Case Report

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Surgery Section

Clinico radiological Presentation and Management of Giant Cell Tumour of Calcaneum: A Case Report

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ABSTRACT

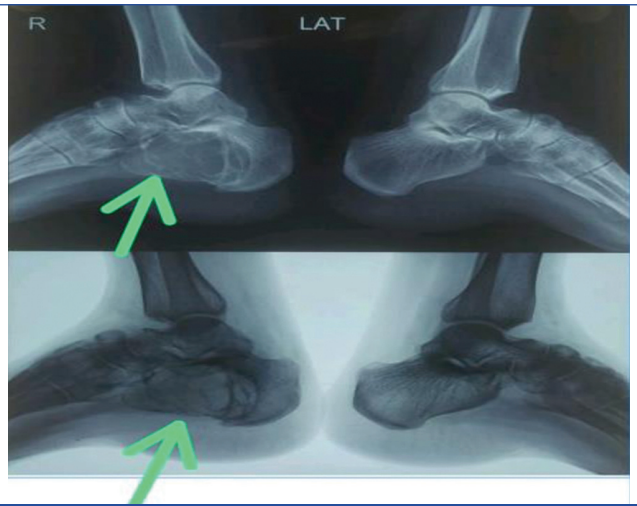
Giant cell tumours of bone are typically benign tumours composed of mononuclear and multinucleated giant cells that are osteoclastically active. They typically develop in long bones but can also appear in unexpected locations. In this case report, a 36-year-old man presented to the orthopaedic OPD with complaints of right heel pain and swelling. The swelling was firm, painful, and adhered to the calcaneus. Radiographs revealed a well-defined, expansile, lytic lesion of the calcaneus with no extraosseous dissemination. After surgery, tissue was sent for histopathological examination, which showed multinucleated giant cells amid numerous mononuclear stromal cells, raising the possibility of a giant cell tumour. During anaesthesia, the bony recess was corrected and filled with bone cement. Patient was ambulatory after three months of the procedure and showed no clinical and radiographic evidence of recurrence even after two years of follow-up. Aggressive characteristics of giant cell tumours can include cortical growth or destruction with a soft tissue component. In certain instances, fluid-filled levels suggestive of subsequent aneurysmal bone cyst development are also visible. Since there are no clinical, radiological, or histological factors that allow one to precisely anticipate the trend of a single lesion to recur or to metastasize, treating bone giant cell tumours remains difficult. Therefore, the surgeon must be well-informed and complete a thorough preoperative work up, including a biopsy, before moving forward with the lesion's final therapy. Early intervention is required due to its potential local aggression. Regular follow-up with the patient is necessary to spot any early signs of metastasis or recurrence.

Keywords: Bone cementing, Curettage, Recurrence

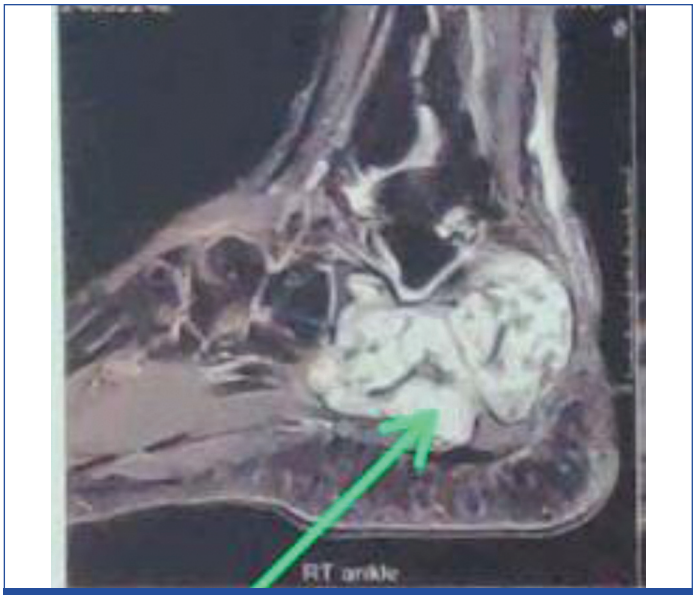
CASE REPORT

A 36-year-old man presented with chief complaints of discomfort and swelling in his right heel for four months. The swelling was gradually progressive in nature with the initial size of 2 cm and enlarged to 5 cm. There was no history of prior trauma or falls. During an inspection, it was seen that the right heel had a noticeable bulge that was firm, sensitive, and adhered to the calcaneus. The ankle joint may move through its usual range of motion, movement not restricted. On examination the local temperature was raised, tenderness was present, no visible veins or sinus were noted.

Radiographic investigation revealed an expansile, lytic lesion of the calcaneus, whereas MRI revealed a tiny zone of transition and a well-defined lesion, and no extraosseous dissemination [Table/Fig-1,2]. All biochemical analysis was normal, i.e., Acid Phosphatase, serum calcium, serum phosphorus, calcitonin, Alkaline phosphatase.

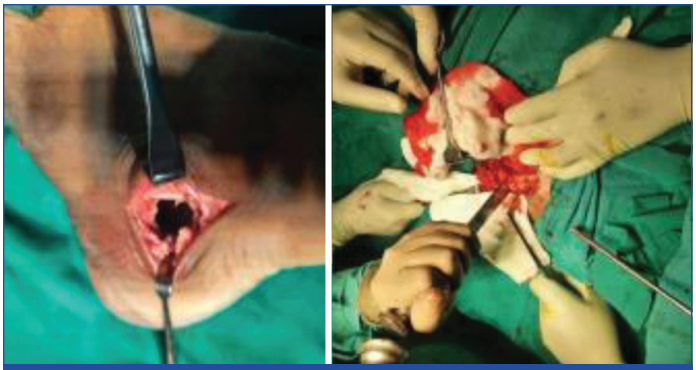


[Table/Fig-1]: X-ray LAT view of right calcaneus showing expansile, eccentric, lytic lesion with a non sclerotic rim (green arrow).



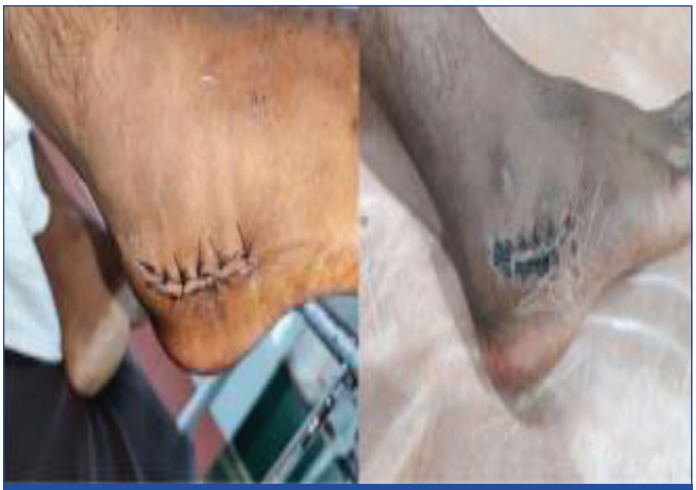
[Table/Fig-2]: MRI showing a clear hyperintense lesion with cystic components bordering the medial and posterior sides of the calcaneus and also had hypointense margins and just a small zone of transition (Green arrow).

Surgery was performed. The tumour was medially positioned; thus, we approached the calcaneus from the lateral side. With a mechanical burr, the lesion was removed. The defect was filled with autografted bone from the iliac crest, and the calcaneus bone defect was filled with grafted bone [Table/Fig-3]. During surgery, the lesion was well-defined, firm, and greyish. The tissue was sent for histopathological examination. Histological samples revealed the usual multinucleated giant cells on a mononuclear stromal cell surface that are indicative of giant cell tumours. The patient was discharged from the hospital on the seventh day after the procedure. For six weeks, the patient was placed on a plaster slab below the knee. After six weeks, gradual weight bearing was initiated.

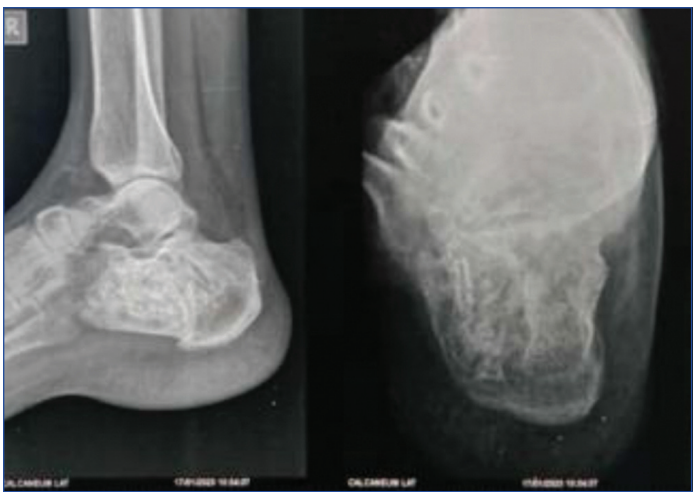


[Table/Fig-3]: Excisional biopsy and bone grafting.

For a year, every three months, then every six months, the patient has to visit the hospital for a regular check-up. The patient was mobile and doing day to day activities very well and almost symptom-free at the two year follow-up [Table/Fig-4], and radiographs revealed no sign of a recurrence [Table/Fig-5].



[Table/Fig-4]: At two year follow-up a cured surgical scar and a static local site.



[Table/Fig-5]: At two year follow-up there was no sign of a recurrence.

DISCUSSION

The GCT is a primary bone tumour that occurs most frequently in the skeleton of adults, accounting for five percent of all primary bone tumours [1]. As shown in our patient, solitary GCT of the foot often affects people in their early 30s to early 40s and is more aggressive than GCT of long bones however, GCT can occur at an unusual age according to Batheja D et al., [2]. Given that it only accounts for 1.2% of calcaneal tumours, GCT of the calcaneus is an uncommon presentation [3]. GCT can also occur in talus which is a rarer presentation according to studies done by Minhas MS et al., and Goldenberg R et al., [4,5]. Clinically, GCT typically manifests with vague symptoms such as gradually developing localised pain, warmth, and oedema at the affected location, which might first be misinterpreted for a chronic sprain, as it was in our case [4]. A clear-cut, eccentric in location, osteolytic, and somewhat expansile lesion in the long bones seen in radiographs. It typically affects the metaphysis and diaphysis, but following physeal closure, it spreads to affect the epiphysis and joint space. Although pathological fractures may be detected, sclerotic rims are often absent [6]. Examples of aggressive features that GCT may exhibit include a transitional zone of transition, cortical thinning or extension, cortical bone loss, and an associated soft tissue mass. Fluid levels were seen on MRI in 1.4 percent of instances, consistent with the subsequent creation of aneurysmal bone cysts [7]. According to the Campanacci staging grading system and based on radiographic appearance, GCT can be classified into three grades: Grade-1 lesion (latent phase), which has a well-defined margin and an intact cortex considered as mild; Grade-2 lesion (active phase), which is moderately expansile, has a relatively well-defined margin and a thin cortex considered as moderate; and Grade 3 lesion (aggressive phase), which have a distorted border and cortical destruction considered as severe, in our case it is of Grade-2 [8]. Out of all primary bone tumours, GCT accounts for 5% and 20% of the benign skeletal tumour. In the third decade of life between 20-50 years of age the prevalence of GCT increases and accounts for 80% [9]. GCT exhibited a 20-40% recurrence potential, a 3% malignant transformation potential, and a 2% metastasis potential, particularly to the lungs [1,9-11]. For a good prognosis, surgical management, ongoing radio and chemotherapy has to be planned; it, therefore, calls for an accurate preoperative diagnosis and the visualisation of lesion expansion and distant metastases. When possible, conservative surgery should be considered the treatment of choice, including the intralesional type of curetage and the implantation of bone cement. Aggressive GCTs, however, could need for extensive excision, secondary reconstruction, or even amputation. Because of the high likelihood of recurrence and danger of malignant transformation and distant metastasis, early identification and treatments are therefore necessary, and these patients should be monitored on a frequent basis. Despite the fact that physical examinations and symptoms of ankle pain and swelling are usually non specific, physicians may misdiagnose patients with less severe conditions like plantar fasciitis, chronic ankle sprains, calcaneal apophysitis, or fractures. [12,13]. For early and correct diagnosis, a thorough history, physical examination, and radiograph should be provided to any patient who has foot discomfort and swelling.

CONCLUSION(S)

Giant Cell Tumour of the calcaneus is an uncommon condition that manifests as heel discomfort and swelling. Although it typically occurs in the fourth decade of life, it can also appear at odd age ranges, as was the case in our instance. A thorough preoperative workup, including a biopsy, is necessary, and the surgeon must be highly aware to find unusual tumours in unexpected places. Giant cell tumours of the calcaneus are associated with high rates of recurrence and may exhibit aggressive behaviour. Early detection and treatment can prevent local tumour spread and delay invasive operations like amputation and calcaneoplasties. Close follow-up is necessary to identify recurrence or metastasis, if any, at an early stage.

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