

Editorial

Online shopping for ambulatory surgery: let the buyer beware!

As government agencies, industry and healthcare payors attempt to contain healthcare costs, there will be increasing pressure to utilize an ever expanding number of non-hospital settings to perform more complex ambulatory surgery procedures on an ever increasing number of patients with health problems. This is already occurring in the United States as ambulatory facilities and their professional staffs are being constantly challenged to merge excellence of care with lowering of cost. Additionally, on the unregulated internet, entrepreneurs are developing sites where patients and surgeons can match needs and services, creating a virtual bidding war.

Prior to 1982, in developed countries, nearly all surgical care was managed in the hospital. In the United States, 80% of all surgery was performed on hospitalized patients; of the 20% that were day surgery procedures only 1% were in freestanding (not attached to a hospital) facilities and 1% in physician's offices (office-based surgery). Today we are fast approaching 75% being day surgery procedures (17% freestanding; 14% office-based). By the year 2005, it is projected that 82% of total surgical volume in the United States will be in an ambulatory setting, of that number, 24% will be in physician's offices.

Question: are the vast majority of ambulatory facilities able to provide safe and appropriate perioperative care for all patients and procedures? Whereas we expect safety regulations and standards for hospitals and freestanding ambulatory centers, the fastest growing segment of ambulatory surgical care, operating rooms within a physician's office, for the most part, remain

without guidelines or accountability to any regulatory agency.

In the January 2000 issue of the *Journal of Plastic and Reconstructive Surgery*, data from an independent survey revealed one death for every 5000 plus liposuction procedures performed in a physician's office. If this doesn't raise a warning flag, then the heading of an article that appeared in the *American Medical News* (an American Medical Association newsmagazine) should: 'Website plans to auction plastic surgery services'. Consumers will be able to solicit bids from physicians over the internet for elective cosmetic surgery. The online service does not check the physician's credentials or provide any verification of background or experience. An internet link is provided to the physician's medical licensing agency; it's up to the consumer to gather the necessary information to make an informed decision. Let the consumer beware!

The office setting cannot become a safe haven for physicians to perform procedures for which they could not have privileges in a hospital or a freestanding center. We have a responsibility to our patients to see that there is no increased risk by maintaining similar standards of care, similar standards of patient safety, regardless of whether a procedure is performed in a hospital, a freestanding facility, or in a physician's office.

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Short communication

The paradox of ambulatory surgery in the third world

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The introduction of ambulatory surgery in Europe is attributed to Nicoll [1]. It would be better to say 'ambulatory surgery in modern times and in western societies', for ambulatory surgery has existed for centuries in Europe and has been practiced in the third world for thousands of years. Circumcision is always ambulatory and, just to give one remarkable example, Kisii craniotomy and craniectomy are also ambulatory [2]. In terms of the long history of surgery, hospital based operations have been the novelty rather than ambulatory surgery. Hospital based operations had bad statistics for a long time principally but not solely because of hospitalism.

In the third world, where the cleavage between rich and poor is so great, there are two different sets of circumstances in relation to ambulatory surgery.

One set applies to the poor or to situations pertaining to poverty. The patient may be sent home immediately after an operation because he has no money to pay for the bed or the hospital is so full that there is no bed for him, no half bed for him, no space under or between the beds.

There are no surveys and no data that would readily quantify this situation. My personal experience, gained in Eastern Africa, where I have operated in more than a hundred hospitals, is that in some hospitals most of the operations which would be performed on a day surgery basis in a modern western day surgery unit are similarly ambulatory in nature. Other hospitals refuse to perform even the most minor procedures unless the patient remains in the hospital. Institutions belonging to the latter category may adopt this policy either out of ignorance or because they cannot fill the beds.

In the private hospitals which cater for the prosperous, the situation is different. These are the hospitals in

which prima facie ambulatory surgery should have taken root exactly in the manner in which it has in developed countries. Indeed day surgery units have been established in many private hospitals. In the African situation they have not succeeded and I am informed by my Asian patients that there are difficulties with ambulatory surgery also on the subcontinent of India.

To illustrate the situation when the roads are bad, traffic jams gigantic, where there are power cuts, where there may be no water, where there is no reliance on telephones and where security is poor, one should not advocate ambulatory surgery. Hence it is not necessarily the quality of surgery or anesthesia which is lacking: it is the environment which is not conducive.

For day surgery the paradox is that whereas the leading hospitals are ready for widening the scope of ambulatory surgery, the privileged clientele is not. At the same time the poor limp home, are carried by relatives, are helped into buses or, yes, tied onto donkeys, because they have no choice. Ambulatory surgery, day surgery is all that is available to them.

The perceptions of the developed world, even the terminology, do not necessarily apply to poor countries. Surgery in Africa has never been as hospital based as it was in Europe or America.

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Patient satisfaction after ambulatory inguinal hernia repair in Hong Kong

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Abstract

Ambulatory surgery was introduced to Asia in the 1990s. Acceptance of ambulatory surgery by oriental patients remains largely unknown. A telephone survey was conducted to evaluate the level of patient satisfaction following ambulatory inguinal hernia repair. A total of 157 patients (61%) completed the telephone survey. More than 90% of the respondents expressed satisfaction with regard to the pre-operative, operative and post-operative service. The majority of the respondents (> 80%) preferred to undergo day surgery again in case of hernia recurrence. Our findings prove that ambulatory surgery has a high level of acceptance in Chinese patients and supports the expansion of a day surgery service in Hong Kong. © 2000 Elsevier Science B.V. All rights reserved.

Keywords: Day surgery; Survey; Satisfaction; Chinese

1. Introduction

A Day Surgery Centre was established at Tung Wah Hospital, University of Hong Kong Medical Centre in 1995. Inguinal hernia repair has been the most common day case operation. The introduction of day surgery has substantially enhanced the efficiency of patient care [1,2]. The waiting time for hernia repair has been shortened from a few months to a few weeks. Concerns regarding the acceptance of day surgery by Chinese patients have arisen with the rapid development of day surgery. Studies have been conducted to evaluate the level of patient satisfaction following day surgery but very few in Asian countries [3–8]. A telephone survey was conducted to evaluate the level of patient satisfaction following ambulatory inguinal hernia repair in Chinese patients.

Patient satisfaction is an important factor in the evaluation of the quality of health care [9]. It reflects the patients judgement of all aspects of care, including the health care process and the clinical outcome of operation. The present study helps to ensure the contin-

uation of a quality clinical service and to identify room for further improvement.

2. Subjects and methods

From December 1995 to December 1998, 271 ambulatory inguinal hernia repairs were performed at the Day Surgery Centre of Tung Wah Hospital, University of Hong Kong Medical Centre. There were 240 men and 19 women. The ages of the study population ranged from 15 to 72 with a mean age of 48 years. Eleven patients with bilateral inguinal hernias underwent staged repairs and only one patient had a simultaneous repair of both hernias.

2.1. Pre-anaesthetic assessment

All patients with inguinal hernias were initially screened by an attending clinician at the general outpatient clinics. Patients who were considered fit for day surgery were referred to our Day Surgery Centre for more detailed assessment. A pre-anaesthetic assessment clinic was arranged by phone at our Day Surgery Centre. During the pre-anaesthetic assessment, the pa-

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tient was invited to complete a questionnaire to evaluate his or her social circumstances and suitability for day surgery. Medical fitness for general anaesthesia was assessed by a senior anaesthetist. Clinical assessment of the hernia was then conducted by a specialist surgeon. If assessed suitable for day case hernia repair a date for admission was given to the patient. Written instructions on post-operative care and management were also explained by the nursing staff.

2.2. Day of operation

All patients were admitted to our Day Surgery Centre on the day of operation after an overnight fast. The procedures were scheduled for the morning session of the operation list. Inguinal hernia repair was performed under general anaesthesia. Operative methods included nylon darn ($n = 169$), Bassini method ($n = 62$), Prolene mesh hernioplasty ($n = 36$), iliopubic tract repair ($n = 2$) and herniotomy with Lytle's repair of the deep inguinal ring ($n = 2$). Local infiltration of the wound with about 10 ml of 0.25% bupivacaine was routinely performed before wound closure.

2.3. Post-operative management

After assessment by the operating surgeon and the anaesthetist, the patients were discharged in the afternoon. All patients were given a supply of oral dextropropoxyphene 32.5 mg q.i.d. p.r.n. and voltaren suppository 50 mg b.d. p.r.n. for analgesia. They had to be accompanied by a responsible adult on discharge. A 24-h telephone hotline was available to the patient in case of any problems or queries.

2.4. Follow-up

Telephone follow-ups on the patient's condition were carried out by the nurse specialist on post-operative days 1 and 3. Under a shared care program with selected primary health care physicians, 16 patients were referred back to their doctors for follow up. Other patients had their follow up at our general surgical out-patient clinic 1–2 weeks postoperatively.

2.5. Telephone survey

A telephone survey was conducted to evaluate the level of patient satisfaction on the pre- and post-operative services, facilities, operative outcomes and adequacy of pain relief at home. Preoperative service referred to the experience at the pre-anaesthetic assessment clinic and sufficiency of pre-operative advice. Post-operative service concerned the recovery process at home and subsequent follow-up. Patients were asked to answer questions on their level of satisfaction in the

above-mentioned areas, with three possible answers: not satisfied, satisfied or very satisfied. The causes of dissatisfaction were recorded. Patients were asked specifically whether they would prefer to undergo day surgery or in-patient hernia repair in case of recurrence or development of a contralateral inguinal hernia.

3. Results

3.1. Demographic features and clinical outcomes

A total of 157 patients completed the telephone survey, leading to a response rate of 61%. There were 136 men and 21 women. The mean age of the study population was 49 ± 15.4 , (S.D.) years. The early outcomes of ambulatory inguinal hernia repair ($n = 271$) in our unit have been reported [10]. Of the 157 patients, 153 (97.5%) were discharged on the day of operation. Four patients were admitted to the ward after operation because of dizziness ($n = 1$), hyperglycaemia ($n = 1$), pain ($n = 1$) and haemoptysis ($n = 1$). All were discharged uneventfully within 1–2 days. None of the patients ($n = 157$) were re-admitted after discharge.

During follow-up, four complications were documented, namely wound bruising ($n = 1$), scrotal swelling ($n = 1$), pulmonary tuberculosis ($n = 1$) and wound haematoma requiring drainage ($n = 1$). The post-operative morbidity rate was 2.5%. There was no mortality.

3.2. Level of patient satisfaction

Fig. 1 shows the level of patient satisfaction on the pre-operative service, facilities, post operative service, operative outcomes and adequacy of pain relief. Only one patient reported dissatisfaction with the pre-operative service because of the missed diagnosis of pulmonary tuberculosis prior to operation. Two patients commented that the hospital complex was old.

Only one patient considered the operative outcome unsatisfactory. It was mainly related to the development of a hypertrophic scar with occasional pain. The four patients with post-operative complications accepted the morbidity and were satisfied with the operative outcome.

Unsatisfactory post-operative pain control was reported by eleven patients (7%).

With regard to the reasons of unsatisfied post-operative service ($n = 8$), five patients found postoperative follow ups inadequate. One patient complained of the poor attitude of the attending clinician during follow-up. Another patient felt unsatisfied with the post-operative service because he was directed to attend the accident and emergency department when the patient rang the telephone hotline for postoperative wound bleeding at night. No specific reason could be elicited in one patient.

3.3. Preference for day surgery or in-patient care

A total of 127 patients, 81% of the respondents, expressed willingness to undertake day case hernia repair again in the future. However; 26 patients would favour in-patient care for a further hernia repair mainly because of post-operative pain. One patient preferred to rest in hospital rather than to resume normal activity immediately after operation.

4. Discussion

Ambulatory surgery has been practised in the West for almost 3 decades but it was introduced in Asia in the 1990s [1,11]. Escalating costs of health care have become the driving force towards the development of day surgery in our territory [12,13].

Based on the Western experience, our day surgery unit incorporated the pre-anaesthetic assessment clinic, operation theatre and recovery room at the same place [3,14,15]. This allowed the patient to become familiar with the environment and reduced anxiety prior to operation. Adequate instruction is provided in the form of video tape, written instructions and verbal explanation. These accounted for the excellent level of patient satisfaction with the preoperative service. None of the patients complained of inadequate pre-operative instruction and only one respondent expressed dissatisfaction. This patient suffered from sub-clinical pulmonary tuberculosis, which was not diagnosed prior to operation. Pre-operative chest roentgenogram was not routinely performed unless indicated.

Two patients were not satisfied with the old hospital complex, which had a history of more than a century. Our hospital is currently undergoing extensive renovation. Hopefully, this will satisfy patients' expectations of a more modern hospital environment.

The clinical outcomes of our ambulatory inguinal hernia repairs have been encouraging [10]. Only one patient considered the operative outcome unsatisfactory because of hypertrophic scar. As virtually all day case operations were performed by specialist surgeons, the post-operative morbidity rate was low in the past 3 years. Other experienced staff, inclusive of anaesthetists and nursing staff were also pivotal to the promising clinical outcome.

The majority of patients (> 90%) expressed satisfaction with the post-operative service. Nonetheless, in contrast to the practice in the UK, home visits by community nurses are not available in our locality [16,17]. To ensure the safety of the patients at home, we provide the patients with a 24-h telephone hotline and conduct telephone follow-ups on post operative days 1–3. The future introduction of home visits by community nurses could help to reduce the workload of the day surgery unit.

The main reason for dissatisfaction in the post-operative period was inadequate pain relief [16,18,19]. Advances in the control of post-operative pain can substantially enhance patient satisfaction and support the continued growth of day surgery. Multi-modal analgesia, with the combination of local anaesthesia, opioids and non-steroidal anti-inflammatory drugs appears to be the best contemporary choice of method

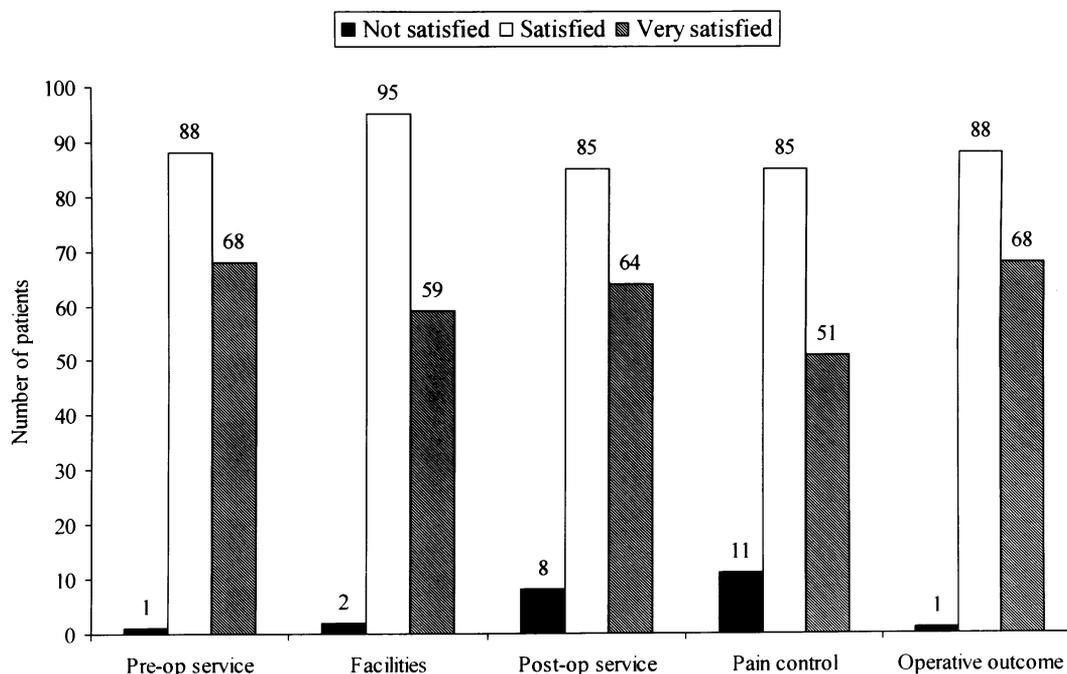


Fig. 1. Bar chart showing the level of patient satisfaction ($n = 157$).

[20]. Other techniques, like continuous infusion of local anaesthetic, remain to be proven [21].

Another reason for dissatisfaction was inadequate follow-up after operation. More than 90% of the patients were followed up at the general surgical out-patient clinic of our hospital after discharge. Very often, patients were discharged after the first visit if the wound healed well without clinical evidence of recurrence. Apparently, some patients welcomed further follow-ups. A shared care program with primary health care physicians was only established 3 years ago. Continued growth of this program will allow more patients to be followed up by their family physicians.

More than 80% of the respondents preferred to have further day case surgery if they developed a recurrent hernia or a contralateral inguinal hernia. Only a minority of our patients expressed a preference for in-patient surgery in the future. Our findings are similar to those reported in the West [18,22,23].

5. Conclusion

The high level of patient satisfaction of all aspects of the clinical service proved that day surgery has been successfully implemented in our hospital over the past 3 years. It reflected a high level of acceptance of day surgery by Chinese patients. Our findings support the further expansion of day surgery in Hong Kong, which will become more important with the rising cost of health care in the next millennium.

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Anxiety management: a distinct nursing role in day surgery

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Abstract

Improved anaesthetic techniques and the increase in minimal access surgery over the past 20 years has had a considerable impact upon the pattern of nursing care required by the surgical patient. In order to adapt to these changes some day surgery nurses have opted for an extension to their role while the majority have expanded their remit and perform nursing interventions within a multi-skilled role. Amid these changing patterns, the nursing profession has been active in conducting research into best practice concerning day surgery. Consequently, a great deal of information is available regarding areas for possible growth. One possible growth area which is also a vitally important issue for patients prior to day surgery is anxiety management. A future nursing role could involve formal anxiety management implicit within a multi-skilled role and as part of an expanded role. The role possibilities are discussed together with an information provision plan as both are central to the effective handling of pre-operative fears. © 2000 Elsevier Science B.V. All rights reserved.

Keywords: Day surgery; Extended and expanded nursing roles; Information provision; Formal anxiety management

1. New era for surgical nursing

Changes to surgical and anaesthetic practice over the past two decades has resulted in a decline in the number of days patients spend in hospital. The average stay has fallen from nine days in 1974/5, to seven days in 1986 [1] and is still falling today (currently 5.4 days) [2]. The length of hospital stay in the UK within the last 20 years has fallen by almost 50%. Furthermore, 60% of all elective surgery in the UK is now undertaken on a day case basis and in some surgical specialities this figure has reached 80% [3]. This is in line with the NHS Management Executive (1993) [4] which states 50% of all elective surgery should be undertaken on a day case basis by 1997/98 with certain surgical specialities able to perform 80% of their surgery by the year 2000. The Audit Commission (1998) [5] also recommends an even greater level of transfer from in-patient surgery to day surgery.

Advances in surgical and anaesthetic practice have ensured many changes to the future of surgical nursing [6,7]. For example, patients undergoing a cholecystec-

tomy in the 1970's regularly required hospitalisation for 2–3 weeks and consequently a considerable amount of physical care. Pearce (1975) [8] states "... on the tenth day the patient is sent down to the X-ray department for the injection of some radio-opaque material along the T-tube." (p. 40). Watson (1979) [9] (a then prominent nursing text) dedicated a whole chapter to the copious levels of physical pre- and post-operative care required during hospitalisation. Currently, only a small number of cholecystectomies are undertaken on a day case basis in the United Kingdom although this is set to rise as the British Association of Day Surgery has recently included cholecystectomy in its 'trolley of procedures' stating that 50% should now be possible in day surgery [10].

The changes associated with cholecystectomy provides one example of how the proportion of physical nursing intervention has fallen and is no longer required to the same degree by the majority of patients undergoing elective surgery. The nursing profession has been slow to react to these enduring changes in surgical and anaesthetic practice and must explore future roles in surgical nursing. Reaction may have been delayed by a common misconception regarding day surgery i.e. day surgery only involves a small amount of minor surgery.

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This assumption is quite false as the figures above seek to highlight. Medical advances now permit patients undergoing intermediate surgery (not minor) and general anaesthesia (not just local or regional anaesthesia) to recover at home rather than in hospital [11,12]. This permanent move away from in-patient surgery to more day case surgery has inevitably led to a number of changes to the traditional role of the surgical nurse.

2. Current role of the nurse in day surgery

In the UK the role of the nurse in a modern surgical unit (excluding theatre) can be broadly placed into three overlapping categories, i.e. traditional managerial role, expanded multi-skilled nursing role and extended specialist nursing role. Firstly, the managerial role involves the day to day running of a modern surgical unit, i.e. strategic planning, multi-disciplinary organisation of work, ensuring correct functioning of the unit, health and safety issues, personnel matters, etc. These multiple issues provide many challenges as they have the potential to impact enormously upon the day surgery patient, i.e. waiting list initiatives, staff recruitment and retention, auditing, etc. These challenges are unyielding as the throughput of patients is not only relentless but growing [3,10].

The expanded multi-skilled (or multi-tasked) role has been largely pre-determined in order to maintain a steady flow of patients through the day case unit and undertake the surgery scheduled for each day [13,14]. In the absence of the copious levels of physical nursing intervention, outlined above, this has been both a logical and practical progression for the role of the nurse. Much nursing intervention concerns the patient's medical fitness for surgery and embraces all aspects of patient care in a matter of 3–4 h, e.g. admission procedures, physical preparation, transfer to the operating theatre, recovery from anaesthesia and discharge home. [14–16]. While these are obviously vitally important aspects within the nurses' role they can be widely viewed as medically orientated tasks to ensure surgical safety and a progressive throughput of patients in the limited time available [13]. Having a multi-skilled nursing workforce within a day surgery unit does, carry numerous benefits [17–19]. Null and Bonser (1997) [20] state "... the development of new skills and increase of each nurse's knowledge base was identified as an opportunity for both professional growth and personal marketability." (p. 324). Nonetheless, in this American study 'cross-training' and adequate preparation of staff required careful planning. The education of staff is also an issue in the UK as a lack of good training may render multi-skilling programmes problematic [21,22].

More recently some of these para-medical tasks have been perceived as an area of extension for the role of

the nurse and ones in which other nursing skills can be employed [23–25]. Pre-operative assessment clinics, for example, are being successfully run by nurses and are providing the opportunity for more traditional nursing skills to be incorporated e.g. interpersonal skills, organisational skills, therapeutic use of self [14,15,25,26]. The benefit of having nurses with extended roles in other areas, able to undertake medically orientated procedures has likewise been well documented [27–32]. But it has been suggested that concentrating too much on quasi-medically orientated tasks may dilute the skills of the nurse [13,33]. Nurses with specialist extended para-medical roles may have to exercise some caution as their professional roots lie in nursing and should therefore avoid becoming too far removed from the nursing domain [29,34]. At the British Association of Day Surgery Annual Scientific Meeting held in Harrogate in 1998 there was a ground swell of opinion from the nurses present against medically orientated tasks becoming a commonly accepted part of their remit. Frequently the number of multi-skilled nurses and specialist nursing roles are determined locally depending largely on requirements [35]. While these new roles may have embraced challenges geared to maximise efficiency they may have inadvertently overlooked some crucial patient centred issues.

A dominant issue for the vast majority of patients prior to day surgery is their anxiety, e.g. fear of anaesthesia, pain and discomfort. Day surgery is providing the ideal opportunity for more accurate pre-operative anxiety management to address these considerable fears. The potential to adopt these changes may now be feasible as (i) the majority of elective surgery now takes place in day surgery, (ii) patients visit hospital prior to surgery for a pre-assessment and (iii) information provision (the most challenging aspect for day surgery) is inextricably linked with anxiety management. Information provision is only one challenging issue currently facing day surgery although the introduction of an anxiety management role and information provision strategy could have a decisive impact upon all current challenges. Recognising the positive contribution a methodical anxiety management plan can offer by making much needed changes may provide a huge boost for day surgery nursing intervention i.e. the development of a new role whose roots lie firmly in nursing research.

3. Current day surgery challenges

Four main challenges have emerged from one of the first reviews of the literature to exclusively examine the opinions of the day surgery patient, i.e. information provision, nursing and anaesthetic practices, patients' experiences within the day surgery unit and recovery at home [36,37]. This review of 67 studies has been up-

dated by a further 32 papers in the two years since the original article was written. However, the above conclusions still firmly remain the most challenging aspects for day surgery, i.e. information, nursing practices, patients' experiences and home recovery. The updated reference list can be found in the reference section

below [38–67,76,100] and the references from the original paper in Mitchell (1999a) [36] and Mitchell (1999b) [37]. The updated list of 99 studies has been subdivided into qualitative and quantitative papers in order to gain greater insight into their classification, validity and reliability (Table 1).

Table 1
Classification of all studies reviewed concerning patients' perceptions of day surgery

Qualitative	Quantitative		
Phenomenological	Audit	Survey	Quasi-experimental
Avis (1994) [36]	Baskerville et al. (1985) [36]	Aasboe et al. (1998) [50]	Augustin et al. (1996) [36]
Donoghue et al. (1995) [81]	Birch et al. (1994) [36]	Agboola et al. (1998) [51]	Coslow et al. (1998) [65]
Donoghue et al. (1997) [86]	Bottrill (1994) [36]	Bhattacharya et al. (1998) [52]	Domar et al. (1987) [36]
Kleinbeck et al. (1994) [36]	Chung et al. (1994) [36]	Birch et al. (1993) [36]	Edwards et al. (1991) [36]
Otte (1996) [36]	Clyne et al. (1978) [36]	Brumfield et al. (1996) [36]	Gaberson (1995) [36]
Thatcher (1996) [36]	Codd (1991) [38]	Buttery et al. (1993) [36]	Goldmann et al. (1988) [97]
	De Jesus et al. (1996) [36]	Caldwell (1991) [36]	Hulme et al. (1999) [65]
	Fenton-Lee et al. (1994) [36]	Callesen et al. (1998) [53]	Kempe et al. (1985) [101]
	Firth (1991) [36]	Claxton et al. (1997) [54]	Markland et al. (1993) [36]
	Fitzpatrick et al. (1998) [39]	Cozzarelli (1993) [36]	Mealy et al. (1996) [36]
	Gupta et al. (1994) [36]	Daoud et al. (1999) [75]	Vogelsang (1990) [82]
	Haddock et al. (1999) [40]	Done et al. (1998) [55]	Wicklin et al. (1994) [36]
	Hawkshaw (1994) [36]	Donoghue et al. (1998) [56]	Zvara et al. (1996) [67]
	Heseltine et al. (1998) [41]	Fengling et al. (1998) [57]	
	Ismail (1997) [42]	Frisch et al. (1990) [94]	
	Kangas-Saarela et al. (1999) [43]	Gamotis et al. (1988) [36]	
	Kelly (1994) [36]	Ghosh et al. (1994) [36]	
	Kennedy (1995) [36]	Gnanalingham et al. (1998) [58]	
	King (1989) [36]	Guilbert et al. (1997) [36]	
	Lewin et al. (1995) [36]	Haldane et al. (1998) [59]	
	MacAndie et al. (1998) [36]	Harju (1991) [36]	
	Marquardt et al. (1996) [36]	Icenhour (1988) [95]	
	Menon (1998) [45]	Jamison et al. (1987) [36]	
	Petticrew et al. (1995) [99]	Lawrence et al. (1997) [60]	
	Ramachandra (1994) [36]	Lindén et al. (1995) [61]	
	Rudkin et al. (1996) [36]	Lindén et al. (1996) [62]	
	Stephenson (1990) [36]	Lisko (1995) [36]	
	Thomas et al. (1987) [47]	Mackenzie (1989) [36]	
	Willsher et al. (1998) [48]	Male (1981) [36]	
	Wilkinson et al. (1992) [36]	Micheals et al. (1992) [36]	
	Woodhouse et al. (1998) [49]	Mitchell (1997) [75]	
		Nkyekyer (1996) [36]	
		Nyamathi et al. (1988) [36]	
		O'Connor et al. (1991) [36]	
		Oberle et al. (1994) [78]	
		Parsons et al. (1993) [36]	
		Philip (1992) [36]	
		Pineault et al. (1985) [36]	
		Pollock et al. (1997) [105]	
		Ratchiffe et al. (1994) [36]	
		Read (1990) [36]	
		RCS & East Anglian R.H.A. (1995) [36]	
		Sigurdardottir (1996) [36]	
		Singleton et al. (1996) [36]	
		Smith (1998) [62]	
		Wedderburn et al. (1996) [102]	
		Willis et al. (1997) [103]	
		Winwood et al. (1993) [64]	
<i>Total (99)</i>	32	48	13

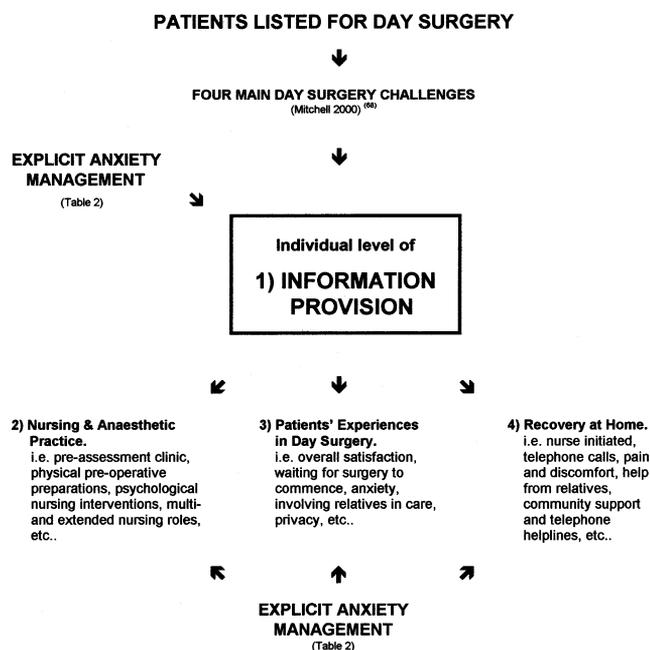


Fig. 1. Pivotal role of information provision in anxiety management.

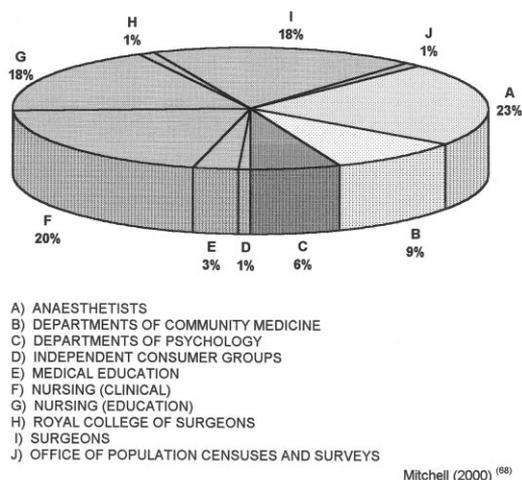


Fig. 2. Classification of professionals undertaking studies concerning patients' perceptions of day surgery (based on primary researcher).

Improvements to information provision are recommended by 57.6% ($n = 57$) of the 99 studies and was implicit in many others (Table 1). Three of the main issues identified in the review [36] are directly linked to the fourth-information provision, i.e. nursing and anaesthetic practices, patient's experiences of day surgery and recovery at home (Fig. 1). Numerous studies within the review plus a subsequent study have firmly linked lower levels of anxiety both in the day surgery unit and at home during recovery with adequate information provision [36,37,68]. Of the main issues, information provision presents the greatest challenge as it is pivotal to the other three (Fig. 1). Tackling the perplexing problems of information provision may

therefore address all the major challenges currently facing day surgery. Attempting to resolve patient information issues may uncover new horizons for the role of the nurse in day surgery, i.e. anxiety management nurse specialist.

To date the nursing profession has made a major contribution to the amount of research concerning the opinions of day surgery patients (Fig. 2). Nurses are therefore a very suitably placed group to recommend and implement these necessary changes as 38% of all the studies into day surgery patients' perceptions have been conducted primarily by nurses [68] (Fig. 2). At the British Association of Day Surgery Annual Scientific Meeting held in Bournemouth in 1999 a survey was undertaken of the delegates present regarding the most suitable group to manage a day surgery unit. Nurse led units were voted overwhelmingly to be the most effective way to manage a day surgery unit. The opportunity to introduce an innovative anxiety management nursing role, which draws firmly on nursing research, could not be better.

4. Anxiety management: a distinct nursing role

Research over 30 years has steadfastly confirmed that when patients enter hospital to undergo surgery they are very anxious regarding the anaesthetic, the operation, the possible pain and discomfort, and being unconscious [69–75]. In a recent study of the pre-operative anxiety associated with day surgery, 97% of patients experienced a degree of anxiety [68] (Fig. 3). An additional fear, closely associated with day case procedures, may be increasing in parallel with the amount of day surgery being undertaken i.e. anxiety resulting from the wait on the day of surgery [68] (Fig. 4). Increased difficulties during the induction of general anaesthesia have also been demonstrated with an anxious patient [76]. Patient anxiety prior to day surgery may eventually become an even greater issue and

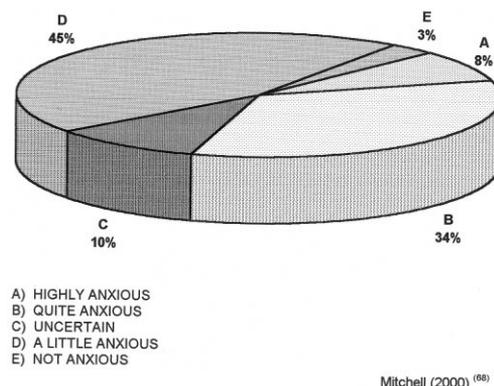
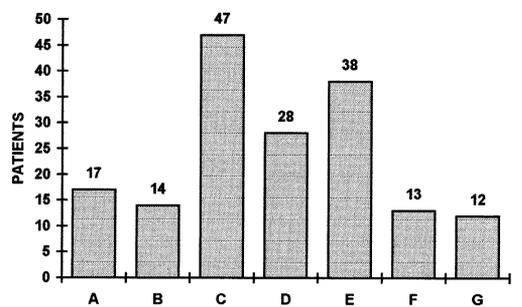


Fig. 3. How anxious would you rate your patient prior to operation today?

Table 2
Anxiety management in day surgery

<i>Nursing diagnosis (i.e. need/problem)</i>	An increased level of anxiety resulting from the impending general, local or regional anaesthesia, surgical procedure, recovery and medical outcome.	
<i>Cues (not exhaustive)</i>	Objective: increased blood pressure, increased pulse rate, increased respiration's, perspiration, dry mouth, frequent micturition, palpitations, trembling, gastro-intestinal disturbance, pale or flushed skin, red blotches on neck and chest, patient stating main pre-operative fears from research i.e. thoughts of being anaesthetised, being unconscious, the possible pain and discomfort afterwards and the operation itself. Subjective: excessive talking, quiet or withdrawn, illogical thoughts, focus on self, fidgety, nail biting, inappropriate laughing or giggling, weepy, rude, unco-operative, wringing hands, tone of voice, aggressive behaviour, precarious state of emotional arousal.	
<i>Goal</i>	To assist the patient in the effective management of their anxiety	
Nursing intervention (not exhaustive) Information provision	Focus on provision of correct level of information i.e. vigilant avoidant and fluctuating and coping styles (Krohne et al. 1996) [109]	Give choice of information pathway in the pre-assessment clinic and (i) supply the relevant and accurate information or (ii) send via the post. Provide both written and verbal information. Provide all information 1 to 3 weeks prior to surgery. All information on the day of surgery to centre around coping style match, i.e. a vigilant copier told every detail. Provide clear distinction between patient preference for information on the day of surgery. 24–48 h post-operative nurse initiated telephone call service. 24 hour telephone helpline and encourage patient to use it.
Promoting cognitive re-framing (cognitive coping strategies)	Focus on most common pre-operative fears (Teasdale, 1995) [110].	Utilise any re-framing ploy, i.e. modern anaesthetic equipment, highly trained and nurses, highly effective and modern anaesthetic agents, constant thorough checking and safety procedures, many operations performed daily without a single problem; while unconscious will be constantly monitored; while recovering will be constantly monitored, etc.
Therapeutic use of self	Focus on nurses' physical presence	Be physically close to the patient, talking and using touch. Demonstrate a friendly, professional, assured assertive and calm manner. Convey emotional stability. Distract with conversation and calming words.
Providing control	Focus on involving the patient in decisions whenever and wherever possible	Involve in decision making — real or perceived, large or small. Give more/less control when requested. Encourage questions and provide consistent answers. Encourage relatives/ friends to remain if so desired. Deal swiftly and effectively with any pain and discomfort. Ensure waiting time is minimal and keep informed of schedule.
Promoting self-efficacy	Focus on praise and encouragement	Convey an optimistic outlook. State repeatedly how well they are coping/managing. Encourage belief in positive self management once discharged. Encourage autonomy. Encourage patient to use telephone helpline.
Evaluation	Focus on patient	Nurse initiated telephone contact after 24–48 h. Give patient anonymous satisfaction questionnaire on discharge for return by post. Randomly telephone to complete a satisfaction with care questionnaire. Establish regular multi-disciplinary reviews of practice.



- A) THE OPERATION ITSELF
 B) BEING UNCONSCIOUS
 C) THE GENERAL ANAESTHETIC (BEING PUT TO SLEEP)
 D) THE POSSIBLE PAIN AND DISCOMFORT
 E) WAITING IN THE DAY SURGERY UNIT PRIOR TO YOUR OPERATION
 F) SOCIAL ARRANGEMENTS i.e. child-minding, work, etc.
 G) OTHER i.e. possibility of reduced health, hunger, possibility of nausea & vomiting, IVI being re-sited, needles, discharge too early, parking ward, layout, lack of warmth, operation being cancelled again, separation from husband.

Mitchell (2000) ⁽⁶⁸⁾

Fig. 4. What aspects of day surgery increased your anxiety?

Table 3
Anxiety management nurse practitioner role

Possible central responsibilities

Create structured programme of information provision.
 Evolve multiple methods of information dissemination.
 Ensure differing levels of information for all procedures.
 Develop protocols to guarantee continuity of the required level of information throughout the pre and post-operative phases.
 Ensure implementation of anxiety management careplan.
 Develop brief multi-disciplinary notes to oversee whole process.

merely add to the need for more explicit anxiety management programmes.

Loss of the more traditional surgical nursing roles, outlined above, has created an opening in which the freedom to address these crucial patient centred issues could be realised. This is in line with the Government's new strategic intentions for nursing where new roles and new ways of working are to be encouraged [77]. A future nursing role in day surgery should involve formal anxiety management implicit within a multi-skilled

Table 4
Information management plan for day surgery

3–4 Weeks prior to surgery	Day of surgery	Following discharge
Structured programme of information provision.	Chosen level of information provision continued.	Chosen level of information provision continued.
Choice of verbal and written information to take home, i.e. simple, intermediate or extended information.	Outstanding questions answered.	24–48 h nurse initiated telephone call.
Information provision incorporated into the pre-assessment or provided by telephone and post.	Relatives' help employed where possible.	Community service available (if required).
Visit to unit if requested.	Relatives kept well informed.	Use of telephone helpline encouraged.
Anxiety management plan utilised.	Anxiety management plan utilised.	Anxiety management plan utilised.
Multi-disciplinary notes utilised.	Multi-disciplinary notes utilised.	Multi-disciplinary notes utilised.

role and as part of an expanded nursing role (Fig. 1). Brief multi-disciplinary notes could be used to oversee this process [68] together with an orthodox anxiety management careplan which draws on research evidence [68]. This distinctive nursing role could spearhead the implementation of an anxiety management careplan (Table 2) and the creation of a structured programme of information provision (Table 3). The structured programme could include (i) differing levels of information for all procedures, (ii) multiple methods of information dissemination and, crucially, (iii) ensure continuity of the required level of information throughout the pre and post-operative phases [68,75] (Table 4). A structured programme of provision such as this, immediately commenced once elective day surgery has been recommended, will also have an unseen benefit as simply establishing an efficient, well run and professional day surgery unit has enabled patients to manage their anxiety more effectively [68].

A number of studies have indicated patients need to be contacted prior to surgery in order to gain information concerning their planned surgery [78–82]. This could be incorporated within the pre-assessment visit, by telephone or post (Table 4). Verbal information could be provided at this point and the chosen written information discussed and given to the patient to take home [55,67,83–85]. A visit to the day surgery unit, if requested, should be made available in order to meet the staff and become more accustomed to the surroundings as 44% of patients in a study by Mitchell (1997) [75] would have preferred a visit. The type of information required by surgical patients has already been established and would simply require adapting to each surgical procedure [86–94]. The patient's relatives can be of great help at this stage although they will require information prior to the day of surgery to enable them to adequately care for their relative upon discharge [95,96].

On the day of surgery any outstanding questions can be answered and the chosen level of information continued. Providing patients with unwanted information

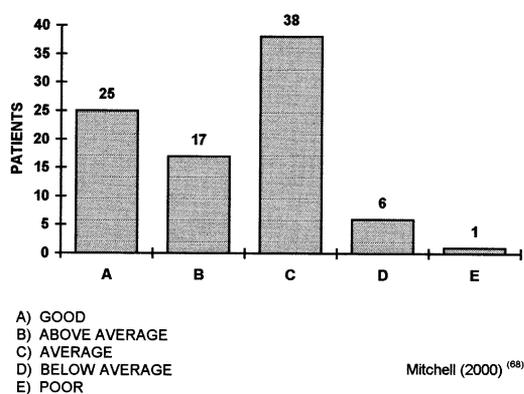


Fig. 5. Overall, how would you rate your patient's adjustment to her surgery today?

can be a waste of resources and only make them more anxious [68,97,98]. The continuation of the correct level of information is therefore crucial within the anxiety management process and must be strictly observed [68,75]. (Tables 3 and 4). This may also help to improve patient adjustment to surgery as some patients clearly do not adjust well to their operation [68] (Fig. 5). The development of protocols to enable the continuity of the correct level of information must therefore be a central part of the nurse specialist's remit, as stated above (Table 3). The patients' relatives must be kept informed and invited to remain with the patient during their stay, subject to all party agreement [99,100].

Patients should be discharged with the desired levels of information together with a contact telephone number. The use of a telephone helpline service should be encouraged as it can reduce the need to contact the community services [101–103]. During the post-operative phase a nurse initiated telephone call can be made to also reduce the demands placed upon the community resources and to ensure a more positive recovery [68,104,105]. If a telephone is unavailable in the patients home, a day surgery out-reach team or community based service could be provided as this has proven to be of great benefit [63,106–108].

5. Conclusion

Much research evidence highlights the fears experienced by day case patients prior to surgery. Information provision has been targeted as a challenging aspect for day case patients as many are very anxious regarding the lack of information. The nursing profession has a tremendous opportunity to develop a new, exciting and dynamic anxiety management role in day surgery. This role could have at its core a planned programme of information provision and encompass an explicit programme of anxiety management. The benefits improved information provision can bring have been

clearly identified. Likewise the tools to undertake this new and inspiring anxiety management role are available. The Government is in support of new nursing roles and improved patient satisfaction stating "Developing roles and improving services go hand in hand" (p. 71) [77]. Ultimately, the clinical application of the changes outlined above must be considered against local circumstances, financial and legal pressures. However, improved patient information provision and formal programmes to enhance anxiety management can only be of benefit to all concerned in day surgery.

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The pain of haemorrhoidectomy: a prospective study

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Abstract

The efficacy of a multimodal analgesic approach for ligation excision haemorrhoidectomy was evaluated in a prospective series of 62 patients. Opioid was given as intravenous fentanyl intra-operatively, as part of a standardised general anaesthetic technique, followed by post-operative parenteral fentanyl or oral oxycodone as required. Pre-emptive local anaesthesia was provided via ischiorectal fossae and haemorrhoid pedicle infiltration. The non-steroidal anti-inflammatory drug indomethacin was administered rectally at the end of surgery and regularly orally for 5 post-operative days. A wide range of pain scores was recorded post-operatively but all mean scores were between 2 and 3. Pain was highest at the time of the first bowel action but this was successfully managed in the patient's home. Patient satisfaction with their pain management was achieved in 95% of patients. We conclude that the multimodal analgesia technique combined with pre-operative patient education leads to successful pain control following haemorrhoidectomy. © 2000 Elsevier Science B.V. All rights reserved.

Keywords: Analgesia: post-operative, multimodal pre-emptive; Surgery: ambulatory, haemorrhoidectomy

1. Introduction

Ligation excision haemorrhoidectomy has a reputation of producing severe pain. It is the most commonly performed operation for prolapsing haemorrhoids. Traditionally patients have remained in hospital until the first post-operative bowel action, a time when parenteral opioids may be administered.

Recent trends towards earlier hospital discharge have led to a re-evaluation of post-haemorrhoidectomy analgesia and the introduction of innovative analgesic options. These include the use of a subcutaneous morphine pump [1], transdermal fentanyl [2] and intrasphincteric ketorolac administration [3]. Regimens such as these have allowed haemorrhoidectomy to be performed as day surgery. However, many of these analgesic options are expensive and require sophisticated equipments. A more suitable alternative may be to use a post-operative pain management plan using a multimodal analgesic technique using commonly available

medications and delivery systems [4]. This concept was incorporated into a day case haemorrhoidectomy project conducted at our hospital [5].

The aim of the study was to prospectively evaluate pain and analgesic requirements after haemorrhoidectomy using a multimodal analgesic technique.

2. Methods

Patients scheduled for haemorrhoidectomy between February 1996 and December 1997 were considered for this prospective series. Exclusion criteria were an American Society of Anaesthesiologists (ASA) Grade 4 or 5, chronic renal failure, coagulopathy, symptoms of bladder outlet obstruction, intolerance of non-steroidal anti-inflammatory drugs (NSAIDs) or inadequate social support following surgery.

In the outpatient department, an investigator discussed the study with the patient and obtained informed consent. Patients were given written information describing the management plan and advised that their pain would be well controlled post-op-

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eratively. Interpreter services were provided to those patients who were from a non-English speaking background.

Pre-operatively, patients were allowed clear fluids orally until 3 h before surgery. On admission, patients were given a sodium citrate/sodium lauryl sulfoacetate/sorbitol (Microlax™) enema. All procedures were performed in the morning by a surgeon experienced in the technique. Patients were unpremedicated and underwent a standardized spontaneously breathing general anaesthetic using a laryngeal mask airway. Propofol induction was supplemented with intravenous fentanyl. Intravenous fluids were avoided unless a specific indication existed. A 100-mg indomethacin suppository was administered to the patients at the end of the procedure.

A standard ligation excision haemorrhoidectomy was performed with the patients in the lithotomy position. Before surgery the surgeon performed an inferior haemorrhoidal nerve block. The local anaesthetic solution used was a combination of 20 ml of 0.5% plain bupivacaine, 10 ml of 1% plain lignocaine and 10 ml of

normal saline to make a total volume of 40 ml. An injection of 5–10 ml was made into the ischiorectal fossa at 16:00 and 22:00 h. A 40-mm, 21 gauge needle was introduced to its full depth and moved upwards and downwards in a fan shaped manner. Before the haemorrhoidal pedicles were grasped, a small amount of local anaesthetic was injected into the point of contact. After making the skin bridges, the haemorrhoid was injected liberally with the anaesthetic solution. Following completion of the procedure, the remainder of the local anaesthetic solution was injected into the wounds.

Patient recovery to home discharge was a three-stage process (Fig. 1).

Patients initially recovered in a dedicated day surgery two-stage recovery area. They were then transferred to a step down unit (stage 3) when the day surgery discharge criteria [6] were met. Once in this unit, patients were encouraged to be self-caring, ambulant and to commence a normal diet. Patients were reassessed by nursing staff at no later than 18:00 h. If the patient had voided urine and pain and nausea were well controlled, they were discharged home to the care of a responsible adult. If these criteria were not met, overnight admission was arranged.

At home, the patients were instructed to take oral indomethacin (25 mg tds) and stool softener (Sorbitol™ 15 ml bd). They had available to them paracetamol, dextropropoxyphene/paracetamol and oxycodone (Fig. 1). Patients were encouraged to take warm salt baths at least twice daily. Any bowel or urinary complications were documented. A registered nurse visited each patient daily until at least the time of the first bowel action.

Pain scores were recorded using a Visual Analogue Scale (VAS Scale 1–10). (1 represented no pain and 10 worst pain imaginable). These were documented at 30, 120 and 240 min post-operatively, daily for the first 5 days, at the time of the first bowel action and on review by the surgeon on the tenth post-operative day.

Post-operative nausea and vomiting (PONV) was also scored according to a VAS score [7]. Intravenous antiemesis prophylaxis, ondansetron 4 mg was given at induction. Patients requiring further treatment received metoclopramide 10 mg intravenously, intramuscularly or orally depending on the recovery phase or orally at home.

On day 30 post-operatively, patients were asked to complete a questionnaire with an independent assessor relating to satisfaction with their post-operative pain management.

2.1. Statistical analysis

Repeated measure analyses for pain scores, nausea scores, analgesia used and antiemetic used were con-

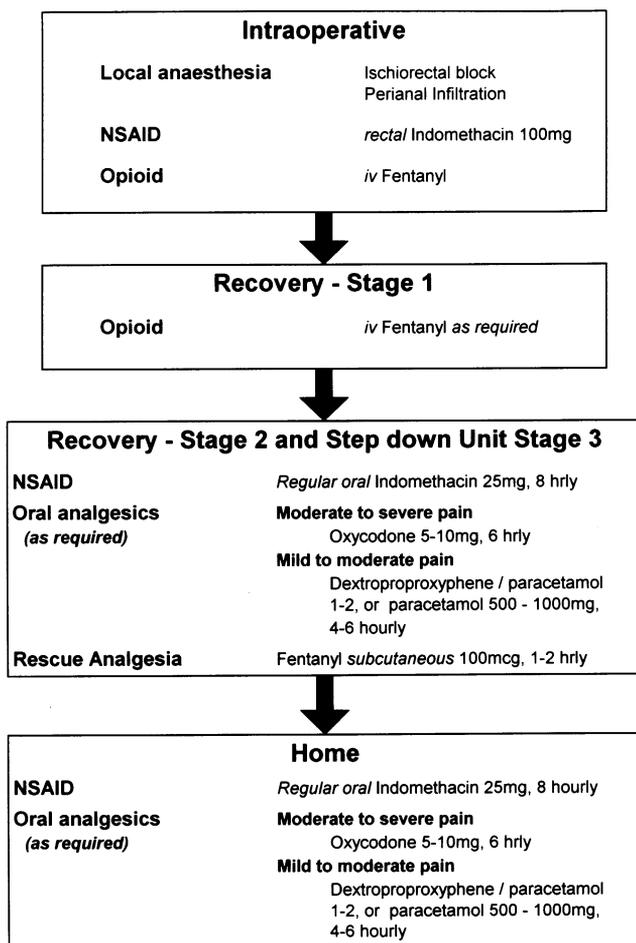


Fig. 1. Phases of patient care with corresponding multimodal analgesic plan.

Table 1
VAS pain scores^a

Time	Number	Mean	Lower	Upper	Range
30 min	62	2.29	1.87	2.81	1–10
2 h	62	2.52	2.13	2.97	1–8
4 h	62	2.45	2.11	2.85	1–6
Day 1	62	2.58	2.20	3.03	1–8
Day 2	62	2.94	2.61	3.31	1–7
Day 3	62	2.82	2.51	3.17	1–7
Day 4	62	2.5	2.17	2.88	1–7
Day 5	62	2.19	1.81	2.65	1–8
Day 10	42	2.70	2.22	3.30	1–8
First bowel action	62	4.81	4.22	5.47	1–10

^a Lower, upper = lower and upper bound for a 95% confidence about the mean.

ducted using generalised estimating equations [8], the data being normalised by a log transformation.

Categorical analyses were conducted for patient satisfaction and nausea and antiemetic use, using the χ^2 -test.

Non-parametric analyses were conducted for patient satisfaction and pain at the first bowel action using the Wilcoxon rank sum test.

3. Results

In this series 62 patients (42 males and 20 females) underwent ligation excision haemorrhoidectomy. The median age was 43 years (range 25–78) and the median weight was 75 kg (range 41–110). There were 34 ASA grade 1 patients, 26 ASA grade 2 and 2 ASA grade 3. Forty-one patients underwent three complex haemorrhoidectomies, 15 had two complexes excised and the remaining six required one complex haemorrhoidectomy. The median dose of intra-operative fentanyl was 100 μ g (range 50–250). Fifty-eight patients received no intra-operative intravenous fluid, two received less than 100 ml and two more than 500 ml.

A wide range of pain scores (Table 1) was seen at all times post-operatively.

Mean pain scores were between 2 and 3 throughout. Analysis of the data showed higher pain levels on day 2 and 3 than in the first 24 h post-operatively (30 min post-operatively c.f. day 2 ($P < 0.02$) and day 3 ($P < 0.05$); 4 h post-operatively c.f. day 2 ($P < 0.04$). Pain on day 3 was worse than day 5 ($P < 0.02$). There was a trend of higher pain scores on day 10 but this was not statistically significant. A similar pattern was seen on analysis of the proportion of patients reporting pain scores greater than 2, seen in Fig. 2, with peaks at day 2, 10 and at the first bowel action.

Analgesic requirements are shown in Table 2. Intravenous fentanyl was given to eight patients (13%) in the first 30 min post-operatively but no patient required it

subsequently. The majority of patients required no analgesia in the first 24 h post-operatively. Oxycodone requirements were higher on the second, third and fourth post-operative days ($P < 0.05$), than at other times. Simple analgesic use was constant throughout the post-operative period.

Median time to the first bowel action was 2 days (range 1–7). The mean pain score at this time was 4.8 (range 1–10), higher than at any other time ($P < 0.0001$). Pain scores with the first bowel action were not related to the day of the first bowel action ($P > 0.15$). Patients (53%) took oxycodone at this time and more oxycodone was used when the bowel action was later in the post-operative period ($P < 0.04$). One patient, who was non-compliant with aperient medication, did not open his bowels until the seventh post-operative day. He had severe pain requiring parenteral opioid analgesia and hospital admission.

The mean nausea scores and antiemetic use are shown in Table 3.

Nausea scores were low. On the second and third post-operative days those patients with higher nausea scores experienced more pain ($P < 0.002$) and took more oxycodone ($P < 0.03$). Only four (6%) patients

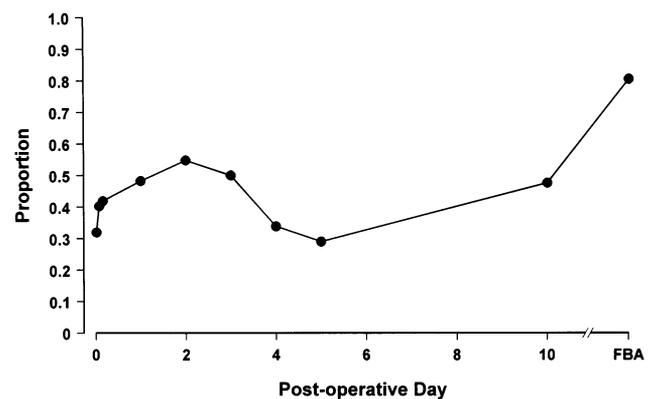


Fig. 2. Proportion of patients with pain scores > 2. FBA = first bowel action.

Table 2
Analgesic use

Time	Number	Fentanyl	Oxycodone	Simple	None
30 min	62	8	3	1	50
2 h	62	0	15	6	41
4 h	62	0	4	11	47
Day 1	62	0	11	11	40
Day 2	62	0	30	13	19
Day 3	62	0	35	18	9
Day 4	62	0	28	18	16
Day 5	62	0	14	17	31
Day 10	42	0	14	11	17
First bowel action	62	0	33	13	16

Table 3
VAS nausea scores and antiemetic use^a

Time	Number	Mean nausea score	Lower	Upper	Parenteral metoclopramide	Oral metoclopramide	None
30 min	62	1.29	0.98	1.7	4	0	58
2 h	62	1.44	1.16	1.79	6	2	54
4 h	62	1.32	1.1	1.59	1	3	58
Day 1	62	1.35	1.07	1.72	0	5	57
Day 2	62	1.8	1.36	2.42	0	15	47
Day 3	62	1.42	1.13	1.8	0	10	52
Day 4	62	1.19	1.01	1.42	0	7	55
Day 5	62	1.16	1.01	1.34	0	4	58
Day 10	42	1.21	0.88	1.82	n/a	n/a	n/a

^a n/a, Not available; lower, upper = lower and upper bound for a 95% confidence about the mean.

required parenteral metoclopramide post-operatively. This was not related to the administration of post-operative fentanyl. Antiemetic use was related to pain on day 2 ($P < 0.03$) and 4 ($P < 0.007$) but was not related to analgesic intake.

There was no relationship between pain and patient age or sex, whether they were from non-English speaking background or the number of haemorrhoidal complexes excised.

Seven of these patients required unanticipated overnight admissions for the following reasons:

1. pain, anxiety, pharmacy delay
2. pain, sweating
3. PONV, delayed voiding
4. PONV, delayed voiding
5. PONV
6. delayed voiding
7. nausea, language barrier

All patients were interviewed on day 30 post-operatively and patient satisfaction with their pain control is shown in Fig. 3.

Fifty-nine (95%) of the patients were satisfied with the post-operative pain management regimen. This level of satisfaction was not statistically related to the pain scores at the time of the first bowel action ($P > 0.9$) or to nausea scores ($P > 0.07$).

4. Discussion

Recovery from surgical haemorrhoidectomy may be very painful particularly at the time of the first post-operative bowel action. In this series, a wide variation in post-operative pain was seen. In general, however, pain was well controlled using a multimodal analgesic approach. Few patients required fentanyl in the recovery room and only one subsequently needed parenteral opioid. Sixty-one of the 62 patients (99%) required

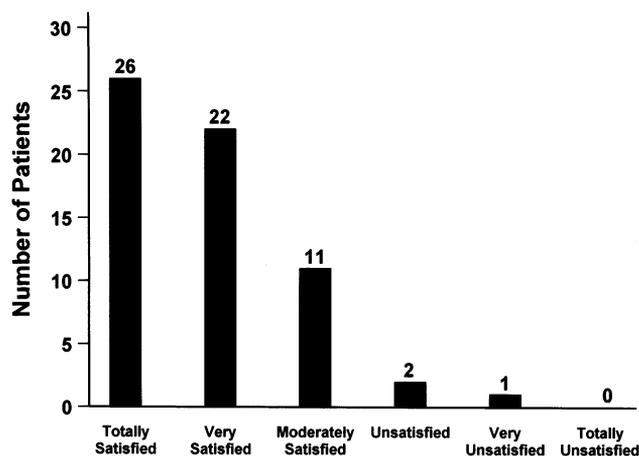


Fig. 3. Patient satisfaction with pain management.

neither parenteral analgesia, nor inpatient management at the time of the first bowel action.

Multi-model analgesic regimens, (the combination of two or more drugs and/or delivery systems to improve analgesia and minimise side effects) have shown benefit after surgery [9]. In particular the benefits of combining non-steroidal anti-inflammatory drugs, local anaesthesia and opioids are well-recognised [10]. Few have described such an approach for post-haemorrhoidectomy pain [11]. The success of the pain management approach on this series is reflected in the low mean pain scores and the high level of patient satisfaction.

Pain levels recorded on the second post-operative day were higher than that seen in the first 24 h. This may be due to the early analgesic effect of the pre-emptive local anaesthetic block. Pre-emptive analgesia is thought to inhibit peripheral nociceptive responses and prevent altered central that amplifies post-operative pain [12]. Infiltration of local anaesthesia for haemorrhoidectomy is controversial. Marsh et al. [13] found that bupivacaine confers no advantage but Morisaki et al. [14] showed that wound infiltration with lignocaine prolongs analgesia following haemorrhoidectomy. Caudal injection of bupivacaine has been shown to be superior to local injection, with patients experiencing significantly less pain 6 h after haemorrhoidectomy [15]. However, not all patients are suitable for caudal analgesia. Failure rates of 5–10% and delayed ambulation have been reported [15]. Spinal anaesthesia has been associated with a higher incidence of urinary retention compared with local infiltration [16]. In an effort to optimise patient advantages of early pain control in this series, we infiltrated local anaesthesia not only into the wounds but also into the ischiorectal fossae. The local anaesthetic thus interrupts the inferior haemorrhoidal nerve and the perineal branch of the fourth sacral nerve on each side. It should provide paralysis of the external sphincter and decreased sensation in the anal canal. The addition of this block would appear to confer specific advantages following haemorrhoidectomy, as our patients had low initial pain scores and analgesic requirements. This needs to be confirmed by further studies.

Increased pain after the fifth day was unexpected. It may be that infection plays a role in post-haemorrhoidectomy pain. Carapeti et al. [17], in a well-designed randomised placebo controlled trial, found metronidazole-reduced pain on day 5–7 after haemorrhoidectomy.

Opioid administration in the outpatient setting may increase post-operative nausea and vomiting. By adopting a multimodal approach to pain management and using prophylactic antiemetics, we anticipated that we would minimise opioid use and avoid this problem. Only 6% of patients required antiemetics in the recovery room, a considerably lower rate than that expected

from the literature [18]. Nausea scores, although not antiemetic use correlated with oxycodone usage. Nausea scores did not correlate with patient satisfaction regarding pain management.

Pre-operative patient education, focussing on pain management strategies can reduce the pain and distress of surgery [19]. Our positive approach to patients pre-operatively was meant to make patients felt confident that their pain would be well controlled. Hospital-based home nursing organisations are perceived as a valuable service with high patient and carer satisfaction as well as providing continuity of care [20]. We believe this involvement was important for the success of our project.

In summary, a wide variation in the level of pain after haemorrhoidectomy has been seen in this series. The pain of haemorrhoidectomy can be well controlled by a combination of adequate pre-operative education, pre-emptive analgesia and a multimodal post-operative analgesic regimen utilising standard medications and delivery systems.

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Ambulatory surgery for groin hernia: the Gilbert repair

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Abstract

The aim of this study was to evaluate the results of the Gilbert repair for primary treatment of indirect inguinal hernias performed as day cases. From September 1996 to September 1998, 145 patients who were admitted for ambulatory surgery underwent Gilbert tension-free repair for treatment of unilateral inguinal hernia. Sex, age, the American Society of Anaesthesiologists (ASA) preoperative assessment score, type of anaesthesia, operating time, postoperative recovery, postoperative pain, morbidity, mortality, recurrence, return to work and the normal daily activities were assessed. The mean follow-up was 21 months (range 12–36). Gilbert's classification, type 2 and 3 hernias were the most common. Spinal anaesthesia was used in 73% of patients. Mortality was zero. Four patients developed postoperative haematomas, two urinary retention, three seromas, and two wound infections. During the follow-up period, only two recurrences of hernia were noted (1.4%). In conclusion, these data show that Gilbert repair is a safe operation, which is simple to learn. It can be performed on an outpatient basis, with a low complication rate, a low level of pain and a short recovery period. Although it seems to have a low risk of recurrence, a long-term follow-up is needed. © 2000 Elsevier Science B.V. All rights reserved.

Keywords: Ambulatory surgery; Inguinal hernia; Gilbert technique; Tension free repair

1. Introduction

Inguinal hernia is one of the most common surgical conditions. Since the development of Bassini's technique in the late 19th century, many operative techniques have been described for inguinal herniorrhaphy. During the past 10 years, the rapid changes that have been developed in prosthetic materials, the trend towards outpatient procedures regional and local anaesthesia, and advances in laparoscopic techniques have meant that the surgical management of the groin hernia has undergone extensive reevaluation. There are three groups of operative procedures for the surgical treatment of hernias [1–8], the 'traditional' herniorrhaphies (Shouldice, Mc Vay, Bassini), the open tension-free procedure with implantation of a mesh (Lichtenstein, Gilbert, Rutkow), and the endoscopic procedure (trans-abdominal preperitoneal hernioplasty (TAPP) and total extraperitoneal hernioplasty (TEP)). Numerous studies have been done to demonstrate both the advantages

and the disadvantages of the individual operative procedures. However, the different types of repair must be compared not only with reference to recurrence and complication rates but also to socio-economic aspects, patient satisfaction, and cost-effectiveness of the particular procedure.

The aim of this study was to evaluate the results of the Gilbert repair for primary treatment of indirect inguinal hernias performed as day cases.

2. Material and methods

Between September 1996 and September 1998, 145 patients underwent a Gilbert tension-free hernioplasty for treatment of unilateral indirect hernia in the Ambulatory Surgery Unit of the University Hospital of La Princesa. The type of hernia was classified according to Gilbert's classification (Table 1) [9,10]. Only patients referred electively for repair of indirect inguinal hernias were included. Patients with incarcerated hernias or in need of emergency operation were excluded, as were patients with femoral hernias detected intraoperatively.

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Table 1
Gilbert classification of groin hernias [9,10]

Gilbert type	Description
1	Indirect inguinal hernia with a snug internal inguinal ring
2	Indirect inguinal hernia with moderately dilated internal ring less than 4 cm
3	Indirect inguinal hernia with a large dilated and distorted internal ring more than 4 cm
4	Direct inguinal hernia with full blow-out of the posterior wall. Internal ring intact; no peritoneal sac
5	Direct inguinal hernia. Diverticular defect of the posterior wall. Internal ring intact, no peritoneal sac

Table 2
Clinical details of the patients studied

<i>Sex</i>	
Men	126 (87%)
Women	19 (13%)
Years, mean (range)	42 (23–70)
<i>Type of hernia, number (%)</i>	
1	21 (14.4)
2	68 (46.9)
3	56 (38.6)
<i>Number (%) in ASA grade</i>	
I	76 (52.4)
II	67 (46.2)
III	2 (1.4)
<i>Anaesthesia</i>	
Spinal	106 (73%)
General with laryngeal mask	39 (27%)
Duration of operation, min (range)	35.35 (20–60)

Table 3
Postoperative complications after 145 outpatient hernia repairs

Haematoma or ecchymosis	4
Urinary retention	2
Seroma	3
Wound infection	2

The operations were performed in accordance with the descriptions in previous papers [5,11]. The hernia sac was fully separated from the cord structures and dissected up to the level of the internal ring and inverted into the abdomen without ligation. A cone-shaped plug was placed in the deep ring. The mesh, measuring 6 × 11 cm was composed of polypropylene (Marlex[®] or Prolene[®]). In type 1 y 2 hernias no suturing was necessary. In type 3 hernias one or two 2-0 prolene sutures were used at the internal ring either medial or lateral to the spermatic cord. The cord was replaced and the aponeurosis of the external oblique muscle was then closed over it with an absorbable suture.

All operations were performed in an ambulatory setting. Patients were admitted on the morning of surgery and discharged the same day if no complications developed. The following variables were recorded, sex, age, the American Society of Anaesthesiologists (ASA) preoperative assessment score, type of anaesthesia, operating time, postoperative recovery, postoperative pain, morbidity, mortality, recurrence, return to work and the normal daily activities.

All patients were given amoxicillin–clavulanic acid (2 g) intravenously as prophylaxis against infection. The degree of postoperative pain was assessed using a 10 cm visual analogue scale (VAS) on which 0, ‘no pain’; and 10, ‘worst possible pain’ at 12, 36, and 60 h after surgery.

At the end of the operation, 10 ml of 0.25% plain bupivacaine was injected over and 5 ml under the external aponeurosis for pain relief. For postoperative analgesia, magnessic metamizol was used intravenously when pain occurred, followed by additional doses by the oral route on request. Before leaving, the patient was given written information and analgesics for another 2–3 days.

Patients were examined postoperatively by a surgeon at 1 week, 6 months, 1 year and every year thereafter. The mean follow-up was 21 months (range 12–36).

3. Results

Clinical details of the patients studied are summarised in Table 2. Patients undergoing herniorrhaphy were mainly male, with a low ASA score. Type 2 and 3 were the most common types of hernia according to Gilbert’s classification. The mean operating time was 35.35 (20–60) min. Mean pain scores according to the VAS (0–10) were 2.41 at 12 h, 1.74 at 36 h and 1.56 at 60 h.

There was no mortality or major complications related to the operation or the anaesthetic. Table 3 contains a summary of the postoperative complications. Two patients needed help to empty the bladder after the operation. Four patients developed haematoma but none needed evacuation or reoperation. Three patients developed seroma and two patients wound infection, which required incision and drainage. In none was it necessary to remove the mesh. There were no instances of draining sinuses, testicular problems, long-term pain, cardiovascular problems, or plug erosion and migration. One hundred and thirty-six (93.97%) patients were discharged on the day of surgery. Complications that delayed discharge were mainly related to the anaesthesia (Table 4).

Two patients had a recurrence at follow-up within 1–3 years postoperatively, giving a recurrence rate of

1.4%. The first recurrence was diagnosed after about 8 months in a patient with a type 3 hernia. This recurrence was symptomatic and has been reoperated upon. The second recurrence was discovered at the 2 year follow-up when the inguinal canal was examined by the surgeon.

One hundred and twenty-two of the 145 patients were still working at the time of operation. Ninety-eight (80.3%) patients returned to work between 15 and 21 days and 24 (19.7%) between 21 and 30 days.

4. Discussion

Tension on the suture line represents the main aetiological factor for recurrent hernia. Suture lines under tension stimulate an inadequate fibroblastic response for healing with a weak scar, mainly when the suture lines are subject to the same forces that caused hernia [8]. With the introduction of polypropylene mesh Usher et al. [12] in 1959, it was possible to perform all hernia repairs avoiding undesired suture line tensions.

Inguinal mesh and plug hernioplasties have been performed using prostheses of different sizes and shapes, either sutured or not, to the tissues. Lichtenstein proposed a complete reinforcement of the inguinal floor with a large sheet of mesh, with adequate mesh tissue interface beyond the boundary of the inguinal floor and the creation of a new internal ring made of prosthesis [2]. Gilbert extended the concept of tension-free hernioplasty to the use of a combination mesh plug and sutureless onlay mesh patch [5] initially used only for the treatment of small to moderate-sized indirect inguinal hernias. The 'second version' of his technique extends the plug repair to type 3 hernias and abandons the patch for all plug repairs [6]. Rutkow proposed the sutureless plug and patch techniques [3,4,13] and a preformed polypropylene mesh plug (Perfix) [14] is now commercially available in various sizes and readily conforms to the configuration of most defects. Recently, Gilbert et al. [15] have proposed a new bilayer patch device with three attached components, an underlay patch that provides a posterior mesh repair; a connector (plug); and an onlay patch that covers the posterior wall.

Table 4
Complications that delayed discharge after inguinal hernioplasty

<i>Related to the operation</i>	
Haematoma	1
Local pain	1
<i>Related to the anaesthesia</i>	
Nausea and vomiting	3
Dizziness	3
Diminished sensation of the lower extremity	1

With the use of the Gilbert repair, two major advantages might be gained; first, it requires less dissection, so a haematoma and seroma formation and patient discomfort are reduced, the chance of nerve injury is decreased, and inadvertent puncture of blood vessels by a needle is avoided; second it can be learned rapidly and can be used in standardised fashion in the repair of virtually any groin hernia.

It is a sutureless technique that not only avoids tissue tension, but fixation is achieved by intra-abdominal pressure, the same force that caused the hernia. A complete dissection of the peritoneal indirect sac well into the iliac fossa is essential to avoid early failure [6].

In other techniques, such as the Shouldice hernioplasty, meticulous dissection and precise repair are desirable for a satisfactory outcome following hernia repair [16]. In the laparoscopic approach, there is a surgeon's learning curve of at least 50 cases [17]. In the Gilbert repair, these details may not be essential for a successful tension-free hernioplasty. It is easy to learn and it can be done by younger and less experienced surgeons in training [18].

Tension-free hernioplasties are said to produce less operative pain than conventional hernioplasties. In this study, postoperative pain has been minimal. Local infiltration with long-acting local anaesthetics has proven helpful [19]. In the majority of the patients no analgesics were administered within the first 24 h after operation. In the remainder only traditional analgesics were given.

In all our patients, we used antibiotics as prophylaxis against infection. Many surgeons use prophylactic antibiotics when mesh repair is used. However, there are conflicting studies regarding their routine use and costs. Taylor et al. [20] in a multicentre, prospective, double-blind study of 619 patients undergoing groin hernia repair concluded that antibiotic prophylaxis was of no benefit to the patients. Gilbert and Felton [21], in a similar study of 2493 hernia repairs with mesh, reported that the costs incurred for routine prophylactic treatment is not justified because the infection rate was only about 1%. On the other hand, Lazorthes et al. [22] in 324 patients showed that the cost of prophylactic antibiotics was ten times less than the cost of treatment of wound complications in the group that did not receive prophylactic antibiotics.

The data presented in this study confirms the experience of others reported in the literature of a low complication rate. A randomised prospective study comparing the complications of the Bassini repair and laparoscopic herniorrhaphy observed an overall complication rate of 21% for the Bassini technique compared with 8% for the laparoscopic approach [7]. Amid et al. [23] and Rutkow and Robbins [13] have both published complication rates of less than 1% with open mesh plug repairs in their specialised centres.

Several studies have reported a recurrence rate of 4.6–6.6% after the Shouldice repair, 2.3–8.6% after the Bassini repair, and 8.8–11.2% with Cooper's ligament repair [1,2,8,16]. In one study of 1252 tension-free hernioplasties [18] the recurrence rate was 0.5% and the complication rate of 1.2%.

Following the Cooper ligament repair and the Shouldice repair, most surgeons recommend patients to avoid vigorous activity or heavy lifting for 4–6 weeks [1]. However, Rutkow and Robbins [13] for the mesh plug repair have recommended resumption of most manual labour in 2 weeks and a 3-week layoff period for individuals who have very heavy work.

In conclusion, the tension-free repair described by Gilbert is a safe operation, simple to learn, can be performed on an outpatient basis, with a low complication rate, a low level to pain and a short recovery period. The Gilbert technique is an ideal hernia repair with low costs, high patient comfort and it seems to have a low risk of recurrence. However, the results of this study must be seen in the light of a short follow-up time and only after a truly long-term follow-up the validity and the recurrence rate of this technique can be determined.

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One-week recovery profiles after spinal, propofol, isoflurane and desflurane anaesthesia in ambulatory knee arthroscopy

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Abstract

There are comprehensive findings on the immediate recovery of patients from different types of anaesthesia, but more information is needed on how patients manage at home after ambulatory surgery. One hundred and seventy-three elective knee arthroscopy patients were randomised into four different anaesthesia groups to receive either spinal anaesthesia (SA) with 5% lidocaine or general anaesthesia (GA) with propofol infusion, isoflurane inhalation or desflurane inhalation. The patients were interviewed over the phone on the next day and asked to complete a questionnaire after 1 week. One hundred and sixty-eight patients (97%) were reached by phone. The questionnaire was returned by 163 patients (94%). After 24 h, all the patients were satisfied with the type of anaesthesia they had received, but 2% of the SA patients would have chosen GA and 4.3% of the GA patients would have chosen SA for the next operation. Based on the questionnaires returned after 1 week, 8.3% of the SA patients would have wanted to have GA, and 4.7% of the GA patients would have wanted to have SA in the future. The incidence of nausea (4.2%) and vomiting (1.8%) was very low in the whole series, with no differences between the anaesthesia groups. Headache after 24 h was experienced by 15.7% of the SA and 10.3% of the GA patients. After 1 week, SA patients reported headache upon standing in 13.5% of the cases, backache in 36.5% and lower leg pain in 59.6%. The corresponding figures for GA patients were 4.5, 9.9 and 39.6% ($P < 0.05$). In spite of the good immediate recovery profile in the all anaesthesia groups, the fact that SA patients reported a higher incidence of headache, backache and lower leg pain after 1 week may be signs of post spinal headache and transient neurologic symptoms (TNS). For overall patient comfort, GA might be a better anaesthetic choice in ambulatory surgery. © 2000 Elsevier Science B.V. All rights reserved.

Keywords: Ambulatory anaesthesia; Desflurane; Home readiness; Isoflurane; Knee arthroscopy; Propofol; Recovery; Spinal

1. Introduction

Knee arthroscopy is one of the most common ambulatory orthopaedic procedures. In Finland, there is a long and established tradition of doing lower leg operations under regional anaesthesia. This practice has also been adopted for ambulatory surgery. Spinal anaesthesia (SA) has been marketed to patients as a pleasant technique that avoids the discomforts of general anaesthesia (GA) — such as being sleepy after the operation, having nausea and vomiting or waking up with pain. The time spent in the recovery unit before discharge has been found to be over three times longer with SA

compared with GA [1]. This will have a major impact on the patient turnover in busy post anaesthesia care units. This fact suggested to us the need to study patient well being at home after different types of anaesthesia, mainly to find justification for giving up the tradition of regional anaesthesia and switching to GA with new short-acting agents.

2. Methods

2.1. Patients and methods of anaesthesia

One hundred and seventy-three elective patients (ASA I or ASA II, age between 18 and 65 years) were randomised into four different anaesthesia groups, SA ($n = 55$) with 5% lidocaine or GA with propofol induc-

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tion followed by propofol infusion (PA, $n = 32$), isoflurane inhalation (IA, $n = 38$) or desflurane inhalation anaesthesia (DA, $n = 48$). Informed consent was obtained from each participant, and the protocol was approved by the Ethics Committee of the Medical Faculty, University of Oulu.

SA was given with lidocaine 50 mg/ml in 7.5% glucose 1.5–2.0 ml through a sharp-point 27-gauge needle. The block was performed laterally through the lumbar III/IV space with the patient lying on the side to be operated. The PA patients were anaesthetised with propofol, starting with a bolus 2 mg/kg i.v. followed by continuous infusion of 12 mg/kg per h for the first 15 min, 9 mg/kg per h for the next 15 min and, when necessary, 6 mg/kg per h until the end of surgery. The IA patients were anaesthetised with isoflurane after a propofol bolus of 2 mg/kg. Isoflurane was given in rising concentrations up to 1 MAC before the skin incision. After that, the anaesthesia was maintained with isoflurane at the 1 MAC level. The DA patients were anaesthetised with desflurane after the same induction dose of propofol as above.

Desflurane inhalation was started at doses of 6% for patients aged over 30 and 7.25% for those less than 30-years-old. The goal was to reach 1 MAC before the skin incision and to continue at that level during the operation. All the GA patients were relaxed with a single bolus of mivacurine 0.3 mg/kg and intubated. The patients were normoventilated with 30% oxygen in air. The fresh gas flow was constantly 2 l/min in all the GA groups. Alfentanil 0.5 mg was given to all groups before starting the anaesthesia. During the anaesthesia, alfentanil 0.5 mg was given for pain when needed (systolic blood pressure or heart rate rise of 20% over the baseline value). Ketoprofen (100 mg) diluted in 20 ml of 0.9% NaCl was given to all groups before the beginning of the operation. Postoperatively, all patients received 100 mg of ketoprofen i.v. or p.o. three times per 24 h and 0.05 mg of fentanyl i.v., when necessary, for postoperative pain relief. The following criteria for discharge were applied in all groups, alert; stable vital signs; able to ambulate; able to take oral fluids; no nausea; and pain controllable by oral medication [2].

Table 1
Demographic characteristics^a

	Spinal	Propofol	Isoflurane	Desflurane
Number of patients (n)	55	32	38	48
Age (years)	41 (16–63)	37 (17–65)	41.5 (17–61)	37.5 (16–64)
Men/women (%)	46/54	38/62	62/38	63/37
Height (cm)	170 (153–187)	170 (153–183)	173 (153–184)	175.5 (155–186)
Weight (kg)	75 (46–95)	72 (51–95)	75.5 (52–95)	75 (54–95)

^a Values are presented as medians and range (minimum–maximum).

2.2. Recovery profile (after 24 h and after 1 week)

On the following day, the patients were asked to ascertain their nausea after leaving the unit on an 11-point rating scale (0, no nausea; 10, worst possible nausea). The intensity of pain was evaluated as an average during the 24-h period on an 11-point rating scale (0, no pain, 10 worst pain imaginable). The patients were also asked whether they had headache (in a supine or upright position), difficulties in micturation or abnormal sleepiness after their discharge. The patient's overall satisfaction with their general condition during the first 24 h after surgery, the timing of discharge, the anaesthesia and the postoperative pain treatment as well as their satisfaction with the staff (surgeon, anaesthesiologist and nurses) were all evaluated on an 11-point rating scale. The patients were also asked if they would have a similar procedure done in the future in the ambulatory setting and if they would have the same type of anaesthesia.

After 1 week, the patients were asked to complete a questionnaire. They were asked about their general condition on the way home (good, moderate, bad), pain on the way home (severe, moderate, mild, none), discomfort during the first week (headache, backache, leg pain) and preferences for possible future anaesthesia.

2.3. Statistics

Tests of normality (Kolmogorov–Smirnov and Shapiro–Wilk) were used. The Kruskal–Wallis test was used for the non-parametric variables and analysis of variation (ANOVA) for the parametric variables (posthoc Scheffe test). $P < 0.05$ was considered to be significant.

3. Results

Of the 173 patients 168 (97%) were reached by phone and 163 (94%) returned the questionnaire. The demographic data of the groups are shown in Table 1. The study groups were comparable with regard to age and weight. In all groups, most of the patients had only minimal or no pain on the way home and during the

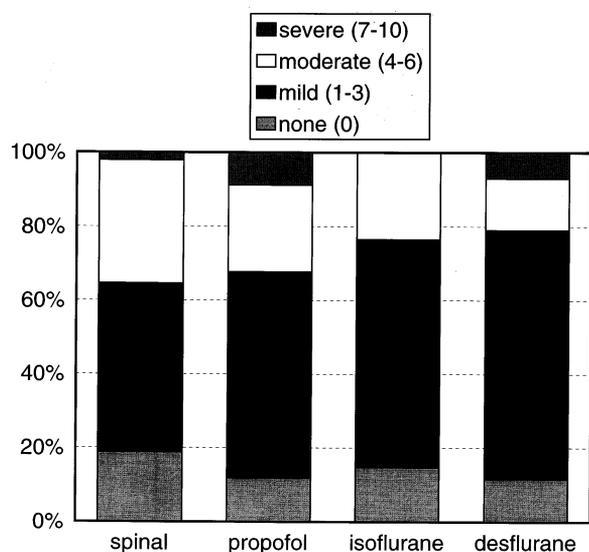


Fig. 1. Pain at home. Severity in visual analogue scale (VAS) during the first 24 h.

Table 2

The incidence of headache during the first 24 h after surgery (24 h) and the incidence of postural headache during the first week after surgery (first week)

	Spinal (%)	Propofol (%)	Isoflurane (%)	Desflurane (%)
24 h	15.7	3.1	8.1	16.7
First week	13.5	3.2	8.8	2.2

first 24 h postoperatively (Fig. 1). All the patients found their condition moderate or good on the way to home even though the distance travelled ranged up to 270 km. The level of pain was similar between the groups during the first 24 h after the operation. Headache after 24 h was experienced by 15.7% of the SA and 10.3% of the GA patients. After 1 week, SA patients had experienced headache when standing in 13.5% of the cases, backache in 36.5% and lower leg pain in 59.6%. The corresponding figures for GA patients were 4.5, 9.9 and

Table 3

The patient's satisfaction with the timing of discharge, the anaesthesia, the postoperative pain treatment and the staff (11-point rating scale; 0, dissatisfied; 10, satisfied)^a

Rating scale	SA		PA		IA		DA	
	5–9	10	5–9	10	5–9	10	5–9	10
Satisfied with the timing of discharge (%)	21.6	78.4	16.7	83.3	21.6	78.4	25.5	74.5
Satisfied with the anaesthesia (%)	29.4	70.6	3.1	96.9	13.5	86.5	4.2	95.8
Satisfied with the postoperative pain treatment (%)	22.0	78.0	15.6	84.4	27.8	72.2	10.4	89.6
Satisfied with the anaesthesiologist (%)	11.8	88.2	9.4	90.6	18.9	81.1	14.6	85.4
Satisfied with the nurses (%)	11.8	88.2	9.4	90.6	21.6	78.4	12.5	87.5
Satisfied with the surgeon (%)	30.0	70.0	18.7	81.3	32.4	67.6	31.2	68.8

^a There were no rating scale values 0–4 in any of groups.

39.6% ($P < 0.05$). The incidence of headache during the first 24 h after surgery and the incidence of postural headache during the first week after surgery are shown in Table 2.

After 24 h, all the patients were satisfied with the type of anaesthesia they had received, but 2% of the SA patients would have chosen GA and 4.3% of the GA patients would have chosen SA for the next operation. The patient's satisfaction with the timing of discharge, the anaesthesia, the postoperative pain treatment and the staff are shown in Table 3. There were two common reasons for the dissatisfaction of the patients, the patients had not seen the surgeon postoperatively; and missed information given by the surgeon. Based on the questionnaires returned after 1 week, 8.3% of the SA patients wanted to have GA and 4.7% of the GA patients wanted to have SA next time in similar procedure. SA patients (98.0%) and 95.7% of the GA patients would have ambulatory surgery in the future. The incidence of nausea (4.2%) and vomiting (1.8%) were very low in the whole series, with no differences between the anaesthesia groups. The SA patients (17.6%) and 14.8% of the GA patients needed medical consultations by phone or by visiting a general practitioner during the first week at home. None of the patients were rehospitalised. Two patients from the SA group and two patients from the IA group had difficulties with micturition during the first 24 h.

4. Discussion

The principal result of the study was that, after ambulatory knee surgery, the patients did well and were highly satisfied with both SA and the types of GA studied here. There was a tendency for lower satisfaction with the surgeon than other members in the ambulatory surgery unit. Patients felt that they got insufficient information from the busy surgeon. The surgeon seldom visited patients postoperatively. The incidence of readmissions after discharge from an am-

bulatory surgery unit is reported to be 3% [3]. None of the present patients were rehospitalised, but the need for medical consultation was obvious. A prospective monitoring programme should include patient follow-up for at least 1 week postoperatively and special attention should be paid into the recovery period that patients get enough information from the surgeon.

The general level of pain was low after the first few hours postoperatively [1], and the pain level continued to be low in all groups during the first week. The spinal patients had a higher incidence of headache, backache and lower leg pain after 1 week, and these may be signs of post spinal headache and transient neurologic symptoms (TNS) [4–6]. The tendency in the DA group to have headache during the first 24 h may be due the fact that desflurane is a cerebral arteriolar dilatator and may result in intracranial pressure changes in vulnerable patients [7]. We used 75–100 mg of lidocain in the SA group and there are studies recommending lower doses of lidocain [8]. The incidence of leg pain was relatively high in the GA groups, suggesting that TNS does not alone explain the leg pain. One cause for the leg pain may be the effect of the patient's position [9] and the blood-free limb due to external pressure.

The total frequency and severity of nausea in this study were lower compared with the earlier studies [10–12]. One reason for the low incidence of nausea may be the limited need for parenteral opioids for postoperative pain relief in ambulatory knee arthroscopy [13].

5. Conclusions

Morbidity after outpatient knee arthroscopy is low. The patients do well and are highly satisfied with both SA and GA. The lower incidence of headache, backache and leg pain favours the use of GA.

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Day surgery for older people (70 +): selection versus outcome effects

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Abstract

As length of Australian hospital stays decreased, concerns were raised about benefits of shorter stays for older people. We investigated personal characteristics, perceived health outcomes (SF-36) and service use of day-only and other patients aged 70 + , at one and 12 weeks after hospital discharge. Day-only patients were younger, had better self-reported health, were selected for orthopaedic, gastrointestinal and ophthalmic procedures and used similar levels of formal and informal services after discharge as people with longer stays. There was no evidence of ill effects of day surgery for older people, but improved selection and information giving procedures can improve outcomes. © 2000 Elsevier Science B.V. All rights reserved.

Keywords: Day surgery; Australia; Day-only patients

1. Introduction

Day surgery¹ has become the dominant modality in surgical care in the United States of America, Canada, The Netherlands, New Zealand, the United Kingdom, European countries, and Australia amongst many countries [2,3,5–12]. In the United States of America, 80–85% of all elective surgery is conducted as outpatient or day surgery procedures [13]. In 1997, the government in the United Kingdom was aiming to increase their level of day surgery to 50% of elective surgery by the year 2000 [10].

The rate of day surgery in Australia lags behind many OECD countries [3]. Only 34.2% of total surgical admissions in the Australia's largest state, New South

Wales, were same day in 1996/1997 [4]. In regions of interest to this study, the South Western Sydney, the South Eastern Sydney, and the rural Macquarie Area Health Services had, respectively, 49.7, 47.2, and 40.1% of total separations as same day cases in 1996/1997. The policy for improved delivery of same day services in New South Wales aims to provide 60% of all surgery on a same day basis by 2001. Older people have a much higher probability of hospital admission than younger people. So the risks and benefits of expanding day surgery for them deserves detailed investigation.

There is evidence that day surgery reduces health expenditure by patients and government, increases satisfaction of surgeons, and facilitates recruitment and retention of staff, especially those with outside commitments [2,9,13–19]. It may also reduce the risk of patient exposure to hospital pathogens, decrease waiting lists, increase patient satisfaction by the convenience surgery facilities, decrease anxiety of patients, families, and friends by allowing others to be present during preoperative and postoperative periods, and minimise disruption to working and domestic life [2,10,15,17–19]. However, concern has been expressed about the impacts of shorter lengths of stay for older people and for community services who respond to their needs when they return home [20].

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¹ Day surgery or procedure is defined as “an operation/procedure, excluding an office/surgery or outpatient operation/procedure, where the patient would normally be discharged on the same working day” [1]. Minor operative procedures undertaken in outpatient or accident and emergency departments are excluded from the definition of day surgery [2,3]. Common day procedures in New South Wales, for example, include gastroscopy, colonoscopy, cataract extraction, release of carpal tunnel, and arthroscopy [4].

The critical issue for patient benefit in day surgery is the selection of appropriate cases. Careful selection also helps to minimise overnight stays after the operation and the costs of cancellation of treatment on the day of surgery [19]. Operations that take more than 60 min are generally not suitable for day surgery [2]. The Royal College of Surgeons [2] recommends a pro forma to be used for patient selection with strict criteria for social circumstances, medical history, systemic disease, medication, risk behaviours, procedures, and weight of patients [2,17].

The Royal College of Surgeons [2] suggested that the elderly, because of a higher risk of morbidity, should be excluded from day surgery procedures requiring general anaesthetic [21]. Elderly patients may also have elderly carers and poor home support systems, thus, precluding procedures being undertaken on a day basis. Some suggest an upper biological, not chronological, age limit around 65–70 years old [2,17,21]. Other literature suggests that the day surgery is suitable for older people if they meet other organ system criteria and have a supportive home environment [13,22]. For example, elderly patients who are classified as high risk patients (The American Society of Anaesthesiologists Classification of Physical Status Class III or IV) with important comorbidity have been identified as suitable for lower urinary tract instrumentation as a day case, under a well judged general anaesthetic. Age on its own is not the sole factor contributing to complications and recovery processes after day surgery [23–25], which complicates the attribution of factors to outcomes. A stay in hospital can be a disorienting and traumatic experience for the elderly [21], and they may benefit from a return to familiar surroundings where they feel more comfortable and at ease. Day-only and short-stays are, therefore, important options in an ageing society.

Despite the public concerns about the impacts of a shorter length of stay for older people and their high utilisation of community services after discharge, there is little outcome research on older people who use day surgery. Assumptions about the impacts of shorter length of stay for younger people do not necessarily translate to the elderly. Community care is an essential feature of appropriate follow-up care for the elderly, but there is as yet no evidence that shorter hospital stays increase actual workloads [26,27]. In addition, cognitive impairments associated with ageing may affect comprehension of information about post surgical recovery, and appropriate health-care practices during convalescence. Current evidence is neutral or positive on older Australians' acceptance of day surgery [27].

Outcomes of day surgery have been measured by mortality, unanticipated hospital transfer [28,29], readmissions following discharge [13,22], major morbidity, and frequency of minor side effects on patients follow-up [29,30]. To date few studies have reported quality of

life outcomes of day surgery such as resumption of patient's activity of daily living primarily limited by general malaise and surgical discomfort [30], and patient satisfaction [13,30–32]. The quality of life outcomes are very important for older people returning home from a day admission. There also is a paucity of studies investigating community service use after day surgery [26].

The aim of this study is to address this gap in knowledge by collecting comprehensive evidence of characteristics and outcomes for older people following day surgery. We examined demographic, clinical, and social characteristics of day-only and non-day-only patients aged 70 years and above to determine the characteristics for selecting patients for surgery on a day basis. We also investigated the difference in health outcomes reflected by the Medical Outcomes Study's Short Form 36 (SF-36) scores and community service use during 12 weeks after discharge between day-only and non-day-only patients.

2. Methods and subjects

Data were collected during 1997 in a study of post-acute care outcomes for older people from four hospitals in Campbelltown, Fairfield, Sutherland, and Dubbo in New South Wales (Australia). Campbelltown is a city on the urban fringe of Sydney with a high aboriginal population, and Fairfield is an outer city area with a large population of non-English speaking background (NESB) people [33,34]. Both cities are in the South Western Sydney Area Health Service [35]. Sutherland is an older suburban area in the South Eastern Sydney Area Health Service [34,35]. Dubbo is a regional country centre in the Macquarie Area Health Service serving a rural and remote population. The multiple sites enabled us to investigate different sex, socio-economic, and disadvantaged groups (including people from rural areas, NESB, and aboriginal backgrounds). Subjects were interviewed in person upon their consent immediately prior to discharge from hospital and by telephone after 1 and 12 weeks post discharge. Direct and telephonic interviews resulted in fewer missing data on the SF-36 items compared with self-completion [36]. The questions related to the SF-36 scores and formal and informal care received referred to the 1-week periods prior to the interviews. The questions related to having visited a doctor or received community care services referred to a period of 12 weeks after discharge.

Participants were the people aged 70 years and above who were discharged from each hospital. As such, they represented a snapshot of typical admissions and discharges of people aged 70 years and above from the four sites, and incorporated in-patient and day-stay

patients. The patients recruited from Campbelltown, Sutherland, and Dubbo were sufficiently proficient in English to be interviewed without an interpreter. The patients recruited from Fairfield were proficient either in English, Vietnamese, or Italian and were interviewed in one of these languages. Patients recruited from all of the four sites were cognitively and physically able to complete interviews. A total of 579 people participated in the face-to-face interview. This decreased to 440 when it came to the people who completed both face-to-face interview and the telephonic interview after 1 week of discharge, and subsequently decreased to 376 when came to those who completed all the three interviews.

2.1. Measures

SF-36 is a standard self-reported measure of health status validated in Australia [37,38] with Australian population norms [39]. While the SF-36 has been used among elderly patients in hospital outpatient and general practice settings in the United Kingdom [40], it is used here for the first time as an outcomes measure in day surgery. The responsiveness of the SF-36 for the same individuals over time in older people is also investigated for the first time in a day-surgery setting.

Other informations used in the analysis include age, sex, educational level, whether the person lives alone or not, income, whether the person has private health insurance or not, whether the person has a pet or not, languages spoken at home, diagnosis, and service use represented by visits to doctors, utilisation of community care services, and formal and informal assistance received. Statistical analyses were conducted using the Statistical Package for Social Sciences (SPSS) for Windows 7.5.

3. Results

One hundred and fifty-eight patients stayed at the hospital for 1 day while 420 patients stayed for more than 1 day. The mean age for the day-only patients was 74.6 years, 4.1 years lower than the mean age for the non-day-only patients, 78.7 years ($P < 0.01$). There were more day-only patients between the age of 75 and 79 and fewer day-only patients who were aged 80 and above compared with non-day-only patients ($P < 0.01$). There was no significant difference between day-only and non-day-only patients in relation to gender, education levels, living situation, income, insurance, possession of pets, and languages spoken at home (all $P > 0.05$).

The largest diagnostic categories for day-only patients were gastrointestinal, ophthalmic, and orthopaedic procedures. The three largest diagnostic categories and the day-only status at the hospital were related. There were more day-only patients for gastrointestinal and ophthalmic procedures, and fewer day-only patients for orthopaedic procedures ($P < 0.01$). In the present study, 94, 89, and 80% of the colonoscopy, gastroscopy, and colonoscopy/gastroscopy procedures, which were the three major day-only gastrointestinal procedures, were undertaken as day cases. The three most common diagnoses for non-day-only gastrointestinal patients were laparoscopic cholecystectomy, abdominal pain, and diverticulitis.

Cataract extraction was the major ophthalmic procedure undertaken as a day case. Ninety-two percent of 39 patients underwent cataract extraction alone on a same-day basis. There were only seven non-day-only ophthalmic patients, and four of these patients also underwent cataract extraction alone. There were three arthroscopy, three carpal tunnel and two toe surgery day-only orthopaedic patients. There were also one arthroscopy, one carpal tunnel and no toe surgery non-day-only orthopaedic patients. Knee replacement, a neck of femur procedure, and total hip replacement were the three common non-day-only orthopaedic procedures. None of these procedures was undertaken as a day case.

The demographic, clinical, and social characteristics were introduced into a logistic regression model in forward stepwise fashion, yielding a progressively enlarging model (Table 1). Only age and diagnostic category variables were included in the final model. Variables for social characteristics were not included in the final model with the likelihood ratio test criterion of 0.05. The odds of undergoing gastrointestinal and ophthalmic procedures as a day case increased by a factor of 8.3 and 63.8, respectively, relative to all other diagnoses apart from orthopaedic, gastrointestinal and ophthalmic procedures. On the other hand, the odds of undergoing procedures on a day basis for people aged

Table 1
Logistic regression model for factors contributing to patients undergoing day surgery procedures^a

Factors	Odds ratio	Significance
Diagnosis		
Orthopaedic	1.6	0.17
Gastrointestinal	8.3	<0.01
Ophthalmic	63.8	<0.01
Age		
75–79	1.0	0.95
80+	0.4	<0.01

^a Variables dropped in the forward stepwise regression procedure were gender, income, education level, private health insurance, and pet ownership.

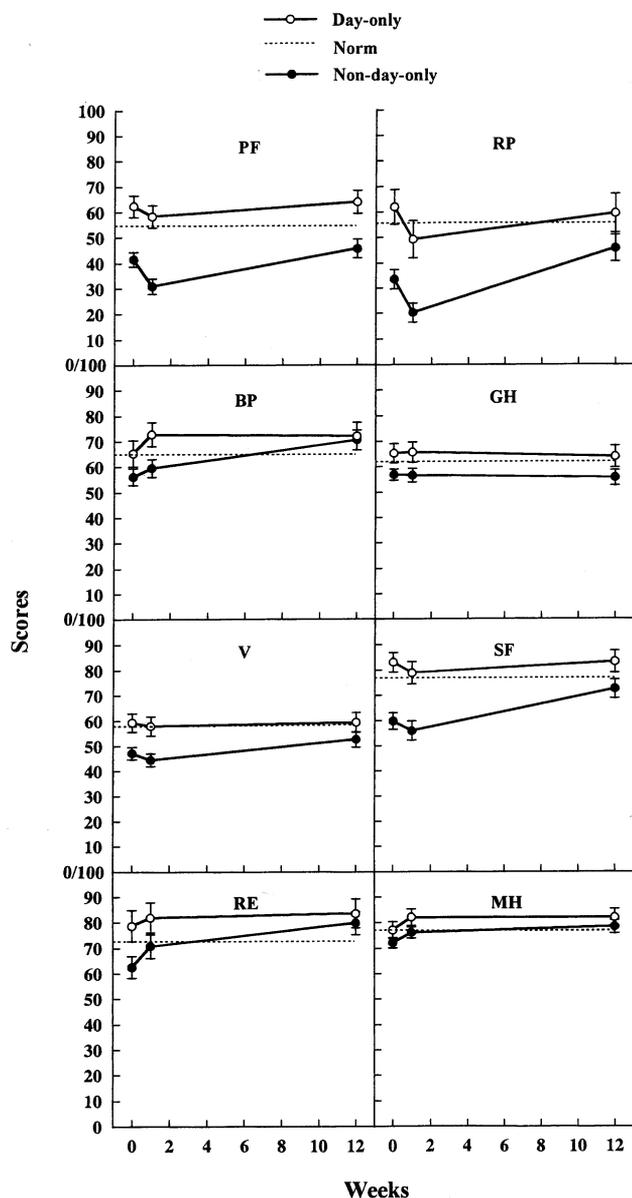


Fig. 1. Mean scores and S.E.M. for the SF-36 subscales across time for day-only and non-day-only patients aged 70 and above with the Australian population norm [41] for people aged 75 and over. The eight subscales of the SF-36 are physical functioning (PF), role limitations due to physical health problems (RP), body pain (BP), general health (GH), vitality composed of energy and fatigue (V), social functioning (SF), role limitations due to emotional problems (RE) and general mental health composed of psychological distress and psychological well-being (MH) [36,42]. The scores on each of these eight subscales range from 0 to 100, and a higher score on each scale indicates a better health status or no limitations. For example, a score of 100 physical functioning scale indicates that the person perceives that he/she is functioning well physically.

80 and above decreased by a factor of 0.4 relative to people aged between 70 and 74.

There was a significant difference between day-only and non-day-only patients for all eight subscales of the SF-36 (all $P < 0.05$; Fig. 1). The scores for each sub-

scale for day-only patients were higher than those for non-day-only patients across contacts, thus indicating better health across each subscale for day-stay patients.

There was a significant quadratic trend across contacts for physical functioning, role-limitations physical, vitality, and social functioning scores (all $P < 0.01$; Fig. 1). The physical functioning, role-limitations physical, vitality, and social functioning scores were higher at discharge and 12 weeks after discharge than at 1 week after discharge. There was also a significant interaction between the quadratic trend and day-only status for physical functioning, role limitations-physical, vitality, and social functioning scores (all $P < 0.05$; Fig. 1). The decrease in physical functioning, role limitations-physical, vitality, and social functioning scores 1 week after discharge compared with discharge and 12 weeks after discharge was greater in non-day-only patients than in day-only patients. The physical functioning, role limitations-physical, vitality, and social functioning scores for day-only patients showed little decrease at 1 week after discharge compared with discharge and 12 weeks after discharge.

There was a significant linear trend across contacts for body pain, role limitations-emotional, mental health, and general health scores (all $P < 0.05$; Fig. 1). The body pain, role limitations-emotional, and mental health scores increased while the general health scores decreased across contacts. There was a significant interaction between the linear trend and day-only status in role limitations-emotional scores across contacts ($P = 0.03$; Fig. 1). The increase in role limitations-emotional scores across contacts for non-day-only patients was more substantial compared with that for day-only patients.

There was no evidence to suggest that day-only patients visited doctors more often or received more community care services than non-day-only patients during a period of 12 weeks after discharge ($P > 0.05$ for both). Both day-only and non-day-only patients received on average 1.8 h of formal help per week both at 1 week and 12 weeks after discharge. Both day-only and non-day-only patients received 17.4 h of informal help per week at 1 week after discharge. The amount of informal help received by both day-only and non-day-only patients decreased to 16.0 h per week at 12 weeks after discharge ($P = 0.03$).

4. Discussion

Day-only older patients appear to be selected on the basis of age, procedure and health status. They were about 4.1 year younger on average, consistent with the Audit Commission Report [43] but not with the study by Fan et al. [14] who examined cataract surgery exclusively. Low numbers undergoing non-day-only cataract

surgery in this study do not allow further comparison with the study by Fan et al. [14]. Health problems, such as circulatory disease, and social support factors, such as living alone, have been shown to influence patients' choice of day surgery [14]. While older people expect more problems in these areas, age per se should not be considered to be an exclusion factor on practical or ethical grounds for day surgery. Better criteria for selecting older people, by focusing on conditions and the environment of the patients and not solely on their chronological age, may increase day surgery rates observed here and improve benefits to patients.

Day-only patients were also selected on the basis of need for gastrointestinal and ophthalmic procedures. The percentages of the same day separations in public hospitals between 1996 and 1997 in Australia have been reported as 71 for gastrointestinal, and 61 for ophthalmic procedures [5]. For example, diagnostic procedures on small intestine and large intestine, and extracapsular extraction of lens by fragmentation and aspiration technique were conducted on the same day 79 and 68%, respectively, in public hospitals during 1996 and 1997 in Australia. The high proportion of older day-only patients undergoing gastrointestinal and ophthalmic procedures compared with non-day-only patients in the present study was consistent with the high proportions of the same day separations in public hospitals. A key issue with the growth in numbers of day-only procedures for the elderly people is whether they substitute for more expensive in-patient procedures or simply increase numbers of procedures undertaken. An increase in procedures without substitution may be justified when there are measurable gains for older people in health and independence.

The characteristics of patients undergoing day surgery introduced in logistic regression analysis were gender, age, diagnosis, income, levels of education, private health insurance cover, and ownership of pets. Age and diagnosis were the significant predictors for patients undergoing day surgery, consistent with our univariate analysis. The absence of social class and economic factors is a positive result for the equity of access in Australia's heavily public-funded health system.

On a well validated, multi-dimensional measure of health status, the SF-36, day-only patients had consistently better health than non-day-only patients. Day-only patients also generally rate their health better than the population norm for people aged 75 and above [41], whereas non-day-only patients generally rate their health lower. On three domains, body pain, role limitations-emotional, and mental health, non-day-only patients recovered to report scores higher than the population norm, but still lower than the day-only mean. It is worthy of note that two of these three measures relate to mental health more than physical

health. Thus, relatively healthy persons are selected for day-only procedures but non-day-only patients recover mentally to near the population norm while their physical health remains relatively poor.

The drop in the SF-36 scores immediately after discharge is the characteristic behaviour for self-report measures [44]. Day-only patients also showed less of a drop in rates at 1 week after discharge on physical functioning, role limitations-physical, vitality and social functioning. This may be due to more invasive procedures for non-day-only patients, however, the patterns appear to be more complex for body pain, general health, role limitations-emotional, and mental health. The SF-36 is clearly responsive to changes over time in health status of older people.

Swan et al. [31] and Jackson et al. [45] also found that moderate levels of symptom distress and reduced functional status were common 1 week after surgery especially with patients who underwent hernia procedures. The drop in patients' perception of physical functioning, impact of physical health on their roles, vitality, and social functioning 1 week after discharge compared with that at the time of discharge, might be due to their inadequate education of patients on what to expect after surgery, thereby causing discrepancy between their expectation and actual recovery. Patients, for example, are better prepared to deal with minor side effects causing disruption to their normal activities after day surgery if they are informed about this issue with written instructions on how to handle them prior to discharge [13].

In previous studies, a prospective audit of short-stay patients, who underwent general surgery, revealed that they were highly satisfied with the surgical service but were dissatisfied with communication between staff and patients [46]. Forty-nine percent of the short-stay patients did not know when they would be able to resume their normal activities. The short-stay patients also displayed less knowledge before surgery concerning what to expect after surgery regarding pain control compared with their preoperative requirements. This may reflect the difficulty in absorbing such information compared to information related to pre-operative requirements. The audit suggested that there was room for improvement in providing information to the short-stay patients. This improvement may decrease suffering from the side effects during their recovery at home.

We found no evidence that day-only patients had more visits to doctors or formal community service use. Given that they appear healthier, we might have expected less service use. Lewis and Bryson [26] in a study of children and adults reported lower than average service use for day-only patients. The advanced age of our participants (aged 70 and above) may explain the similarity in service use between groups. Nor was there evidence to suggest that day-only patients received

more informal care compared with non-day-only patients. While the amount of formal care received was constant across 1 and 12 weeks after discharge, patients, on average, received more than eight times the amount of informal care relative to the formal care. The amount of informal care received per week at 12 weeks after discharge was reduced to 92% of the informal care received at 1 week after discharge. There was no evidence that day surgery generates extra workload for families of older people or primary and community health staff.

5. Conclusion

In the present study with older people aged 70 years and above, day-only patients were slightly younger, tended to have less invasive gastrointestinal and ophthalmic procedures, and reported better health status compared with non-day-only patients. There was also no evidence to suggest that day-only patients had higher postacute service use compared with non-day-only patients. Selection criteria exercised by doctors may have been complex and subtle. Given this skilled selection, generally characteristic of Australian health care, there is no evidence in this study of worse quality of life or of shifting burdens from hospital to formal services or to informal carers in communities arising from day surgery.

Given the potential benefits and lower cost of day surgery, it will be important to apply the same skill in selection to other procedures and to fine tune selection within the current non-day-only group. One option is to develop more extensive before and after care in the community for this group [17]. Availability of adequate community support enables more difficult procedures to be conducted on a day basis. Another option is to improve communication and giving information during the procedure. Finally, if costs are to be constrained for the same or better outcomes, it is important that shorter stays substitute for current longer stay procedures.

Acknowledgements

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Abstracts

Premedication with EMLA cream for ambulatory surgery in children

A Santiago, P Abad, C Fernandez, JC Fernandez-Rial, M Barcena, J Medina

Objectives: The objective of this study was to confirm the ability of EMLA[®] cream (Eutectic Mixture of Local Anaesthetics, Astra, Sweden) to provide effective dermal analgesia after topical application on the skin of the dorsum of the hand 1 h before venous cannulation for anaesthetic induction. **Material and Methods:** Prospective, randomized, double blind study. We included 100 children, ASA I-III, distributed into three groups: Group EMLA (E, $n = 34$), Placebo (P, $n = 33$) and Control (C, $n = 33$). **Results:** The EMLA group of patients (E) referred an evaluation of pain (visual analogical scale (mean = 2.34 ± 2.41), significantly smaller than the other groups (Placebo = 5.54 ± 3.40 , Control = 6.03 ± 2.77). **Conclusion:** EMLA cream, when topically applied 1 h before venous cannulation, provides effective dermal analgesia for venous cannulation. No general or local adverse reactions were observed.

PII: S 0 9 6 6 - 6 5 3 2 (0 0) 0 0 0 4 7 - 0

Quality indicators in ambulatory surgery. A prospective study

R Morales, N Esteve, A Carmona, F Garcia, A Sanchez, P Olesti

Introduction: Ambulatory Surgery has emerged and developed in Spain in a similar way as in other occidental countries. Once established as a model for surgical care, results must be improved using objective quality indicators to assure minimal morbidity, efficient use of resources and satisfaction of patients and family. **Objective:** To provide a list of quality assessment indicators in Ambulatory Surgery and to discuss the necessity of obtaining a general consensus regarding the complexity of both the operations and the patients undergoing surgery. **Design:** Prospective and descriptive study. **Patients and Methods:** The study was performed on 833 ambulatory patients operated on in the Ambulatory Surgical Unit of the Can Misses Hospital of Ibiza. Surgical specialities involved were General Surgery, Ophthalmology, Orthopaedics, Urology, Gynaecology, and E.N.T. All diagnoses and proceedings were classified according to the CIE-9 and DGR systems, showing as an example the codes related to the General Surgery department. Quality Indicators evaluated were: (a) unplanned admission index; (b) re-admission index; (c) emergency department consultations; (d) cancellation index; (e) substitution index; and (f) postoperative pain evaluation. **Results:** Specialities involved were: Ophthalmology 277 patients (33.2%), General Surgery 189 (22.8%), Orthopaedics 142 (17%), Urology 90 (10.8%), E.N.T. 79 (9.5%) and Gynaecology 56 (6.7%). Unplanned Admission Index was 7.2%; Re-Admission Index 0.4%; Emergency department consultation 1.6%; Cancellation Index 3.3% and Substitution Index 70%. The

reasons for unplanned admission were due to specific complications in 36 cases (60.1%), followed by those secondary to an inadequate selection of the patient in 22 cases (36.6%). **Conclusions:** It is necessary to apply a series of Quality Indicators in Ambulatory Surgery. Their systematic evaluation may help us define national standards in order to continuously improve our results.

PII: S 0 9 6 6 - 6 5 3 2 (0 0) 0 0 0 4 8 - 2

Outpatient surgical unit: critical review after the first year of operation

B Sanmarti, X Mira, M Martinez, F Hidalgo, P Nubiola, A Pedernera, J Alayrach

Introduction: Outpatient surgery has been quickly accepted by many hospitals, showing a lot of advantages, both in the quality of health care and also in hospital management. Following this trend, our Hospital started operating an Outpatient Surgical Unit in May 1997. **Objectives:** Once we had reached our 'cruising speed', we thought it wise to make a critical review of our experience. **Material and methods:** We have reviewed 331 patients who underwent surgery during the first year of operation, with special attention to the acceptance of this type of surgery by the population in general, and to the changes in pre-operative and post-operative protocols that this process has caused. **Results:** The rate of admission was 3.02%, and all of them occurred after 24 h. We found 57 minor complications (spotty dressing, mild inflammatory signs) on the first day assessment, but only 16 patients had referred complications. 91.5% of the questionnaires sent back by the patients qualify the experience as good or excellent. **Conclusions:** Outpatient Surgery is a good solution for many surgical pathologies, as it is well accepted by the general population. Inclusion and exclusion parameters regarding age, architectural obstacles and post-operative care can become selectively more lax.

PII: S 0 9 6 6 - 6 5 3 2 (0 0) 0 0 0 4 9 - 4

Contribution of the outpatient surgery unit ITO the general surgery department of a district hospital

L Carrasco, B Flores, JL Aguayo, B de Andres, A Moreno Egea, J Cartagena, JP De Vicente, JG Martin

Introduction: The creation of Outpatient Surgery (OPS) units to combine the quality of medical attention and rationalize costs allows for greater efficiency in the use of resources. **Aim:** To report our series of patients undergoing surgery at the OPS units integrated into our Hospital (Type II). **Patients and method:** Between May 1994 and March 1998, 832 outpatients, of a total of 5230, underwent surgery at our General Surgery Unit. The criteria for exclusion from the pro-