



## International Journal of Case Reports in Orthopaedics

E-ISSN: 2707-8353

P-ISSN: 2707-8345

IJCRO 2023; 5(2): 22-26

[www.orthocasereports.com](http://www.orthocasereports.com)

Received: 21-04-2023

Accepted: 30-05-2023

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# Recurrent giant cell tumour in the distal radius of a young girl: A case report

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DOI: <https://doi.org/10.22271/27078345.2023.v5.i2a.168>

## Abstract

**Introduction:** Giant cell tumor (GCT) is a benign but locally aggressive tumor that accounts for 4% of all primary bone tumors. The distal radius is the third most common site for GCT, after the distal femur and proximal tibia. Wide excision is one of the treatment options for GCT, but this can create a defect at the distal end of the radius. Giant cell tumors (GCTs) that occur in the distal radius are likely to recur. The treatment of recurrent GCTs in the distal radius is very challenging. We report our clinical experience of using proximal fibular autografts to reconstruct the distal radius after en-bloc excision of the entire distal radius in 21-year-old female patient with recurrent GCT (RGCT) of the distal radius.

**Case Report:** We report a 21-year-old female patient who presented to us with status post op query distal radius GCT. Patient had pain and swelling in right wrist since past 12 months, patient was operated at a different centre 6 months back but the pain had not come down and patient was no able move wrist because of pain which was progressive. We performed imaging and concluded it to be recurrent GCT and treated with excision and reconstruction of distal radius with fibula.

**Discussion:** GCT is a benign but locally aggressive tumor that can recur in the same location or metastasize. The risk of local recurrence is high, and it is usually caused by tumor cells that remain behind after surgery or are implanted in the surgical site. The risk of tumor cell contamination of the surgical site by the instruments used during the surgery is lower.

**Conclusion:** Removing the entire RGCT of the distal radius and reconstructing the bone with a proximal fibular autograft are effective ways to control the tumor locally and preserve wrist function.

**Keywords:** GCT, RGCT, enbloc, fibula, autograft

## Introduction

GCT is a common type of benign bone tumor that typically affects people under the age of 40. It can cause mild symptoms that may go unnoticed for months, but some patients may experience acute pain due to a pathological fracture. GCT has the potential to metastasize, and lung metastasis may be present at the time of diagnosis [1].

GCT most commonly occurs in the distal femur and proximal tibia, but it can also affect the distal radius [2]. Intralesional curettage with bone grafting is a common treatment for GCT of the radius, but it has a high rate of local recurrence, especially in the distal radius. This is because GCT in this location is often associated with extra compartmental extension, cortical invasion, and pathological fracture. En-bloc resection with reconstruction is a more effective treatment for GCT of the distal radius than curettage. Traditional reconstruction methods include using a structural fibular allograft or non-vascularized fibular autograft [3].

In this paper, we present the outcomes of our surgical strategy in a patient with RGCT of the distal radius. We found that en-bloc resection with proximal fibular autograft was a safe and effective treatment that resulted in low rates of local recurrence and complications.

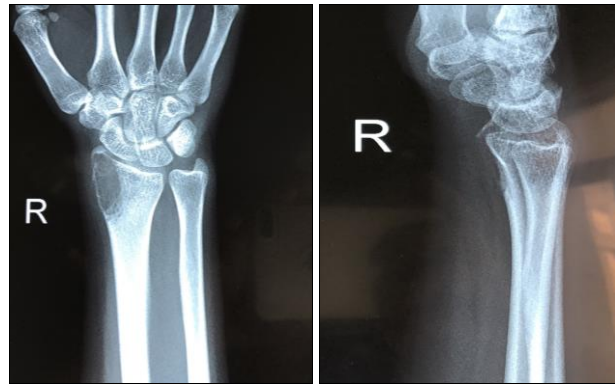
We believe that this surgical strategy is a promising option for the treatment of RGCT of the distal radius. It offers the advantages of local tumor control, wrist preservation, and low complication rates.

## Case Report

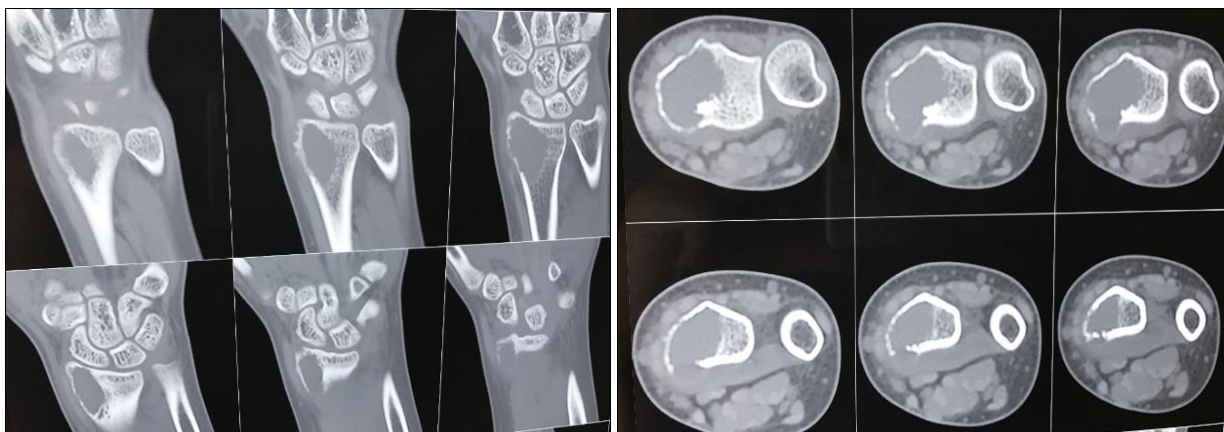
Here we present a patient, 21 year old female who complained of pain and swelling the right wrist since past 1 year which was insidious in onset and gradually progressive which affected patients day to day activities for which she consulted a private hospital 6 months back (fig 1 shows pre op x-ray, fig 2 shows pre op CT scan and fig 3 shows pre operative MRI) where she was said she had a tumor in the wrist and was operated with curettage and cementing.

(Fig 4) Post surgery patient was alright for 2 months post which patient noticed recurrence of swelling and pain so patient came to our hospital for further management. We

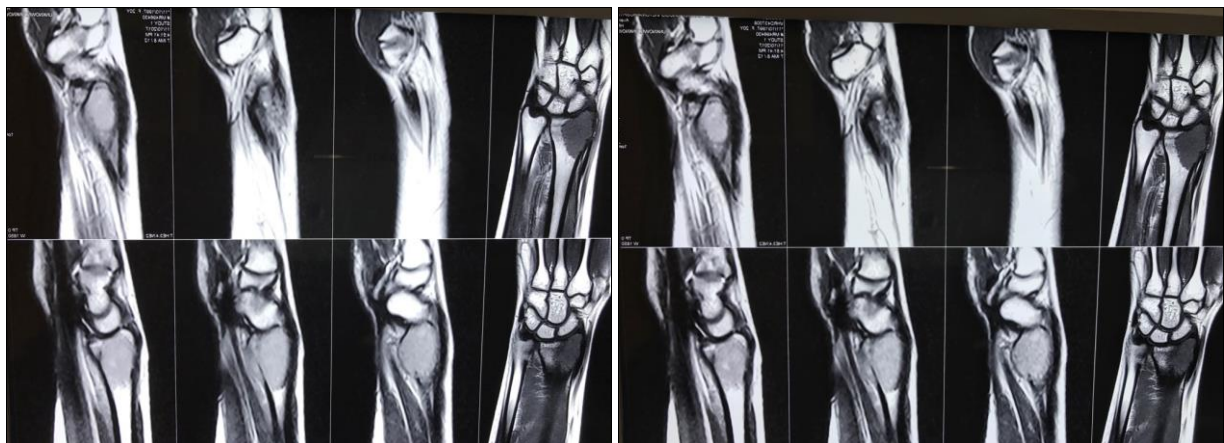
examined the patient clinically (fig 5) Xray (fig 6) showed cement in-situ with cortical breach and soft tissue shadow, MRI (fig 7) confirms the findings of x-ray.



**Fig 1:** Xray wrist AP/LAT Showing epiphyseo-metaphyseal expansile lytic lesion within bone and and cortex intact



**Fig 2:** CT Scan confirming the findings of Xray



**Fig 3:** MRI showing no soft tissue involvement



**Fig 4:** Xray showing status after first surgery

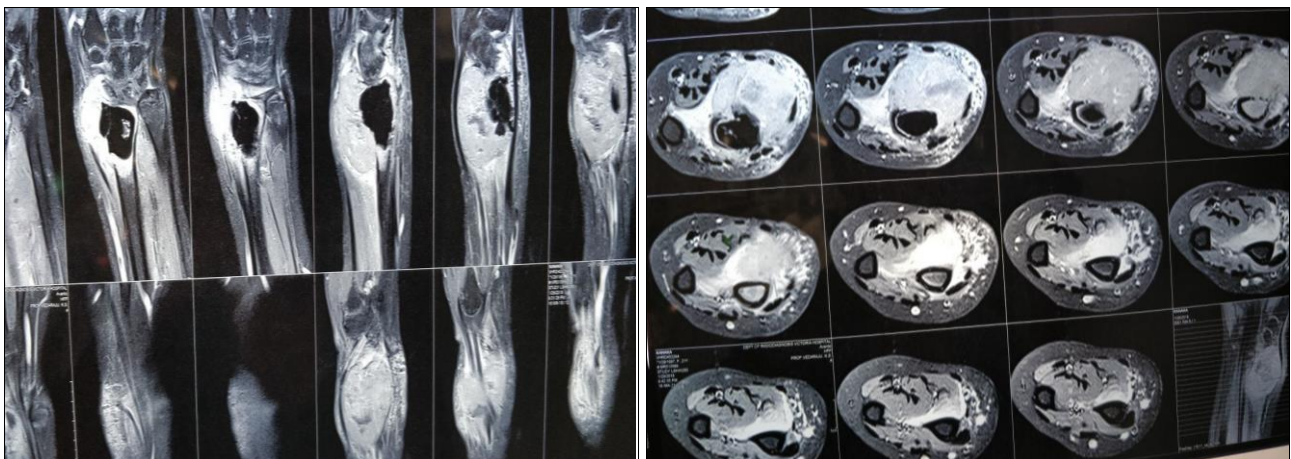




**Fig 5:** Showing clinical images of previous operative scar and swelling



**Fig 6:** Post operative xray showing cement insitu and soft tissue shadow

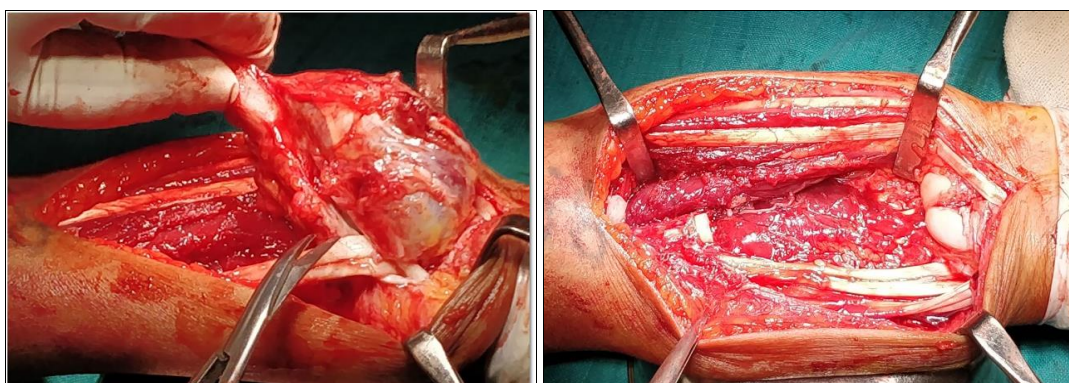


**Fig 7:** Showing soft tissue involvement of the tumor

### Surgical Intervention

Patient was operated with Enbloc resection of the distal radius and reconstruction with fibular head and transfixation of the fibula to the carpal bones using k-wires. Fig 8 shows

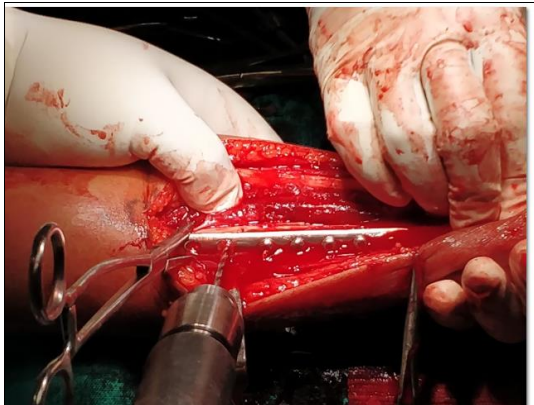
intra operative images of enbloc excision of distal radius, fig 9 shows the excised part of the distal radius, fig 10 shows the fixation of fibula to the remanant radius using semitubular plate, fig 11 shows post operative xray.



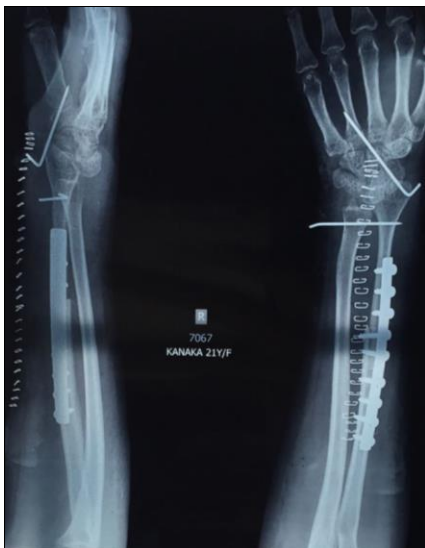
**Fig 8:** Intra operative images showing the enbloc excision of the distal radius



**Fig 9:** Shows the excised part



**Fig 10:** Shows fixation of fibula to radius remnant using semitubular plate



**Fig 11:** Shows post operative Xray

### Discussion

Giant cell tumor (GCT) is a benign bone tumor that can recur locally and spread to the lungs. The risk of local recurrence is high, especially when the tumor is located in the distal radius<sup>[4]</sup>.

The main treatment for GCT is to remove the entire tumor. This can be done by curettage, which is a minimally invasive procedure, or by en-bloc resection, which is a more invasive procedure that involves removing the entire tumor and a surrounding margin of healthy tissue. After the tumor is removed, the defect can be reconstructed with a variety of materials, including bone grafts, prostheses, and allografts. Bone grafts are the most common choice for reconstruction,

but they can have some disadvantages, such as a risk of nonunion and the need for a second surgery<sup>[5]</sup>.

Prostheses are not a good choice for reconstruction because they can wear out and break. Allografts are also not a good choice because they can be rejected by the body. The best choice for reconstruction depends on the individual patient and the specific circumstances. However, en-bloc resection and reconstruction with a vascularized fibular autograft is a promising option that has been shown to be effective in achieving local tumor control and preserving wrist function<sup>[6]</sup>.

Treating and rehabilitating patients with giant cell tumor (GCT) of the distal radius is a challenging problem for orthopedic surgeons. The distal radius is an important bone for the function of the wrist joint, and any malfunction of the wrist can significantly affect a person's daily activities. This is especially true for young patients. The goals of treatment for GCT of the distal radius are to remove the tumor, reduce the risk of recurrence, and preserve as much joint function as possible. This can be done by removing the tumor and replacing the defect with a bone graft. The most common bone graft used for this purpose is the proximal fibula<sup>[7]</sup>.

Local recurrence and loss of joint function are still major problems following surgery for GCT of the distal radius. The risk of local recurrence is higher for tumors that have broken through the cortex of the bone. In these cases, a wider resection of the tumor may be necessary. Resection of the distal radius and reconstruction with a proximal fibula graft offers several advantages. The graft is easy to obtain and does not require bone banking or matching procedures. It also has a high rate of success and does not cause significant donor site morbidity<sup>[8]</sup>.

The best treatment for GCT of the distal radius depends on the individual patient and the specific circumstances. However, resection of the distal radius and reconstruction with a proximal fibula graft is a promising option that has been shown to be effective in achieving local tumor control and preserving wrist function<sup>[9]</sup>.

### Conclusion

En-bloc resection of giant cell tumours of the lower end radius is a widely accepted method. Reconstruction with non-vascularised fibular graft, internal fixation with semitubular plate with transfixation of the fibular head and wrist ligament reconstruction minimises the problem and gives satisfactory functional results with good cosmetic and functional outcomes.

### Conflict of Interest

Not available

### Financial Support

Not available

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**How to Cite This Article**

Sherikar N, Trilok V, Mitra S, Chakravarthy RHY, Angadi SP. Recurrent giant cell tumour in the distal radius of a young girl: A case report. *International Journal of Case Reports in Orthopaedics.* 2023;5(2):22-26.

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