

**CASE REPORT****Chronic expansive pelvic hematoma: atypical location of pseudotumor. A report of 2 cases.****Authors:**

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**Abstract:**

**Case:** Chronic expansive pelvic hematoma is a very rare entity with a few cases published in the literature, being the most frequent locations the thorax and chest. The tumoral mass called pseudotumor produces a large osteolysis in the pelvis with a difficult radiological diagnosis, and not rarely misdiagnosed as sarcoma. The treatment of these type of lesions should be done at a specialized sarcoma centre, and under the supervision of a multidisciplinary committee, that it is enable the correct differential diagnosed and treatment. The pathological analysis is the key point to the diagnosis.

We report two cases located in the pelvis, an extremely rare location.

The resection should be wide to avoid recurrence. The reconstruction in the pelvic cases required “ice-cream cone” prosthesis that provides the restoration of the functionality of the hip.

**Conclusion:** This rare phenomenon is suspicious for malignant tumour. The treatment of this entities should be evaluated in an expert centre in the treatment of sarcomas.

**Keywords:** Chronic expansive hematoma; Pseudotumor; Ice-cream cone prosthesis.

### **Introduction:**

The finding of an intrapelvic tumoral mass in patients who wear hip prosthesis due to the large number of particles loosened by the friction torque employed is uncommon in literature<sup>1,2</sup>. However, when it occurs, it involves an important loss of the patients' quality of life, which can even limit severely the capacity of walking.

Rarely, this pelvic tumoral mass is caused by a chronic hematoma that produces a large osteolysis in the pelvis<sup>3,4</sup>. This tumoral mass could be misdiagnosed a sarcoma. Thus, it is called pseudotumor. The treatment of these type of lesions should be done at a specialized sarcoma centre, and under the supervision of a multidisciplinary committee, that it is enabled to lead the correct differential diagnosed and treatment.

The differential diagnoses of a mass of soft parts which encircle the hip prosthesis we should include malignant tumors, benign tumors or pseudotumoral masses.

We presented two cases of patients that suffered a pelvic pseudotumor and emphasized the importance of a correct diagnose and an adequate treatment.

### **Case Report 1:**

Female patient 77-year-old that arrived at our Emergency Services (University

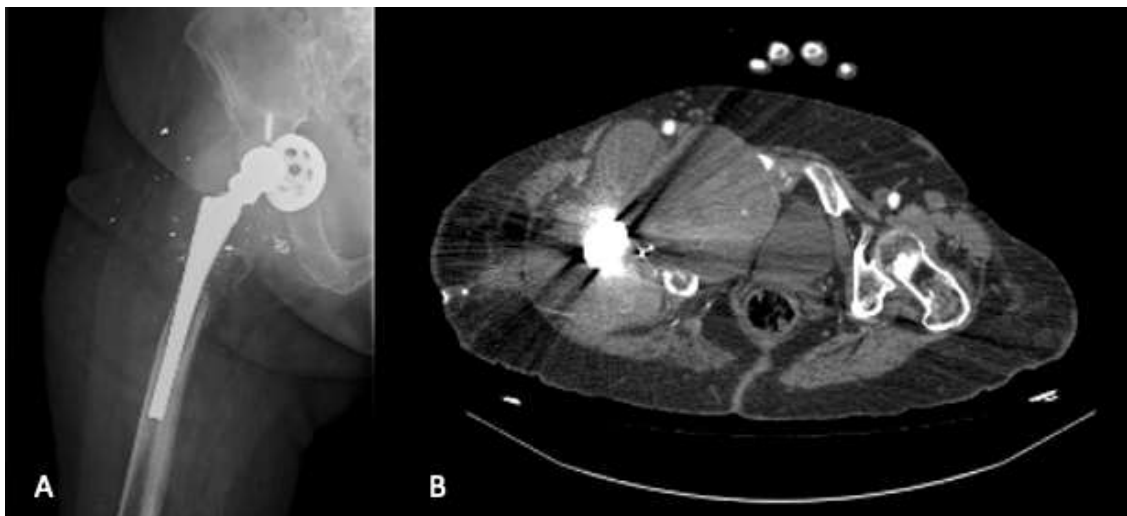
Hospital La Paz) due to a severe pain in the right hip.

As clinical background history, from an orthopaedic point of view, a right Total Hip Arthroplasty (THA) was implanted in 2005 as a result of osteoarthritis. Oncological records showed previous neoadjuvant radiotherapy due an endometrial carcinoma.

Her follow-up with whole-body technetium-99 (Tc-99m) bone scintigraphy (Tc99 bone scan) and thorax, abdomen and pelvic CT by the Oncology Service did not show any findings of local recurrence nor distant metastatic disease.

Physical examination revealed an attitude of shortening and external rotation of right leg, pain, swelling and significant increase in soft tissue in the right proximal thigh, functional impotence for movement of the right hip.

Regarding the complementary studies, an osteolytic lesion in the proximal femur and zones 2 and 3 of the pelvis with significant mobilization of the implanted prosthetic component stands out in the plain radiographs (Figure 1A); In the abdomen and pelvic CT study, significant bone destruction of the iliac bone, iliopubic branch and proximal right femur with a large mass of soft tissues was evidenced, suggesting the differential diagnosis of bone metastasis (Figure 1B).



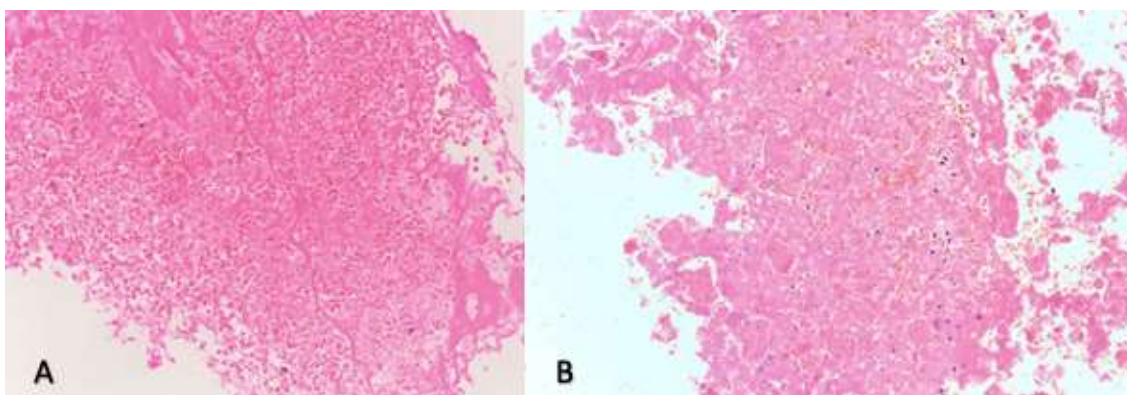
*Figure 1A: plain radiograph with Total Hip Arthroplasty mobilized and osteolytic lesion in the proximal femur and zones 2 and 3 of the pelvis.*

*Figure 1B: Pelvic CT scan study with important bone destruction of the iliac bone, iliopectic branch and proximal right femur. We can see a large mass of soft tissue.*

Given these findings, the patient was referred to the Bone Tumours and Soft Tissue Unit of the University Hospital La Paz in Madrid (Spain). The case was presented to the Musculoskeletal Tumours Committee, deciding to update the staging with thorax, abdomen and pelvic CT and bone scan. All diagnostic tests did not show signs of malignancy. A CT-guided core needle biopsy was decided to rule out bone metastasis or primary tumour. The pathological analysis revealed fibrinous-hematic material with a peripheral fibrous

capsule, compatible with organized hematoma (Figure 2A).

The case is once again presented to the referred committee, in which the need for a second biopsy is concluded, since doubts about its etiology still remain mainly for her oncologic antecedent. The incisional biopsy is done, which diagnosis confirms previous histological findings and to be compatible with a pseudotumoral mass like a chronic expansive hematoma (Figure 2B).



*Figure 2A: Microscope image at 20x and Figure 2B: Microscope image at 40x. The histopathological view shows a poorly organized fibrinous-hematic material.*

We proceed to intralesional resection and subsequent reconstruction with a proximal femur tumour prosthesis (METS® Modular Proximal Femur, Stanmore, Elmstree, UK Stanmore), double

constrained cup mobility and CONED acetabulum / iliac prosthesis (CONED®, Stanmore, Elmstree, UK Stanmore) (FIGURE 3).



*Figure 3. Plain radiograph. Reconstruction with a proximal femur tumour prosthesis (METS® Modular Proximal Femur, Stanmore, Elmstree, UK Stanmore), double constrained cup mobility and CONED acetabulum / iliac prosthesis (CONED®, Stanmore, Elmstree, UK Stanmore).*

### **Case Report 2.**

A 54-year-old female patient is referred to our hospital with a confirmed diagnosis of pelvic pseudotumor. In the imaging tests, she presented a large soft tissue mass in relation to the left Total Hip Arthroplasty (THA) of 22 years of evolution.

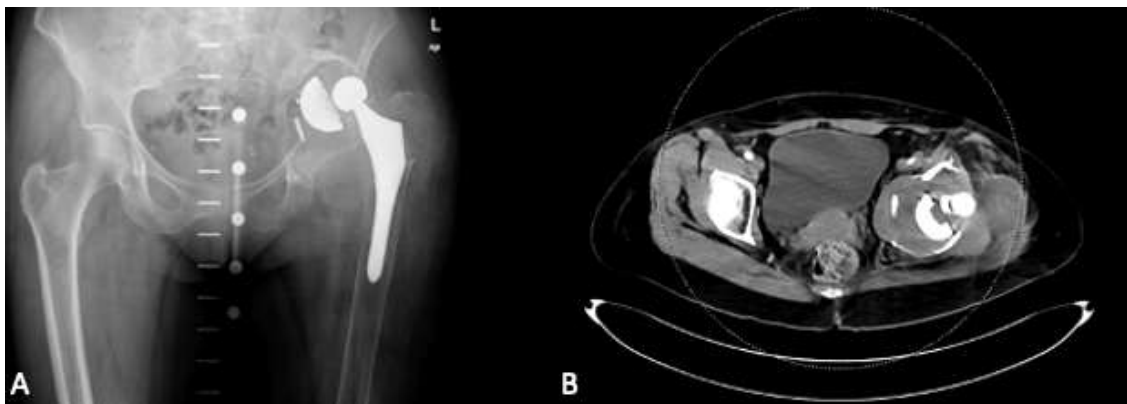
As a clinical history of interest, at the age of 13 y.o. she suffered an accidental fall with a femoral neck fracture, which was treated with Dynamic Hip System (DHS® Dynamic Hip System, Synthes). Consequently, there was a leg length discrepancy that caused the removal of the plate two years after implantation. In the immediate follow-up there were no relevant incidents.

The patient had total hip arthroplasty due to avascular necrosis in 1999 without any complications. However, in 2017 the patient suffers bilateral pain and progressive shortening up to 30 mm.

On physical examination of the affected area, there was no soft tissue mass. Significant pain in the inguinal region stands out, as well as impotence for hip flexion, so that joint range of motion is limited to 0°-90°, with rotations limited to 20° of internal rotation and 30° of external rotation and significant quadriceps atrophy (2/5), lost sensibility in the territory of the femoral nerve, impossibility for active hip

movement. The patient maintains dorsal flexion and plantar flexion of the foot.

Regarding complementary studies, the following stands out: (Figure 4A / Figure 4B).



*Figure 4A: Plain radiograph with plain left Total Hip Arthroplasty mobilized and osteolytic lesion in the proximal femur. We can also see a soft tissue mass.*

*Figure 4B: CT bone scan with a lytic lesion of the left proximal femur and a significant soft tissue mass.*

According to the suspected clinical and radiological diagnosis of hematoma, we proceeded to perform an intralesional resection of the hematoma and afterwards

reconstruction with a proximal femur prosthesis and a LUMIC inverted cone prosthesis (MUTARS® LUMIC® Cup). (Figure 5) (Figure 6).



*Figure 5: Plain radiograph. Reconstruction with a left proximal femur prosthesis and a LUMIC inverted cone prosthesis (MUTARS® LUMIC® Cup).*



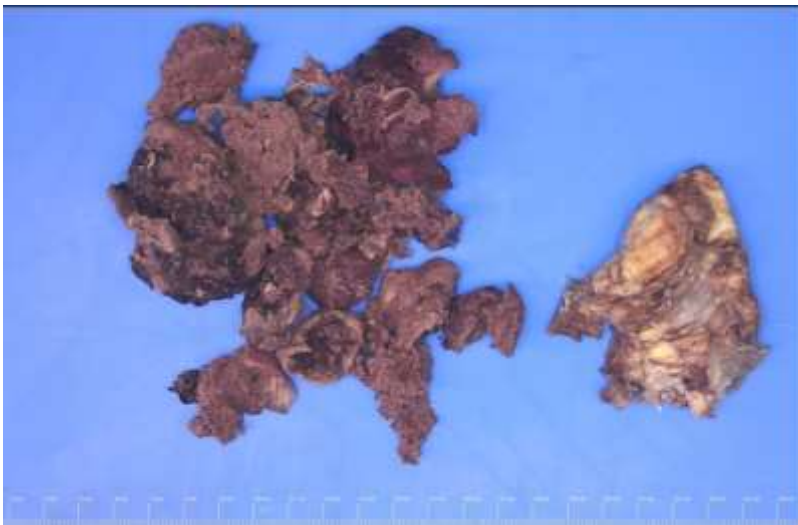


Figure 6: An irregular, soft and dark brown material was sent to the pathology department.

### **Discussion:**

A pseudotumor is a tumour mass that behaves like a neoplasm, although, histopathological it is not, as can be seen in some dysplasia, hemarthrosis, etc.

Bone pseudotumor lesions give rise to clinical, radiological and analytical manifestations similar to bone tumours, facts that must be taken into account to make an adequate differential diagnosis prior to considering surgical treatment<sup>5;6</sup>. Chronic expansive hematoma is a very rare entity with a few pelvic cases published in the literature, being the most frequent locations the thorax and chest<sup>3</sup>.

The formation of an expanding hematoma occurs mostly in patients suffering haemophilia, with preferential affection in the thigh, which produces a dissection of the periosteum and an important bone resorption<sup>7;8;9;10</sup>. However, in the cases presented, the location is pelvic and related to the implantation of the total hip prosthesis in patients not affected by haemophilia in any of its variants<sup>11</sup>.

Patients with total hip replacement with the metal-metal friction pair have a 30%

probability of developing a pseudotumor five years after implantation, which is asymptomatic, although on rare occasions it can cause prosthetic loosening and consequent formation of a pseudotumoral mass<sup>12;13;14;15;16;17</sup>.

The etiology of the pseudotumoral mass is due to a reaction against the particles and ions released from the metal-metal friction that causes a destruction of the tissues surrounding the prosthesis, both in the bone and in the soft tissues<sup>18</sup>. When the phenomenon of expansive chronic hematoma occurs, imaging tests reveal a large mass of soft tissue with bone resorption that makes consider a differential diagnosis with aggressive bone tumour (sarcoma or bone metastasis)<sup>14;19</sup>.

Malignant tumours surrounding hip arthroplasty are rare and are estimated to have an incidence of 1.43 / 100,000, with undifferentiated pleomorphic sarcoma being the most frequent entity<sup>5;20</sup>. Benign tumoral mass around the hip arthroplasty produced as immediately complication after surgery are seroma and hematoma, frequently around the joint hip<sup>5</sup>. Rarely, the

hematoma can become chronic and produce a massive bone destruction<sup>4</sup>.

Treatment must be surgical, with an intralesional resection of the pseudotumor with its pseudocapsule, as far as possible, followed by careful hemostasis to prevent recurrences. For the subsequent reconstruction of the bone defect, in our centre we use an "ice-cream cone" prosthesis, since the lysis produced by the hematoma is very similar to the one produced by bone tumours, so we must reconstruct the pelvic acetabulum in the most anatomical appropriate way possible with the outcome to get the patient to regain ambulation capacity and independence.

In the cases that we expose, the patients had lost the ability to walk with a significant shortening of the affected limb and after reconstruction with an "ice-cream cone" prosthesis, the patients regained their lost independence<sup>21</sup>.

The pathological diagnosis is based on the microscopic presentation of poorly organized fibrin and hematic material adjacent to which connective tissue can be identified with a foreign body-type granulomatous reaction to the detached prosthetic material. Only in cases of clinical-radiological-pathological discrepancy, due to high suspicion of tumour infiltration, may a second biopsy be indicated, as in the first case presented.

In the cases described, prior to the surgery, embolization of the superior gluteal artery is considered essential in order to control intra-surgical bleeding, as well as adequate preparation of the colon in order to minimize the possibility of infection. During both surgeries, an intralesional resection was performed in the periacetabular area, generating such a large defect that tumoral prosthetic devices were needed for reconstruction. Reconstruction with an ice-cream cone prosthesis implies a change in the quality of life of patients, since they are able to recover the ability to walk and reduce the leg length discrepancy that occurs evolutionarily derived from bone resorption caused by the hematoma<sup>21</sup>.

### **Conclusion:**

Tumour lesions surrounding total hip replacements are rare entities, but when they occur, they should be evaluated in centres that are experts in the treatment of sarcomas. Chronic expansive pelvic hematoma is a rare phenomenon that produce a significant bone resorption in addition to a significant soft tissue mass, suspicious for malignant tumour. However, we must consider this entity in the presence of a soft tissue mass with significant bone resorption in patients with total hip replacement. For the reconstruction of the bone defect generated, the "ice-cream cone" prosthesis provides a very interesting restoration of the functionality of the hip and to be taken into account for the treatment of this type of pathology.

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