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Readmissions after general surgery: a prospective multicenter audit



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ABSTRACT

Background: Readmission rates after surgical procedures are viewed as a marker of quality of care and as a driver to improve outcomes in the United Kingdom, they are not remunerated. However, readmissions are not wholly avoidable. The aim of this study was to develop a regional overview of readmissions to determine the proportion that might be avoidable and to examine predictors of readmissions at a unit level.

Methods: We undertook a prospective multicenter audit of readmissions following National Health Service funded general surgical procedures in five National Health Service hospitals and three independent sector providers over a 2-wk period. Basic demographic and procedure data were captured. Readmissions to hospitals were identified through acute admissions lists. Reason for readmission was identified, and the readmission data assessed by a senior surgical doctor as to whether it was avoidable.

Results: We identified 752 operations in the study period with all followed up to 30 d. The overall rate of readmissions was 4.7%, with 40% of these judged as being potentially avoidable. Pain and wound problems accounted for the vast majority of avoidable readmissions. The number of unavoidable readmissions was correlated with the workload of each center ($r = 0.63$, $P = 0.06$) and as with the higher (British United Provident Association) complexity of surgery ($r = 0.90$, $P = 0.01$). Patient and demographic factors were not associated with readmissions.

Conclusions: This prospective audit describes readmission rates after general surgery. Volume and complexity of work are associated with readmission rates. A large proportion of readmissions could be reduced by attention to analgesia and outpatient arrangements for wound management.

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Background

Alongside mortality, readmission after a surgical procedure is increasingly seen as a marker of quality of care.¹ The high rates of readmissions in UK hospitals have been recognized as a target for reduction.² Consequently, the Department of Health instructs Clinical Commissioning Groups not to offer payment for “avoidable” readmissions after elective surgery, with acceptable rates for readmission negotiated at a local level.³ This results in the operating hospital funding further care including hotel and therapy costs.

Previous work evaluating surgical readmissions in the United Kingdom has been limited to single units,⁴ readmissions of operated and nonoperated patients,⁵ and specific types of surgery.⁶ We could not identify prospective data that provided a global view on readmissions after general surgery across multiple centers. Like many other regions, South Yorkshire has a number of challenges relating to the assessment of readmissions, including close geographical proximity of units and the use of independent sector providers of National Health Service (NHS) work. This flux of patients between different centers means that the home unit is not always aware of the readmission.

The aim of this study was to determine the rate all general surgical admissions in a single region, to determine the rate of “preventable” readmissions and to evaluate factors associated with readmission.

Methods

This project was run by the South Yorkshire Surgical Research Group, a surgical trainee-led research collaborative. Through this network, the project was registered with the clinical governance departments at five NHS hospitals in our region. With the agreement of local management, NHS funded procedures at independent sector providers were also captured in the audit. For the purposes of analysis, procedures performed in the independent sector providers were grouped as a single unit. Approval from the Caldicott Guardian was obtained where required.

All NHS funded general surgical procedures (elective and emergency) performed during a 2-wk period were included. General surgical procedures were defined as operations undertaken by general surgeons including (but not limited to) hernia repair, excision of skin lesions, laparotomy, and laparoscopy. Procedures excluded were breast procedures (wide local excision, mastectomy, axillary node procedures, and reconstruction), endocrine procedures (thyroid/parathyroid, and adrenal), vascular procedures (i.e., procedures on veins/arteries or vascular grafts), and urological procedures (procedures on kidney, ureter, bladder, prostate, vagina, scrotum, and testes). These exclusions were made because the relevant surgeons typically manage their own readmissions outside the general surgery on-call team. Upper or lower gastrointestinal (GI) endoscopy was included if performed under general anesthetic by a general surgeon.

At the point of operation, data on demographics, comorbidities, and body mass index were collected. Type of

operation and British United Provident Association classification⁷ were recorded. The patients were followed to discharge and date of discharge, the presence of surgical site infection, new stoma, and discharge blood results were recorded.

During the 30-d follow-up period from discharge, medical and surgical “take” lists were reviewed by the local team to identify postoperative readmissions. When an unplanned readmission was identified, patient notes were reviewed by a senior member of the surgical team (registrar or above). The admission was classified as related or unrelated to the index procedure. Where the readmission was related to the index procedure, it was classified as avoidable or unavoidable. An unavoidable readmission was one where the patient could be assessed or managed without readmission to a hospital bed e.g., in an ambulatory manner. An unavoidable readmission required hospital admission for treatment or investigation. To address crossover between units, admissions following a procedure carried out in another unit were kept in a separate log and reconciled at the end of the study.

At the end of the follow-up period, local data were returned to the originating unit to facilitate quality improvement work.

Results

All five NHS and three independent sector providers in the region participated. Due to small numbers, independent sector providers were considered as one unit for analysis. Data were captured for 752 operations from which there were 35 readmissions (4.7%). Patient demographics and their spread across units are presented in [Table 1](#). There was one 30-d mortality in the group. Thirty-day follow-up from discharge was achieved in all cases.

[Table 2](#) summarizes the reasons for readmissions and the associated index procedures. Of the 35 readmissions, 20 (57.1%) were deemed unavoidable, as they required further inpatient investigation or treatment. The commonest reason for readmissions in this group were collections requiring drainage ($n = 10$), of which six were wound related and four were intra-abdominal. Postoperative viscus leak ($n = 4$) and pain requiring investigation ($n = 3$) were the next most common. Patients with unavoidable readmissions had a median length of stay for their readmission of 5 d (0.08–22 d).

Of the 35 readmissions, 15 (42.9%) were deemed avoidable, as they could be managed in an ambulatory setting. The commonest reasons for readmissions in this group were pain ($n = 7$) and superficial wound infections ($n = 6$). Patients with avoidable readmissions had a median length for their readmission of stay of 1 d (0.08–14 d). The 14-d length of stay was associated with an altered care package and delays in subsequent discharge rather than surgical management.

The median time to readmission was 7.5 d, ranging from 0 to 30 d. Median time to avoidable readmission was 7 d (0–18 d), and median time to unavoidable readmission was 8.5 d (1–30 d). This approached statistical significance ($P = 0.08$, Mantel–Cox test).

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