



LAPAROSCOPIC SURGERY IN GENERAL SURGERY CLINIC – WHERE WE ARE?

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ABSTRACT

More than two decades after its introduction in everyday surgical practice laparoscopic surgery is now a standard treatment option for a wide spectrum of surgical diseases. The **aim** of the study is to evaluate the profile and frequency of laparoscopic operations among all elective interventions performed in a general surgery clinic. **Materials and methods:** 1100 consecutive elective operations performed between September'2007 and March'2010 at our department of general surgery were analyzed retrospectively. **Results:** from all 1100 operations analyzed 167 (15%) were performed laparoscopically. There is a wide spectrum of laparoscopically performed interventions – 11 different procedures. The most common laparoscopic intervention was cholecystectomy – 79% of laparoscopic operations. For 88% of laparoscopically performed interventions the lack of reconstructive part of the operation was typical. The high cost of the procedures with reconstructive part as intracorporeal anastomosis was identified as a main limiting factor for their broad application. **Conclusions:** even in the presence of generally accepted consensus about the superiority of laparoscopic surgery in most of the abdominal operations its broad application is still limited in general surgical department in this country. The main reason as a limiting factor is the higher cost of some procedures compared to open surgery.

Key words: laparoscopy, laparoscopic operations, cost-effectiveness

INTRODUCTION

Since the introduction of laparoscopic cholecystectomy in 1987, the laparoscopic surgery (LS) developed rapidly and gained popularity as a standard treatment for wide spectrum of various surgical diseases. There is no doubt about the superiority of LS over open surgery in terms of reducing the surgical trauma, shortening of postoperative recovery times and reducing the total hospitalization costs for most of the procedures. However there are multiple questions arising with the introduction of LS regarding the growing cost of the equipment and instruments, as well as the need for intensive continuous specialization of the surgeons in the rapidly evolving field of LS. The latter facts are major limiting factors for the LS programs within institutions and countries with limited financial resources (1-4). The aim of this study is to

analyze the profile and frequency of laparoscopic operations among all elective interventions performed in a general surgery clinic.

MATERIALS AND METHODS

All consecutive elective operations performed between September'2007 and March'2010 at the Department of General Surgery of Thracian University Hospital were analyzed retrospectively. The data was collected from the operative reports for elective operations performed during the studied period. The profile of the laparoscopic interventions was analyzed by their type - the presence/absence of reconstructive part of the operation in relation with the need to use the expensive single-use instruments. The latter is related with the fact that the National Health Insurance Fund (NHIF) does not cover the expenses for single-use instruments used in LS in this country.

RESULTS

1100 consecutive elective operations were performed at the Department of General Surgery during the studied period. 167 (15%) from all of the operations were performed laparoscopically. There was a wide range of different laparoscopic operations performed by their frequency and technical difficulty (**Table 1**).

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Table 1. *Laparoscopic interventions performed during the studied period*

Cholecystectomy
Inguinal hernia repair (TEPP and TAPP)
Nissen fundoplication
Appendectomy
Adnexectomy
Suprarenalectomy
Splenectomy
Distal pancreatectomy
Hepatic cyst surgery
Esophagomyotomy
Diagnostic laparoscopy with laparoscopic IOUS and biopsy

The most frequently performed laparoscopic intervention was cholecystectomy – 79% of all laparoscopic operations, followed by inguinal hernia repairs – 8%. All the rest (13%) interventions are the so-called “rarely performed” laparoscopic operations. Laparoscopic cholecystectomy was performed with standard four-trocar technique till April’2009. After that we used our own modification of single incision transumbilical technique with standard instruments (5). For inguinal hernia repair we use totally extraabdominal preperitoneal technique (TEPP) excluding the first 4 patients in our experience were transabdominal preperitoneal technique (TAPP) was used. For the rest of the laparoscopic procedures the widely accepted standard surgical techniques were used. There were 7 (4%) conversions to open surgery. The causes for the conversion were as follows:

- in 5 cases of cholecystectomy due to unclear anatomy,
- in one case of giant hiatal hernia with secondary esophageal shortening which required Collis-Nissen operation,
- in one case of inguinal hernia repair.

Major complications were encountered in 3 cases (1,7%) including:

- common bile duct injury diagnosed during the operation and requiring open repair,
- small bowel injury during cholecystectomy which required open repair,
- splenic artery injury during spleen-preserving distal pancreatectomy which led to ischemic damage and cystic transformation of the spleen requiring laparoscopic splenectomy 3 months after pancreatic resection.

The cost of procedure for the patient paid for instruments, trocars, clip-appliers, meches,

staplers etc. in all cases does not outweigh the official average monthly salary for this country for the respective period.

DISCUSSION

In the developed countries laparoscopic operations rapidly replace the classic open interventions in many fields of abdominal surgery and become the standard of care. Our PubMed search using the term “laparoscopic surgery” showed continuously growing number of published articles including the last decade (**Figure 1**).

Just in the last two years the plateau of the publication activity related to LS seems to be reached which is an indirect indicator for the general acceptance and routine use of the LS around the world. In fact, to date all of the classical open abdominal operations can be performed laparoscopically irrespective of their complexity with the only exclusion of interventions requiring vascular reconstructions. However there are distinct differences in the use of LS among different countries and institutions that were closely related with the healthcare financing issues. The latter directly influenced not only the possibility to keep up to date the technical armamentarium of the hospitals in the current rapidly changing world of LS. Moreover it reflects also on the possibilities of the surgeons to safely and continuously improve their technical skills as well on the possibilities of the healthcare and the patients to afford the higher direct LS expenses. These facts have an important limiting role for a wider application of LS around the world (1-4, 6-8). The other related factors include the longer operating times for LS during the procedure learning periods, which also was related to the logistic and financial issues in the current busy operating theatre.

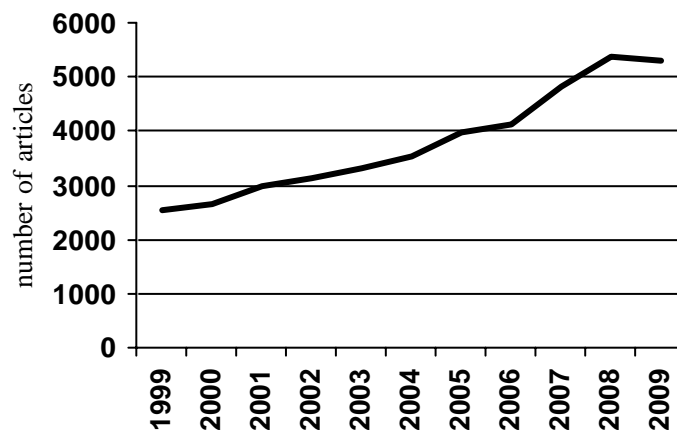


Figure 1. Number of published in the last decade PubMed articles found with the term “laparoscopic surgery”.

Our study clearly confirms the limiting role of the above-mentioned factors on the expansion of the LS in everyday surgical practice among general surgeons in this country. Laparoscopic interventions performed in our clinic vary widely according to their volume and complexity from “simple” (cholecystectomy, appendectomy) to “complex” (pancreatectomy, liver surgery etc.) procedures. The complications and conversion rate in our series of LS were comparable with those published in the literature. Moreover, new laparoscopic surgical techniques were developed by our team (5). This supported our vision that LS was not a distinct surgical subspeciality and can be safely and efficiently practiced by general surgeons. However, our analysis showed that the surgeons cannot overcome the financial issues. Our team performed all kinds of LS irrespective of their difficulty if there was not a necessity to use expensive single-use materials.

In conclusion - the actual cost of the single-use instruments for the most common laparoscopic major procedures (as a bowel resection) was expected to remain the main limiting factor for the future expansion of LS in Bulgaria, as it outweighs more than three times the official mean monthly salary in this country. The secondary effect of this situation remains the unsatisfactory qualification in LS of the general surgeons.

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