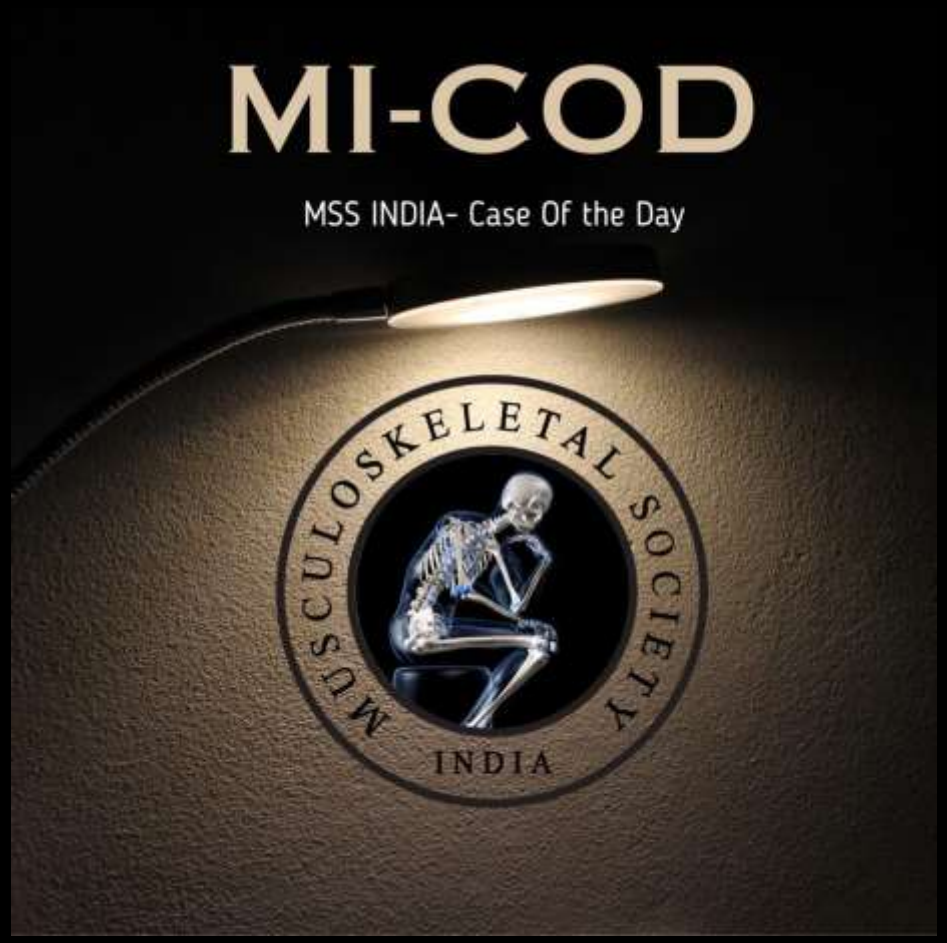
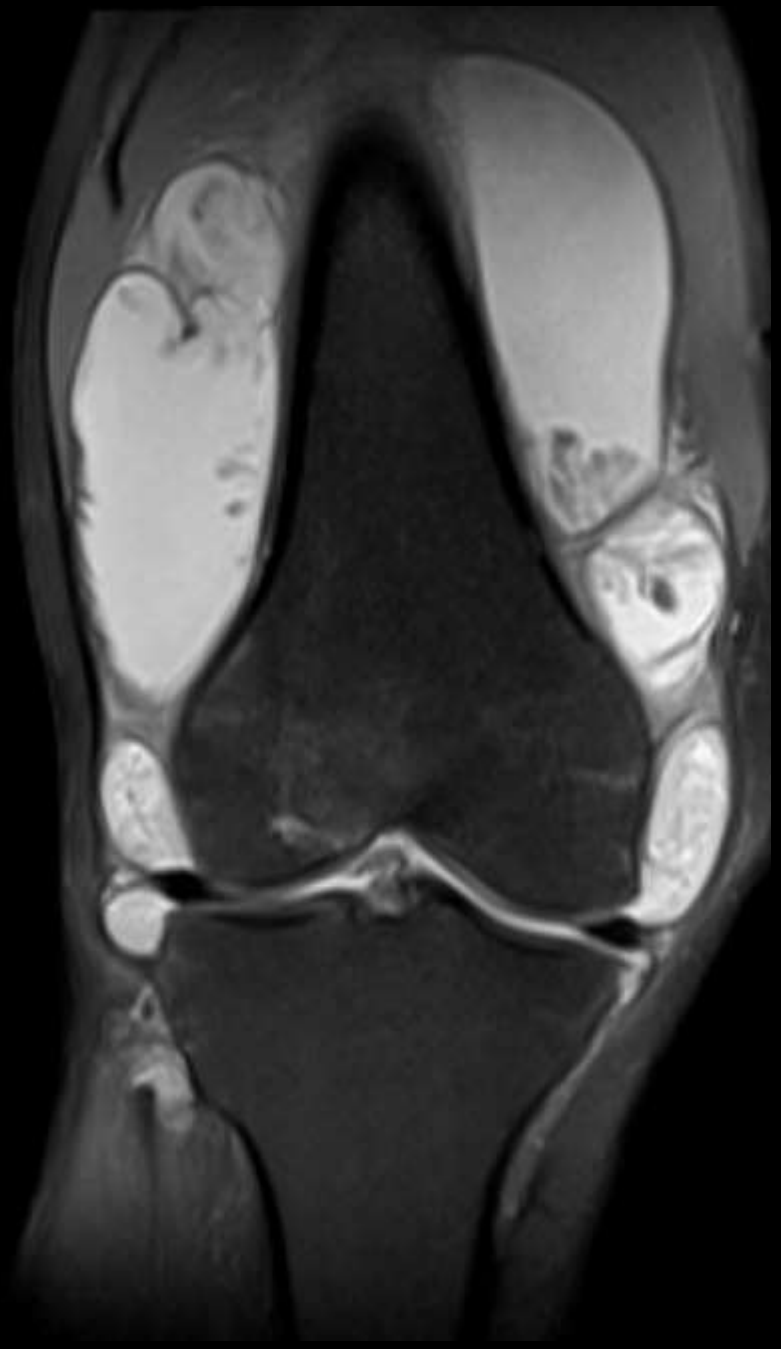
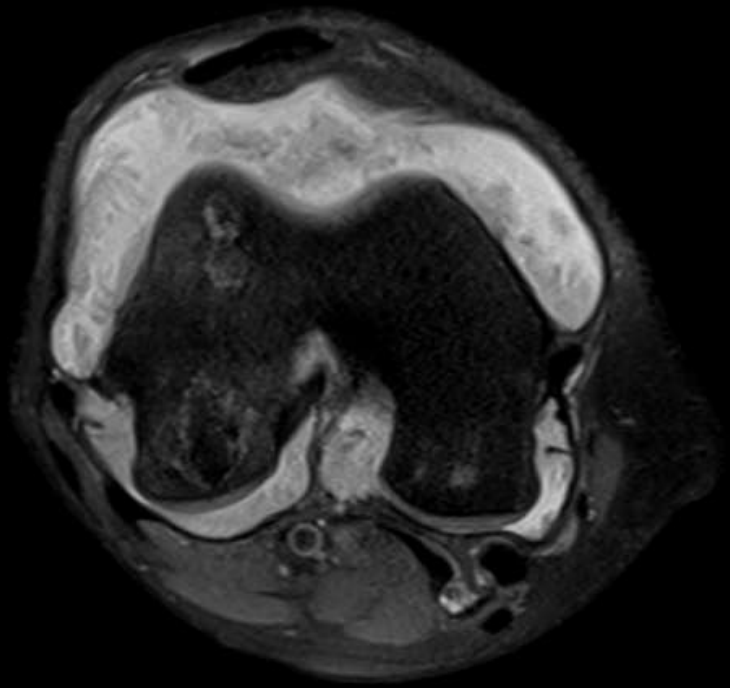
MICOD - 03/05/24
Case contributor – Dr. Sonal Saran



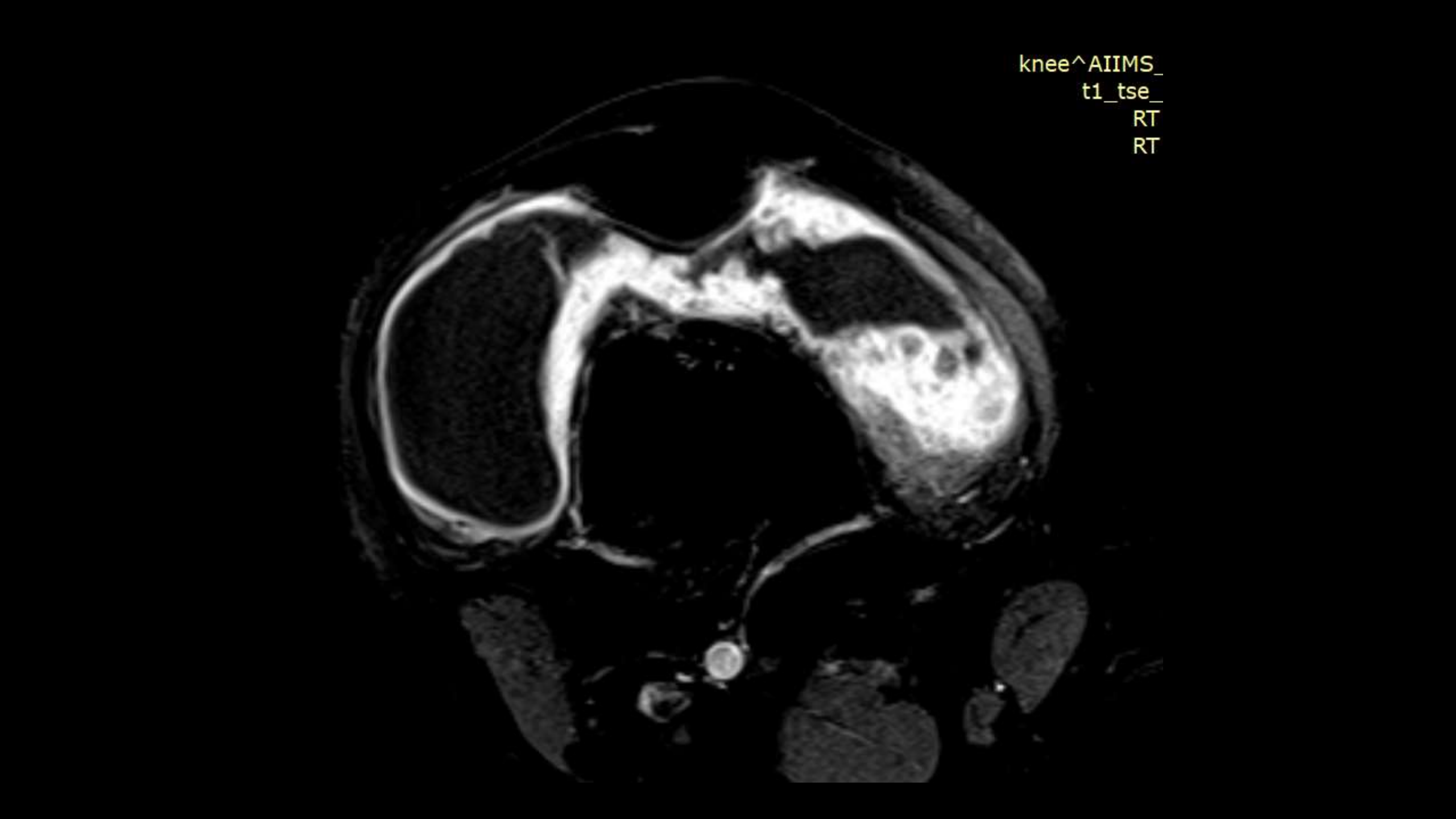
History

- 30 year old male.
- H/o swelling in right knee
- Associated with mild pain relieved on painkillers.






knee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Introduction

- Lipoma arborescens is a rare intra-articular lesion.
- Characterized by **replacement of subsynovial tissue by mature fat cells, giving rise to a villous synovial proliferation.**
- Seen most commonly in 5^{th}-7^{th} decade of life.
- Most cases are mono-articular, with rare polyarticular involvement.

- Clinical Presentation:
  - **Long standing, painless, slowly progressive swelling of the affected joint, with recurrent joint effusions.**

- **Associations:**
  - **Joint effusion:** very common
  - **Degenerative changes :** common
  - **Meniscal tears :** common
  - **Synovial cysts, bony erosions, chondromatosis :** uncommon
  - **Patellar subluxation, discoid meniscus :** rare

Pathogenesis of recurrent joint effusion in lipoma arborescens

- Growth factors are released into the synovial cavity.
- Cause growth of the synovium with its replacement by mature fat cells in a villous or frond-like pattern.
- Overgrowth of the synovial cells causes excess fluid secretion into the affected joint space – leading to recurrent joint effusions.
- Hence, **joint effusions are very commonly associated with lipoma arborescens.**

Imaging in lipoma arborescens - Ultrasound

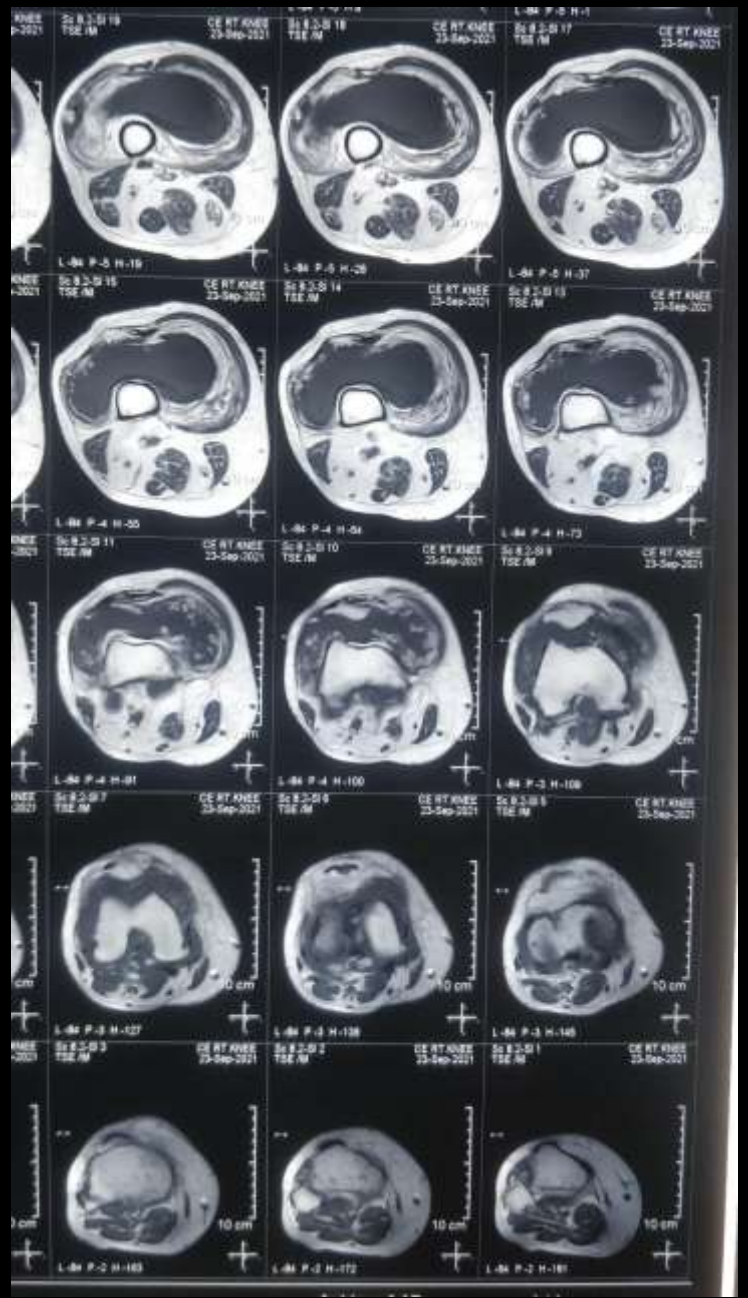
- Findings:
  - **Joint effusion**
  - **Echogenic frond-like projections into the joint effusion.**

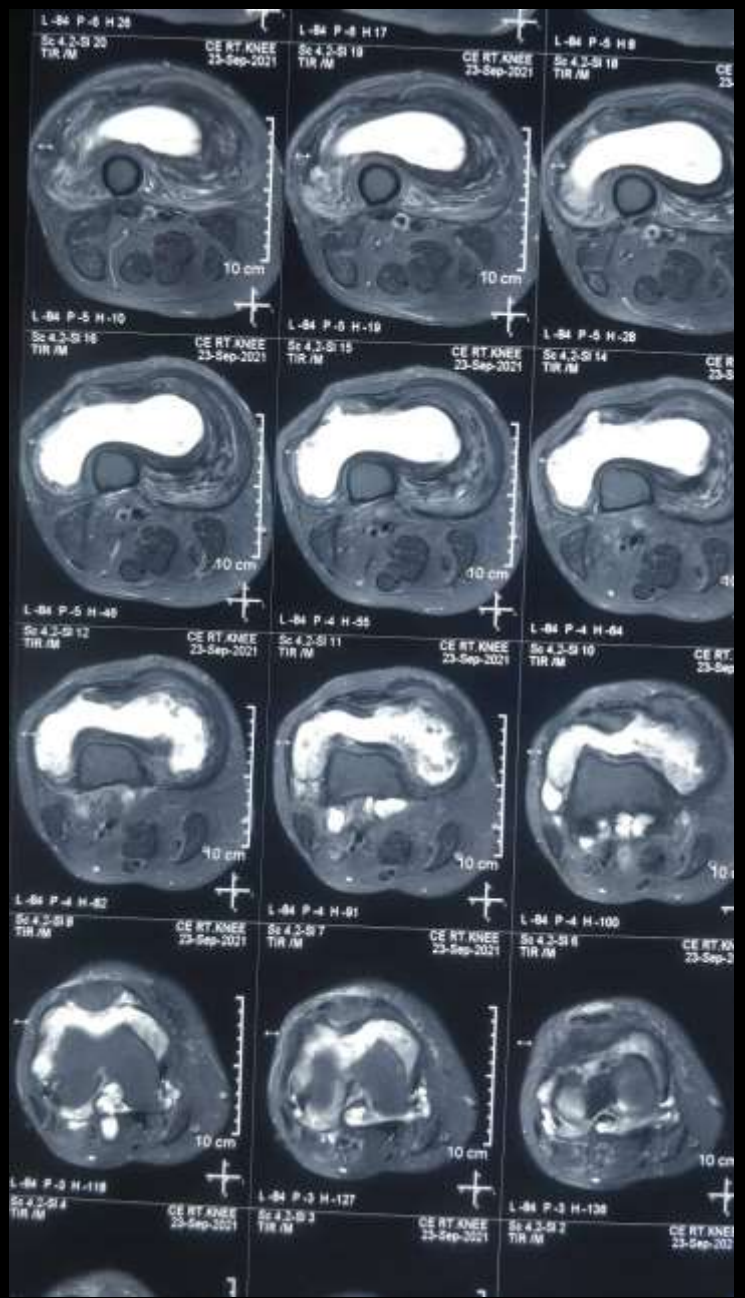
Imaging in lipoma arborescens - MRI

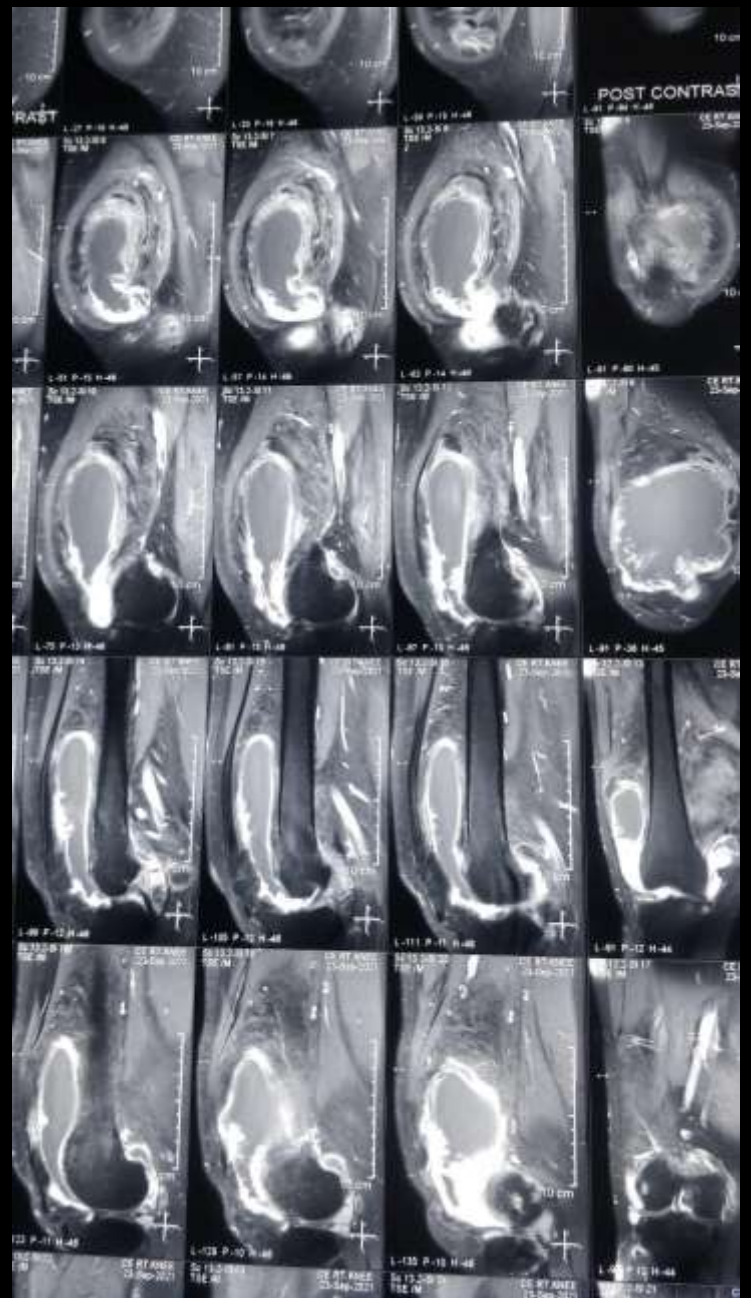
- Modality of choice in diagnosing lipoma arborescens.

- Findings:
  - **T1, T2 hyperintense frond-like projections, showing fat suppression – suggestive of fat containing lesions.**
  - **Peripheral post-contrast enhancement, with linear enhancement of the affected bursa.**
  - **Surrounding joint effusion.**

Another case







References

Original Article

Imaging features of lipoma arborescens

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0(0) 1–8

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Abstract

Background: Lipoma arborescens is characterized by the villous proliferation of the synovium and diffuse hyperplasia of fatty tissue in the subsynovial layer, almost always with a periarticular lesion. According to past articles, fewer cases have depicted the imaging features of lipoma arborescens.

Purpose: To evaluate the computed tomography (CT) and magnetic resonance imaging (MRI) features of lipoma arborescens.

Material and Methods: The imaging features of 15 patients with pathologically proven lipoma arborescens were retrospectively analyzed including lesion number, shape, location, size, margins, attenuation on CT, and signal intensity and enhancement patterns on MR images.

Results: All cases (n=15) showed joint or bursa effusion. The primary lesion attached to the bursa wall adjacent to the bone in 13 cases and to the lateral wall in two cases. CT shows a mass with fatty tissue attenuation values in the suprapatellar pouch (n=3) or subdeltoid bursa with an erosion of the humeral head (n=2), among them two cases showed branched slightly high density in the center of the fat density tissue. Fifteen cases on routine MRI display mass-like subsynovial mass with fatty tissue signal on all of the sequences and suppression of the signal on fat-suppression sequences. Among them, five lesions showed branched slightly low T1-weighted imaging, high proton density-weighted imaging, and T2-weighted imaging signals in the center. It showed the enhancement of the linear surface and the bursa wall in contrast-enhanced MRI (n=3).

Conclusion: Lipoma arborescens have specific CT and MRI features that enable them to make a conclusive diagnosis of this rare condition, which helps the diagnosis before treatment.

Keywords
X-ray computed tomography, magnetic resonance imaging, lipoma arborescens, synovium

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Spectrum of Fat-containing Soft-Tissue Masses at MR Imaging: The Common, the Uncommon, the Characteristic, and the Sometimes Confusing[1]

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Abbreviations: ALT = atypical lipomatous tumor, DDLPS = dedifferentiated liposarcoma, LN = lipomatosis of nerve, WDLPS = well-differentiated liposarcoma, WHO = World Health Organization

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The views expressed in this article are those of the authors and do not necessarily reflect the position or policy of the Department of Veterans Affairs or the U.S. Government.

SA-CME LEARNING OBJECTIVES

Fat-containing tumors are the most common soft-tissue tumors encountered clinically. The vast majority of fat-containing soft-tissue masses are benign. Lipomas are the most common benign fat-containing masses and demonstrate a characteristic appearance at magnetic resonance (MR) imaging. Less common benign soft-tissue masses include lipoblastoma, angiolipoma, spindle cell lipoma/pleomorphic lipoma, myolipoma, chondroid lipoma, lipomatosis of nerve, lipomatosis, hibernoma, and fat necrosis. Well-differentiated liposarcomas (WDLPSs)/atypical lipomatous tumors (ALTs) are locally aggressive soft-tissue masses that do not metastasize. Biologically more aggressive liposarcomas include myxoid, pleomorphic, and dedifferentiated liposarcomas. At MR imaging, lipomas typically resemble subcutaneous fat but may contain a few thin septa. The presence of thick, irregular, enhancing septa and nonfatty soft-tissue mass components suggests liposarcoma rather than lipoma. However, benign lipomatous lesions and WDLPS/ALT often have overlapping MR imaging findings. Distinguishing WDLPS/ALT from a benign lipomatous lesion or from fat necrosis at imaging can be challenging and often requires histologic evaluation. We present the spectrum of fat-containing masses, using the World Health Organization classification of adipocytic tumors, with an emphasis on commonly encountered lesions, characteristic MR imaging findings associated with specific tumors, and overlapping MR imaging findings of certain tumors that may require histologic sampling. We also briefly discuss the role of molecular markers in proper characterization and classification of fat-containing soft-tissue masses.