



Twelve-month work-related outcomes following hip fracture in patients under 65 years of age



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ABSTRACT

Introduction: Recent research has highlighted the need for improved outcome reporting in younger hip fracture patients. For this population, return to work (RTW) is a particularly important measure against which to evaluate treatment outcomes. However, to date, only two small studies have reported RTW outcomes in young hip fracture patients and neither investigated factors predictive of RTW. The aims of this study were to report return to work (RTW) status and predictors of RTW 12 months after hip fracture in patients <65 years.

Methods: Two hundred and ninety-one adults aged <65 years, admitted with hip fractures between July 2009 and June 2013 and registered by the Victorian Orthopaedic Trauma Outcomes Registry (VOTOR) were included in this prospective cohort study. Twelve-month return to work status was collected through structured telephone interviews conducted by trained interviewers. Multivariate logistic regression was used to identify demographic and injury variables that were important predictors of 12-month work status.

Results: Sixty-five per-cent of patients had returned to work 12 months after hip fracture (62% of whom had an isolated hip fracture and 38% of whom had additional injuries). Relative to patients aged 16–24 years, odds of RTW was reduced by 78%–89% for each 10-year increase in age ($p=0.02$). Relative to patients employed as managers/administrators/professionals, odds of RTW were 68% to 95% lower for all other workers ($p<0.001$). For those reporting a pre-injury disability, odds of RTW were 79% lower compared to those without disability ($p=0.004$) and 69% lower for patients with multiple injuries compared to isolated hip fracture patients ($p=0.002$). Finally, patients compensated by a work or transport insurer had a 67% lower odds of RTW relative to patients who were not compensated ($p=0.02$).

Conclusions: Approximately one third of patients <65 years had not returned to work 12 months after hip fracture. Patients who are older, have multiple injuries or pre-existing disabilities or who work in more physical occupations may need more assistance to RTW following hip fracture. The compensation system should be examined to determine why compensated patients may be at risk of poor RTW outcomes.

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Introduction

Hip fractures are associated with significant health-care and individual costs, including reduced mobility, function and quality of life [1–5]. Most commonly occurring in the elderly, the majority

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of hip fracture research has focussed on outcomes in older age groups and particularly on the high associated mortality rate [6–8]. Hip fractures also occur in younger populations, often as a result of high-energy trauma, and, although associated with lower mortality, the resulting morbidity can have considerable impact on long-term function [9,10].

There has been a recent call for improved outcome reporting in younger hip fracture patients and, specifically, for more studies investigating long-term functional outcomes [8]. For patients who are of working age (i.e. below the traditional retirement age of 65), return to work (RTW) is an important measure against which to evaluate treatment outcomes [11]. To date, only two small studies have reported RTW outcomes in young hip fracture patients and neither investigated factors predictive of RTW [12,13].

Knowledge of these predictive factors is important to identify patients at risk of not returning to work and for developing potential strategies which may assist them in achieving better outcomes. Helping patients to return to work may ultimately increase their financial independence and lead to a better quality of life. Therefore, the aims of this study were to report work-related outcomes and predictors of RTW 12 months following hip fracture in patients under 65 years of age.

Methods

Setting and participants

We included all hip fracture patients aged <65 years registered by the Victorian Orthopaedic Trauma Outcomes Registry (VOTOR) from 1 July 2009 to 30 June 2013. The registry captures data about all adult patients (aged ≥ 16 years) admitted for an orthopaedic injury via the emergency department with a subsequent hospital admission (>24 h) to one of four hospitals in Victoria, Australia: the two adult major (level one) trauma services, one regional trauma centre and one metropolitan trauma centre [14]. We included all hip fractures with the following International Classification of Disease, 10th revision, Australian Modification (ICD-10-AM) diagnostic codes: S72.00, fracture of neck of femur, part unspecified; S72.01, fracture of intracapsular section of femur; S72.02, fracture of upper epiphysis (separation) of femur; S72.03, fracture of subcapital section of femur; S72.04, fracture of midcervical section of femur; S72.05, fracture of base of neck of femur; S72.08, fracture of other parts of neck of femur; S72.10, fracture of trochanteric section of femur, unspecified; S72.11, fracture of intertrochanteric section of femur. Patients are excluded from the registry if they have a fracture related to metastatic disease. The registry has been collecting data since 2003 and now captures approximately 5800 patients per year, with an opt-out rate of less than 2%. By opting-out, patients are completely removed from VOTOR. However, patients can also partially opt-out which means that VOTOR retains relevant data about their injury admission from their medical record but does not carry out any further follow-up. These patients are reported amongst those lost to follow-up.

All survivors to hospital discharge registered by VOTOR are routinely followed up by telephone at six, 12 and 24-months post-injury. The full methodology is explained elsewhere [15], and a brief summary is provided here. Trained telephone interviewers contact the patient, or their next of kin where contact with the patient is not possible (e.g. language other than English, dementia, etc.), to collect a range of functional, health-related quality of life, pain and work-related outcomes [15]. The registry also routinely links with the Victorian Death Registry to collect mortality data at each of the time points for follow-up. Owing to high mortality rates, patients aged 60 years and over who fracture their hip via a low fall are followed up to a maximum of 12-months only. The registry has approval from the Human Research Ethics Committee

at Monash University and the institutional ethics committees of each participating hospital.

Procedures

For all eligible patients, the following data was extracted from the registry: demographic details (age and gender), preinjury work status and occupation, mechanism of injury, injury diagnoses (ICD-10-AM codes), presence of comorbidities, pre-injury level of disability (self-reported as none, mild, moderate, marked or severe disability using World Health Organization definition of disability (i.e. impairments in body functions and structures, limitations in activity and/or restriction in participation) [16]), compensable status and surgical procedures performed (Australian Classification of Health Interventions (ACHI) codes). Outcomes extracted included survival to discharge and 12 months, and, for survivors to 12 months, whether the patient had returned to work (paid employment) and whether they had returned to the same workplace and role within that workplace. The comorbid status of the patient was defined using the Charlson Comorbidity Index (CCI), which is mapped from ICD-10-AM codes for associated conditions [17–19]. A CCI weight of zero was given where the patient had no CCI conditions. The source of payment for the admissions was categorised as i) Medicare/non-compensable, ii) Department of Veteran's Affairs (DVA) or private health insurance; or iii) compensable (WorkSafe Victoria or Transport Accident Commission (TAC)). Medicare is Australia's publicly funded universal health care system which provides coverage for all Australian citizens and permanent residents; the DVA provides financial support for war veterans and their dependants, Australian Defence Force personnel and members of the Australian Federal Police; private health insurance is held by approximately 57% of the adult population in Australia, and 46% of injury patients; and the TAC and WorkSafe Victoria are the third party, no-fault insurers for transport or work injury, providing compensation for treatment, rehabilitation, income replacement and long-term support services. For TAC claimants, the claim must be made within one year of the date of the injury or the date when the injury first manifests, or up to three years if reasonable grounds exist for a delay. For WorkSafe claimants there is a time limit of six years from the date of injury to lodge a claim. Following a successful claim, both schemes have the capacity to provide life-long compensation. For the purpose of analysis, hip fractures were categorised as fractured neck of femur (i.e. subcapital, transcervical or basicervical) or trochanteric fracture (i.e. pertrochanteric or intertrochanteric). Type of hip surgery was categorised as internal fixation or total arthroplasty. Owing to the small number of hemiarthroplasties performed in this sample ($n=2$), these were included in the total arthroplasty group. Age was categorised for analysis because of the skewed distribution of this variable.

Statistical analysis

Descriptive statistics were used to summarise the characteristics of each patient group. We used χ^2 analysis to compare groups (i.e. RTW vs. did not RTW) for all variables. Multivariate logistic regression was used to identify demographic and injury variables that were important predictors of 12-month work status. Variables showing a significant ($p < 0.25$) difference between groups on preliminary χ^2 analyses, in addition to those deemed clinically important (age and gender), were entered into the model²⁰. Non-significant variables were identified using Wald tests, and were removed from the model individually in a backward stepwise approach ($p < 0.05$). The reduced model was compared with the initial model using likelihood ratio tests and the remaining variable coefficients assessed to ensure that they

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