

Learning Objectives

To delineate the characteristics of the patient population requiring spinal surgery for metastatic prostate cancer and to report the surgical outcomes in this patient population.

Introduction

Spine and non-spine skeletal metastasis occurs in >80% of patients with advanced prostate cancer. Metastatic spine disease (MSD) from prostate cancer may present as pathological fracture with or without high-grade epidural spinal cord compression (ESCC) or mechanical instability causing pain. Often, MSD may be the presenting feature of newly diagnosed prostate cancer. Surgical treatment may be required for symptomatic high-grade ESCC and previously irradiated or mechanically unstable tumors. At diagnosis, the majority of prostate cancer is hormone-sensitive and responds well to androgen deprivation. Death from prostate cancer typically results from systemic spread of hormone resistant cells. Yet, the examination of the effectiveness of surgical decompression in the setting of high-grade ESCC from prostate metastasis has remained limited.

Methods

A retrospective chart review was performed on all patients treated at our institution from June 1993 to August 2014 for surgical management of MSD from prostate cancer. Demographic data, hormone responsiveness at MSD diagnosis and at surgery, functional status, ESCC grade, surgical indications, surgical details, surgical complications, and surgical outcomes were analyzed.

Results

A total of 139 patients with 157 surgical lesions underwent surgery for MSD. Of those, 126 patients with 143 lesions required decompression for high-grade ESCC. The median age at diagnosis of MSD was 65 years. HRPC was present in 87 patients at surgery. Of 143 lesions with high-grade ESCC, 54% had circumferential involvement on imaging. The median time from MSD diagnosis to surgery was 633 days. In this group, 61% failed prior radiation. Preoperatively, 21% were non-ambulatory, with 32% due to motor weakness. Separation surgery was performed in 91% of patients. The 30-day complication rate requiring readmission was 8.2% and 5.7% of lesions required re-operation for recurrence. Postoperative radiation was given in 52% of unique lesions using a variety of radiation schemes. Motor deficits improved in 42% and 78% of non-ambulatory patients regained ambulation with assistance or independently. Median follow-up and median overall survival was 6.7 and 7.5 months, respectively. Patients with HRPC had a median overall survival of 6.6 months as compared to 16.3 months for hormone-sensitive patients.

Figure 1. Overall survival of patients with HRPC and hormone-sensitive prostate cancer.

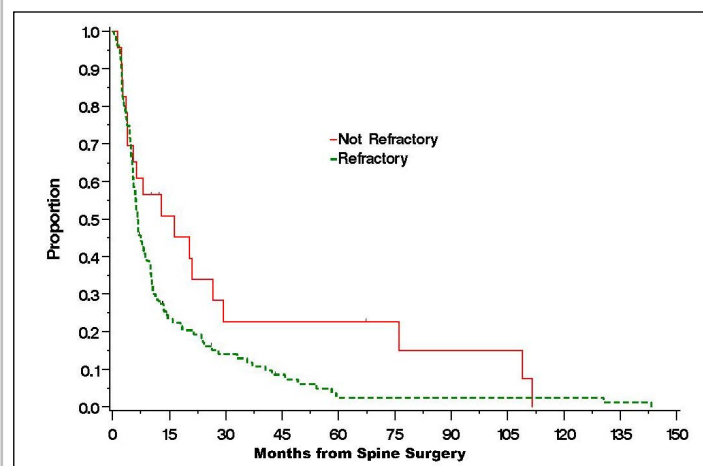
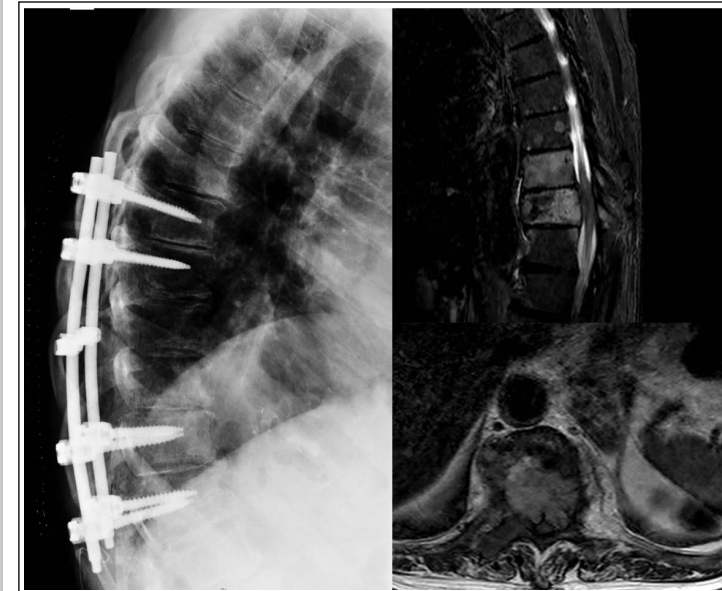


Image 1. 82 year old male with HRPC metastatic to T10 with high grade cord compression and mechanical instability presenting with ataxia and lower extremity proprioceptive deficits. T9-T11 laminectomy performed with T7-T12 instrumentation and fusion. Postoperatively, strength and independent ambulation were recovered.



Conclusions

HRPC patients with MSD are at risk of epidural tumor progression. Patients with hormone-sensitive prostate cancer constituted a small proportion of those undergoing spinal surgery for the treatment of prostate MSD and therefore are unlikely to require spinal surgery. However, 87% of patients in this surgical series had HRPC indicating a group at risk for requiring surgical intervention to treat MSD. The high proportion of patients presenting with motor and sensory deficits emphasizes the aggressive nature of HRPC disease and underscores the need for close surveillance for ESCC and spinal instability. Patients with HRPC have significantly shorter post-operative survival than hormone-sensitive patients and this may affect surgical decision-making.