

Introducing Emergency Surgery to the Day Case Setting

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Abstract:

Emergency surgery has been gradually introduced into the day case setting in the United Kingdom over the last decade. We describe our pathway for introducing minor surgical emergencies to the day case arena, and successful outcomes resulting from the introduction of this new service.

A multidisciplinary working group developed a robust pathway to allow patients presenting for emergency surgery to be managed in the day case setting. Superficial abscesses were identified as suitable day case procedures and began being managed as such at South Devon NHS Foundation Trust in May 2005.

The implementation showed a significant reduction in mean length of stay of 28 h 20 min (95% CI 22 h 12 min–35 h 24 min) when patients were transferred from the inpatient to day case pathway. Patients following our traditional pathway stayed in hospital 5.7 times longer than those following the new process (95% CI 4.7–6.9).

Over a twenty month period, ninety patients were followed through their day case experience. Of those contacted on the first postoperative day, over 80% felt “very good” or “good”, and 61% stated they were pain free, with a further 36% describing only mild pain. There was no nausea, vomiting and all liked being a day case patient.

The introduction of a day case emergency surgery pathway for superficial abscess drainage has been successfully introduced into our hospital trust with a number of significant benefits to patients, staff and management.

Introduction

In order to comply with the NHS plan's aim to perform three quarters of elective surgery as day surgery, most hospitals have seen an increasing drive to convert elective inpatient procedures to day cases⁴. Traditionally, emergency or urgent surgical cases have been excluded from the day case setting. In the Department of Health's operational guide for day surgery they state 'Few true emergencies are suitable for day case surgery, however, many urgent operations that can be arranged within 12–24 hours may well be suitable'². The desire to increase the number of patients treated as day cases has prompted some day surgery units in the UK to promote the addition of emergency surgical cases to their range of procedures^{3–6}. We wished to evaluate the options for developing this service within our trust.

The authors' experience from a number of acute trusts was that minor surgical emergencies often take low priority in a busy emergency theatre and can end up being repeatedly delayed or cancelled. This results in prolonged preoperative fasting, unnecessary overnight stays in hospital and patient dissatisfaction. In this paper we will outline the strategy we employed to introduce urgent surgical cases to the day

surgery arena. Our primary goal was to improve patients experience and to expedite the treatment of their condition. Secondary gains were more efficient use of the emergency operating theatre and a reduction in acute surgical admissions.

Patients and methods

A multidisciplinary working group comprising staff from our day surgery unit, accident and emergency, anaesthetic and surgical departments coordinated the project. Initial tasks were to identify appropriate emergency procedures to be treated as day cases, establish the feasibility of instigating a day surgery process for patients traditionally classed as surgical emergencies and develop a robust clinical pathway for their care. Superficial abscesses were identified as a potentially suitable procedure and a retrospective review of

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patients presenting with this condition was carried out for a three month period. We also needed to audit the use of the emergency operating theatre to establish whether there was a reliable slot in this theatre for our patients to be treated.

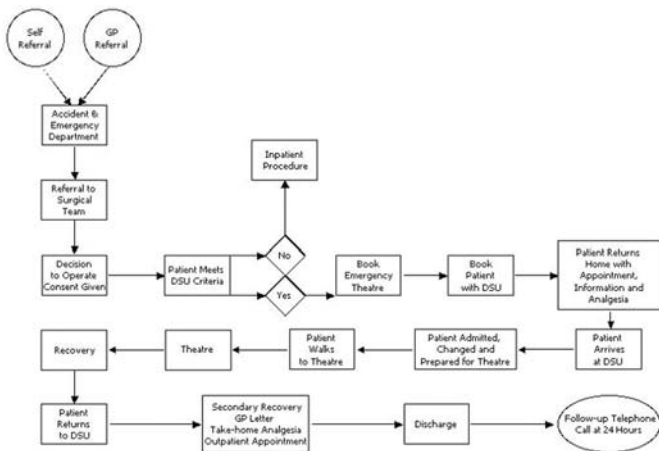


Figure 1 Flowchart illustrating the emergency day surgery pathway

A multidisciplinary team designed the emergency day case pathway (Figure 1) and patients presenting with superficial abscesses started being managed as day cases in May 2005. A guideline was produced to enable identification of suitable patients promptly by staff in the emergency department (Figure 2). Although our day surgery unit treats many patients with both insulin and non-insulin-dependent diabetes with good outcomes, we excluded diabetic patients from this new pathway due to concerns that glycaemic control may be compromised in the presence of significant infection and hence overnight monitoring may be prudent. However we also recognise that early management of these patients reduces the risk of compromising their glycaemic control and are at present reviewing this policy. Patients presenting when surgery would have to be scheduled at weekends (those presenting late Friday or Saturday) were also excluded, as the day surgery unit is only open Monday to Friday. These patients are admitted and treated through the traditional pathway.

**Day Surgery Unit Emergency Surgical Pathway
Criteria to Assess Day Case Suitability**

MEDICAL CRITERIA:
Does the patient have any of the following conditions?
If yes please default to inpatient surgery.

• Diabetes mellitus	Yes / No
• Unstable cardiac disease	Yes / No
• Severe problems with anaesthetics (not including nausea and vomiting)	Yes / No

SOCIAL CRITERIA:
Does the patient have the following?

• Telephone	Yes / No
• Transport home	Yes / No
• Adult escort home and to stay overnight	Yes / No

If these cannot be arranged please default to inpatient stay

Figure 2 Guideline for use by staff in the emergency department to enable prompt identification of patients suitable for the emergency day surgery pathway

Suitable patients gave consent for surgery, were given information packs and provided with analgesia packs containing paracetamol, ibuprofen and oral morphine sulphate (5 x 20 mg doses). They were then advised to return to the day surgery unit at 8am the following morning. If, however, at the time of presentation to the emergency department, an imminent slot was available in our emergency operating theatre and the patient was appropriately fasted, they were transferred immediately to the day surgery unit for same day surgery and discharge. Our surgical colleagues committed to releasing a member of their team to be available to operate at 8.30am. Barring category one emergencies, day surgery pathway patients are scheduled first on the emergency theatre list. We considered trying to coordinate the surgery to occur in our day surgery unit, however as we do not have a day case general surgical theatre list every morning it was thought more reliable to operate in the main theatre complex and utilise the space already identified in the emergency theatre. Postoperative primary recovery occurs in our main theatre recovery unit before transfer back to the day surgery unit for completion of the recovery period and discharge home. Telephone follow-up was carried out on the first postoperative day. Other follow-up was on an individual basis, based on surgical necessity.

After introduction of the emergency day surgery pathway we wished to audit our outcomes to establish whether our primary and secondary outcome measures had been achieved. Data were taken from the Dayynamics® database (Calcius systems), which captures real time day of surgery data and records postoperative outcomes from responses given during our routine semi-structured telephone call 24 hours postoperatively. The following information was collected: patient demographics, operation, times of admission, transfer to theatre, return to the recovery unit, and discharge. The follow-up data were collected by a designated nurse on the first postoperative day. This included general feeling and patient satisfaction, pain assessment, incidence and severity of nausea or vomiting and any need for further medical input. Patients were asked if they liked being treated as a day case rather than an inpatient and whether they liked our unit.

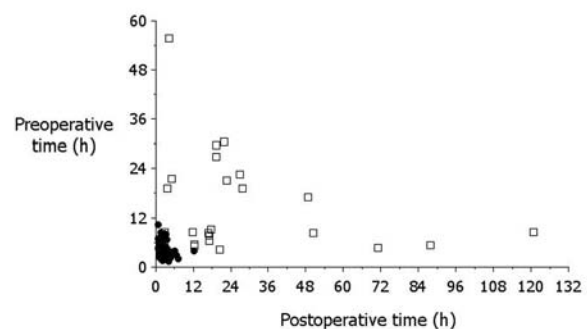


Figure 3 Duration of preoperative and postoperative lengths of stay for patients managed on the emergency day surgery pathway (solid circles) and by the traditional inpatient route (open squares). The five unsuccessful day case patients, all with postoperative length of stay less than 24 hours, have been excluded

Results

Our initial three month retrospective review identified 48 patients who had presented with abscesses, confirming that the condition was suitably prevalent to warrant introduction of a new pathway. None of these patients required resuscitation or prolonged observation solely for the presenting complaint. Only two patients (4.3%) needed management of co-morbid disease (type I diabetes mellitus and ischaemic heart disease with poorly-controlled angina), the others could have been safely managed as day cases. Analgesia requirements were assessed by drug chart review of 34 of the 48 patients, data were incomplete for the other 14 patients (Table 1). Twelve patients required no analgesia in the preoperative period and six for the entire admission. Although nine patients had intravenous opiate analgesia in the preoperative period, eight (73%) received only a single dose of iv morphine in the emergency department, with no other analgesia being given in the preoperative period.

Table 1 Analgesia requirements for 34 of 48 patients prior to the onset of our emergency day surgery pathway. Intraoperative analgesia is not included.

Analgesia required	Before surgery	During entire admission
No analgesia	12 (35%)	6 (18%)
Paracetamol and/or NSAIDs only	6 (18%)	7 (21%)
Oral morphine plus paracetamol and/or NSAID	7 (21%)	10 (29%)
Intravenous morphine	9(26%)*	11 (32%)

*8 patients received a single dose of intravenous morphine and no other analgesia in the preoperative period

A three month retrospective review of the starting time of our emergency operating theatre was conducted. We reviewed 71 emergency lists with a potential start time of 8am; the median start time was 10:03. Only nine emergency lists (12.7%) started before 9am.

Over a 20 month period since May 2005, 90 patients have followed our day surgery pathway for emergency surgery, the majority for incision and drainage of abscesses. The distribution of surgical procedures is shown in Table 2. The admission rate was 5.5%, and 40% of these (two patients) were due to there being no carer available (despite patients having been given clear verbal and written instructions about the need for a carer the day previously). Times patients spent awaiting surgery and discharge during the periods before and after introduction of the new pathway are shown in figure 3. Three patients following the inpatient pathway had prolonged postoperative length of stay. Two of these required postoperative pack changes which could have been performed as an outpatient if they had followed the day surgery pathway. The third patient was given a course of intravenous antibiotics, although there was no documentation as to why and this patient subsequently developed diarrhoea and vomiting which delayed their discharge. Day case management would in all likelihood have prevented this.

Table 2 Distribution of surgical procedures in the 90 patients following our emergency day surgery pathway

Surgical procedure	Number (%) of patients
Perianal abscess	35 (38.9%)
Pilonidal abscess or sinus	14 (15.6%)
Temporal artery biopsy	8 (8.9%)
Axillary abscess	7 (7.8%)
Neck abscess	4 (4.4%)
Other abscess	9 (10.0%)
Other surgical emergency	13 (14.4%)

Preoperative and postoperative lengths of stay are summarised in Table 3. Unfortunately poor data recording for patients following the inpatient pathway meant that only 24 patients had a complete record of the relevant timings, however we considered this a representative sample for this pathway. It can be seen that delays have been very significantly reduced with the introduction of our emergency surgery pathway. The difference in mean total lengths of stay (using the geometric mean calculated from log transformed data) is 28 h 20 min (95% CI 22 h 12 min–35 h 24 min). Patients following our traditional pathway stayed in hospital 5.7 times longer than those following the new process (95% CI 4.7–6.9).

Table 3 Duration of perioperative and total hospital stay for emergency surgery patients managed by traditional inpatient and day surgery pathways. Values are median (interquartile range). The five unsuccessful day case patients, all with postoperative length of stay less than 24 hours, have been excluded

	Traditional pathway (n = 24)	Day surgery pathway (n = 90)
Preoperative period (h)	8.55 [6.05–21.22]	3.48 [2.77–4.67]
Postoperative period (h)	18.33 [11.9–26.88]	2.0 [1.4–2.8]
Total length of stay (h)	35.08 [23.1–53.77]	6.0 [4.5–7.83]

A day surgery nurse attempts to telephone all our patients the morning after surgery (including Saturday mornings). We successfully contacted 49 (58.3%) of the 84 patients the following day; 42 felt good, or very good following surgery, and all 49 felt “much as” or “better” than expected. Thirty of the 49 patients were pain free and a further 18 had mild pain. No patients complained of nausea or vomiting, and two patients required help postoperatively, one by the emergency department and one by a district nurse. All but one of the 49 patients were very satisfied with the experience and all patients liked the day case unit and being a day case patient.

Discussion

We identified the following criteria for a condition to be appropriate for our emergency surgery pathway:

- i) the condition must present sufficiently frequently

- ii) patients should not require resuscitation or prolonged observation
- iii) patients' analgesia requirements can be met adequately with simple oral analgesia
- iv) the surgery is rarely long or complex

As a result of these criteria we were able to select superficial surgical abscesses as an appropriate emergency procedure to tackle.

Day surgery necessitates prompt and timely surgery to enable discharge within a planned session. We needed to identify how to achieve this for our patient cohort. In common with many acute trusts, there is often a hiatus at the beginning of the day in our emergency operating theatre. This is largely due to surgical teams needing to review overnight admissions before establishing which patients need surgery and when. We identified a potential operating theatre slot early on the emergency list each day where emergency day case surgery could be performed, whilst decisions regarding other patients are undertaken. This ensured prompt treatment for our patients without delaying other emergency cases, with the secondary gain of improved efficiency within the emergency theatre.

Although we failed to make contact with over 40% of our patients after their surgery, previous audits in our unit have shown that the majority of patients not contacted have resumed normal activities the following day. Subsequent to this project we now telephone three times during the day and have increased our response rate to in excess of 80%.

We report excellent clinical outcomes and satisfaction in a series of 90 patients who experienced the day case emergency surgery pathway. This project has established that emergency surgical procedures can be successfully undertaken as day cases resulting in dramatic reductions in both pre-and

postoperative lengths of stay. Our unplanned admission rate of 5.5%, although higher than the Royal College of Anaesthetists recommended standard for elective day-case surgery⁷, is we believe very acceptable for this cohort of emergency patients. We note that 40% of these admissions were for social reasons and we hope to eliminate most of these through further education of all clinicians involved in the process. Our data confirm the successful establishment of a service designed to reduce emergency bed days and deliver excellent patient satisfaction.

Acknowledgements

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