



## Distal femoral fractures The need to review the standard of care



James R.A. Smith<sup>a,\*</sup>, Ruth Halliday<sup>a</sup>, Alexander L. Aquilina<sup>b</sup>, Rory J.M. Morrison<sup>c</sup>,  
Grace C.K. Yip<sup>d</sup>, John McArthur<sup>b</sup>, Peter Hull<sup>d</sup>, Andrew Gray<sup>c</sup>,  
Michael B. Kelly<sup>a</sup> Collaborative - Orthopaedic Trauma Society (OTS)

<sup>a</sup> Department of Orthopaedics, Southmead Hospital, Southmead Road, Bristol BS10 5NB, United Kingdom

<sup>b</sup> Department of Orthopaedics, University Hospital, Clifford Bridge Road, Coventry CV2 2DX, United Kingdom

<sup>c</sup> Department of Orthopaedics, Royal Victoria Infirmary, Queen Victoria Rd, Newcastle upon Tyne NE1 4LP, United Kingdom

<sup>d</sup> Department of Orthopaedics, Addenbrooks Hospital, Cambridge University Hospitals NHS Foundation Trust, Hills Road, Cambridge CB2 0QQ, United Kingdom

### ARTICLE INFO

#### Article history:

Accepted 19 February 2015

#### Keywords:

Distal femoral  
Fracture  
Femur  
Supracondylar

### ABSTRACT

**Background:** Hip fracture care has evolved, largely due to standardisation of practice, measurement of outcomes and the introduction of the Best Practice Tariff, leading to the sustained improvements documented by the National Hip Fracture Database (NHFD). The treatment of distal femoral fractures in this population has not had the same emphasis. This study defines the epidemiology, current practice and outcomes of distal femoral fractures in four English centres.

**Patients and methods:** 105 patients aged 50 years or greater with a distal femoral fracture, presenting to four UK major trauma centres between October 2010 and September 2011 were identified. Data was collected using an adapted NHFD data collection tool via retrospective case note and radiograph review. Local ethics approval was obtained.

**Results:** Mean age was 77 years (range 50–99), with 86% female. 95% of injuries were sustained from a low energy mechanism, and 72% were classified as either 33-A1 or 33-C1. The mean Parker mobility score and Barthel Independence Index were 5.37 (0–9) and 75.5 (0–100) respectively. Operative management was performed in 84%, and 86% had their surgery within 36 h. Three quarters were fixed with a peri-articular locking plate. There was no consensus on post operative rehabilitation, but no excess of complications in the centres where weight bearing as tolerated was the standard. 45% were seen by an orthogeriatrician during their admission. Mean length of stay was 29 days. Mortality at 30 days, 6 months, and 1 year was 7%, 16% and 18% respectively.

**Discussion:** This study demonstrates that the distal femoral and hip fracture populations are similar, and highlights the current disparity in their management. The metrics and standards of care currently applied to hip fractures should be applied to the treatment of distal femoral fractures. Optimal operative treatment and rehabilitation remains unclear, and is in need of further research.

© 2015 Elsevier Ltd. All rights reserved.

### Introduction

Fractures of the distal part of the femur account for 3–6% of all femoral fractures [1–3]. There is a small incidence following high energy trauma in the younger population, but this is predominately a low energy fracture in the elderly, commonly sustained after a fall from standing height [2,4]. With the elderly cohort

frequently having multiple comorbidities [5] this low energy fracture can result in multiple complications. Mortality at 30 days, six months and one year have been reported previously as 6%, 17–18%, and 18–30% respectively, with five year mortality as high as 48% [6–9]. These figures are similar to published mortality rates for proximal femoral fractures [10,11].

The management of proximal femoral fractures in England has hugely evolved in recent years, with the introduction of the National Hip Fracture Database [12] and the Best Practice Tariff. This has resulted in standardised and enhanced quality of care throughout the country, leading to an improved patient

\* Corresponding author.

E-mail address: [jrasmith@me.com](mailto:jrasmith@me.com) (James R.A. Smith).

experience, and lower morbidity and mortality rates [12]. These benefits however have not yet been extended to patients with a fracture of the distal part of the femur.

The main focus of the current literature for distal femoral fractures is on biomechanics of fixation methods, surgical technique and new implant technology. Peri-articular anatomical locking plates are becoming the accepted standard in the treatment of these fractures, with retrograde intramedullary nailing (rIMN) and distal femoral replacement used for some fracture configurations. At present there is no consensus on how to treat these difficult injuries, or how to manage these patients post-operatively. The current approach towards weight-bearing and patient follow-up also remains largely unknown.

This multi-centre paper aimed to define the population, current management and outcomes of the treatment of distal femoral fractures in patients aged over 50 years in England.

## Patients and methods

Patients who presented to each of four major trauma centres (Frenchay Hospital, Bristol (FH); Addenbrooke's Hospital, Cambridge (AD); Royal Victoria Infirmary, Newcastle (RVI); University Hospital, Coventry (UHC)) with a fracture of the distal femur between October 2010 and September 2011 inclusive were identified. Plain anteroposterior and lateral radiographs from admission were assessed by a senior orthopaedic surgeon at each centre, and classified using the AO-OTA system [13]. Fracture pattern types 33-A,B and C were included in the study. Patients aged less than 50 years of age were excluded. A retrospective review of operative records, inpatient hospital notes, and outpatient appointment letters was performed for each patient at their study centre. Data was collected on a standardised spreadsheet adapted from the National Hip Fracture Database Audit Tool [14]. Pre-morbid mobility was assessed using the Parker and Palmer Mobility Score [15], and Barthel Index [16]. Patient mortality was recorded at 30 days, four months, six months and one year. Data was collated and analysed using descriptive statistics by the lead investigators.

## Results

### Patient demographics

A total of 105 patients were identified (FH 26, AD 28, RVI 22, UHC 29). This comprises 6% of femoral fractures, when the total number of proximal femoral fractures entered to the NHFD is considered (may represent a very small overestimate as no data is available for diaphysal injuries). Eighty-six percent of the patients were female and the mean age was 77 years (median 80 years, range 50–99) (Table 1). Ninety-five percent of injuries occurred due to a low energy mechanism, and 96% were closed. Periprosthetic fractures occurred in 34% of cases, and 6% were considered to have a pathological aetiology other than osteoporosis. The majority of patients were admitted from their own home, or sheltered housing. 10% were admitted from either a nursing or residential home, 4% from a rehabilitation unit, and 7% sustained their injury whilst already in hospital. Forty-six percent of patients walked regularly without aids (Table 2). The Parker Mobility Score and The Barthel Index were only ascertainable in 57% and 52% of cases respectively. Patients had a mean Parker Mobility Score of 5.37 (range 0–9), and a mean Barthel Index of 75.5 (range 0–100). Mean abbreviated mental test score (AMTS) [17] on admission was 6.75, but only performed on 19% of patients.

**Table 1**  
Patient demographics.

Number		105
Mean age (yrs)		77
Age range (yrs)		50–99
Gender	Male	11 (14%)
	Female	65 (86%)
	Unknown	29
Side of injury	Left	52 (50%)
	Right	48 (46%)
	Bilateral	5 (4%)
Open fracture?	Yes	4 (4%)
	No	101 (96%)

**Table 2**  
Pre-morbid ambulatory ability.

Pre-morbid ambulatory ability	Regularly walked without aids	46%
	Regularly walked with one aid	13%
	Regularly walked with two aids or frame	28%
	Wheelchair or bed bound	13%

### Treatment

Seventy-two percent of the total distal femoral fractures were 33-A1 or 33-C1 type (Fig. 1). Two-thirds (69%) of the patients were admitted directly to an orthopaedic ward from Accident and Emergency, and 6% were not admitted to an orthopaedic ward during their inpatient episode. The initial treatment plan was operative in 82% of cases, occurring at an average of 2 days post admission (mode 1 day, range 0–18), with 86% having their surgery within 36 h. Reasons for delay are detailed in Table 3. A further two cases required operative intervention after failed conservative management.

Seventy-one percent of operative procedures involved an open reduction and internal fixation using a plate and screws, though the mode in which the plate was used varied (Fig. 2). Intraoperative complications occurred in three patients. These comprised two myocardial infarctions (one fatal), and a distal tibial flap required following intra-operative traction. There were 20 known post-operative complications (Table 4).

### Rehabilitation

The majority of patients were mobilised non-weight-bearing (51%), with 18% touch-weight-bearing, 17% partial weight-bearing and 14% full weight-bearing. Of note, there was no excess of complications of fixation associated with less restrictive practices in terms of permitting weight-bearing. Physiotherapy and occupational therapy were provided in 78% of patients, and 45% were seen by an orthogeriatrician during their admission. It was not possible from the case notes to accurately determine the number of patients who received a specialist falls assessment or reviewed for suitability of bone protection medication. No patient had a post operative Abbreviated Mental Test Score documented. The assumption is that these factors were not a priority in their management.

### Discharge and mortality

Mean length of stay was 29 days (range 0–137 days). Seventy percent of patients were seen following discharge in fracture clinic (range 55–82%). Discharge destination is shown in Table 5. Thirty day, 6 month, and 1 year mortality rate was 7%, 16% and 18% respectively (Table 6).

Download English Version:

<https://daneshyari.com/en/article/6083407>

Download Persian Version:

<https://daneshyari.com/article/6083407>

[Daneshyari.com](https://daneshyari.com)