



Case Report

## Chondroblastoma of Proximal Tibia: A Case Report

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### ABSTRACT

Chondroblastoma is a rare bone tumour originating from the epiphysis contributing to nearly 1% of primary bone tumours only. Here is a case report of a 16 year old male patient who came with chief complaints of swelling in posterior aspect of left knee associated with pain. Assessment with radiographs, MRI, USG guided FNAC confirmed the diagnosis, which was then treated with curettage, bone cement and synthetic hydroxyapatite crystals.

**Keywords:** Chondroblastoma, proximal tibia, USG guided FNAC, curettage, bone cement.

### INTRODUCTION

Chondroblastoma is a rare benign tumour of the bone arising from the epiphysis. These contribute to less than 1% of all bone tumors. <sup>(1-3)</sup> These are usually benign but show local invasion of soft tissue. Rarely, distant metastases have also been reported. <sup>(4,5)</sup> Clinically, they present as a slow growing tumor with insidious onset or, rarely following trauma. They are found predominantly in male patients in their second decade of life. <sup>(2)</sup>

First described by Ewing (1923) as a variant of Giant cell tumour, he decided to name it 'calcifying giant cell tumour'. Kolodny (1927) preferred 'cartilage containing giant cell tumour' whereas Codman(1931) used the term 'Epiphyseal Chondromatous giant cell tumours'. <sup>(7)</sup> It was demarcated as a separate entity by Jaffe and Lichtenstein (1942) who renamed it as Chondroblastoma .

These tumours are more commonly found in the epiphysis of the long bones with two most common sites being proximal Humerus and proximal Tibia. <sup>(5,6)</sup> There is a male to female preponderance with ratio of 2:1.

### CASE STUDY

A 16 year old male patient came to the outpatients department with chief complaints of swelling over postero-medial aspect of left knee joint since past 7 months which was associated with pain since past 4 months. The patient tried few home remedies and medicines before the swelling grew to its present size gradually over 7 months. There was a history of fall 7 months back while playing following which the patient noticed the swelling. There was no history of any other swelling in the body in the past or similar history in any of the family members. No history of any other

systemic complaints. On examination the patient was well built and adequately nourished. There was no evidence of pallor, lymphadenopathy or icterus. Local examination revealed a diffuse swelling around 4cm x 4 cm x 1cm in size located on the postero- medial aspect of left knee joint. Surface was smooth .Overlying skin was normal, without any erythema, induration or dilated veins. Margins were ill defined. On palpation there was no localized rise of temperature; swelling was firm in consistency with smooth surface. On deep palpation tenderness was present and the swelling seemed to be attached to the underlying bone. It had resulted in restriction in range of movement of the knee joint with range of movement in flexion being 0-90 deg.

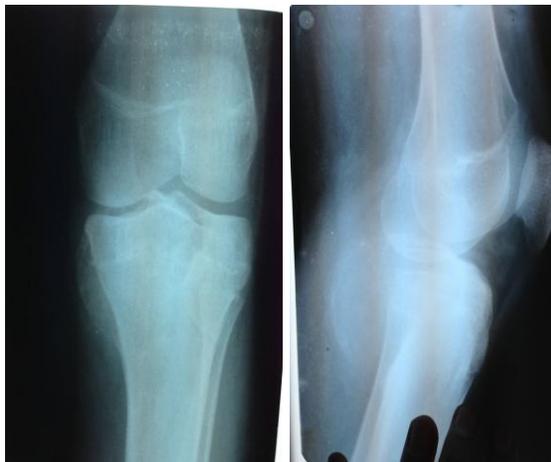


FIGURE 1. X RAY

MRI showed a solitary, well defined, lobulated, expansive lesion located eccentrically in the metaphysis of proximal tibia extending up to the epiphysis and the articular surface. There was displacement of the surrounding muscles and marrow edema of the proximal metaphysis and epiphysis.



FIGURE 2. MRI

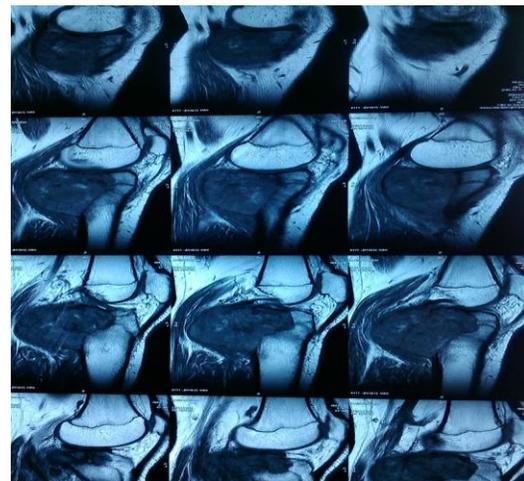


FIGURE 3.

USG guided FNAC showed mononuclear cells, osteoclast like giant cells, occasional stromal fragments and chondroid matrix material. Individual mononuclear cells were polygonal with dense eosinophilia cytoplasm, eccentrically placed nucleus with occasional cells showing prominent nucleoli, nuclear grooving and Reni form nuclei strongly suggestive of CHONDROBLASTOMA.

The patient was treated with open biopsy, curettage, hydroxyapatite crystals and bone cementing. A postero-medial incision was taken depending on assessment of x-ray and CT scan. A cortical window was created, aggressive intralesional mechanical curettage and chemical cauterization with phenol was done and the

cavity created after curettage was filled with bone cement (poly methyl methacrylate) after layering it with synthetic hydroxyapatite blocks (sandwich technique). Post operatively, an above knee slab was applied. Post-operatively patient was mobilized on day 3 with non-weight bearing

exercises. Follow-up x-rays were taken at 1st month and 3rd month postoperatively. X-rays showed maintenance of joint line and no evidence of any recurrence. Patient had slight pain on weight bearing for prolonged period but was otherwise asymptomatic.

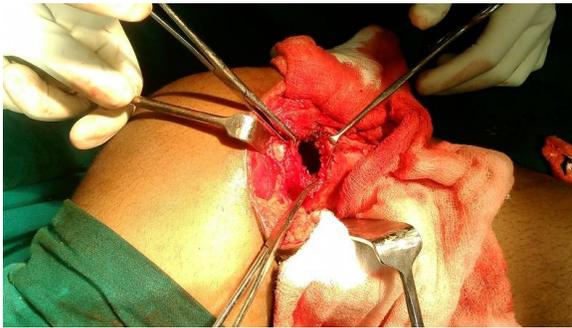


FIGURE 4.

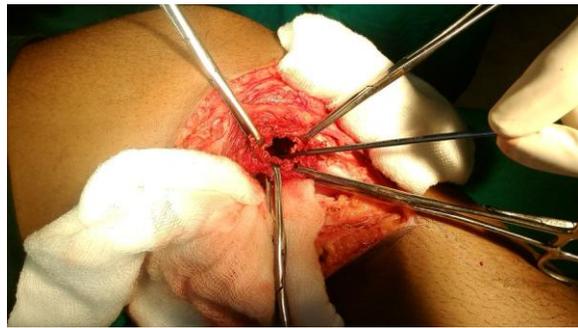


FIGURE 5.

Figures showing the operation site with a medial incision and surgically created cortical window on the medial cortex.



FIGURE 6. Post-operative x-ray.

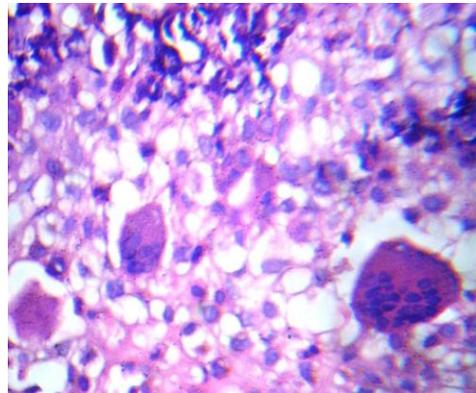


FIGURE 7. Postoperative Histopathology. High power image of histopathology sample showing presence of osteoclast like giant cells in a chondroid matrix.

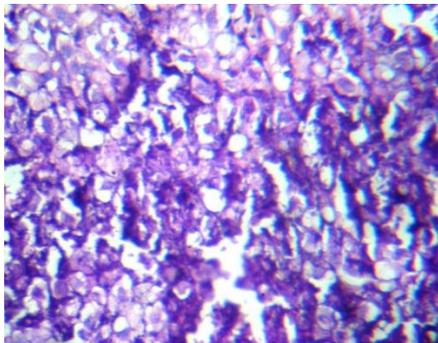


FIGURE 8.

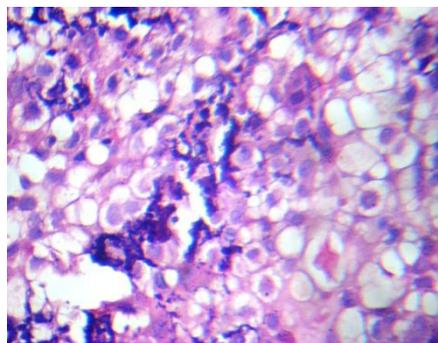


FIGURE 9

High power images of histopathology samples showing sheets of polygonal cells with thick cell membrane and fine pale vacuolated cytoplasm and nucleus with fine chromatin and occasional nuclear grooving. Also seen are osteoclast type of giant cells scattered throughout the tumor. Areas of cartilage formation and "chicken wire" calcification noted.

## DISCUSSION

Chondroblastoma is a rare benign tumour of the bone with excellent prognosis. The most common sites include the epiphyses of long bones with two most common sites being proximal humerus and proximal tibia. <sup>(5,6)</sup> Proximal femur and distal femur are other important sites. On histopathological examination it shows presence of well-defined chondroblasts along with osteoclast type giant cells present in a cartilaginous intercellular matrix and characteristic pericellular focal calcification also known as chicken wire calcification. <sup>(6)</sup> The treatment consists of various modalities but commonly used methods include curettage with bone grafting or bone cement. <sup>(3,7)</sup> The complications in a case of Chondroblastoma can be due to the tumour itself or it can be due to management or lack thereof. An untreated case of Chondroblastoma can increase in size and can destroy entire epiphysis and the articular cartilage. <sup>(7)</sup> The most important complication post operatively is recurrence. Recurrence is found in 10 – 20 % of cases operated cases mostly due to incomplete or ineffective local control of the tumour. <sup>(8)</sup> Other risk factors for recurrence include secondary aneurysmal bone cyst component, <sup>(10)</sup> large lesions <sup>(6)</sup> and open epiphyseal plates. <sup>(6)</sup> Curettage and packing the cavity the cavity with bone cement has shown lower recurrence rates as compared to bone grafting. <sup>(6)</sup> Need for irradiation or wide local resection has not been indicated. <sup>(9)</sup> Delay in diagnosis or misdiagnosis can lead to improper treatment. If left untreated a Chondroblastoma can progress in the stage or worsen the prognosis. Misdiagnosis can lead to wrong surgical procedure or no surgery at all. It is important to rule out secondary aneurysmal bone cyst component (cystic Chondroblastoma) or more aggressive benign epiphyseal tumours like Giant cell tumour. The protocol for

treatment of Chondroblastoma depends on the site, size, behavior and histopathology. Curettage remains the key for local treatment of the tumour. It should be done as meticulously as possible, followed by use of chemical cauterization including hydrogen peroxide <sup>(11)</sup> and 5% phenol. <sup>(9,12)</sup> The use of bone graft or bone cement depends on the site, size and behavior of the tumour. Small size tumours near the epiphysis may be treated satisfactorily by bone grafting as bone cement has the risk of destroying the articular cartilage <sup>(13)</sup> whereas aggressive tumours with higher chances of recurrence can be treated with bone cement.



Figure 10. Anteroposterior and lateral postoperative radiographs showing bone cement.

## CONCLUSION

Early and accurate diagnosis with the help of available imaging and histopathological studies followed by aggressive surgical treatment can reduce morbidity in a case of Chondroblastoma.

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