

Rare Giant Cell Tumor of Olecranon Bone!!!!

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What to Learn from this Article?

A proper history and adequate investigations are a must for diagnosis. Early detection of giant cell tumor helps in complete excision and return of full functions.

Abstract

Introduction: Giant cell tumor (GCT) is a bone tumor involving epiphyseal area of bone abutting the subchondral bone. Commonly found in long bones such as proximal tibia and distal femur. We report a case of GCT of olecranon bone in a 23-year-old male.

Case Report: A 23-year-old patient presented to our outpatient department with pain and mild swelling at the elbow from last 2 to 3 months. On examination, it was seen that there was a moderate swelling at the tip of the olecranon. The magnetic resonance imaging reported a lytic lesion in the olecranon but sparing the coronoid process of the ulna, the biopsy report confirmed that histologically it was a GCT of the bone. Total excision of the tumor was done after lifting the aponeurosis of the triceps muscle. The area remaining after excision of the tumor was phenol cauterized and cleaned with hydrogen peroxide solution. Triceps was reinserted on the remaining ulna. At follow-up the radiographs showed adequate excision of the tumor. The patient gained a full range of movement at the elbow and was functionally restored. There were no signs of any systemic spread of the tumor.

Conclusion: GCT though a very common bone tumor could be missed if present in atypical locations. Radiographically soap bubble appearance might not be present in every case, and there could be multiple diagnoses for lytic lesion in bone. Proper investigations and histopathological examination are necessary for accurate diagnosis and further treatment planning. Early treatment helps in complete excision of tumor along with return of adequate function of the patient.

Keywords: Giant cell tumor, olecranon, bone.

Introduction

There are very few reports of giant cell tumor (GCT) involving the olecranon [1, 2, 3, 4] this tumor despite being histologically benign has a high propensity of metastasis to the lungs [3]. For this reason, *en bloc* excision is the treatment of choice rather than curettage and bone grafting [5]. The aggressiveness of the tumor at this site can be judged from the case report of Sanjay *et al.* [1] where the patient died despite

the fact that *en bloc* excision of the tumor was done after two failed attempts of curettage and bone grafting. Keeping in prospect the rarity of the tumor (2.94%) [6] and the fact that it warrants a timely and through excision. We present here a case of the GCT of the olecranon with full functional follow-up, which was managed by excision with preservation of the coronoid process of the ulna and reinsertion of the triceps aponeurosis to the remaining part of the olecranon. There was no tumor recurrence at the local site or any signs of metastasis with a follow-up of 5 years.

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Case Report

A 23-year-old patient presented to our outpatient department with pain and mild swelling at the elbow from last 2 to 3 months. The patient was a worker in Saudi Arabia and has come on vacation, when he consulted us for his complains. On examination, it was seen that there was a moderate swelling at the tip of the olecranon, with no inflammatory signs, the patient had a mild pain on working and at night, this was hindering with his daily activities. His radiograph and routine blood investigations were carried out. His radiograph revealed a lytic area in the olecranon (Fig. 1) more on the posterior aspect than the anterior. His routine blood investigations were within normal range. To have a better picture of the lesion and to confirm its nature and magnetic resonance imaging (MRI) of the elbow joint was done, and a biopsy of the lesion was taken. The MRI reported a lytic lesion in the olecranon but sparing the coronoid process of the ulna, the biopsy report confirmed that histologically it was a GCT of the bone.

Once the confirmation of the diagnosis was made the treatment options were sought, it was seen from the published data that the tumor was rare, and had the propensity of metastasis to the lungs despite being benign histologically. Since the MRI showed that the coronoid process of the ulna was uninvolved, it was planned that total excision of the tumor will be done after lifting the aponeurosis of the triceps muscle, if adequate resection is done and coronoid is found to be uninvolved intraoperatively, we will excise the tumor and reinsert the triceps on the remaining ulna. If in any case there is suspicion of the tumor tissue present in the coronoid process, the complete excision and future reconstruction for the elbow will be done with prosthetic replacement.

On the table while performing the excision of the tumor after lifting the triceps aponeurosis (Fig. 2), the coronoid was found to be spared, the area remaining after excision of the tumor was phenol cauterized and cleaned with hydrogen peroxide solution. Drill holes were made in the distal ulna to the excised tumor and a V-Y plasty of the aponeurosis was done to bring the aponeurosis to the remaining bone, the tendon was sutured to the bone with Vicryl Suture passed through the drill holes made. Wound was closed in layers (Fig. 3).

At follow-up the radiographs showed adequate excision of the tumor (Fig. 4). The patient gained a full range of movement at the elbow (Fig. 5-7) and was functionally restored. At the follow-up taken before the writing of this report which accounts for 5 years, the radiographs showed no signs of recurrence. There were no signs of any systemic spread of the tumor.

Discussion

GCTs of bone present most often in the 3rd or 4th decade of life [7]. Most GCTs arise in metaphysical-epiphysical areas abutting the subchondral bone and are most commonly found in the distal femur, proximal tibia, and distal radius [7, 8]. It can also be seen in the proximal femur, vertebral body, proximal fibula, hand, and wrist though less frequently [7, 8].

There have been many studies involving GCTs [9, 10, 11] in which a total number of 1447 GCTs of bone cases have been reported, but none of them were located in the olecranon. There has been one report of patient with multicentric GCTs involving the left proximal ulna from 12 years



Figure 1: Anteroposterior and lateral plain radiographs showing an expansile lytic lesion located in the left olecranon and extending into the subchondral region sparing the coronoid process. The lesion was well-defined without sclerotic margins.

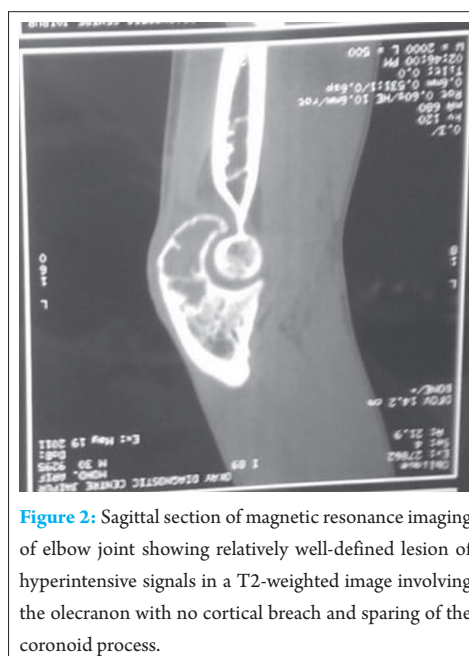


Figure 2: Sagittal section of magnetic resonance imaging of elbow joint showing relatively well-defined lesion of hyperintense signals in a T2-weighted image involving the olecranon with no cortical breach and sparing of the coronoid process.

retrospective study conducted at the Mayo Clinic Hoch *et al.* [12]. As per our best knowledge and PubMed index, there have been three reported cases of solitary olecranon so far [2, 3, 4].

The radiographic appearance of GCT is usually characteristic of the disease. However, it was difficult to make a definitive conclusion in this case, although the plain films showed characteristic findings of GCT largely due to the rare location of the lesion, and the olecranon is a rare area for neoplasms to occur. There are only a few diseases involving this anatomical region has been reported including a ganglion cyst [13], osteoid osteoma [14], and metastasis [15]. However, the X-ray examination and histopathological examination clears the diagnosis.



Figure 3: Closure of wound in layers after excision of tumor and V-Y plasty of aponeurosis.



Figure 4: Post-operative radiographs depicting complete excision of lytic lesion.

Intralesional curettage along with local adjuvants such as liquid nitrogen [16], bone cement [17], and hydrogen peroxide [18] has been the preferred treatment for most cases of GCT of bone [19]. But wide *en bloc* resection is known to provide the lowest recurrence rate [20]. Radiotherapy has also been used to treat GCT of bone and is mainly useful for treating difficult locations such as the spine and sacrum [21].

Conclusion

GCTs of bone represent approximately 5% of primary bone tumors in adults [9]. In addition, patients with GCTs of bone present most often in the 3rd or 4th decade of life [5]. Most GCTs arise in metaphysical-epiphysical areas and are most commonly found in the distal femur, proximal tibia, and distal radius [5, 8]. Other less frequent sites include the proximal femur, vertebral bodies, distal tibia, proximal fibula, hand, and wrist [5, 8]. In addition, GCTs occurring in the patella and great trochanter have been reported [22, 23, 24].

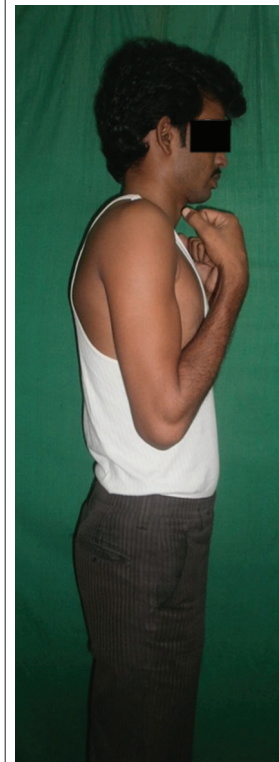


Figure 5: Complete flexion of elbow postoperatively.

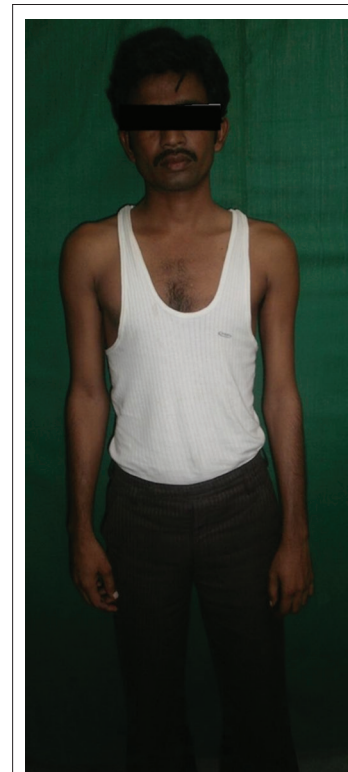


Figure 6: Complete extension of elbow postoperatively in this case.



Figure 7: Patient doing complete flexion of elbow postoperatively.

GCT of the bone occurring at the olecranon is rare (2.94%) [7]. There are very few case reports on this, and those published, show high recurrence rate, despite excision. This paints a very gloomy scenario for the patients presented with this condition.

We planned to present this case report as not only this rare tumor was excised in total but also good functional restoration was achieved, and there was no recurrence either local or systemic. This gives hope to the fact that the early detection of GCT olecranon not only aids complete excision and return of full function.

Clinical Message

GCT although a common bone tumor still can be missed if present in unusual locations. A proper history and adequate investigations are a must for its diagnosis. Early detection helps in complete excision and return of full functions.

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