

Management of Non-Metastatic Pelvic Bone Giant Cell Tumour by Resection, Extended Curettage and Reconstruction with Autograft and Allograft– A Case Report

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Abstract:-

➤ Case –

32year old female who presented with complaints of pain over right groin and difficulty in bearing weight over right lower limb in the last 1 year. Pain was insidious in onset, gradually progressive, radiating to right knee and leg, dull aching in nature, aggravated on walking and strenuous exercise and relieved on rest and medications without any constitutional symptoms. Patient sustained trivial trauma due to accidental fall after which she was unable to walk and weight bear on that limb. There were no similar complaints in other joints. on examination, patient was conscious, oriented to time, place and person and vitals are stable. Tenderness present over right pubic tubercle and crest region. there was no distal neurovascular deficit. Overlying skin was normal without any scar, sinus, or dilated veins. Plain radiograph shows Expansile lytic lesion involving superior pubic rami, acetabulum, and sciatic notch. MRI pelvis showed well defined expansile lytic abnormal signal intensity lesion involving the anterior wall, medial wall and roof of right acetabulum extending to the adjacent right superior pubic rami favours neoplastic aetiology – GCT. Relevant blood investigations, CT Thorax and USG abdomen and pelvis done and mets ruled out. Open biopsy was done and GCT was confirmed. She was diagnosed to have Non metastatic GCT of right superior pubis and acetabulum (roof, medial and anterior wall). She underwent Tumour resection, extended curettage, adjuvant use and reconstruction with morselized fried dried allograft and ipsilateral tricortical iliac crest autograft.

➤ Conclusion

Despite the rarity of this tumour in pelvis and acetabulum and delay in presentation at most of the

times, early diagnosis and treatment protocol of surgical management and reconstruction of the void part gives better clinical and functional outcome. This case gives as one mode of treatment which gave better outcomes.

Keywords:- Giant Cell Tumour, Extended Curettage, Reconstruction.

I. INTRODUCTION

Giant cell tumour is a locally aggressive benign bone neoplasm, most commonly affection women in 3rd decade. GCT accounts for 4-8% of primary bone tumors and 20% of benign neoplasm [1]. Recurrences of about 10-50% is described in various studies. Only 10% of GCTs have malignant transformation [2].

Pelvic GCT are rare accounting for 1.5% to 6.1% of bone GCTs. It usually affects ends of long bones (epiphysis) like distal femur, proximal tibia, proximal humerus and distal radius [3].

Plain radiograph of the involved part usually shows eccentric expansile radiolucent lytic lesion of epiphysis with thinning of the cortex. Magnetic resonance imaging (MRI) is helpful in determining the extent of the lesion within the bone and in the soft tissue, which usually appears dark on T1-weighted images and bright on T2-weighted images. MRI also may reveal fluid-fluid levels which is typical of a secondary aneurismal bone cyst, that occurs in 20% of patients. Diagnosis is confirmed by histopathological examination. Grossly, these lesions are chocolate brown, soft, spongy, and friable with blood filled cavities. Microscopically, multinucleated giant cell is seen with background network of stromal mononuclear cells [4].

The optimal treatment of pelvic GCTs is a controversial topic in orthopaedic oncology. This is due to lack of studies in the literature. Treatment options include radiation therapy (RT) (mainly in case of tumour inaccessible sites), surgery with an intralesional margin (S[IL]), surgery with an intralesional margin and RT, surgery with an intralesional margin and adjunctive cryosurgical technique, microwave inactivation of tumour and intralesional curettage, and surgery with a wide margin (S[W]). There are various reconstructive methods for bone defects created by resection or curettage; these include cement filling, autograft, allograft bone transplantation, rod fixation and hemipelvic prostheses [5,6].

II. CASE REPORT

This is a case of 32year old female who presented to opd with pain over right groin and difficulty in bearing weight over right lower limb in the last 1 year. Pain was insidious in onset, gradually progressive, radiating to right knee and leg, dull aching in nature, aggravated on walking and strenuous exercise and relieved on rest and medications without any constitutional symptoms. Patient sustained trivial trauma due to accidental fall after which she was unable to walk and weight bear on that limb. There were no similar complaints in other joints. on examination, patient was conscious, oriented to time, place and person and vitals are stable. Tenderness present over right pubic tubercle and crest region. there was no distal neurovascular deficit. Overlying skin was normal without any scar, sinus, or dilated veins. Plain radiograph shows Expansile lytic lesion involving superior pubic rami, acetabulum, and sciatic notch. [FIG 1]



Fig 1 X RAY Pelvis with both Hips – Lytic Lesion Over Pelvic and Acetabular Area

MRI pelvis with both hips done - well defined expansile lytic abnormal signal intensity lesion involving the anterior wall, medial wall and roof of right acetabulum extending to the adjacent right superior pubic rami favours neoplastic aetiology – GCT. [FIG 2] [FIG 3] [FIG 4]

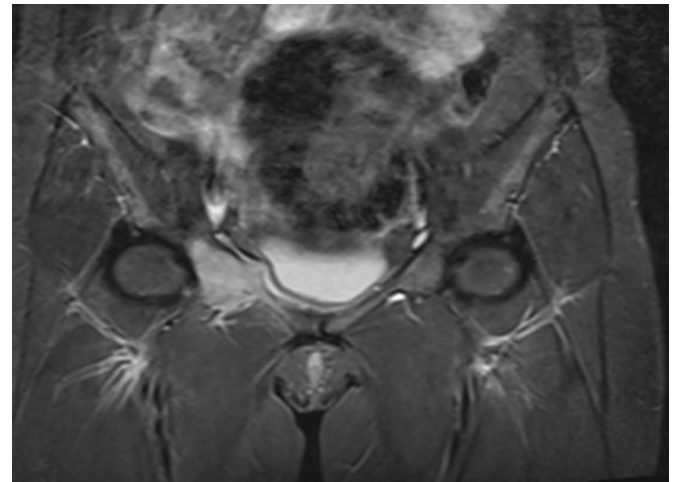


Fig 2 MRI – T1 Weighted – Hyperintense Lesion

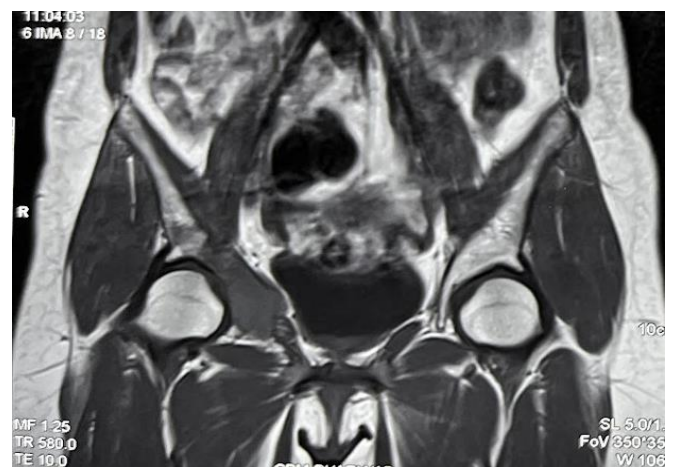


Fig 3 MRI – T2 Weighted – Hypointense Lesion

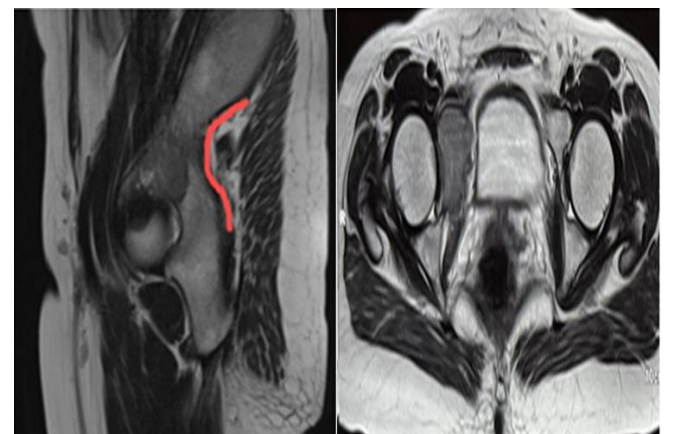


Fig 4 MRI – Sagittal and Axial Sections Showing Femoral Head Free of Disease

Histopathological examination of the sample confirmed GCT which shows osteoclast type of giant cells with occasional spindle cells in a haemorrhagic background.

CT Thorax, ultrasound abdomen and pelvis were done and metastasis was ruled out.

Planned resection of the tumour, extended curettage, adjuvant, and reconstruction using bone graft.

For surgical downstaging of the tumour, Injection DENOSUMAB was given 120mg two doses in a span of 2 weeks. Patient was taken up for surgery after 3 weeks of last dose of denosumab injection. [FIG 5]



Fig 5 Pre and Post Denosumab X Ray Images

Patient after preop work up with adequate blood products reserved was taken up for the procedure. Supine position, through ilioinguinal approach, superior pubic rami and acetabular area reached, obturator nerve identified and secured, the lesion is resected and extended curettage done with high-speed burr, cavity is injected with adjuvant – Hydrogen peroxide and the cavity is filled with morselized freeze dried allograft + ipsilateral tricortical iliac crest large autograft and graft is fixed with 6.5mm CC screws. [FIG – 6,7,8,9]

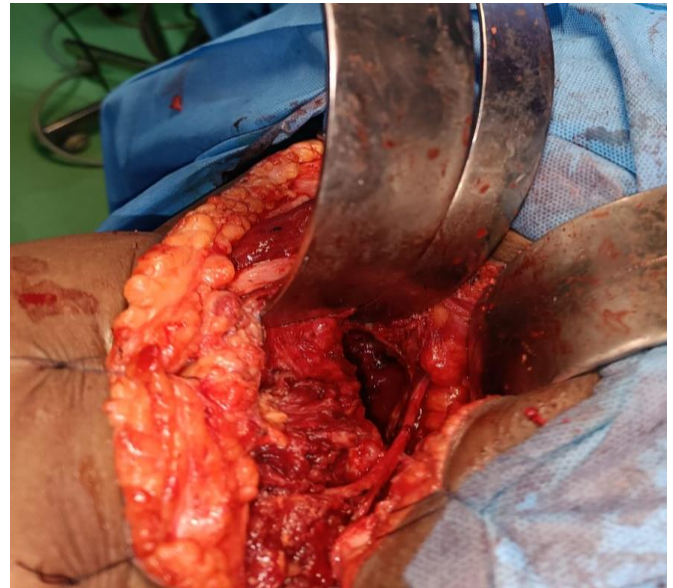


Fig 7 Image Showing – Post Resection and Extended Curettage with High Speed Burr – Cavity of Superior Pubic Rami and Acetabular Wall

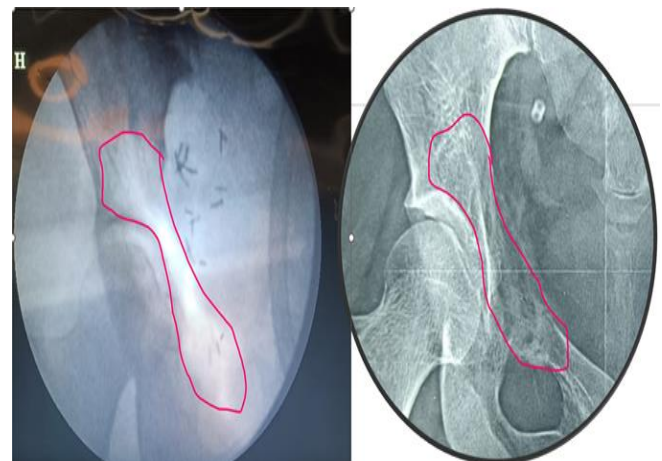


Fig 8 Left Side – Post Resection and Curettage -C Arm Image Compared to Preop X Ray – Right Side

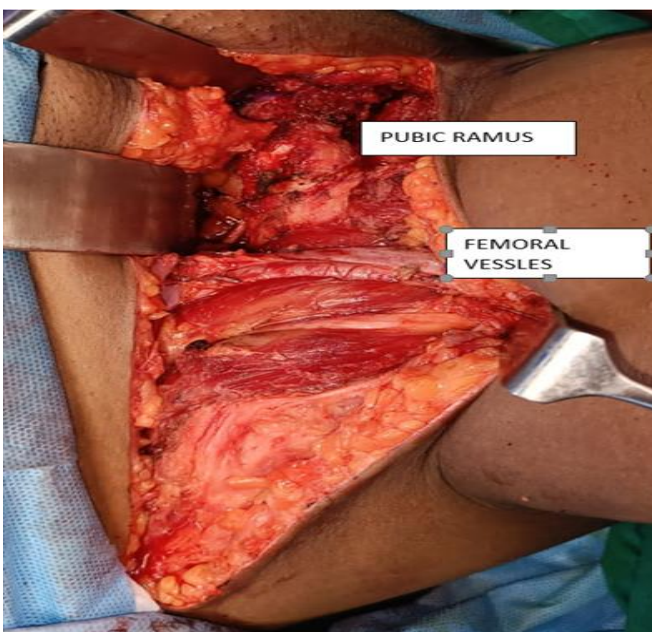


Fig 6 Intra Op – Showing Pubic Rami Bone, Femoral Vessles and Iliopectineus Muscle

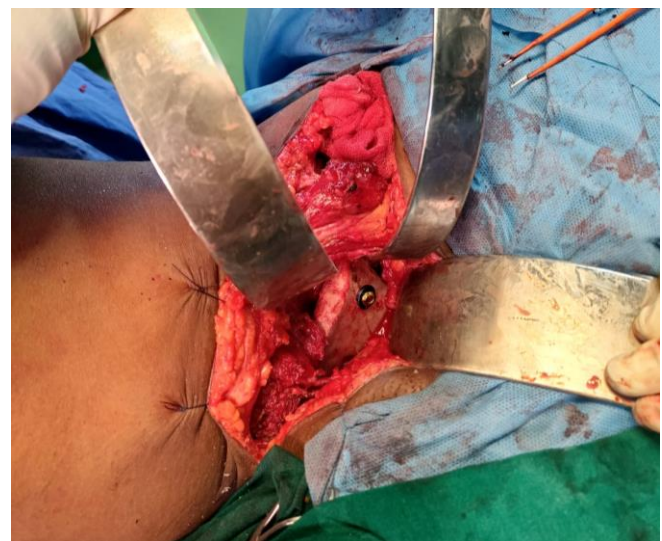


Fig 9 Cavity base Filled with Allograft and on Top Filled with Ipsilateral Tricortical Iliac Crest Autograft and Fixation to Acetabular Wall with 6.5mm Cc Screws

Post operatively patient was stable. Post op radiograph was taken. [FIG -10]



Fig 10 Post Op Radiograph of Pelvis with Both Hips

Patient wound was inspected regularly and sutures were removed on POD-14. Gradually she was started on non-weight bearing mobilization was started from POD-6, with quadriceps strengthening exercise and knee ROM exercises. Started on partial and full weight bearing mobilization with walker 2 months after surgery.

Patient was followed up till 6 months postop with no local recurrence both clinically and radiologically. At 6 months post op, patient can bear weight over both lower limbs and able to sit cross legged and climb stairs with no restrictions. [FIG- 11]



Fig 11 At 6 Moths follow Up – Able to Climb Stairs and Sit Cross Legged with No Restrictions

III. DISCUSSION

Giant cell tumours of bone rarely affect the pelvis. According to the classification system by Enneking [7] for pelvic tumors: 3 types were described - Region 1 (iliosacral), region 2 (acetabular region) and region 3 (ischiopubic). Enneking surgical staging system and campanacci radiological classification is helpful in deciding treatment of GCTs.

The local recurrence of pelvic GCTs is high owing to its complex anatomy and delay in presentation and diagnosis. Study done by Sanjay et al [8] have reported 3 patients out of 15 had local recurrence following intralesional surgery and none out of 2 patients had recurrence treated by wide resection of pelvic GCTs. Similar rate of local recurrences was observed in studies conducted by Guo et al [9] and Balke [10]. However, there were no statistical significance when two methods results were compared. Wide resection has an advantage of getting adequate clear margins and thereby prevent local recurrence.

Finally following wide resection, the void created can be filled by various means like bone cement, allograft, autograft, and prosthesis reconstruction. Although bone cement can be used and it is easy to detect local recurrence, graft was used in our cases keeping in mind that not to cause irritation and thermal necrosis to the surrounding soft tissues and pelvic organs.

External beam irradiation is one of the treatment options in rare areas like pelvis and acetabulum and it was performed in lesions of pelvis for 8 patients where 2 had developed secondary sarcoma and 2 patients had local recurrence [8]. Post operative irradiation has been used in cases of recurrence following surgical treatment but it has its own complication like delayed and poor wound healing and development of secondary sarcoma.

IV. CONCLUSION

Treatment of Non metastatic local benign pelvic GCT by resection, extended curettage, adjuvant use and reconstruction with Morselized freeze dried allograft and tricortical autograft gives better clinical and functional outcome with ability to carry out regular activities with no restriction and no recurrence by 1 year postop.

CONSENT

The patient has given her consent for her images and other clinical information to be reported in the journal. The patient understands that her name and initials will not be publishes, and due efforts will be made to conceal his identity, but anonymity cannot be guaranteed.

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