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## Case Report

# Pes anserine bursitis as a complication of tibial osteochondroma ☆

Asmae Sekkat\*, Ismail Chaouche, Ghita Alami Bassim, Amal Akammar, Nizar El Bouardi, Meriem Haloua, Moulay Youssef Alaoui Lamrani, Meryem Boubbou, Mustapha Maaroufi, Badreddine Alami

Radiology department, Hassan II University Hospital, USMBA, Fez, Morocco

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## ABSTRACT

Exostosis, or osteochondroma, represents the most prevalent primary benign bone tumor, often viewed as a developmental anomaly rather than a true neoplasm. This article presents 2 cases illustrating complications associated with tibial osteochondroma. The first case involves a 25-year-old patient with recurrent medial knee pain attributed to pes anserine bursitis secondary to tibial osteochondroma, managed successfully with surgical excision. The second case features a 15-year-old with similar symptoms and unsuccessful conservative management, highlighting the diagnostic challenges and therapeutic options for this condition. Discussion encompasses the clinical presentation, diagnostic modalities including MRI and ultrasound, and management strategies such as conservative measures, corticosteroid injections, and surgical excision. Recognizing and promptly managing complications like pes anserine bursitis in tibial osteochondroma is crucial to prevent chronic pain and functional impairment, emphasizing the importance of a multidisciplinary approach involving orthopedic surgeons, radiologists, and physical therapists.

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## Introduction

Exostosis or osteochondroma is the most common primary benign bone tumor [1,2], considered sometimes as a developmental anomaly rather than a true tumor [3]. In fact, it is a bone outgrowth covered by a cartilaginous cap, secondary to an abnormal ectopic migration of cells from the growth plate, forming a lesion that herniate through the surrounding pe-

riosteal bone [3]. This fragment grows repeatedly, causing enchondral ossification and sub-periosteal osseous expansion. It is usually found in individuals between 10 and 30 years old, it grows with the child, then stops growing with skeletal maturity.

Exostosis is typically asymptomatic, however, in some cases, it can present symptoms related to complications, caused by irritation or compression of neighboring anatomical structures [1]. Chronic friction of a tendon can produce bur-

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\* Corresponding author.

E-mail address: [Asmaesekkat4@gmail.com](mailto:Asmaesekkat4@gmail.com) (A. Sekkat).

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sitis, which may become infected, hemorrhagic, or undergo metaplastic change, causing pain, and swelling.

## Case presentation

### Case n° 1: Figure 1 (A–F)

We report the case of a 25 years old patient, having complaints of medial knee recurrent pain that worsens with activity and requiring its cessation. Everything suggests that the clinic was in favor of a meniscal syndrome, especially since the patient reports the notion of trauma previously. Physical examination also revealed tenderness at the medial aspect of the knee.

MRI was performed, with no meniscus abnormality, but showing a bony mass arising from the tibia proximal metaphysis, measuring 10 × 8 × 13 mm, with a thin cartilaginous cap (2 mm). We also found fluid beneath the tendons of the pes anserinus at the medial aspect of the tibia associated with surrounding tissue edema. The final diagnosis was pes anserine bursitis as a complication of tibial osteochondroma. The patient underwent surgical excision, with good evolution.

### Case n° 2: Figure 2 (A–D)

A 15 years old patient, with no medical history, no antecedent trauma, presenting a pain in the medial side of the leg, that worsens after flexion. The patient noted also a clicking with knee motion. Physical examination showed a firm soft tissue mass in the proximal part of the left leg, with no transillumination or evident swelling, associated with a lack of flexion compared with the right knee. Computed tomography was performed, showing a well limited and pedunculated bony outgrowth, at the expense of the internal side of the left proximal tibia metaphysis. It was located near the insertion of the pes anserinus tendon, associated to an infiltration of the soft tissues here. An additional ultrasonography was subsequently done, showing a thickened appearance of the tendons, coming into contact with the bony exostosis, with a small effusion of the peritendinous bursa at this level. The patient got intrabursal corticosteroids injection, with no reduction of symptoms.

## Discussion

Exostoses are benign tumors, preferentially found on the metaphyseal side of fertile growth cartilages [2]. The progressively become diaphysometaphyseal by migration resulting from the elongation of the distal portion of the bone [4]. Proximal humerus, distal femur, and proximal tibia, are the most common site by far [1], followed by flat bones and the axial skeleton. It can be sessile or pedunculated, and mostly perpendicular to the bone, oriented away from the adjacent joint. Thus, the diagnosis relies mainly on cortical and medullary continuity with the supporting bone, showed on radiography, CT or MRI.

While often benign, the tumors can lead to several mechanic complications. They can be divided into 3 categories:

- Extrinsic: secondary to compression or irritation of an anatomical structure surrounding the exostosis (bursitis, tenosynovitis, erosion of adjacent bones (especially if it's on scapula [1]) nerve compression and vascular compromise: pseudo aneurysm (popliteal especially), stenosis or occlusion, and deep vein thrombosis). This aligns with the clinical presentations of our patients, highlighting the need for prompt diagnosis and management.
- Intrinsic : related to a fracture if pedunculated, causing acute pain.
- Mixed: in relation to bone deformities and discomfort, that is usually found in an exostosing disease context [5].

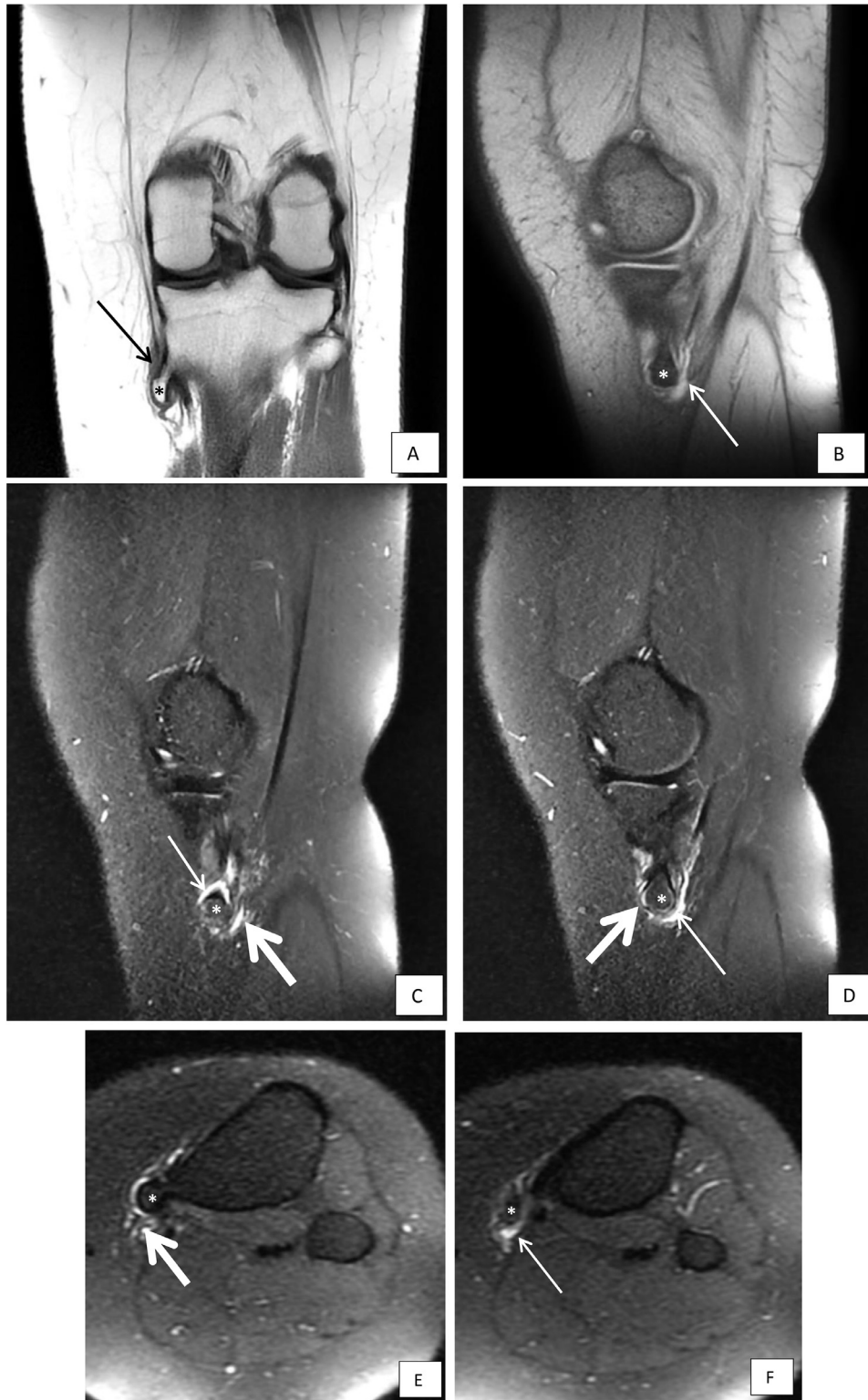
MRI can evaluate the impact of the lesion on the surrounding structures, but is also useful to evaluate the hyaline cartilage cap [6].

The complication we are going to discuss is surface bursitis, resulting from friction of neighboring muscles on the surface of the exostosis. The synovium lining the bursa can also become infected or hemorrhagic [3]. Clinically, bursa formation may manifest as a palpable mass in front of the osteochondroma. Sometimes, it develops relatively quickly, simulating a malignant transformation [2], especially in adults.

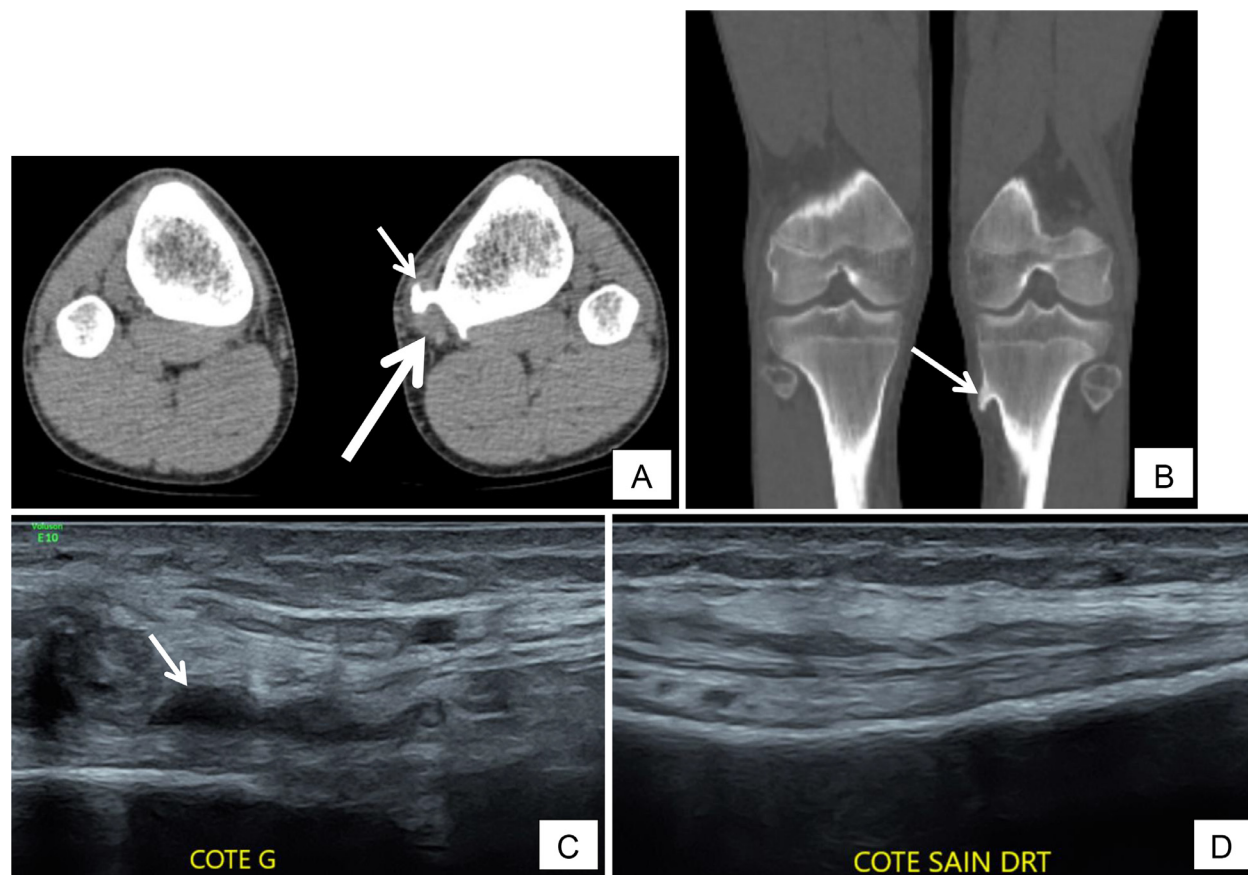
Pes anserine bursitis is the inflammation of the pes anserinus bursa, which is located deep to the pes anserinus tendon, the conjoined tendons of the Sartorius, gracilis, and semitendinosus, as they cross the proximal aspect of the tibia to insert along its medial surface [7]. This condition can cause significant discomfort in affected individuals. In the context of tibial osteochondroma, the bony protuberance can impinge upon the nearby soft tissues, including the anserine bursa, leading to inflammation and swelling.

Radiographs are generally not useful in the diagnosis of pes anserinus syndrome [8]. The bursitis appears as an opacity surrounding the osteochondroma. It may contain calcifications, representing calcified foreign bodies in the bursa. These calcifications can sometimes simulate a thick cartilaginous shell, suggestive of malignant transformation [2], especially if the exostosis is already known: any radiographic interval change in the osteochondroma or its surrounding soft tissues is usually interpreted as a malignant transformation [9]. Ultrasound is particularly useful in accessible lesions, to distinguish the anechoic bursal fluid with its posterior acoustic enhancement, from the hypoechoic tissue of a cartilaginous cap. Calcified fibrinous or cartilaginous bodies in the bursa can be detected, due to the distal acoustic shadowing that they cause on ultrasound. Ultrasonography can also help determine the type of bursal fluid (anechoic, echogenic if infected or hemorrhagic), and guide aspiration for cytological analysis. Bursitis can be not easily identifiable on CT scan, due to poor tissue contrast, like in our case where we used ultrasound to look for the bursitis. This also makes interesting the use of MRI, which can also show the presence of fluid collection and changes in the subcutaneous fat [8].

Treatment of pes anserine bursitis associated with tibial osteochondroma focuses on conservative measures, including rest, ice therapy, analgesics, nonsteroidal anti-inflammatory drugs, and physical therapy. Refractory cases may need an intrabursal injection of corticosteroids [7]. These measures are often effective in relieving pain and inflammation. In cases



**Fig. 1 (A-F) – MRI of the knee, in coronal T1 (A), sagittal MERGE (B), and sagittal (C, D) and axial DP FATSAT (E, F), showing a bony mass (\*) arising from the tibia proximal metaphysis, measuring 10×8×13 mm, with a thin cartilaginous cap (2 mm). We also found fluid (white arrow on C, D, F) beneath the tendons of the pes anserinus at the medial aspect of the tibia associated with surrounding tissue edema (large arrow on C, D, E): anserine bursitis.**



**Fig. 2 (A-D)** – Computed tomography, with axial (A) and coronal views (B), showing a well limited and pedunculated bony outgrowth (arrow on A and B), at the expense of the internal side of the left proximal tibia metaphysis. It was located near the insertion of the pes anserinus tendon, associated to an infiltration of the soft tissues here (large arrow on A). An additional ultrasonography was subsequently done, on the affected side (C), and the normal leg (D), showing a thickened appearance of the tendons, coming into contact with the bony exostosis, with a small effusion of the peritendinous bursa at this level (arrow).

where conservative management fails to provide adequate relief, surgical intervention may be considered to excise the exostosis and alleviate pressure on the surrounding tissues.

With appropriate management, the prognosis for pes anserine bursitis secondary to tibial osteochondroma is generally favorable. Our cases underscore the importance of recognizing potential complications early and initiating timely intervention. Delayed diagnosis or inadequate treatment can lead to chronic pain and functional impairment.

## Conclusion

Pes anserine bursitis is a potential complication of tibial osteochondroma, characterized by inflammation of the anserine bursa due to impingement by the bone tumor. Recognizing this association is essential for accurate diagnosis and timely intervention. A multidisciplinary approach involving orthopedic surgeons, radiologists, and physical therapists is crucial for optimizing patient outcomes and minimizing the risk of complications associated with this condition.

## Patient consent

Written informed consent for the publication of this case report was obtained from the patient.

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