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Case Report

Management of a Case of Distal Ulna Giant Cell Tumor with Excision and Buttress Bone Grafting - A Case Report

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ABSTRACT

Giant cell tumor (GCT) of the distal ulna is an extremely uncommon entity. These tumors are generally managed by excision of the tumor without any reconstruction. Simple excision of the tumor mass without any reconstructive procedure leads to ulnar translation of the carpal bones and dynamic convergence of the ulna toward the radius. In our case, excision of GCT mass of the distal ulna in a 15-year-old boy was supplemented with reconstruction of the distal radioulnar joint by a 2 cm × 1 cm bone graft and tenodesis of extensor carpi ulnaris to the ulnar stump. The patient achieved painless range of motion of his wrist joint by 5 months without any post-operative complications.

Key words: Buttress bone grafting, Distal ulna, Giant cell tumor

INTRODUCTION

Giant cell tumor (GCT) of the bone is an uncommon, benign, locally aggressive tumor arising usually in the epiphyseal region. GCT of distal ulna is an even rarer disease (0.45–3.2% of all primary bone GCTs).[1] This case report is that of a 15-year-old boy with GCT of his right distal ulna which was treated with wide excision and reconstruction of the wrist with buttress bone grafting.

CASE REPORT

A 15-year-old boy came to the outpatient department with pain and swelling in his right wrist and distal forearm for 3½ months. The swelling 4 cm × 3 cm in size was initially small in size and had increased in size over the last 1 month. Standard anteroposterior and lateral radiographs showed an expansile osteolytic lesion in the distal ulna [Figure 1]. A magnetic resonance imaging was done, and the impression was that of an expansile lytic locally aggressive SOL of the distal ulna, suggestive of a GCT [Figure 2]. Fine-needle aspiration cytology was done from the swelling, and the features were suggestive of GCT [Figure 3].

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The tumor was approached through a dorsal incision [Figure 4]. Distal ulna including the tumor and 3 cm of normal bone were excised [Figure 5]. A 2 cm × 1cm iliac crest bone graft was harvested from the contralateral iliac crest. This graft was then fixed to the distal radius with two 4 mm cannulated screws [Figure 6]. The distal end of the remaining ulna was stabilized by tenodesis with the extensor carpi ulnaris muscle [Figure 7]. An immediate post-operative radiograph was obtained showing the graft being held in its place by 2 cannulated screws [Figure 8]. Post-operatively, the wrist was immobilized with a below elbow plaster of Paris slab for 2 weeks after which gentle range of motion exercises was started.

DISCUSSION

GCT of the bone is an uncommon, benign, locally aggressive tumor usually arising in the epiphyseal region.

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GCT of distal ulna is a rare disease (0.45–3.2% of all primary bone GCTs).[1]

Recommended treatment of GCT of expendable bones like the distal ulna is en bloc excision of the tumor without any reconstruction. As per the study by Jamshidi *et al*., for GCT of distal ulna, extended curettage with bone grafting is a better treatment modality when it is confined to the bone. When the tumor breaches the cortex, they recommend tumor resection without reconstruction.[2]

However, excision of the distal ulna may lead to wrist and forearm instability and dynamic convergence of the ulnar

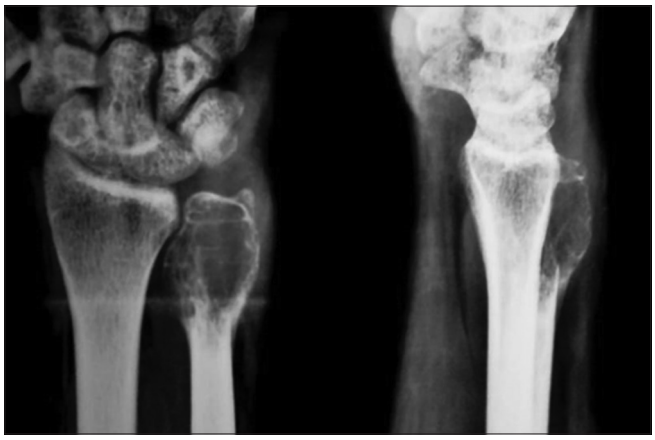


Figure 1: Anteroposterior and lateral radiographs showing an expansile osteolytic lesion in the distal ulna

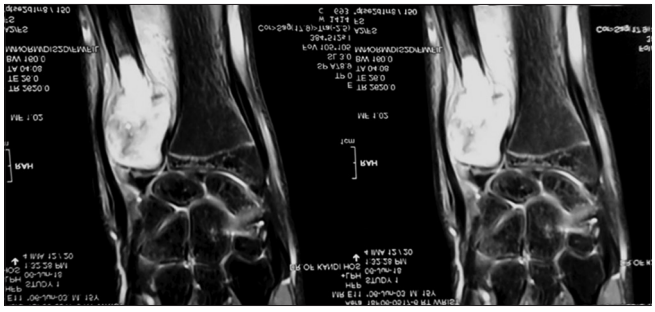
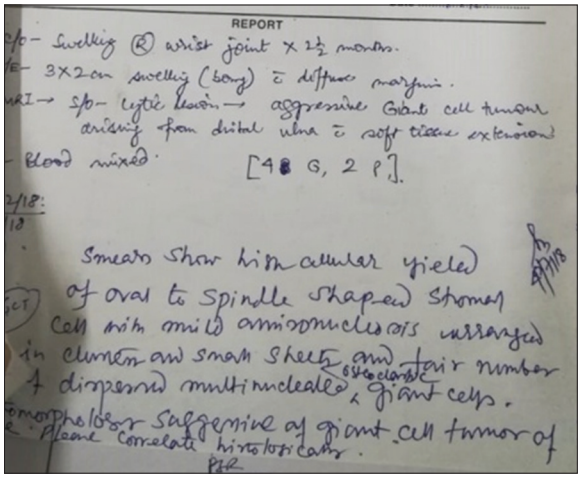


Figure 2: Magnetic resonance imaging showing an expansile lytic locally aggressive SOL of the distal ulna


REPORT

c/o- Swelling (R) wrist joint × 2½ months.

3×2 cm swelling (bony) ± diffuse margin.

MRI → s/o- lytic lesion → aggressive Giant cell tumour arising from distal ulna ± soft tissue extension

Blood mixed.

[48 G, 2 P].

Smears show hypercellular yield of oval to spindle shaped stromal cell with mild anisonucleosis arranged in clusters and sheets and their number ↑ dispersed multinucleated giant cells.

Morphology suggestive of giant cell tumor of bone. Please correlate histologically.

Figure 3: Fine-needle aspiration cytology report was suggestive of giant cell tumor

Figure 4: The tumor was approached through a dorsal incision

Figure 5: Distal ulna including the tumor and 3 cm of normal bone were excised

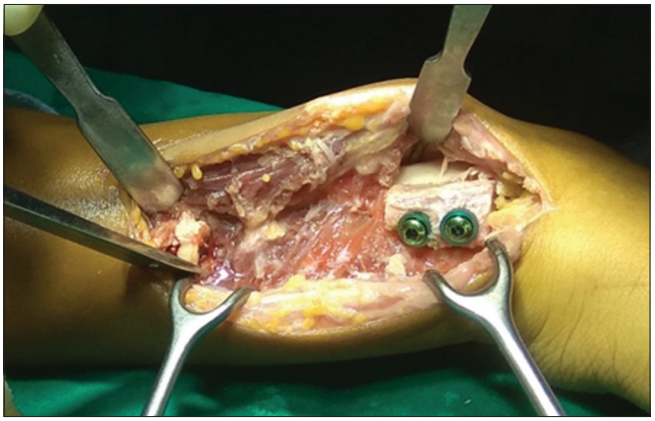


Figure 6: Bone graft fixed to radius with two 4 mm cannulated screws

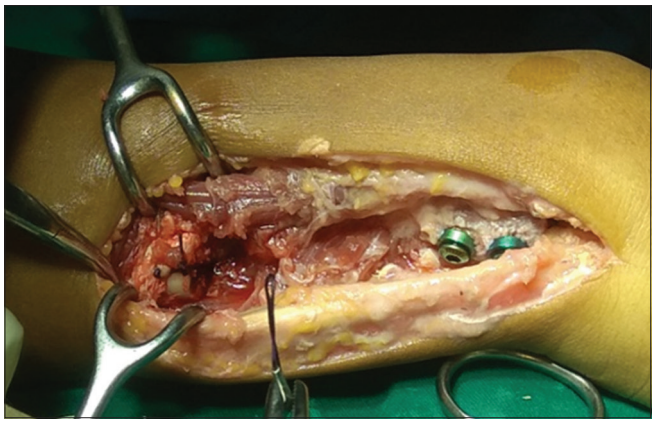


Figure 7: Tenodesis of extensor carpi ulnaris to the distal end of the ulnar stump

Figure 8: Immediate post-operative radiograph

stump toward the radius.[3] Furthermore, there may be ulnar translation of the carpal bones.[4] This may cause pain and stiffness during wrist and forearm movements.

In our case, after tumor excision, we fixed a bone graft to the distal end of the radius to prevent ulnar translation of the carpal bones and to provide ulnar support at the distal radioulnar joint.[4] Moreover, to prevent the radioulnar convergence and ulnar instability, we did tenodesis of the extensor carpi ulnaris to the distal end of the ulnar stump.[5,6]

There were no post-operative complications. 3 months after surgery, there was bony fusion of the bone graft with distal radius, and after 5 months, the patient had painless range of motion of his right wrist joint.

RESULT

There were no post-operative complications. 3 months post-surgery, there were bony fusion of the graft [Figure 9]

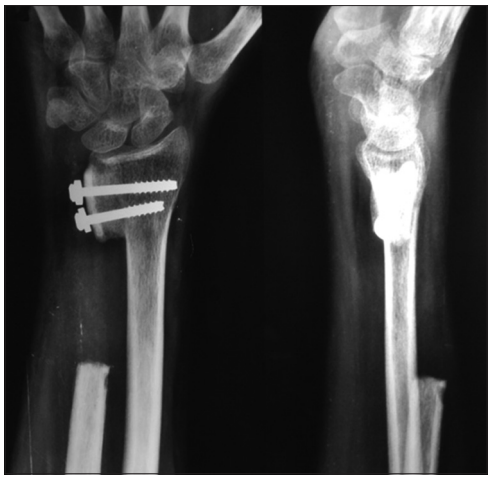


Figure 9: Post-operative radiograph after 3 months showing union of the graft to the distal radius

`Figure 10: Patient had painless range of motion 5 months after surgery

and the distal radius, and after 5 months, the patient had painless range of motion of his right wrist joint [Figure 10]

CONCLUSION

GCTs of the distal ulna are a rare entity. Mere excision of the tumor without any reconstruction may lead to wrist instability, ulnar translation of the carpal bones, and dynamic convergence of the ulna toward the radius during forearm movements. Hence, following excision of the distal ulnar GCT, reconstruction of the wrist can be done using a bone graft fixed to the distal radius, and radioulnar convergence can be prevented by tenodesis of extensor carpi ulnaris to the distal end of the ulnar stump. Painless range of motion of the wrist can be achieved without any post-operative complications.

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