

### **OR13-03: Understanding Why Older People with Low Trauma Fractures Die Prematurely**

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There is increasing evidence that all proximal and not just hip fractures are associated with increased mortality risk. However, the cause of this increased mortality is unknown. We sought to determine the post-fracture trajectories of subsequent hospital admissions and mortality to develop an understanding of why patients with non-hip fractures die prematurely.

This nationwide Danish population-based study included all individuals aged 50+ years who sustained an incident fragility fracture between 2001 and 2014. High-trauma fractures or individuals with fracture prior to 2001 were excluded. Fracture patients were matched 1:4 by sex, age and comorbidity status with non-fracture subjects alive at the time of fracture. Comorbidities included 33 unique medical conditions of the Charlson or Elixhauser comorbidity index. We modelled the contribution of specific fractures on the risk of subsequent admissions or death within the following 2 years.

There were 212,498 women and 95,372 men with fracture followed by 30,677 and 19,519 deaths, respectively over 163,482 and 384,995 person-years of follow up. Mean age at fracture was 72± 11 for women and 75± 11 for men. Proximal fractures including hip, femur, pelvis, rib, clavicle and humerus had increased mortality compared with their matched non-fracture counterparts with HRs ranging from 1.5-4.0, while distal fractures such as ankle, forearm, hand or foot fractures had similar or lower mortality risk.

Almost 75% of men and 60% of women had ≥1 comorbidity. For every additional comorbidity, risk of mortality increased for all fracture types. However, only for proximal fractures did the fracture itself independently increase mortality risk over and above co-morbidity status.

The 2-yr post fracture admission and mortality patterns differed between proximal and distal fractures. Proximal, but not distal fracture subjects had greater risk of any major hospital admission (including cardiovascular disease, cancer, stroke, diabetes, pneumonia and pulmonary disease) within 2 years compared with their non-fracture counterparts. Distal fractures in general had similar admission patterns as their non-fractured matched counterparts.

Furthermore, 2 year mortality risk was increased for proximal fractures whether or not they were admitted to hospital post fracture. By contrast, mortality risk was similar or reduced for distal fractures compared with non-fracture controls.

This study has not only confirmed the increased mortality following proximal fractures but has demonstrated differing clinical trajectories between proximal and distal fractures that contribute to this increased mortality. These findings provide important insights as to why proximal fracture subjects die prematurely that may lead to specific avenues for intervention.