

The limits of ambulatory surgery

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Abstract

The objectives of this study were to analyse the results of an ambulatory surgery unit and the influence of short stay hospitalisation (24 h) on its activity. Between May 1992 and January 1998, 12412 patients have been treated. The most active speciality was general surgery, with 5567 interventions: 3.756 were performed on an ambulatory basis, and 1811 with 24 h hospitalisation. The global substitution index for this speciality was 54.7% (78.7% if we include the patients admitted overnight). 24 h Hospitalisation favours an increment of the substitution indices by allowing more flexibility in the selection criteria and more complex cases to be treated. © 1998 Elsevier Science B.V. All rights reserved.

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1. Introduction.

In the public Spanish Health System, ambulatory surgery programs have been implemented since the mid 1980s, but the development of ambulatory surgery units has not been even across Spain. Thus, regions like Catalonia, Andalucia, Valencia, Madrid, Castilla-La Mancha, the Basque Country, Cantabria and Galicia have a great number of units disseminated throughout their territories, while in other regions the development level in this field is less [1].

The different units have different attitudes toward short stay surgery (SSS). Some work exclusively as 'day hospitals', while in others there is the possibility of 24–48 h stays for some patients [2].

In Granada, the implementation of ambulatory surgery began in 1991, with the development of a pilot program which utilised the surgical areas of the general surgery service of the Hospital Virgen de las Nieves, without forming an organised and independent unit.

In May 1992, a satellite multidisciplinary unit was opened in a building belonging to the Hospital: the San Juan de Dios Centre. In this area, until that date there coexisted a chronic inpatient unit and an under utilised surgical area, endowed with the personnel and infrastructure necessary for the setting up of an ambulatory surgical unit [3].

From the beginning we have had a day hospital and available rooms. This has allowed us to offer our patients both ambulatory surgery and SSS with 24 h hospitalisation.

We seek to evaluate the results obtained by this unit, analysing the influence that the use of SSS techniques has exercised.

2. Material and methods

The patients are first evaluated in the unit's outpatient clinic, where the surgical and anaesthetic selection is made. Complete oral and written information is given about the particulars of the process. Informed consent

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is obtained, and the relevant preoperative tests carried out.

Admission takes place at 08:00 on the day of surgery, and a premedication with benzodiazepines and ranitidine is given. According to the pathology and characteristics of the patients, antiemetic prophylaxis with ondansetrón, single-dose antibiotic prophylaxis and anti-thrombotic prophylaxis with low-molecular weight heparin may also be used.

At the present time, the unit has four operating theatres and a postanaesthetic recovery area is open from 08:30 to 15:00 from monday to friday. From the outset we have had a day hospital (open from 08:00 to 21.00, monday to friday), and eight rooms in a conventional inpatient hospital area. In the latter the SSS patients spend the night as do those following ambulatory surgery (AS) requiring transfer from the day hospital (those that for any reason had not been discharged after 4–8 h of postsurgical observation).

At the time of discharge, the patient receives written instructions about medication, diet, follow-up care, etc. We use oral metamizol for postoperative analgesia. The patients are seen at 48 h (if the wound needs redressing) or at seven days post surgery. They have permanent access to a medical telephone hotline to receive medical information or to resolve any worries. We have never had home hospitalisation services, and hospital hotels do not exist in our area.

During our first five years of activity, the initial results have encouraged us to include more complex surgery and newer specialities. Equally, the exclusion criteria have been made progressively less strictly [4]. The only absolute contraindications at present are shown in Table 1. The term 'deficient social conditions' refers to patients that do not live with a responsible adult, or to those whose home does not meet minimum conditions of hygiene or infrastructure.

We have undertaken a retrospective study of the patients operated in the unit from its creation in May 1992 up to January 1998, analysing the participating specialities and types of pathology treated, the anaesthesia used and the type of hospitalisation. Also we have evaluated (for the general surgery patients) the results in terms of morbidity and substitution indices (percentage of patients dealt with on an ambulatory basis) for different pathologies.

Table 1
Absolute exclusion criteria

Non patient acceptance
Non-compensated ASA III or ASA IV status*
Deficient social conditions
Serious psychiatric pathology
Epilepsy
Drug abuse

* Levels of anaesthetic risk according to the American Society of Anesthesiology.

Table 2
Participating specialities

	Number of patients	Percentage
General surgery	5.567	44.8
Urology	2.835	22.8
Orthopaedics	2.560	20.6
Plastic surgery	391	3.2
Oral and maxillofacial surgery	378	3.1
Ear, nose and throat	318	2.6
Vascular surgery	215	1.7
Ophthalmology	148	1.2
Total	12.412	100.0

To analyse the impact of the 24 h hospitalisation on the unit's activity we have defined two indexes: ASI and GSI. The ambulatory substitution index (ASI) refers to the percentage of patients operated on on an ambulatory basis (AS) in the unit of the total operated on electively for each pathology (in the unit as well as in the reference hospital). The global substitution index (GSI) is the percentage of the total of elective operations undertaken in the unit (AS or SSS).

3. Results

A total of 25253 patients were operated on. 12841 (50.8%) Underwent minor surgery. The remaining 12412 patients (49.2%) underwent AS or SSS. For these patients, the participating specialities are shown in Table 2. The most active specialities were general surgery (44.8% of the total), urology (22.8%) and orthopaedics (20.6%).

With regard to the 5567 general surgery patients 3.756 (67.5%) were discharged after a postoperative period of 4–8 h, while 1811 (32.5%) stayed in the unit overnight. The mean number of surgical procedures performed in each session was approximately 4. Local anaesthesia with sedation was employed in 77.1% of the cases and general anaesthesia in 22.9%.

Table 3
General surgery: groups of operated pathologies

	Number of patients	Percentage
Abdominal wall hernias	3.028	54.4
Proctological conditions	834	15.0
Pilonidal cysts	770	13.8
Soft tissue lesions	544	9.8
Cholelithiasis	128	2.3
Miscellaneous	263	4.7
Total	5.567	100.0

Table 4
Evolution of the substitution indices in different pathologies

	1992–1993		1994–1995		1996–1997		Global	
	ASI	GSI	ASI	GSI	ASI	GSI	ASI	GSI
Inguinal hernia	45.9	78.1	50.2	80.6	51.3	75.4	49.2	78.3
Abdominal wall (total)	45.9	75.7	47.3	74.2	48.8	70.5	47.2	73.6
Proctology	27.9	72.6	35.4	76.7	69.0	90.4	49.5	82.2
Pilonidal cysts	74.8	85.9	83.6	93.6	89.4	95.4	83.0	92.0
Soft tissue lesions	54.3	65.2	80.0	91.3	85.3	96.0	80.6	91.6
Total	48.0	76.5	52.6	78.4	62.3	80.7	54.7	78.7

Table 3 summarises the different conditions treated. Abdominal wall hernias (54.4% of cases) were the commonest, followed by benign anorectal disorders (15%) and pilonidal cysts (13.8%).

The most frequently treated hernias were inguinal hernias, with 2335 patients (77.1% of abdominal wall surgery). Also 399 umbilical, 117 femoral, 114 epigastric, 54 incisional and 8 spigelian-type hernias were treated. The proctologic conditions treated were 315 fistulas-in-ano, 271 anal fissures and 248 haemorrhoids.

The substitution indices for the different groups of pathologies are shown in Table 4, divided into two year periods to evaluate incremental or decreasing trends.

For the total period of the study an ASI of 54.7% was obtained, and this percentage increased to 78.7% if patients admitted overnight (GSI) were included. Over the six years studied, both indices showed an increment, much more marked for ASI. The percentage of general surgery patients treated as day cases in the unit was 62.7% in the first biennium, 67.1% in the second and rose to 77.2% in the period 1996–1997.

Analysing these indices by pathology, we found that in inguinal hernia and total abdominal wall surgery there was a small increase in ASI and a slight decrease in GSI over the 1992–1997 period. With pilonidal cyst surgery there was an increment in both indices, bigger for ASI. This tendency was also apparent—even more clearly—in anorectal and soft tissue surgery.

There were no deaths or serious morbidity. Complications were related to postanaesthetic disorders (nausea, vomiting, hypotension, sickness, etc.) in 6.8% of the patients, and operative wound problems in 4.5% of cases, with a 1.9% infection rate. Only 45 patients (0.8%) were readmitted for various reasons to the unit or the reference hospital. There have been no judicial claims in the six years of activity.

4. Discussion

At present it is generally accepted that AS produces benefits for the patients (low morbidity rate, quicker

recovery and socio-economic reinstatement, lesser anxiety levels thanks to a greater understanding of the surgical procedures, etc.). The health system also benefits (decreased costs, better use of resources, reduction in the waiting lists, etc.) [1,2]. Consequently, day surgery is developing world wide [5]. In Spain there is great variation in day surgery activity with some areas undertaking a great deal and others very little [6].

In an area supported by an established and experienced unit, it would be desirable that the greatest number of patients and pathologies benefit from the advantages of ambulatory treatment [1]. To obtain this and to expand those current 'limits' of ambulatory surgery, the following possibilities should be considered:

(1) To make the selection criteria flexible [4]. In different units, circumstances like home distance, age, compensated ASA III status, obesity and surgery lasting longer than 1 h cause the exclusion of many patients. The effectiveness of these measurements has not been really demonstrated [7–9].

(2) To incorporate into the activity of each centre the pathologies susceptible to being dealt with on an ambulatory basis, but not performed at present [10].

(3) In those units where their infrastructure and resources allow it, carrying out SSS techniques could allow the safe treatment of patients with more complex pathology and those requiring more complex surgery. Exclusion criteria could be all but eliminated and the unit's services enlarged [1,7].

A not inconsequential number of patients (although receiving exhaustive information [11]) are reluctant to return to their homes only a few hours after surgery. 24 h Admission could allow these patients to be treated.

(4) The use of home hospitalisation services could also be beneficial. Increased postoperative control could permit the treatment of more complex cases and higher surgical risk patients in ambulatory units. These services would reduce the stress generated in some patients returning home a few hours after an operation [6,7].

(5) Finally, the availability and use of hospital hotels would favour the treatment of patients who live

alone or whose home lacks the minimum conditions of hygiene and infrastructure [8,12].

In our area, we do not have home hospitalisation teams or hospital hotels. However, the SSS development has not been costly, because the centre where the unit was developed had the necessary underutilised personnel and infrastructure [3].

Analysing the results obtained, it is appreciated that general surgery has been the most active surgical speciality. It was—together with urology—the initiating speciality in our unit. At the beginning, because of material limitations and lack of experience and personnel, our services were limited to primary unilateral inguino-crural hernia repair, small umbilical or epigastric hernia repair, and pilonidal cyst excision. Later, with increasing experience and resources, we included the treatment of bilateral, large or recurrent inguinal hernias, incisional hernias, benign anorectal disorders and cholelithiasis [4].

Globally, thanks to SSS, almost an additional 25% of patients operated on electively with these pathologies have been treated in the unit.

Nevertheless, during the period of study a larger increment is seen in ASI, indicating that all the time we are dealing with more patients on an ambulatory basis, despite including more complex cases and pathologies. This has been possible due to better patient information, improved collaboration at the primary assistance level and more extensive experience [11].

Analysing the data for the different pathologies, it is evident that abdominal wall pathology is treated increasingly in the day surgery setting, but with a slight and progressive decrease of GSI. To explain this tendency it is necessary to clarify that in the 1992–1993 period and also—although in smaller quantity—in the 1994–1995 period there was a great number of these patients on the surgical waiting lists [3]. In these periods they were treated in the unit, making up the fundamental nucleus of its activity. In the last biennium, with a waiting list of around two months, the reference hospital general surgery service also ‘needed’ these patients to complete its surgical programs, therefore inducing the decrease in the GSI percentages.

In relation to the rest of the treated pathologies (anorectal disorders, pilonidal cysts, skin or subcuta-

neous lesions, etc.) the unit has progressively centralised their treatment, mainly on an ambulatory basis.

Analysing the results obtained, we highlight the absence of mortality, the low rate of surgical infections and the very small number of patients readmitted due to complications. This data is similar to that of other similar series [1,13].

In conclusion, we believe it necessary to make the advantages of ambulatory surgical treatment available to the largest number of patients. In our area, thanks to SSS we have increased by an additional 25% the indices of substitution of different general surgery pathologies. Improvement of the administration policy, technological development and creation of facilities that could increase the patients’ acceptance, such as hospital hotels, will favour greater development of the units that carry out these techniques with safety and efficiency.

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