



A RARE CASE OF GIANT CELL TUMOR IN SKELETALLY IMMATURE INDIVIDUAL

Orthopaedics

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ABSTRACT

Giant cell tumor are benign locally aggressive tumor affecting the epiphyseal region of long bones in adult population most commonly around the knee including distal femur and proximal tibia. Patients typically presents between age group of 30-50 (Female>Male) with insidious onset of pain. Treatment is usually curettage, adjuvant therapy and reconstruction as per the extent and location of tumor. We present case of skeletally immature 16 years old girl who presented with right knee pain since 4 years. Clinical evaluation showed tenderness at anteromedial aspect of right knee with painful range of motion at knee affecting her activities of daily living. Radiological evaluation showed expansile lesion which was heterogeneously hypointense causing erosion of both anterior and posterior cortex with periosteal reaction at anteromedial aspect of distal femur. Patient was operated for extended curettage and reconstruction with ipsilateral iliac crest bone graft and bone cement (PMMA) both using the Sandwich technique which was stabilized using plate at the medial cortex of distal femur. Patient was followed up for 4 months postoperatively and has shown functional improvement with significant decrease in pain and improvement in knee range of motion with satisfactory radiological incorporation of graft with no evidence of recurrence.

KEYWORDS

Giant cell tumor, Bone grafting, Sandwich technique, Aneurysmal Bone Cyst, Bone cement.

INTRODUCTION

Giant cell tumor are benign locally aggressive tumor affecting the epiphyseo-metaphyseal region of long bones in adult population most commonly around the knee including distal femur and proximal tibia. Patients typically presents between age group of 30-50 with insidious onset of pain. GCT in skeletally immature age group is less common.

CLINICAL PRESENTATION

16 years old girl came with complaints of pain in right knee since 3-4 years which was insidious in onset and has been gradually progressive which has aggravated since last 3-4 months. History of slip and fall 4 years back. No recent history of weight loss, loss of appetite or other constitutional symptoms. Patient has difficulty in performing her activities of daily living due to painful range of motion at knee.

EXAMINATION

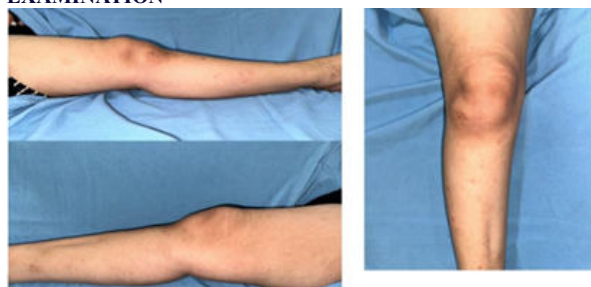


Fig.1 Preop clinical images

Swelling present diffusely

Tenderness present over medial aspect of distal 1/3rd femur

Patellar grinding test positive

Active ankle toe movements present

No DNVC

RADIOLOGICAL ASSESSMENT PREOPERATIVELY

X-Ray shows osteolytic expansile destructive lesion at medial aspect of distal femur with thinning of cortex with periosteal reaction.

MRI shows evidence of expansile lesion which was heterogeneously hypointense causing erosion of both anterior and posterior cortex with

periosteal reaction at anteromedial aspect of distal femur.

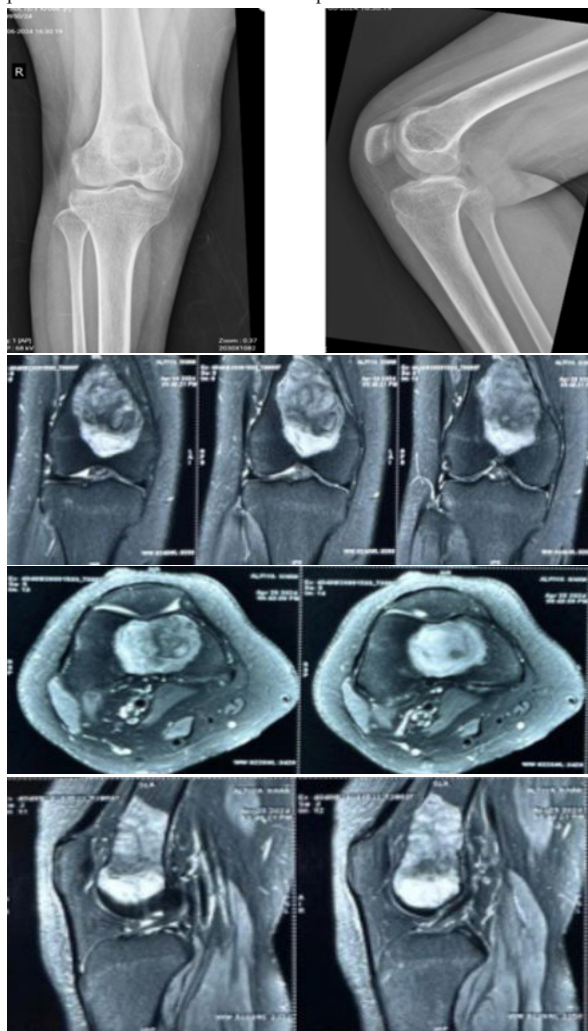


Fig.2 X-Rays and MRI of right knee preoperatively

OPERATIVE PROCEDURE PERFORMED

Patient was operated for extended curettage and reconstruction with both iliac crest bone graft and cement using the Sandwich technique which was fixed using plating at the medial cortex of distal femur.

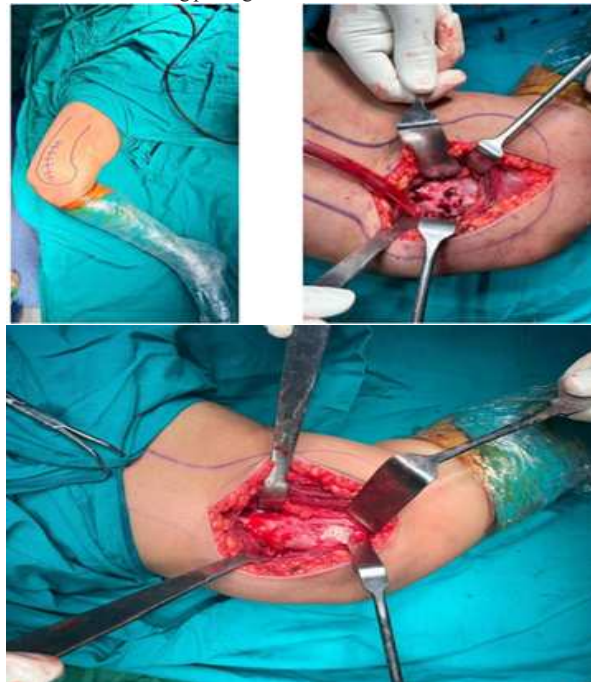


Fig.3 Intraoperative clinical images

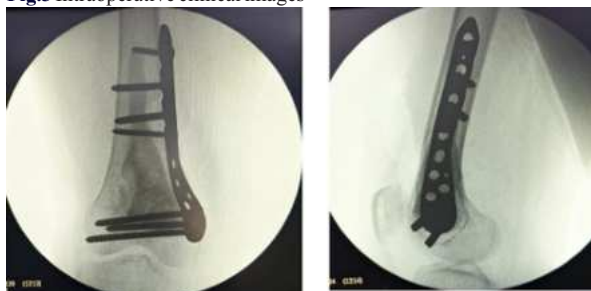


Fig.4 Intraoperative C-arm images



Fig.5 Immediate postoperative X-Rays showing satisfactory incorporation of graft with fixation with plate in well alignment.

HISTOPATHOLOGY REPORT

Shows multinucleate giant cells suggestive of

- 1)Giant cell tumour
- 2)Solid variant of Aneurysmal Bone Cyst.

FOLLOW UP

Patient was given immobilization with long knee brace for 4 weeks and was started on physiotherapy. Patient was advised non weight bearing for 4 weeks following which patient was started on gradual weight bearing ambulation. Patient was followed up at 4 months postoperatively and has shown functional improvement with significant decrease in pain and improvement in knee range of motion which has helped her doing activities of daily living. Radiological

evaluation shows satisfactory incorporation of graft and cement with fixation using plate in proper alignment with no evidence of recurrence at 4 months follow up. Patient was given 3 doses of Inj. Zolendronic acid.



Fig.6 4 months follow up clinical images showing satisfactory range of motion at knee(0-100 degrees)

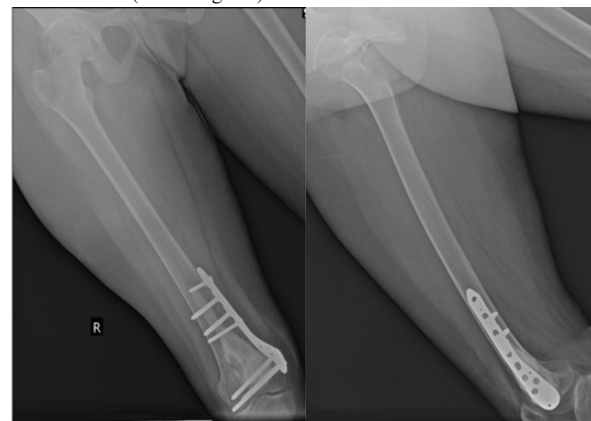


Fig.7 4 months follow up X-Rays showing satisfactory incorporation of bone graft and cement in situ with fixation using plate in well alignment with no evidence of recurrence of tumor

DISCUSSION

Giant cell tumor are benign locally aggressive tumor affecting the epiphyseal region of long bones in adult population most commonly around the knee including distal femur and proximal tibia. Patients typically presents between age group of 30-50 (Female>Male) with insidious onset of pain. Occurrence of giant cell tumor in skeletal immature individual is less common. In this case of 16 years old girl, resection of tumor with reconstruction by both iliac crest and bone cement application was done which was stabilized with plate fixation. Both biology with iliac crest bone graft and structural support with bone cement was given which has shown functional improvement with significant decrease in pain and improvement in knee range of motion with satisfactory radiological incorporation of graft with no evidence of recurrence. Patient is planned for long follow up atleast upto 5 years to look for any evidence of recurrence at local site, incorporation of graft and bone cement with clinical and radiological evaluation and to look for any evidence of metastasis especially using Chest X-Ray.

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