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Case Report

A rare case of distal ulna giant cell tumour – Wide excision and stabilisation using extensor carpi ulnaris tendon

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Abstract

Giant Cell Tumour is a common benign tumour of bone accounting for 3 to 5% of all primary bone tumour. It commonly affects in second decade of life between 18 years to 40 years. Distal ulna is less commonly affected site with reported incidence varying from 0.45% to 3.2%. The current available literature is non-conclusive regarding treatment protocol of distal ulna giant cell tumour and whether stabilization procedure of ulna is required or not after excision of distal ulna to avoid the symptoms of ulnar impingement syndrome. We are reporting a case of right distal ulna Giant cell tumour in 51 year old right hand dominant female patient who presented to us with persistent pain and restricted wrist movements. We performed a wide excision of tumour with dynamic stabilization of distal ulnar stump using extensor carpi ulnaris split tendon graft. We have 2 year follow up of the patient with no recurrence and a good functional outcome having a Mayo wrist score of 80.

Keywords: Giant Cell Tumour, Distal Ulna GCT, Ulna stabilization procedure

1.Introduction

Giant Cell Tumour is a common benign tumour of bone accounting for 3 to 5% of all primary bone tumour. It commonly affects in second decade of life between 18 years to 40 years. Females are more commonly affected than males. The distal femur and proximal tibia are most common sites of giant cell tumour comprising 60% of cases. Distal ulna is less commonly affected site with reported incidence varying from 0.45% to 3.2%. Intralesional curettage is preferred in Enneking stage 1 and stage 2 Giant cell tumour but has high recurrence rate up to 17% as cited in various articles. Wide resection is done in Enneking stage 3. [1, 2]

Distal ulna giant cell tumour being less common, there has been no consensus regarding treatment protocol regarding reconstructive procedures. Some reports have advocated stabilization of distal ulna stump using bone graft augmentation to soft tissue reconstruction. [3,4] Benefits of stabilization procedure have been discussed as better grip strength and improve wrist range of motion and forearm pronation and supination due to avoidance of radio-ulnar convergence. In our patient with solitary distal ulna giant cell tumour, we have performed wide excision of distal ulna and subsequent stabilization using extensor carpi ulnaris tendon.

2. Case

A 51 year old female presented to us with swelling in right wrist since past 3 months which gradually increased size associated with intermittent dull aching pain more severe at night and restriction of wrist movement including pronation and supination of forearm. On Clinical examination, the swelling was found to involve only distal ulna with local tenderness and painful wrist movements. The Mayo wrist score calculated was 55 which is interpreted as poor functional outcome. No distal neuro-deficit or vascular compromise was present. Radiographs were taken and MRI was done to confirm the diagnosis and to identify extent of lesion. Parathyroid hormone level was within normal limit. Patient was counselled pre-operatively in detail about the procedure, known complications and risk of recurrence.

Figure 1: X-ray showing expansile lytic tumour of distal ulna

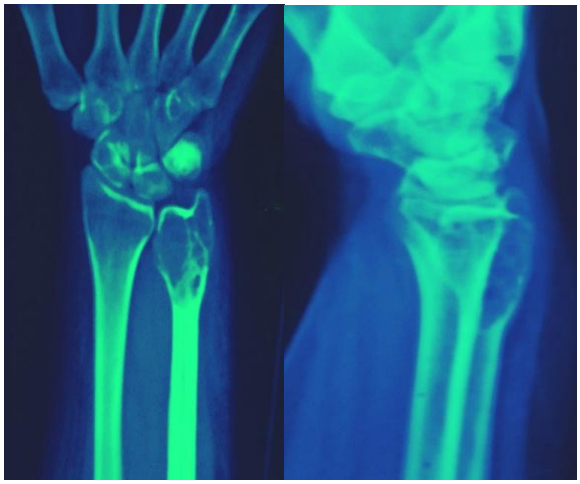
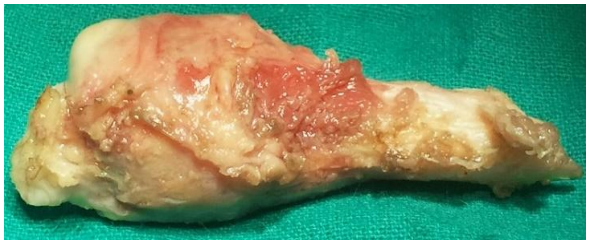


Figure 2: MRI image

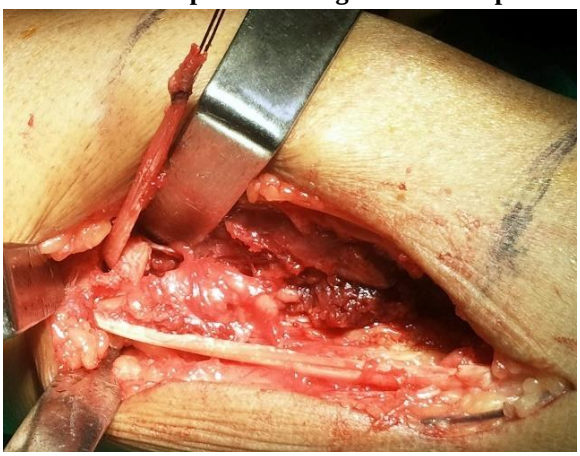
General Anaesthesia was given to the patient. In supine position, 8 cm longitudinal incision was taken over subcutaneous border of ulna extending just distal to ulnar styloid. Extensor carpi ulnaris tendon was identified and dissected free from ulna and extra-periosteal wide resection of tumour was done which included 7 cm of distal ulna stump.

Figure 3: En-block Excision of Distal ulna



The extensor carpi ulnaris tendon was split longitudinally and freed from its distal attachment. A drill hole was made using 3.2mm drill bit 5 mm proximal to cut end of ulna. The tendon slip was passed through the drill hole and sutured back to itself. This resulted in dynamic stabilization of ulna. Closure was done in layers. The upper limb was immobilized in above elbow Plaster of Paris slab in supination. Post-operative dressing and drain removal was done which was uneventful. Slab was discontinued after 4 weeks following which active wrist and elbow movements were started. The histopathological examination of sample collected confirmed the diagnosis of benign giant cell tumour.

Figure 4: Dissection of extensor carpi ulnaris tendon and passed through ulnar stump.



Patient was followed up every 6 weeks up to 6 months and then once a year. Current follow up is present up to 2 year post-operative period. He had no pain with improved wrist movements with good hand grip. The Mayo wrist score in our patient was 80 which are interpreted as good functional outcome.

Figure 5: 2 years Post-operative X-ray

Figure 6: Wrist Range of Motion

A) Wrist palmar-flexion – 45 degree

B) Wrist dorsi-flexion – 40 degree

3. Discussion

Giant cell tumours should be treated aggressively ensuring complete excision to reduce the risk of recurrence. Distal ulnar stump excision has been reported to cause various complications like restriction of pronation-supination due to ulnar stump instability and radio-ulnar convergence as described by MJ Bell *et al*, pain with clicking on wrist movement and weakened grip.[5] The cause of radio-ulnar convergence include pre-stressed effect of interosseous membrane, pull of pronator quadratus, pull of extensor pollicis brevis and abductor pollicislongus. Long term complications have been reported in the form of gradually progressive ulnar translocation of carpals and subsequent wrist arthritis. Various reconstructive procedure have been used by various authors including vascularized fibular graft , distal radio-ulnar joint metallic prosthesis[6,7,8,9], palmaris longus graft for ulnar stabilization, static as well as dynamic stabilization of ulna using extensor carpi ulnaris split tendon graft[10]. Using extensor carpi ulnaris tendon for ulnar stabilization was described by Goldner and Hayes. Stabilization by extensor carpi ulnaris causes dynamic stabilization of ulna during pronation and supination and prevents pain and clicking during wrist movement. An article by MS Dhillon *et al* had advised against stabilization procedure based on their observation of good functional outcome after ulnar stump excision without stabilization.[11] A 15 year follow up in their case series, had good hand grip and function after ulnar stump excision without stabilization procedure. Another subject in their study had undue prominence of ulnar stump due to instability during pronation-supination movement of wrist which was painless and well accepted by the patient both cosmetically and functionally. In our subject we had planned for stabilization procedure considering the high functional demands of the patient. There was no recurrence in our patient at 6 months follow up. The current available literature is non-conclusive regarding treatment protocol of distal ulna giant cell tumour and whether stabilization procedure of ulna is required or not. Also there is no consensus regarding whether bony reconstructive procedure is better accepted by patients or soft tissue stabilization procedure gives better function. A long term follow up comparative study is required to study the functional outcome and complications of various stabilization/reconstructive procedures for ulna.

4. Conclusion

We recommend wide excision of grade 3 giant cell tumour of ulna to ensure minimum risk of recurrence and subsequent ulnar stump stabilisation using extensor carpi ulnaris split tendon graft to provide better wrist functional outcome.

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