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Case report

SUPRACONDYLAR FEMORAL FRACTURE WITH AN INCIDENTAL ENCHONDROMA OF THE TIBIAL PLATEAU.

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ABSTRACT

The enchondroma is a benign tumor of the endosteal cartilage and it is common in young-adult patients. These tumors are usually diagnosed when a pathologic fracture occurs at the site of the lesion or when they are accidentally discovered during investigations performed for other reasons. This report describes the case of a patient with an enchondroma of the external tibial plateau. Diagnosis was made treating an ipsilateral supracondylar femoral fracture caused by a traffic accident.

1. Introduction

The enchondroma is a benign lesion of the intramedullary hyaline cartilage that is usually located at the metaphysis or diaphysis of long bones. Their occurance is relatively rare, representing 10-25% of all benign tumors of the bone, with a presumed peak of incidence between the second and fourth decade [1-2]. The most common affected site is in the hand bones. However, in literature, several cases of enchondromas at different levels were reported in the femur, humerus, tibia and calcaneus [3]. The enchondroma originates from a dysfunction of chondroblasts and are usually isolated lesions which could be associated with the Maffucci syndrome or Ollier syndrome [4]. Most enchondromas are accidental findings or when treating a pathological fracture at the level of the lesion. Small and asymptomatic lesions can be managed conservatively, while larger lesions can be treated surgically with simple curettage and filling with different materials such as idrossiapatite, calcium phosphate, synthetic bone grafts and with allograft and/or autograft bone [8-9-10-11-12].

Supracondylar femoral fractures account for 7% of all femur fractures, rising to 31% excluding hip fracture [13]. In young adults, supracondylar femoral fractures are usually the result of a significant overload with an axial stress component in valgus, varus or rotational movements, such as in traffic accidents or falls from heights.

In elderly patients, this type of fracture usually occurs from low energy trauma due to the lower quality of the bone matrix. Variable degrees of soft tissue injuries are present in cases of high energy trauma. Generally, these fractures are surgically treated, however in cases of exceptional non-displaced fractures or in patients with severe comorbidities exceptions can be made. If the joint is involved, anatomical reduction is required and stable synthesis with plates and screws is preferred. However, in cases of extra-articular fractures, intramedullary nailing or external fixation can be used in order to regain the femur length, rotation and alignment [15-16-17-18-19] .

2. Case presentation

A 16-year-old male patient was admitted into our emergency department presenting with a left supracondylar femoral fracture which occurred in a traffic accident. An X-ray was performed which revealed an osteolytic area on the tibial plateau which was not well defined. A CT exam showed a large osteolytic area occupying the entire lateral tibial emiplate. The fracture was classified as AO33A3 (Fig.1 a,b,c,d).

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Figure 1. a-b: Rx pre-operative; c-d: TC pre-operative.

Reduction of the fracture and synthesis with hybrid external fixator with the bridge of the knee and tibial socket was performed on the patient. Furthermore, a biopsy of the lesion for histological examination was performed (Fig.2 a,b,c).

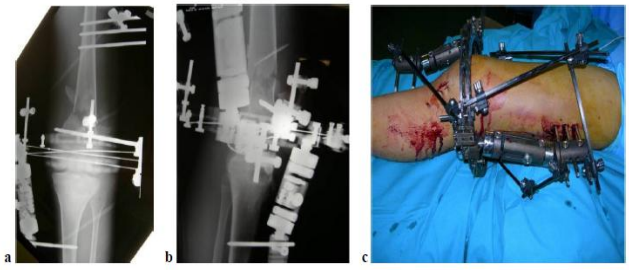

Figure 2. a-b: Rx post-operative; c: clinic post-operative.

Bridging fixator of the knee was performed in order to immediately allow the patient to bear load on the leg, protecting the enchondroma from any pathological fractures. A surgical curettage of the area was performed 15 days later, once the histopathological diagnosis of enchondroma of the lateral tibial plateau was confirmed. The gap was filled with an allogenic cancellous bone graft. The external fixation system was also modified by applying a ring at the tibial level and various articulated clamps in order to allow for knee mobilization. (Fig.3 a,b,c,d).

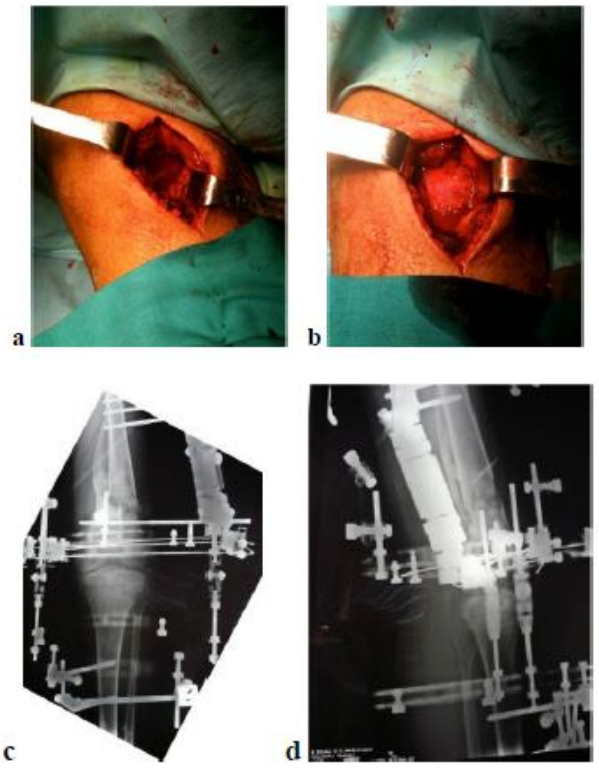

Figure 3. a-b: clinic intra-operative; c,d: Rx post-operative.

The patient began a series of periodic check-ups in our outpatient Department of Traumatology. About 5 months after the trauma, the external fixator was removed and the patient was sent to rehabilitation (Fig 4. a,b,c,d,e).

Figure 4. a-b-c: Rx control at 5 months after trauma; d-e: Rx control at 6 months after trauma.

At about 9 months post-trauma, the CT showed the consolidation of the supracondylar femoral fracture and the bone filling of the gap of the tibial plateau without signs of resorption. Clinically, the flexion of the knee was about 90° (Fig. 5). The patient was walking without crutches and without limping. The patient was completely satisfied.

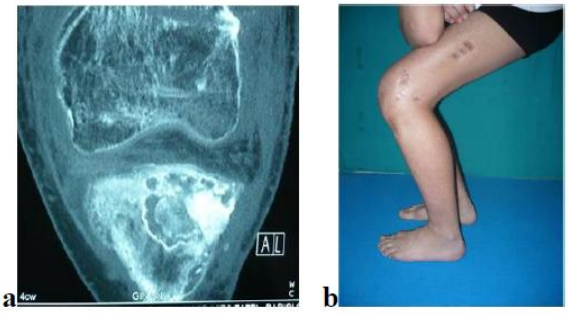

Figure 5. a: TC at 9 months after trauma; b: clinic at 9 months after trauma.

3. Discussion

Fractures of the distal femur are major injuries that can lead to disabling outcomes. The treatment is usually surgical and, in cases of extra-articular fractures, the aim is to restore the length, axis and the rotation of the knee. Enchondroma lesions are relatively frequent in young adults and can be accidentally discovered in the event of bone trauma. In the present case report, the patient described presented a supracondylar femoral fracture and an ipsilateral enchondroma of the external tibial plateau. Due to the large size of the lesion and the risk of a secondary pathological fracture, an external fixator was used to fix the fracture and protect the enchondroma. This allowed for precocious weight-bearing which facilitated the complete healing of the fracture [20-21-22]. A correct histological diagnosis was also performed before surgery, in order to differentiate the enchondroma from a low-grade malignancy chondrosarcoma, which necessitates a wider resection [23-24-25-26]. For this reason, we found a two-stage surgical treatment to be a reliable option considering the need for surgical stabilization of the fracture and a correct definition of the osteolytic area on the tibial plateau [27].

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