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Giant cell tumor of proximal end of fibula: A Case Report

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Conflicts of Interest: Nil

Abstract

Introduction: Giant Cell Tumor(GCT) also known as osteoclastoma is one of the most common benign bone tumour, which occurs in young adults in 20 -40 years age group with high recurrence rate and a potential for aggressive behavior. Most common site of occurrence is distal femur followed by proximal tibia, distal radius and sacrum. Tumors of the fibula account for about 2.5% of all primary bone tumors (13, 14).MRI is the investigation of choice while excision biopsy is gold standard. Available modalities of treatment consist of wide local excision, curettage with or without adjuvants.

Case Report: A 20 year old male presented with pain, swelling and difficulty in walking since 6 months. X-Rays showed geographic, Lytic, Expansile, lesion of head of fibula with cortical thinning. MRI reports suggestive of expansilelytic lesion in fibula head most likely to be Giant Cell Tumor. Biopsy report was suggestive of plenty of giant cells dispersed among mononuclear stromal cells. Patient is managed with wide local excision and curettage. Post excision biopsy specimen sent for histopathological examination which confirmed the diagnosis of Giant Cell Tumor (Osteoclastoma)

Conclusion: GCT is benign tumor of bone with local aggressiveness and higher tendency to recur after surgery. Considering aggressiveness of tumor, wide local excision preserving common peroneal nerve along with curettage was suitable option for optimum functional and ontological outcome while reducing the risk of post operative recurrence.

Keywords: Giant Cell Tumor, Fibula, Excision, Curettage, Osteoclastoma

Introduction

Giant cell tumor (GCT) of bone also known Osteoclastoma are benign bone tumors which exhibit

local aggressiveness that most commonly occur around the metaphysis of long bones, with frequent subchondral bone invasion. These are considerably frequent tumors, accounting for 4—5% of all bone tumors and 21% of benign bone tumors.[1] It is an intramedullary bone tumor consisting of mononuclear and giant mononuclear cells, which resemble osteoclasts.[2] GCT most commonly occurs in 20–40 years age group, and about half of them are located around the knee joint.[3,4,5,6]The most common locations, in which GCT occurs in decreasing order are, distal femur, proximal tibia, distal radius, followed by sacrum[8] Tumors of the fibula account for about 2.5% of all primary bone tumors (13,14).Malignant transformation is seen in 10% of GCTs and 1 to 4 % metastasize to lungs.[7] Main symptoms associated with GCT are pain and swelling around involved joints and difficulty in movements over affected joint. Definitive diagnosis is made based upon radiological and Histopathological findings. Various modalities available for treatment of GCT are surgical treatment, curettage, cementation, monoclonalanti bodies, selective arterial embolization, radiotherapy, bisphosphonates and interferon therapy. Two staging systems namely Enneking and Campanacci system are used for staging of the disease of which later one is based on plain radiography. The goal of surgery is complete resection of disease with wide local excision and curettage.

Case Presentation

A 20 year old male was referred to our tertiary care centre with history of pain and swelling around left knee since 6 months. Pain was over lateral aspect of knee and was insidious in onset. It was dull aching and progressive in nature. It was relieved slightly on taking over the counter analgesics and was aggravated on exertion. The patient did not give any history of trauma. Four months ago, patient noticed swelling for the first time over proximal and lateral aspect of the left leg which was initially bead sized and rapidly progressed to size of a tennis ball. On local examination, the overlying skin was normal without any localized rise of temperature and no visible pulsations. Onpalpation, the swelling was hard in consistency, non-compressible, non-pulsatile and painful. The patient was admitted and blood and radiological work-up was done followed by an core needle biopsy. Radiographical examination showed geographic, lytic, expansile lesion of the head of fibula with “egg shell” rim of calcification with complete destruction of head of fibula with cortical thinning. CT scan showed eccentrically located solitary bone lesions. Biopsy shows plenty of giant cells dispersed among mononuclear stromal cells. Magnetic resonance imaging revealed expansilelytic lesion in fibula head. Haematological and biochemical parameters were normal. Considering the risk for recurrence, patient was counseled for wide local excision of fibular head. After thorough examination, preanaesthetic evaluation and written consent, patient was posted for surgery. Under spinal anaesthesia, under strict aseptic precautions, wide excision of the tumor was done without any injury to common peroneal nerve and surrounding ligaments of the knee joint. Sample was sent for histopathological examination which shows tumor showing mix population of numerous osteoclast-like giant cells and mononuclear spindle shaped cells with stroma showing fibrocollagenous tissue, congested blood vessels, hemosiderophages and areas of tumor necrosis which confirmed the diagnosis of Giant cell tumor. The patient was discharged and asked to follow-up after 1 month, to identify any local recurrence promptly. Patient is able to

walk and squat with minimal pain or discomfort and was able to follow his routine chores with ease at the time of follow-up after 6 months without any pain.

Results

Patient was operated with lateral approch of knee joint. Patient was having pain and swelling over left knee joint with difficulty in walking preoperatively. Postoperative 1month follow-up showed minimal pain (VAS Score 1) which was allowing the patient to do daily activities with some amount of discomfort. Postoperative 6 months follow-up, patient had no pain (VAS Score 0) and did daily activities without any discomfort.

Discussion

GCT should be well treated as it is a benign tumor with localized aggressiveness. Population aged between 20 and 40 years have a higher incidence, with the distal femur and proximal tibia being the common sites (3, 4, 5, 6). In our case, a 20-year-old male was detected with a GCT of the head of the left fibula.GCT has a high tendency to recur after surgical removal as it is locally aggressive (15, 16).The selection of proper treatment is very important to reduce recurrence of GCT.The recurrence rate after curettage only ranges from 12-65% while that of curettage with adjuvant treatment is 12-27 percent and 0-12% after resection. Therefore, optimal removal of tumor is an important predictive factor for surgical outcome [(11)] .About 20% of GCTs tend to exhibit malignant transformation and as intralesional curettage have increased local recurrence rate, we used wide local excision as a treatment modality in our case. Giant cell tumors occurring in other anatomical locations are usually managed using curettage, thermal and chemical cauterization of the tumor cavity walls and a bone graft[(11)].But for GCT occurring in proximal fibula, total en bloc excision of the tumor is the treatment modality of choice[(12)] Many studies show that treating the GCT with wide local excision is associated with low recurrence rate(15,17,18). Klenke et al (18). Found a decreased recurrence rate of 5% in patients managed with wide local excision and 25% recurrence rate when managed withintralesional surgery.

Conclusion

Giant cell tumor is locally aggressive tumor with high postoperative recurrence rate.GCT is commonly found between 20-40 years age group. Its peak incidence is in third decade of life. Diagnosis is based on radiological and histological findings. Surgical removal is the primary treatments of for GCTs. Distal end of femur and proximal end of tibia are are common sites for GCT of bones.GCT involves fibula bone very rarely. Wide local excision of tumor has decreased recurrence rates with better outcome.

References

1. Babinet A. Tumeur à cellule géantes : cahier d'enseignement de la Sofcot. Elsevier SAS : Paris : France 2005:201—19.
2. M. Campanacci, Bone and Soft Tissue Tumors: Clinical Features, Imaging, Pathology and Treatment, 2nd ed., Springer, New York, 1999.
3. L. van derHeijden, P.D. Dijkstra, D.A. Campanacci, C.L. Gibbons, M.A. van de Sande, Giant cell tumor with pathologic fracture: should we curette or resect? Clin. Orthop. Relat. Res. 471 (3) (2013) 820–829.
4. Yongcheng Hu, Yanxi Chen, Dengxing Lun, The establishing and verification of clinical scoring system for giant cell tumor, Chin. J. Orthop. 3l (2) (2011) 105–112
5. F.V. von Steyern, I. Kristiansson, K. Jonsson, P. Mannfolk, D. Heinegård, A. Rydholm, Giant-cell

tumor of the knee: the condition of the cartilage after treatment by curettage and cementing, J. Bone Joint Surg. Br. 89 (3) (2007) 361–365.

6. M. Xie, K. Xiao, Z.H. Fang, R.K. Huang, J.J. Zhao, W.S. Kan, Giant cell tumor of the tendon sheath of the toe, Orthop. Surg. 3 (3) (2011) 211–215.
7. M. Dominkus, P. Ruggieri, F. Bertoni, A. Briccoli, P. Picci, M. Rocca, et al., Histologically verified lung metastases in benign giant cell tumours–14 eases from a single institution, Int. Orthop. 30 (6) (2006) 499–504
8. Bridge JA, Neff JR, Mouron BJ. Giant cell tumor of bone. Chromosomal analysis of 48 specimens and review of the literature. Cancer Genet Cytogenet. 1992; 58 (1):2–13.
9. W.F. Enneking, Giant cell tumor, In: Musculoskeletal tumor surgery, ChurchillLiving stone, New York, 1983, pp. 1435–1468.
10. R.J. O'Donnell, D.S. Springfield, H.K. Motwani, J.E. Ready, M.C. Gebhardt, H. J. Mankin, Recurrence of giant-cell tumors of the long bones after curettage and packing with cement, J. Bone Joint Surg. Am. 76 (1994) 1827–1833
11. Yip KM, Leung PC, Kumta SM. Giant cell tumor of bone. Clin Orthop RelatRes.1996; 323: 60-4.CapannaR,FabbriN,BettelliG.Curettage of giant cell tumor of bone.The effect of surgical technique and adjuvants on local recurrence rate. Chir Organi Mov.1990;75(1Suppl):206.
12. Yip KM, Leung PC, Kumta SM. Giant cell tumor of bone. Clin Orthop Relat Res. 1996; 323:60-4.
13. Unni K.K., Inwards C.Y. Lippincott Williams & Wilkins; Philadelphia, Pennsylvania: 2010. Dahlin's Bone Tumors: General Aspects and Data on 10,165 Cases; pp. 1–9. [Google Scholar]
14. Japanese Orthopaedic Association . National Cancer Center; Tokyo: 2013. Musculoskeletal Tumor Committee, Bone Tumor Registry in Japan-2010. (in Japanese)
15. Puri A, Agarwal MG, Shah M, Jambhekar NA, Anchan C, Behle S. Giant cell tumor of bone in children and adolescents. Journal of Pediatric Orthopaedics.2007;27:635-9.
16. Van der Heijden L, Dijkstra PS, van de Sande MA, Kroep JR, Nout RA, van Rijswijk CS, Bovée JV, Hogendoorn PC, Gelderblom H.
17. Pawar E, Aher G, Gop A, Shah NZ, Ramteke U, Amin A, Kakde S. Management of giant cell tumor of fibular head with curettage: A case report. International Journal of Orthopaedics. 2019;5:63-6.
18. Klenke FM, Wenger DE, Inwards CY, Rose PS, Sim FH. Giant cell tumor of bone: risk factors for recurrence. Clinical Orthopaedics and Related Research®. 2011; 469:591-9.

Legend Figures

Image 1: Clinical picture

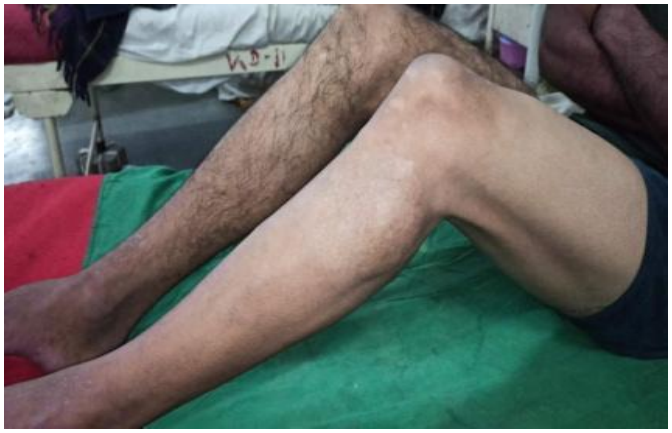

Image 2: Clinical picture

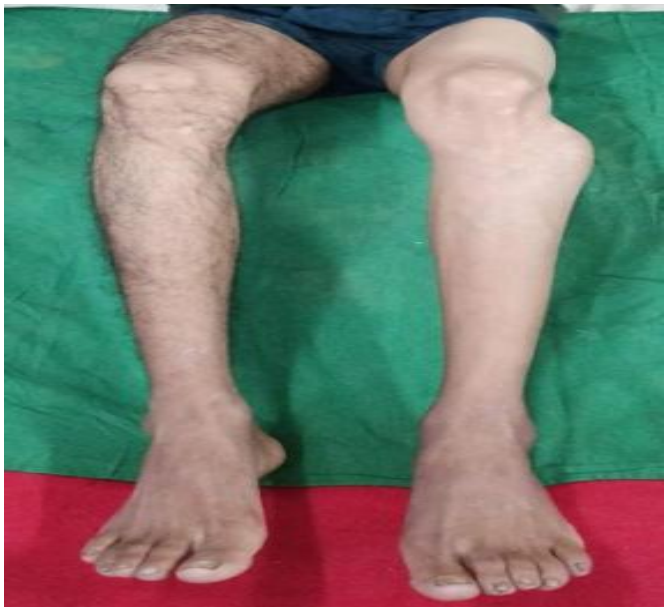

Image 3: Preoperative AP X-Ray

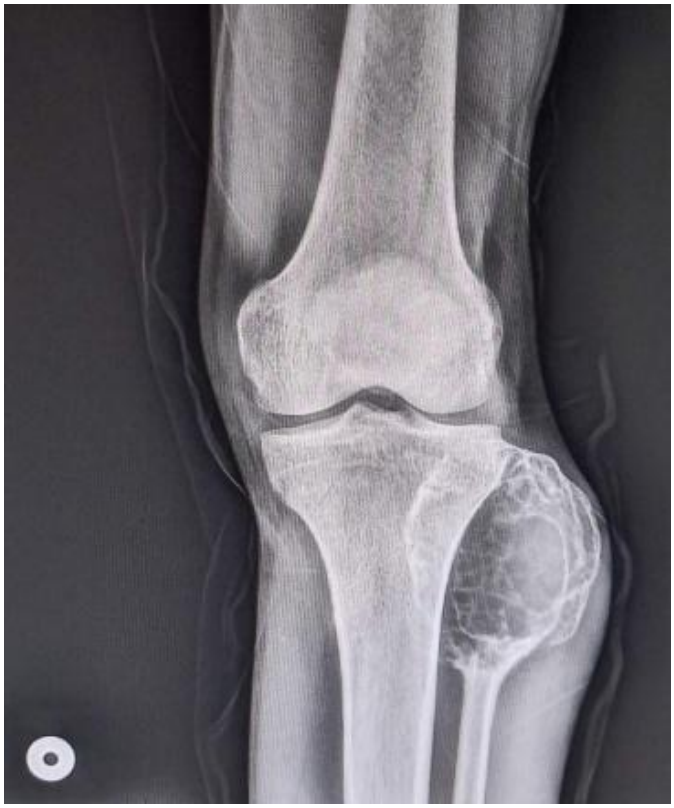

Image 4:Preoperative Lateral X-Ray

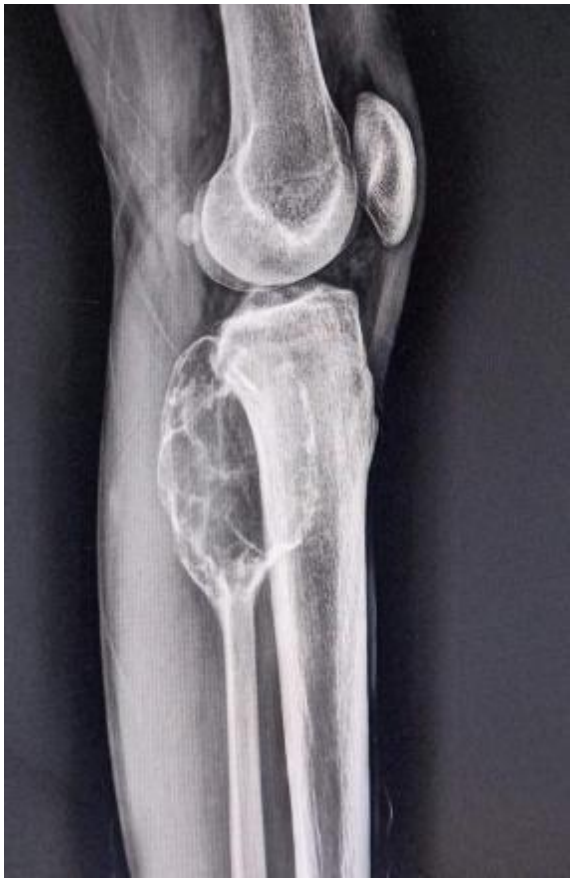

Image 5: Intraoperative picture

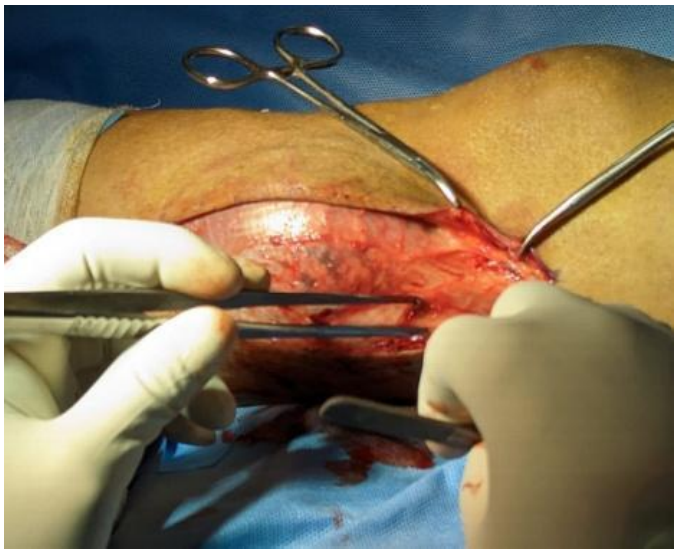

Image 6:Intraoperative picture

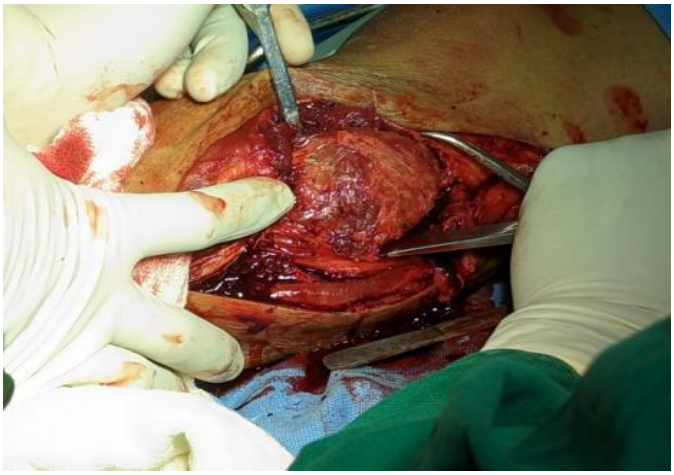

Image 7:Intraoperative picture

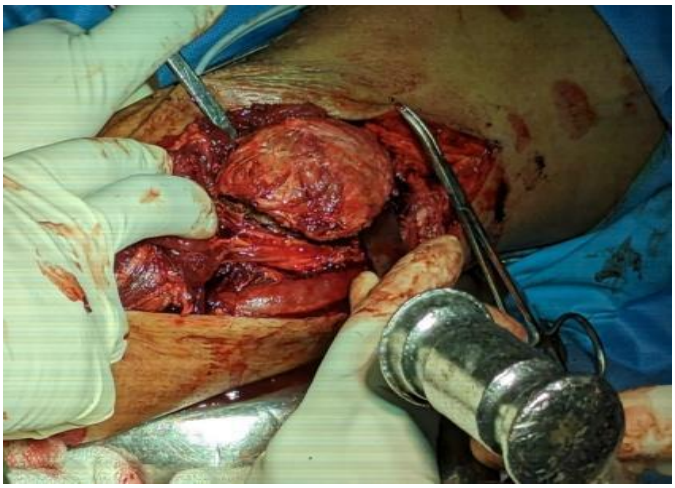

Image 8:Excised specimen

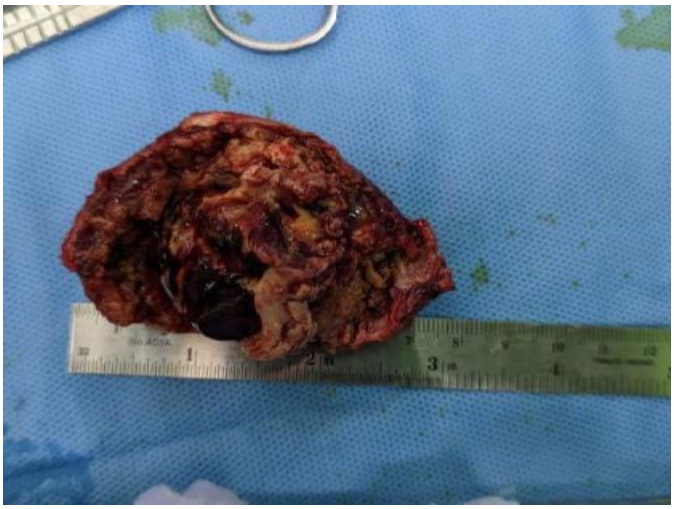

Image 9:Intraoperative scar

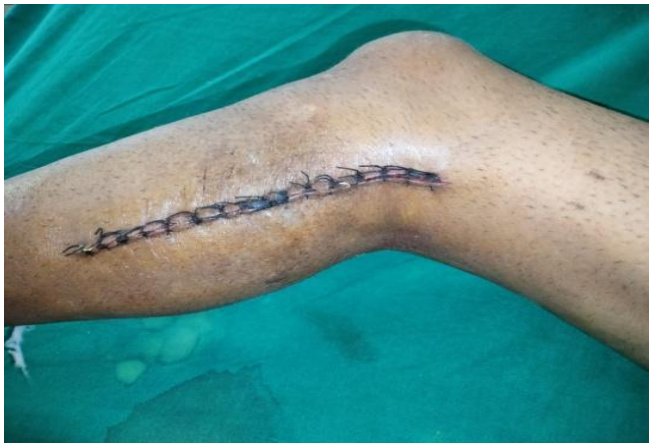

Image 10: Postoperative AP X-Ray

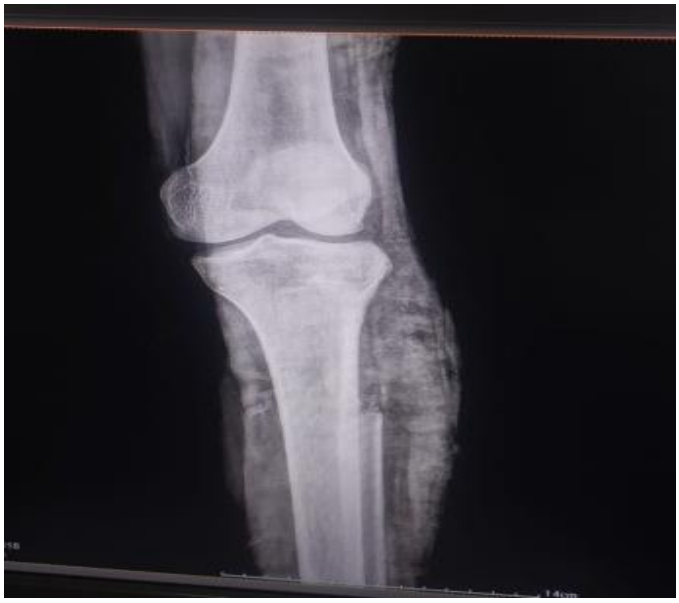

Image 11: Postoperative Lateral X-Ray

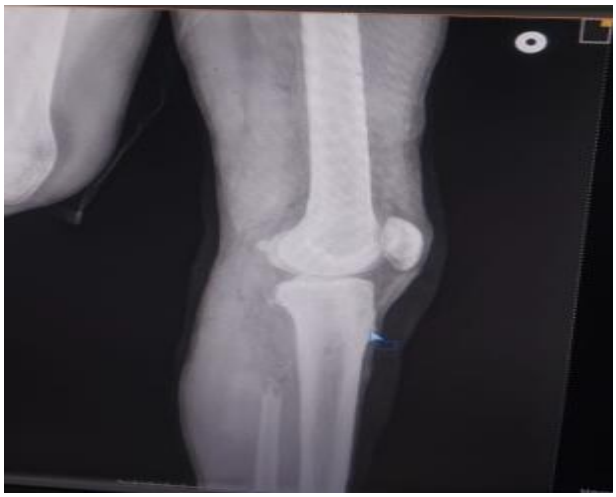

Image 12: One month follow-up scar