



Giant lipomas of the hand, case series

Lipomas gigantes da mão, série de casos

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■ ABSTRACT

Introduction: Lipomas are sporadic in hand and represent less than 5% of soft tissue tumors in this topography. Giant lipomas, even less common, are defined as having a diameter greater than 5 cm. **Methods:** We performed a retrospective analysis of the cases of patients with giant lipomas of the hand seen in the period 2017-2020, at Hospital Pasteur and Hospital de Clínicas, in Montevideo, Uruguay. **Results:** We obtained four patients during the study period. The age of presentation was between 51 and 62 years (mean 57 years). Three lipomas were deep intramuscular, and one was superficial to the regional muscles. The largest had a longer axle of 70mm. All were symptomatic. Marginal resection was performed in all of them, and the postoperative period was uneventful or recurrent. Histopathology confirmed typical lipoma in three cases and lipoma with bone metaplasia in the other. **Conclusion:** Giant lipomas of the hand present as painless, slow-growing tumors that may be symptomatic when compressing adjacent structures. Magnetic resonance imaging is the imaging study of choice for these cases. The applicable treatment is marginal surgical resection, and recurrence is uncommon.

Keywords: Lipoma; Hand; Sarcoma; Soft tissue neoplasms; Case reports.

■ RESUMO

Introdução: Os lipomas são esporádicos na mão e representam menos de 5% dos tumores de partes moles nesta topografia. Os lipomas gigantes, ainda menos comuns, são definidos por terem um diâmetro maior do que 5cm. **Métodos:** Executamos uma análise retrospectiva dos casos de pacientes com lipomas gigantes de mão, atendidos no período de 2017-2020, no Hospital Pasteur e Hospital de Clínicas, em Montevideu, Uruguai. **Resultados:** Obtivemos quatro pacientes no período estudado. A idade de apresentação foi entre 51 e 62 anos (média de 57 anos). Três dos lipomas eram intramusculares profundos e um era superficial aos músculos regionais. O maior possuía eixo mais extenso de 70mm. Todos eram sintomáticos. A ressecção marginal foi realizada em todos eles, e o pós-operatório transcorreu sem intercorrências ou recorrências. A histopatologia confirmou lipoma típico em três casos, e lipoma com metaplasia óssea no outro. **Conclusão:** Lipomas gigantes de mão se apresentam como tumores indolores e de crescimento lento, que podem ser sintomáticos ao comprimir estruturas adjacentes. A ressonância magnética é o estudo de imagem escolhido para estes casos. O tratamento aplicável é a ressecção cirúrgica marginal e a recorrência é pouco comum. **Descritores:** Lipoma; Mãos; Sarcoma; Neoplasias de tecidos moles; Relatos de casos.

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INTRODUCTION

Lipoma is the most common benign soft-tissue tumor, but it is rare in hand, representing less than 5% in this topography^{1,2}. Giant lipomas are those larger than 5 cm and are even less common³.

OBJECTIVE

This paper presents our experience with giant lipomas of the hand and reviews the bibliography associated with its clinical presentation, imaging studies, differential diagnoses, and treatment.

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METHODS

A retrospective analysis of the cases of patients diagnosed with lipoma of the hand treated in 2017-2020 was carried out at the two training centers for residents in Plastic Surgery in Uruguay (Hospital Pasteur, Hospital de Clínicas).

Lipomas that presented at least one of their dimensions greater than 5cm were included.

Clinical case 1

51-year-old female, domestic worker, right-handed. Left hand tumor with 10 years of evolution, slow and progressive growth, without traumatic antecedents. She had pain and paresthesia in the first and second fingers. The examination confirms the presence of a tumor in the first commissure with regular contours, measuring 6 cm in diameter, with a smooth surface and firm elastic consistency, adhered in deep planes and without alterations at the skin level (Figure 1A).

At the level of the digital pulp of the first and second fingers, she presented hypoesthesia with an altered two-point discrimination test, 8 mm, with a negative Tinel sign and no motor alterations. The radiograph showed a tumor with calcifications (Figure 1B). Magnetic resonance imaging showed a polylobulated tumor with well-defined limits, located in the thenar region and at the level of the first interosseous space, deep to the regional muscles, with deep medial extension to the flexor tendons of the second and third fingers. The signal was similar to that of adjacent adipose tissue, with saturation in the *fat sat* sequence, and presented linear and speckled calcifications in its periphery without contrast enhancement (Figure 1C). The report concluded that it was a lipoma with calcifications without nodular areas of abnormal enhancement. Marginal tumor resection was performed dorsally (Figure 1D).

The postoperative period was uneventful, and the paresthesias disappeared within 48 hours. Pathological anatomy showed a well-defined fat cell tumor due to mesenchymal proliferation, composed of mature adipocytes, without atypia or necrosis, accompanied by fibroconnective tracts and focal areas of bone metaplasia. In the 18-month follow-up, she presented a good quality scar, sensitive recovery and no evidence of tumor recurrence.

Clinical case 2

A 60-year-old female with implantable cardioverter-defibrillator colon cancer undergoing chemotherapy. Tumor of the left hand with 1 year of

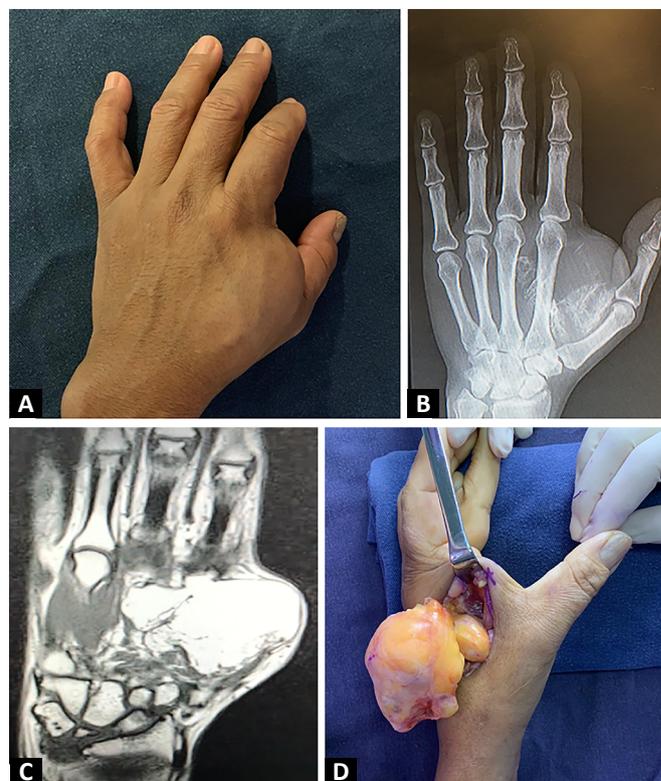


Figure 1. Clinical case 1. **A:** Tumor at the level of the first commissure. **B:** Radiograph showing calcifications. **C:** Magnetic resonance imaging showing fatty tumor. **D:** Intraoperative, dorsal approach.

evolution, later added by paresthesias and difficulty in gripping. The examination revealed a polylobulated tumor of firm elastic consistency, topography at thenar eminence, hypothenar eminence, and middle palmar cell at the base of the third and fourth fingers (Figure 2A). Distal sensitivity was normal. Bearing in mind that, because of her history, it was not possible to perform magnetic resonance imaging, a computed tomography scan was requested, which reported a polylobulated tumor with well-defined limits, 70 mm in diameter; of fairly homogeneous fat density, with some thin and dense tracts, located in front of the flexors of the second to fifth fingers, with lobulations that enter between them; with 20mm rounded distal lobulation at the base of the third and fourth fingers (Figure 2B).

Marginal resection was performed with a palmar approach. A well-delimited lipomatous tumor surrounded by a thin capsule was exposed, deep to the superficial palmar aponeurosis. Inside the tumor, the digital nerve of the third invaginated space was identified, which was released by resecting the entire tumor with its capsule (Figure 2C). The postoperative period was uneventful, and the paresthesias disappeared after two days. The pathological anatomy reported a tumor of adipose tissue with a thin capsule and homogeneous section, given by a benign mesenchymal

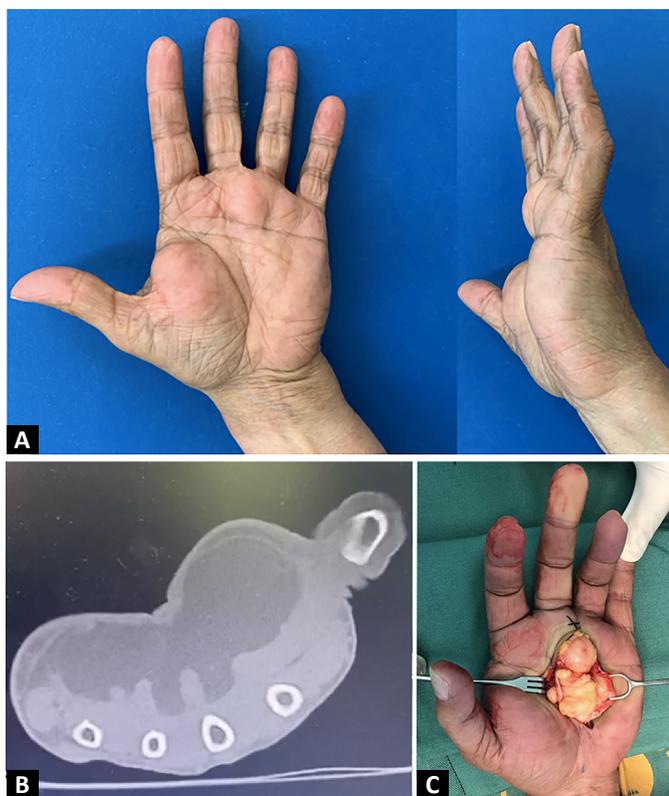


Figure 2. Clinical case 2. **A:** Large palmar tumor. **B:** Tomography showing a subcutaneous tumor occupying the thenar, hypothenar and middle palmar regions. **C:** Exeresis by palmar access.

proliferation composed of mature adipocytes with a delicate fibrovascular stroma, with areas of fat necrosis and fibrosis tracts; no lipoblasts, cytonuclear atypia or mitosis. At the 3-month follow-up, she presented an immature scar without new tumors.

Clinical case 3

55-year-old male, mechanic, right-handed, hypertensive and smoker. Slow-growing, 10-year-old right hand tumor that, due to its volume, prevented the proper grasping of objects. On examination, he had a tumor on the thenar eminence, with well-defined limits and firm elastic consistency, measuring 6 cm in diameter, without sensory deficit (Figure 3A). Ultrasonography was requested, which showed a solid, heterogeneous, well-defined process, with no evidence of vascularization with Doppler, and its etiology could not be concluded.

The MRI showed a tumor at the level of the superficial thenar eminence to the flexor tendons of the first and second fingers, with an intramuscular extension that interdigitates between the muscles of the first commissure; well delimited, lobulated, with an epicenter at the thenar eminence, measuring 56 mm in its long axis, hyperintense on T1-weighted images, with a diffuse homogeneous drop in its signal in the *fat sat* sequence;

some thin septa, minimal enhancement after contrast administration in the septa and periphery (Figure 3B). With a diagnosis of lipoma, marginal resection was performed via the palmar approach (Figure 3C). The postoperative period was uneventful. A cellulosic specimen was sent to the pathology department, which reported a benign mesenchymal proliferation composed of mature adipocytes without atypia or mitosis.

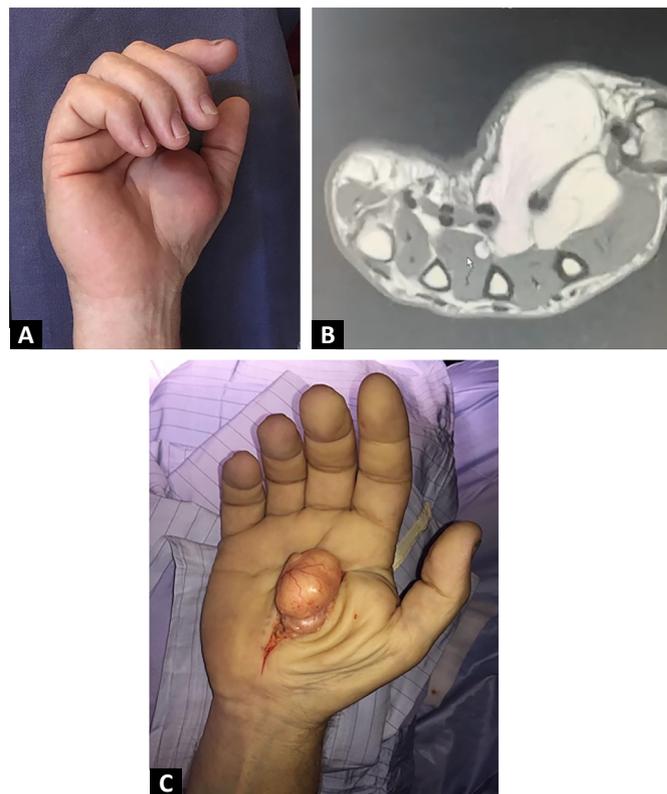


Figure 3. Clinical case 3. **A:** Tumor in the thenar region. **B:** MRI shows intramuscular lipoma. **C:** Intraoperative, palmar approach.

Clinical case 4

A 62-year-old male, right-handed, retired, with dyslipidemia and Crohn's disease. A tumor at the level of thenar eminence was noted two months before consultation, without paresthesia or sensory or motor deficits. On examination, he had a firm, elastic, painless tumor in the left hand at the first space level (Figure 4A). Magnetic resonance imaging was performed, which reported a lipomatous, deep, intermuscular tumor between the thenar muscles and the first dorsal interosseous, 50 mm in its greatest diameter, with expansion between the second and third metacarpals and flexor tendons, with well-defined lobulated contours, with a thin capsule and thin septa inside, without contrast enhancement (Figure 4B). Marginal resection was performed with a palmar approach (Figure 4C). Pathological anatomy reported an adipose

tumor measuring 55 x 35 x 22mm, homogeneous in section, given by an encapsulated adipose proliferation composed of homogeneous and mature adipocytes and a scarce fibrocollagen stroma without lipoblasts or atypia.

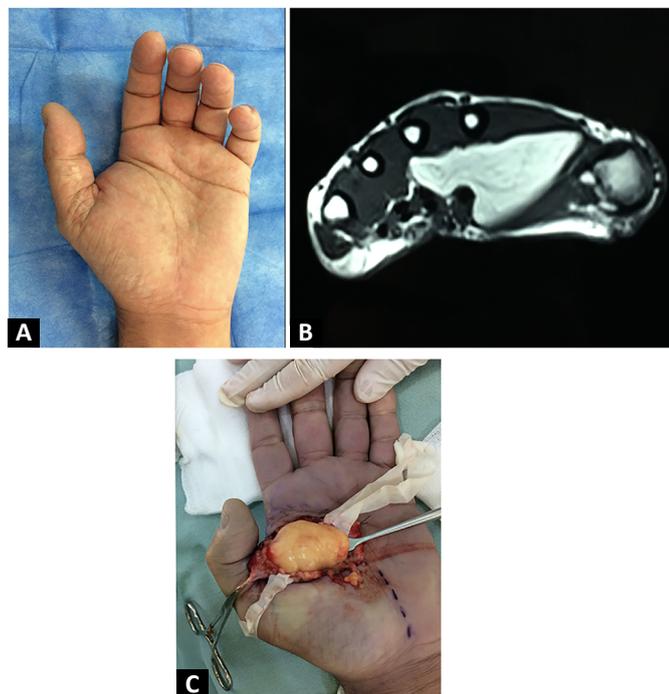


Figure 4. Clinical case 4. **A:** Tumor in the first commissure. **B:** Magnetic resonance imaging shows intermuscular adipose tumor. **C:** Palmar approach resection.

RESULTS

Of the four patients, two were women and two men. Two were operated on at Hospital de Clínicas and two at Hospital Pasteur. The age of presentation was

Table 1. Results.

Case	Sex	Age	Location	Dimensions	Symptoms	Treatment	Pathologic anatomy	Controls until	Center of attention
1	F	51	Thenar region, intramuscular	62mm x 53mm x 41mm	Pain, paresthesia, hypoesthesia	Marginal resection, dorsal approach	Lipoma with bone metaplasia	1 year and 6 months	Hospital de Clínicas
2	F	60	Thenar, hypothelar and middle palmar region, subcutaneous	70mm x 67mm x 40mm	Paresthesias, difficulty gripping	Marginal resection, palmar approach	Typical lipoma with areas of necrosis	3 months	Pasteur Hospital
3	M	55	Thenar region, intramuscular	56mm x 53mm x 45mm	Gripping difficulty	Marginal resection, palmar approach	Typical lipoma	3 years	Hospital de Clínicas
4	M	62	Thenar region, intermuscular	55mm x 35mm x 22mm	Deformity	Marginal resection, palmar approach	Typical lipoma	3 years and 10 months	Pasteur Hospital

F: female, M: male.

between 51 and 62 years (mean 57 years). Three were deep intramuscular, raised in the thenar region; one was superficial to the regional muscles and occupied the thenar, hypothelar and middle palmar regions. Regarding dimensions, the largest had a major axis of 70mm, while the smallest of 55mm.

All were symptomatic, and only one patient had pain, two patients had paresthesia, one had hypoesthesia, two had difficulty gripping due to the size of the tumor and one was consulted only because of the deformity. Marginal resection was performed in all of them, three via the palmar route and one via the dorsal route. The postoperative period was uneventful in all of them. Paresthesias disappeared in the immediate postoperative period when present, and the patient who presented hypoesthesia returned to normal sensitivity.

Histopathology confirmed typical lipoma in three cases, one with areas of necrosis. In one case, it was a lipoma variant with bone metaplasia or osteolipoma. The mean follow-up was 25.75 months, with no recurrence (Table 1).

DISCUSSION

Lipoma is the most common soft tissue tumor in adults, but it is rare in hands, where synovial or ganglion cysts are the most common, followed by giant cell tumors¹.

Giant lipomas are those that exceed 5 cm in diameter and are extremely rare in hand, with only individual case reports and small case series in the literature⁴⁻⁹.

Its location can be subcutaneous or deep subfascial, being the most frequent subcutaneous location. Deep lipomas can be intramuscular, intermuscular or paraosseous when they are on a bone surface¹⁰.

Histologically, it is a well-defined benign tumor of mesenchymal origin composed of mature adipocytes without atypia, but which can be associated with other mesenchymal tissues, configuring variants of lipoma that acquire their name according to the tissue they associate (fibrolipoma, chondrolipoma, osteolipoma, myxolipoma, angioliipoma)¹¹.

Clinically, they are painless and slow-growing tumors that can cause deformity, symptoms of nerve compression or functional deficits when their volume limits hand mobility^{3,12}.

The main differential diagnosis of lipomatous tumors larger than 5 cm is an atypical lipoma or well-differentiated (low-grade) liposarcoma. Differentiation is important because it is a malignant tumor with similar clinical and imaging characteristics, which, although it has no metastatic potential, has a local recurrence rate of 10%, with marginal resection, and can differentiate into high-grade liposarcoma, requiring strict monitoring¹³.

Ultrasound is a diagnostic approach study because it is fast, economical and readily available. On ultrasound, lipomas are well-defined tumors, often isoechoic or hypoechoic concerning the adjacent adipose tissue, with wavy echogenic lines, without acoustic shadowing and minimal or no Doppler signal. Ill-defined margins, non-homogeneous echotexture such as focal nodularity and necrotic areas, and vascularization with Doppler should lead to suspicion of liposarcoma. With an ultrasound compatible with lipoma, when subfascial or larger than 5 cm, it is recommended to extend the evaluation¹⁴.

Magnetic resonance imaging is the imaging test of choice, as it aids in the diagnosis and allows for surgical planning. It is especially indicated in lipomatous tumors larger than 5 cm to differentiate them from low-grade liposarcoma. Gaskin & Helms¹⁵ reported a sensitivity of 100% and specificity of 83% for diagnosing this malignant tumor, with a specificity of 100% for the diagnosis of simple lipoma, which is slightly lower for some lipoma variants as osteolipoma, chondrolipoma, angioliipoma or hibernoma.

Lipomas are seen as well-defined tumors with the same signal intensity as subcutaneous fat in all sequences, signal suppressed in fat suppression sequences, and may have a small number of thin septa (<2mm) or muscle fibers when it is intramuscular. Contrast enhancement is usually not seen except in the fibrous capsule. In contrast, atypical lipomas have large (>2mm) and irregular septa and increased non-adipose content, with intense T2 foci.

Tomography can be useful when magnetic resonance imaging cannot be performed, showing a well-defined hypodense lesion with thin septa

without nodular areas or contrast enhancement, which may present calcifications¹⁶. If the clinical-imaging diagnosis is a lipoma, the treatment is excisional biopsy or marginal resection of the lesion with anatomopathological study to confirm the diagnosis. If there is clinical and imaging suspicion of sarcoma, the evaluation should be expanded, and a biopsy performed or referred to a specialized sarcoma service^{4,17,18}.

Histopathological analysis confirms the diagnosis of lipoma when it shows a proliferation of mature and uniform adipocytes without atypia. On the other hand, low-grade liposarcomas have different sizes of adipocytes and nuclear atypia and are generally positive for the MDM2 gene¹⁹.

The prognosis after marginal lipoma resection is good, and recurrence is rare^{16,20,21}.

CONCLUSION

Giant lipomas of the hand are not common, magnetic resonance imaging is the imaging test of choice, and the curative treatment is surgical with marginal resection and histopathological analysis for diagnostic confirmation. Recurrence is rare.

COLLABORATIONS

- MET** Analysis and/or interpretation of data, Final approval of the manuscript, Conception and design of the study, Research, Writing - Preparation of the original, Writing - Review and Editing.
- MVM** Writing - Review and Editing.
- LJF** Writing - Review and Editing.
- CP** Writing - Review and Editing.
- JMF** Writing - Review and Editing.

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