

Case Report

Giant Cell Tumour of Distal Radius: A Case Report

Kanthimathi, Supreeth Nekkanti

Department of Orthopaedics, JSS Medical College & Hospital, Karnataka, India.

Corresponding Author: Supreeth Nekkanti

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ABSTRACT

Giant cell tumour (GCT) forms 4% of all primary tumours. Distal radius is the third most common site [10%] after distal femur and proximal tibia. It follows a comparatively aggressive behaviour. Wide excision is one of the modalities of treatment, but this creates a defect at the distal end of radius. The preferred modalities for reconstruction of such a defect include vascularised/non-vascularised bone graft, osteoarticular allografts and custom-made prosthesis. We here present our experience with wide resection and non-vascularised autogenous proximal fibula grafting for GCT of distal radius.

Key words: giant cell tumour, distal radius, fibular autogenous graft.

INTRODUCTION

Giant cell tumour is a benign aggressive tumour. [1-3] It forms 4% of all primary tumours [1,2] The distal radius is the third most common site (10%). [2] The age group it affects is 20-55 years. [1,3] It occurs predominantly in females. [2]

CASE REPORT

We report a 52 year old male clerk who gives history of a trivial fall accompanied with pain and swelling over

the right wrist. On physical examination the distal radius was tender, with a firm to hard swelling with palpable crepitus.

Radiographic studies showed osteolytic lesion over the distal right radius occupying epiphysis and metaphysis with break in dorsal and volar cortex. (Figure 1) which helped us conclude it was probably a Campanacci Grade 2/ Enneking Grade 2 giant cell tumour variant. The biopsy confirmed the lesion was a giant cell tumour of distal radius. (Figure.1)

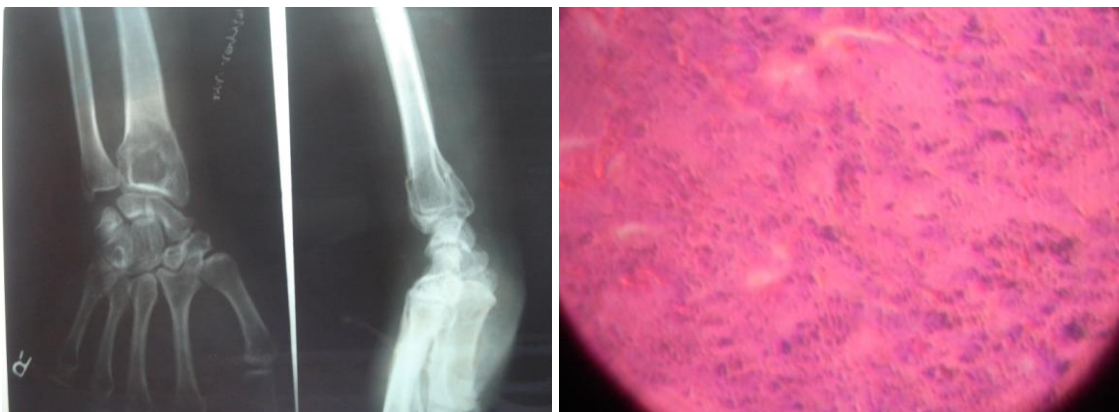


Figure 1: Giant cell tumour distal radius, Histopathology photograph.

Operative Procedure: Wide excision of distal right radius and autogenous avascularised proximal fibular grafting.

The surgery was done in 3 steps:

The patient was placed in a supine position. A spinal block with regional interscalene block was given. A tourniquet was applied on the contralateral thigh (left).

STAGE 1: HARVESTING OF AVASCULARISED AUTOGENOUS FIBULAR GRAFT (left side). (Figure 2)

A posterolateral incision over proximal half of fibula. The peroneal nerve was identified and protected. [2] The dissection plane was in between the lateral head of gastrocnemius and soleus. Adequate length of fibula exposed and osteotomised protecting anterior tibial vessels and deep peroneal nerve.

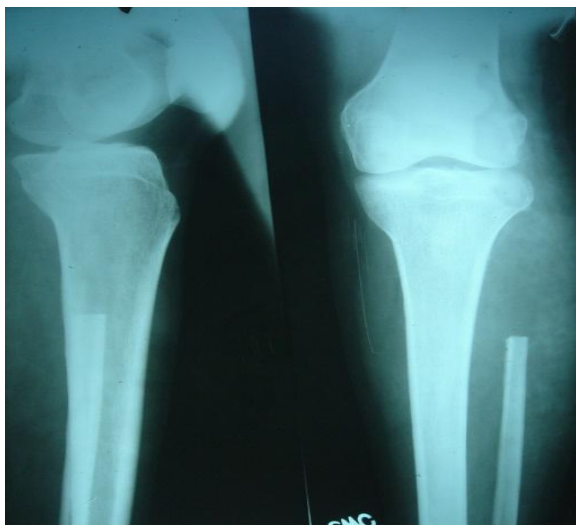


Figure 2: Harvesting of autogenous fibular graft, X-ray.

STAGE 2: EXCISION OF TUMOUR

An anterolateral incision was used to approach the right distal radius. Radial artery was identified and retracted. Subperiosteal dissection of forearm muscles was done to avoid damage to blood supply. The pronator quadratus blocks the tumour from flexor tendons preventing its spread. Anterior interosseus vessels were identified and ligated to prevent embolization of tumour. The

tumour was resected by wide excision with enbloc resection. [2,3]

STAGE 3: FIXATION OF FIBULAR GRAFT TO WRIST JOINT (Figure 3)

A prerequisite would be an adequate length of fibula to maintain normal ulnar variance. The fibula is placed such that the carpal bones are supported by fibular head.

The head should be in direct contact with scaphoid. The graft is then fixed with a hole 3.5 DCP without tension. [1-3]

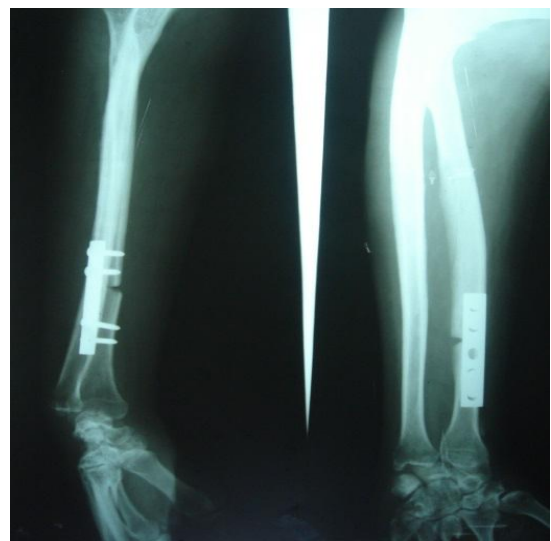


Figure 3: Post-operative x-ray, Graft inserted at the distal radius with DCP fixation.

POST OPERATIVE:

One unit of compatible blood was transfused. The wrist was immobilised in a below elbow slab for twelve weeks. The range of movement exercises begun at twelve weeks. At one year follow up, there was no evidence of local recurrence. Radiography confirmed the union of the radius and fibular graft junction. DCP was in situ. (Figure 4)

The range of movements were dorsiflexion - 30*, palmar flexion-20*, pronation-70* and supination-40*. Patient was able to perform activities of daily living like eating and writing. He is back to his job as clerk.



Figure 4: X-ray after 1 year, Graft united with radius.

DISCUSSION

The clinical behaviour of GCT is unrelated to histological or radiological grading and thus the decision to either salvage or excise the tumorous bone is based on ability to achieve stability and function whatever may be the means used. [1,3]

The indications for en bloc resection would thus include pathological fractures, extensive bone involvement with large soft tissue involvement and collapse of articular surface. [2,3]

Management of GCT of distal radius is critical due to extensive destruction of bone and an aggressive clinical behaviour. Wide excision is a reliable procedure in terms of lower recurrence rates but creates a bony defect

and thus is reserved for large lesions with extended curettage being the treatment of choice for smaller grade I tumours. [2-4]

Ipsilateral proximal fibular non vascularised auto graft reconstruction of the large defect created after resection of distal radius offers many advantages over other procedures.

The fibular head closely resembles the distal radius in its shape and is one of the reported procedure. [5] It has low donor site morbidity, if any, with predictable and satisfactory functional results and is relatively free of major complications, although minor complications occur frequently. [2,3]

We achieved better or similar functional results compared to previously published series with grip strength of 75% of contra lateral normal side and average combined movements of 69%. [2,3] Of particular note was relatively well preserved forearm supination and pronation movements which are most important in terms of functional ability.

Average time for union at host graft junction was 12 weeks. There were no complications like non-union, wrist subluxation, peroneal nerve injury. Though the range of movements of the wrist is not full, the patient is able to carry on with his daily activities without pain. (Figure. 5-7)



Figure- 5

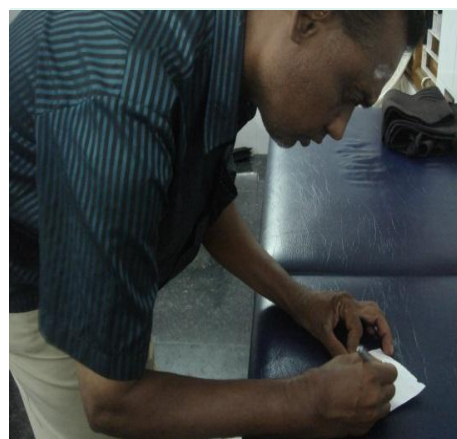


Figure 6



Figure-7



Figure-8

Figure 5-8: Follow up 1 year, range of movements and functional outcome

CONCLUSION

We believe that although results of non-vascularised fibular auto graft reconstruction of distal radius show substantial loss of function as compared to normal wrist, it still gives subjective results acceptable to most patients and comparable to all other available methods of such reconstruction. No vascularised fibular auto graft reconstruction arthroplasty of distal radius can be considered as a reasonable procedure after en bloc excision of Grade II/III GCT of distal radius.

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