**TITLE:A Case of Distal femur swelling in 22 year old female-Giant cell tumour(Osteoclastoma)**

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**Abstract:**

**INTRODUCTION AND PURPOSE:** Giant cell tumour is a benign but aggressive lesion consisting of osteoclast like giant cells, fibroblast like stromal cells and blood vessels. They represent 5% of neoplasms of bone. Patients usually present in the age group of 20 to 30 years with non specific symptoms like pain, swelling and decreased range of motion. This case of Giant cell tumour was aggressive with breaching of the cortex.

**MATERIAL AND METHODS:**A 22year old female patient presented to Gandhi Hospital with chief complaint of pain in the right knee for 2 years with no history of trauma. Pain was insidious in onset and aggravated with walking and relieved on rest. There was no visible swelling. MRI revealed that there was a breach in the cortex of distal femur.

**RESULTS AND CONCLUSION:** Clinical, radiological and biopsy evaluation has been done which is suggestive of giant cell tumour for which curettage and bone grating with Distal femoral locking plate was done.Ipsilateral Fibular and iliac crest autograft was used for bone grafting.

**INTRODUCTION**

It was described by Sir Astley Cooper in 1818.Commonest benign tumour encountered with peak incidence in third decade of life and with female predominance.
It typically involves epiphyseometaphyseal region.
Presenting complaint may be pain of variable severity.
Trauma or pathological fracture may direct attention to site of involvement.
Distal femur, proximal tibia and distal radius are the most common sites.
Main purpose of treating GCT is to eradicate tumour by preserving the joint.
A meticulous curettage of tumour using high speed burr and local adjuvant therapy is the mode of management.

For local recurrence, pathological fractures, locally malignant tumours wide resection is done.
Recent advances in treating tumour defects involves the use of custom made prosthesis for replacement of knee joint defects.

KEYWORDS-Giant cell tumour,distal femur,joint preservance,curettage,autograft.

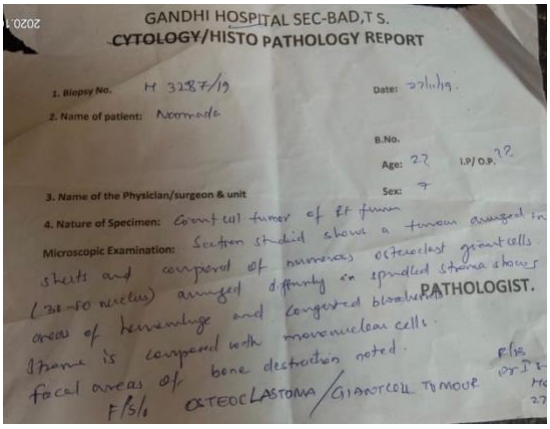
**Clinical description**

A 22 year old female presented to the Gandhi Hospital out patient block with the chief complaint of pain in the right knee for 2 months.
There is no history of trauma. Pain was diffuse ,insidious in onset, aggravated with walking and relieved on rest. There was no visible swelling or any skin changes like scars, sinus around the knee joint. There was local rise of temperature and tenderness. Full range of movements are present.

**MANAGEMENT AND OUTCOME:**

Initially routine investigations like Complete blood picture, ESR,CRP and X-ray imaging were done.
Complete blood picture came out to be normal.
ESR and CRP were elevated.
On Xray(FIG.1) An osteolytic, radiolucent area without sclerotic margins are seen in the distal femur epiphyseal and metaphyseal region.
Later MRI(FIG.2) was advised for the patient and the reported suggested of “Well defined altered surgical

intensity lesion of 7x6x4 cms with narrow zone of transition and cystic components with fluid filled levels within it involving metaphysis and epiphysis of distal femur. There were few areas of cortical break at anteromedial aspect of femur with extra osseous soft tissue component. Feature suggestive of Giant cell tumour with secondary aneurysmal bone cyst."There was no involvement of and neurovascular structures. Surgical profile was sent and trucut biopsy was done from right distal femur.
Biopsy report suggestive of "Giant cell tumour of right distal femur."


GANDHI HOSPITAL SEC-BAD, T S.
CYTOLOGY/HISTO PATHOLOGY REPORT
1. Biopsy No. H 3287/19 Date: 27/11/19.
2. Name of patient: Narmada
B.No.
Age: 22 I.P/ O.P. ??
3. Name of the Physician/surgeon & unit
Sex: F
4. Nature of Specimen: Giant cell tumor of Rt femur
Microscopic Examination: Section studied shows a tumour arranged in sheets and composed of numerous osteoclast giant cells (30-50 nuclei) arranged diffusely in spindled stroma. Stroma shows areas of hemorrhage and congested blood vessels. Stroma is composed with mononuclear cells. focal areas of bone destruction noted.
PATHOLOGIST.
F/S/o OSTEOCLASTOMA / GIANT CELL TUMOUR

Tumour was in stage 2 of Ennekings classification.
There was no evidence of distal metastasis.

Later through lateral approach for distal femur a 15 cms incision was given and soft tissues were incised in same plane. Iliotibial band is divided and vastus is lifted and


Fig.1 Pre-operative XRAY

Fig.2 MRI film

bone exposed. Thorough curettage was done with high speed burr and tumour mass removed. Simultaneously second team of surgeons harvested bone graft from ipsilateral iliac crest and ipsilateral fibula. Tumour cavity was filled with autogenous iliac crest and fibular bone graft and later a 7 holed distal femoral locking plate(FIG.6) was applied with 4 cortical screws of 4.5 mm and 4 cancellous screws of 6.5 mm. Wound closed in layers and dressing done.

Post op x rays were taken. Isometric quadriceps strengthening exercises were started from 2$^{nd}$ Post operative day.

On 15th post operative day suture removal was done and patient was discharged.
Follow up was regular and there are no post operative complications. Xrays were taken regularly and union was confirmed. Knee flexion was started after 3 weeks. After 1 month partial weight bearing was started and gradually progressed to full weight bearing by 2nd month.
Patient is walking normally with good range of movements. There is no recurrence.

Fig.3 After Curettage

Fig.4 Tumour

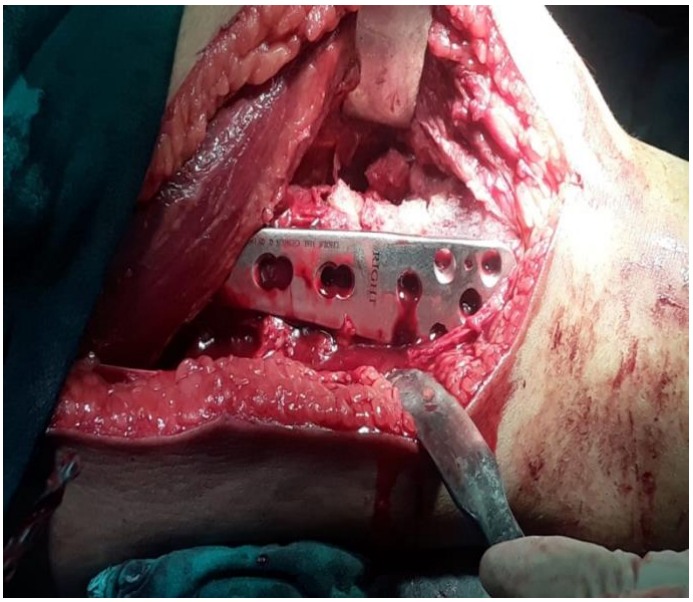


Fig.5 Strut graft fibula.

Fig.6 DFLP and graft placed

**DISCUSSION**

GCT around knee joint is a clinical challenge as it is weight bearing joint with high functional requirement. Importance in management is to achieve good balance between radical removal of tumour to reduce recurrence and preserving knee joint function. Main aim of treating GCT is local control with preserving joint function. This has been traditionally achieved by intralesional curettage and autograft reconstruction by packing the cavity of excised tumour with morselized iliac crest corticocancellous bone. Regardless of how thoroughly performed, intraleisonal

excision leaves microscopic disease in bone and leads to recurrence. Graft from iliac crest was taken for osteoprogenitor activity. Graft from fibula was taken as strut support. Autograft from right fibula and right iliac crest was taken to reduce the graft site morbidity. Modern instruments such as high speed burr, pulsatile jet lavage system, head lamp and dental mirror combined with multiple angled curette's to identify small pockets of residual disease have been used to prevent recurrence. Cryosurgery with liquid nitrogen is associated with problems of local wound and bone complications. Adequate removal of tumour seems to be more predictive factor for the outcome of surgery. Methyl methacrylate cement was not used because it is relatively weak when subjected to shear and torsional stress. Moreover autograft taken from ipsilateral iliac crest and fibula was adequate to fill the defect.

Allograft is expensive and there was no availability of bone bank. Other treatment modalities like arthrodesis and rotationplasty have their own disadvantages. Consequently, in GCT bone treatment some authors used physical methods such as high speed burr and chemical methods like ethanol, phenol, liquid nitrogen and Hydrogen peroxide after bone curettage.

In present study we used high speed burr, electrotome cauterisation, iodine tincture to treat the tumour successfully and iliac crest and fibula autografts were used to fill the cavity. Iodine tincture can desaturate the proteins and cause coagulative necrosis of cells. Successive combined treatment can treat the lesion from

an omni direction and multi angle to reduce the recurrence. As the joint is preserved there is no requirement of custom made prosthesis in this case.

**CONCLUSION**

In cases of GCT, management depends on the site, age and involvement of articular surface.

If tumour involves the neurovascular structures and soft tissue then limb salvage surgery is not possible. If there is intra articular extension, then the management is eradication of tumour with preservation of joint function. Proper curettage and filling the cavity with bone graft and proper plating over the distal femur helped the patient with satisfactory oncological outcome.

Fig.7

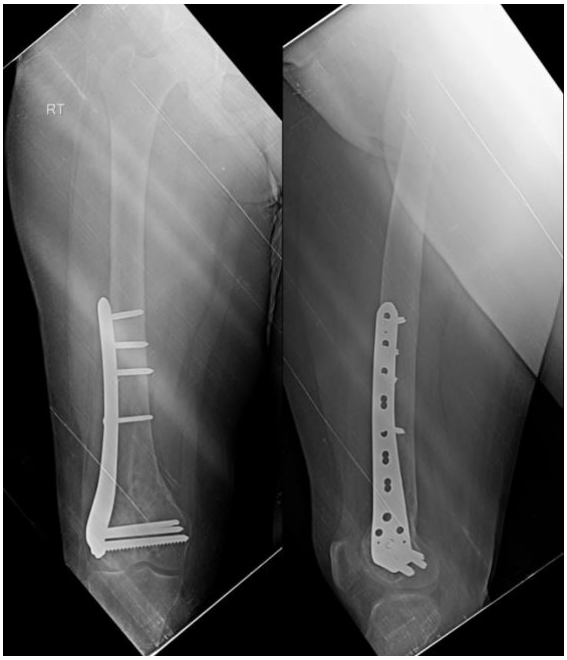


Fig.8

**Fig.7 Post op xray after 1 month**
**Fig.8 Post op xray after 3 months**

Fig 9

Fig 10

Fig.11

Fig.9. patient doing full extension

Fig.10 Patient doing flexion
Fig.11 Patient flexing in prone position

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