Cerrahpaşa Med J 2024; 48(2): 141-145 ORIGINAL ARTICLE

Digital Lipoma: Retrospective Evaluation of Cases in a Reference Center

Mehmet Beşir Öner[1], Can Ege Yalçın[2], Uğur Çelik[3], Fatih Çınar[4], Nil Çomunoğlu[5], Oğuz Çetinkale[2]

[1]Private Clinic, İstanbul, Türkiye
[2]Department of Plastic, Reconstructive and Aesthetic Surgery, İstanbul University Cerrahpaşa, Cerrahpaşa Faculty of Medicine, İstanbul, Türkiye
[3]Department of Plastic, Reconstructive and Aesthetic Surgery, İstanbul Sultangazi Haseki Research and Training Hospital, İstanbul, Türkiye
[4]Department of Plastic, Reconstructive and Aesthetic Surgery, Başakşehir Çam and Sakura City Hospital, İstanbul, Türkiye
[5]Department of Pathology, İstanbul University Cerrahpaşa, Cerrahpaşa Faculty of Medicine, İstanbul, Türkiye

Cite this article as: Öner MB, Yalçın CE, Çelik U, Çınar F, Çomunoğlu N, Çetinkale O. Digital lipoma: Retrospective evaluation of cases in a reference center. *Cerrahpaşa Med J.* 2024;48(2):141-145.

Abstract

Objective: Although lipomas are the most common benign soft tissue tumors, they are rarely found in the hand and are exceptionally rare on the fingers. Therefore, the purpose of this study was to investigate lipomas in atypical locations to aid in the differential diagnosis of finger tumors.

Methods: We retrospectively examined a cohort of 20 patients who were diagnosed with lipomas on the fingers. The diagnosis was made through clinical and imaging examinations. Surgical intervention was based on symptoms such as pain, paresthesias, functional impairment, or aesthetic concerns.

Results: Lipomas were more likely to be located on the third finger of the right hand, and most common pathological subtype was fibrolipoma. One giant lipoma was observed.

Conclusion: Lipomas on the fingers are rare occurrences that typically affect females, and the optimal surgical treatment involves complete removal of the tumor to achieve definitive healing. Despite their rarity, clinicians should consider lipomas in the differential diagnosis of soft tissue tumors in the hand.

Keywords: Digits, fingers, lipoma, soft tissue tumors

Introduction

Hand surgeons often come across masses in the upper limb, which are usually benign and often found on the finger. Surgery is recommended not just to obtain tissue samples for a definitive diagnosis, but also to enhance the hand's function and appearance. Benign tumors located in the distal upper limb have a definite indication for surgical intervention.[1] Lipoma is the most common benign soft tissue tumor of adulthood composed of adipose tissue. While lipomas are commonly found in the head, neck, and back regions, they can also occur in other areas of the body. These benign tumors can even develop in the fingers of the hand and have an estimated incidence of 1%.[2,3] Despite their rarity, clinicians should consider lipomas in the differential diagnosis of soft tissue tumors in the hand.

Stein[4] reported the first case of lipoma of the finger in 1959, where he presented benign neoplastic and non-neoplastic lesions of the hand. Since then, a limited number of case reports and series have been published. In this article, we aimed to present our 20 years of experience with patients who underwent surgery for lipomas of the finger.

Received: September 6, 2023 **Accepted:** January 6, 2024
Publication Date: July 31, 2024
Corresponding author: Can Ege Yalçın, Department of Plastic, Reconstructive and Aesthetic Surgery, İstanbul University Cerrahpaşa, Cerrahpaşa Faculty of Medicine, İstanbul, Türkiye
e-mail: canegeyalcin.md@gmail.com
DOI: 10.5152/cjm.2024.23094

Methods

Study and Population

Ethical approval for this study was obtained from the İstanbul University - Cerrahpaşa Institutional Review Board (Approval no: 58170629-604.01.01-124132, Date: September 23, 2020). A retrospective, descriptive, and analytic study was conducted over a period of 20 years (January 2000-February 2020). The study reviewed patients diagnosed pathologically with lipoma who were hospitalized in our institution. Only patients diagnosed definitively with lipoma at the fingers of the upper extremities were included.

Patients whose medical records could be used for the various clinical, paraclinical, therapeutic, and evolutionary aspects of lipoma were included, while those with incomplete medical records or who were lost to follow-up, were excluded from the study. Informed consent was obtained prior to inclusion.

Data Collection

Patient data were obtained from their medical records using a predetermined data exploitation file and documented on an exploitation form, which was then integrated into a computer database. The sociodemographic variables included age and gender. Clinical variables encompassed medical history and clinical examination. Unfortunately, detailed information regarding the exact tumor

localization was unavailable for 3 patients due to changes in the institution's registration systems over the 20-year period. To ensure standardized data, tumor localization was recorded based on the extensor and flexor zones of the finger. All procedures adhered to the principles outlined in the Helsinki Declaration of 1975.

Literature Review

A literature review was conducted using PubMed, employing the keywords "digit," "finger," and "lipoma." A total of 194 articles were identified, and among them, 55 articles presented cases involving lipomas in the digits.

Statistical Analysis

The statistical analysis was conducted using the Statistical Package for Social Sciences version 23.0 software (IBM Corp.; Armonk, NY, USA). This study involved measuring both qualitative and quantitative variables, including means and standard deviations. To examine associations between categorical variables, we employed the classical parametric test known as the chi-squared test. Throughout the analyses, we maintained a significance level of $P < .05$.

Results

Demographic data and information regarding the tumor location were listed in Table 1. A total of 20 patients were operated on between October 2000 and January 2020. There were 12 female and 8 male patients. The mean age was 45.5, ranging between 1 and 89. Nearly all patients presented with a slowly growing mass on their fingers. All patients underwent imaging either with conventional x-rays, ultrasound, or magnetic resonance imaging (MRI) (Figure 1). Tumors were mostly located on the right hand and the middle finger. All lipomas were solitary except for a 17-year-old patient with macrodactyly of the fourth finger with 2 tumors located on the extensor zone 4 and flexor zone 1 of the same finger. Of all the cases where the exact localizations could be identified (n = 17), in 5 patients, the tumors were on the dorsal aspect of the finger. In 1 patient, the lipoma was semi-circumferential where it extended from the dorsal proximal aspect of the finger distally and volarly. The previously mentioned patient suffered from 2 tumors, 1 on the volar and another on the dorsal side of the finger. In the remaining 10 patients, the tumors were localized to the flexor surface of the fingers. We only had 1 case of subungual lipoma involving the radial aspect of the nail plate. There was 1 case of lipoblastoma, which was observed in a 1-year-old patient who presented with a growing mass on the third finger of her right hand.

Table 1. Demographical Data of the Patients and Tumor Locations

Characteristics		Number of Patients (%)
Age	45.5 (1-89)	
Sex	Female	12 (60)
	Male	8 (40)
Hand	Right	12 (60)
	Left	8 (40)
Finger	First	4 (20)
	Second	2 (10)
	Third	6 (30)
	Fourth	4 (20)
	Fifth	4 (20)

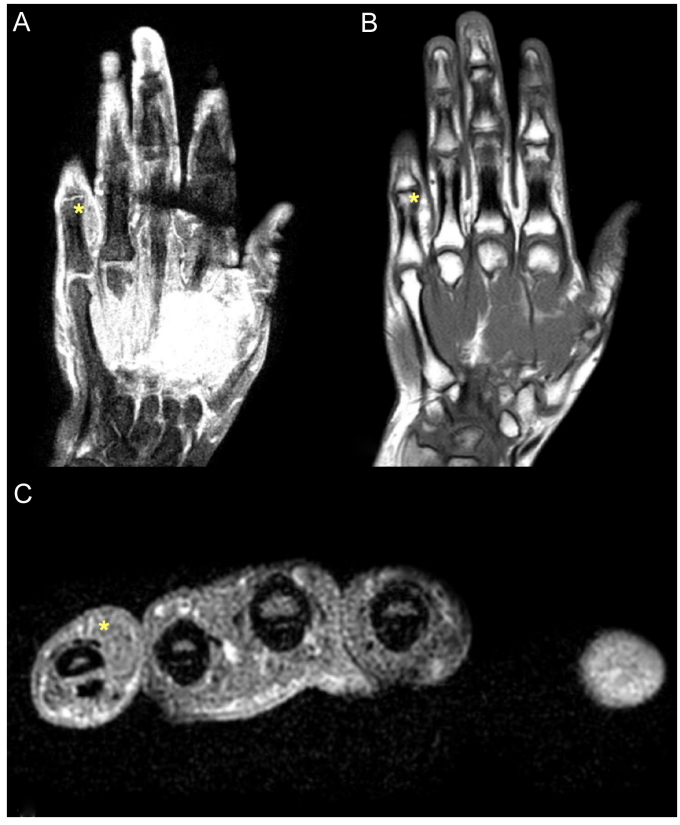

Figure 1. Coronal (A, B) and axial (C) views of the fingers and hand showing an isointense mass (*) on the dorsal and radial aspect of the proximal phalanx.

All patients underwent complete excision, and there were no punch or incisional biopsies. Excisions were performed under local anesthesia in 15 (60%), general anesthesia in 4 (20%), and axillary block in 1 (5%) patients (Figure 2). All excision materials were sent to pathology for histopathological examination (Figure 3). A summary of all cases is provided in Table 2. No postoperative complications were observed, and all patients were discharged on the same day of the operation. All patients were asked to come to the outpatient clinic on the first and second week after the operation and on the postoperative third, sixth, and twelfth months. The mean follow-up period was 11 months, and no recurrence was noted during the follow-up period. The pathology results were obtained for all patients, and fibrolipoma was the most common subtype among the others. The frequencies of them are available in Table 3.

Discussion

Lipoma is the most commonly observed benign soft tissue tumor in adults. Although it is most frequently found in the head and neck region, its presence in the upper extremity is well documented.[1] However, lipomas localized to the hand and wrist region are rarely reported. Of these, lipoma of the digits is even less frequent, although studies investigating the characteristics of these tumors in the hand and wrist region have reported that the tumor may arise from the digits in up to 25%-29.7% of cases.[5] The first report of a lipoma of the digit was made by Stein et al.[6] in 1959,

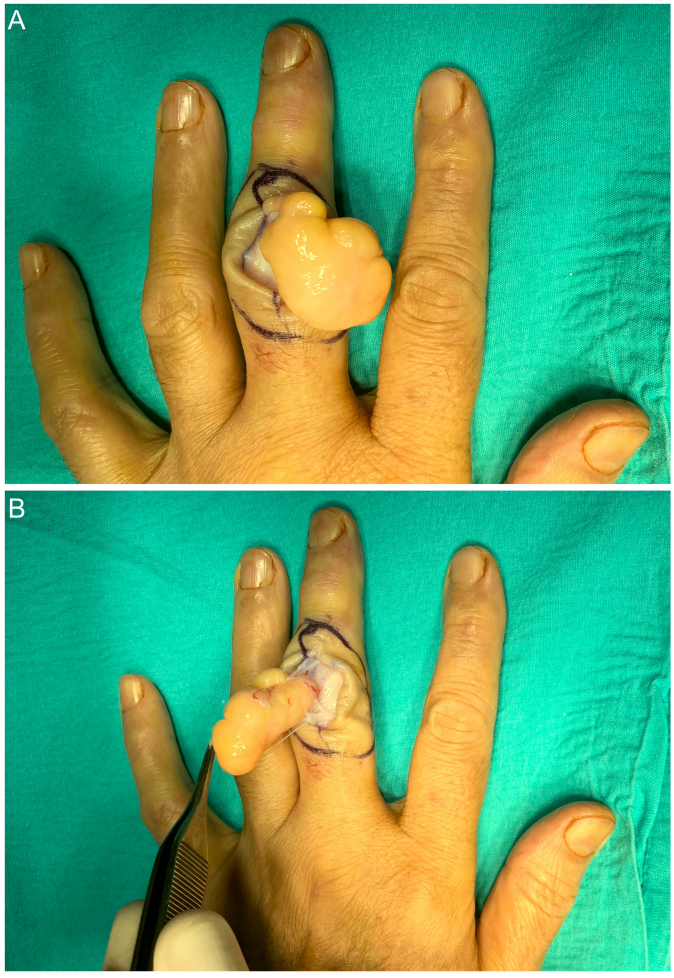

Figure 2. Intraoperative view of a patient with a pathologically confirmed lipoma on the third finger of the left hand.

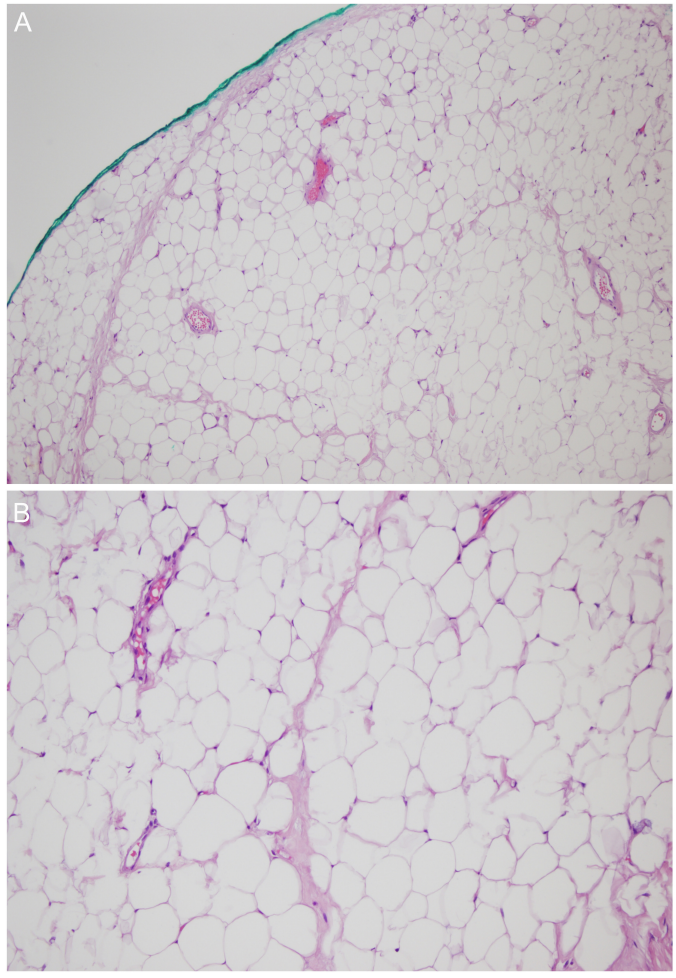

Figure 3. Histopathologic evaluation with hematoxylin and eosin under ×100 (A) and ×200 (B) magnification, respectively, showing a tumor composed of a uniform proliferation of mature adipocytes.

and since then, only a few cases have been reported. None of the series focusing on upper extremity lipomas have extensively studied the fingers.[6-8]

Although the etiology behind lipoma development is usually unknown, posttraumatic appearance of the tumor has been reported.[2] However, none of our patients had a history of trauma. One variant, neural fibrolipoma, may be associated with macrodactyly;[9] however, the appearance of neural fibrolipoma without the presence of this condition has been reported as well.[10,11] In our series, there was only 1 patient with macrodactyly, and the pathological examination revealed fibrolipoma, but not neural.

Previous literature reviews demonstrate that patients present most frequently in adulthood with a female predominance.[12,13] There are, however, exceptions as lipoma may be observed in the pediatric population as well,[14,15] in addition to the patients diagnosed with lipoblastoma, which is expected to occur in the pediatric population.[16] Our series is parallel to the previously published data, where there are examples of patients with lipoma from the pediatric population including a congenital case of a 1-year-old patient diagnosed with lipoblastoma.

The most common presenting complaint of the lipoma of the fingers is a slowly growing mass on the fingers, and because of the proximity to the neurovascular and tendinous structures, finger dysesthesia and limited range of motion may be present.[17] The tumor is characterized by a soft tissue swelling on conventional x-rays, and other modalities such as ultrasound and MRI have excellent diagnostic capabilities while investigating lipoma of the digits, where the tumor is homogeneous and hyperechoic on ultrasound and demonstrates isointense fat signaling on MRI.

The diagnosis of lipoma is often based on clinical examination and can be supported by imaging studies. As suggested by Yamamoto et al.,[1] surgical excision of benign-appearing soft tissue lesions is not only necessary to provide a pathological diagnosis but can also improve patient-related outcome measures. The tumors are variable in size and can be multilocular involving more than 2 digits.[18] Two giant lipomas, defined as tumors greater than 5 cm in at least 1 dimension, have been previously reported.[19] In our series, we only had 1 case of a giant lipoma. The tumor may arise from a variety of structures other than the soft tissue including periosteum,[20] which may lead to bone erosion,[21] digital nerve,[17] and flexor tendon sheath.[22] The tumor may be localized in proximity to the nail plate as well, and periungual[23] and subungual[24] lipomas have been presented in previous reports. We only have 1 additional case of a lipoma involving the nail plate and its radial aspect. In our series, the majority of the tumors were fibrolipomas, and the tumor is most likely to be found on the third finger of the right hand.

One of the largest series provided was a recent study performed by Pertea et al,[25] where only 9 patients were surgically operated on for a digital lipoma. They presented the most extensive collection

Table 2. Summary of All Cases

Case	Sex	Age	Excision Year	Presenting Complaint	Hand	Finger	Localization	Zone	Dimensions (cm)	Diagnosis
1	Female	51	2020	Slowly growing mass for 5 years	Right	5	Dorsal	ZONE 2	1.5 × 1 × 0.6	Fibrolipoma
2	Female	63	2020	Slowly growing mass for 6 years	Left	3	Dorsal	ZONE 3	3.3 × 2.2 × 1	Angiolipoma
3	Male	49	2016	Slowly growing mass for 8 months	Right	3	Volar	ZONE 2	1.5 × 1.5 × 0.6	Angiolipoma
4	Female	1	2016	Rapidly growing lesion for 3 months, confirmed case of lipoblastoma with FNAB.	Right	3	Dorsal	ZONE 1-2-3-4	3 × 2 × 2	Lipoblastoma
5	Male	50	2015	Slowly growing mass for 8 years	Right	2	Volar	ZONE 2	3 × 2.5 × 1	Neural fibrolipoma
6	Female	53	2014	Developing erythema and tenderness on the nail plate for 5 years	Right	5	Dorsal	Nailplate	0.6 × 0.3 × 0.3	Fibrolipoma
7	Female	51	2014	Slowly growing mass for 3 months	Left	4	Volar	Zone 2	3 × 2 × 1	Fibrolipoma
8	Female	17	2014	Macrodactyly of the fourth finger with 2 congenital masses on the same finger	Right	4	Volar and Dorsal	(1) Extensor zone 4, (2) Flexor zone 1	(1) 4.5 × 2 × 1; (2) 0.5 × 0.4 × 0.4	Fibrolipoma
9	Female	37	2013	Slowly growing mass for 5 years	Right	1	Volar	Zone T1	2.5 × 1 × 1	Fibrolipoma
10	Female	54	2013	Slowly growing mass	Right	3	Volar	Zone 2	3.5 × 3.2 × 1.5	Lipoma
11	Female	9	2012	Slowly growing mass for 3 years	Left	1	Volar and Dorsal		2.5 × 1.5 × 1.5	Fibrolipoma
12	Male	33	2012	Slowly growing mass	Right	3	Volar	Pulp	2 × 1 × 0.7	Spindle cell lipoma
13	Male	22	2011	Slowly growing mass	Left	2	Volar	Zone 1	4 × 0.6 × 0.9	Neural fibrolipoma
14	Female	58	2011	Slowly growing mass for 5 years	Right	1	Volar	Zone T1-T2	5 × 2 × 1.5	Spindle cell lipoma
15	Male	33	2011	Slowly growing mass for 6 years	Left	4	Dorsal	Zone 4	4 × 2 × 1.2	Angiolipoma
16	Female	76	2009	Slowly growing mass	Right	3	N/A	N/A	2 × 1.5 × 0.5	Angiolipoma
17	Male	33	2008	Slowly growing mass for 4 years	Right	4	Volar	Zone 2-3	4 × 2 × 1	Neural fibrolipoma
18	Female	55	2006	Slowly growing mass for 3 years	Left	5	Volar	Pulp	1.2 × 0.5 × 0.2	Fibrolipoma
19	Male	76	2003	Slowly growing mass	Left	1	N/A	N/A	6.5 × 4 × 3	Lipoma
20	Male	89	2000	Slowly growing mass	Left	5	N/A	N/A	2.5 × 2 × 0.7	Lipoma

Table 3. Final Diagnoses of the Specimens After Pathological Evaluation

Pathological Diagnosis	Number of Patients (%)
Fibrolipoma	7 (35)
Angiolipoma	4 (20)
Lipoma	3 (15)
Neural fibrolipoma	3 (15)
Spindle cell lipoma	2 (10)
Lipoblastoma	1 (5)

of benign lipomas in the hand and fingers. The gender distribution for lipomas was biased toward males, with 11 men and 4 women affected. All of the men with palm lipomas, however, had jobs that involved manual labor.[25] Gender distribution of lipomas on the fingers in our study is similar to the rest of the current literature, but together with this study, one may speculate that occupation may play a role in the development of lipomas around the hand. However, larger series are required to come up with such a correlation.

Our limitations include the retrospective nature of the study, where some of the detailed information regarding the tumors could not be obtained due to the changes in the recording system of our institution. However, this series is, to date, the largest series of finger lipomas that have been diagnosed and treated in a single institution.

Conclusion

Lipoma is the most common benign tumor of adulthood but is unusually located on the hands and even more so on the fingers. Although rare, lipoma should be listed in the differential diagnosis of enlarging masses of the fingers. Investigational modalities include x-rays, ultrasound, computerized tomography, and MRI. They are infrequently associated with additional symptoms and if discomfort is present, excision generally results in resolution of the symptoms. Although they are not common, lipomas should be included as a potential diagnosis in the evaluation of soft tissue tumors of the hand by healthcare providers.

Ethics Committee Approval: Ethics committee approval was received for this study from the ethics committee of İstanbul University-Cerrahpaşa Institutional Review Board (Approval no: 58170629-604.01.01-124132, Date: September 23, 2020).

Informed Consent: Written informed consent was obtained from patients who participated in this study.

Peer-review: Externally peer-reviewed.

Author Contributions: Concept – O.Ç. M.B.O.; Design – M.B.O., O.Ç.; Supervision – N.Ç., O.Ç.; Resource – U.Ç., F.Ç.; Materials – U.Ç., F.Ç.; Data Collection and/or Processing – C.E.Y., U.Ç., F.Ç.; Analysis and/or Interpretation – M.B.O., C.E.Y.; Literature Search – C.E.Y., U.Ç.; Writing – C.E.Y., F.Ç.; Critical Review – N.Ç, O.Ç.

Declaration of Interests: The authors have no conflict of interest to declare.

Funding: The authors declared that this study has received no financial support.

References

1. Yamamoto M, Nishizuka T, Iwatsuki K, Kurimoto S, Hirata H. Benign hand tumors have a clear indication for surgery according to the patient-rated outcome measures. *J Hand Surg Am*. 2015;40(9):e46. [CrossRef]
2. Copcu E. Posttraumatic fingertip lipoma. *Plast Reconstr Surg*. 2004;114(7):1986-1987. [CrossRef]
3. de Giorgi V, Salvini C, Sestini S, Alfaioli B, Carli P. Lipoma of the finger: a case report and differential diagnosis. *Clin Exp Dermatol*. 2005;30(4):439-440. [CrossRef]
4. Stein AH. Benign neoplastic and nonneoplastic destructive lesions in the long bones of the hand. *Surg Gynecol Obstet*. 1959; 109(2):189-197.
5. Marteau É, Le Nail LR, Rosset P, et al. Epidemiological, clinical and histological features of adipose tumors in the hand and wrist: findings from a continuous series of 37 cases. *Orthop Traumatol Surg Res*. 2020;106(2):329-334. [CrossRef]
6. Hattori Y, Hino H, Kagami S, Niu A. Lipoma of the middle finger: a case report. *Plast Reconstr Surg Glob Open*. 2020;8(7):e2993. [CrossRef]
7. Karaali MG, Polat AK, Koku Aksu AE, Leblebici C, Gurel MS. Solitary noninfiltrating angiolipoma on the finger, an unusual localization. *Dermatol Online J*. 2019;25(2). [CrossRef]
8. Hu Z, Yue Z, Tang Y, Zhu Y. Lipoma of the middle finger: a case report and review of literature. *Medicine*. 2017;96(42):e8309. [CrossRef]
9. Liaw K, Kan JH. Lipofibromatous hamartoma. *Pediatr Radiol*. 2008;38(9):1032. [CrossRef]
10. Avci G, Akan M, Taylan G, Akoz T. Neural fibrolipoma of a digital nerve of the index finger without macrodactyly. *J Plast Surg Hand Surg*. 2010;44(4-5):219-221. [CrossRef]
11. Gundes H, Alici T, Sahin M. Neural fibrolipoma of the digital nerve: a case report. *J Orthop Surg (Hong Kong)*. 2011;19(1):123-125. [CrossRef]
12. Gupta A, Singal R, Mittal A, Goyal M. Report of two cases of subcutaneous lipoma over the finger and review of literature: case series: benign tumour. *Musculoskelet Surg*. 2011;95(3):247-249. [CrossRef]
13. De La Cruz Monroy MFI, Durani P, Offer GJ. Unusual case of finger lipoma: a case report and literature review. *J Plast Reconstr Aesthet Surg*. 2015;68(2):284-286. [CrossRef]
14. Kalisman M, Beck AR. Lipoma of the thumb in a child. *Ann Plast Surg*. 1979;2(2):165-166. [CrossRef]
15. Mahé E, Guéro S, Fraitag S. Lipofibromatose digitale chez un enfant. *Ann Dermatol Venereol*. 2011;138(5):391-394. [CrossRef]
16. Vaiude P, Husein B, Hurrell D, McArthur P. An isolated digital lipoblastoma. *J Plast Surg Hand Surg*. 2014;48(1):94-95. [CrossRef]
17. Kalisman M, Dolich BH. Infiltrating lipoma of the proper digital nerves. *J Hand Surg Am*. 1982;7(4):401-403. [CrossRef]
18. Alsinan TA, Alhablany TM, Alokaili HR, Altamimi AS, Rashidi ME. Multilocular lipoma in the middle and index fingers: a case report. *Cureus*. 2022;14(2):e22172. [CrossRef]
19. Sheeja RTM, Bestin T, Aabha DS. Giant spindle cell lipoma of middle finger: case report and review of literature. *J Hand Microsurg*. [CrossRef]
20. Yadav AK, Pawar ED, Wadia F, Kumar Gs P, Mane A, Harsoor A. Parosteal lipoma of the proximal phalanx of hand. *J Hand Surg Am*. 2021;46(10):933.e1-933.e5. [CrossRef]
21. Abkari I, Abidi A El, Latifi M. Lipome géant du troisieme doigt: à propos d'un cas. *Chir Main*. 2011;30(2):152-154. [CrossRef]
22. Ramirez-Montaño L, Lopez RP, Ortiz NS. Giant lipoma of the third finger of the hand. *Springerplus*. 2013;2(1):164. [CrossRef]
23. Gallouj S, Aqil N, Zahra Mernissi F. Lipome péri-unguéal : une localisation inhabituelle. *Ann Dermatol Venereol*. 2019;146(2):121-124. [CrossRef]
24. Vélez NF, Telang GH, Robinson-Bostom L, Jellinek NJ. Subungual lipoma: presenting as longitudinal nail splitting. *Dermatol Surg*. 2014;40(12):1435-1437. [CrossRef]
25. Pertea M, Lunca S, Filip A, et al. Atypical sites of the lipoma on the hand and fingers: clinical and imaging features and surgical utcomes. *Diagnostics (Basel)*. 2022;12(10):2286. [CrossRef]