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Imaging of Parosteal Lipoma: A Case Report

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Abstract **Case Report**

Parosteal lipoma is an extremely rare benign tumor, accounting for 0.3% of all lipoma. They are often located in the lower limbs, contiguous to the periosteum, and associated with osseous changes. We present a case of a parosteal lipoma appearing in the distal femur with a bony excrescence in a 57-year-old female patient, presenting with a painless soft tissue mass that had been progressing for 10 years. Imaging showed a juxta cortical adipose mass, located in the mid and distal left femoral diaphysis, with adjacent cortical thickening, and osseous excrescences.

Keywords: Paraosteal, lipoma, imaging.

INTRODUCTION

Lipomas are common benign tumors arising from adipose tissue. Parosteal lipoma is a rare subtype of lipomas, contiguous to the periosteum, and accounting for 0, 3% of all lipoma [1].

We present the case of a parosteal lipoma of the distal femur explored by radiography, computed tomography (CT), and histologically documented.

CASE REPORT

A 57-year-old female presented with chronic swelling of the left lower limb. The mass had been progressing for 10 years, gradually increasing in size. We found no history of prior trauma. There were no other comorbidities (Figure 1).

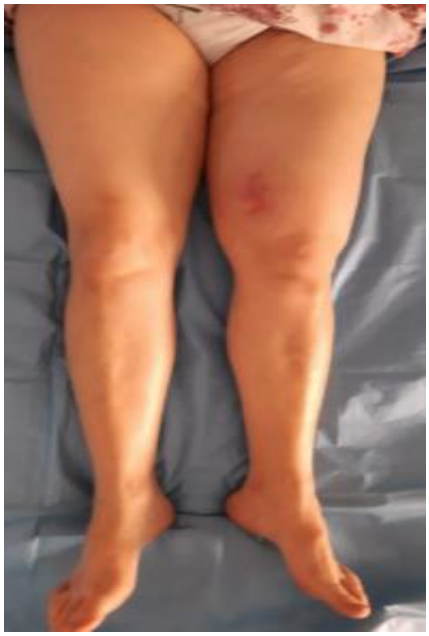

Figure 1: Soft tissue mass of the left thigh in a 57 year old patient

Clinical examination revealed the presence of a mass of the inner side of the left thigh, of firm consistency, adherent to the deeper plane, measuring 15x 10 cm.

The patient did not present with neurological deficit or vascular abnormality.

Radiography of the left leg revealed a juxta-cortical radiolucent mass of mid to distal femoral diaphysis, with bony protrusion and adjacent cortical thickening (Figure 2).

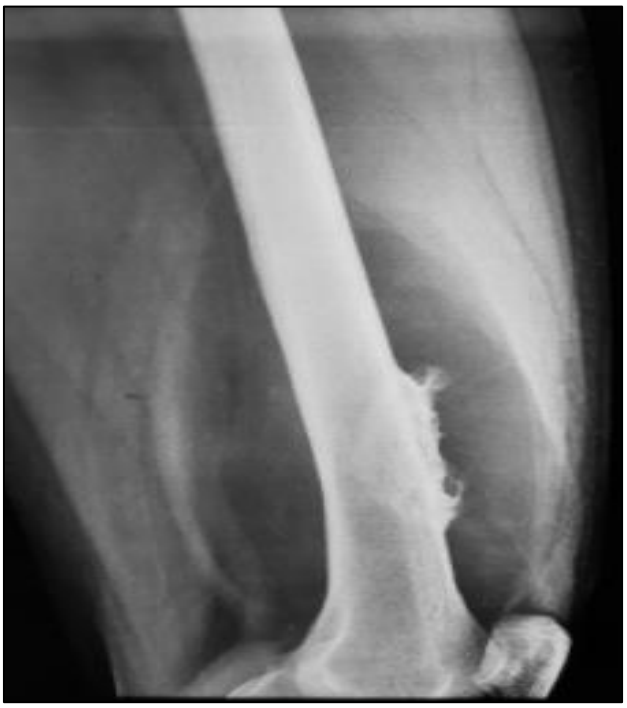

Figure 2: Lateral view X-ray showed a radiolucent soft-tissue mass contiguous to the left distal femur and irregular protrusions of subjacent bone

CT showed a fatty tumor with an irregular ossification, cortical hyperostosis at the margins. We see no medullary continuity between underlying bone and surface bone formation (Fig 2). *

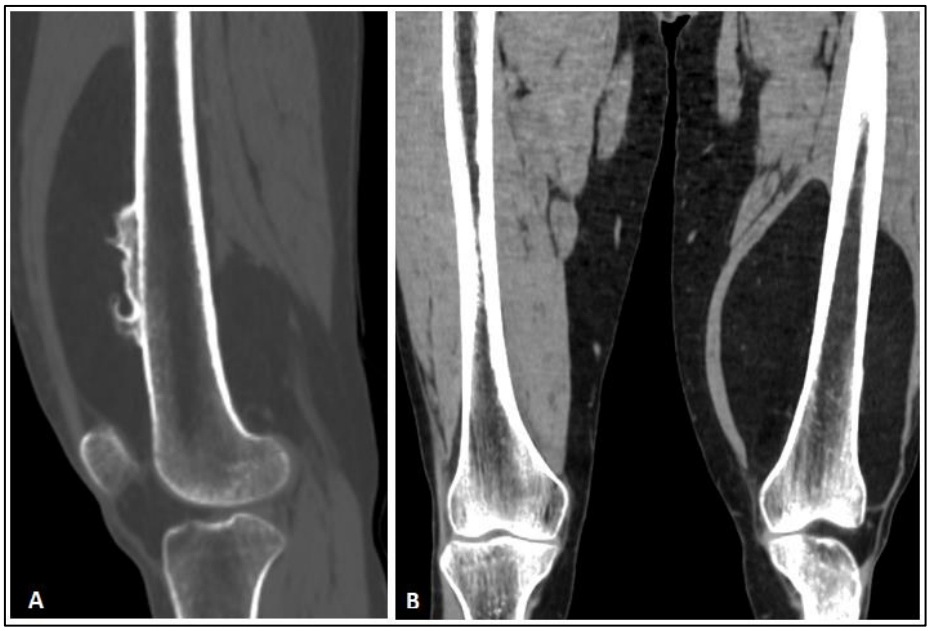

Figure 3: Sagittal (A) and coronal CT (B) showing an adipose juxtacortical mass of the left femur with osseous excrescences at the site of attachment

We also observed bony protrusions of the femoral shaft with inflammatory edema of the bone marrow.

A biopsy was executed, and pathology report showed a lobulated lipomatous proliferation with clusters of irregular lobules. The adipocyte cells show some atypia. Results were in favor of an atypical lipoma. The molecular study found no mdm2 amplification.

DISCUSSION

Lipomas are common musculoskeletal lesions that can arise within the soft tissues, bone, neurovascular structures, and synovium. Most of these lesions are benign, and radiologic evaluation can diagnose many benign lesions [2-4].

Parosteal lipoma is a rare type of lipoma, accounting for 0.3% of all lipomas. The most common sites are the femoral, radial, and humeral diaphysis. Some studies have also reported the lesion near the scapula, ribs, clavicle, metacarpals, pelvis, metatarsals, mandible and skull [3, 5].

They were first described as "periosteal lipoma". Power later changed the denomination in 1888 to "parosteal lipoma" to emphasize that the lesion is adjacent to the bone but does not arise from it since the periosteum contains no fat cells [3, 6].

Most parosteal lipomas occur in the 4th to 6th decade, with a slight male predilection. Patients often present with a palpable and slowly enlarging soft tissue mass.

Mild intensity pain and symptoms of neurologic deficits have occasionally been reported. Nerve palsy is most commonly associated with forearm lesions next to the radius affecting the posterior interosseous nerve [4, 7].

These tumors are identical in their gross and histologic appearance to soft tissue lipomas. Pathologic examination shows greasy yellowish and encapsulated masses, adherent to the underlying periosteum.

Cartilage, osteoid metaplasia, and areas of osseous excrescences or cortical thickening extending from and attaching the lesion to the bone surface are common [4].

They are classified into 4 subtypes according to the degree of chondroid modulation and endochondral ossification:

(I) No ossification
(II) Pedunculated exostosis
(III) Sessile exostosis, and
(IV) Patchy chondro-osseous modulation [8].

The imaging features of parosteal lipoma are usually distinctive. Radiographs show a large juxta cortical lucent mass with varying degrees of septation. Radiography and CT can illustrate the frequent osseous reactive changes at the site of attachment. They are often hyperostotic and include cortical thickening, sclerosis, calcification, or formation of an osseous excrescence.

Less commonly, the reactive bone change can manifest as smooth cortical scalloping or bowing. There were no report of bone destruction [2–4].

CT helps to delineate the extent of the tumor, to determine the attenuation of the lipomatous component (ranging between -30 UH to–125 UH), and to show the absence of cortical and medullary bone continuity with osseous excrescence that is seen in osteochondroma [4].

On MRI, the parosteal lipoma is seen as a juxtacortical mass with signal intensity identical to that of subcutaneous fat [6]. Occasionally, hyaline cartilage can be seen along the larger osseous protuberances which appear as intermediate T1 and high T2 signal intensity.

Fibrous tissue can also be seen and can be differentiated from cartilage given its low-signal intensity on T2-weighted images [2].

MRI best depicts the relationship of the tumor to the underlying bone and muscle and also helps look for Adjacent muscle atrophy is identified as increased striations of fat in the affected muscle and is caused by associated nerve entrapment [3].

Although there are no previous reports of malignant transformation of paraosteal lipoma, the treatment of choice is complete surgical excision especially in case of nerve entrapment and sensitive or motor deficit.

Subperiosteal dissection or segmental resection of the bone may also be required. The prognosis is good and local recurrence is unusual [1, 3, 8].

CONCLUSION

Parosteal lipoma is a benign and rare subtype of soft tissue lipoma, with an excellent prognosis.

Imaging features are characteristics. Radiography and CT are useful for analyzing osseous reactive changes at the site of attachment. MRI is the most suitable imaging modality for evaluating the relationship between the lesion and the underlying bone and muscle, which is pivotal for surgical planning.

Conflicts of Interest: All authors have disclosed no conflicts of interest.

Author Contributions

All authors contributed to the concept of the study, acquisition, and analysis of the data, drafting of the article. All authors had full access to the data, approved the final version for publication, and take responsibility for its accuracy and integrity.

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