

Utilization of Photodynamic Nails with Cannulated Screws for Impending Pelvic Fractures

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Impending fractures of the pelvis and sacrum, particularly in oncologic patients, pose a complex clinical challenge. Treatment teams must balance the need for prompt stabilization with the goal of minimizing surgical morbidity and avoiding prolonged interruptions to systemic therapies. Traditional open surgical approaches for managing impending fractures are often associated with significant morbidity, delayed recovery, and extended disruption of adjuvant treatments. Minimally invasive surgical techniques have emerged as a promising alternative. These approaches include the use of cannulated screws, with or without cement augmentation, and more recently, photodynamic nails. The non-rigid properties of the synthetic polymer in photodynamic nails allow them to adapt to the complex anatomy of the periacetabular and sacral regions. This video demonstrates a CT-guided technique combining cannulated screws and photodynamic nails for stabilizing impending pathological fractures in a 46-year-old woman with metastatic breast cancer involving the right ilium and sacrum. Using C-arm angulation and fluoroscopic imaging, an 11-gauge cannula was advanced into the right ilium through the supra-acetabular corridor. A 3.2 mm guide pin was then introduced through the cannula. A second, parallel access point was created caudally with a trajectory passing through the lytic lesion, once again following the pathway of the supra-acetabular corridor. Under continuous fluoroscopic guidance, an additional 11-gauge cannula was placed in preparation for an iliosacral screw, followed by placement of another 3.2 mm guide pin. Cone-beam CT confirmed the correct positioning of all three guide pins. The caudal LC2 corridor guide pin was exchanged for a photodynamic stabilizer (22 x 13 x 140 mm), which was deployed using standard technique, inflated, and hardened with UV light. The cranial LC2 corridor guide pin was then used to deploy a 7 mm x 145 mm fully threaded screw. Finally, the iliosacral guide pin was replaced with another 7 mm fully threaded screw. This case highlights the indications and contraindications for combining minimally invasive implants—such as screws and photodynamic nails—for the management of impending pelvic and sacral fractures. By showcasing a real-world example, we aim to assist surgeons in selecting optimal treatment strategies that emphasize shared decision-making. These minimally invasive approaches can offer meaningful benefits for patients, including pain relief, improved mobility, and faster resumption of adjuvant therapies, ultimately improving overall outcomes in the treatment of metastatic pelvic and sacral lesions.