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The unplanned admission: a review of the day surgery experience

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Abstract

A retrospective review of unplanned admissions from the Day Surgical Centre (DSC), Royal North Shore Hospital was undertaken. Over the 5 year study period 18 102 patients underwent a surgical procedure in the DSC. Seventy-four patients required an unplanned admission to the hospital. This cohort of 74 patients formed the study group for this review. The mean unplanned admission rate was 0.41%. The unplanned admission rate varied with the surgical speciality and ranged from 0.21% in Paediatric Surgery to 0.55% in Gynaecology. The major cause of the unplanned admissions was due to surgical complications in 49% of the study group. Anaesthetic complications accounted for 23% of unplanned admissions whilst admission, because of a more extensive procedure than originally proposed, accounted for 17.5% of unplanned admissions. The development of significant medical complications was responsible for 9% of unplanned admissions, while social factors were responsible for 1.5% of unplanned admissions. The role of criteria for patient selection is reviewed. © 1997 Elsevier Science B.V.

Keywords: Day surgery; Unplanned admission; Failure to discharge; Surgical specialities; Anaesthesia

1. Introduction

The gradual introduction of the Day Surgery concept, either in stand-alone or integrated centres, has provided an excellent mechanism for the delivery of surgical services to the community.

The economic and logistic advantages of the Day Surgery process are thwarted when a patient is unable to be discharged on the procedure day, as originally planned. The subsequent unplanned admission to the hospital results in cost duplication and increases access pressures on an ever reducing number of inpatient beds.

At the Day Surgery Centre, Royal North Shore Hospital, we reviewed our Day Surgical experience in an attempt to identify the subgroup of patients or procedures that, based on failure to discharge or unplanned admission, are unsuitable to be managed in this type of facility. We also attempted to identify any factors that may have contributed to the unplanned admission.

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2. Methods

2.1. Patient selection

The Day Surgery Centre (DSC), a stand-alone facility at the Royal North Shore Hospital (RNSH), a teaching hospital of the University of Sydney, provided details of patients who had an unplanned admission following a Day Surgery procedure. The patients were identified from the computerised Operating Theatre Register and the Discharge Register at the Day Surgical Centre. A retrospective review of patient case notes from March 1990 to June 1995 was undertaken.

A series of data points were considered and were available in all cases. These data points included the proposed and the actual operation performed, the intercurrent medical conditions that may contribute to the unplanned admission, the type of anaesthetic, the duration of the operation, the post-operative course in the recovery ward and the social situation of the patient.

Table 1
Unplanned admissions per surgical speciality

Speciality	No. of surgeons	Unplanned admissions	Admission rate/surgeon	Unplanned admission rate	
Gynaecology	11	41	1.5	41/7517	(0.55%)
Urology	2	4	3.7	4/1782	(0.23%)
ENT	2	13	2.0	13/3041	(0.43%)
General surgery	5	11	6.5	11/2752	(0.4%)
Paediatric surgery	2	3	2.2	3/1457	(0.21%)
Opthalmology	2	2	1.0	2/363	(0.55%)

3. Results

Between March 1990 and June 1995, 18 102 patients underwent a procedure in the Day Surgery Centre, Royal North Shore Hospital. Seventy-four patients required an unplanned admission to the hospital following a Day Surgery procedure. This represents an unplanned readmission rate of 0.41% for this period. This unplanned admission group comprised 50 female and 24 male patients. The mean age was 44.3 years. The surgical specialities responsible for these admissions are detailed in Table 1.

The unplanned admission patients comprised two cohort groups. Group 1 (13 patients) underwent a procedure that was more extensive than the original booked procedure. This usually involved a diagnostic laparoscopic procedure being converted into a therapeutic procedure. All of these patients were admitted under the Gynaecology Service. Ten patients underwent a definitive procedure following laparoscopy, 1 patient had a laparotomy for adhesions following failed laparoscopy, and 2 patients required further surgery related to a laparoscopic complication.

Group 2 (61 patients) had unplanned admissions due to the development of post-operative complications, either related to the surgical procedure, intercurrent medical co-morbidities or the anaesthetic. Thirty-six patients experienced a surgical complication: 32 of this group were admitted due to surgical bleeding, 1 patient had a CSF leak following an ENT procedure and 3 patients had a complication related to the laparoscopic technique — a perforated uterus and two perforated bladders.

Seventeen patients had complications related to the anaesthetic (0.12% of general anaesthetics). These complications are detailed in Table 2. During the study period 14 659 general anaesthetics were given. In addition 2974 procedures were performed under local anaesthetic and 469 procedures were performed under intravenous sedation. Only patients who received a general anaesthetic required an unplanned admission. There has been no mortality associated with day surgical procedures in the unit.

Seven patients had an unplanned admission due to an acute problem related to the development of a medical complication. These are listed in Table 3. One patient, an 87-year-old female, was admitted as the social arrangements for her Day Only Surgery were cancelled by her family.

4. Discussion

The success of any innovation in surgery is a function of ease of access, reproducibility and reliability. The unplanned admission to an inpatient service following a day surgery procedure represents a 'failure of the day care service' [1]. If the Day Surgery process is to continue to develop as a viable and cost effective way of providing surgical services it is essential that patients are 'carefully selected and prepared for day care procedures' [2]. Failure to continue to monitor the service and use bench marks of quality such as the unplanned admission rate will result in falling standards and a facility that is not supported by either the patients or the clinicians.

The unplanned admission rate at the RNSH DSC of 0.41% across a range of surgical specialities is at the lower end of the published experience. In N.S.W. the aggregated unplanned admission rate in eight day surgery facilities is 2.7% [3]. Some centres with a single surgical speciality have produced lower admission rates, such as 1.07% in an orthopaedic centre [4], 0.32% in a plastics centre [5], and 0.25% in a day care dental surgical centre [6]. Our experience reflects this variation, which is related to the type of surgical speciality. In Paediatric surgery the unplanned admission rate was 0.21%, but in both Gynaecology and Ophthalmology

Table 2
Unplanned admissions due to anaesthetic complications

Complication	No. of patients ($n = 17$)
Delay in recovery time	6
Convulsions	2
Aspiration	2
Pain	2
Vomiting	2
Respiratory distress	2
Allergy	1

Table 3
Unplanned admissions due to medical complications

Complication	No. of patients ($n = 7$)
Cardiac arrest (resuscitated)	1
Pulmonary oedema	2
Arrhythmia	2
Stroke	1
Convulsions	1

the rate was 0.55%. This higher readmission rate in Gynaecology and Ophthalmology has been noted in previous studies [7,8].

Our patients failed the discharge process, more frequently, as a result of surgical, (36/74, 47%), rather than anaesthetic complications (17/74, 23%). This difference is statistically significant ($P = 0.002$; Chi square). This is in keeping with the experience of other groups where surgical complications were responsible for 1.08% of unplanned admissions, while anaesthetic complications were responsible for 0.65% of unplanned admissions [4].

To continue to reduce the unplanned admission rate it is important to constantly evaluate the surgery. The incidence of wound complications, such as post operative bleeding, is reduced by having all surgery performed by consultant surgeons, rather than trainees. The day surgery centre is not the place for the occasional operator [9]. The reduction in wound complication rates, in addition to the provision of a dedicated day surgery facility, are associated with a reduction in the unplanned admission rate [10].

Anaesthetic techniques in Day Surgery practice are aimed at minimising delayed discharge. The routine use of propofol for induction of anaesthesia, intravenous narcotic administration, supplementary local anaesthesia by infiltration or specific nerve blocks, and the use of non steroidal anti-inflammatory agents such as ketorolac are associated with earlier discharge of an awake, pain-free patient [11]. In this study, all the anaesthetic complications were in patients who underwent a general anaesthetic, which comprised 76% of all the anaesthetics given over the study period. To further reduce that component of the unplanned admission rate due to anaesthetic related problems of delayed recovery, vomiting and aspiration, it may be possible to extend the use of local anaesthetic and intravenous sedation as anaesthetic techniques. Nonetheless, these were rare complications in this series (Table 2).

The exacerbation of a medical co-morbidity or the development of an acute medical problem was an uncommon (7/74) cause of unplanned admission. There are two elements in keeping this complication rate low. The conduct of the anaesthetic and the involvement of consultant anaesthetic staff in all cases would appear to be one element of importance. The criteria for patient selection based on patient fitness has been shown to be of prime importance [12]. The patient selection criteria used at RNSH DSC is broadly based and identifies American Society of Anaesthesiology (ASA) classification I and II patients [13]. Despite careful patient selection, seven patients required an unplanned admission due to the development or exacerbation of an underlying medical problem. Six of these patients (86%) were ASA II, while one patient (14%) was ASA III. In the Mayo Clinic series [13] 6/31 patients (19%) were ASA I, 17/31 (55%) were ASA II and 8/31 (26%) were ASA III. These DSC admission criteria were introduced primarily as a guide for referring surgeons. It is unit policy for cases that do not comply with this criteria to be, nonetheless, accepted for day surgery at the discretion of the consultant anaesthetist concerned.

In addition to being medically fit for day only surgery the patient must be socially fit [14]. The importance of non-medical delays in the discharge process is highlighted by Chung [15]. Only one patient in our study had an unplanned admission related to her social situation. Patients are given clear instructions about the need for a support person to collect them from the DSC and to be present overnight after the procedure. The nursing staff contact each patient the following day to ensure that all is well. The presence of a working phone and a support person during the first 48 h is an important inclusion criteria for day surgery cases [16].

The day surgery centre provides an excellent venue for delivering lower cost surgical interventions to the community. It is necessary to continually review one's experience against established benchmarks. Following this process, any highlighted areas for improvement should be carefully considered. Through this process, this important innovation in surgery should continue to develop and command the support of both the patient and the surgeon.

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