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## Ambulatory surgery to cope with long patient waiting lists

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The objectives of this study were to test: (a) whether an Ambulatory Surgery Unit (ASU) would be operative in our environment; (b) to investigate patient acceptance and satisfaction rates for ambulatory surgery; and (c) to assess to what extent the unit would affect general surgery waiting lists. Between October 1990 and March 1994 a total of 552 patients underwent anaesthesia and surgery and were discharged on the same day. Postoperative follow-up was by phone call or home visit by a trained nurse the following day. Total satisfaction following the procedure was expressed by 98% of the patients. A total of 523 admissions for hernia, pilonidal cysts and proctology were saved by the ambulatory unit and the general surgery waiting list was reduced from 13 to 3 months.

Key words: Ambulatory Surgery Unit, waiting lists, patient acceptance

Long waiting lists for surgical procedures due to patient overcrowding are a common problem in many countries. There are several reasons that explain this phenomenon. First is the improvement in access to medical care, particularly where a national health system is present. Second, advances in medical knowledge and technology have broadened the scope of procedures offered, and finally, ageing in western populations has increased the incidence of many pathological conditions, suitable for treatment on an ambulatory basis.

By increasing the number of medical facilities and personnel, waiting lists could be reduced, however this would be economically prohibitive. A better alternative is to optimize the use of existing resources by reducing the number of beds and assisting specialists and, simultaneously, increasing the number of procedures performed over a given period of time.

Ambulatory surgery is an example of the latter solution<sup>1,2</sup>. Resources are almost exclusively used for the care that must be given by medical personnel (surgeons, anaesthetists and nurses) in a specialized setting (operating and recovery rooms). Postoperative care is given at home under supervision by visiting nurses and a medical telephone hotline.

The Hospital de Viladecans is a 114-bed public hospital located in an industrial area near Barcelona. In

October 1990, an Ambulatory Surgery Unit (ASU) was created in order to cope with a steadily increasing waiting list. The unit was intended for procedures that traditionally required 2-7 days of hospital stay as well as for minor surgery under local anaesthesia, that was already being performed without hospital admission. The unit is used by the Departments of General Surgery, Orthopaedics, Gynaecology, Urology, Otorhinolaryngology, Ophthalmology and Dermatology.

Two operating theatres, a resuscitation room and a recovery room are for the exclusive use of the ASU. The head of the Department of Anaesthesia is in charge of the unit as the general coordinator. The unit has its own administrative and nursing personnel and is open daily from 8 am to 5 pm. Surgeons belong to the staff of the hospital.

### Materials and methods

The present study reports on the results of ambulatory surgery carried out between October 1990 and March 1994 on 552 general surgery patients regarding outcome, complications, patient acceptance and satisfaction, and effects on waiting lists. Surgeries were for: hernia, 233; pilonidal cyst, 176; proctology, 45; fibroadenomas, subcutaneous tumours and cysts and lymph node biopsy, 98.

Patients were selected in the Outpatient Clinic. Inclusion criteria included acceptance by the patient, ASA I, II or III status and access to a telephone, as shown in Table 1. Patients suitable for ambulatory surgery were informed and had to sign an acceptance

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form; they also received a simple booklet with information about ambulatory surgery and the hotline number open round the clock for any questions they may have had, pre- or postoperatively. Preoperative tests and evaluation were the same as those used for patients to be operated on as inpatients.

A preoperative evaluation by the anaesthetist was carried out on all patients. The main points of the preoperative information were reiterated and patients were provided with diazepam 10 mg p.o. and ranitidine 150 mg p.o. for the night before the operating day. On the operating day, patients came to the preoperative room after an overnight fast. Anaesthetic procedures and surgical techniques were based on preoperative diagnosis, independently of whether patients were under hospital or ambulatory surgery. Anaesthetic techniques used were: peridural 41%, local plus sedation 48%, general 7%, and intradural 4%. After the operation, patients spent 2–5 h in the recovery room and then returned home on their own. Postoperative discharge criteria are summarized in Table 2a. Failure to meet such criteria or presence of additional admission criteria shown in Table 2b resulted in hospital admission.

Postoperative analgesia was achieved with diazepam 5 mg h.s. and diclophenac 70–50 mg t.i.d. or dihydrocodeine 20 mg b.i.d. plus paracetamol 500 mg q.i.d. in patients with peptic ulcer disease. Ranitidine 150 mg b.i.d. was continued for 24 h postoperatively in all patients. The following day patients were seen or contacted by phone by a visiting nurse from the unit, and if they had a normal postoperative course, they

**Table 1.** Inclusion criteria for ambulatory surgery

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|--|
| <b>Patient</b>   |
| Acceptance and understanding of the procedure                            |
| Reasonable degree of stress towards surgery and pain                     |
| <b>Environment</b>   |
| Adult living with relatives  |
| Telephone and apartment elevator   |
| Maximum distance to hospital 10 km                                       |
| <b>Type of surgery</b>   |
| Minimal preoperative preparation   |
| Able to tolerate liquids p.o. postoperatively                            |
| Antibiotics iv not necessary   |
| Estimated duration general anaesthesia <60 min                           |
| <b>Anaesthetic risk</b>  |
| ASA I and II*  |
| ASA III if local or regional anaesthesia and minor surgery               |
| Arterial hypertension if correctly treated                               |
| Non-insulin-dependent diabetes mellitus if local or regional anaesthesia |
| Respiratory diseases if local or regional anaesthesia                    |
| <b>Exclusion criteria</b>  |
| Obesity >30% ideal body weight   |
| Psychiatric and drug abuse patients                                      |
| Patients under DVT <sup>†</sup> risk or an anticoagulation therapy       |
| Insulin-dependent diabetes mellitus                                      |
| Steroid-dependency for associated disease                                |
| Epilepsy   |

\* ASA, American Society of Anesthesiology risk scoring system. <sup>†</sup>DVT, deep venous thrombosis.

**Table 2a.** Postoperative discharge criteria

|  |
|--|
| Physiologic variables correct (Aldrete test score: 10) |
| Absence of orthostatic hypotension                     |
| Little or no pain                                      |
| Correct oral intake                                    |
| Spontaneous micturition                                |
| Absence of nausea and vomiting                         |
| Understanding of postoperative instructions            |

**Table 2b.** Postoperative admission criteria

|  |
|--|
| Adverse reaction to any drug administered                  |
| Unexpected surgical complexity                             |
| Operative time (general anaesthesia) >60 min               |
| Operation finished after 2 pm (general anaesthesia)        |
| Anaesthetic administered after 2 pm (epidural anaesthesia) |
| Pain difficult to control without opiate analgesics        |
| Lack of any of the discharge criteria after 5 pm           |

came to the Outpatient Clinic a week after the operation. If any problem was observed during the postoperative period, patients could communicate with the nurse or the operating staff 24 h a day by telephone, and a hospital visit was arranged immediately if necessary. Patients always had hospital beds available should any complication have arisen during the postoperative period.

## Results

Ninety-two per cent of patients to whom ambulatory surgery was proposed accepted the procedure. In approximately 4 yr since the unit opened 552 patients have undergone major surgical procedures. Preoperative diagnoses are shown in Table 3.

Mean operative time for general surgery patients was 33 min. Mean recovery time before discharge was 4 h 30 min. Nineteen patients (3%) could not be discharged on the operative day because of: unexpected surgical complexity, 7; pain not controlled with oral analgesia, 6; insufficient postoperative recovery by 4 pm, 4; accidental dural puncture, 1; social problems, 1. Interestingly, the non-discharge rate was 8% (11 out of 141 patients) during the first year and dropped to 2% (8 out of 411 patients) thereafter. This resulted from the exclusion of proctology patients, except for fissura-in-ano. Minor problems such as pain, small wound seroma or haematoma, nausea and vomiting, fever and questions about wound care or medication caused 66 patients (12%) to use the 24-h hotline. In 39 of them (7%), a visit to the Emergency Department was recommended. Ten patients (2%) were readmitted for local complications: unexplained fever, 3; headache as a result of accidental dural puncture during peridural anaesthesia, 1; wound haematoma or infection, 6. They were discharged 2–3 days later. One patient presented with a necrotizing fasciitis after hernia repair, that required local debridement and systemic antibiotics; he recovered uneventfully after 1 month of intensive treatment. This

**Table 3.** Preoperative diagnosis in general surgery patients

|                |            |
|----------------|------------|
| <b>Hernia</b>  |            |
| Inguinal       | 184        |
| Femoral        | 18         |
| Umbilical      | 24         |
| Epigastric     | 7          |
| Pilonidal cyst | 176        |
| Proctology*    | 45         |
| Miscellaneous† | 98         |
| <b>Total</b>   | <b>552</b> |

\*Proctology includes anal fissure and simple fistuli. Haemorrhoids are operated on on an inpatient basis. †Miscellaneous includes subcutaneous benign tumours such as lipomas, breast fibroadenomas and lymph node biopsy.

complication could not be attributed to the fact that surgery had been ambulatory. Postoperative satisfaction was complete in 98% of the patients, who affirmed they would accept an ambulatory procedure a second time. No claims have been filed by ambulatory patients.

Since 552 patients were operated on on an ambulatory basis but 29 were not discharged or readmitted, it is estimated that 523 hospital admissions were avoided in the General Surgery Department. Given that hospital stay for simple procedures such as hernia or pilonidal cyst is usually 3–5 days, over 2000 days of hospital care were saved. Bed occupancy rate in the department in the same period was 84% and mean hospital stay was 8 days. The general surgery waiting list was reduced from 13–3 months since the opening of the unit. The ambulatory surgery waiting list is 6 weeks.

### Discussion

The growth in the demand for health services is associated with an increase in the resources needed to provide a continuing healthcare service with appropriate quality standards. Ambulatory surgery, recently introduced to Spain<sup>3,4</sup>, has been proposed as a possible solution to the problem of increasing demand<sup>1,2,5,6</sup>.

Simple surgeries have been performed under local anaesthesia for a long time. However, major surgery without hospital admission<sup>7</sup> is a more recent development. It consists of procedures of median complexity, performed under any anaesthetic technique, on patients that return home on the same day of the operation. Ambulatory surgery, also called day surgery, must be distinguished from short-admission surgery, where the patient is admitted at least overnight, and from minimally-invasive surgery, a concept that refers to the surgical technique but not to the length of hospital stay<sup>8</sup>.

Ambulatory surgery includes a broad spectrum of techniques belonging to all surgical specialities that usually required a 2–8 day admission period in the past. It is often the case that the pathological conditions that are more common are the ones that can be operated on on an ambulatory basis (see Table 3).

To develop an ambulatory surgery programme, it is necessary to have<sup>9</sup>: (a) trained medical and administrative personnel; (b) hospital areas devoted to ambulatory surgery; (c) strict criteria on surgical and anaesthetic indications, patient acceptance, and postoperative admission or discharge<sup>10</sup>; and (d) postoperative home control<sup>4</sup>.

The results obtained after 4 yr of ambulatory surgery at the Hospital de Viladecans were highly satisfactory. Admissions following surgery planned as ambulatory occurred in only 3% of the general surgical procedures, and these took place mostly during the first year. By making selection criteria stricter, particularly in proctology patients where postoperative pain is poorly tolerated<sup>11</sup>, the number of unexpected admissions decreased during the second year.

Major concerns when practising ambulatory surgery are patient risk, and acceptance by both patients and medical personnel<sup>12</sup>. The present study suggests that patient risk is similar to inpatient surgery, provided a few precautions are taken. Acceptance by the patients was remarkably high and advantages for people involved were obvious. Waiting times for attendance were reduced, social and familiar impact of disease and surgery were minimized and the risk of nosocomial infections were virtually absent. Surgeons appreciated the reductions in waiting lists that reduced pressure on them and the nursing staff involved in the unit was rewarded by not having to work night or weekend shifts.

Waiting lists, a common problem in public hospitals, were progressively reduced in all surgical specialities. However, demand for surgery within the hospital was not decreased to a point where bed occupancy fell, as shown by an 84% bed-occupancy rate, similar to that of other centres without an ambulatory surgical programme. This meant that the beds saved by ambulatory surgery were used to treat a remarkable number of additional patients who would otherwise still be on the waiting list. If healthcare for the population in the area had been saturated, occupancy would have fallen, and in this case the recommended action would have been to reduce the number of beds available.

The system by which health authorities finance the provision of hospital services is a critical factor for ASUs. Budgets must be planned according to the number and severity of patients operated on, as opposed to the number of beds in use and length of hospital stay. Ambulatory surgery is heavily penalized by the latter system, common in many countries, including Catalonia. Fortunately, there is now a trend towards adjusting funding to the real hospital costs of surgical treatment, that has partly been stimulated by the experience gained with the ASU.

In conclusion, ambulatory surgery is feasible and it has the same complication rate as inpatient surgery. It results in marked reductions in waiting lists and improves the use of available resources, with excellent acceptance by patients, medical personnel and health-care administrators.

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