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A Rare Case of Giant Cell Tumour (Osteoclastoma) of 2nd Metatarsal - Case Report

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Abstract: ***Introduction: Giant cell tumour (GCT) is a benign osteolytic, locally aggressive lesion. Seen in young adults at the epiphysis. The most common site is long bones (85 - 90%). GCT of the metatarsal in elderly patients is very rare. Case Report: A 21 - year - old female came with complaints of pain and swelling over right foot dorsal aspect since for the last past 8 months. There was no history of trauma. X - ray foot showed an osteolytic lesion in the right third metatarsal with thinning of the cortex. MRI and fine - needle aspiration cytology confirmed the diagnosis of GCT. The patient was managed by excision with the 2nd ray amputation. At present, 1 years follow - up, the patient is having no pain, difficulty in walking and no evidence of clinical and radiological recurrence. Conclusion: Giant cell tumours could also present at uncommon sites, and they should be considered in the differential diagnosis of lytic lesions of the metatarsals. Excision with ray amputation of the involved metatarsal helps in complete removal of the lesion and helps in early weight bearing. This is the viable alternative treatment option in managing the metatarsal GCT in elderly patients.***

Keywords: Giant cell tumour, second metatarsal, ray amputation

1. Introduction

Sir Astley Cooper first described the giant cell tumor (GCT) in 1818. GCT of the bone is a benign lesion with local aggressiveness and tends to recur locally. In the epiphysio metaphyseal region, 20–40 years old is the average age of presentation. Widely prevalent in long bones, with 50% of cases occurring in the proximal tibia and distal femur region. Distal radius, proximal humerus and fibula are the other common locations. GCT of the foot and hand is rare, comprising about 1.5% and 2% respectively (1). Compared to lesions of the long bones, these hand and foot GCTs show distinct lesions (2). The diagnosis of foot GCT patients is typically delayed or made late because their symptoms are ambiguous. The radiographic characteristics of the foot and hand GCTs are non - specific, and the X - ray of the bone reveals an eccentric lytic lesion without any periosteal reaction (3). Using magnetic resonance imaging (MRI), it is possible to determine the precise location, the degree of involvement, and to distinguish GCT from other lesions. The importance of histopathological analysis is necessary for the diagnosis to be confirmed. Curettage and bone grafting, radiotherapy, amputation, and resection with reconstruction are some of the treatment options for the management of GCT. The preferred approach for the GCT is aggressive curettage or en block resection due of the high local recurrence rate.

2. Case Report

A 21 year female presented with complaints of pain and swelling over the dorsum of the right foot for the past 8 months. The patient was apparently normal 8 months back after which she started observing swelling which was insidious in onset and it gradually progressed. There was no history of any trauma, fever, loss of weight or appetite and no evening rise of temperature. There was no history of previous surgeries. On examination the swelling was oval in shape, approximately measuring 5*4cms on the dorsum of the right foot was noticed opposing 2nd, 3rd and 4th metatarsals with well defined margins (fig.1). The skin over the swelling was not tethered to underlying swelling and was firm in consistency. Tenderness was present with no signs of inflammation.

An expansile osteolytic lesion in the second metatarsal of the right foot was seen on radiographs, preserving the proximal third of the bone. The metatarsophalangeal joint was involved (fig.2). An MRI of the foot revealed an intra - articular extension and a well - defined expansile, solid cystic lesion with an approximate dimension of 5.1*4.1*3.1 cm that emerged from the medullary cavity and head of the second metatarsal. Cytology from a fine - needle aspiration was indicative of GCT. As the patient was young and wanted early weight bearing, we planned for excision with 2nd ray amputation.

The patient was operated under spinal anesthesia, in the supine position. The incision wastaken over the dorsum of the foot over 2nd metatarsal. Soft tissue was dissected and extensor tendons were separated, GCT mass was identified and was removed along with the 2nd metatarsal sparing proximal 1cm without disturbing tarsometatarsal joint (fig, 3). Excised Specimen was measuring approximately about 5*5 cm which was sent for histopathology examination (Fig.4). Hemostasis was achieved and the wound was closed in layers (fig.5).

In the post operative phase x - ray was done and showed complete removal of the tumor with 2nd ray amputation (fig.6). On histopathological examination, the tumor was confirmed to be GCT (fig.9). Post - operative period was uneventful, weight bearing was started after 3 weeks of surgery. At present, 1 years follow - up, the patient is comfortable with no pain and difficulty in walking (fig.7).

Follow - up X - ray showed no recurrence with no other lesions (Fig.8).

3. Discussion

GCT is a benign, locally aggressive bone lesion. Stromal cells and multinucleated giant cells make up its composition (4). The metatarsal bones' GCTs more aggressiver than those of the other bones. The primary symptom of metatarsal GCT is pain, which is comparable to the symptom of conventional GCT observed elsewhere. The swelling is hard, non - mobile and on X - ray, it appears as expansile lytic lesion with the thinning of cortex. Our patient had all these characteristic features. It usually occurs in young adults of 20–40 years in the epiphysio metaphyseal region.

GCT primarily affects the long bones (75–90%), particularly the upper and lower ends of the tibia and femur. Distal radius and humerus are some additional frequent locations. GCTs of the hand and foot bones are uncommon, with foot lesions being even more uncommon than hand lesions. The clinical characteristics of lytic lesions on the foot are frequently variable, making diagnosis challenging. When diagnosing the GCT, the differential diagnoses should be taken into consideration. The brown tumour of hyperparathyroidism, giant cell reparative granuloma, chondromyxoid fibroma, aneurysmal bone cyst, angiosarcoma, myeloma, and an expansile metastatic lesion like renal cell carcinoma can all resemble GCT. The many treatment options include resection with reconstruction, irradiation, amputation, curettage and bone grafting (2, 5, 6, 7). Differentiating GCT from other lesions is aided by clinical characteristics including age and length of symptoms as well as radiological findings like location, depth of the tumour into surrounding soft tissue, and lack of periosteal response. It is possible to rule out tuberculosis if there is no history of fever, weight loss, anorexia, or a negative reaction to antitubercular therapy. An aneurysmal bone cyst typically appears as a hard, slowly growing mass in the second decade. Giant cell reparative granuloma is a rare benign intraosseous reactive lesion that typically develops in the metatarsal. Its radiological and histological characteristics may resemble those of GCT. The clinical nature of the GCT of the metatarsal bone is determined by the limited space on the dorsum of the foot, and the common finding is the soft - tissue swelling.

Prashant et al. reported metatarsal GCT case which was managed with excision and reconstruction using fibula autograft with good outcome (8). The above mentioned approach is challenging to employ on senior patients because of underlying comorbidities; it may result in delayed union, nonunion, or fracture at the graft site, which may necessitate further procedures down the road; and it also delays weight - bearing. We performed excision with 2nd ray amputation because our patient was young who wanted to begin weight bearing as soon as possible, and it was successful. The procedure's cosmetic drawback shouldn't pose a serious problem when treating GCT patients because it is not a serious issue.

4. Conclusion

It is important to take GCTs into consideration when making a differential diagnosis for lytic lesions of the metatarsals because they may also manifest at unusual places. Excision combined with ray amputation of the affected metatarsal aids in the full elimination of the lesion and promotes early weight - bearing. This is an effective alternate method of treating older adults with metatarsal GCT.

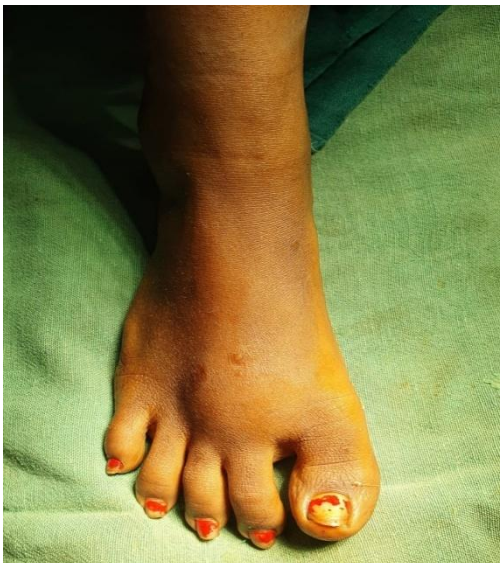

Figure 1: Pre - operative clinical image

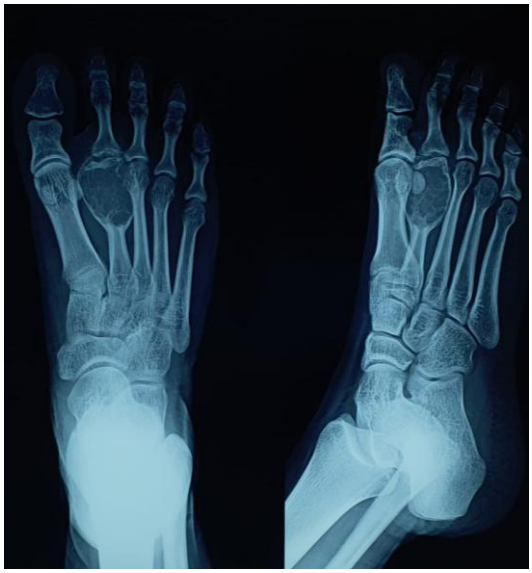

Figure 2: Pre - operative X - ray showing lytic lesion in the 2nd metatarsal

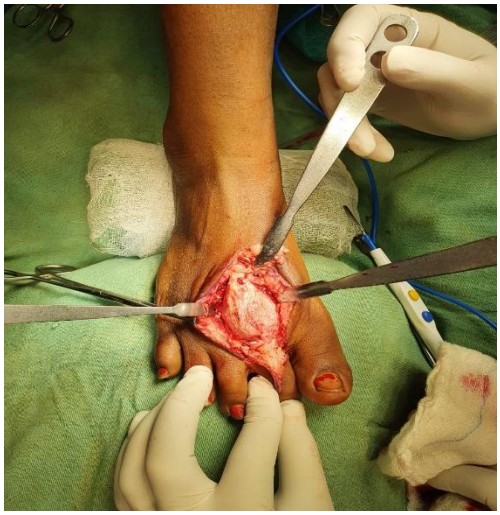

Figure 3: Intraoperative picture showing the tumor mass after superficial dissection and 2nd toe removal.

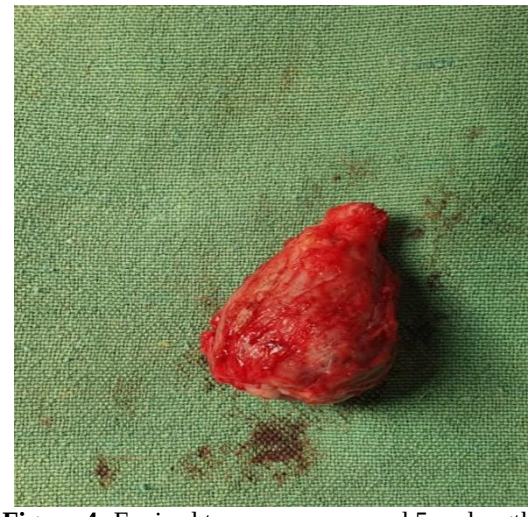

Figure 4: Excised tumor mass around 5cm length

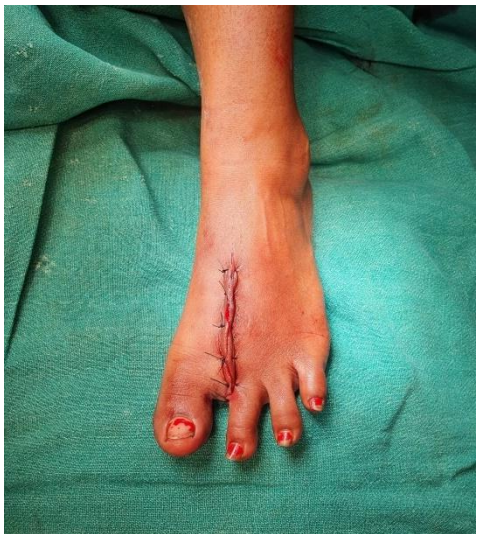

Figure 5: Wound closure

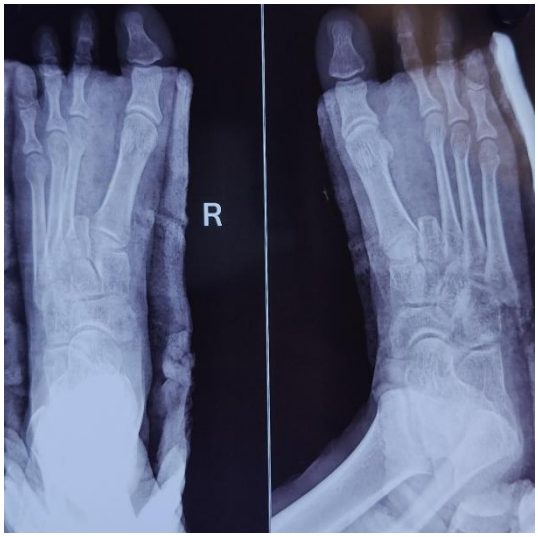

Figure 6: Immediate post operative x - ray

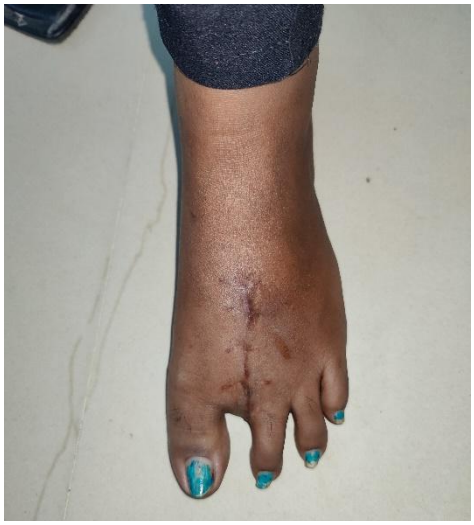

Figure 7: Follow up clinical photo

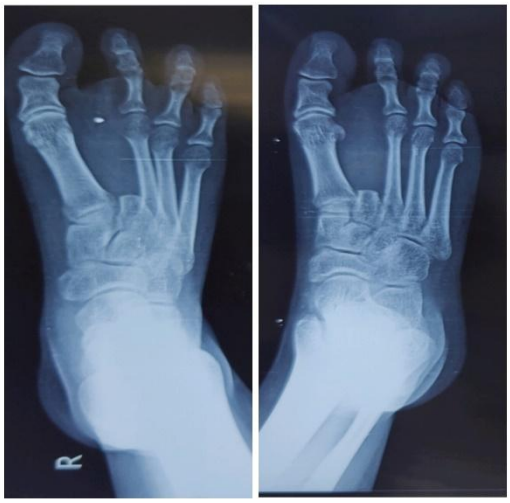

Figure 8: Follow up X - ray

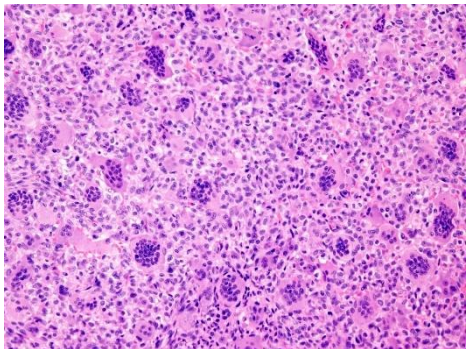

Figure 9: Histopathological picture: GCT

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