Giant Cell Tumor of Distal Ulna – A Rare Case Report

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Learning Point of the Article:
Good reconstruction and stabilization of distal ulna stump are important for good functional outcome.

Abstract

Introduction: Among the benign primary bone tumors, Giant cell tumor (GCT) accounts for about 3% to 5%. It is a locally aggressive tumor with maximum incidence between 20 to and 40 years of age. The sites where GCT is most commonly seen are distal femur, and proximal tibia followed by distal end radius. Distal end of ulna is a rare site with an incidence of only 0.45% to 3.2%.

Case Report: We report a case of a 32-year-old male with GCT giant cell tumor of the left distal ulna. We managed the patient with en bloc resection of distal ulna along with reconstruction of distal radio ulnar joint (DRUJ) and triangular fibrocartilage complex (TFCC) using proximal fibula graft and palmaris longus graft. DRUJ was stabilized with a k-wire.

Conclusion: After 1 year of follow-up, patient showed good results in terms of range of movements of the wrist joint with no evidence of recurrence.

Keywords: Giant cell tumor, Distal ulna, Distal radio-ulnar joint, Proximal fibular graft, Palmaris longus graft.

Introduction

Giant-cell tumor (GCT) is a rare tumor of the bone which is benign in nature and locally invasive. It has an incidence of about 3–5% among all primary bone tumors [1]. The age group in which it is commonly prevalent is 20–40 years. It usually presents in the metaphysis of long bones and can extend up to the epiphysis. Distal femur and proximal tibia followed by distal end of radius are the most common sites involved [2]. Among all the sites of occurrence of GCTs, the distal end of ulna is extremely rare, which accounts for only 0.45–3.2% [3]. Malignant transformation of GCTs is rare, however, when present in the wrist joint approximately 12% of these can convert to malignant tumors.

The treatment of GCT of distal ulna is a challenging procedure due to its close proximity with distal radio ulnar joint (DRUJ) and carpal bones.

Case Report

A 32-year-old Indian male presented with pain and swelling over his ulnar aspect of the left distal forearm for 20 days. Patient had history of trauma due to fall from bike 20 days back following which he developed pain and swelling over left distal forearm. Conservative management with B/E slab and analgesics was given in a private clinic. There was no history of any constitutional signs or symptoms. The family, occupational, and histories were not significant. The general physical and systemic examinations were normal.

On local examination, there was an oval swelling of 3 × 2 cm in the left distal end of the ulna over dorsomedial aspect. The skin over the swelling was normal with no overlying scar, sinus, or prominent veins. There was no local rise of temperature. The...
swelling was tender and consistency was firm. There was no adherence to the overlying skin but the swelling was fixed to the underlying bone. Active and passive range of motion of the left wrist joint was diminished compared with the contralateral side. There was no distal neurovascular deficit.

Plain radiograph of wrist showed a lytic lesion involving left distal ulna with expansion and ballooning of cortex with pathological fracture without any periosteal reaction. (Fig. 1) Computed tomograms showed expansile osteolytic lesion seen in lower end of ulna measuring approximately 30 × 21 × 26 mm size with patchy cortical breach extending up to articular surface of the wrist (Fig. 2).

A diagnosis of GCT was made clinically. Biopsy was done to confirm the diagnosis.

Patient was treated with en bloc resection with reconstruction of distal ulna with fibular graft and DRUJ stabilization with palmaris longus graft and k-wire.

Through a 12 cm longitudinal incision made over dorsomedial aspect of distal ulna, en bloc resection of distal ulna of 8 cm with 2 cm safe margin was done (Fig. 3). Proximal fibular cortical graft from ipsilateral side was taken and fixed to distal ulna stump with a 7-hole DCP. Palmaris longus tendon was harvested and used as a tendon graft for the reconstruction of the triangular fibro cartilage complex (TFCC) and DRUJ as described by Adams and Berger in the treatment of chronic DRUJ instability. This construct was stabilized with a k-wire across the fibular graft and distal radius (Fig. 4). An above elbow cast with a window for dressing of the incision site was given and limb elevation was advised. Suture removal was done after POD 12 with removal of cast after 4 weeks and follow-up was taken at 3 months, 6 months, and 1 year. Following removal of the cast, physiotherapy was started. He started gradually regaining his strength and movements following physiotherapy. After 1 year, sound union of the graft was noted with good functional range of movements at wrist and forearm with excellent hand grip and no evidence of carpal instability or recurrence of the tumor (Fig. 5-7).

**Discussion**

GCT is a rare primary benign bone tumor. It commonly occurs between the age group of 20–40 years. Primary GCT of distal end of ulna is a rare site for occurrence of this tumor with incidence of 0.45–3.2%. Being a rare site, the treatment for GCT of distal ulna is a challenging procedure. The treatment is directed toward complete removal of the involved part with safe margins and reconstruction and stabilization of distal ulnar stump and DRUJ to avoid recurrence and preservation of joint function.

Various methods have been described for GCT of distal end ulna. A study by Cooney et al. showed excellent results in six out of eight patients that underwent en bloc resection of distal ulna without reconstructive procedure for the osseous defect [4]. On the contrary, many authors have documented poor functional results following en bloc resection of distal ulna without DRUJ reconstruction due to reasons like pain and restriction of movements [5].

The Darrach’s procedure done for the degenerative conditions which involve resection of distal ulna is not comparable to resection of distal ulna in case of tumors for various reasons [6]. In young patients with high functional demand, there is a need for anatomical reconstruction and stabilization of distal ulnar stump and DRUJ. Different techniques have been suggested for reconstruction of distal ulna and DRUJ following en bloc...
Our case, a 32-year-old functionally demanding male with GCT of distal ulna treated using this new technique of reconstruction of the entire length of excised distal ulna, DRUJ and TFCC using proximal fibula, Palmaris tendon graft, k-wires, and dynamic compression plate showed excellent radiological and functional results.

Conclusion

Our case, a 32-year-old functionally demanding male with GCT of distal ulna treated using this new technique of reconstruction of the entire length of excised distal ulna, DRUJ and TFCC using proximal fibula, Palmaris tendon graft, k-wires, and dynamic compression plate showed excellent radiological and functional results.

Clinical Message

GCT of distal ulna is a very rare occurrence. Being a rare site, the treatment for GCT of distal ulna is a challenging procedure. Keeping this in view, our treatment is directed toward complete removal of the involved part with safe margins and reconstruction and stabilization of distal ulnar stump and DRUJ to avoid recurrence and preserve good joint function.

References

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