The Majority of Periprosthetic Femur Fractures would be Missed if Reliant on National Arthroplasty Registries: The Scottish National Audit of Periprosthetic Femur Fractures.

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INTRODUCTION:
Periprosthetic femur fracture (PFF) data capture in national registries is incomplete, and its burden on healthcare services is a challenge to quantify. Aims included: establishing the characteristics of patients sustaining a PFF, PFF management, mortality, and comparison to native hip fractures (NHF) using Scottish Hip Fracture Audit (SHFA) data.
METHODS:
A nationwide retrospective cohort study of all patients ≥50 years sustaining a PFF managed in 16 centres over 12 months (2019). This study was undertaken by the Scottish Collaborative Orthopaedic Trainee Research Network (SCOTnet). SCOTnet is a trainee-led collaborative, supported by the Scottish Committee for Orthopaedics & Trauma (SCOT). Data were collected from patient electronic health records (EHR) or paper notes as appropriate for each site, with no patient identifier shared out-with region. Data collected included: patient, PFF and management characteristics, and outcomes including frailty and mortality. Comparison to NHF data and independent associations of PFF with mortality were assessed with Cox regression survival analysis, adjusted for confounders.
RESULTS:
There were 328 PFF with a mean age of 79 (SD 10) years, and 66% were female. Median follow-up was 2.8 (Inter-Quartile Range 1.67-3.22) years post-injury. Compared to NHF, PFF patients were less frail (Clinical Frailty Scale score [CFS] 4 v 5, p-value ≤0.001) and more likely to be home-dwelling (91% versus 76%, p≤0.001). The majority of PFF were relative to arthroplasty implants (307 (93.5%): 228 (70%) hip; and 79 (24%) knee. 175 (53%) patients were managed with fixation, 99 (30%) with revision arthroplasty and 50 (15%) managed conservatively. Median length of stay was 15 days (IQR 8-28 days), and the one-year mortality rate was 21%. Factors independently associated with increased mortality risk were: inter-periprosthetic fractures versus all other types (aHR 2.65, p=0.003), male patients (aHR 1.76, p=0.015), older age (per year aHR 1.07, p=≤0.001), and higher pre-injury frailty (CFS 5-9: aHR 4.16, p=0.027).
DISCUSSION AND CONCLUSION:
PFF occurred in less frail patients than NHF but were associated with prolonged hospital stay and significant mortality risk at one-year. The majority (70%) of PFF would potentially be missed if reliant on revision arthroplasty numbers reported in national arthroplasty registry data alone.
Summary
Periprosthetic femur fractures (PFF) are less common than native hip fractures and are commonly sustained by patients living in their own home who are less frail when compared to native hip fracture patients.
PFF are morbid injuries for patients with a mean one-year mortality rate of 21%, but with higher mortality risk in patients who were male, frail, older, more comorbid, or had inter-prosthetic (Unified Classification System [UCS] Type D) fractures.
The majority (70%) of the PFF captured in this study may have been missed if reliant on the Scottish Arthroplasty Project records only arthroplasty procedures.