

Percutaneous Stabilization of Pathologic Fracture of the Pelvis and Sacrum

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INTRODUCTION:

There are approximately 400,000 cases of metastatic bone disease (MBD) annually. The pelvis and sacrum are common sites of advanced osteolysis and pathologic fractures. Mainstays of care for non-acetabular pelvic MBD are radiation therapy and pain management; however, pain and dysfunction caused by pelvic ring instability can persist. There is limited palliative utility of open surgical interventions due to their inherent risks, morbidity, and prolonged convalescence.

METHODS:

This is a multi-institutional retrospective case series reviewing a novel percutaneous technique that imparts mechanical stability to the pelvic ring for patients with pain/dysfunction from osteolytic lesions and pathologic fractures due to MBD. An intraoperative 3D cone-beam CT is performed. From this, specific screw trajectories are planned based upon patients' pathology. Augmented reality integrates these screw trajectories with intraoperative fluoroscopy. Percutaneously injected cement augments screw fixation into pathologic bone and osteolytic defects.

RESULTS:

Fifty-six procedures were included in this series and performed from 4/2018 to 4/2022. All patients had exhausted standard treatment options. Median procedural time was 119 minutes; median length of stay 3 days (IQR 1, 6), and average follow up was 8 weeks (range, 4-128 weeks). Improvements were observed in ECOG scores, ambulatory status, and VAS. Of 56 MBD patients, 15 patients (27%) underwent a staged cemented total hip arthroplasty (THA), eliminating need for complex acetabular reconstructions, i.e., cages. Observed complications were: one (2%) wound healing complication, one (2%) broken screw, one (2%) periprosthetic joint infection in a staged THA, and one (2%) partial lumbosacral plexus injury (localized on EMG).

DISCUSSION AND CONCLUSION:

The described percutaneous intervention requires minimal convalescence and is shown here to be a safe and effective treatment option for imparting mechanical stability to pathologic fractures of the pelvic ring.

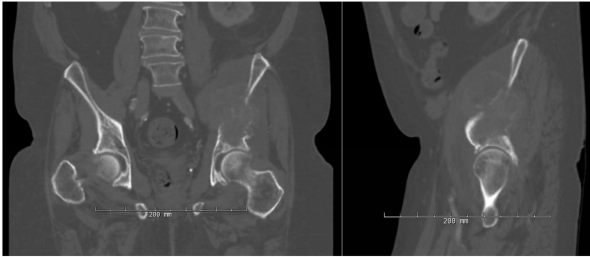


Figure 1. Coronal (left) and sagittal (right) CT scans of the pelvis demonstrating lucent lesion in the left periacetabular region.



Figure 2. Postoperative radiograph demonstrating bone cement with three screws in the left periacetabulum.