

Social Determinants of Health and Disparities in Outcomes Following Geriatric Acetabular Fractures

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Introduction

Acetabular fractures in older adults are complex injuries often resulting from low-energy falls and complicated by poor bone quality and comorbidities. Treatment options include non-operative management, Open Reduction and Internal Fixation (ORIF), Total Hip Arthroplasty (THA), or a combination of both. While THA has shown benefits such as improved pain relief and reduced complication rates in certain patients, no standardized treatment guidelines exist, and decisions often depend on surgeon experience and institutional practices.

Beyond clinical factors, disparities related to race, insurance status, socioeconomic background, and hospital characteristics may influence treatment decisions and outcomes. Studies show that minority and underinsured patients are more likely to experience delayed surgery and worse postoperative outcomes, while patients treated at rural or low-volume hospitals may receive lower-quality care.

This study investigates how both patient-level and hospital-level disparities affect treatment patterns and outcomes in geriatric acetabular fracture care, with the goal of informing more equitable and standardized treatment approaches.

Objective and Significance

- Assess how socioeconomic status, race, insurance, and comorbidities impact outcomes in elderly patients with acetabular fractures.
- Inform more equitable, data-driven treatment protocols. Highlight disparities to support improvements in orthopaedic trauma care.

Knowledge Gap

- No standardized guidelines exist for choosing between ORIF and THA in elderly patients.
- Non-clinical factors like race, insurance, and hospital type are often overlooked despite their impact on outcomes.
- Surgeon preference and institutional variation contribute to inconsistent care.

Methods

Design: Retrospective cohort study using the National Trauma Data Bank, 2017–2025.
Population: Patients aged ≥65 with acetabular fractures.
Variables Collected:

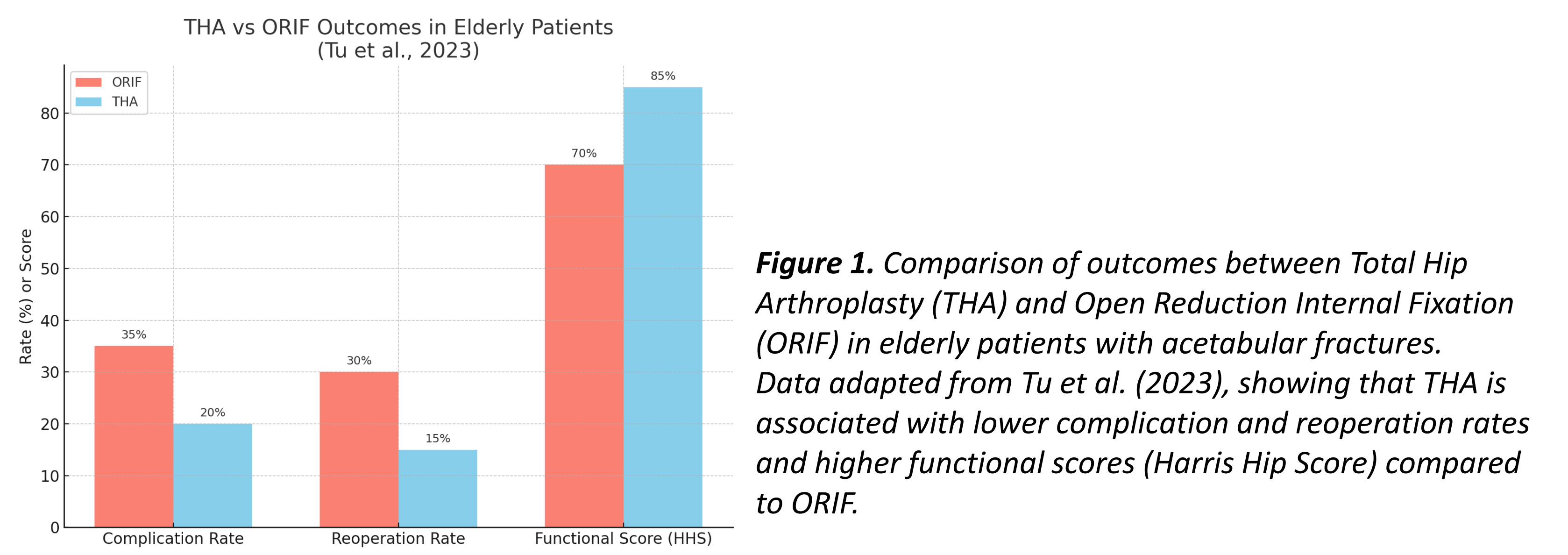
- Patient-level: age, sex, race/ethnicity, insurance type, income by zip code, comorbidities.
- Hospital-level: urban/rural status, teaching designation, surgical volume.

Treatment Types: Non-operative, ORIF, THA, or combined ORIF/THA.
Outcomes Measured: Complication rates, mortality, length of stay, readmissions, discharge disposition.
Analysis: Multivariable regression and hierarchical modeling using SAS 9.4.

Literature

Studies consistently show that THA yields superior outcomes in elderly patients with complex fractures, especially those with poor bone quality or multiple comorbidities. ORIF, while viable for simple fractures, is associated with higher rates of hardware failure and nonunion in older adults.

Additionally, disparities in treatment outcomes are well-documented—minority and Medicaid patients often face delayed surgery, longer hospitalizations, and increased complications. High-volume, urban academic centers report better outcomes, emphasizing the influence of hospital-level factors.



Hypothesized Results

Based on previous literature, we hypothesize that **patient insurance status (e.g., Medicaid or self-pay), race/ethnicity, and hospital characteristics (e.g., rural location, low volume, non-teaching status)** may significantly influence outcomes such as **complication rates, hospital length of stay, and discharge disposition**.

We also hypothesize that **treatment modality, particularly THA, and care received at high-volume centers** may be associated with **differences in functional recovery and readmission rates**.

Discussion and Limitations

Socioeconomic status, race, insurance type, and hospital characteristics likely impact treatment choices and outcomes in geriatric acetabular fractures. Findings may support the development of standardized treatment algorithms that incorporate both clinical and systemic factors to reduce disparities. High-risk groups, such as underinsured or minority patients, may benefit from targeted interventions and improved care access.

Limitations:

- Retrospective study design limits causal inference
- Lack of surgeon-level decision-making data
- Absence of long-term functional outcomes

Acknowledgements

We thank the Department of Orthopedic Surgery and the Department of Community Health Sciences at LSUHSC–New Orleans. This study is supported by a grant from the Medical Student Research Enhancement Program.

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