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Incidence and significance of postoperative complications occurring between discharge and 30 days: a prospective cohort study

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ABSTRACT

Background: Accurate documentation of complications is fundamental to clinical audit and research. While it is established that accurate diagnosis of surgical site infection (SSI) requires follow-up for 30 days; for other complications, there are minimal data quantifying their importance between discharge and 30 days.

Methods: In this prospective cohort study, inpatients undergoing general or vascular surgery were reviewed daily for complications by the medical team and a research fellow. A standardized telephone questionnaire was performed 30 days following surgery. All complications were documented and classified according to severity.

Results: A total of 237 of 388 patients who completed the telephone survey developed a complication, including 77 who developed a complication for the first time after discharge from hospital. Overall 135 (33%) of a total of 405 complications were identified after discharge. These complications included 36 of 63 (57%) SSI, 6 of 12 small bowel obstructions, and three of four major thromboembolic events and a number of space SSI, urinary infections, functional gastrointestinal problems, and pain management problems. Cardiac, respiratory, and neurologic complications were mainly diagnosed in hospital. Of the 135 "postdischarge" complications, 89 were managed in the community and 46 (34%) resulted in admission to hospital, including seven which required a major intervention. There was one death.

Conclusions: One-third of complications occurred after discharge, and one-third of these resulted in readmission to hospital. Research and audit based on inpatient data alone significantly underestimates morbidity rates. Discharge planning should include contingency plans for managing problems commonly diagnosed after discharge form hospital.

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Introduction

Accurate documentation of complications is fundamental to clinical audit and outcome research. While inpatient complication rates are readily available, there are minimal data on the incidence of complications that occur after discharge from hospital. One complication which has been studied is surgical site infections (SSIs), and in this case, the importance of 30 day follow-up is well established, with the majority of SSI developing after discharge.[1-5] This observation, combined with the ongoing trend toward earlier discharge from hospital, highlights the importance of adequately identifying SSI after discharge. While the importance of postdischarge events also presumably applies to other complications, unfortunately, they are inconsistently identified, and the magnitude of the problem is not well documented in the medical literature.

Following a discussion of the potential importance of postdischarge complications in our audit meeting, we decided to prospectively document the complications that develop between discharge and 30 days. We wanted to identify which complications occurred and to assess the frequency and severity of these complications.

Methods

A 10 month prospective observational clinical study was performed at the Leeds General Infirmary. Exclusion criteria included not being discharged within 30 days of surgery and being unable to be contacted by telephone after discharge from hospital (Figure).

Inpatient and outpatient complications were prospectively identified and recorded. Inpatient complications were identified by two mechanisms. Patients were reviewed daily by their clinical team, and all documented complications were recorded. Second, a clinical researcher, a doctor who was on a surgical training program, reviewed all patients twice a week. The doctor was able to talk directly with the patient and the clinical team to clarify any questions and to ensure that all complications had been captured. Most patients were assessed shortly after discharge by their primary care doctor (general practitioner) in the community and were seen approximately 4-6 weeks later by their surgeon at the outpatient clinic. We elected to capture postdischarge complications by directly contacting patients using a structured telephone questionnaire 30 days following surgery. The following questions were asked: (1) Have you had any problems since discharge from hospital? (2) Has there been any problems with your wound? (3) Have you visited your doctor since discharge from hospital? If the answer was yes to any of these questions a detailed description of the problem and any treatment given was obtained. There were no questions to help identify any other specific postoperative complication. Three attempts were made to contact a patient. Our prospectively collected inpatient data were then checked to assess if any problem identified by the telephone questionnaire was a continuation of a previously diagnosed complication or a new problem. The hospital notes, including outpatient letters, were also reviewed for any additional information which would help to clarify the nature and severity of the reported postdischarge complications.

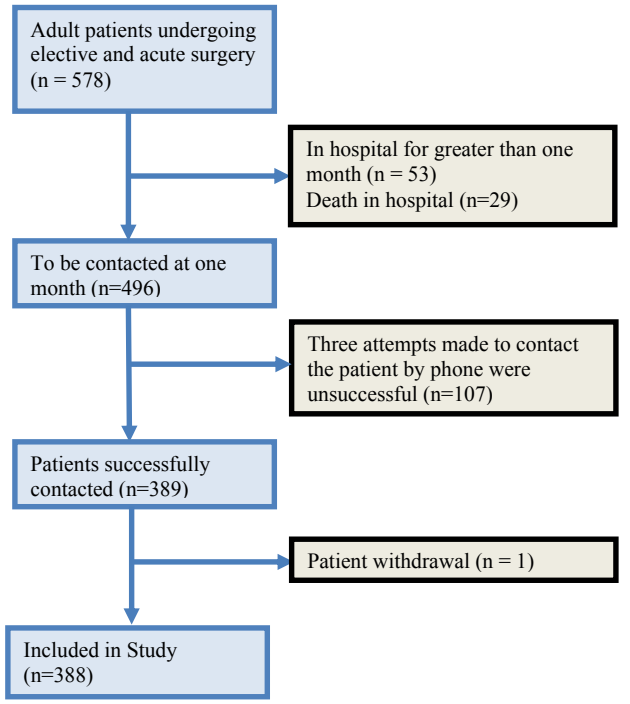

Figure – Flow diagram for inclusion and exclusion of patients. (Color version of figure is available online.)

Standard definitions for complications, in line with the American College of Surgeons National Surgical Quality Improvement Program, the Centre for Disease Control definitions of nosocomial infection and other referenced sources were used.[6-8] Complications also included unexpected adverse events which resulted in additional patient management problems, whether they were primarily caused by the surgery or not.[9] Examples included unacceptable difficulty with stoma management or uncontrolled postoperative pain. The severity of inpatient complications was assessed using the Clavien–Dindo system.[10] The severity of outpatient complications was also scored using five categories of treatment, with an emphasis on discriminating between the different levels of care required, including whether treatment was administered in the community or in the hospital (Table 1).

Descriptive statistics were used to assess the number of complications after discharge from hospital. Continuous variables were reported by using either the mean with 95% confidence intervals or the median with interquartile range. The chi-square test was used to compare categorical variables between groups. The Leeds Teaching Hospitals NHS Trust Research and Ethics committee approved the study which was integrated into the audit program of the department of surgery.

Results

Of 578 patients undergoing surgery, 496 were discharged from hospital before 1 month, and of these, 389 were contacted by