



## Editorial

## Teaching in the ambulatory surgery unit

There is still the belief, particularly in teaching hospitals, that surgery and anaesthesia cannot be taught in a surgical day unit. Only the other day a senior surgeon in a major hospital told me that he had to admit a number of inguinal hernia patients to his inpatient beds in order to teach undergraduates and postgraduates. Certainly 15–20 years ago this might have been warranted, but certainly not today. Modern anaesthetic techniques have relieved the tight time constraints of the past and have made the day unit an ideal place to teach the basics of both surgery and anaesthesia.

Medical students can see a large range of common conditions in all surgical specialities, learn the basics of local and general anaesthesia and develop an understanding of the importance and practicalities of patient selection and information. Only a few far-sighted medical schools have made the best use of their day surgery facilities as teaching units through which groups of students rotate. One such example is Kings College Hospital in London where students are not only taught surgery and anaesthetics by surgeons and anaesthetists, respectively, but are also taught other skills, such as patient recovery, by senior staff nurses. In such units the medical students enjoy both the diversity of cases they see and the multidisciplinary teaching.

Surgeons and anaesthetists in training can also be taught and refine their practical skills in the day unit. They do require closer supervision by their consultant trainer than when operating on inpatients as even minor complications in a day case can be a major problem to the patient when they return home. However, tighter supervision accords well with the demands being put on trainers by their specialist colleges.

An added benefit of teaching all grades in a day unit is that the approach to the patient has to be holistic because of the short stay in the unit and the organisation and discipline required for successful day surgery.

All involved in day surgery should extol the virtues of the day unit as an educational resource. Doubters should be disabused of the concept that anaesthesia and surgery can only be taught on an inpatient basis. 80% of elective surgery can be undertaken in the day unit. The procedures are the commonest in the surgical repertoire. For a properly structured and balanced education, trainees need to be exposed to these both initially and more frequently than some of the more *recherché* inpatient work.

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## Ambulatory surgery: an organisational and cultural revolution, a social and political challenge

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I cannot remember the name of the rabbi who called out—maybe it was in fact Woody Allen: ‘Does anyone have a question, because I have the answer’.

No doubt this question seems at first glance a paradox or absurd humour. Could one actually imagine solving a problem before having stated it? Of course not.

But could one imagine an answer to a non-question? No more.

To a formulated question, an answer is possible, probable and maybe even certain. The answer is more certain than the question. The questioning is therefore undoubtedly the most hazardous and essential moment of the answer.

Why this rather philosophical introduction and how does this concern our subject?

All present here already know the answer: The answer is ambulatory surgery. But ambulatory surgery is the answer to what, to which questions?

Nowadays the paternity of modern ambulatory surgery is classically attributed to James Henderson Nicoll a surgeon from Glasgow which, as every Scot knows, is in Scotland.

In 1909, Nicoll published an article in the *British Medical Journal* about his experience with 8988 operations performed as day surgery cases [1].

What do we know about this experience that related to a wide range of operations performed on children, almost half of them less than 3-years-old and a fair number of them less than 1 year.

Which problems was the development of this important healthcare practice supposed to solve? Nicoll explained it in his article: ‘Infants and young children in a ward are noisy and not infrequently malodorous. Children rest more quietly and fare better in the arms of a mother of average intelligence than anywhere else’. Finally, the Scottish surgeon continues: ‘I have no alternative to the opinion that the treatment of a large number of the cases at present treated as inpatients constitutes a waste of the resources of a children’s hospital or a children’s ward’.

Taking into account his experience with children, Nicoll estimated that, as far as the adults are concerned, various operations and particularly cures of hernia, lead to hospitalisations that, according to him, were too long and could be reduced to... less than a week.

Unfortunately we don’t know much—if anything—about the possible means, and in particular about the organisational model implemented by Nicoll. All that Nicoll tells us, is that the children were operated in the out-patient department and went home in their mother’s arms. The mothers were given nursing advice and apparently, everything went well.

When he gave this presentation, at a meeting of the British Medical Association, most of his distinguished colleagues participating in the debate entirely agreed with him and claimed that they shared the same practice.

Under these circumstances, it is at the very least curious that no report whatsoever has reached us relat-

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ing to these practices and their authors from the 50 or 60 years that followed. Not only from Scotland, but elsewhere.

It would appear in fact that modern ambulatory surgery was reinvented about 30 years ago.

At that time, a few programmes were successfully implemented in a small number of North American hospitals which all suffered from a lack of hospital beds. But most certainly the creation by J. Ford and W. Reed of the first freestanding centre with four operating theatres, the Surgicenter of Phoenix, has been the strongest incentive for the development of modern ambulatory surgery [2,3].

Indeed, by leaving the cocoon of the traditional hospital environment, ambulatory surgery fitted in from the start with a resolutely new context. It was not a matter any more of somehow adapting existing hospital procedures in an attempt to shorten traditional hospitalisation. By becoming independent, ambulatory surgery outside hospitals compelled its pioneers to a new, specific thorough re-think, both conceptual and systematic, of this kind of patient care, in all its aspects.

Whatever the original stimulus may have been, J. Ford and W. Reed had at the same time to convince—which surely was not easy—the political world, the health authorities, the social security organisms, the insurers, the banks, the physicians and of course the patients. Indeed substantial personal financial risks had to be taken at last.

Without any doubt ambulatory surgery owes a significant part of its specificity and of its image power to the whole enterprise and to its happy outcome. The exemplary implementation and success of the project of J. Ford and W. Reed stimulated many others to follow their example.

They have probably also contributed in an efficient way to making ambulatory programmes operational in many hospitals.

Now ambulatory surgery has evolved considerably since Nicoll. Nowadays it is considered to be an accepted concept with several aspects aimed at all population groups and at all medical specialities.

From an architectural aspect: various architectural models range from a more or less substantial integration into the traditional hospital structure, to an increasing autonomy and even to a complete independence from it.

From a medical aspect: ambulatory surgery imposes choices: selection of eligible operations, selection of suitable patients, selection of surgical techniques and implemented anaesthetic means. Neither technological progress nor new molecules have made the advent of ambulatory surgery possible—Nicoll, 1909, testifies to the fact—but clearly this progress and these molecules—and all those to come—have led to a significant increase of the number of indications.

From an economic aspect: I shall come back to this later on.

From a qualitative aspect: the search for global quality in traditional hospitals is impeded by various parameters: the many players involved, geographical dispersion of sites, variable complexity and length of patient care chains. Under these conditions, with concerns for efficiency, the quality approach usually concentrates on selective targets in patient care chains. Conversely, in the unit or the centre of ambulatory surgery, the parameters are: units of time, place and action. The staff is small and characterised by its great cohesion. The care chains are short. The process of taking charge is homogeneous. Both its validity and its quality can easily be managed and controlled. Modern ambulatory surgery is really a great step forward in the process of implementing global quality in the hospital.

Although architectural, medical, economic and qualitative aspects certainly are remarkable characteristics of ambulatory surgery, the essential point is actually elsewhere.

In fact, ambulatory surgery is above all defined as an organisational concept. Organisation is really the core of the concept. Every administrative or medical eventuality needs to be anticipated, has to follow clearly established procedures. The organisation must be formalised in an organisational model, a chart, standardised documents to which all of the participants need to adhere. Oral and written information among the various players is essential at every stage. Any improvisation may compromise the safety of the patients and prevent their returning home at the scheduled time. However, if organisation is its most remarkable element, this is not so much because of the organisation itself, but because of its absolute emphasis on the patient. The organisation is the focus of the concept, the patient is the focus of the organisation.

However, some will point out: 'But does not the same apply to the traditional hospital'? In a traditional hospital, the patient is certainly central to diagnostic and therapeutic preoccupations but not to the organisation. Indeed, the physician and the nursing staff are at the centre of the organisation. The time the inactive patient spends in his bed, is not one of these parameters to which the administrator, the physician or the staff pay much attention. The hospitalised patient orbits the periphery of the medical services that take care of him at more or less widely spaced intervals depending on their own availability. Regularly providing information to the patient and, possibly, to his environment, so essential in ambulatory surgery, is too often uncertain. 'Don't worry about anything, we take care of everything'.

The order of organisational priorities is reversed in an ambulatory surgery unit. This substantive organisational revolution is even more: it is indeed a genuine cultural revolution.

For the past 30 years an increasing number of us have committed ourselves to promoting a better recognition and extension of the practice of modern ambulatory surgery. With determination, sometimes even with passion. The contexts are sometimes as difficult as those which J. Ford and W. Reed had to confront in their time, maybe even more so. Why? What questions do we wish to answer?

Ambulatory surgery is much appreciated by the patient—how could it be otherwise in a system where he really is the focus of all preoccupations.

Ambulatory surgery is much appreciated by the staff because of the excellent working conditions. It yields better quality management. Finally, it is economical. This last aspect is usually put before the other arguments. That is also why I mention it at the end of the list to clearly indicate that other arguments exist that are equally substantial to justify our commitment to ambulatory surgery.

Through all this, it is clear that the economic aspect takes a critical place in the present context.

We know very well that health costs weigh ever more heavily and unbearably on public and private finance. The problem is world-wide. It applies to rich and poor countries, countries suffering from too many or too few hospital beds, and this whatever the social security system, be it state provided or liberal. Moreover, the perspectives are not encouraging: constant and expensive development of sophisticated techniques, increased patient requirements, plethora of supplies for health care, ageing population, occurrence of new pathologies,...

As Woody Allen puts it: 'It is better to have money than not to have it, be it for financial reasons'. But money is also required for healthcare. The survival of our social security systems depends upon it and the preservation of quality care accessible to all at an affordable cost constitutes a major social challenge.

Lacking in resources, the authorities typically react with authoritarian actions aimed at limiting the access to health care financed by the Community. This has other consequences: difficult access to sophisticated and expensive techniques, decreased quality of health care, stagnation and degradation of hospital equipment, medicine at two speeds, increased financial contribution by the patients, de facto exclusion from social security benefits of certain categories of people.

These regulatory measures usually lead hospitals, providers of health care and patients to generate perverted compensation mechanisms which, at the economic level, reduce the capacity to efficiently limit cost increases.

But most intolerable is clearly the social and medical deterioration of the poorest and most vulnerable population categories. Because funds are said to be lacking. Because in fact important resources are wasted without real justification.

History teaches us that economic and social misery brings about social disorder, social conflicts, rise of extremisms, exacerbation of antagonisms, rejection of others. It sometimes ends in damaging national balances and consequently intentional relations.

But it is not at all necessary to recall history; are we not witnessing this today in many places around the world and especially in our western countries?

You could ask me whether all this is not a bit exaggerated? Maybe, but anyway, access to quality health care as a whole for our fellow-citizens is a major right in our societies which needs absolutely to be preserved. It is out of the question to waste it through lack of imagination or determination. Each contribution to more social justice deserves consideration. And this is what we demand from our project.

In the hospital sector which is the principal source of health care expenses, ambulatory surgery is probably the only really innovative approach. It does not consist of managing shortage, but of making better use of available resources by modifying the *modus operandi*. Ambulatory surgery is not a stopgap measure at times of restrictions, but is clearly the best choice for more than half of the operations that require a typical hospital environment. As it affects such a large scale market for operations, a very impressive savings potential seems feasible. Precious resources that are presently wasted without real necessity could be preserved to meet needs that are far more acute.

From all this, I'll conclude that the commitment to ambulatory surgery is presently of a clearly ethical nature. It reflects elementary social ethics.

In the end, the result seems beyond doubt. Who still questions the importance and the legitimacy of ambulatory surgery nowadays? Who still hesitates to predict the generalisation of this practice? Can we doubt that, if presently a new hospital network had to be created from scratch on a national scale, the sanitary authorities would conceive it so that globally 50% of the operations would automatically be performed in ambulatory surgery units and centres especially conceived to that effect: units and centres characterised by a light structure, performing and productive organisation, a rapid turnover. At the same time, traditional hospital services would significantly reduce their bed capacity, but increase their technical density and their endowment in qualified personnel.

As all our countries have hospitals, the necessity to adapt and to transform traditional hospital is probably the major obstacle to the development of ambulatory surgery. And this more so as the hospital park is larger. The hospital is in fact both a centre and a power stake. To touch its structure and the arrangements of every kind that rule it inevitably leads to strong resistance and opposition.

But do we have a choice? And if ambulatory surgery is an alternative to traditional hospitalisation, is there a credible alternative to ambulatory surgery?

‘One should never make projects, especially for the future’. I quote the French humorist Jean Amadou. Should that stop us? In order to answer the difficult challenges that our societies are faced with regarding social security and public health, one has today to:

1. Update the nature and the importance of what is needed as a result of modern techniques and new modes of patient care management,
2. Adapt hospital structures to these redefined needs in order to optimise the use of available resources,
3. Implement policies that provide efficient incentives to all stakeholders: hospitals, physicians and patients.

If, no doubt, in the end ambulatory surgery will develop as it should, the real question is: how fast and under which conditions. Therefore, which loss of time and resources should one still bear? The answer largely depends on the determination of the policy makers and their capacity to efficiently manage this matter.

Saving money requires clear thinking. And the latter is often missing. This does not relate to political power only. Let me tell you a short anecdote. From the 13th until the 15th September 1995 a world congress on an important surgical topic was held in Kiel in Germany. The international participants had the choice among numerous simultaneous sessions in various rooms of variable size. I had been invited to chair a session on ambulatory surgery and I was allotted the smallest room. In the largest room, the speakers tackled far more important questions: organ transplantation. A brief survey of surgical activity in Belgium displays a few hundred operations of this type. On the other hand, hundreds... of thousands of operations qualify to be treated by ambulatory surgery, but it is, of course, only ambulatory surgery.

Oh yes, let me tell you the name of this congress: 1st World Congress on Surgical Efficiency and Economy.

What can we propose or wish or dream? Maybe the politicians could take the initiative to organise a big, straightforward and open debate, that would gather all the most involved field workers and experts, and no longer only the usual lobbies and political partners. What would be the general framework for such a debate? The main objective is obviously to deliver high quality health care for all at a reasonable cost. The most appropriate policies and the most suitable means would be sought and discussed. Each stakeholder should be heard and find his legitimate claims satisfied: the government, the hospitals, the physicians, and the patients of course.

It is out of the question to set traditional hospital activity against day hospitalisation. Each type of structure must be able to fulfil its mission alongside one other. Ambulatory surgery will not develop unless the necessary means are made available. Moreover, if the hospital must be transformed, in exchange it will have to benefit from adequate means in order to assume its heaviest missions to the very best. To reform the hospital, not to penalise it.

One should also identify and treat the questions and concerns that are often unformulated by certain decision-makers:

1. Does ambulatory surgery create a transfer of patients or an additional market?
2. Will the development of ambulatory surgery not lead to the creation of a new treatment network—an additional competitor—which could possibly worsen a potential hospital over-capacity?
3. Doesn't ambulatory surgery lead to a financial transfer from the hospital to the patient, the family, and the extra-mural services?

Physicians and patients may also fear certain adverse effects in the future: what will happen to our liberty to choose the mode of hospitalisation?

Don't these questions seem legitimate and judicious to you? Probably yes, and many answers are already available. But, as I said at the beginning of this lecture, they could only be so, if politicians are sufficiently sensible to ask us these questions.

Perhaps they judge the situation not serious enough to require handling in the way we recommend.

Let me end then with a final anecdote: ‘‘A Minister of Social Affairs and a Minister of Health fall together from the 50th floor of a building. When they reach the level of the first floor. they congratulate each other by saying: until here, everything has gone well’’. Of course, at that moment everything is still possible but soon somebody inevitably will have to pay the bill, financially, socially and politically.

Ladies, gentlemen and politicians, please note that on an international and on a national level, the IAAS and its national associations are at your disposal: somewhere between the ground floor and the 50th floor.

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# Comparison of ondansetron, dimenhydrinate versus placebo as PONV prophylaxis for outpatient gynecological laparoscopy

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## Abstract

This is a study comparing ondansetron, dimenhydrinate versus placebo as PONV prophylaxis for outpatient gynecologic laparoscopy. Postoperative nausea and vomiting (PONV) is very common following ambulatory gynecological laparoscopy. Prophylactic antiemetic therapy if safe, effective and affordable may reduce the incidence of PONV, expedite hospital discharge and improve patient satisfaction. After institutional review board approval, informed written consent was obtained from 87 ASA I–II women undergoing ambulatory gynecological laparoscopy. In a random and double blind fashion the women were divided into three groups receiving either ondansetron 8 mg, dimenhydrinate 50 mg or placebo. A standard anesthetic technique with propofol, fentanyl, mivacurium, nitrous oxide and isoflurane was used. Measurements of nausea, emesis, pain, drowsiness, and satisfaction and recovery milestones were recorded. Psychomotor recovery was evaluated using p deletion and digit symbol substitution (DSS) test. There was no difference in the groups with respect to demographic data. Dimenhydrinate prolonged immediate recovery and impaired psychomotor recovery, but there was no difference in postanesthesia care unit (PACU) or hospital discharge. The incidence of PONV was minimal. The visual analogue score (VAS) for nausea was only 1 on a scale from 0–10 cm in all groups. Only one patient in the placebo group experienced PACU emesis. The incidence and severity of PONV was so low, even in the placebo group that the use of prophylactic antiemetic therapy cannot be justified. © 1999 Elsevier Science B.V. All rights reserved.

*Keywords:* Ondansetron; Dimenhydrinate; Laparoscopy; Ambulatory; PONV

## 1. Introduction

Post operative nausea and vomiting (PONV) has been described as ‘the big little problem’ [1]. PONV remains the most frequently encountered and most distressing problem in post anesthetic care [2,3]. Severe PONV may lead to delay in discharge from day surgical units, unplanned admission, increased costs, and decreased patient satisfaction [4]. The ideal antiemetic agent would be inexpensive, non-sedating and effective regardless of etiology. The agents we currently use are not universally effective, expensive (ondansetron 8 mg

\$ 34.40)<sup>1</sup> or have undesirable side effects (droperidol, dimenhydrinate, prochlorperazine).

PONV following laparoscopic procedures is reported at a rate of 27–65%, therefore it is frequently used as the surgical model [1,5–8]. Many studies of antiemetic therapy appear to have been intentionally designed to increase the likelihood of PONV in order to easily demonstrate an effect. These studies use barbiturates, opiates and inhalational agents, in nausea prone surgery and patients with a history of PONV. Risk factors include anesthetic technique, age, gender, and hormonal levels in women for PONV [3,9].

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<sup>1</sup> Data from Pharmacy London Health Sciences Centre.

Numerous antiemetic drugs have been studied in an effort to reduce these symptoms [7,8,10]. Dimenhydrinate is commonly used in Canada and elsewhere as an antiemetic but has not been widely studied [11,12]. Dimenhydrinate is a H<sub>1</sub> receptor antagonist related to diphenhydramine. It is used to treat motion sickness, and vestibular diseases. Dimenhydrinate as an antiemetic was described in the 1950's [13,14]. Currently our institution uses approx. 25 000 doses of this drug per year. Various studies have described the efficacy of dimenhydrinate [12,15,16]. Bidwai describes a 26% reduction in the rate of PONV compared to placebo [15].

Ondansetron a serotonin subtype-3 receptor antagonist has been found to be effective in the prevention and treatment of PONV [7,10,17–19]. Reduction of PONV has ranged between 20–30% depending on the dose of ondansetron utilized as compared to placebo in gynecologic laparoscopy [7,10]. The cost of a single dose of 50 mg of dimenhydrinate (\$ 0.42) is substantially less than a dose of ondansetron 8 mg (\$ 34.40). We prospectively studied the cost effectiveness of dimenhydrinate versus ondansetron as prophylactic antiemetic therapy for laparoscopic surgery.

## 2. Methods

After institutional review board approval, informed written consent was obtained from 87 ASA physical status I–II women scheduled for elective gynecologic laparoscopy. The study design was double blind and randomized with a placebo control group. Preoperatively patients were screened for PONV risk factors including day of menstrual cycle, previous PONV and motion sickness. Patients received a standard anesthetic. Anesthesia was induced with propofol. Intubation was facilitated using mivacurium. Immediately post induction subjects received either placebo, ondansetron 8 mg, or dimenhydrinate 50 mg intravenously. Randomization and preparation of study drugs were completed by the hospital pharmacy. Narcotic dose was restricted to fentanyl 100 µg before induction and patients were maintained using isoflurane and nitrous oxide and oxygen. Gastric suction was not performed.

Postoperative nausea, drowsiness and satisfaction were evaluated by a blinded observer using a 10 cm visual analogue scale (VAS). Objective data regarding emesis or use of a rescue antiemetic was also collected. Psychomotor recovery was evaluated using p deletion and digit substitution tests, administered preoperatively, then one hour and 2 h after PACU admission. Test scores were calculated as a percent of preoperative baseline measurements.

The following day, in a telephone interview, measurements were obtained using a verbal rating scale (VRS)

Table 1  
Demographic data

	Placebo	Dimenhydrinate	Ondansetron
Patients (#)	29	28	30
Age (years)	32 ± 7	33 ± 7	33 ± 6
Height (cm)	165 ± 8	165 ± 12	162 ± 16
Weight (kg)	68 ± 15	69 ± 12	68 ± 15
Surgery (min)	28 ± 16	22 ± 8	25 ± 24
Anaesthesia (min)	35 ± 19	28 ± 7	36 ± 25

from 0–10. Willingness to repeat the same antiemetic therapy and to pay for antiemetic drugs was also determined. Patients were asked how much they would pay for an antiemetic on a scale from \$ 0 to 50. Statistical analysis was performed using ANOVA for parametric data,  $\chi^2$  for non parametric data, and a *P* value of < 0.05 was considered significant. The power of the study was calculated to determine a 2 cm difference in VAS for PONV. This figure was chosen since symptoms should be reduced by at least 20% to justify prophylactic therapy.

## 3. Results

Demographic data was similar in all groups (Table 1), and there was no difference in PONV risk due to menstrual cycle, motion sickness or prior PONV. The incidence of PONV was similar (Table 2). Combining PACU and home scores for nausea, requirement of rescue antiemetic and emesis episodes did not show a statistically significant difference (*P* < 0.05) between the groups (Figs. 1 and 2). VAS scores for PACU nausea were the same for each group (1 ± 2). No difference could be demonstrated in measurements of pain, dis-

Table 2  
PONV

		Placebo	Dimenhydrinate	Ondansetron
Any nausea	Home	38	33	29
	PAUC	29	20	12
Antiemetic (% patients)	Home	17	15	11
	PAUC	19	8	8
Emesis (% patients)	Home	4	4	0
	PAUC	21	17	10
Satisfaction VAS (cm)	Home	9 ± 2	9 ± 1	9 ± 2
	PAUC	8 ± 2	8 ± 2	8 ± 2
Mean ± SD				
Would repeat (% patients)		90	92	100

## Nausea

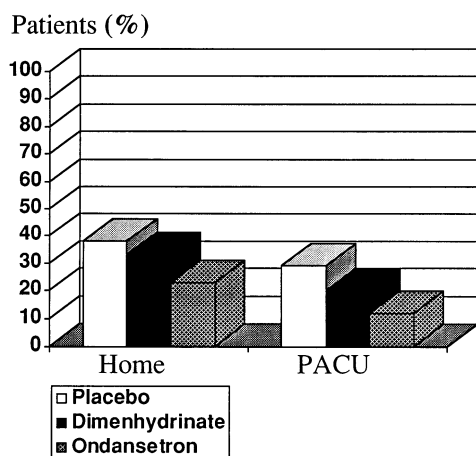


Fig. 1. The percentage of patients with any incidence of nausea at home or in the PACU. Patients were contacted by telephone interview 24 h post-operatively.

charge time, nursing care or supplies consumed. Immediate recovery from anesthesia and time to orientation were delayed ( $P < 0.05$ ) by dimenhydrinate (Table 3); and more patients in this group (Figs. 3 and 4 and Fig. 5) could not complete psychomotor tests and had lower scores on both the p deletion and DSS tests ( $P < 0.05$ ).

Analgesic requirement in PACU were similar in all groups, patients received an average of  $6 \pm 4$  mg intravenous morphine and two tablets of acetaminophen with codeine prior to discharge home. There was no difference in patient satisfaction or preference for the same future therapy (Fig. 6). Patients were willing to pay an average of  $\$32 \pm 17$  for antiemetic medication.

## Antiemetic Required

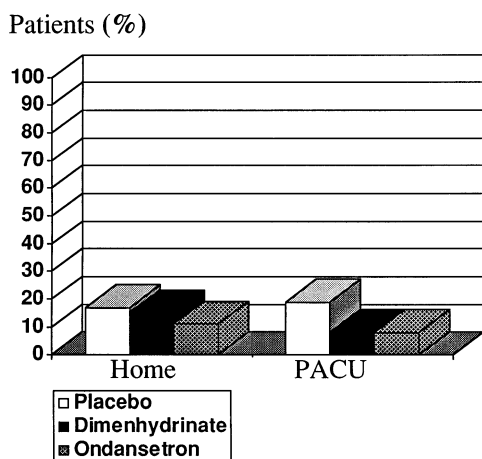


Fig. 2. The percentage of patients that required an antiemetic at home or in the PACU. Patients were contacted at home by telephone interview 24 h post-operatively.

Table 3  
Recovery profile

	Placebo	Dimenhydrinate	Ondansetron
Extubation (min)	$4 \pm 3$	$6 \pm 4$	$5 \pm 2$
Eyes open (min)	$5 \pm 4$	$8 \pm 5^*$	$5 \pm 3$
Oriented (min)	$7 \pm 4$	$12 \pm 8^*$	$8 \pm 4$
PAUC time (min)	$56 \pm 17$	$57 \pm 14$	$54 \pm 20$
Discharge (min)	$205 \pm 74$	$199 \pm 40$	$189 \pm 20$

\* Different from placebo,  $P < 0.05$ .

## 4. Discussion

This anesthetic protocol produced minimal PONV, even in the placebo group. Patient satisfaction (8/10 cm VRS) and willingness to repeat placebo therapy (90%) in future was very high. The cost of prophylactic ondansetron at \$34.00 is difficult to justify given the marginal and clinically insignificant benefits observed. While dimenhydrinate is a commonly used antiemetic, sedative properties make it undesirable for outpatient anesthesia.

Previous studies examining the efficacy of antiemetic therapy following outpatient laparoscopy have used barbiturates as the induction agent. This study is original in that it examines a commonly used antiemetic with a current and typical anesthetic technique. This makes our findings clinically relevant.

Propofol is commonly used as an induction agent in the ambulatory setting, and previous studies using this drug have reported rates of PONV in outpatient laparoscopy 27–50% [7,8]. Our incidence of PONV is similar to others using propofol as the induction agent. Studies using barbiturate induction for outpatient la

## Psychomotor Tests not completed

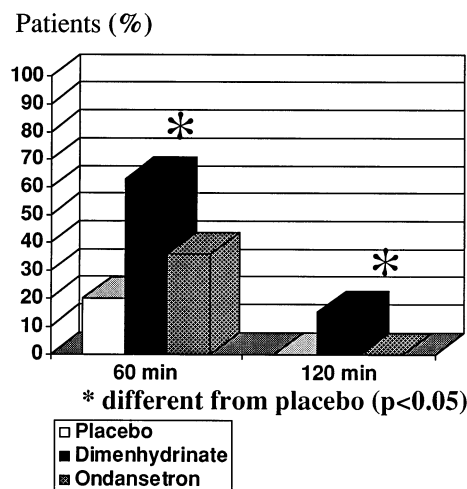


Fig. 3. The percentage of patients who were unable to complete psychomotor tests in PACU postoperatively. Measurements were made at 60 and 120 min. \*, denotes statistically significant compared to placebo at  $P < 0.05$ .



## P Deletion Test

Patients (%)

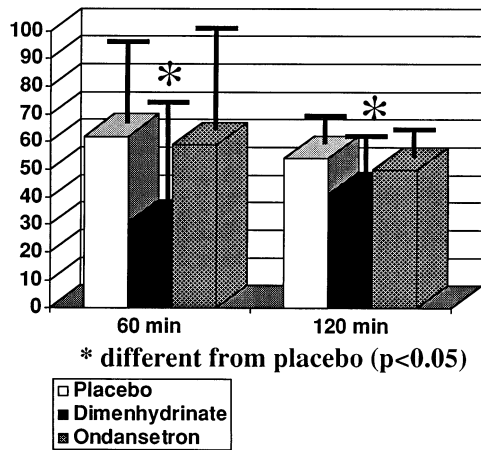


Fig. 4. P deletion tests were completed preoperatively to establish a baseline. The test was conducted at 1 and 2 h after PACU admission and calculated as a percent of baseline. Values are mean  $\pm$  SD and \* denotes statistically significant compared to placebo at  $P < 0.05$ .

paroscopy have a higher incidence of PONV [5,6,10]. Effectiveness of antiemetic therapy with thiopental has been demonstrated [5,6,10,17,19]. The value of prophylactic antiemetics when added to current clinical practice has not yet been demonstrated.

The study was designed with power adequate to determine a 2 cm difference in VAS for nausea. Previous studies have examined the objective presence of vomiting, any sensation of nausea or the use of a rescue antiemetic. This study is unique as it measures the severity of symptoms and not just the incidence of

any PONV. Patients were asked to subjectively rate severity of nausea. Overall nausea was minimal. Although some individual patients reported nausea it was not rated as distressing regardless of which drug they had received. Ondansetron and dimenhydrinate did not reduce the incidence or the severity of PONV.

Dimenhydrinate has some central nervous system depressant effects [20]. Therefore the study drug was given after induction of general anesthesia to blind the patient and anesthetist. Dimenhydrinate was shown to delay emergence from anesthesia and patients were less able to complete psychomotor tests after. While this did not affect PACU time or time to discharge from the hospital additional sedation without a significant reduction in PONV offers no clinical advantage. Previous studies have demonstrated the effectiveness of ondansetron as an antiemetic [5,8,18]. We examined the cost effectiveness of ondansetron versus placebo therapy in a high risk population. Despite a trend in reduced emetic episodes using ondansetron this was not statistically significant.

We found no benefit to prophylactic dimenhydrinate. In previous work on pediatric patients having strabismus surgery dimenhydrinate produced a 30% reduction in nausea and vomiting. This study examined pediatric patients having strabismus surgery with thiopental for induction of anesthesia [12]. The only recent adult study of prophylactic dimenhydrinate was conducted on patients receiving intravenous contrast material [16]. There was no benefit of prophylactic dimenhydrinate in preventing nausea and vomiting. This study did not use any sedative or anesthetic agents. Our study is unique as it examines the efficacy of a commonly used antiemetic that has not been investigated.

In this study the anesthetic protocol was designed to minimize PONV. The intraoperative narcotic dose was chosen to reflect current clinical practice in our institution, and to minimize the risk of opioid induced PONV. Despite the modest dose of intraoperative narcotic the pain scores and analgesic requirements in PACU were low and further justifies this as an appropriate dose of fentanyl. This anesthetic choice reflects an appropriate choice for outpatient laparoscopy.

## Digit Symbol Substitution

Patients (%)

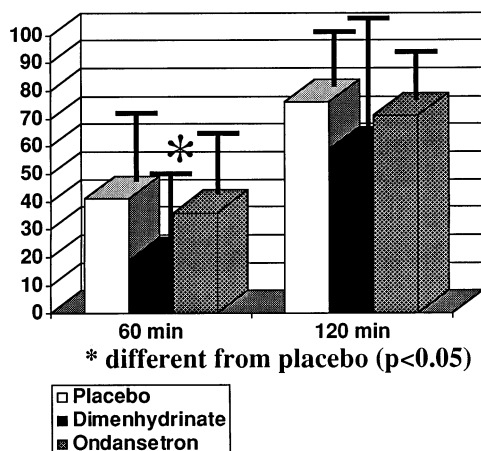


Fig. 5. DSS tests were completed preoperatively to establish a baseline. The test was repeated at one and two hours after PACU admission and calculated as a percent of baseline. Values are mean  $\pm$  SD and \* denotes statistically significant compared to placebo at  $P < 0.05$ .

## 5. Summary

PONV is a multifactorial problem, which may not have a singular therapeutic solution. PONV is an important complication and is distressing to our patients. Prior work has examined the efficacy of prophylactic antiemetic therapy. Further work should focus on the optimal anesthetic agents to avoid PONV and the best rescue agent should symptoms occur. In this study the anesthetic technique produced insufficient PONV to

## Satisfaction

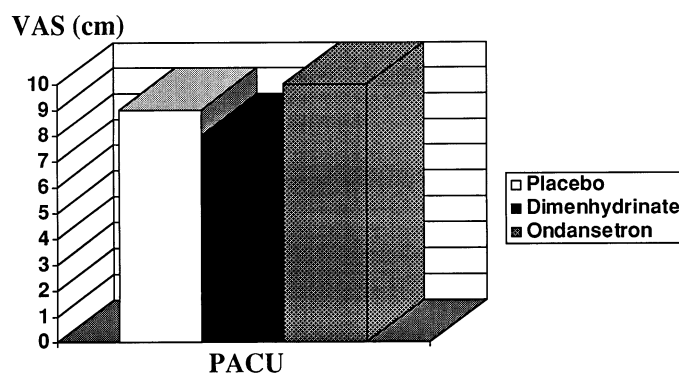


Fig. 6. Patients were asked to mark their satisfaction on a visual analogue scale from 0 to 10 cm. Values are mean  $\pm$  SD.

justify prophylactic use of antiemetic agents. With new anesthetic drugs the ‘big little problem’ may eventually become just a simple little problem after all.

### Acknowledgements

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# Does laparoscopy make splenectomy a safe ambulatory operation? Preliminary results

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## Abstract

Our aim is to explore the feasibility of ambulatory laparoscopic splenectomy. Of 11 patients, five were not suitable for ambulatory care. Of the remaining six, four (67%) were successfully completed on an ambulatory basis. Two patients (33%) required admission to hospital, one for pain control and one because of oozing with a low platelet count. Both were discharged well the next morning. One of the ambulatory patients developed a splenic bed hematoma, treated symptomatically as an outpatient. This early experience suggests that laparoscopic splenectomy can be a safe ambulatory operation. © 1999 Elsevier Science B.V. All rights reserved.

*Keywords:* Ambulatory surgery; Idiopathic thrombocytopenic purpura; Laparoscopic splenectomy; Outpatient surgery

## 1. Introduction

Since its first description in 1992 [1], laparoscopic splenectomy has been shown to have the same advantages over open surgery that have been demonstrated for other laparoscopic procedures: less discomfort, shorter hospital stay, earlier return to regular activities and lessened hospital cost [2,3]. Description of the right lateral position [4] and development of ultrasonic scissors [5] have made laparoscopic splenectomy technically easier to perform. Although increased experience has allowed extension of the technique to large spleens [6], the commonest indication remains idiopathic thrombocytopenic purpura with its normal sized spleen. Some authors suggest laparoscopy may promote splenosis or missed accessory spleens [7–9], but recent follow-up studies show results comparable to those seen with open surgery [2,10–12].

The current trend toward ambulatory surgery has been helped by laparoscopy, which has enabled many operations, hitherto requiring hospital care, to be done on an ambulatory basis. Thus, in our hospital, use of

laparoscopy has made appendectomy, even when ruptured [13], inguinal hernia repair [14], incisional hernia repair [15], cholecystectomy [16,17] and Nissen fundoplication [18] all outpatient procedures. Our first laparoscopic splenectomy was done in 1995; the patient was admitted to hospital overnight. Because he exhibited minimal disturbance to homeostasis, similar to our experience with other laparoscopic operations now done routinely on an outpatient basis, we decided to assess the feasibility of adding laparoscopic splenectomy to our regimen of ambulatory surgery. This communication describes our preliminary experience with this approach.

## 2. Methods

Patient data were entered prospectively and all elective splenectomies done between 1995 and 1998, inclusively, at the Salvation Army Scarborough Grace Hospital, a 228-bed non-teaching acute care community hospital, were analyzed. Since 1995, all elective splenectomies were booked for laparoscopic surgery and after the first operation all were considered for ambulatory surgery. Apart from the first patient, patients were excluded from the ambulatory program if an abdomi-

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nal incision had to be made, either to retrieve an intact spleen for pathology purposes, or because of conversion to open surgery. All patients were referred for surgery by the same hematologist (L.G.) and all operations done by the same surgeon (J.J.), assisted by the senior author (A.V.). Operations were done in the right lateral position, gently flexing the kidney bar to drop the iliac crest and lengthen the loin space. Initially splenic vessels were secured with clips, then with the use of endovascular stapling devices and lately with a combination of clips and ultrasonic scissors. Hemoglobin and platelet count were determined postoperatively, patients were assessed by the hematologist and criteria for discharge determined by the day surgery nurse in accordance with previously published guidelines for laparoscopic day surgery patients [19].

### 3. Results

Eleven operations were done in the 4 years under study. Idiopathic thrombocytopenic purpura (ITP) was the indication for surgery in six. The other five were done for hemolytic anemia, Felty's syndrome, spherocytosis, lymphoma and an as yet undefined myeloproliferative condition. Accessory spleens were found in two patients. Eight patients were taking steroids at the time of surgery. There were no platelet transfusions. Three patients had significant blood loss (over 250 ml) and one needed transfusion of 750 ml of packed cells. There was a clear, although statistically non-significant, difference in the preoperative hemoglobin and platelet values for ITP and non-ITP patients. Average hemoglobin for ITP patients was 147 g per 100 ml (121–170) and average platelet count  $70 \times 10^9$  (2–211) per ml. For non-ITP patients these values were 90 (56–102) and 155 (8–225), respectively; 4–12 h postoperatively hemoglobin fell an average of 18 g per 100 ml and platelets rose an average of  $6 \times 10^9$  per ml. These changes from preoperative levels did not achieve statistical significance and were not significantly different for ITP and non-ITP patients or for ambulatory and non-ambulatory patients. Average hospital stay for the non-ambulatory patients was 4 days, average age 54 years and average operative time 171 min. An average of 4 months (range 1–8) after surgery, platelet counts for ITP patients had risen an average of 246%, from  $70 \times 10^9$  to  $242 \times 10^9$ . There have been no late relapses since and no patient has needed steroids to maintain the effect.

The first patient, as mentioned, was not considered for ambulatory surgery. Of the remaining ten patients, two were excluded because an intact spleen was required by the pathologist, necessitating an abdominal incision (Pfannenstiel in both cases). An additional two were excluded because of conversion to open

surgery (one for a huge spleen due to lymphoma and one to control major bleeding from a technical mishap). The remaining six patients were all managed as ambulatory surgery patients. Average age was 44 years (18–71) and five were females. American Society of Anesthesiologists Physical Status (PS) Classification assigned by the anesthesiologist was PS1 (1), PS2 (3), PS3 (1) and PS4 (1). Diagnosis for these patients was ITP (3), spherocytosis (1), Felty's syndrome (1) and hemolytic anemia (1). Average operative time was 128 min (101–180).

Of the six outpatients, two (33%) required admission. One was admitted for pain control and one was admitted for precautionary observation because of oozing throughout the operation in the presence of a low platelet count. Both patients were sent home without problems the following morning. The other four patients (67%) were discharged without mishap the day of surgery. One of them returned to emergency with left upper quadrant pain 24 h after surgery and 4 days later was found on ultrasound to have a splenic bed hematoma the size of the removed spleen. By then the hemoglobin had dropped from 130 to 90, but since she was hemodynamically stable she was treated expectantly as an outpatient with eventual resolution of both symptoms and hematoma.

### 4. Discussion

Our experience suggests that 67% of suitable patients undergoing laparoscopic splenectomy can be treated on an ambulatory basis. In retrospect our first patient as well as the two patients admitted could have been treated on an ambulatory basis. However, even if we had had a 100% rate of ambulatory care, a series of seven patients would not be enough to draw reliable conclusions. For this reason our experience must be considered preliminary only. We offer it for publication at this preliminary stage for two reasons. Firstly, since we work in a small hospital where elective splenectomy is not a common procedure, time to accumulate sufficient experience may make a definitive report practically unachievable. We put our data forth in the hope that they may encourage colleagues with larger volumes to explore the concept.

The second, and weightier reason we suggest our small experience may reflect reality derives from our wide experience with ambulatory laparoscopic surgery for a variety of other operations of approximately the same magnitude, which heretofore required inpatient treatment. The response of our splenectomy patients to laparoscopic intervention was so similar to all our other ambulatory patients that similar ambulatory treatment seemed reasonable. We are encouraged that our early experience has indeed confirmed this expectation.

Laparoscopic splenectomy is not characterized by excessive postoperative pain or interruption of intestinal function, either of which may require hospital care. With respect to the laparoscopic approach, a major concern has been the ability to detect and remove accessory spleens and to avoid splenosis by breaking the capsule. In our series there has been no instance of spilling splenic pulp. Two patients were found to have accessory spleens, which were successfully removed. This corresponds to the reported incidence of 15–20% [20] and suggests laparoscopy can deal successfully with this eventuality. At four months platelets have risen 246% without having to use steroids for any patient and there have been no relapses to date. This suggests laparoscopy is equivalent to open splenectomy for managing ITP, as reported by Lozano-Salazar et al. [11].

With respect to ambulatory treatment, the major concern with splenectomy is the risk of bleeding. Clearly immaculate hemostasis is required in this operation. If operative hemostasis is secure, significant postoperative bleeding should not occur. If it were to occur, massive bleeding from a major vein or significant artery should induce sufficient hemodynamic instability that early signs should become evident long before the patient is ready for discharge from the day surgery unit (usually about 4–6 h postoperatively). Oozing or smaller vessel bleeding may indeed go undetected, as happened to one of our patients, but such bleeding should not be life threatening, should allow ample time for the patient to return and should rarely require intervention.

Our experience suggests that postoperative hemoglobin and platelet levels change so little from preoperative levels that they do not seem to be reliable guidelines for safe discharge. For ITP patients, platelet counts rise rapidly but significant elevation is not detected before 24 h. In the immediate postoperative state the average elevation is only  $6 \times 10^9$  per ml. Average hemoglobin drop was 8%, well within the range one might expect from the combination of 'normal' operative blood loss and hemodilution by aggressive intraoperative crystalloid infusion. Thus, although serial hematologic monitoring may be thought to be prudent before same-day discharge, careful monitoring of vital signs remains the most reliable detector of problems that may preclude safe discharge. Because of the vast experience with such monitoring in our unit with other operations of similar or greater magnitude, we feel confident that for splenectomy, as for other conditions [21,22], instability requiring further attention will be detected during postoperative observation and patients who remain stable during observation do not decompensate later. Our preliminary results suggest that this may indeed be true, but larger numbers are needed for confirmation.

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## Meeting report

**Society for Ambulatory Anesthesia, 14th Annual Meeting,  
April 29–May 2, 1999**

At the 14th annual meeting of SAMBA held in Seattle, WA, USA, the April 29th, Friday morning session 'New Innovations' was moderated by Richard A. Kemp, M.D., SAMBA President-elect.

John B. Leslie, M.D. (Mayo Clinic Hospital, Scottsdale, AZ) presented an overview of 'Postoperative Nausea and Vomiting: Patient Satisfaction and Outcomes.' He opened his remarks by saying, "PONV issues include the overall incidence, high-risk subgroup identification, anesthetic technique comparisons, potential adverse events from vomiting, and the big debates over the higher costs of the new agents." There appears to be no simple answer to the problem. The issue is whether we should try to prevent PONV in high-risk patients, or offer treatment if PONV occurs.

Data were presented confirming the significant impact PONV has on prolonging outpatient stay. The incidence of PONV in multiple studies over the past four decades varies between 20 and 30%, depending upon numerous surgical and patient factors. For there to be any consistency, practitioners must understand the definition of PONV extends to 24 h postoperatively and not just into the post anesthesia care unit (PACU) where following discharge the patient leaves sight of the anesthesia team. Leslie documented that much of PONV occurs after discharge and not in the PACU or ambulatory facility.

Certain factors place patients into a high-risk group for PONV: age (adolescent or teen); body habitus (obesity); gender (hormonal cycles); anxiety; history of PONV or motion sickness; gastroparesis or other gastrointestinal disease; recent food or alcohol. Additionally, there are surgical and anesthetic factors triggering PONV: surgical site; duration of procedure; movement; pain; hydration; anesthetic drugs. General anesthetic procedures have been listed as producing more PONV than regional or MAC (sedation) techniques.

Opioids, ketamine and etomidate are usually associated with increased PONV.

Whether to treat prophylactically or wait until the patient experiences PONV remains a difficult decision. The economic issues raised also complicate the challenge to justify administering a medication to a patient who may not have needed the agent to begin with! As to the issue of timing of the antiemetic, studies with multiple classes of antiemetics now suggest the drug should be administered at the end of the procedure to provide higher efficacy.

He concluded his remarks by stating, "Aggressive antiemetic prophylaxis will not prevent all PONV; routine prophylaxis may be expensive or have undesirable side effects if some of the older but lower acquisition cost antiemetics are used inappropriately." If any cost effective strategy existed, a facility would first have to identify (by outcome studies) the high-risk PONV patients and ensure they received an appropriate dose of the currently recommended antiemetic by the best route and at the optimal time to facilitate patient care, minimize resource utilization, and speed the patient's release to home.

Mark A. Warner, M.D. (Mayo Clinic, Rochester, MN) discussed 'Fasting Guidelines: Optimal Timing.' Dr. Warner chaired the American Society of Anesthesiologists (ASA) taskforce on preoperative fasting and the use of pharmacological agents to reduce the risk of pulmonary aspiration. The purposes of the ASA guidelines are to enhance the quality and efficiency of anesthesia care, stimulate evaluation of individual practices, and reduce the severity of complications related to pulmonary aspiration of gastric contents, should it occur.

Perioperative pulmonary aspiration that results in morbidity or mortality is a rare event; serious morbidity and considerable costs however, are associated with pulmonary aspiration that does not result in death.

Although aspiration may occur at any time (including immediately before the induction of anesthesia), the majority of aspirations appear to occur during tracheal intubation and extubation. The traditional rule (obtained in animal models and it is unclear if it applies to our patients) is that the chance of lung damage is most likely if the aspirated material has a pH less than 2.5 or a volume greater than 25 ml. He then went on to list general and specific factors that make certain patients at greater risk for aspiration. The ASA guidelines do not recommend preoperative use of medications that block gastric acid secretions or administering antacids in patients who have no apparent increased risk for pulmonary aspiration.

Dr Warner summarized fasting recommendations to reduce the risk of pulmonary aspiration. For procedures requiring general anesthesia, regional anesthesia, or sedation/analgesia it is appropriate to fast from intake of clear liquids for two or more hours before the procedure; fast from intake of breast milk for four or more hours; fast from intake of infant formula for six or more hours; fast from intake of a light meal or non human milk for six or more hours. Approximately 90% of clear liquids empty within 60 min; warm liquids faster than cold. The taskforce noted that intake of fried or fatty foods or meat may prolong gastric emptying time. Both the amount and type of foods ingested must be considered when determining an appropriate fasting period. The fasting guideline recommendations do not apply to women in labor. Dr Warner made it quite clear that following the ASA guidelines does not guarantee complete gastric emptying.

The third panelist was Frances Chung, M.D. (Toronto Hospital, Toronto, Ontario, Canada) who provided an extensive review of 'New Drugs and Techniques for Postoperative Pain Management.' She opened her remarks by stating, "Postoperative pain is one of the main barriers to increasing the range of ambulatory procedures. Persistent pain has been shown to lead to postoperative nausea and vomiting, delayed discharge, contact with medical facility after discharge, and unanticipated admissions." Although it is now recognized that under-treatment of pain is common in outpatients, more than 80% of patients are satisfied with their pain control even though overall medication use was low.

She went on to say, "Optimal postoperative pain control for ambulatory surgery should be effective, safe, with minimal side effects, facilitate recovery and be easily managed by the patients after discharge." She broadly classified postoperative analgesia into pharmacological and non-pharmacological techniques. The mainstay of the pharmacological technique is the use of opioids; however, opioid analgesia has to be balanced against the side effects engendered, mainly nausea and vomiting. Non-opioid techniques included peripheral

nerve blocks and wound infiltration/installation and non-steroidal anti-inflammatory drugs (NSAID). Non-pharmacological techniques including cryoanalgesia, hypnosis and relaxation, transcutaneous electrical nerve stimulation and acupuncture-like transcutaneous stimulation have found limited use. Multi-modal analgesia, using a combination of opioid, NSAID and local anesthetic appears to be superior to any single modality, and this technique is highly recommended.

Evidence so far cannot support a major benefit of preemptive analgesia in postoperative pain management. Though evidence is lacking for preemptive analgesia, preoperative administration of a non-opioid analgesic can be an important factor in providing intraoperative analgesia, thereby reducing the intraoperative opioids and anesthetic requirement, and facilitating a smooth rapid recovery. There is no scientific documentation of the superiority of any individual NSAID for perioperative use. The choice of preparation, therefore, depends upon availability, desired route of administration, duration of effect and cost. The combined use of opioid and NSAID is ideal for treatment of severe pain.

Dr Chung feels optimizing postoperative pain control is the key to further advancement in the field of ambulatory anesthesia, and that, new portable analgesic delivery systems which are under investigation may prove to be the future for post-operative pain management in ambulatory surgery.

The final panelist was Rebecca S. Twersky, M.D. (Long Island College Hospital, Brooklyn, NY), SAMBA President who spoke on 'Recovery Concepts: 23-Hour Admits Versus Recovery Inns.' She opened her remarks by stating, "Driven by efforts at cost containment, technological advances in surgery and anesthesia, over 70% of all surgeries in the United States are being performed in the outpatient setting. Predictions are that this number will increase to over 78% by the year 2006. Ambulatory procedures are being applied to longer and more complex surgeries, and on sicker patients. Consequently, more innovative and intensive postoperative management will be required. Aftercare then must bridge the gap between traditional inpatient length of stay and extended post-surgical recovery care in the outpatient settings. Options for aftercare include: 23-h recovery facility, free-standing recovery centers, home health care and hospital hotels."

The increasing demand for post-surgical recovery care, where patients can stay between 23 and 72 h has propelled the growth of free-standing surgery recovery centers. A recent Federated Ambulatory Surgery Association survey reveals that approximately 10% of the Association's 2500 free-standing surgery centers have the capability of providing 24-h recovery aftercare. These facilities have an average of 3.8 beds; utilization

is approximately a 19-h average length of stay. Less than 1% of free-standing centers can provide 72 h of aftercare; these facilities have four beds per facility with an average length of stay of 34 h. The three largest utilizers of aftercare facilities are orthopedic, plastic and gynecological surgery. She did say that problems exist with reimbursement for aftercare.

Another option for aftercare, the hospital hotel, offers low overhead, improved ambiance and comfort for patients. Some facilities offer medical/nursing services, while others do not. Based upon current patterns, the total number of outpatient surgery centers

that offer extended post-surgical recovery care will continue to grow. However, a degree of caution is prudent until more outcome studies are conducted to assess different modes of aftercare to determine which are most beneficial for outpatients.

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## Abstracts

### Axillary blockade of the brachial plexus. Incidents and complications

S Ortega, C Gómez-Muñoz, L Muñoz, JP Ortega, MA García-Enguita, P Arauzo, A Solanas

*Cir May Amb* 1998;3(4):248–253

**Objectives:** The axillary blockade of the brachial plexus (BPB) is a broadly used technique for the surgical interventions of the hand and/or forearm, but there are few bibliographic references about the incidence of complications due to the blockade. The objective of this article is to review the incidence of neurovascular complications during the practice and in the immediate postoperative period following BPB, as well as to evaluate the efficacy of the method. **Subjects and methods:** One hundred and thirty-five patients were studied; they were operated on the hand and/or forearm, by axillary BPB either as an elective surgery or as an emergency. The axillary blockade of the brachial plexus was carried out with a needle with bevel edge of 30° and size 18 G connected to a nerve-stimulator, and mepivacaine was used as a local anaesthetic. **Results:** Paresthesiae appeared during the puncture in 2.22% of cases and it was bloody in 3.70%. The blockade was effective in 90.4% of patients. The nerve that needed supplementary blockade with more frequency was the median one in 3.35% of cases. During the immediate postoperative period, 12 patients (8.88%) had paresthesiae. **Discussion:** The axillary BPB is an easy technique to carry out, and a very useful one in the surgery of the hand and/or forearm, but it is not free of complications; although they are generally light, they should not be underestimated but correctly valued.

### Spinal anaesthesia with mepivacaine for ambulatory surgery

J Castillo Monsegur, M Arilla Montanuy, JC Cabrera Ruiz-Lopera, F Escolano Villén, J Castaño Santa

*Cir May Amb* 1998;3(4):254–258

The aim of this study was to evaluate spinal anaesthesia with 25 G Whitacre needles using mepivacaine in ambulatory surgery. **Methods:** One hundred and twenty-one surgical operations under subarachnoid block with 25 G Whitacre spinal needles were studied retrospectively. A dose of 45–90 mg of mepivacaine was used according to the type of surgery. The following parameters were considered: postoperative length of hospital stay, number of patients requiring admission before discharge, number of patients coming to the emergency unit after discharge, readmission rate and factors inducing these parameters. **Results:** The male-to-female ratio was 61/60 with a mean age of 52.4(17.4) years and ASA status I–III. Anaesthesia was inadequate in one case, requiring deep sedation. The mean postoperative length of stay was 265 ± 60 min (range 133–441). The readmission rate before discharge was 10.7% (13 patients), and two patients (1.65%) came to the emergency unit after discharge: one suffering from sphincter incontinence following

an anal procedure, and the other having problems with the wound dressings. Both of them left hospital within a few hours. One patient presented pain in the lumbo-sacral region and lower extremities. No patient in the group experienced post-dural puncture headache. Readmission rate was 0. **Conclusion:** This study shows that spinal anaesthesia using mepivacaine is a safe and effective technique for day case surgery.

### Ocular hypertension prevalence at the Hospital de Sant Joan day-case unit

P Romero, O Espeso, I Martínez, D Del Castillo

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**Purpose:** The ocular hypertension in cataract surgery has been well described, and can be hazardous to visual outcome in patients with pre-existing compromised optic nerve vasculature (patients with open-angle glaucoma, high myopia, or diabetic retinopathy). In the present study, we determined the prevalence of acute intraocular pressure in our day-case surgical unit. **Methods:** Two hundred and three patients were submitted at cataract extraction from May 1995 to March 1996, in the ambulatory unit of our hospital. All patients were submitted to extracapsular cataract extraction with lens implant, all received preoperatively a drop of timolol maleate (0.5%) 1 h before surgery, and 0.5 ml of acetylcholine chloride was irrigated at the end of surgery. Postoperative controls included a rest in a reanimation unit for 6 h, a home control by a nurse the next day and a hospital control at 48 h after surgery. Ocular tension controls were carried out with a Perkins tonometer at 6, 24, and 48 h, and at 5 days postoperatively. **Results:** Patients mean age was 71.80 ± 9.03, 49.26% were males and 50.7% were females. The postoperative ocular hypertension occurred in 63 patients (31.03%). In the high risk group (patients diagnosed of open-angle glaucoma, high myopia and diabetic retinopathy), ocular hypertension was present in 18 patients (42.85%). The ocular tension was higher than 30 mm Hg in 25 patients (12.31%). Mean age and sex were not significant epidemiological factors. **Conclusions:** The high prevalence of ocular hypertension in cataract surgery is a factor that will lead us to a strict ocular tensional control after surgery, specially during the first postoperative 8 h.

### Oral ambulatory surgery. A two years experience

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The aim of this article is to present our guides and the results obtained in an oral ambulatory surgery pilot program, after 2 years of experience and 347 operations done in a Peripheral Speciality Centre.

### Conservative and haemodynamic treatment of the venous insufficiency on an ambulatory basis

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The CHIVA (cure Conservatrice et Hemodynamique de l'Insuffisance Veineuse en Ambulatoire) is a new surgical technique for the treatment of the varicose veins in inferior extremities. This article exposes the issues of the technique and explains the result and the experience that was attained with this method in 200 extremities. In conclusion, with this new method, the results are satisfactory. The advantage over the stripping procedure is mainly a lesser surgical trauma that allows one to make it in an ambulatory basis. The inconvenience is that it needs an eco-Doppler.

### What is the input of short stay surgery to the ambulatory surgical units?

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*Introduction:* In our country, the different units that practice ambulatory surgical techniques have different attitudes about short stay hospitalisation. Some work exclusively as 'day clinics', while others have facilities for 24–48 h stay. In our unit, the ambulatory and short stay surgery have coexisted since its founding. The implications and consequences of such coexistence are analysed. *Material and Methods:* We have checked the medical records of patients that underwent surgical operations in a satellite and multidisciplinary unit from its creation in May 1992 to April 1997. We have assessed participating specialities, type of operation, anaesthesia and hospitalisation, substitution indexes and morbidity. *Results:* In that period, 20.532 patients were operated on:

10.647 underwent minor surgical procedures, and 9.885 belong to the ambulatory and short stay surgery group. Of these, 5.009 were operated on by the General Surgery team, two-thirds treated on an ambulatory basis and the other third with 24 h hospitalisation. The pathologies more frequently treated were abdominal wall hernias, benign proctologic cases, pilonidal cysts and soft tissue tumours. The overall substitution index for these operations was 53% (78% if the short stay patients were included). *Conclusions:* In a unit with appropriated facilities, the development of short stay surgery programs will permit one to work with less rigid exclusion criteria, including more patients and procedures more complexes, increasing their case-mix and substitution indexes.

### Laparoscopic cholecistectomy. A retrospective survey on 147 cases

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We present a retrospective study involving 147 laparoscopic cholecystectomies carried out in section 'A' at the Department of General Surgery at the Hospital Miguel Servet from November 1991 to March 1997. The objective of this report was to evaluate the use of laparoscopic procedures in a section with high attendance pressure. We present a series of 147 patients, 110 were women and 37 men, with a mean age of 49.2 (range 40–70). One hundred and twenty patients (81.4%) did not report surgical antecedents. Twenty-five patients had had an infraumbilical laparotomy and two patients had had a supraumbilical laparotomy. The most frequent symptom of presentation was biliary colic (74.48%). The preoperative study included: hepatic enzymes (normal in 74%), abdominal ultrasounds, preoperative biliar endoscopic cholangiography in four cases, with stones removed in one case and without abnormality in three cases. We conclude that laparoscopic cholecystectomy should be available to all general surgeons, being a reliable technique on basis of the surgical responsibility of all surgeons.