

Giant Cell Tumour of the Femoral Neck: A Rare Site Managed by Curettage and Bone Grafting Only

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Abstract A giant cell tumor (GCT) is an osteolytic tumor occurring in young adults at the epiphysis or end of the long bone. This occurs after the epiphyseal plate has ossified and longitudinal bone growth is completed. Giant cell tumor is one of the most obscure and intensively examined tumours of bone. Its histogenesis is uncertain, the histology does not predict the clinical outcome and there are still many unanswered questions with regard to both its treatment and prognosis. Giant cell tumor of femoral head or neck is rarely seen in very few patients with accidental diagnosis. The disease affects activities of daily living (e.g. walking stair climbing and housekeeping) ultimately leading to a loss of functional independence. We present here an uncommon site for occurrence of the GCT in the femoral neck, and its subsequent management by joint preservation surgery employing simple curettage of the lesion and bone grafting with no relapse after two years of follow up.

Keywords: giant cell tumour, femur, neck, curettage, bone grafting

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1. Introduction

Giant cell tumor is one of the most intensively examined bone tumours. Its histogenesis is uncertain, the histology does not predict the eventual clinical outcome and there are still many unanswered queries with regard to both its treatment and prognosis.

The World Health Organization has classified GCT as "an aggressive, potentially malignant lesion", which means that its evolution based on its histological features is unpredictable. Statistically, 80% of GCTs have a benign course, with a local rate of recurrence of 20% to 50% [1,2]. About 10% undergo malignant transformation at recurrence [3] and 1% to 4% gives pulmonary metastases even in cases of benign histology [4]. The tumor is radiologically revealed by a large sharply circumscribed area in reduced density asymmetrically located in the epiphysis sub cortically and extending towards the metaphysis. Multiple septae of bone and soft tissue traverse the interior making the characteristic loculated soap bubble appearance.

We present here an uncommon site for occurrence of the GCT in the femoral neck, and its subsequent management. Approximately 50% of GCTs are located around the Knee at the distal femur and proximal tibia [1,5,6], with the proximal humerus and distal radius representing the third and fourth most common sites. Mirra [9] has reported an incidence of less than 4% of 1182 cases in this location.

2. Case Report

A male patient age 39 yrs presented to our hospital with complaints of pain in the right hip for sixteen months duration. The pain was radiating to the knee joint. There were no significant examination findings except tender hip on deep palpation. Radiographs of pelvis with both hips revealed an osteolytic lesion in the right neck of femur inferiorly (Figure 1). A CT scan was done to see the extent of the lesion (Figure 2) which revealed that the lesion was confined to the neck with no extension into the surrounding tissues or adjacent bony structures. There was no evidence of any breach of the cortex. It was decided to try to preserve the normal joint and attempt to do a thorough curettage and grafting of the lesion to eradicate the tumour and give the patient a chance to lead a completely normal life. We decided not to attempt total hip arthroplasty considering the young age of the patient and the localized nature of the lesion. It was operated via anterior approach of the hip with curettage, phenol cauterization and bone grafting of the lesion. The pathological site was not internally fixed but the patient was advised bed rest for six weeks with restricted touchdown weight bearing subsequently for ten weeks. Histopathology of the curetted material showed uniform distribution of osteoclast like giant cells in a background of mononuclear cells, confirming the diagnosis of GCT. Integration of the graft was observed and patient started full weight bearing at sixteen weeks (Figure 3). He was followed regularly in our hospital for two years with x rays with no recurrence of the lesion (Figure 4). At the last follow up two years after surgery, there was no evidence of recurrence locally and patient did not have any pain and was able to do routine daily activities with full weight

bearing. The range of movements (flexion, abduction, rotations) was full. There was no limb length discrepancy.



Figure 1. Radiograph of the hip showing osteolytic lesion in the right neck of femur inferiorly



Figure 2. CT showing lytic lesion in the neck with extension into the head as well



Figure 3. Post operative radiograph at 16 weeks showing osseointegration of the bone graft



Figure 4. Follow up radiograph at 2 years with complete restitution of the lytic lesion and no relapse

3. Discussion

Giant cell tumor is an unpredictable tumor. No definite biological parameters can be used to determine the prognosis or aggressiveness of this lesion. The overall outcome of treatment is good. Giant cell tumor at the upper end of tibia and lower end of femur and distal end of radius are sometimes common but giant cell tumor at the femoral head is uncommon tumor in our country. Despite debate in literature, the treatment varies according to be site of involvement and grade of the disease. Treatment options for these patients include curettage with bone grafting and bone cement impregnation [1,2,6], phenol cauterization [3], excisional arthroplasty like girdle stone [7], hemiarthroplasty [8] or total hip arthroplasty [8]. Results of hemiarthroplasty in young patients are poor and well documented in literature [5,8] and shortening and prolonged immobilization is not accepted with excision arthroplasty.

In most benign aggressive bone tumours, wide surgical excision is usually curative. However, following en bloc resection, the rate of the recurrence is in between 0% and 5% in primary lesions [9,10]. In giant cell tumours, due to its location in the epiphysis, the GCT often invades the subchondral bone of the joint. Hence, en bloc resection often requires sacrifice of the articular surface and resultant complex reconstruction procedures which can lead to complications, occasional revision operations and decreased quality of life in the long term [11,12].

Resection is usually performed in GCT found in the proximal fibula, radius, distal ulna, or in the wing of the ilium in which a reconstruction is not necessary or in malignant types of GCTs, stage -3 GCTs, which have

already destroyed the cortex tend to recur more often and when the defect is large and the joint surface is destroyed, resection is the management of choice [10,11]. The treatment of choice in most GCTs is curettage and bone grafting. Historically, however it has been associated with high rate of recurrence (30%-50%) and therefore different adjuvants have been introduced. these presumably remove the tumour cell which remain after curettage because of their thermal (liquid nitrogen, methylmethacrylate) or chemical (phenol, hydrogen peroxide) effects [3,6,11,12]. Extended curettage and application of bone grafting are therefore the most accepted methods in the treatment of GCT [10,11].

As the patient was young we preferred to do a joint sparing surgery with preserving the head. Phenol cauterization was done as it is safe and effective local adjuvant therapy with curettage as it is documented [3] to decrease the incidence of local recurrence in GCT [1,6]. Our case was grade II Jaffe [4] histopathologically and has no recurrence at the last follow up at two years post surgery. The patient has no functional disability.

Conflict of Interest

Each author certifies that he has no commercial associations (e.g. consultancies, stock ownership, equity interests, patent/licensing arrangements, etc) that might pose a conflict of interest in connection with the submitted article.

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