

Palmar Lipoma in an Unusual Location – Diagnostic Challenges and Surgical Treatment

Nikolay Dimitrov^{1,2}(✉), Kircho Patrikov^{1,2}

¹ Medical University – Sofia, Sofia, Bulgaria

² University Orthopedics Hospital “Prof. B. Boichev” – Sofia, Bulgaria

dimitrovniki@abv.bg

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Abstract — Lipomas are the most commonly encountered benign tumors of the soft tissues, but they are rarely located in the palm. Their presence in this area can lead to functional impairments and pose a diagnostic challenge due to the complex anatomy of the hand.

We present a clinical case of a 59-year-old woman with a one-year history of a progressively enlarging lipoma in the subcutaneous fat tissue of the palmar area of her right hand. Preoperative diagnosis was made using magnetic resonance imaging and radiography. The tumor was surgically removed. The patient achieved full recovery of hand function after the operation. Histological examination confirmed the diagnosis of lipoma.

This case highlights the importance of including lipoma in the differential diagnosis of hand tumors, even when they are located in unusual areas. Early diagnosis and surgical treatment can prevent functional limitations and provide optimal outcomes for patients.

Keywords — lipoma, palmar, surgical treatment

1. Introduction

Lipomas are the most commonly encountered benign tumors of the soft tissues¹. They originate from mature fat cells and are usually located in subcutaneous tissue. Although they can appear anywhere on the body, lipomas in the hand area, especially the palm, are relatively rare^{2,3}. They constitute 1% to 3.8% of all tumors in this region³.

Unlike other locations, palmar lipomas present a diagnostic challenge due to the complex anatomy of this area, which includes numerous muscles, tendons, nerves, and blood vessels. This complexity makes it difficult to distinguish lipomas from other soft tissue tumors⁸. Palmar lipomas, though benign, can grow significantly over time, causing pain, paresthesias, and reduced range of motion^{3,14}. The diagnostic approach includes a thorough clinical examination, imaging studies, and histopathological analysis^{1,8}. Surgical excision is the definitive treatment, often leading to complete resolution of symptoms and restoration of hand function^{4,19}.

2. Case Report

A 59-year-old woman was admitted to the clinic with a complaint of a slowly growing, painless swelling in the palmar area of her dominant right hand (Figure 1). The mass had been present for approximately one year and had gradually increased in size, causing progressive restriction of movement in the third, fourth, and fifth fingers, as well as difficulties with gripping. The patient reported a trauma to the area a year prior. These anamnestic data correlate with observations by other authors who describe such cases as post-traumatic lipomas^{7, 9, 10, 11, 12}.

Upon examination, a soft, mobile, painless subcutaneous mass was found, measuring approximately 6.5 x 4.5 x 3 cm in the palmar region, in zones 2-3 according to the classification of Kleinert and Verdan¹⁹ (Figure 1). The formation was located superficially to the flexor tendons of the fingers. No pathological changes in the skin were observed. The patient exhibited slightly restricted range of motion in the third, fourth, and fifth fingers, as well as reduced gripping ability. No vascular or nerve deficits were noted.



Figure 1. Clinical images of the patient's right hand showing a lipoma in the palmar area.

An X-ray of the right hand was performed, which did not show any bone changes or calcifications in the area of the tumor (Figure 2).

Magnetic Resonance Imaging (MRI): The MRI confirmed the presence of a well-defined, homogeneous mass measuring 6.5 x 4.5 x 3 cm, located in the palmar area. The formation exhibited hyperintensity on T1- and T2-weighted images and signal suppression of the fatty tissue when using the FS TSE DR sequence, which is characteristic of a tissue mass of lipid origin^{6, 14}. There was no infiltration into surrounding structures or signs of malignancy (Figures 3, 4).



Figure 2. X-rays of the hand in a patient with a palmar lipoma.



Figure 3. Axial and coronal T1-weighted MRI images of the hand, showing a Hyper-intense lesion corresponding to a lipoma.

3. Treatment

After discussion, a decision was made for surgical removal. The operation was performed under regional anesthesia. A skin incision was made directly over the mass, and careful dissection was performed to separate the lipoma from the surrounding tissues. The tumor was excised en bloc and sent for histopathological evaluation (Figure 5). The procedure concluded with meticulous closure and sterile dressing (Figure 6).

The postoperative period passed without complications. During subsequent follow-up, the patient reported full restoration of finger movement and disappearance of pain. Histological examination of the excised tumor confirmed the diagnosis of lipoma, composed of mature adipocytes with a thin fibrous capsule.

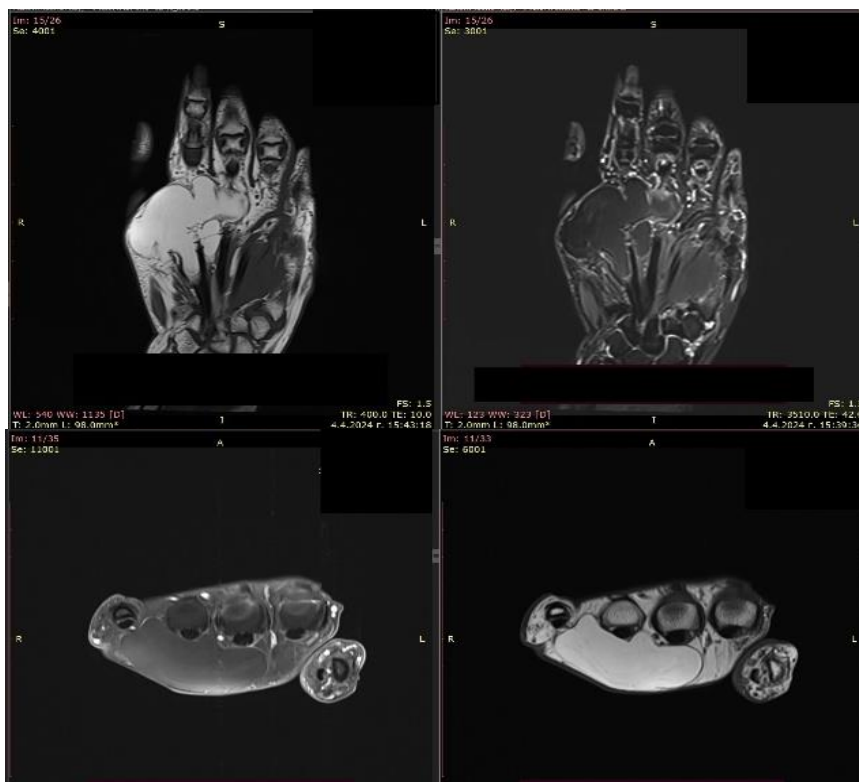


Figure 4. Axial and coronal T1-weighted MRI images with fat signal suppression of the hand, demonstrating suppression of signal from the lipoma.



Figure 5. Intraoperative image showing the excised lipoma in a container.



Figure 6. Intraoperative image showing the result after closure.

4. Discussion

Lipomas are commonly encountered benign tumors, but they rarely localize in the palm^{2,3}. In the described case, the patient was affected by a subcutaneous lipoma in the area of the palm of the dominant hand, in zones 2-3 according to the classification of Kleinert and Verdan. Although benign, palmar lipomas can reach significant sizes, as seen in the presented case, where the tumor had been growing for one year and had reached dimensions of 6.5 x 4.5 x 3 cm. These sizes are consistent with the results of Rydholm and Berg, who reported similar and larger dimensions in 95% of cases⁴. In the described case, the volume and specific location of the tumor led to restricted finger movements, emphasizing the importance of early diagnosis and treatment. The growth of lipomas can lead to functional impairments and decreased quality of life despite their benign nature³.

In the differential diagnosis of palmar tumors, other benign formations such as giant cell tumors of the tendons, ganglia, epidermal cysts, schwannomas, neurofibromas, granulomas, and foreign bodies should be considered¹³. Among the malignant tumors to be considered are soft tissue sarcomas, such as liposarcoma, fibrosarcoma, malignant fibrous histiocytoma, and synovial sarcoma⁸. Magnetic resonance imaging (MRI) confirmed the presence of a palmar lipoma^{6, 14}, providing critical information about its size, location, and relationship to adjacent structures. This data excluded other differential diagnoses and directed surgical treatment.

Histological examination of the excised tumor confirmed the diagnosis of lipoma. Microscopically, the tumor consisted of mature adipocytes arranged in lobules, separated by fibrous septa. No signs of malignancy, such as nuclear atypia, mitoses, or necrosis, were found. These histological characteristics are consistent with typical findings in lipomas¹⁵.

The successful excision of the lipoma in this case led to full restoration of hand function and disappearance of symptoms. The outcome of our surgical treatment of palmar lipoma is consistent with the positive results reported by Leffert (1972)¹⁴ and Vijayraghavan et al. (2010)¹⁶ for upper limb lipomas, including giant ones. Although our experience, like theirs, is limited to a small number of cases, which does not allow for statistically significant conclusions, the data support the effectiveness of surgical excision for this type of tumor.

5. Conclusion

The presented clinical case underscores the importance of including lipomas in the differential diagnosis of hand tumors, even when localized in unusual areas such as the palm. Although lipomas are usually asymptomatic, they can cause significant functional limitations depending on their size and location. MRI plays a crucial role in confirming the diagnosis and ruling out other soft tissue tumors. Early diagnosis and surgical treatment of palmar lipomas can prevent long-term complications and improve the quality of life for patients.

6. References

1. Tumors and Proliferations of Adipose Tissue. New York: Masson; 1981.
2. Froimson AI. Benign solid tumors. *Hand Clin.* 1987;3(2):213–7.
3. Phalen GS, Kendrick JI, Rodriguez JM. Lipomas of the upper extremity: a series of fifteen tumors in the hand and wrist and six tumors causing nerve compression. *Am J Surg.* 1971;121(3):298–306.
4. Rydholm A, Berg NO. Size, site and clinical incidence of lipoma: factors in the differential diagnosis of lipoma and sarcoma. *Acta Orthop Scand.* 1983;54(6):929–34.
5. Doods GC, Hricak H, Sollitto RA, Higgins CB. Lipomatous tumors and tumors with fatty component: MR imaging potential and comparison of MR and CT results. *Radiology.* 1985;157(2):479–83.
6. Aust MC, Spies M, Kall S, et al. Lipomas after blunt soft tissue trauma: are they real? Analysis of 31 cases. *Br J Dermatol.* 2007;157(1):92–9.
7. Weekes RG, McLeod RA, Reiman HM, Pritchard DJ. CT of soft-tissue neoplasms. *AJR Am J Roentgenol.* 1985;144(2):355–60.
8. Meggitt BF, Wilson JN. The battered buttock syndrome: fat fractures: a report on a group of traumatic lipomata. *Br J Surg.* 1972;59(3):165–9.
9. Herbert DC, DeGeus J. Post-traumatic lipomas of the abdominal wall. *Br J Plast Surg.* 1975;28(4):303–6.
10. Rozner L, Isaacs GW. The traumatic pseudolipoma. *Aust N Z J Surg.* 1977;47(6):779–82.
11. Penoff JH. Traumatic lipomas/pseudolipomas. *J Trauma.* 1982;22(1):63–5.
12. Garcia Ceballos JI, Wylock P. Hand palm and finger lipomas: four case reports and review of the literature. *Eur J Plast Surg.* 2005;28(5):243–6.

13. Kransdorf MJ, Bancroft LW, Peterson JJ, et al. Imaging of fatty tumors: distinction of lipoma and well-differentiated liposarcoma. *Radiology*. 2002;224(1):99–104.
14. Leffert RD. Lipomas of the upper extremity. *J Bone Joint Surg Am*. 1972;54(6):1262-1266
15. Weiss SW, Goldblum JR. Benign Lipomatous Tumors. In: Enzinger FM, Weiss SW, editors. *Soft Tissue Tumors*. 3rd ed. St Louis, Mo: Mosby; 1995. pp. 381–430.
16. Vijayraghavan S, Kanna R, Mahendran P. Giant lipoma of the hand. *Indian J Plast Surg*. 2010 Jan-Apr;43(1):103-5.
17. Kleinert HE, Verdan C. Report of the committee on tendon injuries. *J Hand Surg*. 1983;8:794.

7. Authors

Assoc. Prof. Nikolay Dimitrov, MD, PhD is a member of the Bulgarian Orthopedic and Traumatology Association (BOTA). He works as an orthopedic surgeon at the University Specialized Hospital for Active Treatment "Prof. Boycho Boychev" EAD in Sofia, Bulgaria. He is also an Associate Professor at the Department of Orthopedics and Traumatology at the Medical University of Sofia, Bulgaria.

Dr. Kircho Patrikov, PhD is also a member of the Bulgarian Orthopedic and Traumatology Association (BOTA). He works as an orthopedic surgeon at the University Specialized Hospital for Active Treatment "Prof. Boycho Boychev" EAD in Sofia, Bulgaria. Additionally, he serves as a Chief Assistant Professor at the Department of Orthopedics and Traumatology at the Medical University of Sofia, Bulgaria.