Twenty Years of Laparoscopic Cholecystectomy: Philippe Mouret—March 17, 1987

Alexandros Polychronidis, Prodromos Laftsidis, Anastasios Bounovas, Constantinos Simopoulos

It took more than 100 years for a new technique, laparoscopic cholecystectomy, to replace classic open cholecystectomy as the gold standard for the treatment of cholelithiasis. Once introduced, the evolution to laparoscopic cholecystectomy took place so suddenly and on such a large scale worldwide that, in the history of surgery, the last decade of the 20th century will certainly be remembered as that of the laparoscopic revolution. Few procedures have transformed so quickly and so dramatically the daily practice of every surgeon, and laparoscopic surgery has been firmly integrated into the curriculum of general surgery residency programs.[1]

The first open cholecystectomy was performed on July 15, 1882, by the German surgeon Carl Johann August Langenbuch (1846–1901) at the Lazarus Krankenhaus, Berlin, on a 43-year-old man.[2] Earlier, John Stough Bobbs performed the first cholecystotomy on July 15, 1867, in Indianapolis, Indiana on a 30-year-old woman with an ovarian cyst and a 4-year history of biliary colic.[3,4] In 1630 Zambecarri and in 1667 Teckoff showed in animal experiments that the gallbladder was not essential to life.[4,5]

The history of laparoscopy began in 1901, when Russian gynecologist Dimitri Ott examined the peritoneal cavity of a pregnant woman by using a head mirror and a speculum introduced into a culdoscopic opening.[6,7] In the same year, German surgeon George Kelling visualized the peritoneal cavity of a dog by using a Notze cystoscope through the abdominal wall after filtered air had been inserted using a Fiedler puncture needle (called "koelioskopie").[8] In 1911, a Swedish surgeon, Hans Christian Jacobaeus, reported his 10-year experience of 115 examinations in 72 patients. He was able to inspect both abdominal and chest cavity, without pneumoperitoneum, and he called the technique "laparothorakoskopie," from the Greek words "lapara" (meaning the part of the body corresponding to the abdomen), "thoraco" (chest) and "skopein" (meaning to look at).[9] During the same year, Bern Keim performed the first laparoscopy in the United States of America. He reported his experience using an electric headlight and a proctoscope (called organoscopy) in a patient with pancreatic cancer and in a patient with chronic appendicitis.[10] In 1924, Zollikofer used carbon dioxide to produce pneumoperitoneum,[11] and in 1929, the German Kalk designed a lens system with a 45-degree scope to permit better inspection of the abdominal viscera.[12] The first operative laparoscopy was reported in 1933 by the German Fervers who performed abdominal adhesiolysis under visualization.[8] In 1937, the Hungarian Veress first described the use of a Veress needle for the creation of pneumoperitoneum.[13]

Laparoscopy became a vital part of gynecologic practice throughout the 1960s and 1970s. On September 12, 1980, gynecologist Kurt Semm, one of the pioneers of laparoscopic surgery, performed the first laparoscopic appendectomy using a suture technique.[14] During this period, gynecologists described several therapeutic laparoscopic procedures, including tubal ligation, ovarian cystectomy, incision and drainage of tubo-ovarian abscesses, and lysis of pelvic adhesions for chronic pelvic pain.[7] Paradoxically, laparoscopy did not gain acceptance in the field of general surgery. The prevailing surgical dogma of the time was "the larger the cut, the better the surgeon."[15]

On March 17, 1987, Philippe Mouret performed the first laparoscopic cholecystectomy, in Lyon, France. This date represents a profound epistemological leap: "before that, there was nothing, after that there was laparoscopic surgery."[16] Patients have deserted the waiting rooms of conventional surgeons and crowd into those of the laparoscopic surgeons. Moreover, laparoscopic surgery now forms a fundamental part of all standard surgeons' training courses.[1]

According to Philippe Mouret, the first cholecystectomy was performed quite naturally, without premeditation. The patient was a woman of about 50 years, suffering from painful pelvic adhesions, who had been referred to him for laparoscopic adhesiolysis. The patient also suffered from symptomatic gallbladder lithiasis, and had asked him if he would perform both operations at the same time. The operation schedule mentioned: "laparoscopy, gynecological adhesiolysis, and cholecystectomy."[16]

Second Department of Surgery, Democritus University of Thrace, Alexandroupolis 68100, Greece (all authors).

Address reprint requests to: Alexandros Polychronidis, Associate Professor of Surgery, 15 Kolokotroni Street, Alexandroupolis 68100, Greece. Telephone: +302551074006, Fax: +302551030417, E-mail: polych@med.duth.gr

He performed a systematic primary exploration of the gallbladder, which was the second procedure on the schedule. The exploration was easy due to the leanness of the patient. Quite naturally and without even thinking that he would be able to complete the procedure, he started making preparations that seemed possible for the later cholecystectomy. He had considerable experience in laparoscopic surgery. He had performed 8000 previous laparoscopies and more than 100 appendectomies. This experience allowed him to perform the laparoscopic cholecystectomy in reasonable safety. On the following first postoperative day, he found the patient, fully dressed, and with every intention of leaving the hospital. She reproached him coldly for not having also operated on her gallbladder, as he had promised.[16]

Mouret repeated the procedure approximately 15 times during 1987. However, things started off in 1988 when Francois Dubois, who had been informed by a nurse, met Mouret and started experimenting on animals, and achieved extraordinary success after only a few months. Mouret then met Jacques Perissat, who improved the technique and his support instantly made the procedure appear respectable to the University, which had been resistant to change.[16]

The use of laparoscopic cholecystectomy also began in the United States around the same time. J. Barry McKernan and William B. Saye performed the first laparoscopic cholecystectomy on June 22, 1988 in Marietta, Georgia[17] followed by Eddie J. Reddick and Douglas O. Olsen of Nashville, Tennessee.[18]

Previously, in 1983, the Russian Lukichev performed the first laparoscopic cholecystostomy, but its publication was limited to the Russian literature, and it remained unknown.[19]

However, the first actual laparoscopic cholecystectomy was performed by Prof Dr Erich Muhe in Boblingen, Germany, on September 12, 1985. He performed 94 such procedures before Mouret had performed his first laparoscopic cholecystectomy in 1987.[20,21,22] However, this innovative technique was not widely accepted. Muhe was largely ignored and faced severe criticism from the German medical establishment. Instead, it was Mouret who was responsible for laparoscopic surgery achieving medical respectability by performing the first laparoscopic cholecystectomy.[23]

In 1986, Muhe presented his findings on laparoscopic cholecystectomy before the German Surgical Society Congress (GSS), when his lecture had not been included in the proceedings and next presented the lecture on cholecystectomy without laparotomy to the Lower Rhine-Westphalian Society in October 1986 in Cologne. The audience was skeptical of his claims, and the response was disappointing.[22] In 1990, his article about the first laparoscopic cholecystectomies submitted to the *American Journal of Surgery* was rejected because of his difficulties with the English language. Finally, at the 109th German Surgical Society Congress (GSS) on April 21, 1992, his pioneering work in endoscopic surgery was recognized as one of the greatest original achievements of German medicine in recent history, and Muhe received the GSS Anniversary Award.[22]

In April 1989, Professor Jacques Perissat, whose presentation had not been accepted in the main program at the meeting of the Society of American Gastrointestinal Endoscopic Surgeons (SAGES) in Louisville, Kentucky displayed a videotape on laparoscopic cholecystectomy and described his technique in a remote booth of the exhibition area. This videotape quickly attracted a larger audience than did the lecturers in the main auditorium,[24] and marked the beginning of the worldwide revolution in laparoscopic surgery for general surgeons.[7]

Laparoscopic cholecystectomy was completely incorporated into general surgery in an astonishing 2 years to 3 years, and reports of the successful use of laparoscopy in larger clinical studies led to the rapid development of minimally invasive surgery (MIS). Although the first published reports were greeted more with criticisms than with compliments, laparoscopic cholecystectomy being typically characterized as "a futureless technique," "circus surgery," and "a media show of a tightrope dancer who is totally careless of the risks for the patients,"[1] the subsequent rapid acceptance of the technique of laparoscopic surgery by the general population is unparalleled in surgical history. The rapid development of MIS was partially attributable to the interests of the industries involved in these new techniques and the associated devices, but most of all it was a natural evolution driven by the increasing number of patients who requested MIS.[23]

Laparoscopic cholecystectomy has spread rapidly worldwide mainly because postoperative pain is less, recovery is more rapid, cosmetic results are better, hospital stays are shorter, and the return to work is quicker than with the open procedure. Moreover, the traditional absolute contraindications for laparoscopic cholecystectomy in certain specialized situations have largely been resolved and rendered relative, including the presence of acute cholecystitis, a history of previous abdominal surgery, morbid obesity, pregnancy, cirrhosis and even situs inversus totalis. Most cases of open cholecystectomy now only occur as conversions from a laparoscopic approach. Therefore, inclusion of the term "laparoscopic" is essentially a pleonasm, and perhaps simply

"cholecystectomy" should be used when referring to the laparoscopic cholecystectomy procedure, with the full term "open cholecystectomy" used for classic open cholecystectomy. It appears that surgical techniques evolve faster than the corresponding terminology.[25,26]

A natural consequence was the development of new laparoscopic techniques for many other organs including the abdominal wall for repair of hernia, the colon, the stomach, the esophagus, the kidney, the spleen, the bladder, the adrenal gland, the pancreas, the liver, the common bile duct, the aorta, and other intrathoracic structures. In addition, the first transnational telesurgery was performed in 2001 on a patient in France while the operating surgeon was 6.500 km away in New York.[27]

The introduction of laparoscopic cholecystectomy represents a historical turning point that is just as momentous as the discovery of anesthesia, asepsis, antibiotics, extracorporeal circulation, and the use of operating microscopes. It is consistent with the general trend of introducing more efficacy and fewer constraints in all modern therapeutics, but where it will lead remains difficult to predict.[1]

It is now crucial for all general surgeons to keep up with this trend toward laparoscopic procedures and thereby become an integral part of the revolution in medicine created by the advent of minimally invasive surgery.[7]

References:

1. Perissat J. Laparoscopic surgery: A pioneer's point of view. *World J Surg*. 1999;23:863–868.

2. Morgenstern L. Carl Langenbuch and the first cholecystectomy. *Surg Endosc*. 1992;6:113–114.

3. Bobbs JS. Case of lithotomy of the gallbladder. *Trans Indiana Med Soc*. 1868;18:68.

4. Traverso LW. Carl Langenbuch and the first cholecystectomy. *Am J Surg*. 1976;132:81–82.

5. Langenbuch C. Ein Ruckblick auf die Entwicklung der Chirurgie des Gallensystems. *Verhandlungen der Deutschen Gesselschaft fur Chirurgie*. 1986;68.

6. Ott DO. Ventroscopic illumination of the abdominal cavity in pregnancy. *Z Akush Zhenskikl Boleznei*. 1901;15:7–8.

7. Himal HS. Minimally invasive (laparoscopic) surgery. *Surg Endosc*. 2002;16:1647–1652.

8. Vecchio R, MacFayden BV, Palazzo F. History of laparoscopic surgery. *Panminerva Med*. 2000;42:87–90.

9. Jacobaeus HC. Kurze Ubersicht uber meine Erfahrungen mit der Laparothorakoscopie. *Munchen Med Wochenschr*. 1911;50: 2017.

10. Bernkeim BM. Organoscopy: cystostopy of the abdominal cavity. *Ann Surg*. 1911;53:764–767.

11. Zollikofer R. Zur Laparoscopie. *Schweiz Med Wochenschr*. 1924;54:84.

12. Kalk H. Erfahrungen mit der laparoscopie. *Z Klein Med*. 1929;11:303.

13. Veress J. Neues Instrument zur Ausfuhrung von Brust-Punktomen und Pneumothorax Bahandlung. *Dtsch Med Wochenschr*. 1938;64:148.

14. Semm K. Endoscopic appendectomy. *Endoscopy*. 1983;15: 59–64.

15. Spaner SJ, Warnock GL. A brief history of endoscopy, laparoscopy, and laparoscopic surgery. *J Laparoendosc Adv Surg Tech A*. 1997;7:369–373.

16. Mouret P. How I developed laparoscopic cholecystectomy. *Ann Acad Med Singapore*. 1996;25:744–747.

17. Litynski GS. The American spirit awakens. In: Litynsky GS, ed. *Highlights in the History of Laparoscopy*. Frankfurt, Germany: Barbara Bernet Verlag; 1996;227–270.

18. Reddick EJ, Olsen D, Spaw A, et al. Safe performance of difficult laparoscopic cholecystectomies. *Am J Surg*. 1991;161: 377–381.

19. Lukichev OD, Filimonov MI, Zybin IM. A method of laparoscopic cholecystostomy. *Khirurgiia (Mosk)*. 1983;8:125–127.

20. Muhe E. Die erste cholezystektomie durch das laparoscop. *Langenb Arch Klin Chir*. 1986;369:804.

21. Litynski GS. Erich Muhe and the rejection of laparoscopic cholecystectomy (1985): a surgeon ahead of his time. *JSLS*. 1998; 2:341–346.

22. Reynolds W Jr. The first laparoscopic cholecystectomy. *JSLS*. 2001;5:89–94.

23. Meyer G, Huttl TP. Laparoscopic surgery in Europe. Development and education. *Surg Endosc*. 2001;15:229–231.

24. Dent TL. Framework for the future. The 1997 Gerald Marks Lecture. Society of American Gastrointestinal Endoscopic Surgeons (SAGES). March 22, 1997. *Surg Endosc*. 1997;11:975–978.

25. Polychronidis A, Karayiannakis AJ, Simopoulos C. 'Laparoscopic cholecystectomy' or simply 'cholecystectomy'? *Med Princ Pract*. 2003;12:276.

26. Slim K. When a surgical procedure loses its adjective "laparoscopic." A slow semantic evolution, scientifically justified. *Ann Chir*. 2004;129:191.

27. Marescaux J, Leroy J, Gagner M, et al. Transatlantic robot-assisted telesurgery. *Nature*. 2001;413(6854):379–380.