A National Descriptive Analysis of 729 Internal Hemipelvectomy Patients: Demographics, Complications, and Mortality from a Large-Scale Database

Kaleb J. Patterson BSA[1], Sai Prasada Rao K. Manikonda BS[1], Lorenzo Deveza MD/PhD[1]
[1]Department of Orthopedic Surgery, Baylor College of Medicine, Houston, TX, USA
Email of Presenting Author: Kaleb.Patterson@bcm.edu

Disclosures: Kaleb J. Patterson (N), Sai Prasada Rao K. Manikonda (N), Lorenzo Deveza (Consulting with Lento Medical Inc.)

INTRODUCTION: Internal hemipelvectomy is a limb-sparing resection of half of the pelvis (hemipelvis), typically performed for pelvic bone tumors. Because these surgeries are rare, existing outcome data are limited to small case series. We analyzed a large multi-institutional clinical database to characterize patient demographics, complications, and mortality in the largest known cohort of internal hemipelvectomy patients to date.

METHODS: A retrospective descriptive study was performed by querying the Epic Cosmos database from August 2010 to July 2025. Patients were identified using Current Procedural Terminology (CPT) codes for radical pelvic resection (27075-27078). To isolate a cohort treated with curative intent, patients with a diagnosis of common primary cancers that metastasize to bone or a diagnosis of bone metastases within the two years preceding the index procedure were excluded. Data on patient demographics, primary tumor diagnosis, postoperative complications, and mortality were extracted and analyzed.

RESULTS: A total of 729 patients were identified (56.7% male, 43.3% female). The cohort demonstrated a bimodal age distribution, with a large proportion of patients aged 18-40 (29.1%) and 50-75 (48.3%). The patient population was predominantly White (75.3%) and Not Hispanic or Latino (81.8%). For patients with a coded primary tumor diagnosis, the most common histologies were osteosarcoma (n=148), chondrosarcoma (n=30), and Ewing's sarcoma (n=14). The most frequent major complications were postoperative wound infection (n=40, 5.5%), wound dehiscence (n=29, 4.0%) and nerve injury (n=13, 1.8%). Lung metastasis within 2 years of the procedure occurred in 22 patients (3%). All-cause mortality rates were 6.9% at 1 year and 13.6% at 5 years.

DISCUSSION: This study represents the largest reported cohort of internal hemipelvectomy patients, establishing national benchmarks for demographics, oncologic indications, and outcomes. Osteosarcoma emerged as the most common indication, a finding that contrasts with prior adult-focused series and likely reflects the broader age range captured in this nationwide database. The complication rates highlight the substantial morbidity associated with the procedure on a large scale. The findings may be limited by the retrospective design, reliance on administrative coding, inconsistent availability of SNOMED tumor codes, and the inability to evaluate surgical techniques, resection margins, or functional outcomes. Despite these constraints, this analysis provides a foundational epidemiologic profile of the internal hemipelvectomy population in the United States and serves as a baseline for future clinical and outcomes research.

CLINICAL RELEVANCE: This study addresses a critical knowledge gap by analyzing the largest cohort of internal hemipelvectomy patients to date. The resulting benchmark complication and mortality rates can inform surgical decision-making, risk stratification, and patient counseling.