

Outcomes after limb sparing resection in primary malignant pelvic tumors

A. Puri*, M. Pruthi, A. Gulia

Orthopaedic Oncology, Tata Memorial Hospital, Mumbai, India

Accepted 21 October 2013

Available online 5 November 2013

Abstract

Aim: To evaluate morbidity, oncologic results and functional outcome in patients with malignant tumors of pelvis treated with limb sparing resection.

Methods: Between March 2002 and November 2010, 106 cases of non metastatic malignant pelvic tumors were treated with limb sparing resections of pelvis. Diagnosis included chondrosarcoma (65), Ewing's sarcoma (25), osteogenic sarcoma (10), synovial sarcoma (3) and malignant fibrous histiocytoma, high grade sarcoma, epitheloid hemangiolioma (1 each). Three patients had intralesional surgery because of erroneous pre-operative diagnosis of benign tumor and were excluded from final analysis. Remaining 103 patients underwent limb sparing resections with intent to achieve tumor free margins. In 1 case, an intraoperative cardiac event lead to the surgery being abandoned. Reconstruction was done in 2 of 38 cases that did not include resection of acetabulum. For 64 resections involving acetabulum various reconstruction modalities were used.

Results: Surgical margins were involved in 20 patients. Forty five patients had complications. 91 patients were available for follow up. Follow up of survivors ranged from 24 to 122 months (mean 55 months). Twenty one patients (23%) had local recurrence. Sixty patients are currently alive, 46 being continuously disease free. Overall survival was 67% at 5 years. Patients in whom acetabulum was retained had better function (mean MSTS score 27) compared to patients in whom acetabulum was resected (mean MSTS score 22).

Conclusions: Though complex and challenging, limb sparing surgery in non metastatic malignant tumors is oncologically safe and has better functional outcomes than after an amputation surgery.

© 2013 Elsevier Ltd. All rights reserved.

Keywords: Limb salvage; Osteosarcoma; Chondrosarcoma; Ewing sarcoma; Reconstruction

Introduction

Limb salvage in appropriately indicated patients for bone tumors is now the rule rather than an exception. Though there is considerable literature regarding limb salvage in appendicular lesions, series documenting the results of surgical excision with limb salvage in pelvic tumors are not so common. Pelvic tumors besides being uncommon offer a unique challenge to adequate oncologic resection because of their location, large size at presentation and close proximity to neurovascular structures and visceral organs.¹ Reconstruction after resection to minimize functional morbidity while attempting to restore the weight bearing axis from femur to sacrum is also demanding and

authors have reported varying degrees of success with different techniques.^{2–6} The perceived poor prognosis in pelvic tumors as compared to extremity lesions, prolonged surgical time with associated blood loss and the possibility of post operative complications associated with pelvic resections are some of the other daunting features that make surgical treatment of these lesions challenging.^{1,7}

The purpose of this study was to evaluate the morbidity, functional outcome and oncologic results in patients with malignant tumors of the pelvis treated with limb sparing surgical resection.

Patients and methods

We reviewed 106 malignant tumors of the pelvis which were treated with limb salvage at our institute over an 8 year period between March 2002 and November 2010. The patients were identified by a retrospective review from a prospectively maintained database. The medical

* Corresponding author. Dept. of Orthopaedic Oncology, Room No: 45, Tata Memorial Hospital, E. Borges Road, Parel, Mumbai 400 012, India. Tel.: +91 22 24177183; fax: +91 22 24146937.

E-mail address: docpuri@gmail.com (A. Puri).

records, imaging, oncologic and functional status were reviewed. There were 69 males and 37 females with a median age of 32 years (range 2–64 years). Eighty nine patients presented to our institute primarily and 17 were referred after recurrence (11 patients) or attempted incomplete excision elsewhere (6 patients).

Tissue diagnosis was obtained or reviewed in all the patients. The diagnosis included chondrosarcoma in 65 patients, Ewing's sarcoma in 25, osteogenic sarcoma in 10, synovial sarcoma in 3 and malignant fibrous histiocytoma, high grade sarcoma, and epitheloid hemangiothelioma in 1 case each. Three of these patients had an erroneous preoperative diagnosis of a benign tumor and underwent intralesional excision. These were excluded from the final analysis. The remaining 103 patients underwent limb sparing resections with intent to achieve tumor free margins. Except for 8 grade 1 chondrosarcomas the rest (95 patients) were all graded as high grade tumors.

Prior to surgery all patients underwent a thorough oncological assessment to determine the extent of local disease and exclude the presence of distant metastases. Staging studies, including plain radiographs and MRI of the limb, CT scans of the chest, total body scintigraphy and bone marrow biopsies where indicated were performed. In the latter part of the series PET scan was used as part of the staging investigations in patients with Ewing's sarcoma. All these patients were non metastatic at presentation. Indicated patients received chemotherapy and radiotherapy as per the existing hospital protocol. Except for chondrosarcomas we offer chemotherapy to all high grade tumors arising in bone. Thirty eight of the patients in this series received multiagent chemotherapy. Post operative radiotherapy is offered to all patients of Ewing's sarcoma who have an involved margin or a very large soft tissue component at presentation. In addition to surgery, 11 patients received radiotherapy for the primary tumor.

MRI was used to define the extent of the lesion, the involvement of the soft tissues, relation to the neurovascular bundle and the level of transection of the bone. The decision to offer surgical excision to these patients was taken at a multidisciplinary tumor board meeting based on the possibility of achieving tumor free resection margins as evaluated on preoperative imaging. The primary goal of surgery was complete excision of the tumor, with preservation of a functional limb. Pelvic resections were classified according to Enneking and Dunham into 4 types; iliac (T1), acetabular (T2), pubis or ischium (T3) and sacral (T4).⁸ Combinations of these resections were also performed. In patients with hip joint involvement an extra-articular resection of hip (EA hip) along with the pelvic segment was performed. After resection, various methods of reconstruction were adopted. These were based on type of resection, amount of residual bone, individual surgeon preference and the functional desires of the patient as assessed during preoperative counseling.

In 1 case, an intraoperative cardiac event lead to the surgery being abandoned. Thirty eight patients did not include resection of the acetabulum (8 of these included part of the sacrum) while in 64 patients the acetabulum was resected (T1+2 = 17, T1+2 + 3 = 12, T1+2 + 3+4 = 2, T1+2 + 4 = 4, T2 = 1, T2+3 = 18, T1+2 + 3+EA hip = 3, T2+EA hip = 2, T1+2 + EA hip = 3, T2+3 + EA hip = 2).

Reconstruction was done in only 2 of 38 patients in whom resection excluded the acetabulum. One was reconstructed with sacro-pelvic fixation using a screw rod construct coated with antibiotic cement and in the other case extracorporeal radiation (ECRT) with reimplantation was done. For resections involving the acetabulum various reconstruction modalities were used including pseudarthrosis (33), arthrodesis (19), ECRT (5) and pelvic prosthesis (7). In the majority of the pseudarthrosis (30) we performed a hip transposition, stabilizing the femoral head to either the sacrum, residual ilium or ischium using a prolene mesh to create a pseudocapsule.^{5,9} In the remaining 3 patients a stainless steel wire loop was used for temporary stabilization while eventual fibrosis occurred. There were 10 ischio femoral and 9 ilio femoral arthrodeses.

Resection margins were classified as clear or involved. Even if there had been an inadvertent breach of tumor capsule intraoperatively which was immediately repaired, the margin was classified as involved irrespective of the final histopathology report. Such cases were treated with copious intraoperative lavage and were not considered for post operative radiotherapy if the bony resection margins were clear.

Patients were asked to follow up every 3 months for the first 2 years and 6 monthly subsequently. Ninety one patients were available for follow up. Follow up was calculated from the time of diagnosis to the last date of review or death. Besides screening for disease surveillance, radiographs of the local part were assessed at each visit. Functional status was assessed at time of last follow up using the Musculoskeletal Tumor Society (MSTS) scoring system.¹⁰

Statistical analysis

Survival rates were analyzed with the Kaplan–Meier method. Overall survival was taken from the date of diagnosis to the last date when the patient was documented to be alive or the date of death. Disease-free survival was defined as the time from the date of diagnosis to recurrence of disease at local, regional, or distant sites.

Results

Resections not involving the acetabulum had a mean duration of surgery of 4.5 h (2.5 h–8 h). Mean blood loss for this group was 2500 ml (200 ml–10,000 ml). Resections involving the acetabulum had a mean duration of surgery of 6.8 h (3.5 h–12 h). Mean blood loss for this group was 4500 ml (350 ml–13,000 ml).

Download English Version:

<https://daneshyari.com/en/article/3985255>

Download Persian Version:

<https://daneshyari.com/article/3985255>

[Daneshyari.com](https://daneshyari.com)