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Celebrating a decade of innovation in surgical education

by L. Michael Brunt, MD, FACS

HIGHLIGHTS

- Commemorates the 10th anniversary of the FLS program
- Explains the rationale for developing the program
- Describes the impact of the FLS program on general surgery practice and training
- Considers the possible future of the program

This year marks the 10th anniversary of the Fundamentals of Laparoscopic Surgery (FLS) program. In honor of this milestone, the program's founders—all of whom are leading surgical educators, past-presidents of the Society of American Gastrointestinal and Endoscopic Surgeons (SAGES), and Fellows of the American College of Surgeons (ACS)—are taking this opportunity to look back at the remarkable story behind the creation of FLS and its successful implementation.



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Beginnings

SAGES launched the FLS program in response to the need for formal education in the underlying principles and basic skills of laparoscopic surgery. The highly anticipated launch of this program in October 2004 represented the culmination of many years of research and development by some of the leading surgeons in the field of minimally invasive surgery.

Prior to the creation of FLS in 1997, learning laparoscopic surgical techniques was a haphazard affair for many surgeons. “In the early days of laparoscopy, everybody was convinced of the value of this technique, but as it was actually becoming implemented, there were problems in a couple of regards: (1) a huge group of surgeons required training, as did residents, in an environment where not a lot of teachers were available; and (2) surgeons were being trained through industry-funded courses that were highly variable in terms of their format. People would attend courses and then go back to the hospital and get credentials,” said ACS Regent Gerald M. Fried, MD, CM, FACS, FRCSC, FCAHS, Edward W. Archibald Professor and chairman, department of surgery, McGill University, and surgeon-in-chief, McGill University Health Centre Hospitals, Montreal, QC.

“Unfortunately, when laparoscopic surgery was expanded widely, there were a lot of complications related to its introduction,” Dr. Fried continued. “And it put a really good technique at jeopardy, so that benefits that were obvious with the technique weren’t being realized and patients were suffering.”

Circa 1997, two like-minded surgeons who co-chaired SAGES Continuing Education Committee at the time, and who were performing laparoscopic surgery during its infancy in the early 1990s, Lee Swanstrom, MD, FACS, and Nathaniel Soper, MD, FACS, began sharing their ideas about how to teach the basic skills of laparoscopy. “I was reading the ATLS® (Advanced Trauma Life Support®) testing manual on the way to

the SAGES meeting, and the preface to the manual featured the history of ATLS and how it had changed the way physicians care for patients. I thought ‘We need to do this for laparoscopy,’” explained Dr. Swanstrom, clinical professor of surgery, Oregon Health Sciences University and The Oregon Clinic, Portland. “Laparoscopy at the time was growing much less rapidly than we had hoped or expected. It was my feeling that this was in part because surgeons were uncomfortable with anything beyond laparoscopic cholecystectomy, as they had never mastered the basic underpinnings of laparoscopy. I met with Nat Soper and showed him the outline I had penciled out, and we were off and running,” Dr. Swanstrom said.

According to Dr. Soper, Loyal and Edith Davis Professor of Surgery and chair, department of surgery, Northwestern University Feinberg School of Medicine, Chicago, IL, and former ACS Governor, “Lee and I were amazed that, at that point, we were almost 10 years into the laparoscopic revolution, but still it was apparent that a lot of people didn’t know a lot about the cognitive aspects of it, the underpinnings, the physiology of pneumoperitoneum, the potential risks and complications, and some surgeons had not really learned some of the fundamental techniques,” Dr. Soper said. “They knew how to do a one-handed gallbladder removal, but that’s it, and we really felt that we could put together something similar to the ATLS examination for laparoscopy.”

First steps

Shortly after the initial discussion between Drs. Swanstrom and Soper, SAGES called upon them to lead the development of FLS. “In the early days, it was really the four of us—Lee and I for the first several months, Sallie [Matthews, SAGES executive director] then came and met with us and helped work with us on the initial part, and then as we looked for the techni-



Dr. Fried



Dr. Soper



Dr. Swannstrom



Dr. Schwaitzberg

cal skills part to put with the cognitive side, we pulled Gerry [Fried] in," Dr. Soper said.

In addition, Jonathan Sackier, MD, BCh, FACS, FRCS, professor of surgery, University of Virginia, Charlottesville, then a member of the SAGES board of governors and chair of SAGES continuing education committee, agreed that a consistent training program in laparoscopic skills, similar to ATLS, was needed. SAGES leadership convened a task force to discuss the development of a program that assessed laparoscopic skills and technical knowledge.

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"The following year, a group of SAGES members organized a planning meeting and a resident course," added SAGES past-president and FLS committee chair Steven D. Schwaitzberg, MD, FACS, ACS Governor; professor of surgery, Harvard Medical School; and chief of surgery, Cambridge Health Alliance, MA. "We got a committee working on this project and a bunch of different people working on the different chapters for the cognitive portion, and it was off to the races," Dr. Soper said.

With goals set, SAGES began the creation of a training program. The program would be a three-fold training package—didactics, clinical judgment, and manual skills—and would ensure that surgeons were grounded in the basics of laparoscopy. Drs. Soper and Swannstrom drafted the basic program.

"We then heard about a pelvic trainer that Carl Westcott [MD, FACS, associate professor of surgery, Wake Forest University School of Medicine, Winston-Salem, NC] was working on at Wake Forest. We approached him and he was kind enough to donate the intellectu-

al property for the trainer that became the FLS box," Dr. Swannstrom said. "We had also approached Gerry when we read about the MISTELS [McGill Inanimate System for Training and Evaluation of Laparoscopic Skills] project he was doing."

SAGES approached Sybill Storz, PhD, with the concept of FLS. She liked the idea, and Karl Storz Endoscopy-America Inc. [El Segundo, CA], provided the seed money that allowed the project to get off the ground. "I am not sure it would have happened if it hadn't been for the generosity of all these folks," added Dr. Swannstrom.

"We wanted to cover only the fundamentals of laparoscopy and not try to get into highly specialized content. We thought that would be too complicated to do right out of the box," explained Dr. Soper. "What we were interested in was truly what we called it from the very beginning—the Fundamentals of Laparoscopic Surgery." The program would comprise two different components—knowledge acquisition and the technical aspect.

Dr. Fried's contribution was critical in developing the technical portion. "Before I really got involved with SAGES, I was working on the same type of principles in my own departments at McGill, focusing more on the technical skills side," Dr. Fried said. "We had worked on developing a skills simulation program that would allow us to teach skills in a very inexpensive way, but also to embed those metrics that would allow us to actually observe and define the performance. And then, when I came to SAGES and heard about the FLS program, it was just a natural fit.

"So we brought our manual skills part to the program. The didactic/knowledge component was well advanced in its process, and it was a nice merger to bring those two together. The goal was to make it different than a regular educational test where you just passively go into a room and observe things, or you do random things on animals; in contrast, FLS was highly structured, and there was this verification part that really

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ensured that we had some basis [on which] to give a diploma or not.”

Meanwhile, the cognitive portion of the FLS exam was facilitated through the consultation of educational psychometric specialist Kaaren Hoffman, PhD, associate professor, division of medical education, Keck School of Medicine, University of Southern California, Los Angeles, who led item writing sessions throughout the nation, Dr. Schwaitzberg said. “Beta testing of the complete FLS examination occurred at eight sites, which ultimately led to the validation of the examination. Tufts Medical Center, where I ran surgical training in MIS, served as one of the original beta test sites and a site for item writing and cognitive testing,” he added.

What did it take to create FLS?

“It took an unmet need to really create FLS,” explained Dr. Fried. “We were very naïve about how complicated it was to achieve our goals, and we learned a lot by experience. We got a lot of good advice from educators who had thought about this professionally for a long period of time. Then, we had to overcome a type of bias against being measured—some people are always a little bit concerned about it. In order to accept the measure, they have to really believe that the measurements are legitimate and measuring the right thing. So, it took solid science to actually support this.”

Dr. Soper remembers when the SAGES surgeons involved in developing the program committed to moving forward and incorporating an examination into the program. “We made the leap of saying, ‘OK, if we’re going to really do this, and do it right, this needs to be the go-to way of learning and examining people to make sure they do it right. So, we’re going to pair this with a high-stakes examination.’” That was both the stroke of genius and the challenge that delayed the fruition of FLS.



An early FLS box



A new trainer box

Since the inception of FLS, more than 9,000 surgical residents, fellows, and practicing physicians have successfully completed the FLS program. Since the ACS began cosponsoring FLS in 2005, more than 275 FLS on-site testing events have occurred at more than 150 different locations in the U.S. and Canada.

Partnership with the ACS

An important milestone in the evolution of FLS was the development of a partnership with the ACS. According to Dr. Soper, “As SAGES started to roll out [the FLS project], it became apparent that greater buy-in was needed and that just because SAGES said this was a good thing would not necessarily have the same clout as if we get this paired with a national organization that had weight and gravitas. That’s when we went to the College and Ajit Sachdeva [MD, FACS, FRCSC], Director, ACS Division of Education. We were able to get them to buy into the whole concept and essentially cosponsor it. I think this, to a great extent, pushed it into greater visibility and ultimately led to the ABS [American Board of Surgery] mandating it.” As a result of the partnership with the ACS, a joint FLS committee was created that is co-chaired by Dr. Fried, representing SAGES, and Lenworth M. Jacobs, Jr., MD, MPH, FACS, representing the ACS. The joint committee continues to be responsible for oversight of major decisions related to the FLS program.

Impact on field of general surgery

FLS’ impact on general surgery has been tremendous, according to Dr. Fried. “First of all, it did achieve its goal, and that was to standardize both a knowledge set and a skills set that people had to acquire. But, more importantly, it really introduced the verification of surgical training that has become a new model for other traditional programs; that is, not only to teach someone, but also to set goals. The other really interesting thing is it changed the approach from defining training by hours or rotations to a goal can be measured, so that the concept of metrics and measurable outcomes has really permeated the whole way that we train our residents now.”

“The impact of FLS has been significant since it created a standard of validated surgical training for residen-

cy education in America. On its present trajectory, the vast majority of surgeons in America will ultimately be FLS certified,” Dr. Schwaitzberg said. “FLS introduced the reality of validated competency measurements into surgical practice,” added Dr. Swannstrom, “capsulizing the program’s impact.... In many ways the original goals for the program were exceeded.”

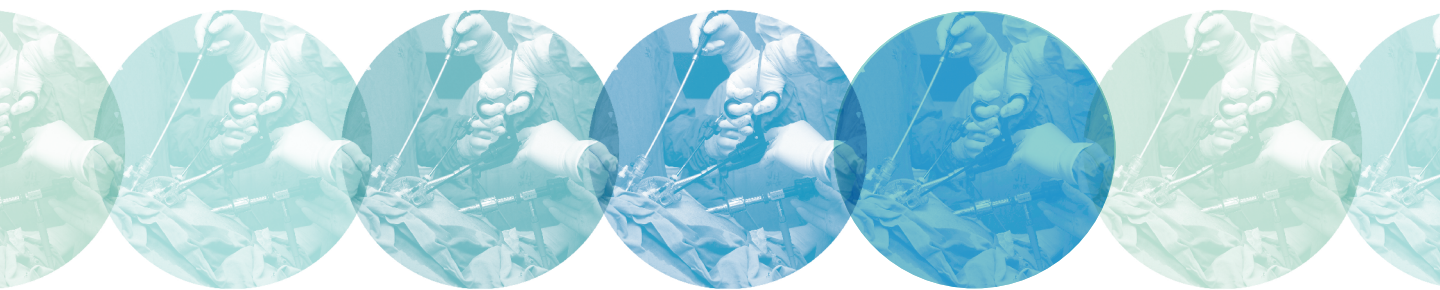
Since the inception of FLS, more than 9,000 surgical residents, fellows, and practicing physicians have successfully completed the FLS program. From the time the ACS began cosponsoring FLS in 2005, more than 275 FLS on-site testing events have occurred at more than 150 different locations in the U.S. and Canada. More than 30 countries have purchased the FLS online didactics and the FLS Training System, and surgeons from more than 20 countries have taken the FLS exam.

In 2008, the ABS mandated that all general surgery residents seeking board certification pass the FLS exam to be eligible for the general surgery qualifying exam. That same year, the Covidien Educational Fund was launched, allowing more than 7,000 general surgery residents to access FLS at low or no cost over the next six years. In 2012, in a public statement, SAGES and the ACS recommended that all general surgeons who perform laparoscopy be certified through the FLS program.

Widespread influence

Because of the trailblazing efforts of the FLS developers and the positive results of the program, other types of training modules continue to spread throughout the field of general surgery. “The whole world is watching,” said Dr. Fried, “and I think the amazing thing is that all other specialty societies, whether you talk to gynecologists or urologists or even instrument vendors, are interested in taking that model and developing educational programs that are based on the same principles.”

Nonetheless, Dr. Soper said, he has been surprised that other surgical societies have not launched similar



programs. “I think everybody realized how much work went in, and continues to go into, making this program viable and what it costs [to develop such a program]. There are very few things in surgical training that have really been developed well, to the point where they can withstand the scrutiny of high-stakes examinations. We need more of these things to be able to make sure that we’re training residents in the appropriate fashion.”

Reflecting on the fact that most surgical residents believe that laparoscopic surgery is now the norm, Dr. Soper can see that the art of surgery has come full circle. “At some point, I think that there is going to have to be someone who is taking on a way of standardized training in open abdominal surgery. As crazy as that sounds, what we’re finding is that [with] many surgeons now coming straight out of training, there are some operations they’ve only done laparoscopically. And they don’t feel comfortable doing an open gallbladder operation or an open common bile duct exploration, or some stomach operation that they’ve opened because of complications, because 99 percent are now being done laparoscopically,” he said. “So, there’s a concern that 20 years from now, when there’s some condition that requires an open operation, surgeons are not going to be nearly as comfortable as those of us who trained in the open era and learned laparoscopy on top of that experience, as opposed to the other way around.”

The future of FLS

The surgeons involved in FLS leadership believe that it is essential to regularly revisit the blueprint to make sure the program remains relevant and up-to-date. It has only been 10 years since the FLS launch, but the question that now comes up is, “Where do we go from here?” Should a similar program be developed for more advanced technical skills related to laparoscopy that can be used for a variety of procedures? A major focus of the FLS program now is on the international level, with groups in Asia,

Latin America, the Middle East, Europe, and Africa becoming FLS trained and certified and expressing interest in making the program more widely available to their surgical constituencies. Efforts are under way to determine the feasibility of translating FLS into Spanish to make the program more accessible to surgeons in Latin America and other Spanish-speaking countries.

Final thoughts

“FLS has made a big impact on my career and changed a lot of the ways I think of surgical education, and importantly, it’s brought me together with some wonderful people that I’ve met through the FLS program that have enriched me personally,” Dr. Fried said.

“The opportunity to give back to the field as one of the original FLS authors, and then years later as an FLS Committee Chair, has been fantastic,” Dr. Schwaitzberg said. “The work of the committee is endless, as the team works to continually update the material, assess for relevance, and spread out internationally.”

Dr. Swanstrom concluded, “For me, the best part of surgery is the excitement of coming up with a new idea to make things better, developing it, teaching it, and then watching it change how patients are cared for. FLS is a perfect example of this: We thought laparoscopy could be done better, we worked together to build a new way of teaching and measuring competence, and we have now seen it change how surgery is thought of around the world.” ♦