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Case Report

Carpus translocation into the ipsilateral ulna for distal radius recurrence giant cell tumour: A case report and literature review

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ABSTRACT

Giant cell tumour is a frequent benign neoplasm. It is characterized by local aggressive behaviour and frequent recurrence. The most common localization is the distal femur followed by proximal tibia (40%). The distal radius is the next place (10%). The recurrence in the distal radius in primary cases is reported 10%, in recurrent cases is almost 30% and depends to the kind and the stage of the tumour at the time of treatment. Multiple options have been reported for treatment of Campanacci III giant-cell tumour (GCT) of the distal radius after resection. Actually the treatment of recurrence remains a real dilemma. Several reconstructive options (e.g. resection arthroplasty, prosthetic replacement, arthrodesis, ulnar translocation, centralization of the carpus over the remaining ulna, use of vascularized or nonvascularized fibular graft, with or without, arthrodesis, have been described up to date.

We present a case of recurrence of GCT of distal radius after curettage, where we selected the centralization of the ulna into the carpus as a salvage procedure with satisfactory results. The procedure provides a valid option for the management of recurrent GCTs of distal radius offering excellent cosmetic and acceptable functional result.

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1. Introduction

Giant cell tumour (GCT) is a benign bone tumour, most commonly found in the distal femur and the proximal tibia, while distal radius is the third commonest site.^{1,2} Patients

with a primary giant cell bone tumour of the distal radius, are usually young adults³ and the goal of treatment of this tumour at the distal radius is complete removal of the tumour and reconstruction of the bone defect in order to preserve maximum function of the wrist joint.⁴ Treatment consists of either extended curettage followed by packing of the cavity

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with bone graft or methylmethacrylate cement.⁵ Extended curettage followed by packing of the cavity with bone graft or methylmethacrylate, or resection of the lesion followed by reconstruction with autograft or allograft are considered as the treatment of choice for the primary tumour.^{6,7} The recurrence rate of the GCT in the distal radius is 27%–54%, but although the recurrence rate of GCT is relatively high, an exact algorithm on how to treat them is lacking.⁸ Treatment of recurrence of GCT continues to be a major problem. Various treatment modalities for recurrence are mentioned in the literature and these include a) extended curettage, with or without reconstruction, using autogenic/allogenic bone grafts or polymethylmethacrylate (PMMA) b) resection and reconstruction with vascularized or nonvascularized proximal fibula (fibular head arthroplasty), c) resection with partial wrist arthrodesis (radio-schapholunate) using a strut bone graft and e) resection and complete wrist arthrodesis using intervening strut bone graft.⁹ Fusion of the wrist to the ulna is a technique that allows wide resection in the case of a primary aggressive or recurrent distal radial GCT and has been described only in a few reports.¹⁰

The aim of this case report is to present a simple technique and its advantages, of fusing the wrist to ulna in a functional position after a recurrence of a distal radial GCT.

2. Material and method

A 36 year old female presented at the outpatient clinic with a swollen and painful left wrist and distal forearm since five months. There was no history of injury, and a local general practitioner initially had treated the patient with a splint for 6 weeks without any success.

Clinical examination revealed swelling on distal forearm and wrist, without any localised pain at palpation. The range of movement was mildly decreased with some pain at extremes. Plain radiographs of the wrist showed an osteolytic lesion of the distal radius with well-defined borders and without sclerosis, new bone formation or calcification (Fig. 1).

The initial clinical diagnosis was a type II according to Enneking classification Giant Cell Tumour of the distal radius. Eventually the diagnosis was confirmed with MRI scan and an open biopsy. Taking under consideration the staging of the

tumour, it was decided to treat the patient with aggressive curettage through wide decortication (windowing) by dorsal approach. The tumour was removed with the use of multiple angled curettes, in order to identify and access small pockets of residual disease, and a high power burr in order to break the bony ridges and to extend the curettage as it is recommended. Finally, pulsatile jet lavage systems used at the end of the curettage to bare raw cancellous bone and physically wash out tumour cells. The bone void was filled with bone graft substitute calcium sulfate cement (MIIG X3, Wright Medical Technology, Inc, Arlington, TN) and the lesion was bridged with an external fixation for 2 months (Fig. 2).

The patient was followed-up regularly for 12 months post-operatively. During this period the calcium sulfate graft was gradually absorbed, but unfortunately symptoms were not resolved, the patient was still complaining for pain and swelling which were gradually increased. The wrist X-rays showed recurrence of the tumour (Fig. 3).

This time the tumour was staged as a type III GCS according Enneking's Classification. Systematic investigation was applied in order to exclude metastatic lesions, and decision was made for a wide resection of the tumour and fusion of the wrist to the ulna, creating a single-bone forearm and centralization of the ulna on the wrist.

During the operative procedure of the tumour was resected within optimal margins, the ulna was detached from the carpus by dividing the ulnar collateral ligament and resecting the triangular fibrocartilage complex. The articular surface of the distal ulna and proximal row carpal bones were decorticated, exposing the underlying cancellous bone. A mortise was created in the central portion of the carpus to accept the distal ulna, which was aligned with the third metacarpal. The hand and carpus were positioned in neutral flexion and extension and neutral to slight pronation. A properly moulded dorsal 3.5 dynamic compression plate was used for the fusion (Fig. 4).

A plaster cast was applied post-fixation for 6 weeks to protect the reconstruction.

3. Results

Routine follow-ups were performed at 6 weeks, 3, 6 and 12 months after surgery, and subsequently every year. The ulna-

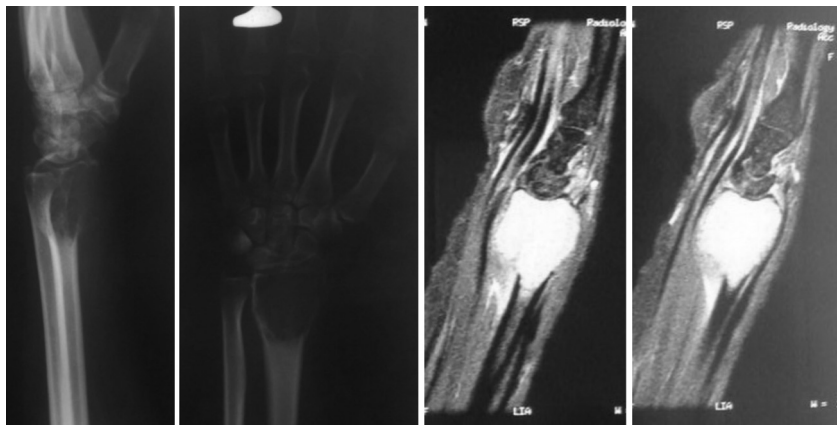


Fig. 1 – Plain radiographs of the wrist showing the osteolytic lesion of the distal radius.

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