Parosteal lipoma of the thigh
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Section: Musculoskeletal system
Area of Interest: Musculoskeletal soft tissue
Procedure: Diagnostic procedure
Imaging Technique: CT
Imaging Technique: MR
Special Focus: Neoplasia Case Type: Clinical Cases
Authors: Daniel ARDITIAphrodite SYROGIANNOPLOUODavid TCHERNIN
Patient: 62 years, female

Clinical History:
A 62-year-old woman presented with a painless focal enlargement of the right thigh. Clinical examination found a large soft mass in the thigh, measuring about 10 centimeters.

Imaging Findings:
Radiographs show a large irregular osseous protuberance next to the femoral shaft, surrounded by a radiolucent mass.
The CT demonstrates an osseous excrescence adherent to the cortical surface of the femoral shaft, without any medullar continuity. The soft tissue mass completely surrounds the ossification, is well delineated, with a mean attenuation value of -96HU, in favor of fat.
MRI confirms the lipomatous nature of the soft tissue mass, with hypersignal on T1 weighted sequences and loss of signal after fat saturation. The borders of the lesion are regular and well delineated, without any infiltration of the surrounding muscles. Some very fine septal enhancement is seen after injection of contrast media, without any nodular enhancement.

Discussion:
Parosteal lipoma is a very rare type of lipomatous lesion (0.3% of lipomas) [3]. Thigh, forearm, calf and arm are the most common locations [3]. The average age of presentation is 50 years, but it can affect patients of any age. This lesion is a benign neoplastic process, with no reported cases of degeneration.
Patients usually present with a painless soft tissue mass. Depending on the location and size of the lesion, local compression of structures (in particular muscles and nerves) can cause symptoms, such as nerve palsy.
Radiographic appearance is typical [1, 2], showing a well-circumscribed radiolucent mass adjacent to the bone, with variable osseous changes at the site of attachment. These changes include hyperostosis (most common), bone deformity and cortical erosion [4].
MR imaging of parosteal lipomas shows a homogeneous lobulated lipomatous mass, adherent to the cortical surface of the adjacent bone. When present, osseous excrescences can be differentiated from osteochondromas by the lack of continuity with the marrow space of the underlying bone and the lack of a cartilaginous cap. Some low-intensity strands with moderate enhancement may be identified within the lesion, corresponding to fibro-vascular strands that are commonly found in lipomatous lesions [1, 5].
CT shows both components as well, with a particularly good depiction of the osseous structure.
Recommended treatment is complete surgical resection in symptomatic patients, or abstention in case of an
incidental finding.

In our case, a biopsy was performed under CT guidance that confirmed the diagnosis.

**Differential Diagnosis List:** Parosteal lipoma of the femoral shaft, Low-grade liposarcoma, Osteochondroma, Myositis ossificans, Parosteal osteosarcoma, Bizarre parosteal osteochondromatous proliferation

**Final Diagnosis:** Parosteal lipoma of the femoral shaft.

**References:**


Mark J. Kransdorf, Mark D. Murphey (2006) Imaging of Soft Tissue Tumors. 120-123


Description: Axial CT image shows an osseous excrescence arising from the femoral shaft, surrounded by a hypodense soft tissue mass. There is no continuity of the osseous component with the marrow of the femoral bone. Origin: Arditi D, Department of Radiology, Hopitaux Universitaires de Geneve, Geneva, Switzerland
Description: HU measurement of the soft tissue component of the mass indicates fat (-96 HU mean)
Origin: Arditi D, Department of Radiology, Hopitaux Universitaires de Geneve, Geneva, Switzerland
**Description:** Axial T1-weighted image demonstrates the lipomatous nature of the soft tissue component (T1 hypersignal). Presence of some fine septa within the lesion. **Origin:** Arditi D, Department of Radiology, Hopitaux Universitaires de Geneve, Geneva, Switzerland
Description: Sagittal T1-weighted image. Origin: Arditi D, Department of Radiology, Hopitaux Universitaires de Geneve, Geneva, Switzerland
Description: Axial T1-weighted image with fat saturation after intravenous gadolinium injection shows some enhancement of the septa (arrows). Origin: Arditi D, Department of Radiology, Hopitaux Universitaires de Geneve, Geneva, Switzerland
Description: AP radiograph of the right hip shows an irregular osseous protuberance of 5 centimeters surrounded by a radiolucent mass (arrows) Origin: Arditi D, Department of Radiology, Hopitaux Universitaires de Geneve, Geneva, Switzerland