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Implementation of ambulatory surgery in a university hospital: an audit comprising 873 general surgery cases

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Abstract

The Ambulatory Surgery Centre of the Lausanne University Hospital was established in 1995 as a multispeciality unit comprising general surgery, plastic surgery, otorhinolaryngology, orthopaedics and urology. In its first 3 years of activity 873 general surgery procedures were performed, including biopsies, laparoscopies, inguinal hernia repair and vein stripping. An audit of these cases revealed an overall morbidity of 1%, a rate of non-planned admissions of 0.6%, no re-admissions within 30 days, and that 95% of patients were satisfied with their care. These results demonstrate the feasibility of implementing ambulatory surgery in a teaching hospital and encourage the expansion of this practice.

Keywords: Ambulatory surgery; Hernia; Varicose veins; Proctology; Biopsy

1. Introduction

Ambulatory surgery is increasingly accepted and encouraged throughout the world by both government and private agencies [1–3]. It is now well recognised that it can achieve surgical results as good as inpatient care, and at lower costs [4,5]. This has led, in some countries, to more than 50% of elective surgery being performed on an outpatient basis [6]. Ambulatory surgery was formally introduced in Switzerland only rather recently. Scheidegger et al. [7] reported good acceptance by patients and surgical results comparable to inpatient series. This, combined with financial reforms in the Swiss health care system, stimulated the implementation of other centres of ambulatory surgery in Switzerland. The challenge now is to evaluate the effects of these changes, in order to define ways to improve the quality and efficiency of care delivered.

The Ambulatory Surgery Centre of the Lausanne University Hospital was inaugurated in April 1995. The unit is open for the specialities of general surgery, urology, orthopaedics, otorhinolaryngology and plastic surgery. Although there was no substantial change in the total number of patients referred to the hospital, a shift of cases from the traditional operating rooms to the ambulatory facilities has been observed. This study reviews the general surgery procedures performed during the first 3 years of activity at the centre.

2. Definitions

2.1. The Centre

The Ambulatory Surgery Centre is dedicated to procedures in the following categories: (1) Strictly 'ambulatory', when the patient does not need a bed (mostly local anaesthesia); (2) 'Same day', when admission and discharge are on the same day; and (3) 'One-day with night', when an overnight stay is required. Many patients benefit from a reimbursement package for 'one-day surgery', which covers all three categories. As Switzerland has an essentially liberal health care sys-

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Table 1
Contra-indications for surgery

Drug addiction, alcoholism
Cirrhosis (Child's B or C)
Severe psychiatric disorders
Coagulopathy
Unfavourable socio-economic conditions:
Living alone
Language problems
No telephone

tem, financial arrangements had been negotiated with insurance companies prior to opening the centre.

The facilities include two operating rooms, a seven-bed recovery room, a waiting room and an office. The Centre's permanent staff are formed by three recovery room nurses, one scrub-nurse, one nurse-anaesthetist, one circulating nurse and one administrative assistant. Surgeons and anaesthesiologists are assigned to the Centre according to schedules determined by their services.

2.2. Preoperative evaluation

Candidates for ambulatory surgery are evaluated once a week in the hospital's outpatient clinic. The patients are asked to complete a screening checklist designed to identify co-morbid and social conditions that may contra-indicate surgery. Table 1 summarises these contra-indications. A fully trained surgeon is responsible for confirming the indication and eligibility for ambulatory surgery. During the same visit, the patient is also evaluated by an anaesthesiologist. Preoperative laboratory testing is requested according to a pre-established protocol (Table 2). The patients are then given written preoperative instructions and the date and time for surgery. No premedication is prescribed.

2.3. Peri- and post-operative care

On the day of the operation, the patient stays in the recovery area before and after the procedure. He will return home the same day if the discharge criteria are fulfilled. These are essentially the acronym AAAAM: awake, analgesia, ambulating, alimentation and miction [10]. The patient must be taken home by someone, and have company during the entire first postoperative day. Written postoperative instructions and emergency numbers to call are given. Analgesics are provided for the first 24 h to avoid the need to stop at a pharmacy on the way home. If the criteria for discharge are not met, the patient is admitted overnight (one-day stay).

Standardised anaesthetic techniques and postoperative analgesic/anti-inflammatory drugs are used. When general anaesthesia is employed, the opiate of choice is alfentanyl, and diclofenac is administered by suppository at the end of the intervention. In hernia repair, local anaesthetic block with bupivacaine with adrenaline is added. For most cases, a mixture of tramadol and mefenamic acid is prescribed for postoperative analgesia.

The surgical techniques employed are based on well-established methods. For instance, the Shouldice technique [11] is used for inguinal hernia repair.

Patients undergoing varicose vein surgery and those who have known risk factors for thromboembolism, receive a prophylactic subcutaneous dose of heparin. In addition, vein-stripping patients are given low molecular weight heparin subcutaneously for 5 days after surgery [12,13].

A single prophylactic dose of antibiotic is used for hernia surgery and implantation of vascular devices. This practice is based on literature reports indicating a real risk of nosocomial infections in ambulatory surgery [14].

A fax is sent on the same day of surgery to the referring physician, containing the operative report and the recommended postoperative care. Patients are contacted by telephone the next day, to ascertain their adequate recovery and to evaluate pain control, the incidence of nausea or vomiting, and the general level of satisfaction. A visit to the hospital clinic is scheduled for the second day after surgery, for dressing changes and additional evaluation.

3. Patients and methods

Data were collected prospectively for 873 general surgical cases done during the first 3 years of activity at the Centre (April 1995 through April 1998). The pa-

Table 2
Preoperative tests

Age	Men	Women
<40 Years	No laboratory, or according to history	Haemoglobin
40–60 Years	Glucose, creatinine, ECG	Haemoglobin, glucose, creatinine, ECG
>60 Years	Haemoglobin, glucose, creatinine, ECG, chest X-ray	Haemoglobin, glucose, creatinine, ECG, chest X-ray

Adapted from [8,9].

Table 3
Types of anaesthesia

General	45
Regional	12
Local	37
Local + sedation	6

Values are in percent.

tients were 524 men (60%) and 349 women (40%). Their mean age was 41 years (range 16–87 years). The following parameters were registered: morbidity, efficacy of analgesia, unplanned hospitalisation, 30-day re-admission, and overall satisfaction.

4. Results

Of the total number of cases in the general surgery service 9% were shifted to the ambulatory centre. Of the patients referred for preoperative evaluation in the outpatient clinic, 10% did not qualify for ambulatory surgery.

The following operations were performed: 219 biopsies, 70% lymph nodes and 30% small tumours; 205 hernia repairs, all inguinal, 90% indirect and 10% direct; 134 excisions of varicose veins, 70% being unilateral stripping of the greater saphena; 128 proctology procedures, including excisions of anal lesions, haemorrhoidectomy, sphincterotomy and fistulectomy; 134 vascular access procedures, 90% Port-a-cath® and 10% other catheters (Groshong® and Permcath®); 16 implants of lumbar capsule, for treatment of chronic pain, as part of a clinical trial protocol [15]; 13 arterio-venous fistulas for haemodialysis (Brescia-Cimino); 24 laparoscopic cholecystectomies, 22 in the 'one-day with night,' and two in the 'same-day' category; and one lysis of adhesions by laparoscopy, for chronic abdominal pain. The types of anaesthesia used are summarised in Table 3.

Of the cases 25% were in the 'ambulatory', 65% in the 'same-day', and 10% in the 'one-day with night' category. Five patients had unplanned admissions (0.6%) for not satisfying the discharge criteria.

The complication rate was 1%. There were four haematomas, three after varicose vein stripping, and one after hernia repair; four scrotal oedemas, all after hernia repair; and one superficial cellulitis of the leg, after vein stripping. There was no mortality. No recurrences of hernias or varicose veins were observed, but the follow-up period was too short for a relevant analysis.

At the time of the first-day postoperative evaluation, 22 patients (2.5%) could not be reached by telephone. All others provided adequate information. Of these 95% were satisfied with the care they received, and 95% reported satisfactory analgesia. Five percent reported postoperative nausea or vomiting. Five patients (0.6%) were not fully satisfied, mainly complaining of delays or changes in the operating room schedule, and the remaining (4%) were uncertain at the time of the evaluation.

5. Discussion

This audit is based on the initial 3 years (1995–1998) activity at the Ambulatory Surgery Centre at Lausanne University Hospital. We assessed 873 general surgery cases, which represent approximately 25% of the cases performed in the Centre during that period. The overall evaluation is encouraging. No significant problems were found. The 'learning curve' phenomenon was not observed. This may have been the result of meticulous planning prior to opening the facilities. In that preparatory period, experienced teams were contacted, other centres were visited, agreements were made with insurance companies, and demographic data was gathered within and outside the institution. In addition, the full-time personnel were chosen based on experience and motivation.

The surgical results compare favourably with those of centres that have longer experience [16]. The overall incidence of complications was low, and there were no serious complications or deaths. The follow-up period was not sufficient to evaluate the long-term results, particularly important in hernia and varicose vein surgery. Bilateral hernias were occasionally repaired on the same day, in selected cases, usually on patients who were young and highly compliant with postoperative care.

Ambulatory requires careful planning and preparation. Deviation from this concept may have been the cause of the dissatisfaction of some patients. In the ambulatory setting, potential complications and postoperative treatment must be more accurately anticipated than for inpatient care, and patients and referring physicians must be clearly informed and actively participate. The operations should be performed, or directly supervised, by fully trained surgeons and anaesthetists using proven anaesthetic and surgical techniques. When such principles are not followed, there is greater risk of delays in the schedule. Consequently, more patients may need to be admitted for overnight observation. The preoperative visit is of paramount importance. Patients tend to feel more secure if examined by experienced physicians, ideally those who will be present in the operating theatre. In addition, this reduces errors in patient selection that may lead to cancellations or unplanned hospitalisations.

Teaching and training aspects [17], which are particularly important in a university hospital, must be care-

fully considered. It is desirable that trainees be exposed to all aspects of outpatient surgery, including patient selection and practice administration. This will prepare them to provide surgical care that is increasingly shifted into outpatient care. However, ambulatory surgery makes sense only if it can maintain or improve the quality of care, which may be difficult to achieve with the usually short rotations of physicians in training and students. It is clear that supervision by fully trained surgeons and anaesthesiologists is mandatory regardless of the level of the trainee or the magnitude of the procedure. It may also be advisable to limit the participation in ambulatory surgery to advanced trainees. This will allow them to practice many procedures that are commonly required in the surgical curriculum.

From the economic point of view, there is evidence that an ambulatory structure leads to savings compared to traditional management [4]. Although this study does not assess the financial aspects, a significant economy has been observed in all services participating in the centre. These data were reported by Wasserfallen et al. [18], who also estimated that 39% of the cost of implementation could be recovered in 1 year of optimal utilisation of the facilities. Nevertheless, in a liberal health care delivery system, it is important that administrators and insurance companies be made aware that surgeons and anaesthesiologists must not be coerced to treat as outpatients those who are better served by inpatient care.

The current study shows an excellent overall patient satisfaction rate. This high acceptability for a practice recently introduced in the community suggests that new procedures may be incorporated in the future. However, only procedures previously tested in the inpatient setting are recommended. Recently developed procedures or technologies should be adopted with caution, to ensure the safety and efficiency of the system and avoid additional training costs. A sensible resistance to pressure from insurance policies, competition, surgical advances, media, industry, and patient preferences is often needed to maintain excellence.

In summary, the present analysis shows that our initial results are comparable to those from other centres that have longer experience [16,19,20]. They confirm that ambulatory surgery is safe, effective and acceptable to patients and their relatives. This is achieved by selection criteria that consider not only the surgical pathology, but also the individual, and by using appropriate techniques and planned postoperative analgesia.

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