

## PAPER 31

Minimally Invasive Percutaneous Screw Fixation in Painful Pelvic Lesion Caused by Metastatic Cancer

Rui Yang, Sara Orr, Jichuan Wang, Waleed Hardan, Jana Fox, Bang Hoang, and David Geller

(R.Y., S.O., J.W., W.H, B.H., D.G.) Department of Orthopaedic Surgery, (J.F.) Department of Radiation Oncology

Montefiore Medical Center, Albert Einstein College of Medicine, Bronx, New York

Corresponding Author: Rui Yang, M.D.

Address: 3400 Bainbridge Ave. 6th floor, Department of Orthopaedic Surgery, Montefiore Medical Center, Bronx, NY 10467

Tel: 1-718-920-2060

E-mail: [ryan@montefiore.org](mailto:ryan@montefiore.org)

### Abstract

**Background:** Pelvis is one of the most common sites for metastatic bone disease. These lesions lead to pain and immobility. When treated with open surgery, it is often associated with significant risks such as bleeding and infection. The prolonged recovery time and the associated morbidities may delay systematic therapy.

**Methods:** We described the minimally invasive percutaneous screw fixation technique in the treatment for metastatic pelvic disease. The principle is to bridge the lesion to the intact bone with large bore cannulated screws and re-enforce mechanical axes of the pelvis through multiple bony conduits. These screws were placed directly under fluoroscopy without the need for special instruments. No PMMA bone cement was used.

**Results:** We performed percutaneous screws fixation in 52 patients with periacetabular metastatic lesions (Enneking Zone 2), and in 24 patients with non-periacetabular lesions (Enneking Zone 1, 3, and 4). The average surgical time was 1.8 h. No blood transfusion was needed. There was no wound complication. Either pre-operative or post-operative radiation was given with an average dose of 15 Gy. Average follow-up time was 6 months. Post-operatively, there was significant improvement in pain control and functionality as measured by visual analog scale (VAS) and Eastern Cooperation Oncology Group (ECOG) score, respectively. Conversion to a total hip arthroplasty was performed in 7 patients due to persist pain or disease progression. For patients who survived longer than 3 months post operatively, 76% of them were found to either have new bone formation filling the defect or being radiographically stable. There is no implant loosening or failure.

**Conclusions:** Minimally invasive percutaneous screw fixation is a safe modality in the treatments of patients with metastatic pelvic lesions. It is effective for pain control and associated with function recovery. It allows biological bone reconstitution for lasting mechanical stability. These screws can be easily converted to support a cemented acetabulum cup for total hip arthroplasty if needed. It provides an attractive alternative in patients with high risk for open surgery.