

## **One-Year Mortality Following Non-Hip Fragility Fractures in Older Adults Compared to Hip Fractures**

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**INTRODUCTION:** Hip fractures in older adults are widely recognized as sentinel events associated with high mortality and substantial functional decline. In contrast, other common fragility fractures—such as those involving the vertebrae, pelvis, ribs, sacrum, proximal humerus, distal radius, and dens—have received comparatively limited attention despite their prevalence in aging populations. The underrepresentation of these injuries in mortality-focused research may contribute to gaps in clinical risk stratification and care delivery. This study aimed to compare one-year mortality rates following hip fractures to those associated with other major fragility fractures in older adults, with the goal of identifying fracture types that may pose a similarly high or underrecognized mortality risk.

**METHODS:** A retrospective cohort study was conducted using the TriNetX United States Collaborative Network, a multicenter electronic health record platform encompassing over 117 million patients. Adults aged 60 to 89 years with an index fragility fracture between 2015 and 2025 were identified using International Classification of Diseases, Tenth Revision (ICD-10) codes. Fracture locations included the hip (S72.0 to S72.2), distal radius (S52.5), vertebral compression (S22.0, S32.0), proximal humerus (S42.2), pelvis (S32.5), ribs (S22.3 to S22.4), sacrum (S32.1), and dens (S12.11 to S12.12). For each fracture group, patients were propensity score matched to the hip fracture cohort by age, sex, race, and comorbidity burden. Kaplan-Meier survival analysis and Cox proportional hazards models were used to compare one-year mortality rates and adjusted hazard ratios.

**RESULTS:** One-year mortality following non-hip fragility fractures was generally lower than that observed in the hip fracture cohort (log-rank  $p < 0.03$ ). However, several subgroups demonstrated equivalent or higher mortality. Males aged 60 to 69 years with pelvic fractures had a one-year survival rate of 89.8% compared to 90.8% in matched hip fracture patients ( $p = 0.0215$ ), with a corresponding hazard ratio indicating higher mortality risk (HR = 0.875, 95% CI 0.798–0.959,  $p = 0.0042$ ). Similarly, males aged 70 to 79 with dens fractures had a one-year survival rate of 85.8% versus 87.8% in the hip fracture group ( $p = 0.0036$ ), with an adjusted hazard ratio of 0.825 (95% CI 0.692–0.983,  $p = 0.0352$ ). Most other fracture types—including vertebral compression, proximal humerus, distal radius, and sacrum—were associated with lower mortality risk compared to hip fractures.

**DISCUSSION AND CONCLUSION:** Although hip fractures remain the most widely studied fragility fracture associated with elevated mortality in older adults, this analysis reveals that certain non-hip fractures—particularly pelvic and dens fractures in specific male age groups—are associated with comparable or higher one-year mortality. These findings highlight the need to broaden clinical focus beyond hip fractures when assessing risk and developing post-fracture care pathways. Greater recognition of the mortality burden associated with select non-hip fragility fractures may lead to improved prognostic awareness, resource allocation, and outcomes for older adults sustaining these injuries.