Medical audit

Factors delaying surgical treatment of hip fractures in elderly patients

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Background: Published guidelines recommend early surgical treatment of hip fractures in elderly patients. Understanding the factors that delay surgical intervention is essential in order to introduce changes that will facilitate early treatment.

Aim: To determine the factors delaying surgical treatment of hip fractures in elderly patients for more than 24 h.

Patients and Methods: Assessment of 163 consecutive patients undergoing surgery for hip fractures at the trauma unit of Manchester Royal Infirmary.

Results: Only 72/163 (44.2%) patients had their operation within 24 h of presenting to hospital. The remaining 91 patients had a total of 239 days delay (in excess of the initial 24 h) for surgical treatment. Active medical problems (56.5%) and a wait for medical investigations (19.7%) caused most delays. Lack of operating theatre time and Sunday trauma lists caused 23.8% of delays.

Conclusions: Medical problems account for most delays of surgical treatment of hip fractures. A multidisciplinary approach, with early input by medical and anaesthetic teams, is essential in managing such patients. Established protocols may reduce waiting times for essential investigations.

Key words: Surgery – Hip fractures – Elderly

Delays in operative treatment of hip fractures may confer increased postoperative mortality in the short term and poor functional recovery in the long term.^{1–3} Early fixation of intracapsular neck of femur fractures decreases the risk of avascular necrosis and non-union.⁴ Prompt surgical intervention also avoids unnecessary discomfort for the patient and facilitates early mobilisation and rehabilitation. Guidelines for the management of hip fractures recommend that surgical intervention should be carried out within 24 h of the fracture occurring.⁵

In the era of clinical governance, the management of hip fractures can be used to assess how well different orthopaedic trauma units perform.⁶ Determining how long patients have to wait for operative treatment may form an important component of such assessment.

Understanding the factors delaying operative treatment is vital to implement changes that will reduce unnecessary delays. The aim of this study was to determine the time taken for operative treatment in a city-centre hospital for patients admitted with hip fractures, and to identify factors causing delays.

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Patients and Methods

Manchester Royal Infirmary has a 28-bedded trauma ward. Consultant-led orthopaedic trauma lists operate between 0830 and 1300, Monday to Saturday. In most cases, the patients on the trauma list are assessed by an anaesthetist in the morning of their operation. A total of 173 consecutive patients admitted with a clinical diagnosis of hip fracture to the trauma unit of Manchester Royal Infirmary were included in this study. The number of days taken from presentation to operative treatment was calculated. Where there was a delay of more than 24 h, the reason for such a delay was determined by taking into account the anaesthetic assessment and the patient's orthopaedic team assessment. In all, 123 patients were studied prospectively and 50 retrospectively.

Results

Of 173 consecutive patients admitted with a clinical diagnosis of hip fracture over a 13-month period, 163 had surgical treatment, 9 were managed non-operatively because they were medically unfit and of high operative risk, and 1 patient was found not to have a hip fracture following magnetic resonance imaging. The age of these patients ranged from 54–96 years (median, 77 years). At surgery, 85 patients had dynamic hip screw fixation, 27 cannulated screw fixation, 7 intramedullary nailing, 40 hip hemi-arthroplasty, and 4 total hip replacement. At operation, 151 patients were under general anaesthesia and the remaining 12 under spinal or epidural anaesthesia.

Of the 163 patients, 72 (44.2%) had their surgery within 24 h of presenting to accident and emergency. The remaining 91 (55.8%) patients had their operation at more than 24 h (Fig. 1). These 91 patients had a total of 239 days

Table 1 Number of delay days due to medical reasons in elderly patients with hip fractures

Reason for delay	Number of delay days	
Respiratory problems		
Chest infection	22	(9.2%)
Exacerbation of COAD	3	(1.3%)
Cardiovascular problems		
Angina	21	(8.8%)
Left ventricular failure	2	(0.8%)
Uncontrolled atrial fibrillation	2	(0.8%)
Hypertension	3	(1.3%)
Haematological problems		
High INR/other coagulation problems	19	(7.9%)
Low haemoglobin (< 9 g/dl)	6	(2.5%)
Neutropenia	6	(2.5%)
Electrolyte disturbances	13	(5.4%)
Awaiting high dependency unit bed	14	(5.9%)
Combinations of above	24	(10.0%)

Percentages are relative to the total number of delays encountered in this population ($n = 239$).

delay (in excess of 24 h) for surgical treatment. Most of this delay was due to on-going active medical problems that increased operative risk (135 days, 56.5%; Table 1) and due to patients awaiting medical investigations (41 days, 19.7%; Table 2). A significant proportion of delay was due to lack of operating theatre time (43 days, 18%), and due to lack of Sunday trauma lists (14, 5.8%).

Discussion

There is evidence to suggest that delay in operative treatment of hip fractures confers increased postoperative mortality and morbidity, and is associated with poor

Figure 1 Time of surgical treatment of hip fractures in elderly patients after admission to the Manchester Royal Infirmary.

Table 2 Days of delay due to patients with hip fractures awaiting investigations prior to surgery

Reason for delay	Number of days delayed	
Echocardiogram	33	(13.8%)
Bone scan to exclude malignant metastases	7	(2.9%)
MR scan to confirm hip fracture	5	(2.1%)
Leg Doppler to exclude DVT	2	(0.8%)

Percentages are relative to the total number of delays encountered in this population ($n = 239$).

functional recovery.¹⁻⁴ Published guidelines recommend that surgical treatment should take place within 24 h of the fracture occurring.⁵

In our study, surgical treatment was delayed for more than 24 h in a significant proportion of patients (55.8%), which is similar to that reported in other hospitals in the UK.^{7,8} Active medical problems that increased operative risk were the most common factor delaying surgical treatment of hip fractures in elderly patients. As might be expected for an elderly population, cardiovascular and respiratory problems were most commonly encountered. Acute medical problems can be improved by appropriate interventions prior to surgical treatment. Early assessment by physicians, cardiology and anaesthetic teams as well as involvement of chest physiotherapists seems essential. It was noteworthy that many delays were due to clotting derangements. Patients on anticoagulants for previous deep venous thrombosis, pulmonary embolism, chronic atrial fibrillation or heart valve prostheses usually have a target INR between 2 and 3. This may take up to 96 h to reduce to acceptable levels for surgical intervention, if the only measure taken is withholding warfarin treatment.⁹ Faster correction of INR may be achieved by administering coagulation factors and vitamin K. Close liaison with a haematologist is essential for faster INR reversal.

Many patients (19.7%) were delayed because they were awaiting investigations, most commonly an echocardiogram to determine the significance of heart murmurs audible on clinical examination. Obtaining echocardiograms in a busy hospital can take considerable time in the absence of an agreed protocol with the cardiology department prioritising patients with hip fractures.

Lack of theatre time was a significant (23.8%), but not the main, cause of surgical delays. This could be anticipated with the introduction of daily, consultant-led, trauma lists. This finding would mean that simply obtaining more theatre time will not necessarily reduce waits for surgical intervention.

In summary, multiple medical problems and wait for investigations often delay surgical treatment in hip fracture patients. In view of this, we feel that elderly patients with hip fractures should be assessed by the anaesthetic and hospital medical teams early in their hospital admission. Correctable problems can then be reliably identified early and measures of optimisation initiated. Usually there is a 24-h period between the patient being admitted to hospital and the next operative trauma list, an opportunity window for medical interventions. Agreed protocols with the cardiology and radiology departments can facilitate earlier performance of essential investigations. It would also be of value if dedicated trauma lists operate daily during weekends.

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