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CASE REPORT

MULTICENTRIC GIANT CELL TUMOR OF IPSILATERAL ACETABULUM AND FEMORAL HEAD WITH PATHOLOGICAL FRACTURE OF FEMORAL NECK: A CASE REPORT

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ABSTRACT: INTRODUCTION: Multicentric Giant Cell Tumor is extremely rare; here we are presenting a case of pathological neck femur fracture in case of multicentric giant cell tumor involving ipsilateral acetabulum along with femoral head and neck. **CASE PRESENTATION:** 24 years old male presented with pain in groin region and inability to walk after he fell down while walking. He had pain in left groin on weight bearing for last six months. Radiological examination shows pathological trans-cervical femoral neck fracture with sub-articular lytic lesion in femoral head and neck suggestive of Giant cell tumor. MRI has been done to define the extent of involvement and to rule out soft tissue infiltration. Fine needle aspiration cytology which was done through anterior route was inconclusive. After review of literature, patient has been planned for excisional biopsy and un-cemented total hip arthroplasty. Intra-operatively, frozen section confirms the giant cell tumor and surprisingly acetabulum was found to be involved which was curetted and hydrogen-peroxide treated. Post-operatively, patient was pain-free with good range of movements at hip. **CONCLUSION:** Giant cell tumor involving femoral head and neck with pathological fracture though uncommon, but may present as multicentric with acetabular involvement.

KEYWORDS: Multicentric Giant Cell Tumor, Ipsilateral, Acetabulum, Pathological Femoral neck fracture.

MESHTERMS: Acetabulum, Femoral Neck Fractures, Femur Head, Femur Neck, Fractures, Spontaneous, Giant Cell Tumors.

INTRODUCTION: Giant cell tumor represents 5% of all primary bone tumors.[1] Nearly 50% of the cases occur in region of knee.[2,3] Femoral head and neck is an uncommon location. Mirra has reported incidence of less than 4% of 1182 cases of Giant cell tumor.[4]

Treatment of Femoral head and neck Giant cell tumor remains controversial, with various forms of therapy being employed like curettage with bone grafting, with or without adjuvant treatment, local excision, resection arthrodesis, radiotherapy or endoprosthetic replacement.[5] We are reporting one such case at this rare anatomical site.

CASE REPORT: 24 yr old male patient presented with inability to walk after history of fall while walking. He had history of pain over left hip region on weight-bearing for last 6 months.

On examination there was no significant lymphadenopathy or distal neurovascular deficiency. General examination was unremarkable.

X ray (Fig. 1) shows a trans-cervical fracture neck of femur with well-defined sub-articular lytic lesion involving femoral head and neck; suggestive of Giant cell tumor. MRI (Fig. 2,3,4), shows 57 X 42mm size T2W intra-medullary hyper-intense lesion seen in neck and head of left femur with

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thinning of cortex. Marginal sclerosis seen around the lesion. Fracture seen through neck of femur with fallen fragment. Lesion shows minimal enhancement. Lesion is sub-articular in location. Visualized muscles in hip, pelvis and thigh were normal. Urinary bladder along with pelvic organs was normal.

All routine blood investigations were normal. Serum calcium, phosphorus and alkaline phosphatase were in normal limits. Chest X ray was normal.

Fine needle aspiration cytology (FNAC) which has been taken through anterior route was inconclusive showing hemorrhagic fluid and no malignant cells.

Patient was planned for excisional biopsy with un-cemented total hip replacement arthroplasty.

On exploration through postero-lateral approach, femoral head and neck was sent for frozen section to confirm diagnosis of Giant cell tumor (Fig. 5). After neck cut frozen section biopsy confirmed the total clearance of tumor.

Unexpectedly, acetabulum was found to be involved (Fig. 6), which was curetted and treated with hydrogen peroxide before placing the metallic shell for un-cemented total hip replacement. Curetted material from acetabulum confirmed Giant cell tumor histo-pathologically. Both proximal femur and acetabulum samples shown numerous osteo-clastic type of giant cells in back ground of mono-nuclear stromal cells with no atypical or mitotic figures (Grade I).[6]

Post-operatively, wound was healed by primary intention. At fifteen months follow up patient was pain-free and having left hip range of motion of,

Flexion 0-90° Abduction 0-30°.

Int. rotation 0-25° Ext. rotation 0-25°.

There was no limb length discrepancy.

DISCUSSION: Cooper and Travers first described Giant Cell Tumor (GCT) of bone in 1818.[7] In 1940, Jaffe & Litchtenstein defined Giant cell tumor to distinguish it from other tumors.[6]

Giant cell tumors are solitary lesions; less than 1% is multicentric.[8,9,10] Multicentric Giant cell tumor (MCGCT) is more aggressive and has propensity for small bones of hand and feet. Patients with Multicentric Giant cell tumor tend to be younger[11] as in our case.

Since, Multicentric Giant cell tumor occurs in less than 1% of Giant Cell Tumor, regular screening of GCT patients for multicentricity may not be cost effective.[12,13] In our case acetabular involvement was missed initially and diagnosed intra-operatively.

Practical difficulty of total clearance of Giant Cell Tumor by curettage in femoral neck has been observed by many authors.[6,14,5] In view of 100% recurrence rate after curettage and grafting at this particular anatomical site, Tibrewal recommended Total hip replacement as primary treatment of choice in young patients[5] rather than reserving it for recurrences and complications like pathological fractures.

In acetabulum, due to its anatomical site intra-lesional curettage with hydrogen peroxide application has been done. However, simple curettage has recurrence rate of 27 -55 %.[15,16]

Hydrogen peroxide was used as chemical adjuvant to remove residual tumor cell.[1,17,18].

Half yearly screening by skeletal survey is recommended for Giant Cell Tumor at unusual sites or having multicentric involvement.[8,12] Though in our case, follow-up is of only fifteen months till

date, Literature review[13] showed that protocol should be followed for at least 5 yrs, as most cases develop recurrences or additional lesions with in this period.

CONCLUSION: This case has been presented, as femoral and neck is an uncommon site of giant cell tumor and multicentric giant cell tumor involving ipsilateral acetabulum is not been reported.

CLINICAL MESSAGE: This case is presented for its rarity, as Giant Cell Tumor hip is unusual and Multicentric Giant cell tumor involving ipsilateral acetabulum and femoral head with pathological fracture of femoral neck is extremely rare.

It is hoped that it will contribute to the knowledge of orthopaedicians.

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Fig. 1: Radiograph showing pathological trans-cervical femoral neck fracture with sub-articular lytic lesion

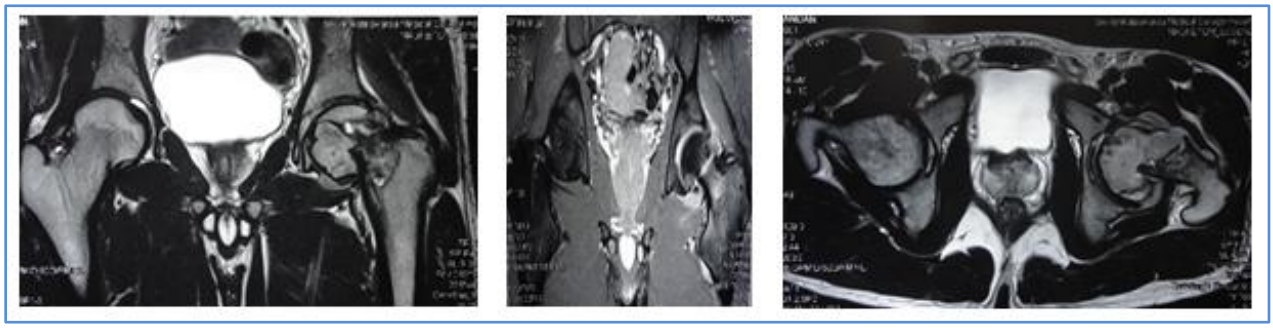

Fig. 2, 3 & 4: T2W MRI showing sub-articular intra-medullary hyper-intense lesion with marginal sclerosis suggestive of Giant Cell Tumor with pathological fracture neck of Femur lesion

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Fig. 5: Femoral head intra-operatively

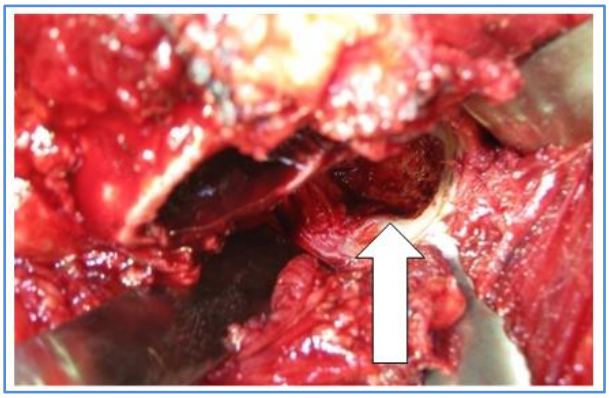

Fig. 6: Acetabular involvement intra-operatively

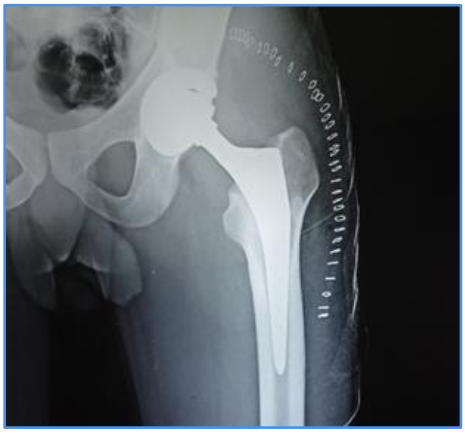

Fig. 7: Post-operative X-ray

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