

## C A S E R E P O R T

# Unusual osteolytic intraosseous ganglion cyst of the medial tibial condyle in a patient affected by mild osteoarthritis of the knee

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## Summary

Bone lesions of the proximal tibia are common findings; depending on the site, age of the patient and symptoms at the time of presentation a careful differential diagnosis must be carried out. Benign and malignant lesion must be taken into account to perform the correct therapeutic procedure; histological findings are of fundamental importance to complete and clarify radiological findings. We present the case of a 60 years old active patient complaining of atraumatic medial knee pain. X-Rays performed at the time of the first visit to the outpatient clinic revealed an osteolytic lesion of the medial tibial condyle. We performed an MRI that highlighted a lobulated cystic lesion of the medial tibial condyle eroding the cortical bone and expanding to the surrounding soft tissue. The cavity appeared populated of a mixed and various tissue with a low signal intensity on T1 weighted images and a high signal intensity on T2 images. Differential diagnosis can be considered with epiphyseal bone lesions such as giant cell tumor, chondroblastoma or fibrous dysplasia, and also rheumatoid related lesions or ganglion cyst of bone. The tissue obtained from the incisional biopsy macroscopically revealed a clear, yellowish gelatinous and mucinous material. The microscopical histological exam confirmed a cystic area of the lesion; the lumen contained some dense, fibrous material with focal mucoid degeneration. The patient's clinical history, the imaging appearance, the locally aggressive aspect of the lesion and its slow growing together with the pathological confirmation allowed us to diagnose an intraosseous ganglion cyst. According to the age of the patient, his working and recreational habits and the moderate grade of osteoarthritis, we decided to perform an extra articular-sparing procedure: curettage and grafting with bone bank allograft (bone chips). Post operative X-Rays showed a good filling appearance of the lesion without reabsorption or any out flow of the graft. With limitations concerning the short follow up, the patient showed a very high level of satisfaction, especially in terms of pain relief and time to regain his working and recreative activities about two weeks after surgery. An accurate and long follow up must be carried out to verify the integration of the allograft and any articular degenerative progression ([www.actabiomedica.it](http://www.actabiomedica.it)).

**Key words:** Intraosseous Ganglion Cyst, Knee Pain, Osteolytic Lesion

## Introduction

Bone lesions of the proximal tibia are common findings; depending on the site, age of the patient and

symptoms at the time of presentation a careful differential diagnosis must be carried out.

Benign and malignant lesion must be taken into account to perform the correct therapeutic procedure;

histological findings are of fundamental importance to complete and clarify radiological findings (1, 4, 9, 10).

### Case Report

We present the case of a 60 years old active patient complaining of atraumatic medial knee pain.

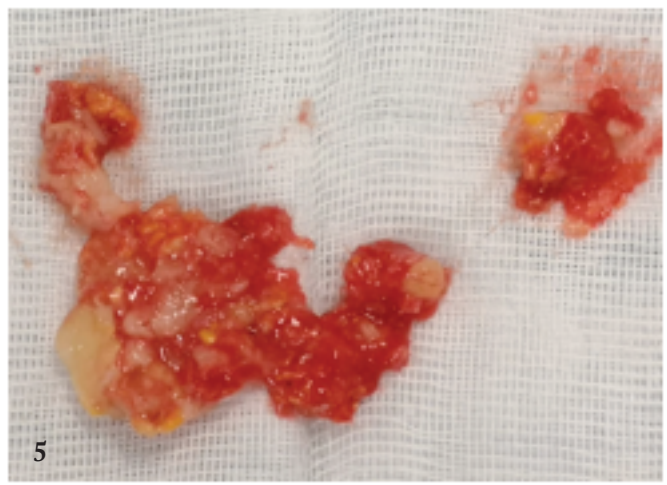
The patient had undergone a medial meniscectomy 15 years before due to a meniscal traumatic lesion.

X-Rays performed at the time of the first visit to the outpatient clinic (**fig.1,2**) revealed mild varus osteoarthritis of the knee and an osteolytic lesion of the medial tibial condyle.

We performed an MRI that highlighted a lobulated cystic lesion of the medial tibial condyle eroding the cortical bone and expanding to the surrounding soft tissue; no evidence of interruption of the subchondral bone was found. The cavity appeared populated of a mixed and various tissue with a low signal intensity on T1 weighted images (**Fig.3**) and a high signal intensity on T2 images (**Fig. 4**).

Differential diagnosis can be considered with epiphyseal bone lesions such as giant cell tumor, chondroblastoma or fibrous dysplasia, and also rheumatoid related lesions or ganglion cyst of bone (5, 8).

The tissue obtained from the incisional biopsy macroscopically revealed a clear, yellowish gelatinous and mucinous material (**fig. 5**).



The microscopical histological exam confirmed, on a panoramic view (**fig. 6, 7**), a cystic area of the lesion; the lumen contained some dense, fibrous material with focal mucoid degeneration, while the wall was composed of a fibrous tissue with some ossification and some calcification. Any inflammation cells were detached. An higher magnification (**fig. 8**) of the a fibrous nodule of the fibrous wall revealed an extensive microcalcification.

The patient's clinical history, the imaging appearance, the locally aggressive aspect of the lesion and its slow growing together with the pathological confirmation allowed us to diagnose an intraosseous ganglion cyst.

According to the age of the patient, his working and recreational habits and the moderate grade of osteoarthritis, we decided to perform an extra

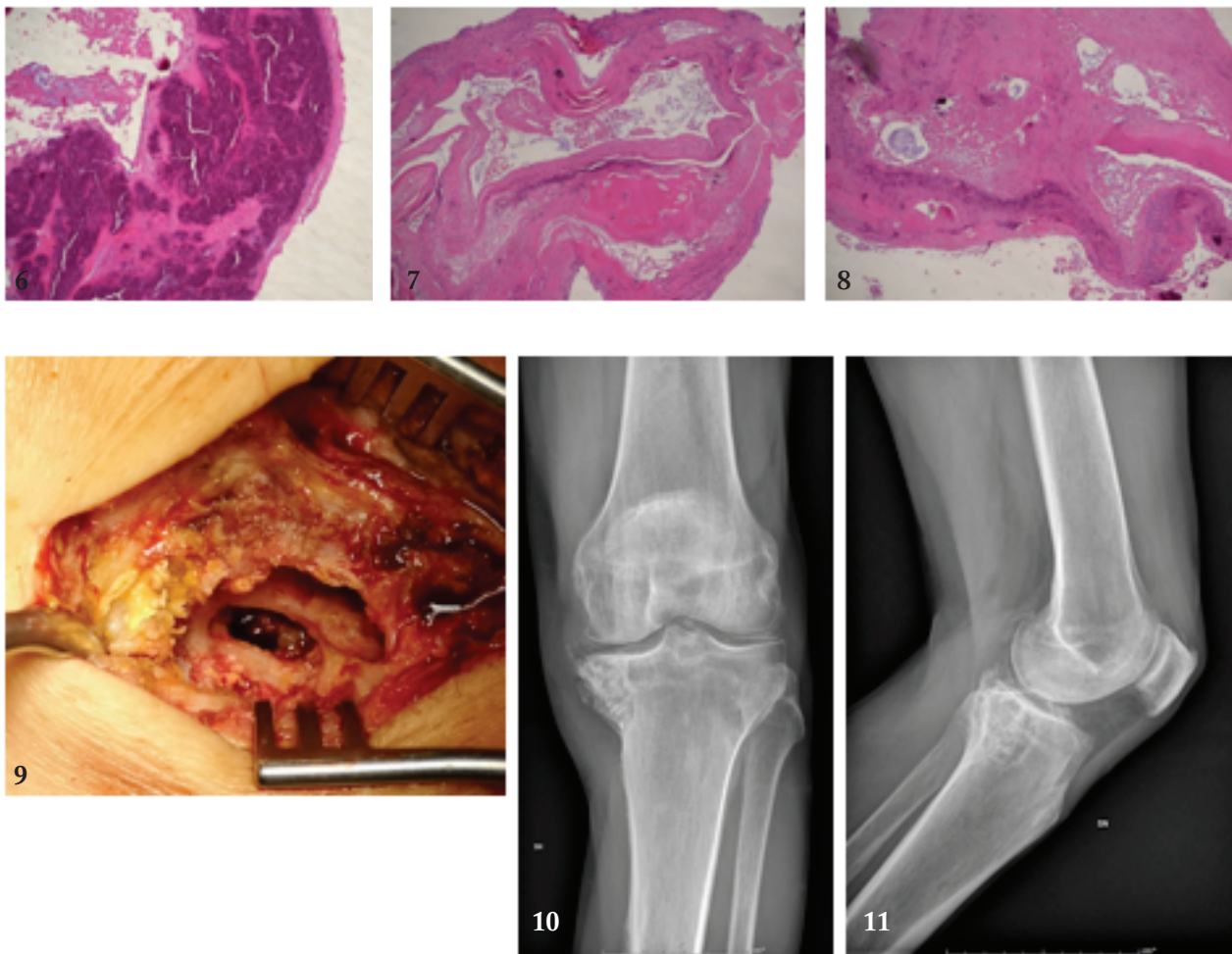
articular-sparing procedure: curettage (**fig. 9**) and grafting with bone bank allograft (bone chips).

Post operative X-Rays showed a good filling appearance of the lesion without reabsorption or any out flow of the graft (**fig. 10, 11**).

## Discussion

Intraosseous ganglion cysts (IGC) are rare and their prevalent localization is at the epiphysis of long bone; a common site of these lesions is the medial malleolus of the ankle although they can occur frequently also about the knee and the shoulder (1, 2 3).

IGC rarely involve the joint despite their proximity to the articular rim; the latter together with the



absence of osteoarthritic changes distinguish IGC from marginal cysts and subchondral bone cysts more commonly associated with degenerative condition of the joint (6, 9, 10)

Patients affected by IGC are usually middle aged and present with mild, localized pain that is increased by weight bearing.

The etiology of the IGC remains uncertain; two main – and opposite – theories hypothesize the origin (6, 7).

The first theory sustain an intraosseous origin of the cyst; the IGC is a cystic lesion that contains gelatinous material and is considered similar to that of soft-tissue ganglion. According to this theory, an extraosseous origin of the cyst is rare due to the presence of the periosteum and the cortex.

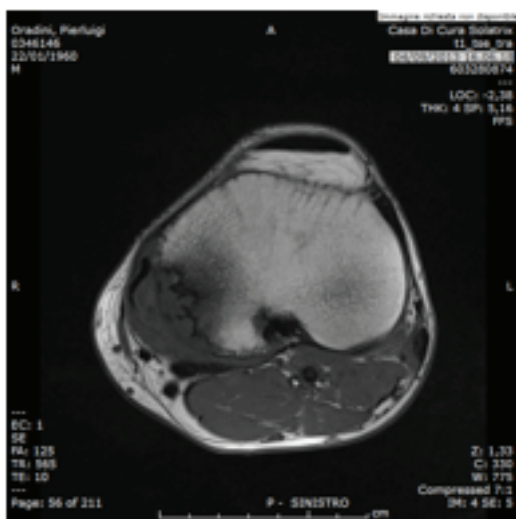
According to other authors, the IGC take shape and act subsequently as a mass-occupying lesion,

eroding adjacent cortical bone. This theory would explain the predilection for the epiphyseal and metaphyseal sites where tendons insert in bone.

Intraosseous ganglion, rarely, shows a communicating - overlying soft tissue ganglion.

Furthermore, as well as an unclear etiology, is still uncertain whether the IGC is related to osteoarthritis or not (6, 7, 9, 10).

Although our findings do not clarify the origin of the cyst, we could find an older MRI of the patient dating 7 years ago; such imaging revealed the presence of a bone marrow edema and a serpiginous, multilocular, lesion extending in the proximal tibia. Despite Fig. 12 and 13 have been performed with different technique, they permit to demonstrate the progression of the lesion both on the intraosseous and the extraosseous side.



The differential diagnosis based on the location of the lesion include tumors that arise in the epiphyseal to metaphyseal region, such as giant cell tumor, aneurysmal bone cyst, and chondroblastoma; similarly, the radiological differential diagnosis includes simple bone cyst (should have sharp borders and a sclerous rim), giant cell tumor (should be located in the epiphysis) and fibrous dysplasia (the cystic form should have a groundglass appearance), multiple myeloma and metastasis (5, 8, 9).

According to our case (11, 12), the most common surgical treatment of these lesions is curettage and bone grafting; the mild grade of arthritis in association with the age of the patient and his functional demands lead us to perform a joint sparing surgery instead of a total knee arthroplasty, in order to save the patient's bone stock.

With limitations concerning the short follow up, the patient showed a very high level of satisfaction, especially in terms of pain relief and time to regain his

working and recreative activities about two weeks after surgery.

An accurate and long follow up must be carried out to verify the integration of the allograft and any articular degenerative progression.

**Conflict of Interest:** Each author declares that he or she has no commercial associations (e.g. consultancies, stock ownership, equity interest, patent/licensing arrangement etc.) that might pose a conflict of interest in connection with the submitted article

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