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PERCUTANEOUS CEMENTOPLASTY THROUGH CANNULATED SCREW REINFORCEMENT FOR PERIARTICULAR METASTATIC BONE LESIONS – A REPORT OF TWO CASES

INTRODUCTION

Bone is one of the most common sites for tumor metastasis. Up to 50% of cancer patients will develop bony metastasis. Bony metastases are not only associated with shortened survival and increased healthcare costs, but also with serious skeletal-related events including pathologic fractures, bone pain, and needing radiation or surgery. Such lesions are typically treated non-surgically with pain medication, bisphosphonates, and radiation, however, refractory or recurrent lesions may require surgery for pain relief and skeletal stability. Percutaneous cementoplasty has emerged as a safe and effective surgical treatment for pain relief and osseous stability, especially with lesions in the bony pelvis and weight-bearing portions of long bones. Our study's purpose was to demonstrate two cases in which percutaneous cementoplasty was implemented through and combined with cannulated screw reinforcement for periarticular bony metastasis.

METHODS

Patient 1 is a 75-year-old male with renal cell carcinoma status-post nephrectomy with a painful, isolated right supra-acetabular osteolytic lesion. He was initially treated with pain medication radiation, however his right groin pain progressively worsened after his last dose of radiation, making ambulation difficult. On exam, he demonstrated reproducible groin pain with palpation, antalgic gait, and loss of hip range of motion. Due to concerns for continued pain and wound breakdown in the setting of high dose radiation, we proceeded with percutaneous cementoplasty with fixation and ablation. Two cannulated screws were placed intraosseously from the iliac crest into the lesion. Interventional radiology completed a radiofrequency ablation through the lumen of one of the cannulated screws. Subsequently, a kyphoplasty needle was inserted through one of the cannulated screws, the balloon was inflated, and 20 mL of polymethylmethacrylate cement was injected into the lesion.

Patient 2 is a 75-year-old man with metastatic lung adenocarcinoma status-post lobectomy and left proximal fibular resection with postoperative chemoradiation. Two years after the fibular resection, the patient again developed pain about the lateral knee and was found to have recurrence with infiltration into the lateral tibial metaphysis. On exam, he demonstrated an antalgic gait, tenderness about the left knee with intact knee range of motion, and severe radiation skin burns. Due to concern for impending pathologic fracture, we proceeded with prophylactic fixation and cement augmentation. He underwent tibial nail fixation with proximal and distal interlocking screws. A cannulated interlocking screw was inserted proximally. Two additional percutaneous cannulated screws were placed into the lesion to support the tibial plateau. A kyphoplasty needle was inserted through the proximal interlocking cannulated screw, the balloon was inflated, and 5 mL of polymethylmethacrylate cement was injected.

RESULTS

Patient 1 had significant pain relief, was capable of ambulating 250 feet without assistive devices, and discharged to home on postoperative day 1. There were no complications intra- or post-operatively at 1-month follow-up. At 1 month, he was performing physical therapy to return back to golfing.

Patient two had moderate postoperative pain and remained inpatient for 3 days to progress with physical therapy. He was able to ambulate over 100 feet and climb stairs with an assistive device. There were no complications intra- or post-operatively at 2-month follow-up. His pain was significantly improved and he was able to fully bear weight.

DISCUSSION and CONCLUSION

Percutaneous cementoplasty alone for bony metastasis has been well-documented as a safe and effective option for pain relief. Percutaneous cementoplasty in conjunction with fixation devices as well as ablation has emerged as a newer treatment modality for painful metastatic lesions in load-bearing regions of bone. Additional benefits include killing residual tumor and improving mechanical stability at critical bony articulations. Our results are consistent with previous reports of pain relief and functional outcomes after this procedure. These two cases serve to further demonstrate the efficacy and safety of this technique, as well as exhibiting the use of cannulated screws as conduits for ablation and extra-spinal kyphoplasty balloon inflation and cementation of bony lesions.