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Increased All-Cause Mortality Following Proximal Humerus Fractures In Danish Adults: A Register-Based Matched Cohort Study Of 91,796 Fracture Cases And 458,980 Controls

Trauma / Shoulder & Upper Arm Trauma / Epidemiology, Prevention & Diagnosis

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Background
Proximal humerus fractures (PHFs) are common, particularly among older adults, and are associated with frailty. While studies from other Nordic countries have reported increased mortality in patients with PHFs, compared to the background population matched by age and sex, no studies have investigated mortality following PHFs in the Danish population.

Objectives
The aim was to determine whether adults with a PHF in Denmark have higher all-cause mortality rates compared to age- and sex-matched controls from the general population.

Study Design & Methods
This population-based matched cohort study retrieved data from the Danish National Patient Register and the Danish Civil Registration System from 1998 to 2018. All adults (≥18 years) with a PHF were included and matched 1:5 to age- and sex-matched controls from the general Danish population. The outcomes were all-cause death upon 30 and 90 days and one and two years after the index date of fracture. Poisson regression analysis accounting for interactions was performed, and age- (in 10-year bands) and sex-specific mortality rates (MRs) per 1,000 persons with 95% confidence intervals (95% CI) were calculated for the restricted time periods 0-30, 31-90, 91-365, and 366-730 days for both PHFs and controls. Mortality rate ratios (MRRs) were calculated for the age groups 60-69, 70-79, 80-89, and ≥90 years.

Results
A total of 91,796 patients with PHF and 458,980 age- and sex-matched controls were included in the analysis.

Across all time intervals, the MRs were higher among PHF patients, compared to their age- and sex-matched controls, with MRs consistently higher for men than for women. The MRs increased with age in both PHF patients and controls. The MRR for PHF patients and controls was highest within the first 30 days post-fracture, particularly for the age group 60-69 years, where the MRR was 17.45 (95% CI: 15.32–19.88) for males and 7.50 (95% CI: 6.84–8.23) for women. Between 31 and 90 days, the MRR decreased to 6.97 (95% CI: 6.22–7.81) for men and 3.71 (95% CI: 3.42–4.02) for women in this age group, with further decreases observed from 90 to 365 days. After 1 year, the MRR stabilized and remained relatively consistent throughout the two-year study period.

Conclusions

In the Danish population, patients with PHF demonstrated significantly higher all-cause mortality rates than their age and sex-matched controls, with the highest rates within the first 30 days after the fracture. The mortality was notably higher among men than women.