

Complications following day surgery: Is quality assurance the answer?

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Abstract

As the scope of modern day surgery continues to expand, the assurance of quality will assume greater importance. Current day surgery is mostly associated with minor morbidity, although the future may see an increase in more major complications. If quality assurance programmes are to be used in the maintenance of quality for future day surgery, it is essential that such programmes utilise an agreed set of quality indicators and standards of practice that highlight the relative impact of such complications on those involved. © 1997 Elsevier Science B.V.

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1. Introduction

In the UK the scope of day surgery has expanded dramatically over the last 10 years, and there is considerable pressure, both governmental and financial, for such expansion to continue. Guidelines concerning patient, operative and social selection criteria are changing to allow sicker patients to undergo more extensive day surgery. So much so, that when setting selection criteria, only two fundamental questions have to be considered. Firstly, would anything be done differently if a particular patient had a particular operation but as an inpatient? Secondly, is there a significant risk of complications occurring post discharge, in spite of the patient having been kept in the day surgery unit for a period determined by the operation undertaken and the patient's specific characteristics?

Close scrutiny of the complications that occur following day surgery is therefore of fundamental importance. If day surgery is to fulfil its potential, both in terms of the numbers of patients treated and the scope of operative procedures undertaken, it is essential to know how patients fare post surgery, and particularly post discharge. Again there are two important issues at stake here. Firstly that standards of excellence are in no

way compromised by the pressure for expansion, and secondly that those working within the field of day surgery are aware of the extent of the burden placed on general practitioners and community medical services. Although Osborne and Rudkin [1] found that at early follow-up only 4% of day case patients had presented to general practitioner and 3.1% had attended a hospital Accident and Emergency department, Fletcher et al. [2] found that in the first 5 days after day surgery, nearly half of all patients required some form of primary health care intervention, with half of these occurring in the first 2 days. Thus, it would appear that day surgery already imposes a significant workload on community health services and it is likely that this burden will increase in the future.

2. The scope of future day surgery

The scope of future day surgery will depend upon the definition of sensible limits of day surgical practice. After all, not all patients and operations are suitable for day surgery and future guidelines need to recognise these limitations. So what are these limitations; the limits to providing high quality day surgery, meeting the needs of patient, purchaser, provider and community? How will these limitations change with the devel-

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opment of new surgical techniques, different anaesthetics, and the altered provision of community care? The practice of continuous quality improvement is now essential as it is only by undertaking ongoing quality assurance programmes that we can assess, and thus assure, the quality of service we are providing, both at the present time, and in the future.

3. The benefits of quality assurance

It is worth clarifying the potential benefits such programmes make available to us. The principle benefit of such programmes is to assure quality; to answer the fundamental question 'Where is your evidence that local clinical activities really are meeting the required standards?' Equally important, however, quality assurance programmes can introduce and vet change. Change is inevitable for as George Bernard Shaw warned "Progress is impossible without change and those who cannot change their minds cannot change anything." In the past doctors and nurses have rightly been accused of 'shroud-waving' in order to obtain funding for any desired change. In the future, if not the present, resources will only be allocated if a proven need exists. Quality assurance programmes can play a vital role in providing just such proof. Finally it must be remembered that quality assurance can be of enormous benefit in the sphere of postgraduate and continuing medical education, after all De Lacy [3] has pointed out that there is no more powerful educational tool than audit.

4. What complications of day surgery should our quality assurance programmes focus on?

Traditionally, quality assurance programmes have divided their attention between what Donabedian [4] describes as "structure, process and outcome", although this rationalisation has not helped the British Day Surgery in deciding what constitutes quality care. Few would argue that outcome measures are the most important in determining the quality of day surgical care, the best studied of which includes unanticipated admission and readmission, patient satisfaction and postoperative complications.

4.1. Admission

Unanticipated hospital admission represents the most widely used outcome measure of quality day surgical care. After all admission represents a fundamental failure of our stated aim of admitting, treating and discharging our patients in the same day. The incidence of unanticipated admission is said to vary between 0.1 and

5% [5,6]. More recently Osborne and Rudkin [1] in 6000 patients and Ogg et al. [7] in 31 000 patients have found the admission rate to be around 1.4%.

It is known that certain types of surgery are more likely to be associated with postoperative morbidity and admission. Chung (1995) [8] found that patients who underwent certain types of surgery such as gynaecological and general surgery, had a six-fold increased risk of developing persistent symptoms in the day surgery unit, which in turn was correlated with increased symptoms 24 h postoperatively and admission. Similarly Ogg et al. [7] have recently found that nearly half of all admissions in his series had undergone gynaecological surgery although the highest admission rates as a percentage of all cases performed in each type of surgery occurred in general surgery, closely followed by gynaecology and dental surgery.

Further examination of the reasons for these admissions reveal that it is minor, and not major, problems that most commonly cause admission, the more common anaesthetic complications being pain, nausea and vomiting and delayed recovery, while the most common minor surgical complications were bleeding and unplanned extensive surgery. Social reasons for admission are uncommon with only 0.08% of admissions being caused in this way [7]. The most common reasons were the lack of home carers and escorts but such figures are proof that nurse based assessment systems, guided by medical protocols, work very well indeed. Such figures highlight two further important facts. Firstly that we must look further than simply admission rates and note that while several studies have claimed low admission rates, such studies often conceal much higher re-admission rates. Chung's [8] study found an admission rate of only 0.2% whereas the re-admission rate 24 h to 2 weeks after discharge was 1.4%. Secondly studies of admission rates emphasise the importance of high quality patient selection. Tuckey et al. [9] found that when day case laparoscopic cholecystectomy was attempted in unselected patients, only 31.1% of patients were fit for discharge at 6 h after surgery, and even after 24 h the admission rate was still 12.5%.

4.2. Mortality and major morbidity

The complications that occur following day surgery have been classified by Natof [10] into major and minor. Thus, a major complication is an untoward response or abnormal condition having the potential for serious harm while a minor complication has no potential for serious harm. Mortality studies in day patients frequently reveal that this is a very rare complication of day surgery. Several studies have found the mortality following day surgery to be between 1:20 000 and 1:66 000 [11,12]. The weakness of most studies into anaesthetic related deaths is that reporting is retrospec-

tive and on a voluntary basis. It is thus possible that under-reporting may contribute to the low mortality rate associated with day surgery.

Of the major complications that occur following day surgery, the best studied are myocardial infarction, pulmonary embolus, respiratory failure and cerebrovascular accident. Warner et al. [12] prospectively studied the incidence of these complications in a large population of adult patients and found the incidence of major complications to be 1:1455, and several studies have highlighted the fact that major complications following day surgery are surprisingly uncommon. On the other hand, day surgery is often associated with a wide variety of minor complications. Whilst major complications, with their potential for serious harm, are obviously important, in many ways, due to their relative frequency, it is minor complications that are of greater concern. After all, Phillip [13] showed that 86% of day case patients complain of at least one minor problem after discharge.

4.3. *Minor morbidity*

To some extent the type of minor morbidity described in the day surgery population is determined by the types of symptomatology sought by investigators. Chung et al. [14] found the most common complaints at 24 h following day surgery were pain, nausea and vomiting, headache, sore throat, drowsiness and lethargy. It is interesting to note that these incidences are remarkably similar to those published by Ogg [15] over 20 years ago, despite changes in anaesthetic and surgical techniques. Chung et al. [16] have gone on to show that the type of surgery plays a role in determining the postoperative minor morbidity at 24 h. Several studies have shown that certain day case operations, notably gynaecological laparoscopy, are associated with a high incidence of minor morbidity.

5. Is quality assurance the answer?

If we are to use quality assurance programmes to reduce postoperative morbidity following day surgery we must realise that simply measuring the incidence of major and minor complications is not enough. Current quality assurance programmes require further refinement especially as Davies and Crombie [17] have highlighted that there are problems associated with over reliance on outcome data. Outcome measures have limitations in that they are only useful when compared with data from a different institution or from the same institution at a different point in time. Such comparisons are fraught by case mix differences, as can be seen in the comparison of admission rates between two day case units, one performing all cases under general

anaesthesia, while the second using exclusively local and regional techniques. Also, Wilson and Cleary [18] have pointed out that many outcome measures are 'soft' in terms of both validity and reliability, again frustrating meaningful evaluation of the outcomes achieved.

Further difficulty lies in the definition of a suitable standard of practice for our quality assurance programme. How do we decide how much pain is acceptable in what percentage of patients and for how long? This leads us to ask some fundamental questions. Firstly, 'When does minor morbidity become a complication?' and secondly, 'What is it about morbidity that makes it important enough to be considered either worth preventing or as an indicator of quality, and to whom is it important?' Minor morbidity is not always of minor significance to patients.

The basic premise of day surgery is that surgery and anaesthesia can be safely performed to meet the same degree of excellence as that achieved in the inpatient setting. While day surgery free from all morbidity is an ideal, inpatient treatment is often far from this standard of practice and so perhaps it is unrealistic to judge the quality of day surgery on the incidence of headache, sore throat or even pain and postoperative nausea and vomiting.

If we are to use quality assurance programmes in any meaningful way we need to know how the morbidity that we measure affects patients in terms of their satisfaction with day surgery, the time taken for their return to normal function and crucially, how that morbidity is managed, be it by the patient themselves, the district nurse or general practitioner, or even by the hospital. Furthermore, we must constantly bear in mind a comparison with inpatient care. If a patient undergoes a carpal tunnel decompression, it is not surprising that their return to work will be delayed, whether they have their operation as an inpatient or as a day case.

6. Conclusions

Day surgery is changing. In future the logical progression is to develop day surgery to incorporate both short stay surgery and 'day of surgery admission' (DOSA), making the most of the skills acquired in day surgical patient selection, anaesthesia and minimally invasive surgery. This in turn may mean that while most morbidity associated with day surgery is at present minor, the balance between major and minor morbidity may change. Quality assurance programmes will be an essential part of the activity of all day surgery units, to assure the quality of service provided. To be meaningful, however, such programmes must be developed from simply measuring the incidence of common forms of morbidity to measuring an agreed set of

Table 1
Suggested quality indicators for day surgery

Admission rate
Readmission rate (within 30 days)
Did not attend (DNA) rate
Cancelled on day of surgery (CODS) rate
Patient satisfaction/complaints
GP satisfaction/complaints/workload
Pain
Postoperative nausea and vomiting (PONV)
Return to normal function

identical quality indicators, which include information concerning patient satisfaction, return to normal function, and the method of management of any morbidity occurring. There is an urgent need to reach international agreement on a set of quality indicators for day surgery (see Table 1) and to include within these quality indicators both outcome and process measures. Finally we must begin to develop the link between quality and cost because what ever changes the future brings, we will always be required to provide cost effective quality care.

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