

Giant Cell Tumor Involving the Proximal Phalanx of Ring Finger: A Rare Case Report

E Venkateshulu¹, Shiva Naik², A Naveen Kumar³, Ajay Kumar³, Rajeevratna Suresh Naik³

¹Professor, Department of Orthopaedics, Vijayanagara Institute of Medical Science, Bellary, Karnataka, India, ²Associate Professor, Department of Orthopaedics, Vijayanagara Institute of Medical Science, Bellary, Karnataka, India, ³Post-graduate Student, Department of Orthopaedics, Vijayanagara Institute of Medical Science, Bellary, Karnataka, India

Abstract

Giant cell tumor (GCT) of bone arising from a phalanx is extremely rare. We hereby report a case of GCT arising from a phalanx of left ring finger. He initially presented with swelling over the proximal phalanx of ring finger. He was diagnosed as GCT and was treated primarily by intralesional curettage and autogenous bone graft. At his follow-ups patient presented with recurrence for which he was successfully treated with ray amputation (en block resection). At his most recent follow-ups, he is recurrence-free and had returned to his previous occupational and recreational activities. GCT of phalanx is locally aggressive and highly recurrent tumor so primary aim of treatment should be block removal of tumor mass. Patient should be under regular follow-up for detection of early recurrence appropriate treatment.

Key words: Bone graft, Curettage, Giant cell tumor, Ray amputation

INTRODUCTION

Giant cell tumor (GCT) of a phalanx of a finger is extremely rare. Only 2% of all reported GCTs are found in the hand.¹ The metaphysical region of the metacarpals and phalanges has been found to be the common site of GCTs in most of the reported cases.²⁻⁴ Though GCT is not a sarcoma, its relatively high recurrence rate.⁵ Coupled with local aggressiveness after simple curettage often requires extensive en bloc excision.

The recurrence of GCT of hand is higher than for other locations. Local recurrence following curettage and bone grafting has been reported to be as high as 90%.^{1,4,6,7} Wide resection and reconstruction with structural bone grafting is also reported to have a high local recurrence rate.⁶ Multiple procedures such as excision (local or wide), ray amputation, and amputation are used to eradicate the disease completely. Even with single- or double-ray

resection for primary or recurrent tumors, local tumor control may not be absolute. Here, we report one case GCT proximal phalanx of ring finger noting the rarity of a lesion at this site, and also high chances of recurrence and need for multiple procedures.

CASE REPORT

A 38-year-old male presented with a painless swelling of the left ring finger of 6 months duration without any history of trauma or fever (Figure 1). Examination revealed a fusiform swelling, hard in consistency, in the proximal phalanx of ring finger. The overlying skin was stretched and pigmented without adherence to the underlying mass. The adjacent joints had normal ranges of movement. Regional lymph nodes were not palpable. Serum biochemistry was within normal limits. Radiographs demonstrated an expansile lytic lesion involving the entire phalanx with a cortical break (Figure 2a). The articular margins were found to be intact. Radiograph of the chest was normal. Fine needle aspiration cytology revealed multinucleated giant cells with stromal cells in the background. Under general anesthesia, curettage of the lesion was performed with cancellous bone grafting from the iliac crest (Figure 2b). The recovery was uneventful. Histology confirmed the diagnosis of a GCT, demonstrating osteoclastic giant cells admixed with stromal cells.

Access this article online



www.ijss-sn.com

Month of Submission : 01-2015
Month of Peer Review : 02-2015
Month of Acceptance : 02-2015
Month of Publishing : 03-2015

Corresponding Author: Dr. A Naveen Kumar, Department of Orthopaedics, Vijayanagar Institute of Medical Sciences, Room No. 3, 17th Block, Bellary, Karnataka, India. Phone: +91-9742777513. E-mail: naveenavinalli@gmail.com

On regular follow-up, patient presented with progressive swelling. At 6th-month follow-up on examination, the swelling was globular in shape, firm in consistency, and tender. The overlying skin was found to be fixed and markedly stretched (Figure 3a1 and a2). Regional lymph nodes were not palpable. A radiograph revealed an expansile lytic lesion in the remaining part involving the entire phalanx including the articular surface and was

associated with soft tissue swelling (Figure 3b1 and b2). A radiograph of the chest was normal. There were no signs of the disease elsewhere in the body. Results of laboratory studies were within normal limits.

Ray resection of the ring finger was performed under brachial block taking consent from the patient. Resected tumor tissue was found to involve the entire base of the proximal phalanx, including the articular cartilage. Histopathological examination reconfirmed that it was a GCT of proximal phalanx with extension into 3rd aintermetacarpal space. The patient had an uneventful recovery [Figure 4].

At his most recent follow-up (1 year), neither clinical nor radiological evidence of local recurrence was seen [Figure 5].

RESULT

After proper ray excision of ring finger for GCT of proximal phalanx, there was no recurrence of the tumor at 1-year follow-up. There was no limitation on the strength or motion of the uninvolved digits or wrist. He was able to perform normal activities of daily life except that the patient started wearing his ring in the middle finger.

DISCUSSION

GCT of the hand is rare and seems to be different from conventional GCT, which occurs at other sites in the



Figure 1: Clinical photograph of swelling over proximal phalanx of ring finger



Figure 2: (a) X-ray showing an expansile lytic lesion with break in the cortex, (b) X-ray after curettage and bone grafting



Figure 3: (a1 and a2) Clinical photograph showing recurrence of tumor, (b1 and b2) X-ray anterior-posterior and oblique showing lytic lesion of proximal phalanx of ring finger



Figure 4: (a1-a4) Ray excision of ring finger of the left hand, (b) postoperative day 15 after suture removal, (c) immediate post-operative X-ray

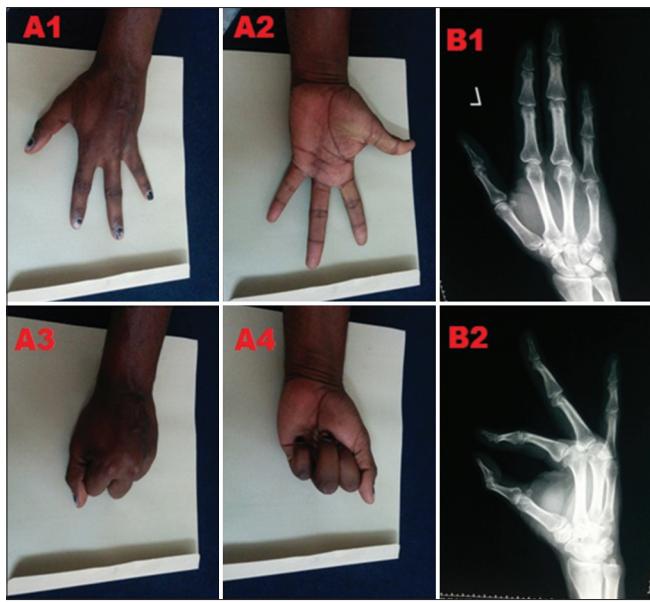


Figure 5: At 1 year months follow-up: (a1-a4) Clinical photos showing finger movements, (b1 and b2) X-ray showing no recurrence of the lesion

skeleton. GCTs recur more rapidly in the hand than they do in other locations. It is even rarer to encounter a GCT arising from the phalanges. Of the more than 2400 skeletal GCTs reported in the literature, <50 were found to involve the phalanges of the hand.^{7,8} Coley *et al.*⁹ reported only two cases of GCT arising from the phalanges in their series of 108 cases. Goldenberg *et al.*, in their analysis of 218 cases of GCT, reported six cases involving the phalanges.¹⁰ In another two large series of 568 and 327 cases of GCT, authors found only four and one cases of phalangeal involvement, respectively.^{11,12} Yasuda *et al.*¹³ reported a multicentric GCT of the hand involving a finger and the wrist. Benign metastasizing tumor of hand has also been reported. GCT of the hand has also been reported.¹⁴ GCTs of the hand have been treated with curettage and cancellous bone grafting, wide resection, and structural bone grafting or ray amputation.^{1,4,6,7,15} High local recurrence rates have been reported with these treatment modalities.^{1,4,6,7}

Daniel *et al.*¹⁶ reported a GCT of the middle phalanx treated with curettage and bone grafting, which recurred at 9 months and was successfully treated by excision and allograft replacement. Wittig *et al.*¹⁷ reported three cases of phalangeal GCT treated with curettage, cryosurgery, and cementation. Resection-iliac graft and double arthrodesis for GCT of the proximal phalanx of the thumb has also been reported.¹⁸ Most local recurrences of GCT cases of the hand are reported to occur within 1 year of primary surgery.^{1,6} Patel *et al.*⁷ treated three cases of GCT of the hand with curettage and bone grafting, two of which had local recurrence and required ray resection.

Most of the GCT cases with recurrent tumors require ray amputation to prevent recurrence. There are reports of success with ray resection or amputation at the cost of the loss of a functional finger.^{7,15} We chose ray resection of the amputated ring finger with the aim of preventing recurrence. The recurrent tumor in our patient expanded eccentrically, leading to increase in size of swelling. Histology of the lesion also revealed osteoid formation. Kumar and Tuli¹⁹ and Dahlin¹¹ reported similar histological findings in their series. Following ray resection of the ring finger, there was no functional loss of the hand in our patient. The patient was satisfied with a cosmetically improved hand. In view of the comparative rarity of a tumor arising from the phalanges of the finger, the present case was considered worth reporting.

CONCLUSION

GCT of phalanx is locally aggressive and highly recurrent tumor so primary aim of treatment should be block removal of the tumor mass. Patient should be under regular follow-up for detection of early recurrence if any. Here we have treated a case of GCT phalanx which recurred with primary treatment of curettage; recurrence was detected early and treated appropriately with ray excision.

REFERENCES

1. Averill RM, Smith RJ, Campbell CJ. Giant-cell tumors of the bones of the hand. J Hand Surg Am 1980;5:39-50.
2. Feldman F. Primary bone tumors of the hand and carpus. Hand Clin 1987;3:269-89.
3. Dahlin DC. Giant-cell-bearing lesions of bone of the hands. Hand Clin 1987;3:291-7.
4. Wold LE, Swee RG. Giant cell tumor of the small bones of the hands and feet. Semin Diagn Pathol 1984;1:173-84.
5. Eckardt JJ, Grogan TJ. Giant cell tumor of bone. Clin Orthop Relat Res 1986;45-58.
6. Athanasiou EA, Wold LE, Amadio PC. Giant cell tumors of the bones of the hand. J Hand Surg Am 1997;22:91-8.
7. Patel MR, Desai SS, Gordon SL, Nimberg GA, Sclafani SJ, Vigorita VJ, *et al.* Management of skeletal giant cell tumors of the phalanges of the hand. J Hand Surg Am 1987;12:70-7.
8. Bloodgood JC. Bone tumors. Central (medullary) giant-cell tumor (sarcoma) of lower end of ulna, with evidence that complete destruction of the bony shell or perforation of the bony shell is not a sign of increased malignancy. Ann Surg 1919;69:345-59.
9. Coley BL, Higinbotham NL, Kogure T. Giant cell tumor of bone. Am J Surg 1958;96:479-91.
10. Goldenberg RR, Campbell CJ, Bonfiglio M. Giant-cell tumor of bone. An analysis of two hundred and eighteen cases. J Bone Joint Surg Am 1970;52:619-64.
11. Dahlin DC. Dahlin's Bone Tumors: General Aspects and Data of 11,087 Cases. 5th ed. Philadelphia: Lippincott-Raven; 1996.
12. Campanacci M, Baldioni N, Boriami S, Sudonese A. Giant cell tumour of the bone. J Bone Joint Surg 1987;69A:106-13.
13. Yasuda T, Kanamori M, Ishizawa S, Nogami S, Hori T, Suzuki K, *et al.* Multicentric diffuse-type giant cell tumor of the hand. Mod Rheumatol 2008;18:67-71.
14. Lopez-Barea F, Rodriguez-Peralto JL, Garcia-Giron J, Guemes- Gordo F.

- Benign metastizing giant cell tumour of the hand. Report of a case and review of the literature. Clin Orthop Relat Res 1992;270:4.
- 15. Slesarenko YA, Sampson SP, Gould ES. Giant cell tumour of the distal phalanx of the hand. Hand Surg 2005;10:289-91.
 - 16. Daniel JN, Eglseeder WA, Sydney SV. Giant cell tumor of the middle phalanx. Orthopedics 2000;23:1097-9.
 - 17. Wittig JC, Simpson BM, Bickels J, Kellar-Graney KL, Malawer MM. Giant cell tumor of the hand: Superior results with curettage, cryosurgery, and cementation. J Hand Surg Am 2001;26:546-55.
 - 18. Fnini S, Labsaili N, Messoudi A, Largab A. Giant cell tumor of the thumb proximal phalanx: Resection-iliac graft and double arthrodesis. Chir Main 2008;27:54-7.
 - 19. Kumar S, Tuli SM. Giant cell tumor of the middle phalanx of the left fifth finger. Case report. Int Surg 1971;55:288-92.

How to cite this article: Venkateshulu E, Naik S, Kumar AN, Kumar A, Naik RS. Giant Cell Tumor Involving the Proximal Phalanx of Ring Finger: A Rare Case Report. Int J Sci Stud 2015;2(12):168-171.

Source of Support: Nil, **Conflict of Interest:** None declared.