Excision And Endoprosthesis Implantation For Proximal Femur Giant Cell Tumor

Author(s): Dr. Sarvdeep Dhatt, Dr. Naveen Tahasildar, Dr. Sujit Kumar Tripathy, Dr. Shashidhar BK, Dr. Tajir Tamuk

Corresponding Author:
Dr. Sarvdeep Dhatt,
Pool Officer, Department of Orthopaedics, Postgraduate Institute of Medical Education and Research, Chandigarh, 160012 - India

Submitting Author:
Dr. Sarvdeep Dhatt,
Pool Officer, Department of Orthopaedics, Postgraduate Institute of Medical Education and Research, Chandigarh, 160012 - India

Article ID: WMC001236
Article Type: Case Report
Submitted on: 28-Nov-2010, 08:51:58 AM GMT  Published on: 29-Nov-2010, 08:29:08 PM GMT
Article URL: http://www.webmedcentral.com/article_view/1236
Subject Categories: ORTHOPAEDICS
Keywords: Giant cell tumor; Proximal femur; Custom-made endoprosthesis

How to cite the article: Dhatt S, Tahasildar N, Tripathy S, BK S, Tamuk T. Excision And Endoprosthesis Implantation For Proximal Femur Giant Cell Tumor. WebmedCentral ORTHOPAEDICS 2010;1(11):WMC001236

Source(s) of Funding:
Nil

Competing Interests:
Nil
Excision And Endoprosthesis Implantation For Proximal Femur Giant Cell Tumor

Abstract

We report a case proximal femur giant cell tumor in an active young male who presented with pathological fracture. The tumor was excised with a wide margin and the defect was reconstructed successfully with a custom made endoprosthesis. After three years, the patient had an excellent functional outcome with Musculoskeletal Tumor Society Functional score of 26.7.

Introduction

Giant cell tumor (GCT) is a benign/locally aggressive bone tumor with predilection to occur the knee joint [1, 2]. Proximal femur is a relatively rare site for the occurrence of primary GCT accounting for only 1-10% [3,4,5]. GCT in this location poses a unique challenge in management owing to difficulties in preoperative diagnosis, obtaining a safe surgical margin and reconstruction of the surgical defect, considering the complex biomechanics of the hip joint [6-9]. We report a case of GCT of proximal femur (Enneking stage II) associated with pathological fracture managed effectively by wide excision and proximal femur endoprosthesis.

Case Report(s)

A 44-year-old man presented with history of right hip pain for 3 months. He sustained a trivial fall 2 days before and after that he could not bear weight on the affected limb. He had no history of constitutional symptoms and had no history of any congenital anomaly.

On local examination, he had an obvious external rotation deformity and tenderness over the trochanteric region. Antero-posterior radiograph of the right hip (figure 1) revealed a lytic lesion involving the proximal femur (ISOLS H2), associated with pathological fracture. Magnetic resonance imaging showed a heterogeneous high intensity on T2 weighted image involving the proximal femur (figure 2). Histopathological evaluation of the lesion on needle biopsy revealed a collection of multinucleated-osteoclastic-giant cells in a background of stromal cells. The stromal cells were mitotically active. The possibility of giant cell tumor was raised. Chest radiograph did not show any evidence of metastasis.

The histological and radiological grading of the lesion showed Enneking surgical stage II and Campanacci radiological grade 2. It was decided to go for wide surgical excision followed by endoprosthesis implantation. The tumor was removed enbloc (figure 3). A large surgical defect was created which was reconstructed with a 270 mm long custom-made femoral-endoprosthesis with a stem diameter of 13 mm. Abductors were sutured to the endoprosthesis along with the ilio-psoas and external rotators.

Post-operatively the patient had a shortening of 1 cm on the operated side compared to the other limb. Post-operative radiograph showed a well fixed endoprosthesis. The patient was followed up every monthly for first 6 months and 3 monthly up to 3 years. He had a good functional outcome (Musculoskeletal Tumor Society Functional Score=26.7) at the end of 3 years. Chest radiograph showed no evidence of metastasis. Local radiographs showed no evidence of loosening of the implant. He was able to do his normal daily activities comfortably.

Discussion

Giant cell tumor is notorious for local recurrence unless completely excised with adequate margin. Curettage with or without bone grafting are associated with high recurrence rates and can help a certain group of patients when carefully chosen [10-12]. Adequate (wide) tumor margin during excision seems to be an important predictor of good outcome than adjuvant therapy following curettage [5-7]. Wide excision and reconstruction with endopros thesis for proximal femur GCT in young patients has got its own limitations considering the high rate of mechanical failure and concerns over the longevity of the implant [8]. This age group of patients comes under the high demand group, whose daily activities can
mechanically load the endoprosthesis with forces beyond its stress limits. Nevertheless, wide excision and tumor endoprosthesis remains the primary treatment of choice in giant cell tumor in this region instead of using it as a secondary procedure for recurrence, non-union or other complications [10-12].

There is a higher incidence of pathological fracture associated with GCT of proximal femur than in any other areas. Pathological fracture is associated with higher recurrence rate due to tumor dissemination during fracture [4]. Pathological fracture associated with GCT of proximal femur poses a challenge in management particularly in the young active man. Achieving wide tumor margin becomes extremely difficult with intralesional excision which is compounded by the lack of stability at the fracture site with routine fixation devices.

Conclusion

Wide margin excision of the tumor and reconstruction using a tumor endoprosthesis seems to be an adequate management for proximal femur GCT with pathological fracture while carefully following up the patient for early mechanical failure.

Authors contribution(s)

SD managed the patient. NT, SKT and SB helped in acquisition of the data. TT reviewed the literature. All the authors have read the manuscript and approved.

References

Illustrations

Illustration 1

Antero-posterior radiograph of pelvis and both hip joints shows an osteolytic lesion with pathological fracture in the trochanteric region of right proximal femur.

Illustration 2

Magnetic resonance images show a heterogeneous high intensity signal on T2WI at the right trochanteric region.
Illustration 3

Photograph of the excised proximal femur giant cell tumor (after enbloc removal)

Illustration 4

Well fixed Proximal femur endoprosthesis after GCT excision
Disclaimer

This article has been downloaded from WebmedCentral. With our unique author driven post publication peer review, contents posted on this web portal do not undergo any prepublication peer or editorial review. It is completely the responsibility of the authors to ensure not only scientific and ethical standards of the manuscript but also its grammatical accuracy. Authors must ensure that they obtain all the necessary permissions before submitting any information that requires obtaining a consent or approval from a third party. Authors should also ensure not to submit any information which they do not have the copyright of or of which they have transferred the copyrights to a third party.

Contents on WebmedCentral are purely for biomedical researchers and scientists. They are not meant to cater to the needs of an individual patient. The web portal or any content(s) therein is neither designed to support, nor replace, the relationship that exists between a patient/site visitor and his/her physician. Your use of the WebmedCentral site and its contents is entirely at your own risk. We do not take any responsibility for any harm that you may suffer or inflict on a third person by following the contents of this website.