

## CASE REPORT

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### GIANT CELL TUMOR OF TALUS IN A SKELETALLY IMMATURE PATIENT: A CASE REPORT

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**ABSTRACT:** Giant cell tumor is a benign, aggressive tumor seen in skeletally mature patients. Its occurrence in skeletally immature is quite rare. We present one such rare case in an adolescent female who presented with complaints of pain and swelling of her right ankle. She was diagnosed with Giant cell tumor of body of talus and treated with curettage and bone grafting. The tumor recurred six months later. Though few available literature support calcaneotibial arthrodesis, considering her tender age we went ahead with curettage and bone grafting again. Complete recovery with second procedure showed that curettage and bone grafting is still a good treatment option for Giant cell tumor of bone which is known for recurrence.

**INTRODUCTION:** Conventionally it is said that Giant cell tumor is seen in skeletally mature patients, commonest age group being third decade. However there are incidences where Giant cell tumor is seen in skeletally immature patients. One of the literature reviews shows the incidence of Giant cell tumor of bone in skeletally immature as 7.5% with mean age of 10.5 years<sup>1</sup>. Incidence of Giant cell tumor of talus is rare and documented as less than 1% with involvement of body being common.<sup>2</sup> We report one such rare case of Giant cell tumor of body of talus in a 13 year old female child.

**CASE REPORT:** A 13 year old skeletally immature female child was referred to us with complaints of painful swelling of her right ankle since 3 months. Pain was insidious in onset; initially present on weight bearing, gradually progressed to persistent pain even at rest.

Examination of the right ankle joint revealed a diffuse swelling. There was local rise of temperature mainly over the anterior aspect of ankle. Both dorsiflexion and plantar flexion were painfully restricted. Movements of subtalar joint could not be appreciated well, as dorsiflexion of ankle was restricted. Dorsalis pedis and posterior tibial pulsations were well felt and there was no neurological deficit in the right limb. Inguinal lymph nodes were palpable but non-tender and not enlarged.

## CASE REPORT

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**Figure 1 & 2: Ankle joint showing diffuse swelling**

X-ray of the right ankle revealed an eccentric osteolytic lesion within the body of talus in anteroposterior view.

Lateral view showed the same lytic lesion breaking through the superior cortex of the neck of talus making it extra compartmental.

The osteolytic area was geographic in type and there were no intralesional septae to give the classical radiological picture of soap bubble.

MRI confirmed that the lesion is extra compartmental to talus. The ankle and subtalar joints were normal.

The radiological diagnosis was extra compartmental giant cell tumor.  
Chest radiography was normal.<sup>3</sup>



**Figure 3: Lateral radiograph of ankle showing lytic lesion in the Talus**

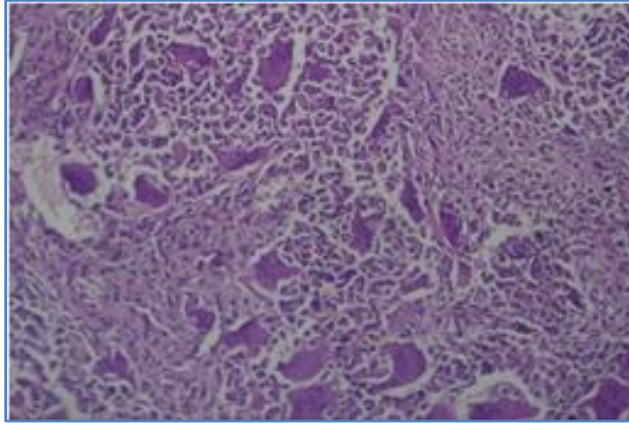


**Figure 4: AP radiograph showing lytic lesion**

## CASE REPORT

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With these features it was decided to obtain a tissue diagnosis. Open biopsy was performed through an anterior approach after obtaining a written informed consent from the mother. As there was a cortical break, it was easy to curette out the tumor tissue completely through this approach. Surgical wound was closed and patient was put on below knee slab.



**Figure 5: Histopathological findings were suggestive of benign Giant cell tumor**

The above diagnosis put us into practical problem of treating this case considering the age of the patient and the rare site of the lesion.

Literature review also did not reveal much on the management of skeletally immature patient with Giant cell tumor of talus. One of the case reports revealed excision of the talus and tibio-calcaneal arthrodesis as definitive treatment<sup>2</sup>. Whereas one more case report revealed 19 years of successful follow up after curettage and bone grafting for Giant cell tumor of the talus.

We decided to manage the case with curettage and bone grafting.

Patient was called back after two weeks. The planned line of management, the prognosis and the chances of recurrence were discussed with the parents. Although the tumor was extra compartmental we decided to go ahead with talus conserving surgery considering the age, sex and poor economic status of the patient. After obtaining a written informed consent, patient was posted for curettage and bone grafting.

Talus was approached through the previous biopsy scar on the anterior aspect of ankle. The bone was curetted out thoroughly following which a lavage was given using hydrogen peroxide and normal saline.

After excising the previous biopsy tract, liquid nitrogen was sprayed into the cavity created on the talus. Corticocancellous bone graft harvested from iliac crest was mixed with allograft G - BONE and filled into the talus.

We did not use bone cement mainly for two reasons. One is because tumor was extra compartmental and the second one due to the proximity of lesion to the ankle joint and distal tibial physis. Soft tissue closure was achieved over a vacuum drain. Ankle was immobilized in a below knee slab.

## CASE REPORT



**Figure 6: Post op – lateral radiograph**



**Figure 7: Post op AP radiograph**

Suture removal was delayed until second week and there was no complication in terms of wound healing. Patient was kept non-weight bearing post operatively. X-ray taken one month later showed features of consolidation of the bone graft. Below knee slab was continued for one more month and patient advised to walk on a non-weight bearing walker.

At 3 months follow up, soft tissue swelling had settled fully and patient was started on active assisted mobilization of ankle and partial weight bearing. Patient tolerated rehabilitation very well.



**Figure 8: Dorsiflexion of ankle 3 months post-operative**



**Figure 9: Plantar flexion of ankle 3 months post-operative**

Six months later patient presented with complaints of pain and swelling over her right ankle again. She was unable to fully weight bear on her ankle due to pain. Examination revealed swelling around the ankle with painful restriction of both plantar and dorsiflexion.

X ray and MRI of ankle revealed recurrence of Giant cell tumor as two lytic lesions at the G-BONE - bone interface. Since the risk of recurrence was explained before the first surgery itself, it was considerably easy to convince the parents for the second surgery.<sup>4</sup>

## CASE REPORT

After routine pre-operative investigations, considering the skeletal immaturity of the patient, it was decided to repeat the curettage and bone grafting again instead of a debilitating surgery like complete excision of talus and calcaneotibial arthrodesis.<sup>4</sup>

Talus was approached through medial malleolar osteotomy. Body of the talus was thoroughly curetted to remove the previous graft mass and also the unhealthy tissue. This time corticocancellous graft was harvested from left iliac crest. Talus was filled with mixture of corticocancellous graft and G-BONE. Medial malleolus was fixed back in position with 2K – wires. Limb was immobilized in below knee cast for 4 weeks.



**Figure 10: AP and Lateral view of ankle following medial malleolar osteotomy, curettage and bone grafting**

Follow up X- rays during first, second and fifth month showed consolidation of bone graft. Clinically, patient showed signs of improvement and started fully weight bearing by six months. Ankle movements were about 20° dorsiflexion and 20° plantarflexion. There were no signs of recurrence this time up to one year.



**Figure 11: Clinical picture of ankle after 6 months showing range of motion**

## CASE REPORT

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**DISCUSSION:** Giant cell tumor is a benign aggressive tumor which is commonly encountered in clinical practice. Although it was described way back in 1818, the mystery behind exact clinical behaviour, aggressiveness, radiological and histological characteristics still seems to be persisting.<sup>5</sup>

It comprises about 20% of benign bone tumours and 5% of primary bone tumours. This tumour tends to involve the epiphyseometaphyseal end of long bones<sup>6</sup>. Involvement of small bones of hand and foot is uncommon.

The lesion almost always affects skeletally mature patients with an incidence rate of 74% in the age group between 15 and 40 years. After the third decade of life, there is a gradual decrease in incidence, with only 13% reported to occur in patients older than 50 years of age.<sup>7</sup>

Giant cell tumour, in skeletally immature patients is extremely rare with an incidence rate of only 1.7%. But whenever it does, it creates practical problems for the surgeon and the patient family in terms of complications like recurrence, repeat surgeries and probably limb shortening which might not allow the parents easily agree for definitive surgery.

Even in this case we had practical problems when tumor recurred. The limited published literature review was supporting excision of talus followed by calcaneotibial arthrodesis. When parents were given the option of curettage with bone grafting versus complete excision of talus they opted for the talus conserving surgery.

The second surgery was through medial malleolar osteotomy which gave good access to talus to be curetted out fully and filled with bone grafts.

Weight bearing was delayed till 6 months following second surgery and tumor did not show any clinical or radiological signs of recurrence.

**CONCLUSION:** Even after so many years of research studies using modern imaging techniques and histopathological diagnosing methods, when we describe giant cell tumor everything revolves around a word 'MOST COMMON'.

Orthopaedic surgeons, radiologists and pathologists still think twice before giving the diagnosis of giant cell tumor. This is because there are vast numbers of other cystic or tumorous diseases of bone which present like giant cell tumor either clinically, radiologically or histopathologically.

The importance of correctly identifying these tumors rests on the difference in their treatment and prognosis.

The results of various types of treatment of giant cell tumor of bone are not uniformly successful. At one end is the commonly practiced relatively simpler method of curettage and bone grafting which has high rate of recurrence, at the other end is a debilitating surgery which has the disadvantages of causing loss of function of the joint.

Orthopaedic surgeon needs to take a wise and safe decision in treating such cases especially in countries where patients do not carry insurance coverage and also where medicolegal cases against doctors are alarmingly increasing.

### REFERENCES:

1. Picci P, Manfrini M, Zucchi V, Gherlinzoni F et al. Giant-Cell Tumor of Bone in Skeletally Immature Patients. *J Bone Joint Surg Am*, 1983 Apr; 65(4): 486-490

## CASE REPORT

2. Bapat MR, Narlawar RS, Pimple MK, Bhosale PB. Giant Cell Tumour of Talar Body - Case Report. J Postgrad Med. 2000 Apr-Jun; 46 (2): 110 – 111
3. Bertoni F, Present D, Enneking WF. Giant-cell tumor of bone with pulmonary metastases. J Bone Joint Surg Am, 1985 Jul; 67 (6): 890-900
4. Arbeitsgemeinschaft Knochentumoren, Becker WT et al. Local Recurrence of Giant Cell Tumor of Bone after Intralesional Treatment with and without Adjuvant Therapy. J Bone Joint Surg Am, 2008 May 01; 90 (5): 1060-1067.
5. Song KS, Park CH. Giant Cell Tumor of the Talus: 19-Year Follow-up of a Patient. J Foot Ankle Surg. 2014 May 28. pii: S1067-2516 (14) 00139-2 .doi:10.1053/j.jfas.2014.04.003.
6. Lizz van der Heijden, Michiel AJ et al. Mid-Term Outcome after Curettage with Polymethylmethacrylate for Giant Cell Tumor around the Knee: Higher Risk of Radiographic Osteoarthritis? J Bone Joint Surg Am, 2013 Nov 06; 95 (21): e159.
7. Campanacci M, Baldini N, Boriani S, Sudanese A. Giant-cell tumor of bone. J Bone Joint Surg Am, 1987 Jan; 69 (1):106-114

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