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The Development of Laparoscopic Surgery in Spain

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For the Section of Endoscopic Surgery, Spanish Association of Surgeons

Key Words

Colon cancer, laparoscopic surgery · Laparoscopic surgery, development/acceptance level · Laparoscopic appendectomy · Laparoscopic antireflux disease surgery · Laparoscopic cholecystectomy · Laparoscopic inguinal hernia repair · Opinion survey, laparoscopic surgery

Abstract

Aim: To assess degree of development and level of acceptance of laparoscopic surgery in Spain. **Method:** A questionnaire was sent to all members of the Spanish Association of Surgeons in April 2003. It included 32 questions, 9 of which were general, and 23 referred to specific clinical situations, techniques, and standard practice. **Results:** Eight hundred and fifty-eight (33.1%) surgeons replied. Only 211 (25%) surgeons reported performing advanced laparoscopic procedures. Four hundred and twenty (49%) surgeons believed that the results obtained with laparoscopic surgery were better than those obtained with conventional surgery, and 325 (40%) surgeons believed that laparoscopy would become a superspecialty. Laparoscopic surgery was considered the method of choice in the treatment of gallbladder stones (99%), gastroesophageal reflux disease (94%), acute cholecystitis (81%), in selected cases of inguinal hernia repair, and in procedures to be performed in spleen and adrenals, benign colon disease,

and obesity. Three hundred and ninety-eight (47%) surgeons considered laparoscopic surgery the preferred approach for colon cancer, 292 (34%) for appendicitis, and 155 (18%) for incisional hernia. Five hundred and five (59%) surgeons considered that the use of laparoscopic surgery had grown less than expected. **Conclusions:** The vast majority of surgeons advocated laparoscopic surgery for the treatment of gallbladder stones and gastroesophageal reflux disease. Although most hospitals had the appropriate technical facilities for performing advanced laparoscopic procedures, few surgeons actually did so.

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Introduction

Laparoscopic surgery has been one of the most important breakthroughs in recent years. Many interventions that used to be performed using an open approach are now successfully performed by laparoscopy, and this approach has had a great impact on current surgical practice, modifying many established surgical concepts [1, 2].

At present, no consensus exists on many of the indications for laparoscopic surgery, and the results obtained with these techniques are still controversial. There is also little understanding of the current level of development and acceptance of laparoscopic surgery. In Spain, there is an impression that laparoscopic surgery has not reached

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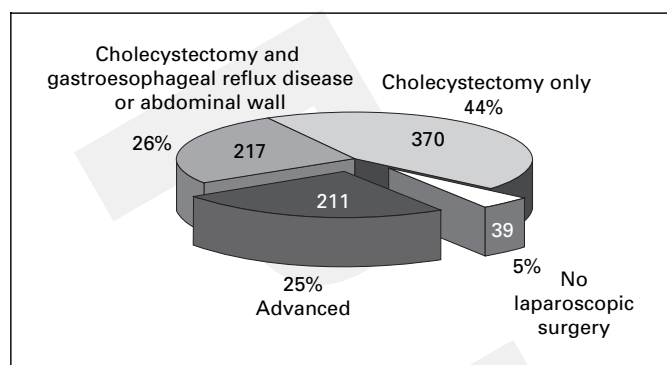


Fig. 1. Types of laparoscopic surgery performed.

its full potential [1, 3–5]. There are few data on extent of the use of laparoscopic surgery, how many surgeons practice it, what sort of training they have received, what they think of the procedure, and what technical facilities and equipment there are available. For these reasons, the Laparoscopic Surgery Section of the Spanish Association of Surgeons undertook a survey among its members to determine the degree of development and the level of acceptance of laparoscopic surgery.

Methods

The Endoscopic Surgery Section of the Spanish Association of Surgeons designed a postal survey that comprised 32 questions. The first part of the questionnaire contained general questions, including age, professional status, and availability and quality of the laparoscopic instruments. The second part of the questionnaire referred to aspects of laparoscopic training and to clinical situations, asking surgeons to name their technique of first choice and what they saw as the ideal and the real role of laparoscopic surgery in their daily practices. The questionnaire was sent by mail and e-mail to the 2,651 members of the Spanish Association of Surgeons in March and April 2003, and it was also distributed at congresses and scientific meetings held during this period.

The answers were entered into a Windows 2000 Access database. The differences between groups were analyzed using the χ^2 test, and significance was set at $p < 0.05$.

Results

General and Training-Related Responses

Eight hundred and fifty-eight (33.1%) surgeons responded to the questionnaire. The median age was 50 (range 23–76) years. Seventy-six (9%) surgeons were residents, and the others were specialist surgeons. Fifty-eight (7%) worked in private centers, 228 (28%) in regional hos-

pitals, 172 (21%) in general hospitals, and 362 (44%) worked in university hospitals.

Six hundred and ninety-nine (81%) of the surgeons can perform laparoscopic surgery at any time in their hospital. One hundred and fifty-five (18%) reported that facilities for laparoscopic surgery were available to them for 1–2 days/week, and 699 (82%) could perform emergency laparoscopic procedures.

Five hundred and eighty-four (70%) surgeons were satisfied with the laparoscopic equipment available to them, and their satisfaction was higher in private centers (45 surgeons, 79%) than in regional (155 surgeons, 68%), general (108 surgeons, 63%), or university hospitals (224 surgeons, 62%; $\chi^2 = 6.919$, $p = 0.097$). Thirty-nine (5%) of the surgeons surveyed did not carry out laparoscopic procedures of any kind. Three hundred and seventy (44%) surgeons only carried out laparoscopic cholecystectomies. Two hundred and seventeen (26%) respondents performed laparoscopic surgery for gastroesophageal reflux disease or abdominal wall defects in addition to cholecystectomies. Only 211 surgeons (25%) practiced advanced laparoscopic procedures, including surgery on colon, solid organs, and bile duct (fig. 1).

One hundred and fifty-three (33%) out of 485 surgeons under 50 years of age performed advanced laparoscopic surgery as compared with 58 (38%) out of 150 surgeons over this age ($\chi^2 = 1.38$, d.f. = 2, $p = 0.502$).

The two most common reasons for not carrying out advanced laparoscopic surgery were insufficient numbers of cases to acquire the necessary experience of the technique ($n = 171$, 35%) and objections from within the hospital itself ($n = 161$, 33%). Sixty-five (13%) surgeons considered that the laparoscopic procedures did not offer any advantages over conventional surgery, 62 (12%) did not know where to obtain specialist training, and 37 (7%) surgeons were not willing to undergo further training.

Four hundred (49%) interviewees considered the results obtained with laparoscopic surgery to be better than those obtained with conventional surgery, while 302 (37%) stated that the results depended on the surgeon's experience. Only 7 (1%) surgeons stated that the results of laparoscopic surgery were worse, and 110 (13%) believed that they were the same as those after conventional surgery.

Three hundred and twenty-five (40%) surgeons believed that advanced laparoscopic surgery would eventually become a superspecialty, while 490 (60%) believed that it would be performed by all surgeons. Four hundred and nineteen (67%) of the surgeons that did not perform advanced laparoscopy believed that it would become a superspecialty, whereas 139 (66%) surgeons who prac-

ticed advanced laparoscopy believed that it would be generally used, and only 72 (34%) of them stated that it would become a superspecialty.

Three hundred and thirty-two (40%) surgeons stated that the best method of training was under the guidance of expert laparoscopic surgeons rather than other options such as participation at congresses and laboratory courses.

Four hundred and thirty (53%) surgeons believed that residents should perform laparoscopic treatment for gastroesophageal reflux disease and abdominal wall hernia repair during their training. Two hundred and sixty-four (32%) interviewees believed that residents should perform laparoscopic cholecystectomy only, and 123 (15%) stated that residents should perform advanced laparoscopic techniques only after completion of their residency.

Evaluation of Clinical Indications

Laparoscopic surgery was considered the gold standard in symptomatic cholelithiasis by 835 (99%) surgeons. Seven hundred and fifty-four (89%) of the surgeons performed this routinely, 30 (4%) used the open approach, and the other 61 (7%) used the two techniques selectively.

In the treatment of acute cholecystitis, 156 (19%) interviewees considered that open cholecystectomy is still the best approach, while for 683 (81%) surgeons laparoscopy was the first choice. Only 280 (33%) surgeons performed it routinely however, 133 (16%) used it selectively, and 226 (27%) surgeons preferred to delay surgery or to perform open laparotomy ($\chi^2 = 395.4$, d.f. = 1, $p < 0.001$).

Only 152 (18%) surgeons considered laparoscopic treatment the first choice for bile duct stones, and only 55 (7%) performed this procedure. Preoperative endoscopic retrograde cholangiopancreatography followed by a laparoscopic cholecystectomy was the most frequently used therapy ($n = 570$, 67%), and 141 (17%) surgeons performed open surgery.

Laparoscopic cholecystectomy and intraoperative cholangiography were the preferred options in uncomplicated acute pancreatitis according to 448 (54%) surgeons. Four hundred and nine (49%) surgeons performed it routinely, while 343 (42%) surgeons performed endoscopic retrograde cholangiopancreatography followed by a laparoscopic cholecystectomy, and 78 (9%) surgeons used open surgery.

Seven hundred and eighty-seven (94%) surgeons considered that laparoscopic treatment of gastroesophageal reflux disease is the gold standard, and 662 (80%) performed it. Only 132 (16%) surgeons used an open approach, and 34 (4%) surgeons referred these patients to another hospital for laparoscopic surgery.

The laparoscopic approach was preferred by 491 (67%) of the surgeons for bariatric surgery. Sixty-eight (9%) surgeons preferred gastric banding, and 177 (24%) preferred open surgery. One hundred and seventy-four (23%) surgeons performed laparoscopic procedures routinely, 22 (3%) performed a banding procedure, 270 (35%) performed an open procedure, and 304 (39%) surgeons referred their patients to another center for obesity surgery.

Only 35 (4%) surgeons believed that laparoscopic inguinal hernia repair is the preferred option for all hernias, and 340 (40%) surgeons advocated this procedure selectively for bilateral or recurrent hernias. Four hundred and fifty-nine (56%) surgeons did not consider it the ideal technique for any hernia. Seven hundred and fifty-two (91%) surgeons routinely used an open mesh repair, 23 (3%) used a nonmesh repair, and 52 (6%) surgeons performed laparoscopic surgery. Four hundred and eighteen (77%) surgeons preferred the extraperitoneal to the trans-abdominal approach for laparoscopic hernia repair.

In colon surgery, 383 (47%) surgeons considered that the laparoscopic access is the best option in all cases, 252 (31%) only in benign colon diseases, only 7 (1%) in cancer, and 168 (21%) surgeons did not consider it the ideal technique in any case. Two hundred and thirty-seven (33%) surgeons performed laparoscopic surgery routinely, 190 (27%) selectively, and 277 (39%) never.

Laparoscopy was considered the ideal approach by 611 (72%) surgeons for adrenalectomy. Laparoscopy was also considered appropriate for the diagnosis of an acute abdomen by 559 (66%) surgeons, for abdominal cancer staging by 517 (61%), and for splenectomy by 417 (49%). Only 289 (34%) surgeons considered a laparoscopic procedure the treatment of choice for acute appendicitis, 153 (18%) for ventral hernia repair, and 111 (13%) surgeons for the assessment of abdominal trauma (table 1).

Thyroid, pancreas, esophagus, and liver laparoscopic techniques were considered inappropriate or in the initial stages of development by 806 (95%) of the surgeons. Five hundred and sixty (66%) surgeons believed that robots were likely to be introduced in the future, although 272 (32%) considered that their utility would be limited, and only 17 (2%) believed that they were useful at the present time.

Four hundred and eighty-two (59%) surgeons believed that the use of laparoscopic surgery had not grown as much as expected, 238 (30%) stated that the rate of progress of laparoscopic surgery was appropriate, and 87 (11%) surgeons believed that the value of laparoscopy had been exaggerated. One hundred and forty-two (67%) of the surgeons performing advanced laparoscopic proce-

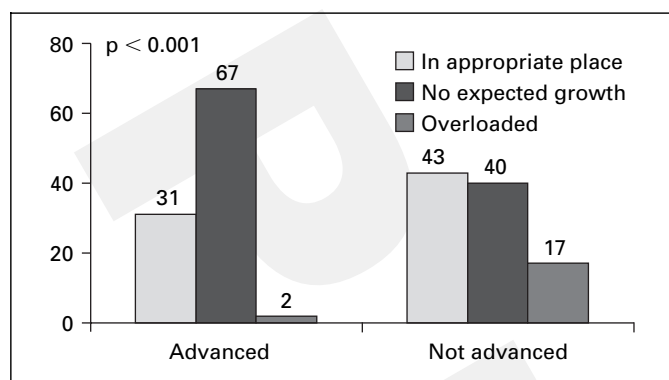


Fig. 2. Different grades of acceptance of laparoscopic surgery.

Table 1. Laparoscopic surgery considered as the first-choice treatment for the target organ or indication listed

Target organ or indication	Yes		No		Selected cases only	
	n	%	n	%	n	%
Spleen	417	49	51	6	383	45
Adrenal glands	611	72	42	5	195	23
Acute appendicitis	289	34	212	25	348	41
Acute abdomen	559	66	34	4	254	30
Abdominal trauma	111	13	196	23	546	64
Incisional hernia	153	18	263	31	433	51
Perforated ulcer	346	41	177	21	320	38
Tumor staging	517	61	51	6	279	33

dures stated that laparoscopic surgery had not achieved the expected level of development, and only 4 (2%) of them believed that there was case overload, while 251 (40%) of the surgeons who do not perform advanced laparoscopic procedures believed that growth had been below their expectations, and 107 (17%) stated that its importance had been exaggerated ($\chi^2 = 47.13$, d.f. = 4, $p < 0.001$; fig. 2).

Discussion

Many of the common procedures performed by surgeons can be carried out using the laparoscopic approach, but in many indications its effectiveness has not yet been demonstrated. Reasons which have limited the use of laparoscopy include the technical difficulty, a significant learning curve for each procedure, and the cost [2, 4, 6–11].

The response rate of the members of the Spanish Association of Surgeons was only 33.1%. Since the Association represents a number of nongastrointestinal specialties (plastic, vascular, pediatrics, etc.) and retired surgeons, the response may be considered representative. The response rates to surveys among medical professionals is generally low, and the trends shown are more important than the specific response rate [2, 3, 12–14].

Because of the rapid development of laparoscopic surgery and the lack of guidelines, the process of training surgeons in these techniques has not been standardized, and adequate training programs have not been specifically established. No consensus exists on whether advanced laparoscopic techniques should be included in standard surgical training programs [1] or learnt once specialist training has been completed [15]. In Spain, only 15% of the surgeons believed that residents should perform advanced laparoscopic procedures.

Ninety-five percent of the surgeons interviewed practiced laparoscopic surgery, but only 1 out of every 4 surgeons performed advanced laparoscopic procedures. It is not clear whether laparoscopic surgery should be a super-specialty for a few surgeons or be performed by all general surgeons. Most surgeons with laparoscopic experience believed that the use of laparoscopic techniques should be generalized, although this issue continues to be controversial [2–9]. Most of the surgeons who did not carry out advanced laparoscopic procedures pointed to the low number of patients in whom this would be performed, to resource or other local constraints as well as to the unwillingness to learn the procedures.

Although only 25% of the interviewees performed advanced laparoscopic procedures, almost half of the surgeons believed that the results of laparoscopic surgery are better than those obtained with open surgery. Thirty-seven percent believed that the results were more dependent on the surgeon's laparoscopic experience than on the technique itself. Only 13% of the surgeons believed that the laparoscopic results are worse than those obtained performing conventional surgery.

In Spain, as in other Western countries [10, 11, 13, 16, 17], it is widely accepted that laparoscopic cholecystectomy and laparoscopic gastroesophageal reflux disease treatment have fully replaced the open techniques [5, 18]. Various national studies have demonstrated the widespread use of laparoscopic cholecystectomy [3, 16, 17], but for acute cholecystitis, there were significant differences in this study between ideal (81%) and actual practices (33%).

There was also a wide acceptance of laparoscopy for acute abdomen, adrenalectomy, and tumor staging. Laparoscopy was also widely accepted for splenectomy, although not as a first-choice operation. Laparoscopic surgery in more complex situations has gradually become established in Spain. Thirty-three percent of the surgeons routinely performed laparoscopic techniques for colon surgery and 28% in selected cases; 26% of the surgeons routinely performed laparoscopic bariatric surgery. Few surgeons considered that the laparoscopic approach is the first choice for patients having colon cancer, ventral hernia, abdominal trauma, inguinal hernia, or acute appendicitis. Laparoscopy appeared to have been accepted for less frequent procedures, such as adrenalectomy and splenectomy, because of obvious advantages, while with more common procedures, such as appendectomy and hernia repair, the benefit had not been clearly demonstrated [2, 5, 10].

In Spain, only a few surgeons used the laparoscopic approach for the treatment of bile duct stones or instead preferred endoscopic retrograde cholangiopancreatography followed by laparoscopic cholecystectomy (67%), despite the unnecessary overuse of endoscopic retrograde cholangiopancreatography [17]. Most surgeons believed that advanced laparoscopic procedures, including pancreatotomy and thyroid, hepatic, and robotic surgery, are still in the developmental stage, but the overall impression was that these techniques have potential.

More than half of the surgeons considered that laparoscopic surgery had grown less than expected, although this perception varied, depending on the surgeons' laparoscopic experience. Surgeons who performed advanced laparoscopic procedures for the most part believed that the rate of growth of laparoscopic surgery had been less than expected, while those who did not believe that the rate of growth had been acceptable or that the value of the approach had been exaggerated.

Laparoscopic surgery has become the standard of care for many basic procedures. Nevertheless, advanced procedures were performed by only a few surgeons, despite the fact that most hospitals had adequate technical facilities and equipment, presumably due to the lack of evidence of their advantages over open surgery, coupled with the technical difficulty [5, 7, 9, 10]. Thus, the evidence base for advanced laparoscopic surgery needs to be expanded [4], and there should be better opportunities for training both for trainees and practicing specialists.

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