GENERAL SURGERY

INDEX COPERNICUS INTERNATIONAL

ICV value for 2024 = 82.51

Case Report | International Journal of Medical Case Reports

# Primary Bilateral Lipoma Arborescens of the Wrist: A Rare Case Report

**Swara Mahadik[1], Sushil Dubey[2]**

[1] 2nd year MBBS student, KJ Somaiya Medical College, Mumbai, India.
[2]MBBS, DNB (General Surgery), Fellowship in HPB Surgery, India.

ISSN 2455-0574

## ABSTRACT

**Background:**
Lipoma arborescens (LA) is an uncommon benign synovial disorder characterized by villous lipomatous proliferation of the synovium. It most frequently affects the knee; involvement of the wrist is distinctly rare and may be misdiagnosed as ganglion cyst, tenosynovitis, or other synovial proliferative conditions. Primary LA is typically described in younger patients without underlying degenerative or inflammatory arthropathy. We report an exceptionally rare presentation of primary bilateral wrist LA.

**Case Report:** A 30-year-old man presented with a gradually progressive, painless-to-intermittently painful swelling over the dorsal aspect of the right wrist for 2 years. There was no antecedent trauma or systemic symptoms. He had undergone excision of a similar lesion from the left wrist 3 years earlier, suggesting bilateral disease. Examination showed a soft, lobulated, non-tender dorsal wrist mass with painful limitation of extension. Wrist radiograph showed no arthropathy or bony abnormality. The lesion was excised under regional anesthesia and found to be a well-encapsulated yellow, lobulated villous fatty synovial mass which was completely removed while preserving extensor tendons and retinaculum. Histopathology demonstrated villous synovial hypertrophy with subsynovial mature adipose tissue and lymphoid follicles; immunohistochemistry (CD3/CD20 negative, reactive Ki-67 pattern) excluded lymphoproliferative pathology confirming LA. Postoperatively, recovery was uneventful with restoration of painless wrist extension. The patient remains under follow-up for recurrence.

**Conclusion:** Primary LA of the wrist is rare and may present with bilateral involvement. Characteristic intraoperative appearance and histopathology along with immunohistochemistry enables the diagnosis. Complete excision yields excellent functional outcomes. Regular follow-up and surveillance is recommended given limited evidence on recurrence in small-joint LA.

***Keywords: Benign Neoplasms, Lipoma Arborescens ,Synovectomy, Wrist Joint.***



**International Journal Of Medical Case Reports (ISSN 2455-0574) is an indexed medical journal indexed in Index Copernicus**

Access this Journal Online
Quick Response Code
Website: www.ijomcr.net
Email:ijomcr@gmail.com

## INTRODUCTION:-

Lipoma arborescens (LA), also referred to as villous lipomatous proliferation of the synovial membrane, is an uncommon benign synovial disorder that typically presents as a slowly progressive, long-standing periarticular or intra-articular swelling with intermittent pain, effusion, and limitation of movement.[1] Although it can occur across a broad age spectrum, most reported patients are adults in the fourth to sixth decades, and the clinical course is frequently indolent, leading to delayed diagnosis and prolonged morbidity. The knee—particularly the suprapatellar pouch—accounts for the vast majority of cases, whereas involvement of small joints of the hand and wrist remains distinctly rare, often resulting in initial attribution to much more common dorsal wrist pathologies such as ganglion cysts or nonspecific synovitis. The original clinicopathologic characterization included a chronic course and the potential association with degenerative change. These characteristic features reinforced the need to consider LA in patients with persistent synovial-based swellings rather than treating such lesions as simple superficial lipomas.[2]

Histopathologically, LA is defined by frond-like (arborescent) villous hypertrophy of synovium with subsynovial replacement by mature adipocytes, typically without cytologic atypia. The lesion is widely conceptualized as a reactive synovial process rather than a true neoplasm, consistent with its frequent association with chronic joint irritation, degenerative arthropathy, inflammatory arthritides and prior trauma or mechanical stress. Contemporary clinicoradiologic reviews support a practical division into “primary” LA—more often described in younger individuals with minimal or absent underlying joint pathology—and “secondary” LA, which is more prevalent and occurs in the setting of long-standing degenerative or inflammatory joint disease.

**Dr Swara Mahadik**
2nd year MBBS student, KJ Somaiya Medical College, Mumbai, India
Email : mahadikswara26@gmail.com

This distinction is clinically relevant because secondary LA may coexist with structural joint abnormalities that influence symptoms, management decisions and postoperative outcomes.[3]

Imaging plays an important role in the preoperative recognition of LA, particularly in atypical locations where diagnostic suspicion is low. Magnetic resonance imaging (MRI) is regarded as the imaging modality of choice because it can demonstrate the pathognomonic frond-like synovial proliferation that follows fat signal intensity on T1- and T2-weighted sequences and suppresses on fat-saturated sequences, often accompanied by joint effusion and variable synovial thickening. Larger imaging series have further highlighted that LA can appear as diffuse villous involvement or as a dominant mass-like lesion, and that associated intra-articular pathology—especially in the knee—may be common, supporting the concept of LA as a manifestation of chronic synovial insult. In resource-limited settings where MRI is unavailable, the diagnosis may remain presumptive until excision.[4]

Clinically, LA of the wrist poses unique diagnostic and therapeutic challenges. The wrist's confined compartments and close relationship to extensor tendons and retinacular structures may lead to earlier functional limitation (e.g., reduced extension) even with modest lesion size, while its rarity increases the likelihood of misclassification as ganglion cyst, tenosynovitis, synovial chondromatosis, or pigmented villonodular synovitis. Reviews emphasize that definitive diagnosis rests on histopathology, and that treatment is typically synovectomy or complete excision. This can be performed either as open surgery or arthroscopically depending on location and extent.[5] Surgical management is generally associated with excellent symptomatic relief, though recurrence has been reported, particularly when excision is incomplete or when persistent underlying synovial drivers remain.

Substantial knowledge gaps persist regarding primary LA in small joints especially the wrist. The published literature remains dominated by LA involving unilateral knee joints with wrist involvement largely confined to isolated case reports. This scarcity of cases of LA involving joints other than knee joints is the cause of limited evidence-based guidance about diagnostic algorithms, recurrence risk, and follow-up strategies. Notably, bilateral wrist LA has been described as an exceptionally rare manifestation. In this context, our case report of primary bilateral LA of the wrist aims to strengthen clinical awareness and contribute to the existing evidence toward improved recognition and management of this rare entity.

**CASE REPORT:-**

A 30-year-old man came to the out-patient-department with a history of gradually progressive swelling over the dorsal aspect of the right wrist for 2 years. This swelling was associated with intermittent pain and discomfort during wrist movements leading to mild functional restriction. The pain characteristically increased on extension. There was no history of antecedent trauma, fever, weight loss, or other systemic complaints. Notably, the patient had undergone surgical excision of a similar lesion from the contralateral (left) wrist 3 years earlier at another center, and the prior histopathology was reported as a lipoma arborescens of wrist.

Local examination revealed a soft, lobulated, non-tender swelling over the dorsal right wrist. The mass was non-compressible, mobile, and freely movable under the skin. Wrist movements were mildly painful and restricted, with extension being most symptomatic (Figure 1).

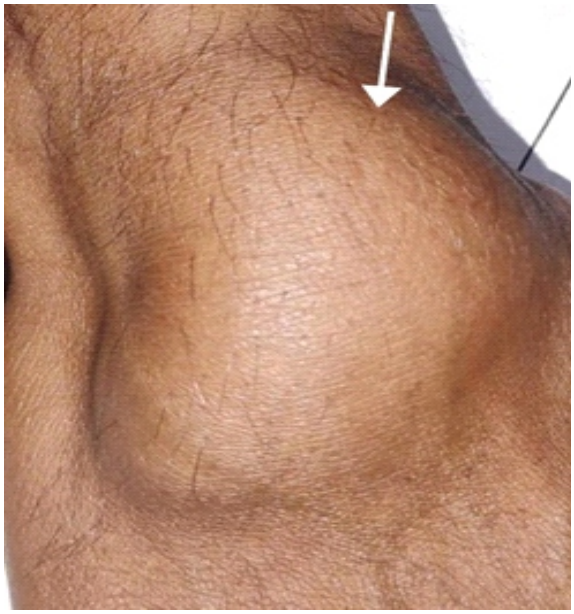

*Figure 1 - Clinical photograph demonstrating a well-defined dorsal wrist swelling (arrow) in a patient diagnosed with lipoma arborescens of the wrist.*

Neurovascular examination of the limb was normal. Examination of other joints was unremarkable. Routine hematological parameters were within normal limits. Plain radiography (X-ray) of the wrist showed no bony abnormality, arthropathy, or features suggestive of a chronic bone or joint disorder. Magnetic resonance imaging (MRI) could not be performed due to financial constraints.

The patient underwent surgical excision of the lesion under regional anesthesia. Intraoperatively, the lesion was identified deep to the dermis and was well-encapsulated. It extended from the metacarpophalangeal joint region and coursed beneath the extensor retinaculum. Grossly, it appeared as a yellowish, lobulated, villous fatty mass arising from the synovium, with extensions into the inter-tendinous planes. Complete excision was achieved while sparing the extensor retinaculum and extensor digitorum tendons. There was no significant bleeding and no neurovascular injury. The procedure was uneventful.

The excised specimen was transported in formalin. Microscopic examination (H&E staining) demonstrated synovial hypertrophy with lymphoid follicles and involvement of lobular adipose tissue separated by vascularized septae. Immunohistochemistry was performed. IHC showed a polyclonal reactive pattern (mixed CD3+ T cells and CD20+ B cells) with low/physiologic Ki-67, supporting reactive lymphoid aggregates and excluding lymphoma (Figure 2).

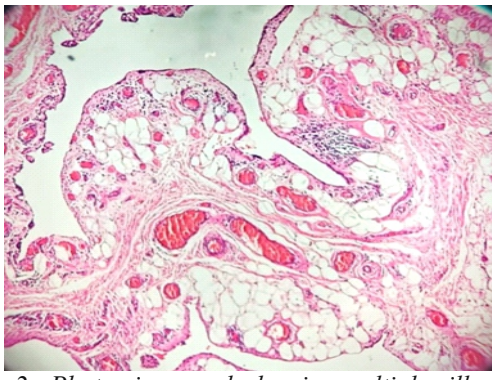

*Figure 2 - Photomicrograph showing multiple villous synovial projections with sub-synovial infiltration by mature adipose tissue, consistent with lipoma arborescens.*

The postoperative course of the patient was uneventful. There was no seroma or surgical site infection. The patient could achieve complete return of wrist extension without pain. He is under regular follow-up for monitoring of complications and recurrence.

**DISCUSSION:-**

Lipoma arborescens (LA) is classically described as a slow, indolent villous lipomatous proliferation of synovium, and most clinicians still primarily associate it with chronic knee effusions rather than small-joint disease.[6] The present case is notable for young age (30 years), wrist involvement with functional limitation predominantly on extension, and a history strongly suggestive of bilateral disease, all in the absence of radiographic arthropathy or inflammatory systemic features—supporting a "primary" phenotype. Complementing this, the radiology-focused review by Sanamandra and Ong reinforced that LA is uncommon, frequently under-recognized, and can masquerade as other synovial or periarticular masses—particularly when it arises outside the knee.[7] In our patient, the 2-year history of gradually progressive swelling with intermittent pain and mechanical restriction mirrors the chronicity highlighted in these reports, but the location in the dorsal wrist likely made misattribution to common entities (e.g., ganglion, tenosynovitis) more probable, thereby prolonging symptoms and delaying definitive excision.

A major practical challenge in this case was the lack of MRI, which is typically considered the most discriminating preoperative investigation for LA. In the largest dedicated MRI series, Vilanova and coauthors demonstrated that LA shows a characteristic frond-like fatty synovial proliferation and described both diffuse villous and focal mass-like patterns, often accompanied by joint effusion and additional joint pathology.[8] Although their cohort predominantly involved the knee, the central message is transferable: MRI helps distinguish LA from pigmented villonodular synovitis (PVNS) and synovial chondromatosis by confirming fat-signal villous projections and suppression on fat-saturated sequences. In the current patient, financial constraints precluded MRI, and diagnosis relied on intraoperative gross appearance (yellow lobulated villous mass arising from synovium) and histopathology. This limitation is clinically relevant because atypical sites such as the wrist can have a broader differential and closer relationships to tendon compartments, retinacular structures, and neurovascular bundles. Nonetheless, the radiographic absence of erosions, calcifications, or arthropathy, coupled with a well-encapsulated lesion and postoperative functional recovery, aligns with a benign synovial proliferative process rather than a more locally aggressive synovial disorder.

Histologically, our specimen showed synovial hypertrophy with villous architecture and subsynovial mature adipose proliferation, supported by a polyclonal reactive IHC pattern (mixed CD3+ T cells and CD20+ B cells) with low/physiologic Ki-67, excluding lymphoma. This profile is consistent with the pathologic definition proposed by Hallel et al., in which villous synovial proliferation with mature fat replacement is typical and cytologic atypia is absent.[9] The broader clinicoradiologic synthesis also frames LA as more plausibly reactive than neoplastic, frequently associated with chronic irritation in secondary forms, but also occurring idiopathically in younger patients without evident joint disease. Our patient's normal laboratory parameters, absence of constitutional symptoms, and normal wrist radiograph argue against an inflammatory arthropathy–driven secondary LA, while the prior contralateral excision suggests either true bilateral primary disease or a shared mechanical/synovial stimulus affecting both wrists over time. Even without MRI, the concordance between gross "arborescent" morphology and classical microscopic features provides high diagnostic confidence.[10] The present case contributes to the sparse literature on wrist LA and particularly the possibility of bilateral involvement. Chander and colleagues reported synchronous bilateral wrist LA as an exceptionally rare manifestation and highlighted that chronic irritation/inflammation may be an important driver while also proposing mechanistic perspectives related to adipocytic differentiation within synovium.[11] Their case supports the concept that wrist LA can present bilaterally and be clinically misleading. Similarly, Kostas-Agnantis et al. described an upper-extremity case with wrist swelling and compressive symptoms (carpal tunnel), where imaging suggested a fatty synovial lesion and open excision was effective.[12] Together, these reports emphasize that, in the wrist, even modest synovial proliferations may become symptomatic earlier due to confined anatomy and tendon/retinacular constraints—consistent with our patient's pain accentuated by extension. Importantly, complete excision in our case preserved the extensor retinaculum and tendons and resulted in prompt restoration of painless extension, reinforcing that careful dissection and complete removal of synovial-origin villous tissue can yield excellent functional outcomes.[13]

Management of LA is generally surgical—synovectomy or complete excision—with recurrence uncommon when resection is complete, but the optimal timing and follow-up strategy remain uncertain for non-knee disease because of limited case numbers.[14] Natera and colleagues, in a series focused on primary knee LA, associated delayed synovectomy with subsequent degenerative change and advocated timely intervention when feasible.[15] While extrapolation from knee to wrist must be cautious, their findings are conceptually relevant: prolonged synovial proliferation and effusion may perpetuate mechanical and inflammatory microenvironments that could compromise joint surfaces over time. In our patient, earlier recognition might have shortened morbidity and reduced risk of local mechanical consequences (e.g., persistent restriction, tendon irritation), even if frank osteoarthritis is less predictable in the wrist than in weight-bearing joints. Given the history of contralateral excision and the rarity of bilateral wrist LA we consider periodic clinical surveillance appropriate, focusing on recurrent swelling, effusion or renewed motion limitation. Future reports that systematically document imaging patterns, completeness of synovectomy, symptom duration, and longer-term wrist function will be essential to refine recurrence risk and follow-up recommendations for small-joint LA.

**CONCLUSION:-**

Primary lipoma arborescens of the wrist is an extremely rare benign synovial pathology. A high index of suspicion is required for diagnosis. Histopathology confirms the diagnosis, and complete surgical excision provides excellent functional outcome.

**Conflict Of Interest : None**

**Source of Funding : None**

**Consent:- "Written informed consent was obtained from the patient for publication of clinical details and images."**

**REFERENCES:-**


1. Davra SV, Srivastava R, Sehrawat S. Lipoma Arborescens: A Rare Synovial Lesion Unveiled by Radiologic Imaging. Ann Afr Med. 2025 Nov 20. French, English. doi: 10.4103/aam.aam_615_25. Epub ahead of print. PMID: 41318899.
2. Bahk WJ, Shin S, Jang J, Seo KJ, Kim Y, Kim H. A Lipoma Arborescens Probably Causing Significant Osteoarthritis of the Elbow in a Young Man. Diagnostics (Basel). 2025 Jul 28;15(15):1888. doi: 10.3390/diagnostics15151888. PMID: 40804853; PMCID: PMC12346672.
3. Al-Shraim MM. Intra-articular lipoma arborescens of the knee joint. Ann Saudi Med. 2011 Mar-Apr;31(2):194-6. doi: 10.4103/0256-4947.77501. PMID: 21403407; PMCID: PMC3102483
4. Martín S, Hernández L, Romero J, Lafuente J, Poza AI, Ruiz P, Jimeno M. Diagnostic imaging of lipoma arborescens. Skeletal Radiol. 1998 Jun;27(6):325-9. doi: 10.1007/s002560050390. PMID: 9677649.
5. Kalifis G, Maffulli N, Migliorini F, Marín Fermín T, Hovsepian JM, Stefanou N, Hantes M. Surgical management of upper limb lipoma arborescens: a systematic review. J Orthop Surg Res. 2022 Mar 4;17(1):138. doi: 10.1186/s13018-022-02997-7. PMID: 35246183; PMCID: PMC8896089.
6. Kamaci S, Doral MN, Ergen FB, Yucekul A, Cil A. Lipoma arborescens of the knee. Knee Surg Sports Traumatol Arthrosc. 2015 Aug;23(8):2196-2201. doi: 10.1007/s00167-014-2996-3. Epub 2014 Apr 22. PMID: 24752536.
7. Sanamandra SK, Ong KO. Lipoma arborescens. Singapore Med J. 2014;55(1):5-10. doi:10.11622/smedj.2014003
8. Vilanova JC, Barceló J, Villalón M, Aldomà J, Delgado E, Zapater I. MR imaging of lipoma arborescens and the associated lesions. Skeletal Radiol. 2003;32(9):504-509. doi:10.1007/s00256-003-0654-9
9. Hallel T, Lew S, Bansal M. Villous lipomatous proliferation of the synovial membrane (lipoma arborescens). J Bone Joint Surg Am. 1988;70(2):264-270.
10. Pai SN, Ayyadurai P, Jeganathan PV, Perumal S, Arumugam S. Lipoma Arborescens: can we afford to miss it? ANZ J Surg. 2022 Jan;92(1-2):218-222. doi: 10.1111/ans.17357. Epub 2021 Nov 16. PMID: 34783131.
11. Chander B, Awasthi B, Preet K. Synchronous lipoma arborescens of bilateral wrist: an extremely rare manifestation and a new perspective on etiopathogenesis. J Cancer Res Ther. 2015;11(3):646. doi:10.4103/0973-1482.150402
12. Kostas-Agnantis I, Gkiatas I, Korompilia M, et al. Lipoma arborescens of the upper extremity with anatomic variation of the palmaris longus: a case report. JBJS Case Connect. 2022;12(3). doi:10.2106/JBJS.CC.22.00334
13. Franco M, Puch JM, Carayon MJ, Bortolotti D, Albano L, Lallemand A. Lipoma arborescens of the knee: report of a case managed by arthroscopic synovectomy. Joint Bone Spine. 2004 Jan;71(1):73-5. doi: 10.1016/S1297-319X(03)00102-7. PMID: 14769527.
14. Ouazzani Chahdi H, El Bouardi N, Ferhi M, Akammar A, Haloua M, Youssef Alaoui Lamrani M, Boubbou M, Maaroufi M, Alami B. Lipoma arborescens of the knee: A case report. Radiol Case Rep. 2024 Mar 21;19(6):2272-2276. doi: 10.1016/j.radcr.2024.02.106. PMID: 38559650; PMCID: PMC10978464.
15. Natera L, Gelber PE, Erquicia JI, Monllau JC. Primary lipoma arborescens of the knee may involve the development of early osteoarthritis if prompt synovectomy is not performed. J Orthop Traumatol. 2015;16(1):47-53. doi:10.1007/s10195-014-0295-x


*****

**Author Contribution : SM**: contributed to patient management, data collection, and drafting of the manuscript, **SD**: performed data interpretation, critical revision of the manuscript, supervised the study, and approved the final version.

Received : 10-01-2026 Revised: 05-02-2026 Accepted : 25-02-2026