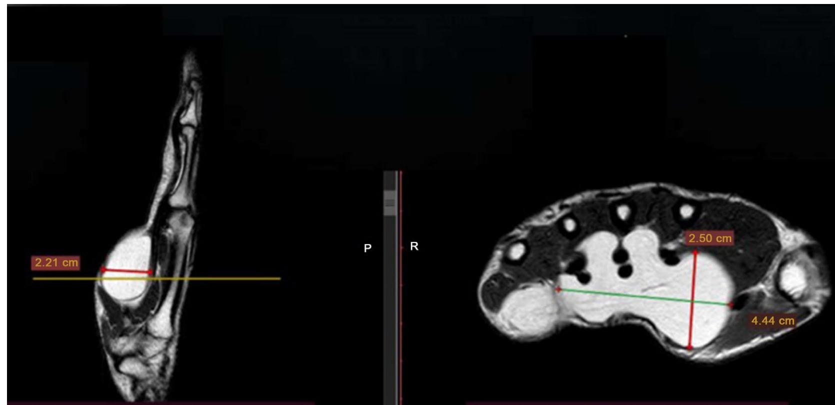

Figure 2. MRI of the left hand showing a 4.80 × 6.30 × 2.45 cm (CC × T × AP) thin-walled, septated, and multicompartmental lesion.

Working diagnosis, soft tissue mass, palmar aspect, hand, left; t/c Giant palmar liposarcoma.

Surgical Technique

The patient is planned for excision of the left palmar mass. Preoperative planning begins with a thorough assessment of the patient's medical history, physical condition, and imaging studies.

General anesthesia via IV sedation was administered with proper monitoring and assessment. The patient was positioned supine, with the affected hand draped and exposed. An incision was made along the planned surgical site to allow optimal exposure of the mass. A distinct, encapsulated, multilobulated fatty tissue lesion was identified measuring 5.5 cm × 5 cm × 2.0 cm (Figure 3). The mass was yellowish, soft, and showed no adhesion to tendons or bone, making resection straightforward. Neurovascular structures were carefully dissected away from the mass, allowing for its complete excision. The specimen was sent for histopathological analysis which revealed Lipoma. All surrounding structures were preserved under direct vision, and the wound was closed in layers after achieving hemostasis with absorbable sutures. The surgical site was covered with a non-adhesive dressing, sterile gauze, and a compression bandage.

After surgery, the patient was closely monitored before being discharged. A detailed rehabilitation plan was developed to optimize function and prevent complications, with regular follow-up appointments scheduled for ongoing assessment

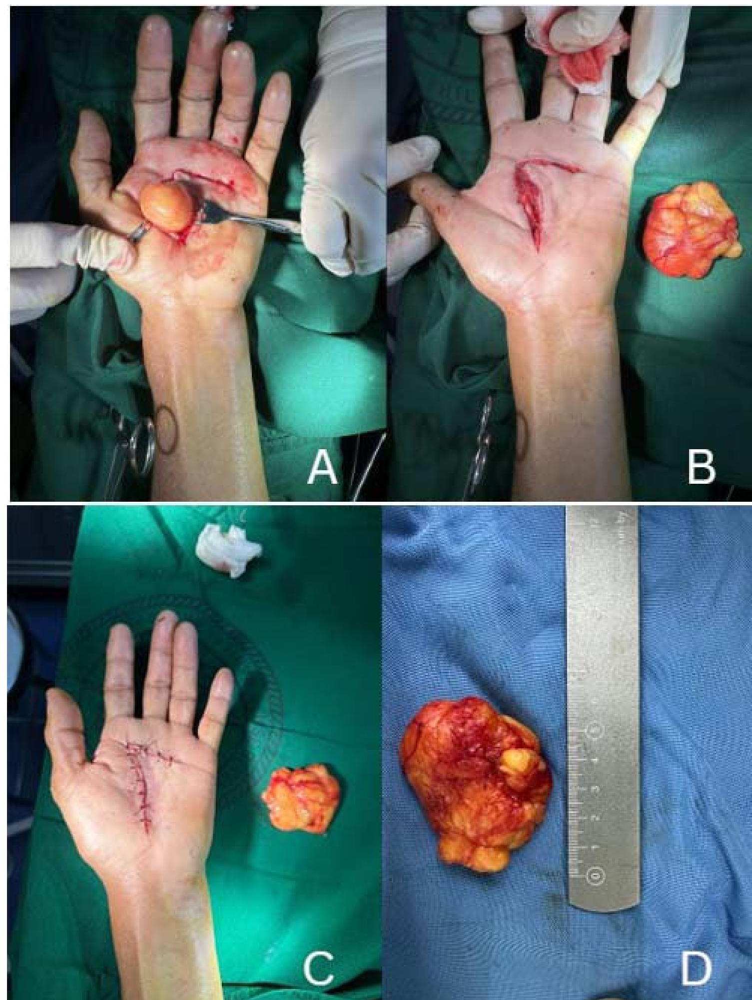

Figure 3. Intraoperative images: Extraction of the mass (A), (B), (C); measurement of the extracted mass (D).

and monitoring. Final hitopathology report revealed "well circumscribed lobules of mature fat cells, separated by septa consistent with lipoma".

The patient was seen in our clinic up to 3 months post operatively with good compliance to post-operative instructions and with no signs of recurrence.

Patient was able to regain full finger and wrist range of motion. Pins and needles sensation felt during the early weeks of follow up is gradually resolving with almost none at the 3rd week of follow up.

3. Discussion

Lipomas are the most common benign soft tissue neoplasm but only 1% of all lipomas present in the hand [8]. However, with growth and in a low compliance soft tissue environment, such as the hand, these neoplasms can result in a fast compression of neurovascular structures, especially in the deep palmar space [9]. Ultrasonography (US), computed tomography (CT), and magnetic resonance imaging (MRI), together with histopathology are used to diagnose lipo-

mas. MRI results for benign lipomas show clear boundaries and follow the subcutaneous fat signal in all sequences, with very thin septations [10]. In this case, MRI reveals also a thin wall, septated with fat-suppressed which is in congruent with the study.

Giant lipomas are >5 cm in diameter and are extremely rare in the hand. If a mass effect is seen, surgical excision is necessary [5] [11]. Some of the signs of a mass effect are hand function disability and finger paresthesia [2]. The case in this study showed no mass effect on the neurovascular status. Additionally, it is essential to rule out malignancy in cases of giant lipomas. In our case, the differential diagnosis that came from the referring institution includes liposarcoma versus synovial sarcoma. Biopsy is the best way to confirm the diagnosis but there are physical features that can make malignancy less likely. Firm and fixed mass on palpation as well as fast growth progression point more on malignancy and were all absent in our patient. Although radiological imaging in this case indicated a low likelihood of malignancy (well defined fat containing mass verus irregular and infiltrative margins seen in malignancy), and histological testing will confirm that the giant lipoma was benign, a complete excision was performed for the reasons previously discussed.

Lipomas arising from the hand account for a relatively small proportion of just 1% - 3.8% of benign hand neoplasms [12] [13]. These tumors commonly occur between 50 and 70 years of age in obese people, without any gender predisposition [12]. These tumors are categorized according to size and labeled a giant lesion when measurement exceeds 5 cm [14]. Only one-fourth of these lesions are manifested by symptomatic pressure on other structures in their vicinity [14]. Lipomas may arise from the subcutaneous plane, superficial to the palmar fascia, or deep to it, causing compression of neurovascular structures. In this case, the mass exceeds 5 cm, and the 61-year-old patient is asymptomatic, aligning with findings from the study.

Palmar lipomas can lead to functional impairment in grip strength and finger mobility, either due to the large size of the lesion or because of compression of the intrinsic muscles. For this reason, the management approach should be based on the size of the lesion, with histopathological examination being the next recommended step. MRI is useful for confidently diagnosing lesions made up entirely of adipose tissue, but an excisional biopsy is the standard recommendation in the literature [9].

In the hand, a biopsy of the tumor is both the last step of the diagnosis and the first step of treatment [15]. It will help to confirm whether the mass is benign or malignant, to classify the tumor, to plan the type of procedure needed. Not every hand tumor requires a diagnostic biopsy [15]. If the pretreatment imaging and clinical assessment is complete and typical (synovial cyst, para-articular mucoid cyst, superficial lipoma, giant-cell tumor of the synovial sheath, endochondroma, etc.), an excision-biopsy can be performed at first. The primary reasons for excising a hand lipoma include suspected malignancy, compression of neurovascular

structures, functional impairment, and cosmetic concerns [16]. Excisional biopsy involves removal of a lesion through the reactive zone, in this case, excision of the lipoma [17].

4. Conclusion

In conclusion, giant lipomas in the hand and fingers can affect essential structures such as neurovascular bundles, muscles, tendons, and bones. As a result, precise and complete resection is crucial to ensure the best clinical outcomes. Although the hand is an unusual site for benign lipomas, it requires careful consideration due to the risk of compressing neurological and vascular structures and the potential for malignant transformation, especially in cases of larger lesions. MRI and Histopathological analysis partnered by complete history and physical examination are key to differentiate this kind of tumor to their aggressive and malignant counterpart.

Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images.

Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

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