Case 15509

Eurorad

Hibernoma with broad bone erosions

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Section: Musculoskeletal system
Area of Interest: Musculoskeletal soft tissue
Procedure: Diagnostic procedure
Procedure: Biopsy
Procedure: Comparative studies
Procedure: Localisation
Imaging Technique: MR
Imaging Technique: Percutaneous
Imaging Technique: CT
Special Focus: Neoplasia Case Type: Clinical Cases
Authors: Tercero Azorin MI, Abad Ortiz L, Viguera Garrido L, Pastor Juan MR, Lozano Setién E
Patient: 65 years, female

Clinical History:

An incidental and indolent buttock tumour was found in a 65-year-old woman after perform a Computed Tomography (CT) for breast cancer staging. We did not have previous pelvic imaging studies of the patient.
Imaging Findings:

The initial CT showed a lipomatous soft tissue mass in the left gluteal muscles in contact with the iliac bone, causing broad and deep bony erosion of sclerotic borders, without cortical rupture, reflecting low radiographic aggressiveness and probably long-term evolution.
Magnetic Resonance Imaging (MRI) illustrates a thin peripheral capsule with superior disruption in communication with subcutaneous fat tissue (SFT) of the dorsal region. The tumour presents heterogeneous signal intensity similar but not identical to fat tissue in T1-weighted sequences with patchy areas of slightly lower signal and absence of a complete fat suppression in SPIR sequences. The tumour showed heterogeneous uptake after intravenous contrast administration which reflects internal vascularisation and also showed thin internal septa. No signal alterations in the bone marrow of the pelvic bones were shown.
Discussion:

Hibernomas are soft tissue tumours of brown fat with radiographic benign behaviour. They usually have well-defined margins and/or a peripheral capsule, and they are characterised by a typical slightly lower heterogeneous signal intensity compared with mature fat tissue in T1 sequences. Occasionally the absence of complete suppression in STIR sequences in relation to associated fibrovascular tissue component is found. [1] After contrast administration, they present intense internal enhancement of the brown fat component, showing fine septa (<2 mm) and internal vessels. [2]

Its different radiological behaviour in comparison to benign lipomas may lead a differential diagnosis to other malignant lipomatous tumours such as well differentiated liposarcomas. The absence of solid poles, thick septa (> 2 mm) or other local aggressive imaging features helps us to rule out this diagnostic possibility. [3]

It is very unusual to find associated extensive erosions when the tumour is placed to the bone, with only one

previous reported case. [4] The absence of pain or increased local temperature which are frequently associated and the slightly older age of the patient than usual makes this case very atypical.

The definitive diagnosis was provided by US- guided biopsy [5] and the pathology report from the patient revealed a lipomatous lesion with brown adipocytes that resemble brown fat, positive with S100 stain and streaks of fibrovascular tissue.

In several cases the biopsy does not exclude hibernoma differentiation in well-differentiated liposarcomas and that is why complete excision is indicated without reported local recurrence. [6]

In our patient, the tumour was completely resected and the final histopathology study of the specimen did not find malignant cells, supporting the diagnosis of hibernoma like the biopsy report.

The patient received systemic and surgical curative treatment for her locally advanced breast cancer and remains asymptomatic until the present without recurrence signs in two year follow-up imaging studies.
Differential Diagnosis List: Hibernoma, Lipoma, Liposarcoma, Hibernoma

Final Diagnosis: Hibernoma

References:

Vassos N , Lell M , Hohenberger W , Croner R , Agaimy A (2013) Deep-seated huge hibernoma of soft tissue: a rare differential diagnosis of atypical lipomatous tumor/well differentiated liposarcoma. Int J Clin Exp Pathol 6(10):2178-2184 (PMID: 24133596)
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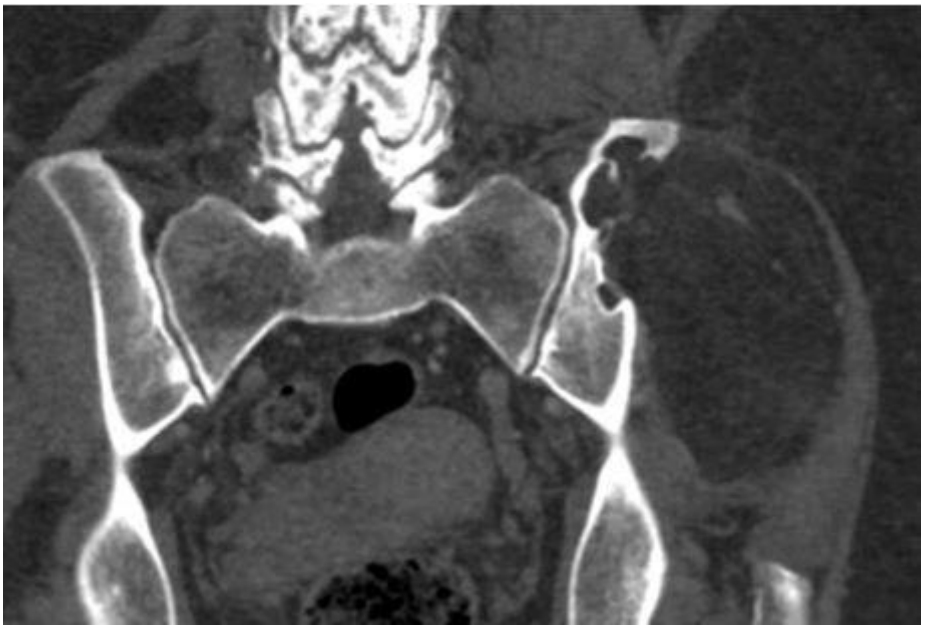
Veillette C. Pitcher J.D, Doan-Johnson S. (2009) Hibernoma. PORTNotes. OrthopaedicsOne. The Orthopaedic Knowledge Network
Thorns C, Schardt C, Katenkamp D, Kähler C, Merz H, Feller AC (2008) Hibernoma-like brown fat in the bone marrow: report of a unique case. Virchows Arch 452:343–345 (PMID: 18188594)
MJ, Moser RP Jr, Meis JM, Meyer CA (1991) Fat-containing soft-tissue masses of the extremities. RadioGraphics 11:81–106 (PMID: 1996399)

Figure 1

a

Description: Axial contrast-enhanced CT shows deep and broad bone erosions in left iliac bone in relation with fatty tumour in left gluteal muscles. **Origin:** Tercero Azorin M.I. Department of Radiology, HGU Albacete, Albacete, Spain.

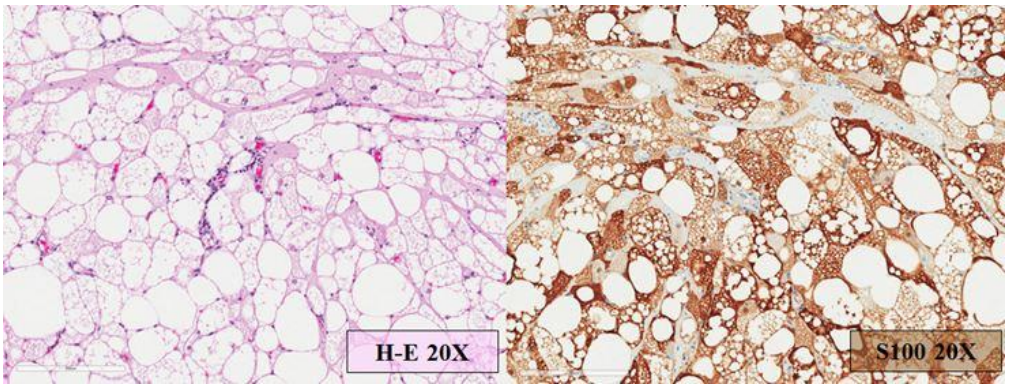
b



Description: Coronal reconstruction CT shows deep and broad bone erosions in left iliac bone. **Origin:** Tercero Azorin M.I. Department of Radiology, HGU Albacete, Albacete, Spain.

Figure 2

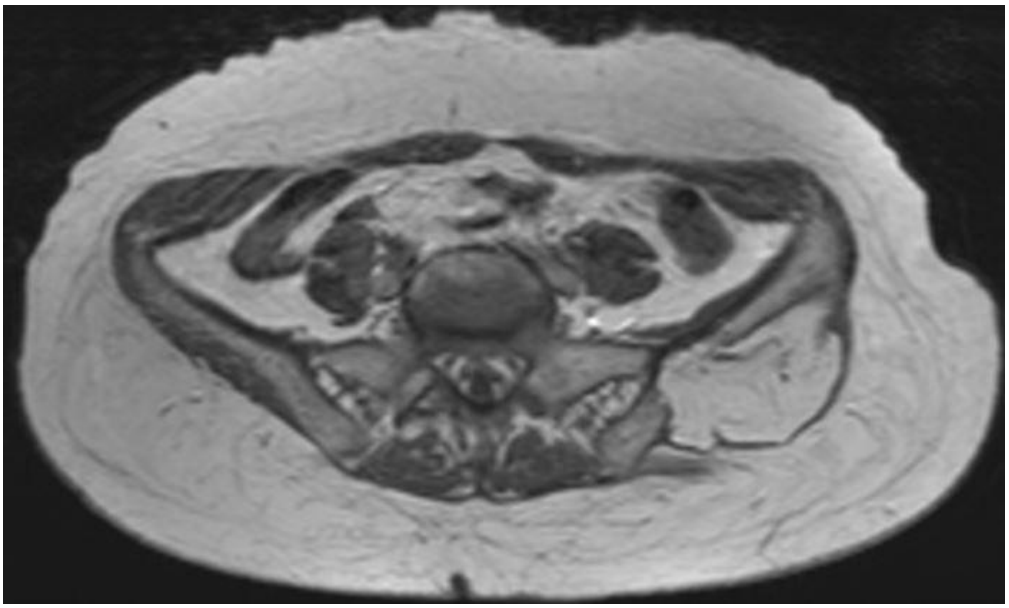
a



Description: Lipomatous lesion with brown adipocytes that resembles brown fat positive with S100 stain with thin fibrovascular
septa. **Origin:** Viguera Garrido L. Department of Pathological Anatomy. HGU Albacete, Albacete, Spain

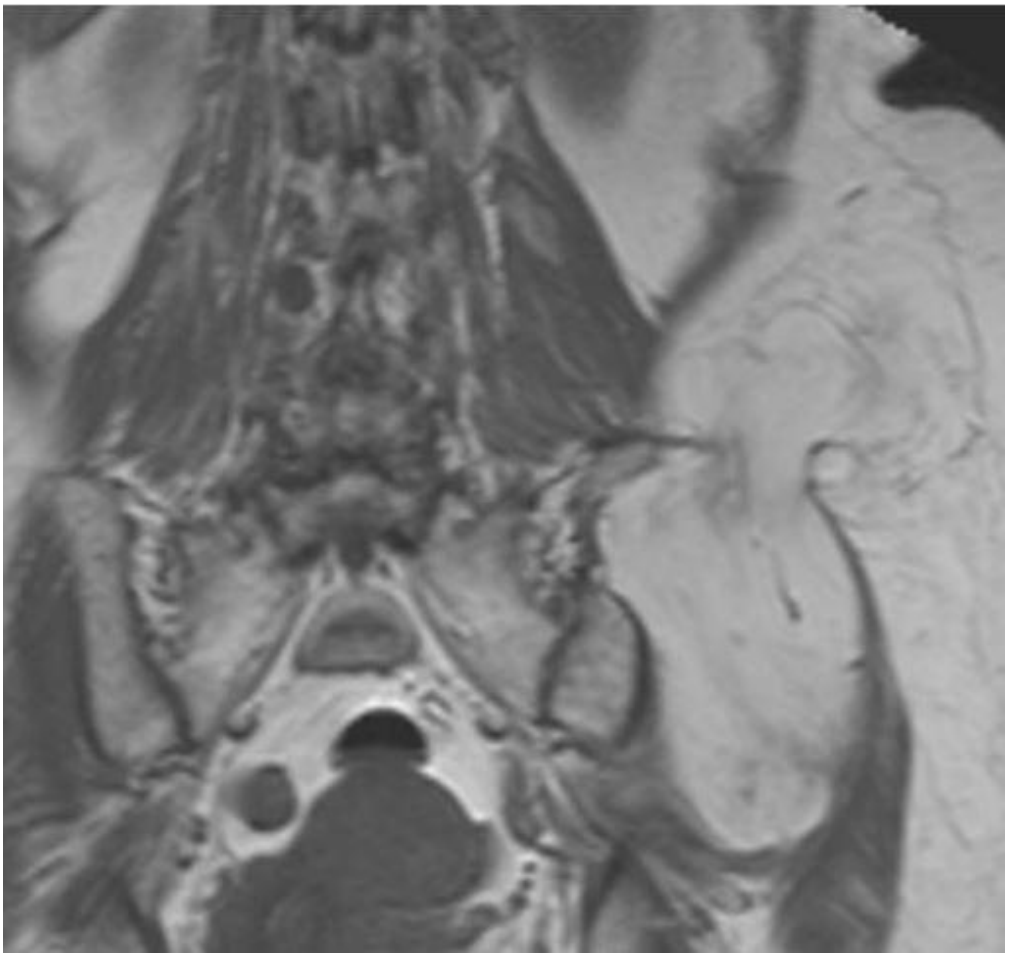
Figure 3

a



Description: T1SE axial image. Left gluteal lipomatous tumour. Isointense signal intensity compared with subcutaneous fat tissue and associated iliac bone erosions. **Origin:** Tercero Azorin M.I. Department of Radiology, HGU Albacete, Albacete, Spain.

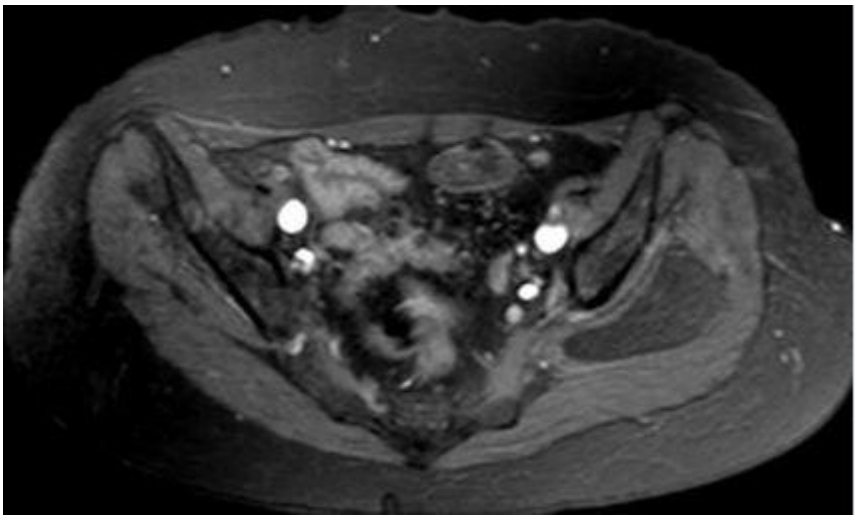
b



Description: T1SE coronal image. Ill-defined internal areas of lower intensity and ruptured upper edge of the capsule. **Origin:** Tercero Azorin M.I. Department of Radiology, HGU Albacete, Albacete, Spain.

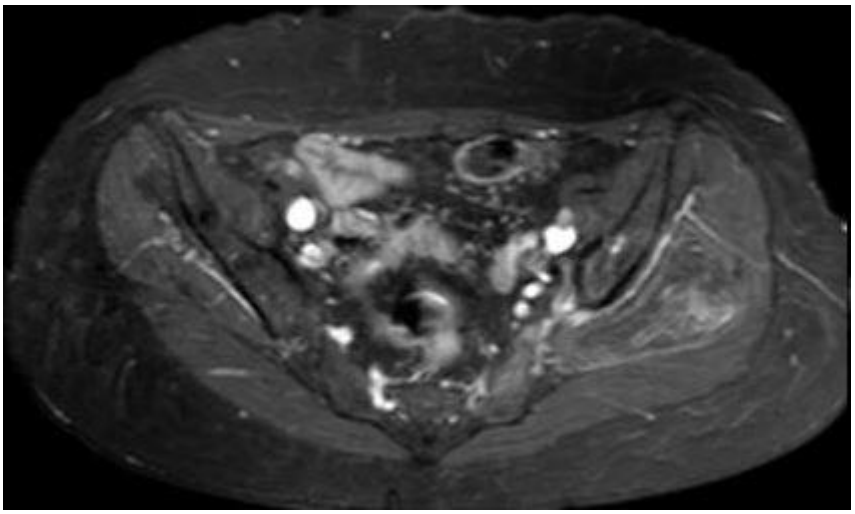
Figure 4

a



Description: Fat-saturated T1 image pre-contrast. Signal suppression of left lipomatous gluteal tumour.
Origin: Tercero Azorin M.I. Department of Radiology, HGU Albacete, Albacete, Spain.

b



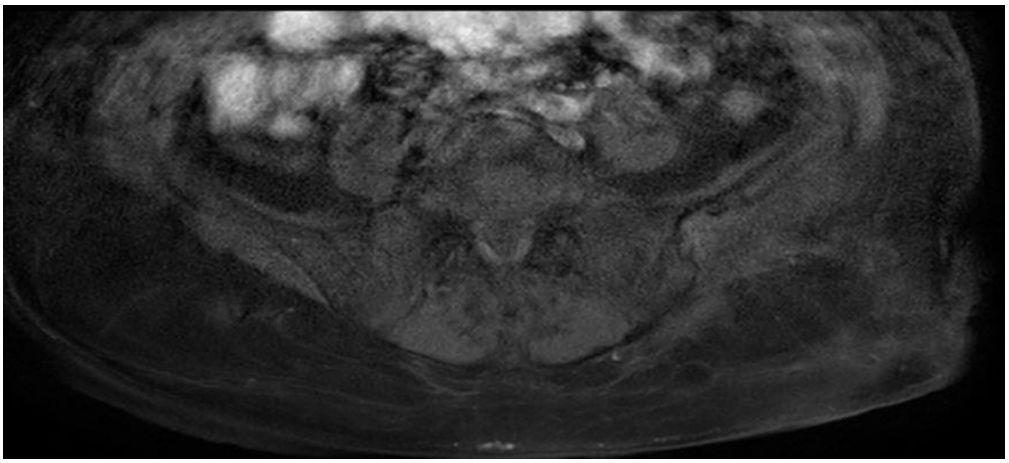
Description: Fat-saturated T1 image post-contrast shows slow and heterogeneous internal uptake, small internal vessels and thin peripheral capsule. **Origin:** Tercero Azorin M.I. Department of Radiology, HGU Albacete, Albacete, Spain.

Figure 5

a

Description: CT post-operative imaging. Postsurgical changes in left gluteal region. There is no evidence of residual fat tissue tumour. **Origin:** Tercero Azorin M.I. Department of Radiology, HGU Albacete, Albacete, Spain.

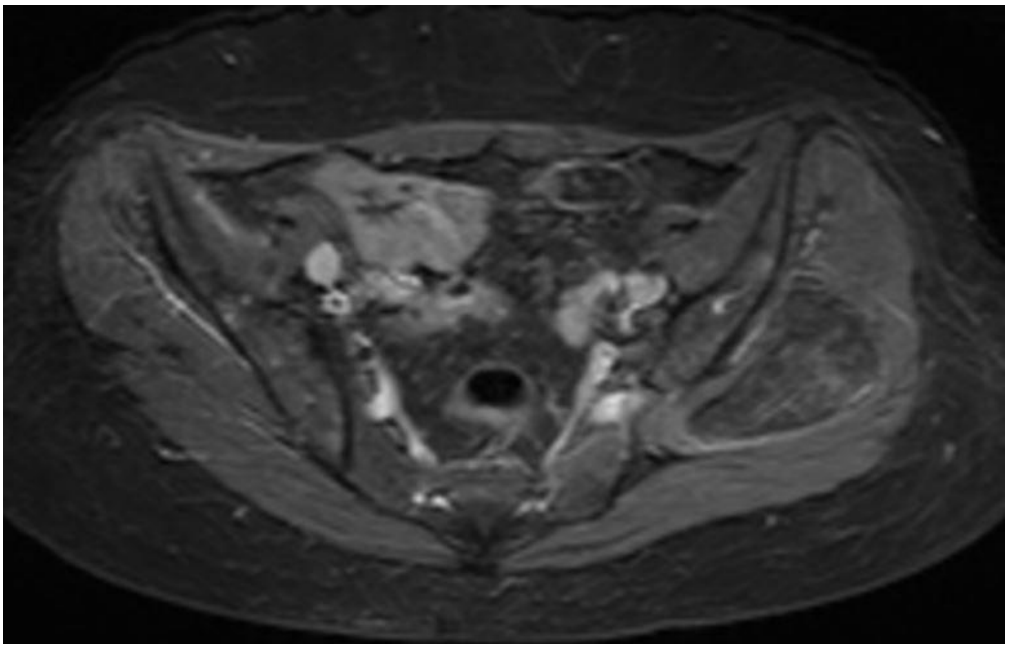
b



Description: T1 FAT SAT post-operative imaging. Postsurgical changes in left gluteal region. **Origin:** Tercero Azorin M.I. Department of Radiology, HGU Albacete, Albacete, Spain.

Figure 6

a



Description: Higher signal intensity and inhomogeneous suppression on STIR images as compared to subcutaneous fat. **Origin:** Tercero Azorin M.I. Department of Radiology, HGU Albacete, Albacete, Spain.