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The best practice tariff and hip fractures: How can Northern Ireland keep up?

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ABSTRACT

Introduction: Current hip fractures guidelines recommend surgery within 36 h of admission. The 2011 National Hip Fracture Database (NHFD) report shows our institute has the fewest patients meeting this target (9%). Northern Irelands' exclusion from the "Best Practice Tariff" means no incentive-led treatment or prioritisation of hip fracture patients.
Method: We performed a systematic review of post-operative results to highlight deficiencies in delivery of patient care. We reviewed 702 patients admitted between September 2009 and April 2012. Patients were prospectively identified and added to our Fracture Outcome and Research Database (FORD). Results were compared to national average values from the NHFD.
Results: 16.7% of patients met the 36-h target to theatre compared to the UK average of 66%. 81.7% underwent a pre-operative orthogeriatric review. The main reasons for surgical delay were inadequate theatre space (58%) and medically unfit patients (29%). After exclusion of medically unfit patients, medically fit patients were divided into delayed surgery and not delayed categories. Medically fit patients who had delayed surgery had inferior outcomes-longer hospital stay and higher mortality as an inpatient and at 30 days.
Conclusion: Without a change in funding, Northern Ireland will struggle to compete with the UK mainland and decrease mortality in this patient group.

Introduction

The epidemiology of hip fractures with their significance to the governing bodies of the NHS has been widely discussed.[1,2] The aging population and the potential economic burden that this represents means these injuries, which command considerable resources, are of particular interest to both the government and media.[3]

Current best practice guidelines recommend, among other things, surgery within thirty-six hours of admission.[2] Currently all the hospitals participating in the National Hip Fracture Database of the UK fall short of this standard with success rate varying from 88% to 9%.[3] This statistic highlights two main points; firstly there is considerable scope for improvement in the lower performing hospitals and secondly, despite an efficient management system for these patients it is unlikely that even the higher performing hospitals will

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reach 100%. The main reason for this is inadequate theatre time, which is universal between a majority of participating units.[3] Aside from this, the population demographics (91.6% older than seventy years) and high ASA grade (65.6% ASA grade 3 and above[3]) also have a significant bearing.

While it makes humanitarian sense to try and streamline these patients' optimisation and subsequent surgery, the arbitrary time limit of thirty-six hours for gold standard care is borne out of "low quality" and "very low quality" evidence according to the NICE guidelines.[2,4,5] This raises the question "is a target time to theatre of 36 h realistic, working within the financial constraints of the NHS and the elderly patient population involved, with multiple co-morbidities requiring medical optimisation?"

No randomised controlled trials examining the timing of surgery have been performed due to the ethical implications this would have. Evidence from multiple observational studies does suggest that earlier surgery is associated with shorter hospital stay, better functional outcome, lower rates of post-operative complications and mortality.[4,6–8] Conversely, several studies have shown no significant difference in outcomes for patients who require further time prior to surgery.[9,10] The desire to strive towards the thirty-six hour target had led to some anecdotal evidence that the patients may not have as good an outcome than if they where further physiologically normalised prior to surgery.

As the lowest ranking hospital in the National Hip Fracture Database time to surgery category we performed a further systematic review to highlight possible deficiencies in how we delivered patient care. We hypothesised that as we took longer to get patients to surgery, our subsequent outcomes would also be inferior.

Materials and methods

We conducted a systematic review of hip fracture patients admitted to our unit between September 2009 and April 2012. We identified 1014 patients admitted with a hip fracture in that time period. All of the patients were prospectively identified and their information was added to our Fracture Outcome and Research Database (FORD). Exclusion criteria included those aged under 65, those who underwent conservative management, patients with missing data and those who had a pathological fracture. After application of the exclusion criteria we had a total sample size of 702 patients. Using the auditing software we reviewed patient data, focusing on timing from admission to surgery, reasons for surgical delay and orthogeriatric review. The effects on patient mortality was measured as an inpatient and at 30 day follow up allowing comparison of our outcomes to national averages using data from the National Hip Fracture Database (NHFD). A Chi-squared test was used for statistical analysis and a p-value of <0.05 was used as the threshold for statistical significance. Wilsons test was also used to determine 95% confidence intervals.

Results

The average age was 83.4 years ranging from 65 to 101 years. 74% ($n = 519$) of patients were female and 26% ($n = 143$) were male. 55.6% of patients sustained an intracapsular fracture ($n = 390$) and 44.4% an extracapsular fracture ($n = 312$). ASA grade was used to assess patients' pre-operative physical status. 69% ($n = 487$) had an ASA grade of ≥ 3 indicating the majority had severe systemic disease. A pre-operative medical assessment was carried out by an orthogeriatrician on 81.7% of patients ($n = 573$). On average in the UK only 36.4% receive a pre-operative medical assessment. The various surgical procedures performed included: cannulated screws ($n = 16$), hemiarthroplasty ($n = 330$), intramedullary nailing ($n = 26$), dynamic hip screw ($n = 326$), total hip replacement ($n = 2$) and other ($n = 2$). 86.9% of patients were transferred to an orthopaedic ward within 4 h of admission ($n = 610$).

The average time to theatre was 83.2 h, ranging from 2 to 609 h. The graph below illustrates the distribution of the timing of theatre (Fig. 1). 16.7% ($n = 117$) of patients met the 36-h target to theatre, which is significantly lower than the average UK value of 66%

The primary reason for surgical delay was inadequate access to theatre, representing 58% of the sample with delayed surgery. In comparison with the rest of the UK, only 35% was due to theatre access. 29% ($n = 204$) of patients were medically unfit, this was the second most common reason cited for delayed theatre.

The principal outcomes for these patients were considered at discharge and at 30-day follow up allowing for comparison of UHD results to the rest of the UK using data from the NHFD. Overall results were favourable by comparison. The average length of hospital stay was 16.3 days, which is similar to the UK average of 16.4 days. In hospital mortality at 4.7% ($n = 33$ 95%CI 3.4–6.5%) was significantly lower than the UK average of 9.4%. Mortality at 30 days was 5% ($n = 35$ 95%CI 3.6–6.9%), which was also lower than the UK average at 8.4%.

Medically unfit patients were then excluded, leaving 71% of the original sample ($n = 498$ medically fit patients). This allowed comparison of those patients who were medically fit and had surgery within the recommended 36 h to those who were also medically fit but whose surgery was delayed beyond the target time. Of the medically fit patients, 81% ($n = 404$) had surgery delayed beyond 36 h and 19% ($n = 94$) had no delay. Patients who were medically fit for theatre but had their surgery delayed beyond the 36 h recommended time frame all had inferior outcomes but they did not meet the threshold for statistical significance. Medically fit patients who had delayed surgery had a longer hospital stay (15.4 days) compared to those with no delay (11.8 days). Delayed patients also have increased 30-day mortality and in-hospital mortality at 5% (p value 0.23, 95%CI 3.2–7.5%) and 4.7% (p value 0.26, 95%CI

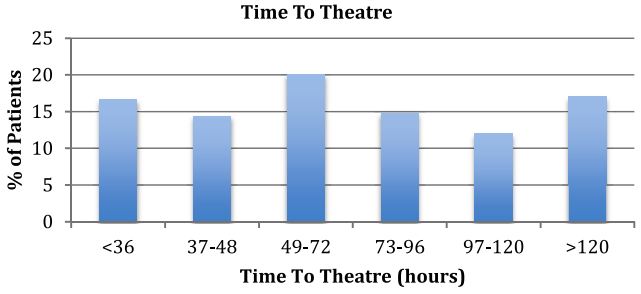

Fig. 1