Giant Cell Tumour of Third Metacarpal: A case report

Parveen Garg MS*, Sonam Kaur Walia MBBS**, Baljit Singh MS***, JPS Walia****

* Consultant, Narain Hospital, Patiala
** JR., Department of Radiology, Rajindra Hospital, Patiala
*** Assistant professor, Guru Ram Dass Medical college, Amritsar
**** Professor, Department of Orthopedics, Rajindra Hospital, Patiala

ABSTRACT

We report a rare case report of Giant Cell Tumour (GCT) arising from third metacarpal in an eighteen years old female treated with enbloc resection and fibular graft. Only 2% of Giant Cell Tumour occur in the hand. Metacarpal involvement is much less common than a phalangeal one.

Keywords: Giant Cell Tumour, fibular graft, metacarpal.

INTRODUCTION

Giant cell tumour or osteoclastoma is a benign, locally aggressive tumor with a high tendency for local recurrence. It occurs during the second and third decade of life.

85-90% of cases occur in long bones. Only 2% of giant cell tumors occur in the hand and very rarely in metacarpal. We report a giant cell tumor in the third metacarpal which is a rare site.

CASE REPORT

An 18 year old student came to us complaining of swelling over the third metacarpal of right hand for last 6 months. The swelling was sudden in onset and progressive in nature. Occasional pain was present over the swelling. On examination the swelling was firm in consistency and was confined to 3rd metacarpal bone. The overlying skin was normal. There was no history of trauma or any other constitutional symptoms. The X-ray revealed a soap bubble appearance suggestive of giant cell tumor involving the 3rd metacarpal bone (Figure 1).

Fine needle aspiration cytology was carried out, which suggested the diagnosis of giant cell tumor. Enbloc resection of distal metacarpal containing the tumor was done and sent for histopathological examination (Figure 2).

The defect was reconstructed with a fibular graft taken from the left leg after fixation with a K-wire. (Figure 3).
The patient was given POP back slab both in the hand as well as the left leg for three weeks. Histopathological examination showed a well vascularised, highly cellular tissue consisting of sheets of mononuclear stromal cells having pleomorphic vesicular nuclei and multinucleated giant cells.

The patient was kept under regular follow-up. The graft was fully taken up after six months. Till five years of follow-up there has been no sign of recurrence both clinically and radiologically. Functionally palmer flexion was full with 5\(^\circ\) - 7\(^\circ\) extension lag. (Figure 4)

**Figure 3: Reconstruction of defect with fibular graft**

**Figure 4: Clinical function of the hand**

**DISCUSSION**

Cooper\(^3\) first reported giant cell tumors in the 18\(^{th}\) century; in 1940, Jaffe and Lichtenstein defined giant cell tumor more strictly to distinguish it from other tumors. Giant cell tumors usually occur de novo but may also occur as a rare complication of Paget disease of the bone. Giant cell tumor arises from the epiphysis and metaphyseal involvement may occur in skeletally immature patients. Another theory states that it arises from the metaphysis and extends into the epiphysis as the skeleton gets matured.

Giant cell tumor occurs in age group of 20-40 years. The incidence peaks in 20-30 years. Giant cell tumors are much less common in children; the rate is 5.7\% in skeletally immature patients. There is a distinct female predominance, the ratio ranging from 1.3 to 1.5.

Giant cell tumors are mostly solitary, and multicentre in 1-2\%. 85-90\% of the cases occur in the long bones, the sites most commonly affected being the lower end of the femur, upper end of the tibia, the lower end of the radius. Spine involvement is rare except for sacrum.

In most patients, giant cell tumors have an indolent course, but they can recur locally in as many as 50\% of cases. GCT is malignant in less than 5\% of patients. They may be either primary occurring from the lesion or may be secondary following treatment particularly radiotherapy.\(^2\)

X-rays are diagnostic. The lesion is purely lytic, expansile, soap bubble in appearance and eccentrically located in epiphysis of long bones. Periosteal reaction is seen in case of pathological fracture.\(^6,7\) CT-scans helps to determine exact amount of cortical destruction, joint surface and determine the optimal location of the cortical window. MRI determines the extent of lesion in the bone and in soft tissue.

Microscopically GCT is composed of multinucleated giant cells, 40-60 nuclei per cell in a sea of mononuclear stromal cells. Areas of storiform spindle cell formation, reactive bone formation of foamy macrophages may be seen. Secondary aneuysmal bone cyst may be present.

The various treatment modalities described in literature are simple curettage, curettage with bone grafting, enbloc resection with reconstruction of joint surface using silastic prosthetic implants, amputation, arthrodesis, radiotherapy, chemotherapy & embolization. The use of intraoperative cryogenic agents like 10\% phenol, hydrogen peroxide, liquid nitrogen, electrocautery, argon beam coagulator, warm saline or heat of methyl methacrylate packing has reduced the recurrence rate upto 10\%.

The metacarpophalangeal joint reconstruction can be achieved by metatarsal substitution with a combined iliac crest graft, nonvascularised fibular graft, silastic prosthetic replacement. In our case we performed a local resection followed by reconstruction using fibular graft.

**REFERENCES**