Emergency surgery: atavistic refuge of the general surgeon?

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SUMMARY

A prospective audit of emergency soft-tissue surgery for an eight-week period revealed that general surgical emergency operations were more than twice as common as those undertaken in other soft-tissue specialties. The audit reveals that emergency general surgery needs an increase in resources, an increase in available staff and an increase in the role of the consultant general surgeon on call. An alternative solution would be to admit soft-tissue emergencies by specialty and develop specialist emergency services.

INTRODUCTION

Almost all surgeons in Great Britain nowadays profess a specialty. The rise in the profile of the specialist associations is proof of the process. Emergency soft-tissue surgery is probably the only justification for the use of the term 'general surgeon'—a definition that can be used pejoratively by mischief makers.

The rising age of the population of Great Britain, coupled with the decline in personal service available in primary care, has produced more emergency admissions to hospital. Consultant surgeons are encouraged nowadays to involve themselves in emergency surgery but question their ability to offer an effective service, partly because they may have become divorced from the mainstream of emergency admissions to the surgical wards (e.g. those in breast surgery and vascular surgery practice), and partly because the reduction in support from current surgeons in training has taken effect.

In 1993, a dedicated daytime emergency operating theatre was introduced at the Royal United Hospital Bath. The effect of this novelty was audited in 1994[2]. In 1992 half of all emergency operations were done at night (between 10 pm and 8 am). This proportion was reduced to one-third when the theatre was available during the day. The grade of the principal surgeon nevertheless did not change, with a consultant surgeon being present in the emergency theatre for very few cases, although 23% of emergencies required laparotomy[2].

An audit of mortality in the elderly after urgent and emergency surgery was conducted in 1997[3]. This established that the postoperative death rate in an elderly population who underwent soft-tissue emergency surgery was significantly higher than that of a similar cohort who underwent emergency orthopaedic surgery. The death rate was not affected by the seniority of the principal surgeon or anaesthetist, nor by the timing of the operation. The risk of death after emergency soft-tissue surgery increased with the ASA score, but this finding was not specific enough for prediction of individual outcomes[3].

In 1993 there were five consultant general surgeons with three registrars or senior registrars, and five senior house officers, at the Royal United Hospital. The surgical directorate has now increased so that there are eight consultant surgeons, four staff surgeons, five specialist registrars (one part-time research) and five senior house officers. More permanent appointments are anticipated and are needed, together with an increase in other resources.

When only seven consultants were in post a work programme was constructed which released each surgeon 'on call' from daytime duties for a continuous period of seven days, thus allowing supervision of all emergency procedures during the day and at night. The current audit was undertaken whilst this pattern of work was being carried out, to assess the effectiveness of this solution to the problems of emergency surgery.

PATIENTS AND METHODS

The Royal United Hospital Bath serves a rural population of 420 000. One emergency operating theatre is available for use by the departments of general surgery, gynaecology, ear, nose and throat (ENT) surgery, urology and oral surgery during the day, while the orthopaedic department has exclusive use of a separate orthopaedic trauma theatre.

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The single emergency theatre available after 5 pm has to be shared (for financial reasons) with both the orthopaedic trauma team and the emergency obstetric service. In each 24-hour period the general surgical on-call team consisted of a consultant surgeon, a registrar or staff grade, a senior house officer, and a house officer.

Over eight weeks, with one of the seven consultant general surgeons available continuously seven days and seven nights a week, data were collected on all patients who were admitted as an emergency to the general surgical wards and who were operated on within 24 hours of admission. The time of admission to hospital, the time of decision to operate, the time of the operation, the nature of the operation, and the grade of the senior surgeon present in the operating theatre were recorded. Data were also collected on the overall use of the emergency theatre by the different specialties.

RESULTS

Over the observation period 305 operations were performed in the emergency theatre—38 cases per week or an average of 5 cases in each 24 hours.198 (two-thirds) were general surgical cases, the remainder being obstetrics/gynaecology 28, ENT 25, orthopaedics (out of hours) 23, urology 8, and oral surgery 3. Of the 198 general surgery cases, 130 (66%) were emergency operations performed within 24 hours of admission, 54 (27%) were operations performed more than 24 hours after acute admission, and 14 (7%) were elective procedures. Thus 34% of all the general surgical cases dealt with during this period in the daytime emergency theatre were not acute emergencies. The availability of the theatre and of the consultant surgeon, however, allowed urgent and semi-emergency cases to be dealt with opportunistically during daylight hours and produced a predictable routine in the other elective daytime operating theatres.

The rest of this audit concerns only the 130 patients who had operations within 24 hours of acute admission. The procedures were appendicectomy in 44%, abscess drainage (usually perineal) 16%, herniorrhaphy 7%, operations for perforated viscus 11%, obstruction 7%, vascular procedures 12%, and operations for gastrointestinal bleeding 3%.

The 24-hour admission period was divided for the purpose of the audit into daytime (8 am–5 pm), evening 5 pm–10 pm, and night-time (10 pm–8 am). 60% of emergencies were admitted in the 9 h of a conventional working day, 21% arrived after 5 pm and 19% arrived during the night.

All emergency cases were seen immediately after admission by the (resident) senior house officer on call. A decision was then made about resuscitation and investigation. A treatment plan was organized with the (non-resident) registrar or staff grade on call, and the timing of any operation was confirmed after discussion with the (non-resident) consultant. All cases were booked for theatre at the time of the consultant's decision to operate.

64 patients were booked during the day, 53 during the evening and 13 at night (the last group were thought to be critically ill). The average time from booking to start of surgery was 330 minutes for operations before 5 pm, 190 minutes for evening operations and 200 minutes for operations after 10 pm.

57 patients were operated on during the day, when the theatre was not being used by the directorate of orthopaedics or the directorate of obstetrics, but 73 soft-tissue emergency patients had to be compressed into the single shared emergency theatre after 5 pm.

Only 57 of the 64 patients on whom a daytime decision had been taken about surgery came to theatre during the working day. As night approached, slippage worsened with only 42 of the 53 evening decisions about surgery being carried out during the evening period. 31 patients (24% of the total) required night-time emergency surgery, although the surgical decision to operate at night should only have affected 13 patients. 18 patients were thus subjected to night-time surgery for logistic reasons (14% of the total). 11% of all soft-tissue emergencies had to be operated on after midnight.

During the 8-week period of this audit the on-call consultant surgeon was available continuously for one week at a time. The rest of the four-man emergency surgical team changed at 24-hour intervals to reduce the hours of the younger doctors. The likelihood of the surgeon working with his or her usual team was thus no more than chance and the consultant on call was the fulcrum of the emergency service from day to day. The grade of the principal surgeon in theatre is shown in Table 1.

During the audit period therefore the consultant surgeon on call was in theatre after 10 pm for 5 of the 31 operations undertaken at night and 8 of the 42 operations carried out during the evening. There were 27 laparotomies for non-vascular problems (21% of the total in that time, most being undertaken by the registrar or staff grade after discussion with the consultant).

Table 1 **Grade of principal surgeon in theatre**

Grade	*Daytime emergency surgery*	*Evening emergency surgery*	*Night-time emergency surgery*
Senior house officer	14%	1%	0%
Registrar/staff grade	68%	80%	84%
Consultant	18%	19%	16%

DISCUSSION

Emergency surgery could be the benchmark of the trained and experienced general surgeon and could be a source of pride. If this is to be so, it requires reorganization and more resources. This audit of an 8-week period in the Royal United Hospital has revealed that general surgery produces more than twice as many emergencies in two months as obstetrics and gynaecology, ENT, urology and oral surgery combined. Emergency surgery for general surgeons is thus a more onerous burden than it is for many of the specialties that were once part of the generality of surgery. In any review of terms and conditions of service in the NHS, such a burden requires consideration and financial recompense if recruitment to general surgery is to be maintained.

In the Royal United Hospital contraction of the emergency service into one operating theatre for financial reasons after 5 pm can cause long delays from decision time to operation time. The proportion of surgical emergencies operated on at night has continued to fall from 50% to 33%[2] and now to 24%, with only 11% of operations started after midnight. This is no cause for complacency since 18 patients (14% of the total) were subjected to night-time surgery because of long delays.

Many emergency operations can probably be carried out under indirect consultant supervision by an experienced specialist registrar or staff grade. 44% of the emergency operations in the current audit period were undertaken to remove the appendix and 16% were undertaken to drain abscesses—often around the anus and perineum. The availability of a daytime emergency theatre and of a consultant on call can ensure that the incidence of rupture of the appendix, and of anal fistula formation in delayed perineal abscess surgery, is kept to a minimum. Only 40% of emergency admissions who come to surgery (perhaps 2 or 3 of the daily average of 5) seem to be complex enough to require the skill in theatre of a surgeon who has completed surgical training. It may be in future that operating privileges for trainee surgeons will be contingent upon the presence of a surgical trainer in the theatre block. In such circumstances, the consultant surgeon must negotiate a period of rest at least equal to that available to trainee surgeons in the 'New Deal', otherwise sleep deprivation could affect subsequent performance. One reason why consultants are less than enthusiastic about night-time operation is simply the problem produced by sleep deprivation in the middle-aged. The Government has brought in legislation to control the working hours of younger doctors, but has not addressed this matter in older doctors. Consecutive nights out of bed can produce fatigue in any age group.

On occasions, seven days on call can become stressful and uninviting. If beds are scarce, emergency patients become scattered throughout the hospital. If a large number of critical cases are admitted on the night before completing the period on call, the planned surgery of the following week can be jeopardized, with an unwelcome knock-on effect that can lead to complaints. The seven-day on-call rota in the Royal United Hospital has been revised since this audit was undertaken so that each of the eight surgeons is on call only for 24 hours in alternate weeks, on the day of his elective operating list. The emergency theatre is available, together with the on-call registrar. The surgeon books his elective list to ensure availability in the emergency room as necessary. Three-day weekends are done on call in rotation.

More resources are necessary in the National Health Service to ensure that patients listed for emergency surgery are taken to theatre within an acceptable timescale—perhaps within 60 minutes of the decision to operate. The average delays revealed by this audit are unacceptable and can be life-threatening. They are a reflection of the competition for scarce resources between elective and emergency surgery, and between different surgical specialties. Theatre time is expensive, and, until now, waiting lists have been the main priority of the management[4]. With the onset of the concept of clinical governance, and the increase of emergency admissions produced by the ageing population, priorities may change. It must be recognized, however, that a fully staffed emergency theatre, day and night, diverts resources from elective surgery, so waiting lists can lengthen and government targets, e.g. for cancer surgery, could be in jeopardy. In addition, removal of a consultant surgeon from elective specialty surgery inevitably increases waiting times for this type of surgery in proportion to the number of surgeons available in the specialty in that hospital. Emergency surgery is currently regarded as the benchmark of the general surgeon in Great Britain. In other countries, general surgery is considered atavistic and each specialty has developed its own emergency services (and is remunerated accordingly). Could this be the way ahead for the NHS?

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