Operative delay for fracture of the hip
A TWO-CENTRE PROSPECTIVE STUDY

N. Von Meibom, N. Gilson, A. Dhapre, B. Davis
From Luton and Dunstable NHS Trust, Luton, and West Suffolk Hospital, Bury St Edmunds, England

We undertook a simultaneous prospective two-centre study to examine why patients with fractures of the proximal femur experience a delay in undergoing surgery.

At centre 1, 23 of 105 patients (22%) suffered an avoidable delay, 18 (78%) because of a lack of theatre capacity while at centre 2, 71 of 130 patients (55%) had an avoidable delay, with 54 (76%) because of this cause. Miscellaneous reasons such as poor ward management, co-existing medical conditions, and lack of equipment were responsible for the remainder of the delays.

Without a substantial increase in operating capacity for acute trauma, it will not be possible to comply with guidelines which recommend surgical treatment within 24 hours in elderly and vulnerable patients.

Fractures of the proximal femur are common in the elderly and vulnerable patient population and represent a high percentage of the trauma seen in the hospitals of the United Kingdom. The incidence of these fractures will continue to rise due to an increasingly elderly population. Proximal femoral fractures account for one-half of all orthopaedic perioperative mortality and significant patient morbidity. The economic cost of these fractures is also substantial in terms of hospital stay and increased demands for help in the community.

There is a wealth of literature which has examined the relationship between surgical delay for patients with proximal femoral fractures, morbidity and mortality. However, the evidence of a direct link between delay and complications remains controversial. Some authors conclude that delay in surgery is an independent risk factor for mortality, while others disagree. There is a consensus, however, that, on purely humanitarian grounds, these patients should not be kept waiting unnecessarily.

The Scottish Intercollegiate Guidelines Network (SIGN) recommends that patients with proximal femoral fractures should undergo surgery as soon as possible (within 24 hours), during standard daytime working hours, including weekends, if their medical condition allows. In 1999 the National Confidential Enquiry into Perioperative Deaths (NCEPOD) made similar recommendations.

Despite this, it is widely recognised that delays in operating upon these patients are common. There is a paucity of literature which has specifically examined the reasons for these delays, although those which have been noted include the need for medical stabilisation, a lack of operating time, a delay in diagnosis and lack of consent.

We have therefore examined the specific reasons as to why surgery was delayed for these patients by more than 24 hours from admission.

Patients and Methods
Between February and August 2004 we carried out a simultaneous, prospective, two-centre study examining the factors leading to surgical delay in all patients admitted with a fracture of the proximal femur (intracapsular, extracapsular, pertrochanteric, subtrochanteric).

Centre 1 (West Suffolk Hospital, Bury St Edmunds, United Kingdom) was a 680-bed District General Hospital serving a population of 275 000 and centre 2 (Luton and Dunstable Hospital, Luton, United Kingdom) a 565-bed District General Hospital serving a population of 310 000.

Centre 1 had one half-day operating session for trauma every weekday with no dedicated weekend list, giving a total of five operating sessions. Centre 2 had four half-day and one whole-day theatre sessions for trauma, with one half-day list at weekends, a total of seven sessions.
Table I. Reasons for avoidable delays to surgery

<table>
<thead>
<tr>
<th>Reason</th>
<th>Centre 1 (n = 23)</th>
<th>Centre 2 (n = 71)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of theatre capacity</td>
<td>18</td>
<td>54</td>
</tr>
<tr>
<td>Lack of equipment</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Non-indicated echocardiography</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Poor ward management</td>
<td>2</td>
<td>11</td>
</tr>
<tr>
<td>Lost notes/radiographs</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>Lack of imaging</td>
<td>0</td>
<td>2</td>
</tr>
</tbody>
</table>

* Three patients were initially medically unfit but then underwent an avoidable delay once fit for surgery

Results

Centre 1. Of the 105 patients 73 (70%) were operated on either on the next available trauma list or within 24 hours, leaving 32 (30%) waiting for longer than 24 hours. In 23 of these (72%) the delays were wholly or partially avoidable. Of the 23 patients with avoidable delays this was due to lack of theatre capacity in 18 (78%). Other reasons are shown in Table I. Patients with unavoidable delays to surgery are shown in Table II. Three patients were classed as partially avoidable. Initially, they were medically unfit for surgery but then suffered an avoidable delay once medically fit.

Centre 2. Only 39 (30%) of the 130 patients had surgery either on the next available trauma list or within 24 hours, leaving 91 (70%) waiting longer than 24 hours. Of these, 71 (78%) were deemed to have wholly or partially avoidable delays and in 54 (76%) of these it was due to lack of theatre capacity (Tables I and II).

Discussion

This is a simple study which attempts to answer a simple question. Why, despite recommendations both recent and dating back 20 years, do patients with fractures of the proximal femur still wait more than 24 hours for surgery? Our results have shown that when delays occur, in more than 75% of patients the reason is a lack of theatre capacity, be that on a trauma, emergency or elective operating list. The two centres where this study was performed are representative of medium-sized District General Hospitals in the United Kingdom and it is perhaps reasonable to infer that this is the situation throughout the country. A recent, large, prospective study from Moran et al6 revealed that 54% of their patients had delays in reaching theatre because of a lack of available operating space, supporting our suggestion that this is a widespread problem within the United Kingdom. The situation may not be better overseas. In 1999, Dolk9 published a retrospective review of 274 patients in Sweden who had undergone surgery for fracture of the hip in the late 1980’s and concluded that 27% of patients were delayed for no obvious reason, assuming that these represented a lack of operating space.

Our results contrast with those of Guryel et al8 who found that medical reasons and waiting times for pre-operative echocardiography marginally delayed patients more frequently than a lack of theatre availability. However, this was a small and retrospective audit over a period of three months and it is therefore difficult to compare their results with our findings. In our study, only a minor contribution to the overall delay was due to medical reasons (Table II).

Why is it that theatre space for these patients is so limited? One reason which we identified was the prioritisation of cases. Semi-elective cases such as removal of metalwork, acute knee arthroscopy and internal fixation of scaphoid nonunion were scheduled for trauma lists. To include such cases in elective waiting lists adds further to increasing government pressure on waiting-list targets, while adding them to trauma lists can lead to delays in acute surgical treatments. Which acute patients should take priority? There are guidelines7,8 which state that fractures of the hip should be prioritised, but there are none for these semi-elective cases.

The problems are compounded by the recommendations of NCEPOD,11 which state that out-of-hours operating should be restricted. Further restrictions are applied by the European Working Time Directive (EWTD),12 which theoretically forces surgeons to take rest days after working for a certain time while on call. There is now a conflict between the original and widely practised NCEPOD recommendations11 and the changing working practices imposed by EWTD, such that in 2003 NCEPOD “Who Operates When II” recommended that, with the introduction of shift working patterns, staff should no longer be tired and consideration should be given to performing non-essential surgery out of hours.

Another significant cause of delay in our study was inadequate management of patients pre-operatively in terms of measurement of electrolytes, blood glucose, and
haemoglobin and poor control of anticoagulation (Table I). Our figures are slightly higher than those quoted by Dolk. While rigorous and continuous education of junior staff may prevent some of these delays, the impact of this would be small when compared with increasing trauma capacity.

Our results, and those of Moran et al, suggest that there is an underprovision of trauma services in the United Kingdom. This must represent a false economy. Fox et al demonstrated that delay for non-medical reasons increased both the loss of independence and the requirement for increased home help, with a consequent 23-day increase in hospital stay. This is a large and unnecessary bed occupancy as well as a high cost, and these findings are supported by the work of Villar et al.

Currently, trauma systems are overflowing. Our study showed that many patients with a fracture of the hip were slotted into spaces on elective daytime lists, onto generic emergency lists which ran alongside trauma lists, or occasionally in emergency lists out of hours. The problem of overcrowded trauma theatre lists is chronic and was reported in 1986 by Villar et al who stated that “to include patients with proximal femur fractures into a standard trauma list system, is to exacerbate a situation already out of control”. Our prospective, two-centre study, specifically examining the reasons for surgical delay, would seem to suggest that little progress has been made in the last 20 years. We conclude that in the current climate of elective waiting-list targets, the elderly patient with a fracture of a hip seems to be somewhat forgotten.

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References