Re-admission rates within 28 days of total hip replacement

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ABSTRACT

INTRODUCTION The aim of the study was to identify the reasons for the higher than expected emergency re-admission to hospital within 28 days of total hip replacement (THR) for Stepping Hill Hospital, Stockport.

PATIENTS AND METHODS Over a 42-month period, 65 (8.5%) of 769 patients were re-admitted within 28 days of discharge following primary THR. Case notes for 61 patients were available for retrospective review to assess premorbidty, initial postoperative complications and reason for re-admission.

RESULTS The main reasons for re-admission were complications related to the procedure. These included thrombo-embolic disease 2.5%, atraumatic dislocation 1.4%, wound complications 1.2% and swollen limb 1.8%. Other causes such as admission to another department for problems not related to THR accounted for 0.8%.

CONCLUSIONS Our findings are comparable with the published literature for early complications following THR. The three main reasons for re-admission were atraumatic dislocation, thrombo-embolic and wound complications such as superficial infection and haematoma are the commonest world-wide. The re-admission rate to hospital within the first 28 days following THR was a clinical indicator suggested by the UK Department of Health. It has subsequently been incorporated in a group of indicators used by the CASPE Healthcare Knowledge Systems (CHKS), a private healthcare consultancy and analysis company, for peer benchmarking. Our re-admission rates are inflated by admissions for non-THR-related reasons. The level of post-THR complications leading to re-admission were acceptable compared with the available published literature regarding 28-day re-admission. We anticipate that this study may act as a benchmark for other trusts.

KEYWORDS

Total hip replacement – Re-admission – Postoperative complications

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Total hip replacement (THR) is the most common major orthopaedic surgical procedure in the UK,¹ with about 38,000 performed annually.^{2,5} Re-admission rates are a key measurement tool in today's outcome-focused healthcare environment. The UK Department of Health has set 're-admission rates within 28 days of THR' as a specific clinical indicator for comparing surgical outcomes between trusts.⁴

The UK Department of Health (DH) and the Commission for Health and Audit Improvement (CHAI) have been developing the use of clinical indicators as a tool for comparing performance, target setting, and to promote improvements in quality of care. These indicators, including outcome-related measures such as re-admissions and mortality, are becoming the new currency for comparing trusts and their clinicians. They are increasingly being used to inform the public and enable choice. Fifteen specific clinical indicators, including one related to

emergency re-admissions, were published in a DH consultation document in July 1997.⁴ The indicators were developed in close alignment to NHS priorities. Several other documents followed culminating in a further consultation document in May 2001.⁵ This set out to publish possible indicators that would reflect policy commitments in National Service Frameworks and the NHS Plan. This later document included emergency re-admission rates within 28 days following elective admission for total hip replacement (age and sex standardised). This indicator was one of a number selected by CHKS as benchmark indicators for enabling subscribing trusts to monitor their own performance independently of the DH and in advance of national publication. This type of activity is evidence of good clinical governance.

Stockport NHS Foundation Trust became aware that its re-admission rate was higher than its peers⁶ and set out to investigate why.

Patients and Methods

Patients who had THR surgery between August 1997 and March 2001 were identified using the OCPS 4 coding on the PAS system.⁷ The search was then refined to highlight the subset that required re-admission within 28 days of discharge. The code used was W37.1 for primary THR. The notes of the subset were retrospectively analysed with the aid of a proforma in which relevant information was collected. The proforma was devised with the aid of the Trust's Clinical Effectiveness Unit.

The surgical data collected summarise patient demographics, co-morbidity, primary hip pathology, prosthesis used, thrombo-embolic prophylaxis, surgeon and reason for re-admission.

Results

OPCS 4 coding identified 769 patients as having THR surgery between August 1997 and March 2001. A total of 68 (8.8%) of the 769 were identified as re-admitted within 28 days of discharge following THR. Out of the 68 cases identified for review, 3 had been coded incorrectly and 4 case notes were missing. Of the cases coded incorrectly, two had total knee replacements and the other was admission for a non-orthopaedic problem. Of the missing case notes, 3 had electronic data stored on the PAS system and one had no records for re-admission reason. Of the 65 cases correctly identified as having had a THR, 5 (7.7%) re-admissions were not related to THR surgery (Table 1).

The following results are based on review of 60 (7.8%) patient case notes. There were 20 male patients and 40 female patients re-admitted with a median age of 70.8 years (range, 25.2–85.2 years). The main indication for THR surgery was osteoarthritis.

Table 1 Unrelated causes for re-admission

Knee effusion
Back pain
Baker's cyst
Jaundice
Fracture neck of femur on contralateral side

The reasons for re-admission related to THR were thrombo-embolic disorders, dislocation, wound problems and swollen legs (Table 2). Swollen legs refer to patients who had negative venograms or Doppler ultrasound results therefore ruling out DVT. Other re-admission reasons included upper respiratory tract infection, trochanteric bursitis and a mechanical problem caused by a broken trochanteric wire.

Patients presenting with acutely swollen legs were investigated for thrombo-embolic complications. A total of 33 (55%) patients were re-admitted with this problem giving a re-admission rate of 4.3%. Thrombo-embolic complications were confirmed by positive venogram or Doppler ultrasound investigations. They accounted for 19 (31.7%) cases, approximately a third of re-admissions over the 3-year period giving a re-admission rate for this complication of 2.5%. Patients who tested negative for thrombo-embolic complications but were admitted with swollen legs totalled 14 (23%) cases, a re-admission rate 1.8%. After analysing the cases with thrombo-embolic complications, only half the patients received chemical thrombo-prophylaxis pre-operatively and two patients had previous history of thrombo-embolism. All patients had

Table 2 Complication rates and median length of stay by year

Complication	1997–1998 <i>n</i> = 130 (%)	1998–1999 <i>n</i> = 216 (%)	1999–2000 <i>n</i> = 22670 (%)	2000–2001 <i>n</i> = 197 (%)	Total <i>n</i> = 769 (%)
Dislocation	2 (1.5)	4 (1.9)	4 (1.8)	1 (0.5)	11 (1.4)
Venous thrombo-embolism	2 (1.5)	5 (2.3)	6 (2.7)	6 (3.1)	19 (2.5)
Swollen legs	3 (2.3)	4 (1.9)	4 (1.8)	3 (1.5)	14 (1.8)
Superficial wound	2 (1.5)	1 (0.5)	2 (0.9)	4 (2.0)	9 (1.9)
Deep infection		1 (0.5)			1 (0.1)
Other orthopaedic	1 (0.8)	1 (0.5)			2 (0.2)
Urinary retention		2 (0.9)			2 (0.2)
Other medical	1 (0.8)	1 (0.5)			2 (0.2)
Total	11 (8.5%)	19 (8.8)	16 (7.1)	14 (7.1)	60 (7.8)
Median length of stay (days)	12	11	10	10	

intra-operative mechanical calf pump in theatre and post-operative thromboprophylaxis with low molecular weight heparin and TED anti-embolism stockings.

Atraumatic dislocations occurred in 11 (18%) cases resulting in a re-admission rate of 1.4%. The lead operating surgeon was a consultant in all but two operations. Two operation notes commented on technical difficulty due to patient body habitus.

Wound problems encompassed superficial infection, superficial dehiscence and haematoma. This group of 9 (15%) patients were responsible for 1.2% of re-admissions.

The mean length of stay after the initial operation was 14 days (range, 7–89 days). The median length of stay reduced during the period of study (Table 2). A random selection of 40 case notes was taken from the non re-admitted group and revealed one coding error where the patient did not have a THR giving an estimated coding error rate of 2.5% for THR cases.

Discussion

The aim of this study was to explain why the Trust had an apparently high re-admission rate following THR and to identify any avoidable complications requiring re-admission to hospital. The Trust had an average re-admission rate over the period 2000–2003 of 8.2% compared with its peer group (a group of district general hospitals that subscribe to CASPE Healthcare Knowledge Systems from across England) of 5.3%. The Trust's Annual Standardised Re-admission Index showed an excess of re-admissions of between 16–68% per year.⁶

The principal reasons for re-admission within 28 days in this Trust were atraumatic dislocation, wound problems, thrombo-embolic disorders and swollen legs. Recent literature quotes the following complication rates: 0.9% PE, wound infection 0.2%, and hip dislocation at 3.1% in the first 90 days with all these complications occurring most commonly in the first 2 weeks following discharge.⁸ Deep venous thrombosis rates vary from 12–37% in the first 5 weeks.⁹

The re-admission rates for specific groups of complications are all comparable to the published literature. However, it was unclear why this Trust had higher re-admission rates compared with other trusts. One explanation might be that some post THR patients and presenting problems were more likely to be admitted if first seen by a different speciality. An example may be those patients with swollen legs or thrombo-embolic disease admitted under the Division of Medicine. Other trusts may not identify these patients as postoperative re-admissions or may have more robust out-patient models of care described below.

This review highlights the fact that a high proportion of patients were re-admitted with suspected DVT. These

patients were admitted for varying lengths of time awaiting investigation. This obviously adds to pressures on NHS resources and there is an opportunity with modern management to investigate and treat such patients as out-patients. This approach has been proven to be safe.¹⁰

The length of stay reduced during the period of study, which relates to a trend towards earlier postoperative discharge. Since the completion of this study, the median length of stay had reduced to 8 days by 2003. It is important to ensure that, with an increase drive to create efficiencies for elective admissions, a secondary increase in inefficiency does not occur due to a raised re-admission rate. In addition, it would be valuable to monitor the impact of early discharge practice on the workload of the out-patient's department and general practitioners.

Three (4.4%) of the re-admission patients were coded incorrectly as total hip replacements. These patients and the 5 (7.7%) who were re-admitted for unrelated reasons postoperatively account for 12.1% of cases identified as requiring re-admission specific to post THR. However, the review of 40 case notes of non-re-admitted THR coded cases suggested an error of coding in general of only 2.5% compared with the re-admission cases. It is possible that some patients undergoing THR may have been miscoded to another procedure and their subsequent re-admission because of a complication related to THR surgery overlooked. However, given the low coding error rate, the impact of this is likely to be small. Nonetheless, if clinical coding is to be used as the basis for identifying these cases, it has to be a reliable resource for generating clinical indicator data. Trusts must ensure coding errors are minimal if not entirely eliminated. It is incumbent on both clinical staff, managers and coding staff to work together in allocating the correct diagnostic and procedure codes.

Re-admissions specific to post THR is no longer a separate clinical indicator. The clinical indicator now used is '28-day emergency re-admissions of adults post discharge' and will cover all medical and surgical re-admissions including patients undergoing THR. It is in trusts' interest to monitor re-admission rates to compare results with their peers. Trusts must also address coding issues to reduce the likelihood of inaccurate coding presenting a picture of poor outcome. The findings of this study provide a benchmark for other trusts and outline an approach for both Medical and Surgical Directorates to monitor 28-day re-admissions.

Conclusions

The paper highlights the importance to clinicians of using clinical indicators and benchmarking to monitor the quality of their services. Our results emphasise the need for reliable and accurate coding to identify patients related to specific procedures and outcomes. Greater efforts and close

collaboration between clinicians and coding staff are also required to ensure trusts are identifying all patients re-admitted under any speciality within the 28-day period following discharge. If this process fails, clinical indicator data will be erroneous and unacceptable for comparison between trusts. The higher than expected rates for Stockport NHS Foundation Trust may be explained by errors of coding and inclusion of cases admitted for reasons not related to THR surgery. In addition, a small number of patients may have been managed differently and re-admission possibly avoided. The underlying complications were otherwise no greater than expected.

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