

## Case Report

# Osteolytic Pseudotumor Induced by a Piece of Wood

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### ABSTRACT

A case of osteolytic lesion in the right proximal tibia due to an intraosseous wooden foreign body in a 20 years old man is described. Surgical treatment that consisted of removal of foreign body granuloma followed by bone grafting resulted in good clinical and radiological outcome with excellent and painless range of movement of the knee and incorporation of the graft. A review of the

relevant literature showed that our case was unique in some respects, particularly as regards the size and site of the foreign body and the extent of injury. In any case of osteolytic or osteoblastic lesion, the possibility of a pseudotumor should be considered in the differential diagnosis and recent imaging techniques should be used.

KEYWORDS: foreign body, granuloma, osteolysis, pseudotumor

### INTRODUCTION

A foreign body granuloma is a result of fibrous tissue encapsulation in cases of retained foreign organic bodies in hands and feet. Most organic foreign materials embedded in the bone or in the surrounding tissues usually do not produce reaction that can be detected radiologically<sup>[1]</sup>. Some thorns and wood splinters are capable of inducing pathological reactions (osteolytic or osteoblastic) that in some cases may resemble malignancy<sup>[2]</sup>. We present an interesting case report on a foreign body granuloma of the proximal tibia associated with an osteolytic lesion, caused by a wooden splinter. Diagnostic procedures and surgical treatment are discussed.

### CASE REPORT

A 20-year old Kuwaiti male sustained a penetrating injury to his right knee by a wooden splinter originating from a mandolin.

He removed the foreign body himself and sought medical advice in a nearby hospital. He was treated with NSAID's and elastic knee immobilization for a short period of time.

The wound being a simple puncture was not debrided. Because of the discomfort in his right knee the patient presented himself in the casualty of the Armed Forces Hospital, where he was seen by a House Officer. He replaced the splint applied previously by a plaster slab. After one week, the plaster was removed and physiotherapy started. Few months later, the patient was reviewed by the

orthopedic clinic because of a mild painful swelling in his right knee. His blood tests were normal but the plain X-ray revealed a juxta - articular osteolytic lesion of the proximal right tibia (Fig. 1).

Further work up in the form of CT and MRI was done and the differential diagnosis included aneurysmal bone cyst, simple bone cyst and osteoclastoma (Fig. 2 & 3).

Surgery was decided using anterior knee approach during which a deep cavity was found in the proximal tibia just below the articular surface. Intra-articularly, the overlying cartilage was edematous, dull white and cracked in appearance and was left untouched. Curettage of the cavity revealed multiple pieces of wood splinters and yellowish brown scanty discharge (Fig. 4).

The cavity was irrigated copiously with saline and filled with bone graft taken from the iliac crest as it was big and deep. The wound was closed in layers and the pathological specimen was sent both for bacteriological and histopathological study. On the first postoperative day when the MRI pictures were re-evaluated, the initially overlooked foreign body was clearly demonstrated.

The patient's postoperative stay was uneventful and he was discharged. During outpatient follow up, wound stitches were removed after a couple of weeks and regular X-rays were taken every two weeks until bone union was seen and there was full functional recovery of the knee joint (Fig. 5). The bacteriological culture result was negative. Histopathological examination revealed chronic non-specific inflammation with giant cells.

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Fig. 1: Plain X-ray showing osteolytic lesion of proximal right tibia

## DISCUSSION

Bony reaction to a foreign body depends on its location *i.e.*, parosseous, intracortical or intramedullary. The reason for this reaction remains unclear. It may be mechanical, toxic or infectious. In a number of reports published in recent years, reactions to organic foreign bodies have been described as osteolytic, osteoblastic or combinations of both. Periosteal reaction might as well be present and intensive enough to mimic Ewing sarcoma. This phenomenon was described with a variety of thorns but less commonly with wood<sup>[3]</sup>.

In most patients, the interval between initial injury and the onset of clinical symptoms might be as long as three years<sup>[4]</sup>. In 1952, Maylahan described three cases of thorn - induced pseudo - tumors and since that time, ten more cases have been reported<sup>[5]</sup>.

In 1971, Gerle compared eight cases and found that all but one was below 15 years of age. Lesions affected mainly hands and feet with the exception of one case, where the pathology was located in the fibula. X-rays showed variable stages of osteolysis with periosteal reaction. No cortical destruction or medullary expansion was found. The cultures were negative rather because of the use of antibiotics<sup>[5]</sup>. Biopsy should always be performed no matter how classic the roentgenographic appearance is. Excision biopsy, in cases of a foreign body granuloma, may represent the only clue to complete cure both symptomatically and radiographically<sup>[6]</sup>.

As all reported cases showed negative bacteriological examinations we believe that bone reaction is a mechanical or chemical response to a foreign body rather than infection and this response might be proportional to the volume of inoculated foreign bodies as in our case.

In recent years, with the use of Ultrasound, C.T scan and MRI, accurate diagnosis of foreign body reactions was established<sup>[7-9]</sup>. But it has also been reported that splinters that have been there for less than three days are not detected reliably by any of

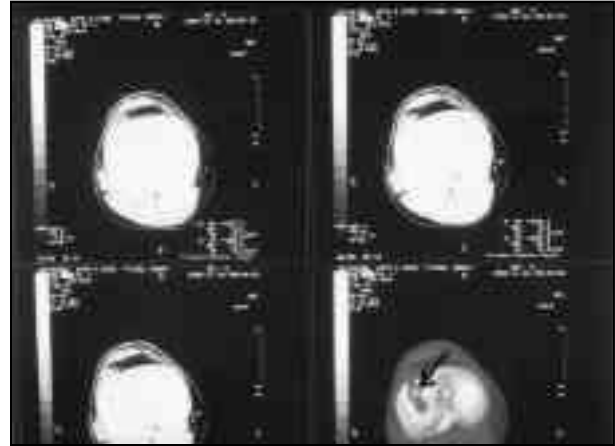


Fig. 2: CT image demonstrates the same lesion eroding the tibial articular surface

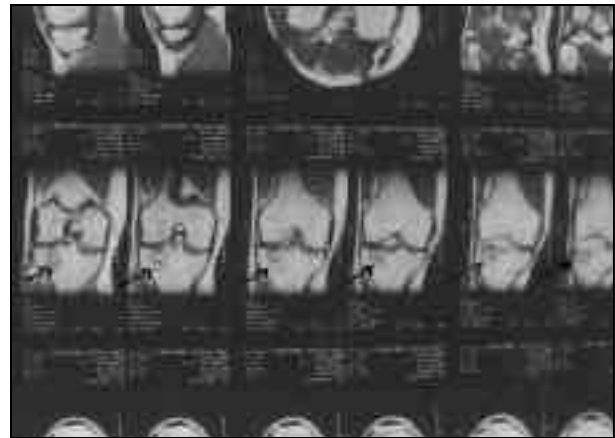


Fig. 3: MRI reveals a well circumscribed lesion with a central hypointense nidus

the imaging method<sup>[8]</sup>.

It was also found in various cases that foreign bodies were hypointensive on T1 weighted images and the most important factor for their identification on MRI is the presence of a surrounding rim of fluid rich granulation tissue or fluid filled cyst<sup>[10-12]</sup>.

Our case is different in many respects because it is the only one presenting in the tibia close to the knee joint. The lesion was deep enough to need a bone graft despite the fact that the foreign body was a wood splinter and not a plant thorn. We used CT and MRI in our investigation and this clearly showed the radiolucent foreign body with erosion of the articular surface and medullary expansion. These interesting differences make our case unique and set it apart from all other reported cases.

## CONCLUSION

Because a history of injury may often be vague or forgotten and because of the sometimes prolonged latent period, a high index of suspicion is required to diagnose a pseudotumor. No bone is immune and radiographic findings are usually a

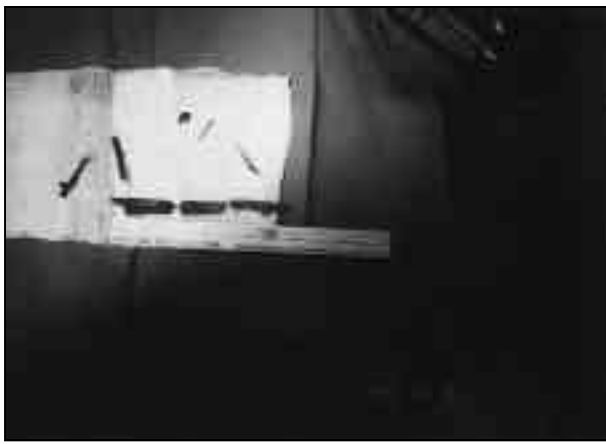


Fig. 4: Big size wooden pieces extruded from the tibial bone cavity



Fig. 5: Plain X-ray of the right knee after full recovery

combination of osteolytic and/or osteoblastic presentations with failure to visualize the radiolucent foreign body. Recent imaging techniques such as MRI may emerge as the only diagnostic tool in most cases.

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