GIANT CELL TUMOR OF DISTAL END ULNA TREATED WITH RESECTION WITHOUT RECONSTRUCTION- A CASE REPORT

Sharma Gaurav Mahesh¹*, Naik Lokesh Gudda², Qureshi Faisal³, Badgire Krishna Sudhakar⁴, Waghchoure Chaitanya⁵, Relwani Nisha⁶

Abstract

Giant cell tumor or Osteoclastoma is a locally aggressive benign tumor accounting for 3%-5% of all the primary bone tumors. This tumor usually affects distal femur, proximal tibia or distal radius. Case- A 32 year old female presented to the OPD with gradually increasing swelling at distal end of ulna. After through clinico-radiological examination, a diagnosis of Enneking grade 3 giant cell tumor of distal end ulna was made which was treated with En block Excision. Conclusion- Giant cell tumor of distal end ulna is a rare entity which can be successfully treated with En block excision without the need for reconstruction. This tumor has a good prognosis with no recurrence and complete functional recovery can be achieved when diagnosed at an early stage.

Author Affiliations:
1-5 Department of Orthopaedics, Sir HN Reliance Foundation Hospital, PrarthanaSamaj, Girgaon-400004, Mumbai, Maharashtra, India.
6 Department of Community Medicine, MGM Medical College, Navi Mumbai, Maharashtra, India.

Keywords: Giant Cell Tumor, Reconstruction, Distal ulna

*Corresponding Author:
Dr. Sharma Gaurav Mahesh
Clinical Associate, Department of Orthopaedics,
INTRODUCTION

Giant cell tumor or Osteoclastoma is a benign but locally aggressive tumor, accounting for 3%-5% of all the primary bone tumors \(^1\). It has predilection towards the meta-epiphyseal region, with majority of the times affecting the distal femur and proximal tibia. Distal end of ulna is one of the rare sites accounting for 0.45%-3.2\% \(^3\). There is high rate of local recurrence if not treated effectively. The goal is to achieve a thorough excision with or without reconstruction to curtail the incidence of recurrence and metastasis. The incidence of distant metastasis to long bones, lungs, brain, viscera, spine, lymph nodes is usually <2\% \(^4\). We hereby report a rare case of giant cell tumor at distal end of ulna.

CASE REPORT

A 32 year old right hand dominant female, homemaker by occupation presented to the outpatient department in May 2014 with complaints of swelling over Left wrist since past 10 months. The swelling was insidious in onset and gradually progressive in nature. It was associated with dull aching pain which was intermittent and aggravated on terminal range of movements at left wrist joint. There was no history of past medical or surgical illness associated with the same. The general and systemic examination was within normal limits.

On Local examination, there was a 5 x 3cm swelling over the dorsal aspect of distal ulna. The skin condition was normal and elastic with no local rise of temperature, scar, sinus or dilated veins. The swelling was ill-defined and was tender only on deep palpation. The swelling was not adherent to the skin but to the underlying bone. The range of movements was Flexion of 50 degrees, extension of 30 degrees, radial and ulnar deviation of around 10 degrees each at Left wrist joint. The pronosupination and elbow movements were possible but painful. There was no distal neurovascular deficit associated.

Radiologically, there was an expansile radiolucent lesion with ballooning of the cortex and soap bubble appearance without
periosteal reaction at the distal end of ulna (Fig. 1). Magnetic resonance imaging revealed a heterogenous intensity with an expansile lesion extending at the epiphyseo-metaphyseal junction. The cortical margins were thin and there was a combination of solid and cystic areas. The distal radioulnar joint was involved. On the basis of clinico-radiological co-relation, a diagnosis of Giant cell Tumor was made. It was a stage 3 tumor as per the Enneking’s classification for Benign musculoskeletal tumors, indicating a locally aggressive lesion. There was no distant metastasis elsewhere in the body.

Considering the staging and anticipated local aggression, a decision of en-bloc resection was planned. Well written informed consent was obtained from the patient after explaining her in detail.

**Surgical Technique**

Under General anaesthesia combined with interscalene block, the left upper limb was prepared. Tourniquet was inflated at 200mm of Hg without exsanguinating the upper limb. The distal ulna was exposed using the dorsal approach starting from the ulnar styloid proximally. The plane between extensor and the Flexor carpi ulnaris were identified and isolated. En-block extra-periosteal excision of the tumor along with 3cm of normal bone was done. The cut ends were curetted and freshened. Thus, 8cm of distal ulna along with the triangular fibrocartilagenous complex, ulnar attachment of the pronator quadratus and the distal radio-ulnar joint capsule was excised in total (Fig. 2). Since the distal end of the ulna was found to be stable, no further reconstruction was attempted. Meticulous closure was done. The specimen was sent for histopathology which showed presence of multinucleated osteoclast type giant cells, thus confirming the diagnosis of giant cell tumor.

**Figure 1:** Pre-operative X ray
Giant Cell Tumor of Distal end Ulna treated with Resection without reconstruction- A Case Report

Discussion

Giant cell tumor or osteoclastoma accounts for 3%-5% of all the primary bone tumors in the body affecting majority of the young adults between 20 and 40 years of age with more propensity towards female gender \[3,6\]. Till date, there has not been any general consensus regarding the treatment guidelines, due to its locally aggressive nature.

The treatment of tumor involves a multimodal approach. Although medical management has limited role, Denosumab which acts as a RANKL inhibitor, has been used recently for the management of inaccessible tumors \[2\]. Surgical options includes curettage alone, curettage augmented with adjuvants like phenol, liquid nitrogen, high speed burr, hydrogen peroxide, polymethyl methacrylate, bone grafting and cryotherapy with varying results \[3,7\]. Although Intralesional curettage without or without adjuvants provides good local control, the rate of recurrence can vary between 12-27\% \[8\]. En-bloc excision holds to be a good surgical option with recurrence rates as low as 0-12\% \[9,10\]. However, it involves major resection of the pathology which can lead to further compromise in joint function and instability.
Distal end of ulna has important anatomical attachments which includes pronator quadratus muscle, Triangular fibrocartilaginous complex and distal radio-ulnar joint capsule, all of which helps in maintaining the stability of the wrist joint. Excision at this level can lead to disturbances in the biomechanics of the carpal bones along with DRUJ instability. The resection of Pronator Quadratus muscle at a lower level can cause impingement symptoms between distal radius and ulna, whereas higher level resection is associated with instability and dorsal prominence of the ulnar stump [11]. There have been various procedures described to alleviate these issues. Hashizume et al [12], described an ulnar buttress arthroplasty for reconstruction after resection of distal ulna. Kayias and Drosos [13] mentioned that the instability of DRUJ can be successfully avoided by the use of Extensor carpi ulnaris tenodesis while Kessler and Hecht [14] used Flexor carpi ulnaris tenodesis procedure in patients with Rheumatoid arthritis with distal ulnar subluxation. A combination of distally based FCU and proximal based ECU to achieve static as well as dynamic stabilization has been mentioned by Breen and Jupiter [15] with good results.

There have been studies with En block resection of the distal ulna without reconstruction. Cooney et al [16] in their series of 3 malignant and 5 benign tumors showed that the routine concept of reconstruction following excision of distal ulna is not necessary. They had excellent functional results in 6 out of 8 patients with an average follow-up of 7.5 years and ulna resection upto 9cms. Wolfe et al [17], in their retrospective analysis of 12 patients with distal ulna excision concluded that wide excision without reconstruction is a predictable and durable alternative to variety of disabling conditions of distal radio-ulnar joint. Dhillon et al [11] operated 4 patients with giant cell tumor of distal end ulna with a mean follow-up of 9 years with En block excision without reconstruction. They had excellent outcome in 75% of their patients with no functional impairment or recurrence. The functional outcome was excellent in our case.

Less duration of follow-up can be attributed as the limitation of the present case report.

**CONCLUSION**

Although no definitive conclusions can be derived from the present case report, we are of the opinion that En block excision for distal
ulna as long as 8-9 cm can be performed without the necessity for reconstruction based on the present review of literature and our experience.

Conflict of Interest Statement-
There is no conflict of interest.

Informed consent was taken from both the patients.

REFERENCES:


