CASE REPORT

Partial Resection of Pelvis and Salvage of the Lower Limb in the Treatment of Malignant Pelvic Tumours

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Summary

Malignant pelvic tumours often present late, hence a high index of suspicion should be maintain in order to arrive at the diagnosis. This is particularly true for those who have unusual symptoms. A proper planning and staging strategies is required to save the limb, and the limb salvage surgery is at present the surgery of choice to achieve local control and restoring optimum functions of the lower limbs as being illustrated by our three cases.

Key Words: Pelvic tumour, Limb-sparing surgery

Introduction

Malignant tumours of the pelvis remain a challenge for both oncologists and reconstructive surgeons. Limb salvage is often a viable alternative to hemipelvectomy for the treatment of malignant pelvic tumours. It is justified when this procedure provides a satisfactory surgical margin or when amputation cannot provide a better margin. In general, function is better after a limb-sparring procedure as compared to hemipelvectomy and fitting of prosthesis. Reconstructive procedure to increase function of salvaged limbs further improves quality of life.

Within 2 years (1998 - 1999) we had three cases of pelvic tumours and in each case we attempted a wide resection which was followed by reconstruction.

Fig. 1: Pelvic tumour before resection and (inset) post resection of tumour with fibular autograft as strut with mobile hip (case 1).

Case 1

A twenty-seven year old gentleman presented with right thigh pain for 20 months, which was relieved by massage and non-steroidal anti-

inflammatory drugs. He sought treatment owing to persistent and significant night pain. A plain radiograph showed an osteolytic lesion of right ilium. Magnetic resonance imaging revealed a tumour in right ilium, 4cm from acetabulum but sparing the sacroiliac joint. The biopsy confirmed the diagnosis of chondrosarcoma grade I. Unfortunately biopsy the site was poorly placed in the midsubstance of gluteus maximus and this was complicated by low-grade infection. Nevertheless a wide resection of the ilium extending proximally to the sacroiliac joint and distally 2cm proximal to the acetabulum was performed. Reconstruction of the ilium was achieved with two 7-centimeter long fibula strut grafts. The margin of the specimen was free of tumours on histopathological study. Currently, after one year of surgery he is ambulating and bearing his full weight with a mobile and stable right hip joint.

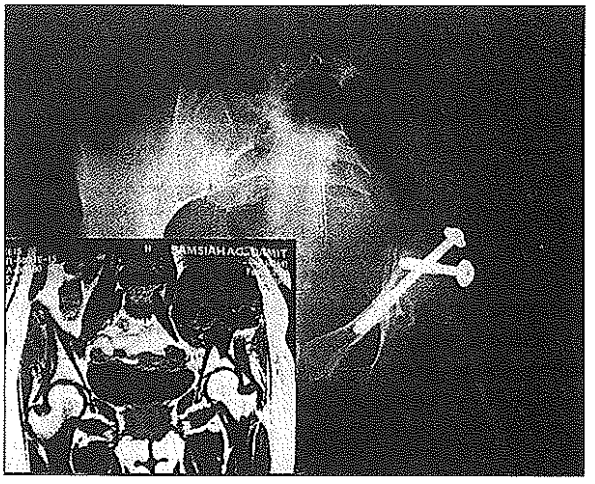

Fig. 2: Pre-op MRI (inset) and post resection of tumour with fusion of hip aided by screws (Case 2).

Case 2

A thirty-four year old lady presented with pain in the left hip for 18 months, which was initially treated as non-specific muscle pain. An examination revealed a vague mass over the left buttock. The plain radiograph showed an osteolytic lesion in ilium with multiple areas of calcification. A computed tomography confirmed the presence of bone lesion occupying the whole ilium extending to the superior part of the acetabulum. The biopsy confirmed it was an osteoblastic osteosarcoma. The patient received 6 courses of chemotherapy followed by 12 courses of radiotherapy. However local staging three months after completed treatment revealed a persistent active lesion. We performed a wide resection of the entire ilium including one third of the acetabulum, followed by arthrodesis of the femoral head to the residual acetabulum. The postoperative period was complicated with wound dehiscence at the radiation site, which was later resurfaced with a rectus abdominis rotation flap. Histopathological study revealed that the resected specimen had a free tumours margin. Presently, after ten months of surgery the patient is ambulating with crutches.

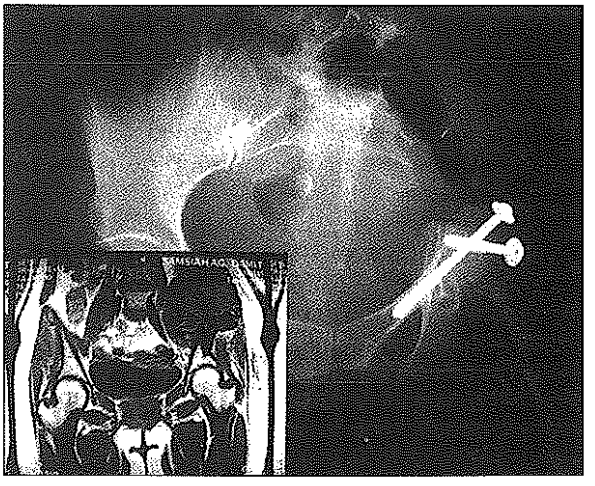

Fig. 3: Post resection of tumour with fusion of hip aided by screws (Case 2).

Case 3

A fifty-four year old man presented with back pain for 20 months. He had a history of a benign thyroid swelling removed ten years ago. A plain radiograph of the pelvis showed an osteolytic lesion of the right ilium extending to the

subchondral region of the acetabulum. Magnetic resonance imaging confirmed the above finding with involvement the gluteus medius and iliacus muscles. The biopsy revealed that this was a papillary adenocarcinoma secondary from the thyroid. There was no evidence of other metastases or active bony lesions on bone scan and CT thorax. A wide resection of entire ilium and half of the acetabulum was performed followed by arthrodesis of femoral head to the residual acetabulum. The histopathological study of the resected specimen revealed free tumour margins. At present, after ten months of surgery he is on hormonal treatment and local radiotherapy, and ambulating with aid of crutches.

Discussion

Hindquarter amputation, is a major operation with devastating functional and psychological effects. At present this procedure is reserved for patients with a realistic prospect of cure when no other reconstructive option is available. In its place hemipelvectomy has been accepted as surgical treatment of malignant tumours of the pelvis for many years.

Despite recent advances, the prognosis of pelvis tumours is still very poor[2,4]. This is because, pelvic tumours remain undetected for a long time, and at presentation the tumour had grown very large and difficult to treat[2,4]. This was observed in all of our cases. The symptoms arising from a pelvic tumour are often insidious and non-specific in nature. However, a request for a simple high quality radiograph of the pelvis will usually detect the presence of tumour as was shown in all the three cases. One should maintain an index of suspicious when the symptom appear out of proportion.

Recent advances in adjuvant chemotherapy, radiation therapy, high quality diagnostic imaging and the improvement in surgical techniques have changed the prognosis of pelvis tumours and made limb-sparing surgery possible. Complete wide resection has become a standard aim for the curative surgical management of malignant tumours. This was illustrated in all our 3 cases and the surgical margins were clear of the disease. The overall survival five year survival rate for high-grade pelvis osteosarcoma has been reported to be between 20% and 47%[2]. Successful treatment always involves effective adjuvant chemotherapy, surgical resection of the tumour with or without the external beam radiation. Chondrosarcoma generally is treated with operative resection only, while adjuvant radiation and chemotherapy has been reserved for patients who have the mesenchymal or dedifferentiated type of tumour or if the surgical margins are inadequate[4]. Presently available statistics indicate that patient with metastatic breast carcinoma, myeloma and lymphoma have a mean anticipated survival of 28 months after surgical intervention, while those with prostate, renal and thyroid metastases have approximately 20 months[3].

The techniques for resection of pelvic tumours has been well documented[1]. The reconstructive procedures include illiofemoral and ischiofemoral arthrodesis, surgical pseudoarthrosis, reconstruction with pelvis allograft, and the use of custom made endoprosthesis, saddle prosthesis and reimplantation of the excised hemipelvis after sterilization by autoclaving[1,3]. Justification for the selection of a limb salvage procedure depends not only on achieving local control of the tumours and pain free lower limb, but also on restoring functions to a level that is superior to what can be achieved by hemipelvectomy and prosthetic fitting. This was demonstrated in all of our cases and these patients have been ambulating either free of walking aids (case 1) or with the help of elbow crutches (cases 2 & 3). Regardless of the functional result, most patients are very satisfied with the postoperative status, especially when they consider the alternative of hemipelvectomy.

References

1. Enneking WF, Dunham WK: Resection and reconstruction for primary neoplasm involving the innominate bone. J Bone Joint Surg. 1978; 60A: 731-46.
2. Grimmer RJ, Carter SR, Tillman RM, Spooner D, Mangham DC, Kabukcuoglu Y: Osteosarcoma of the pelvis. J. Bone Joint Surg. 1999; 81B: 796-802.
3. Harrington KD: Orthopedic management of extremity and pelvic lesion. Clin. Orthop. Rel. Res. 1995; 312: 136-47.
4. Lee FY, Mankin HJ, Fondren G, Gebhardt MC, Springfield DS, Rosenberg AE: Chondrosarcoma of bone: An assessment of outcome. J. Bone Joint Surg. 1999; 81A: 326-38.