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Giant Cell Tumour of the Distal Ulna: A Case Report

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Abstract
Introduction: *Giant cell tumour (GCT) in distal ulna is a rare site. GCT is a benign and locally aggressive tumour. Generally occurs in adults between the ages of 20 and 40 years. This is very unusual, with a reported incidence of 0.45 to 3.2%. A few cases of GCT distal ulna have been described in the literature. Here, we report a case of GCT at unusual site.*
Case Presentation: *A 17-year-old female presented with a painful swelling of the right wrist with painful wrist movement. That case was diagnosed as GCT of distal ulna after proper investigation. The tumor was treated with marginal resection with chemical cauterization and restoration and fixation of TFCC to distal end of radius with help of ethibond and k-wire, below elbow pop slab was given and K-wire was removed after 6 weeks.*
Conclusions: *GCT of distal ulna is a rare occurrence. This tumour may have a good prognosis if it is diagnosed early and radically treated. Excision of mass gave us excellent result. Excision biopsy confirmed the diagnosis.*
Keywords: *Adjuvant therapy, Curettage, GCT, Phenol, Ulna.*

Introduction

Giant cell tumour (GCT) of bone is benign and locally aggressive tumour. It represents approximately 3% to 5% of all primary bone tumour. It generally occurs in adults between the ages of 20 and 40 years. GCT of bone is very rarely seen in children and in adults older than 65 years of age. GCT occur in approximately one person per million per year. Usually, the tumour site is at the long bone meta-epiphysis, especially the distal radius, femur and proximal humerus, tibia. The distal ulna is an unusual site (0.45% to 3.2%) for a primary bone GCT.[3],[4],[5] We report the case of a distal ulna GCT diagnosed in a 17-year-old female. It was treated with marginal resection, chemical cauterization with 5% phenol and restoration of TFCC to distal end of radius with help of ethibond and k-wire fixation. Wrist was immobilized with below elbow pop slab. K-wire removed after 6 weeks and wrist mobilization was started.

Case presentation

A 17-year-old women presented with approximately a two month history of palpable, firm and localized pain full swelling on distal ulna of right upper limb, [fig1,2]. The lesion have increased in size over the last two months.

Initially pain was intermittent and with time passes pain become continuous. There was no history of any associated trauma in past. Her family history and past medical history were unremarkable.

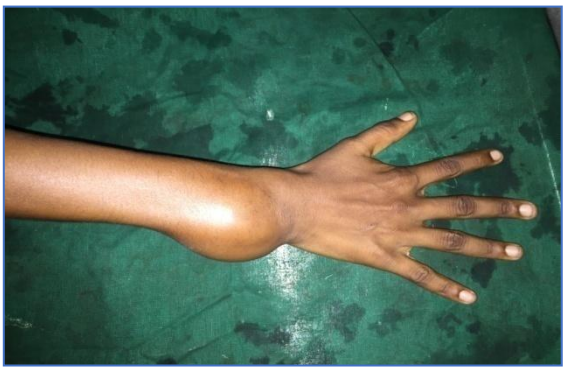


Fig.1

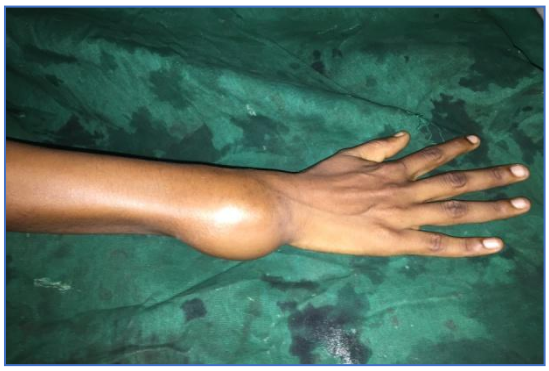


Fig.2

(Pre Operative Lesion)

The swelling was visible & palpable around distal forearm. No limitation of any of wrist movement except some degree of supination and pronation was observed. Laboratory tests were within normal ranges. Wrist xray showed an ecceneric, expansile, multilobular, and radiolucent lesion with a clear margin, so-called soap-bubbled appearance lesion at the distal end with absence of periosteal reaction, [figure 3]. Other X-rays including chest showed no abnormality. Magnetic resonance image (MRI) showed a low intensity in T1 weighted image and a relatively high intensity in T2 weighted image, [figure 4,5,6,7].

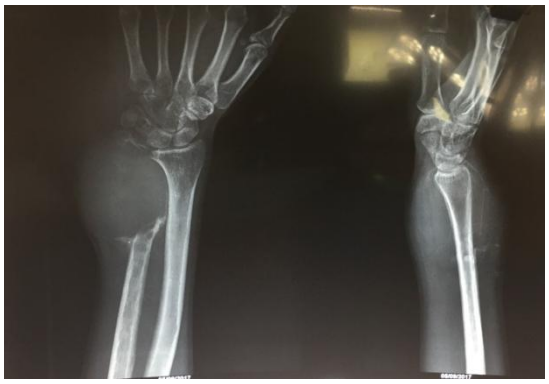


Fig.3 (Pre-OP X-Ray)

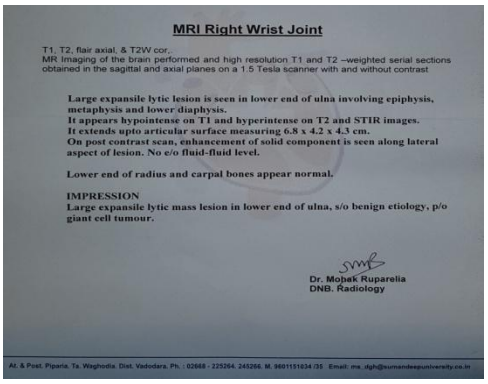


Fig. 4 (Pre-OP MRI Report)

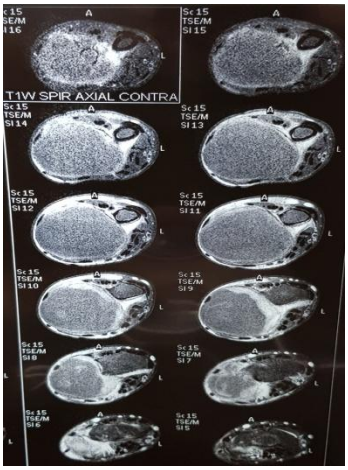


Fig. 5

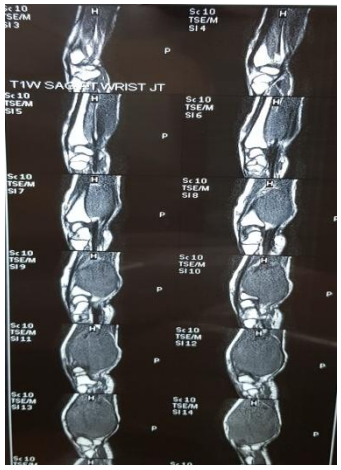


Fig. 6

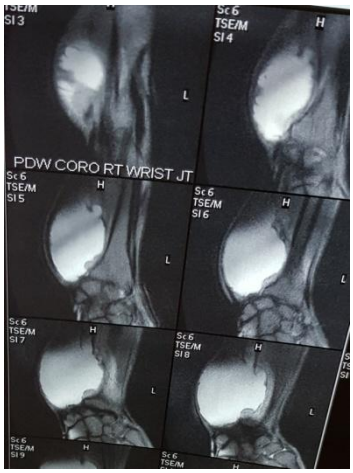


Fig. 7

(Pre-OP MRI Films)

So in planned operation theatre marginal resection, chemical cauterization with 5% phenol and restoration of TFCC to distal end of radius was done with the help of ethibond and k-wire fixation, [figure 8]. Resected materials was send for biopsy [figure9,10].

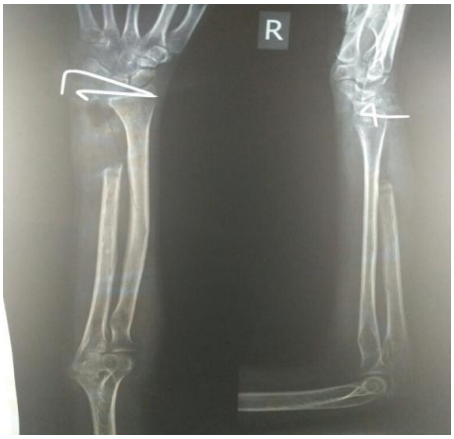


Fig. 8
(Immediate Post-OP X Ray)

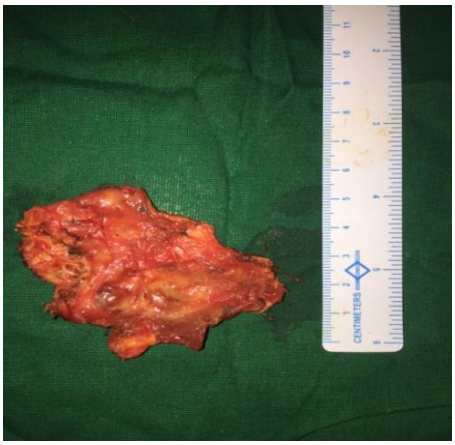


Fig. 9

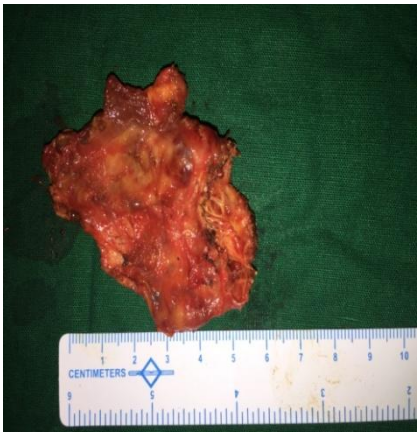


Fig. 10
(Ressected Mass Sent For Biopsy)

Histopathological findings showed mononuclear cells ranging from small round to spindle with pale cytoplasm. There was presence of osteoclastic giant cells, fibroblastic proliferation was also seen and all features suggestive of GCT, [fig.11,12].

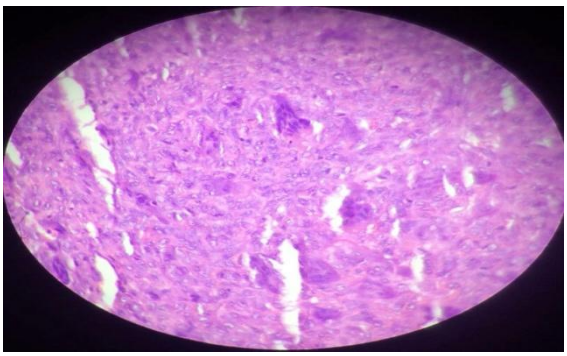
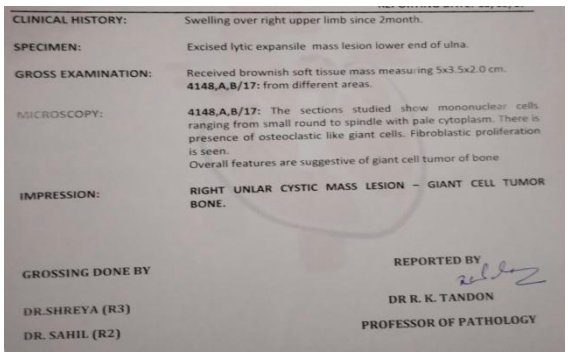


Fig. 11



CLINICAL HISTORY: Swelling over right upper limb since 2month.

SPECIMEN: Excised lytic expansile mass lesion lower end of ulna.

GROSS EXAMINATION: Received brownish soft tissue mass measuring 5x3.5x2.0 cm. **4148,A,B/17:** from different areas.

MICROSCOPY: **4148,A,B/17:** The sections studied show mononuclear cells ranging from small round to spindle with pale cytoplasm. There is presence of osteoclastic like giant cells. Fibroblastic proliferation is seen.
Overall features are suggestive of giant cell tumor of bone

IMPRESSION: RIGHT UNLAR CYSTIC MASS LESION – GIANT CELL TUMOR BONE.

GROSSING DONE BY
DR.SHREYA (R3)
DR. SAHIL (R2)

REPORTED BY
DR R. K. TANDON
PROFESSOR OF PATHOLOGY

Fig. 12

(Histopathology Slide and Report)

Based on these clinical and histological findings she is diagnosed with GCT of distal ulna. She has been followed up on 12 days of post op for suture removal then 2 months and last follow up on 6 months and her pain was relieved ,wrist movement was almost full, [figure 13, 14].

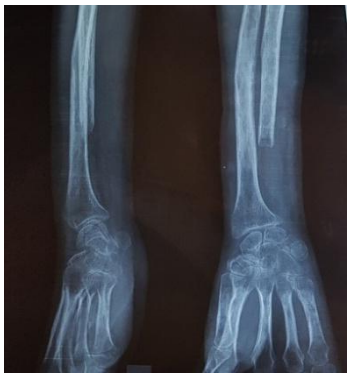


Fig. 13
(Final Follow up X-Ray)

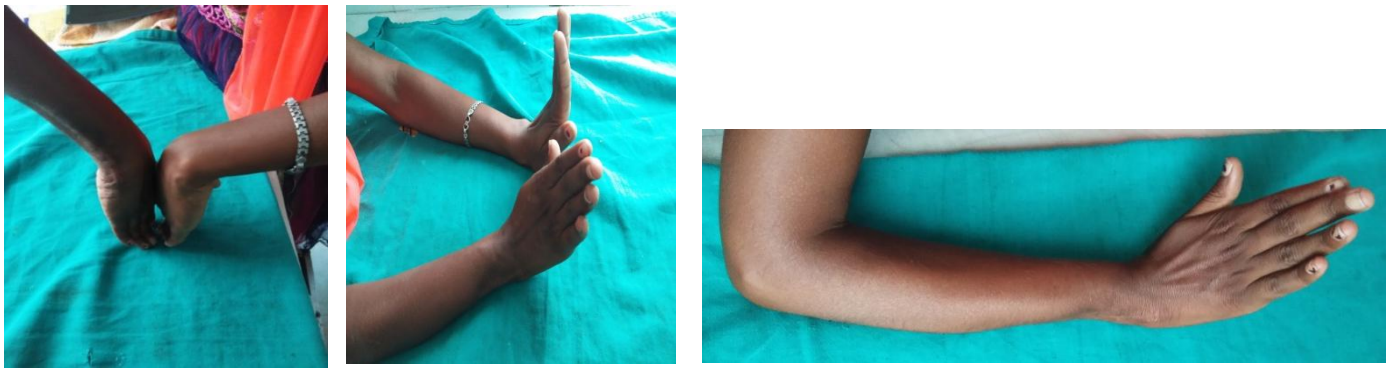


Fig. 14
(Final Follow up Clinical Pictures)

The GCT has since remained stationary. On the basis of clinical and radiographic evaluations, the lesion was graded as stage 2 as per the Enneking Staging system for benign bone tumour.

Discussion

The GCT was first described in 1818 by Cooper and Travers. Its local aggression has been highlighted by Nelaton and its malignant potential by Virchow. It is a rare tumour, essentially benign, but it may behave unexpectedly, regardless of the results of radiological or histological examinations. It is usually located in the long bone meta-epiphysis and it frequently involves the subchondral bone without involvement of the articular surface; however, larger tumours may extend into the metaphysis and, more rarely, into the diaphysis. Proximal tibia, humerus, distal femur and radius are typical sites.GCT represents about 3% to 5% of all bone tumours and 21% of benign bone tumours[1,2].

In 70% of cases, it involves women in the third to fourth decade of life. The distal epiphysis of the ulna is an unusual place for a primary bone GCT; in fact, this occurs in only 0.45% to 3.2% of all primary bone GCT's[3]. In the past, these tumours were treated with amputation or large resections and ulterior reconstructions. Currently, surgical treatments are:

- Intralesional curettage
- Curettage and bone grafting
- Cryotherapy of the cavity after curettage
- Application of phenol after curettage
- Radiation
- Insertion of methyl methacrylate cement in the cavity after curettage
- Resection followed by allograft En-bloc resection with or without reconstruction orstabilization of the ulna and prosthetic reconstruction
- Embolization of the feeding vessels

The variables related to the tumor, such as size, location, biological activity, cortical bone destruction or pathologic fracture evidence, determine the treatment [4]. Although an en-bloc resection radically assaults the tumour, significantly reducing the risk of recurrence, functional outcome is very bad. A simple curettage provides an excellent functional outcome, but with a higher recurrence rate of approximately 40%[1-5] if compared with the patients who received adjuvant therapy (45% versus 18%).Therefore, various adjuvant therapies have been associated with the curettage: phenol, cryotherapy[6-8], used intra-operatively. The recurrence rate ranges approximately 2.3% after cryo surgery[6,7].However, it needs to be mentioned that a multicenter study of the Canadian Sarcoma Group[9] reported an overall recurrence rate of 17% and claimed that the filling material or the type of adjuvant would not have an absolute impact on recurrence. Furthermore, some studies show that the use of an adjuvant would not be necessary in some cases, such as intraosseous GCT[10]. According to Schajowicz[11], curettage alone is an inadequate oncological procedure, but when it is combined with an adjuvant therapy, it globally provides a better result with respect to

one-block excision, especially in terms of functionality. Therefore, the correct treatment must achieve a balance between oncological radicality and the restoration of skeletal segment functionality [12-14]. Curettage associated with bone grafting has been shown to be effective in many cases[15]. In this study it is used with phenol as an adjuvant, because it is capable of causing protein and DNA coagulation, inducing cell necrosis. In the present case intralesional curettage was possible because the tumour was a grade III and the reconstruction was carried out with stability with TFCC.

Conclusions

Diagnosis of GCT is difficult and requires a great deal of experience, especially in young patients. Osteolytic lesions incidentally found at a long bone epiphysis, can be misinterpreted. This tumour may have a good prognosis if treated early and radically. It is important to know atypical locations of tumour in order to perform a proper diagnosis.

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