Audit

Balancing priorities in the management of hip fractures: guidelines versus resources

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Background: About 60,000 patients are treated for hip fractures each year in the UK and the incidence is increasing. The majority of these patients are elderly and sick, and delay to operation may be fatal. The National Confidential Enquiry into Peri-Operative Deaths (NCEPOD) guidelines aim to improve quality of care for such patients. However, we present an audit highlighting the importance of balancing the implementation of such guidelines with available local resources to ensure that established priorities in the care of these patients remain paramount.

Methods: The 2001 NCEPOD report recommends that pre-operative transthoracic echocardiography be performed in patients who have evidence of aortic stenosis in order to identify those requiring invasive monitoring and high dependency unit care postoperatively.

Results: We have assessed the impact of the implementation of these guidelines on surgery for fractured neck of femur at our hospital, auditing both delay to surgery and the effect of the investigation on subsequent management. In the period studied prior to the introduction of the NCEPOD guidelines, no patients underwent pre-operative echocardiography. Subsequent to their introduction, 10% of patients underwent the investigation, which in the current study did not alter management but did delay surgery by 4–8 days in all cases.

Conclusions: For such guidelines to be implemented, adequate resources should first be provided. In the absence of these resources, clinicians must balance the need for adequate pre-operative assessment with the need for urgent surgery.

Key words: Hip fracture – Echocardiography – NCEPOD – Audit

About 60,000 patients are treated for hip fractures each year in the UK and the incidence is increasing.¹ The majority of these patients are elderly (75% over 75 years of age) and sick (10% die within 30 days of admission and up to 41% die within 6 months).^{2–5} These patients require an operation within 48 h of admission to hospital. If surgery is delayed beyond 48 h for non-medical reasons, then the mortality rate increases up to 10-fold.^{6,7}

The National Confidential Enquiry into Peri-Operative Deaths (NCEPOD) is a registered charity whose aim is to review clinical practice and identify potentially remediable factors in the practice of anaesthesia, surgery and other invasive medical procedures. The 1999 NCEPOD report states 'there should be sufficient, fully-staffed, daytime theatre and recovery facilities to ensure that no elderly patient requiring an urgent operation waits

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Table 1 Patient demographics

	No. of patients admitted			Mean age Years (range)	Mean number of co-morbidities (range)	Mean ASA grade (range)
	Male	Female	Total			
February/March 2001	4	18	22	82 (70–93)	1.4 (0–4)	2.6 (2–4)
February/March 2002	10	28	38	82 (68–93)	1.6 (0–4)	2.6 (2–4)

for more than 24 hours once fit for surgery, including weekends'.⁸ Amongst the many recommendations of the 2001 NCEPOD report,⁹ it is suggested that pre-operative echocardiography be performed in patients with fractured neck of femur who have evidence of aortic stenosis, hence identifying any evidence of significant cardiac disease in patients with an aortic murmur (who may otherwise be asymptomatic). The NCEPOD recommendations state that patients shown to have a large aortic valve gradient or small aortic valve area with a reduced ejection fraction require invasive monitoring, ICU/HDU care and excellent postoperative pain control. It was our impression that the implementation of this particular guideline was causing significant operative delay in patients awaiting surgery for fractured neck of femur and thus we undertook an audit to investigate.

The aim of the current study was to assess the impact of the 2001 NCEPOD guidelines on surgery for fractured neck of femur at our hospital. We audited both delay to surgery and the effect of echocardiography on surgical management.

Patients and Methods

Inclusion criteria

The Princess Royal Hospital is a district general hospital treating approximately 200 fractured necks of femur each year. We reviewed the records of all patients admitted with a fracture neck of femur to our hospital during the months of February and March 2001 (prior to introduction of NCEPOD echocardiography recommendations) and

the same months in 2002 (subsequent to introduction of NCEPOD echocardiography recommendations). Those patients under 65 years of age and those that did not undergo surgery for their hip fracture were excluded from the study (total 4 patients).

Study design

Demographic data were collected regarding all patients as well as information regarding co-morbidities and ASA grading (Table 1). If a patient's operation was delayed, then the cause and length of the delay were noted. Those patients who underwent pre-operative echocardiography were further studied to establish whether this investigation altered the peri-operative management of the patient. The data from the two years were then compared and the impact of echocardiography in these patients assessed.

Results

Study groups

A total of 66 patients were admitted with a fractured neck of femur during the period studied (22 during the February/March period 2001 and 38 patients during the same period in 2002). Table 1 illustrates the patient demographics for the two groups. The age and sex distribution of the two groups were similar. The mean ASA grade of each group was also similar, as were the mean number of co-morbidities (as noted pre-operatively in the patient records).

Table 2 Operative delay: length of delay and its cause

	February/March 2001	Reasons for delay	February/March 2002	Reasons for delay
Within 24 h	15/22 (68%)		25/38 (66%)	
24–48 h	4/22 (18%)	Pneumonia (2) Theatre availability INR normalisation	3/38 (8%)	Theatre space Image intensifier (2)
3–5 days	3/22 (14%)	Pneumonia (2) INR normalisation	3/38 (8%)	Theatre space Image intensifier Echocardiogram
6–10 days	0/22 (0%)		5/38 (13%)	Echocardiogram (3) INR normalisation CCF
> 10 days	0/22 (0%)		2/38 (5%)	Medical (2)

Thus the 2001 group of patients studied closely matched the demographic properties of the 2002 group of patients and could reasonably be compared.

Operative delay

Regarding the 2001 study group, 3/22 (14%) waited more than 48 h for operation and no patient waited more than 5 days. In the 2002 study group, 10/38 (26%) waited more than 48 h and some patients waited 10 days or more for operation (Table 2).

Causes of operative delay

We also investigated the causes of the above delays. In the 2001 group, four patients had their operation delayed due to pneumonia, two patients required normalisation of their INR, and one patient was delayed because of a lack of theatre availability. No patients were investigated with transthoracic echocardiography during this period.

In the 2002 group, three patients required medical optimisation and one patient required normalisation of their INR prior to their operation. Two patients did not receive their operation within 24 h due to a lack of theatre availability, whilst three further patients were delayed due to image intensifier failure. During the 2002 period (subsequent to the 2001 NCEPOD recommendations), four patients were investigated pre-operatively with a transthoracic echocardiogram. This delayed surgery in all four cases (10% of group studied) and resulted in one patient's operation being delayed 4 days, another by 7 days and two further patients did not undergo operation until 8 days after admission. In all four cases, the delay occurred entirely in waiting for the echocardiogram to be performed. If the delays due to waiting for echocardiography are removed from the 2002 figures, the number of patients delayed over 48 h drops to 16% which is then close to the figure of 14% for the previous year.

How did the echocardiogram alter the peri-operative management?

Of the four patients that were investigated with an echocardiogram prior to their operation, none required invasive monitoring or ITU/HDU care. This investigation did not, therefore, alter the peri-operative management of these patients but did significantly delay their surgery.

Discussion

The results reveal that since the 2001 NCEPOD recommendations, more of our patients have undergone pre-operative

echocardiography, but due to the limited provision of echocardiography in our hospital, patients' surgery has been significantly delayed. In the current study, the echocardiogram did not alter subsequent patient management. However, the issue is not so much whether echocardiography is useful in the pre-operative assessment of such patients but whether it is sufficiently important to warrant significant delay to operation. There is strong evidence that operative delay in these patients carries a significantly increased risk of mortality and thus our overwhelming goal should be to ensure that such delays do not occur without sufficient cause.^{6,7} Investigations that are likely to incur a delay in the patient receiving operative treatment of their hip fracture must be evaluated against the established risks of this delay. When requesting any such investigation, the clinician must be aware of the likely time needed to obtain it and consider its value in this context. Resources are finite within the National Health Service whilst demand upon them continues to rise through advances in knowledge and technology. Clinical audit is an essential tool in effectively identifying the limitations of specific resources where they are impacting patient care. Once these limitations have been identified, treatment priorities must be established/re-iterated pending further resource availability. In the case of pre-operative echocardiography in patients with a fractured neck of femur, we recommend increasing provision to accommodate demand for the investigation. However, until such resources are forthcoming, we suggest that operative delay beyond 48 h of admission cannot be justified in order to wait for an echocardiogram to be performed.

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