

## Case Report

# Synovial lipoma of the ankle and foot: a rare case report

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**Received:** 11 January 2023

**Revised:** 07 February 2023

**Accepted:** 13 February 2023

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### ABSTRACT

Synovial lipomatosis is an extremely rare type of disease in which there is an excess of adipose tissue involving the synovium layer of joints or synovial sheath around the tendons causing pain, paraesthesia, and weakness. The most common site being reported till now is Knee joint or parapatellar space other joints such as elbows and shoulders are being reported after the knee joint, and the ankle joint is rarely reported 2 cases have been reported in the English literature. We report a case of a 28-year-old male presenting with swelling of the right foot for 12 years and developed symptoms of pain and tingling on the toes for 2-3 weeks. Multiple bony hard lesions were palpated on the base of the foot, ultrasonography (USG) showed a subcutaneous lesion around the extensor tendons of the foot and fine needle aspiration cytology (FNAC) had a picture of the synovial cyst. Surgical excision was done and histopathology was reported to be as a fibrofatty tissue with multiple adipocytes suggesting lipoma arborescent.

**Keywords:** Synovial lipomatosis, Ankle and foot, Lipoma, Lipoma arborescent

### INTRODUCTION

Synovial lipomatosis is a highly rare and uncommon condition of the synovial joints and synovial sheaths and bursae. The etiology of this condition is not completely defined, it has been characterized as the hyperplasia of the adipocytes in the subsynovial layer.<sup>1</sup> The most commonly reported site is the knee joint like the suprapatellar pouch due to the fat pad layer surrounding the knee.<sup>2,3</sup> Occasional reporting of the cases of the elbow, and shoulder is being done.<sup>4-8</sup> Its occurrence in subacromial-subdeltoid bursae and bicipital bursae is also being reported.<sup>5</sup>

“Arborescens” in Latin means “tree”, as described tree-like morphology of the lipomatous villous synovial proliferation. When there is the absence of macroscopic villi, then it is termed lipoma simplex or lipoma of the tendon sheath.<sup>9,10</sup> It has been suggested to name both the condition lipoma arborescens and lipoma simplex as synovial lipomatosis.

Lipoma involving tendon sheaths of the ankle and foot has rarely been reported in the literature. Here we report a rare case of synovial lipomatosis.

### CASE REPORT

Presenting a case of a 28-year-old male who came to the orthopedic surgeon with 12 years of history of swelling on the dorsum of the right foot which was painless until the last 2-3 weeks. Now suffering from pain in the right foot which aggravates on standing and walking, the patient also complains of a tingling sensation on the fingers of the same foot. There are no skin problems, no morning stiffness, no systemic manifestations, and no other joint involvement. He does not give any history of trauma to the foot recent and in the past. Examination reveals bulky soft rubber-like swelling on the foot, the skin on the swelling is normal. On palpation, the patient has deep tenderness and the dorsalis pedis is not palpable, swelling was compressible. Laboratory routine tests like complete blood count and renal panel are within normal limits, rheumatoid factor

was negative, uric acid was within normal limits, and erythrocyte sedimentation rate (ESR) and C-reactive protein (CRP) is not raised. On roentgenogram the are features of soft tissue swelling and underlying bony growths seen on the navicular bone and the base of 1<sup>st</sup> metatarsal of the right foot. No signs of erosion or periostitis (Figure 1).



Figure 1 (A and B): Pre op and post op X-ray.

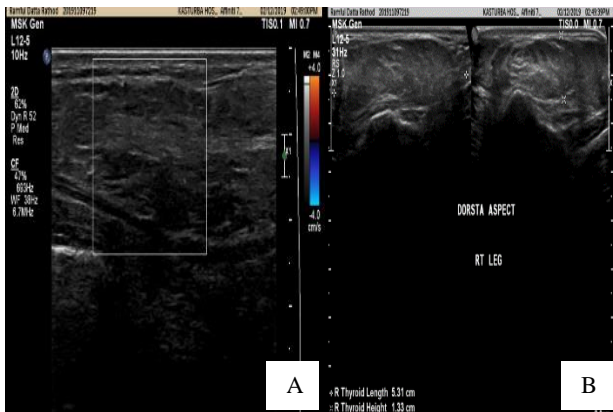


Figure 2(A and B): USG findings (subcutaneous extension).



Figure 3: Clinical photograph of the swelling.

On ultrasonography, it was confirmed the swelling arising from the subcutaneous tissue was benign etiology. Fine needle aspiration cytology (FNAC) was done later to find the origin of the swelling and found to have both synovial cells and adipose cells with adipocytes dominating the picture. Surgical excision was done of the swelling and an incision was taken on the dorsum of the foot, meticulous dissection was done to save the tendons and the neurovascular structures in that area and the lipoma of size 16×6×3 cm was removed and sent for histopathological evaluation and was confirmed to be synovial lipomatosis as it showed multiple adipocytes.

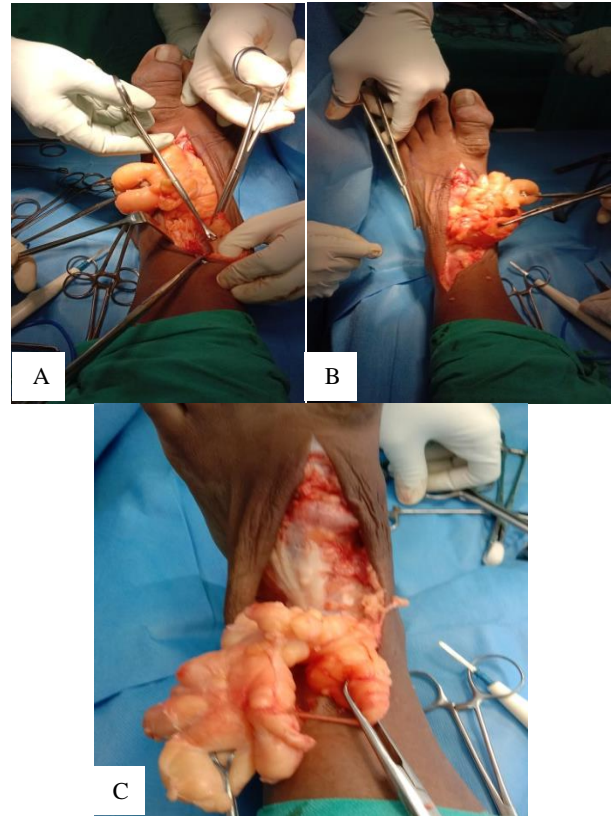
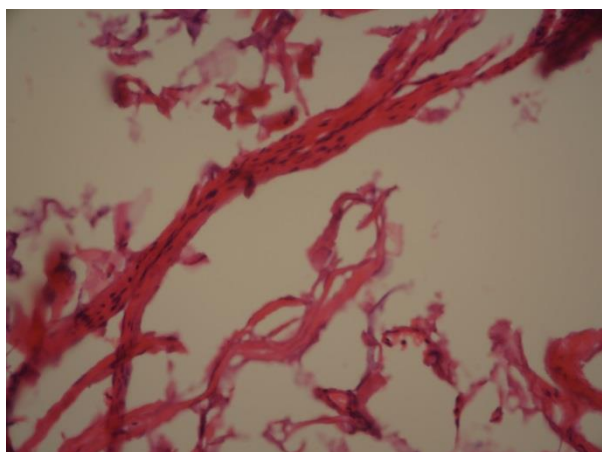


Figure 4 (A-C): Surgical steps (intraop findings).



Figure 5: Excised lipoma dimensions (16×6×3 cm).



**Figure 6: Histopathological image of the lesion showing lymphocytes infiltrated in the villous synovial tissue and adipocytes.**

## DISCUSSION

Out of the total soft tissue tumor, lipoma accounts for 50%.<sup>11</sup> Synovial lipomatosis is a disease of the elderly median age to be of 50 years.<sup>12</sup> Although most cases of lipoma arborescens have been reported in adults, children can be affected as well. The most commonly affected joint by far is the knee joint, and the knee joint is more common in the suprapatellar pouch.<sup>2,3</sup> Sites like subdeltoid bursae causing rotator cuff tears have also reported the presence of synovial lipomatosis.<sup>4,5</sup> Synovial lipomatosis affecting the ankle joint and foot is extremely rare. And here we report the same synovial lipomatosis around the tendon sheaths of the extensor part of the foot.

The cause of synovial lipomatosis is unclear but high chance of it being a non-specific reaction to trauma or chronic synovitis of the joint. It is also quoted that the cause is related to syndromes such as short bowel syndrome may show multiple joint involvements.<sup>8</sup> Clinical symptoms are related to compressive problems like pain, and limitation of the movement of the joint tingling sensation due to compression of the neurovascular structures. The diagnostic tool includes imaging like the magnetic resonance imaging (MRI), roentgenogram, and ultrasonography and then to be confirmed on tissue diagnosis like FNAC and histopathology.

MRI primarily gives the diagnosis when adipose tissue-suppressed sequences are used in particular. High signal intensities is been exhibited by the synovial lipomas and adipose tissue on T1 and T2 weighted images.

Synovial lipomatosis diagnosis is done with the fatty tissue-suppressed MRI sequence. Due to differences in the treatment and the prognosis we have to differentiate in various types of adipose proliferative diseases such as pigmented villonodular synovitis, rheumatoid arthritis, synovial hemangiomas, and synovial chondromatosis.<sup>16</sup> In T1 and T2 weighted images

Pigmented villonodular synovitis shows diffuse signals of low intensity and synovial hemangiomas show diffuse signals on.

As their treatment and prognosis differ, it is important to differentiate synovial lipoma from other adipose tissue proliferative diseases, including pigmented villonodular synovitis, synovial chondromatosis, synovial hemangiomas and rheumatoid arthritis.<sup>12</sup> Pigmented villonodular synovitis exhibits diffuse signals of low intensity on T1- and T2-weighted images. Synovial chondromatosis varies from low to high signal on T2- and T1-weighted sequences according to the cartilaginous components of the lesion. Synovial hemangiomas exhibit intermediate signal intensity on T1- and T2-weighted images, with areas of high signal intensity due to the presence of fibrous septa between the vascular channels and adipose tissue in the lesion. Rheumatoid arthritis exhibits intermediate to low signal intensity on T1- and T2-weighted images and is associated with the formation of fibrous pannus.<sup>12</sup>

Characteristic macroscopic features include a hypertrophic glistening yellow or orange mass of synovial tissue. The arborescens type shows prominent villous proliferation and the simplex type is composed of lobulated fatty tissue, which grows from the sheath and is indistinguishable from it. On microscopic, the tissue is composed chiefly of the villous proliferation of the synovial membrane and hyperplasia of the subsynovial adipose tissue, and the presence of lymphocytes as seen in (Figure 6).

Surgical treatment options for synovial lipomatosis include excision, if possible, arthroscopically but depending on the site and extent of the tumor the modality is being decided. Arthroscopic removal is conducive in large joints like the knee joint but not a choice in small joints of the body where it might need extensive excision like in our case the tumor was extensive in size and to completely excise it large incision has to be taken.<sup>14</sup>

## CONCLUSION

Synovial lipomatosis also known as lipoma arborescens is rarely found in the ankle joint and needs to be differentiated from other adipose proliferating diseases by managing it. In the ankle joint surgical excision is the final mode of management in the lesions causing vascular, neurological and musculoskeletal compressive symptoms. Arthroscopic excision is possible in large joints like knee joint and can be difficult in ankle joint.

*Funding: No funding sources*

*Conflict of interest: None declared*

*Ethical approval: Not required*

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**Cite this article as:** Wankhede AK, Rathod R, Mote G, Badole CM, Medhi M. Synovial lipoma of the ankle and foot: a rare case report. *Int J Res Orthop* 2023;9:454-7.