

Problems in day care surgery

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SUMMARY

In-patient admission represents a failure of a day care service. The hospital records of 105 patients transferred from the day ward to the in-patient wards were studied retrospectively. Of 2,039 patients treated in the day care ward, 105 (5%) required in-patient admission over a 12 month period. Of these 105 admissions, 17% did not fulfil the criteria for day care patients, 46% had surgical problems, and 35% anaesthetic-associated problems. The in-patient admission rate could be reduced by improved out-patient selection of cases, use of a separate day care theatre, increased use of local anaesthetic techniques, reduction in the use of parenteral opioids, the use of simple oral analgesics or non-steroidal anti-inflammatory agents as pre-emptive analgesia and a wider use of propofol as an induction agent which provides superior recovery from anaesthesia.

INTRODUCTION

Interest in day care surgery has increased in recent years for various reasons, including improved surgical and anaesthetic techniques, increased efficiency, patient demand and financial constraints. The day care unit in this hospital was opened in January 1989. There are 12 beds available for gynaecological, plastic, orthopaedic and general surgical procedures. The guidelines for the use of the unit are shown in Table I.

Patients are assessed at the surgical out-patient clinic for suitability as day patients and a comprehensive pre-operative assessment form is filled in when the patient comes to the unit.¹ There is no separate day care theatre and the day cases are included in the main theatre lists. The unit guidelines for safe discharge are shown in Table II.

This paper reports on the rate of in-patient admission from this unit, the reason such admissions were necessary, and on the relationship of the anaesthetic morbidity to the anaesthetic agents used.

METHOD

Nursing staff in the day unit tabulate the reasons for all transfers to the in-patient wards. The hospital records of these patients over the 12 month period (1st January – 31st December 1989) were obtained and studied.

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TABLE I

Agreed guidelines for use of day surgery unit at the Ulster Hospital

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1. Ward to be open from 8.00 am until 5.00 pm, Monday to Friday.
 2. Patients to be booked 48 hours in advance, otherwise bed can be re-allocated.
 3. No emergency admissions unless for discharge same day.
 4. Admitting consultant surgeon or anaesthetist in charge of case will be responsible for disposal of patient at 5.00 pm.
 5. Patient to be accompanied home by a responsible adult and not to be left alone till next day.
 6. Patients to be under 70 years of age.
 7. Patients to live within 20 miles of hospital.
 8. Patients considered to be fit and healthy.
 9. Procedures normally to last less than 30 minutes and severe pain or haemorrhage not expected.
 10. Patients to fast overnight.
 11. No patients to receive a general anaesthetic after 2.30 pm.
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TABLE II

Guidelines for safe discharge after day surgery

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1. Patient must have a responsible adult to escort him/her home and stay with him/her at home.
 2. Patient's vital signs must have been stable for at least one hour.
 3. Patient must have no evidence of respiratory depression.
 4. Patient must be —
 - Orientated to person, place and time
 - Able to dress himself/herself
 - Able to walk out without assistance
 - Able to retain orally administered fluids
 - Able to void.
 5. Patient must not have —
 - More than minimal nausea or vomiting
 - Excessive pain
 - Bleeding.
 6. Patient should stay at least 1 – 2 hours after extubation.
 7. Patient must have written instructions for the post-operative period at home.
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RESULTS

The procedures performed were grouped into seven categories: anaesthetic (patients requiring central blocks for the treatment of chronic pain) 1%, general

medicine (endoscopies) 7%, general surgery 37.5%, gynaecological surgery 31%, orthopaedic 11%, plastic 3.7% and maxillofacial surgery 8.7%. Table III shows a summary of the procedures carried out on the 2,039 patients passing through the unit in the first year.

TABLE III
Procedures carried out on day surgery patients

	<i>Anaesthetic</i>	<i>General medicine</i>	<i>General surgery</i>	<i>Gynaecological surgery</i>	<i>Orthopaedic surgery</i>	<i>Plastic surgery</i>	<i>Maxillofacial surgery</i>	<i>Total</i>
<i>All patients</i>	21 1.0%	145 7%	764 37.5%	633 31%	225 11%	76 3.7%	175 8.7%	2039
<i>Patients admitted</i>		1 1%	38 36.2%	25 23.8%	25 23.8%	6 5.7%	10 9.5%	105

Of the 2,039 treated in the day care unit, 105 (5%) subsequently required transfer to the appropriate surgical ward. Of these, 97 had had general anaesthesia, three had had sedation only, and four had had their operations cancelled. One patient was an emergency admission following a mild anaphylactic reaction to injected contrast media in the X-ray department. No patient receiving treatment under local anaesthetic alone was subsequently admitted. The majority of in-patient admissions were for less than 24 hours. The reasons for these admissions are shown in Table IV.

TABLE IV
Reasons for in-patient admission in 105 patients from the day care unit

<i>Day case surgery inappropriate</i>	<i>Surgical complications</i>	<i>Anaesthetic complications</i>	<i>Others</i>
18 (17%)	48 (46%)	37 (35%)	2 (2%)
2 > age 70 years	8 Haemorrhage	21 Nausea ± vomiting	1 Emergency collapse in X-ray after injected contrast media
1 No accompanying adult	3 Further investigation	13 Drowsiness ± dizziness	1 Transfer from medical ward
1 Obese	4 Extensive surgery	1 Difficult airway	
4 Severe respiratory distress*	4 Fractured malar	1 Caudal epidural injection	
2 Bleeding problems**	3 Excessive sedation	1 Epileptic	
1 Multiple sclerosis	8 Post-operative pain		
1 Hb. 6.8g/dl*	7 Elevation/observation of limb		
1 Epileptic	2 Not voiding urine		
3 Hypertensive	2 Urinary catheter inserted		
1 Parkinson's disease	6 Theatre late		
1 Previous anaesthetic reaction	1 Physiotherapy required		

* = cancelled.

Eighteen patients (17%) did not fulfil the criteria for day care patients, mainly because of existing medical problems. Four patients in this group had their operation cancelled; one had a bleeding disorder, one was on warfarin, one was profoundly anaemic (haemoglobin 6.8g/dl) and one had an acute chest infection.

The largest group, 48 patients (46%), had surgical problems. Most of these were unforeseen surgical complications such as the insertion of a urinary catheter following cystodiathermy, haemorrhage, severe post-operative pain requiring further investigation, and the inability to void urine after circumcision. Other reasons for in-patient admission were to some extent avoidable, such as patients being called to theatre late in the afternoon, excessive sedation administered by the surgeon for diagnostic endoscopies and the need for elevation or observation of a limb. Four patients with fractured malar bones were admitted temporarily to the day ward due to the unavailability of more suitable accommodation, and one patient was transferred from a medical ward as a "day patient" for a minor gynaecological operation.

Thirty-seven patients (35%) had anaesthetic problems. Twenty-one suffered nausea and/or vomiting. The majority of these had received opiates, nine had been given nalbuphine, four levorphanol and one fentanyl. Seven patients had received cyclizine prophylactically. Thirteen patients were too 'drowsy' or 'dizzy' to be discharged safely. All of these had had opiates (eight long-acting and five short-acting — Table V). Of the three remaining patients, one required blind nasal intubation because of a difficult airway and was admitted following prolonged and

TABLE V
Post-anaesthetic sequelae

<i>General anesthetic</i>	<i>Nausea ± vomiting</i>	<i>Dizziness ± drowsiness</i>	<i>No anaesthetic problems</i>
Propofol, N ₂ O/O ₂ , halothane	6	—	34
Propofol, N ₂ O/O ₂ , isoflurane	—	—	1
Propofol, N ₂ O/O ₂ , halothane + fentanyl/alfentanil	1	5	3
Propofol, N ₂ O/O ₂ , halothane + nalbuphine	5	—	—
+ levorphanol	4	3	1
+ pethidine	—	2	1
Methohexitone, N ₂ O/O ₂ , halothane + nalbuphine	1 4	— —	10 —
Methohexitone, N ₂ O/O ₂ , isoflurane	—	—	1
Thiopentone, N ₂ O/O ₂ , halothane + levorphanol	— —	— 3	4 —
Thiopentone, N ₂ O/O ₂ , isoflurane	—	—	3

traumatic instrumentation of the larynx. The second patient, a 30-year-old woman, had an epileptic fit about two hours after a general anaesthetic with etomidate and alfentanil: she had denied having 'fits' on the pre-anaesthetic assessment form, despite a previous medical history of epilepsy and the diagnosis was confirmed later on electroencephalography. The third patient displayed loss of power in the legs and inability to void urine following a caudal epidural injection. This particular patient had completely recovered by the next morning.

DISCUSSION

In-patient admission represents a failure of the day care service and in this series amounted to approximately 5% of the throughput of the unit. Ogg¹ in Cambridge reported a hospital admission rate of 0.2% for the years 1984–1986 which seems remarkably low, and Goulbourne² reported an admission rate of between 3% and 5%, so there is great variation. The incidence of hospitalisation reported by Natof in the USA varied from 0.6% to 4.1%.³ The reasons for admission in these studies were surgical, medical and anaesthetic-related, and were similar to the findings in this paper. Careful pre-operative assessment of patients at the out-patient clinics would reduce our in-patient admission rate considerably, and the use of a more stringent out-patient assessment form is being considered to improve patient selection. An anaesthetic assessment clinic, run in conjunction with the relevant surgical out-patient clinics would be another solution. There will always be a certain number of unforeseen acute problems which will result in either cancellation or in-patient admission.

The surgical problems (46%) reflect certain dilemmas inherent in the service. It is difficult to predict the individual patient's pain threshold. The pace of operating lists is variable and, as shown, six patients were admitted following surgery late in the afternoon. It is prudent to put the day cases first on lists, especially in the afternoon. A separate day care theatre would avoid this particular problem. With recent in-patient bed closures, there are often problems in finding beds for emergency cases (fractured malar bones, fractured limbs) which lead to admission to the day care unit as a temporary measure. Although this is not accepted practice, it allows more efficient use of theatre time. Orthopaedic, plastic or maxillofacial surgical patients are more likely to be admitted than those having general or gynaecological surgery performed. (Table III).

The post-anaesthetic sequelae causing admission were mainly nausea, vomiting, dizziness or drowsiness. Of the 21 cases suffering from nausea and vomiting, 14 had had opiates (13 long-acting) as had all the patients admitted with drowsiness/dizziness. Opioids are associated with respiratory depression, dizziness, nausea and vomiting.^{4, 5} In addition, early mobility following anaesthetic predisposes to emetic side effects. Long-acting opioids are inappropriate for day care surgery and the use of simple analgesics or non-steroidal anti-inflammatory agents as pre-emptive analgesia reduces the post-operative analgesic needs.⁶ A number of patients will require potent analgesics, and this is an area which needs further study in the day care setting.

Local anaesthesia is appropriate in many cases. Meridy⁷ states that significantly fewer of these patients were admitted to hospital than those receiving general anaesthesia, and this has also been the case in this series.

Propofol is favoured by Millar⁸ as it provided good conditions for day care surgery with superior recovery both immediately and 24 hours after operation. It has also been found to have anti-emetic properties;⁹ the addition of alfentanil, a potent short-acting narcotic, did not increase the incidence of nausea and vomiting,^{8, 10} and gave total patient satisfaction.¹⁰ It may, however, be contraindicated in patients with a medical history of epilepsy.^{11, 12, 13} It is also a more expensive drug than the alternative induction agents currently available. The response to McWilliam's study^{14, 15, 16, 17} defends the use of propofol especially in day care surgery, drawing attention to the low relative cost of anaesthetic drugs compared to the cost of surgery, and pointing out that low post-operative morbidity is 'cost saving' by reducing the post-operative in-patient admission rate.

Interestingly, no patient given isoflurane, an inhalational agent in frequent use in this hospital, required in-patient admission with anaesthetic problems. Short¹⁸ found that isoflurane-supplemented anaesthesia allowed recovery as rapidly as an alfentanil-supplemented group and demonstrated a low incidence of nausea and vomiting. Eger,¹⁹ felt that isoflurane caused less nausea than halothane. Carter,²⁰ however, found that there was no real difference between isoflurane, halothane and enflurane for short procedures.

In summary, in-patient admission following day surgery procedures would be reduced by improved out-patient selection of cases by introducing a pre-admission assessment form filled in at the out-patient clinic, operating early on day cases or by using a separate day case theatre, and avoiding the use of the day care ward for the temporary accommodation of emergencies. Anaesthetic complications would be reduced by increased use of local anaesthetic techniques, reduction in the use of the longer-acting parenteral opioids, the use of oral analgesic or non-steroidal anti-inflammatory agents as premedicants and possibly a wider range of propofol and alfentanil as the anaesthetic technique of choice.

A prospective study is planned further to elucidate the sequelae of the various anaesthetic techniques used, with the aim of improving the day care service.

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