Original Article

Proposal of a Formal Gynecologic Endoscopy Curriculum

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ABSTRACT

As minimally invasive surgery becomes mainstream in the United States and around the world, the formal training of endoscopic surgeons is an issue of growing concern. With the implementation of the American Association of Gynecologic Laparoscopists/Society of Reproductive Surgeons (AAGL/SRS)–sponsored fellowship training in gynecologic endoscopy and a growing number of hands-on courses, we have the challenge of credentialing and certifying future gynecologic endoscopists. The objective of this article is to propose and to illustrate a uniform standardized core curriculum for obstetrics and gynecology residents, fellows in AAGL/SRS-sponsored fellowship programs, and participants in postgraduate courses. Consisting of 3 discrete parts, this proposal addresses formal laparoscopic training for gynecologists, already implemented and available to general surgeons, and a novel proposition for core training in hysteroscopy. The curriculum is distributed in a quarterly system with specific educational objectives in each quarter. After quarters 1 and 2, an online examination is given; after quarter 3, participants are required to take and pass a hands-on examination at a specified testing facility; and at the end of quarter 4, participants must demonstrate leadership skills in the operating room and in a teaching capacity, and promote the principles of the AAGL. Journal of Minimally Invasive Gynecology (2009) 16, 416–421 © 2009 AAGL. All rights reserved.

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As minimally invasive surgery (MIS) becomes mainstream in the United States and around the world, the formal training of endoscopic surgeons is an issue of growing concern. With the implementation of the American Association of Gynecologic Laparoscopists/Society of Reproductive Surgeons (AAGL/SRS)–sponsored fellowship in gynecologic endoscopy and a growing number of hands-on courses, we have the challenge of educating and graduating future gynecologic endoscopists who, ideally, should be able to provide laparoscopic education in the future.

To date, despite enormous progress made by the AAGL and fellowship sites in education, there is no specific and unified curriculum for training and credentialing endoscopic gynecologists. There are multiple surgical certification processes but they are primarily tailored to general surgeons. As a result, even those protocols are not applicable to gynecologists because they do not address diagnostic or operative hysteroscopy.

In the early 1990s, ACOG issued basic guidelines for the credentialing of gynecologists who want to perform laparoscopy. Around the same time, the Accreditation Council for Gynecologic Endoscopy (ACGE, now part of AAGL) issued its own guidelines including resident education, didactics, hands-on training, written examinations, and surgical skills testing, followed by supervised surgery before independent practice. The Primer of Endoscopic Surgery was also developed as a curriculum guide. Neither of these guidelines was fully adopted into practice. Basic principles identifying core competencies in gynecologic endoscopy have been proposed recently by the Canadian Endoscopy Education Project [1]. While this attempt clearly demonstrates the need for a structured gynecologic endoscopy curriculum and consensus within academia, the issue of implementing such a monumental task remains unresolved.

The objective of this article is to propose and describe a uniform standardized core curriculum for obstetrics and gynecology residents and fellows in AAGL/SRS-sponsored...
fellowship programs. Consisting of 3 discrete parts, this proposal addresses both formal laparoscopic training for gynecologists, already implemented and available to general surgeons, and a novel proposition for core training in hysteroscopy.

Application

As with any formal curriculum training, the ultimate goal is to produce an educated and competent physician capable of conducting safe independent practice. The building of necessary skills is a gradual and stepwise process that requires periodic benchmark testing and assessment of scholastic and practical skills. As a result of such philosophy, we propose a quarterly blended-learning approach to training. This would enable application of this curriculum to be variable in duration, from several months as an obstetrics and gynecology resident to a longer 1- to 2-year fellowship in gynecologic endoscopy.

It is understandable that a few months of residency training cannot compare with 1 to 2 years of fellowship training. Thus, it is logical to conclude that the pace of endoscopic teaching during residency will be accelerated and, if needed, adjusted. Nevertheless, we expect that the residents interested in minimally invasive techniques will demonstrate basic knowledge and skills necessary for successful and safe future endoscopic practice.

Core Curriculum

The first quarter of training must be dedicated to acquiring specific knowledge of pelvic and abdominal anatomy specific to laparoscopy and gynecology. Inherent in endoscopic surgery, magnification of the surgical field and panoramic and close-up views make the orientation and manipulation different from laparotomy, which requires intimate knowledge of topographic anatomy. By the end of the first quarter, a resident or fellow must be able to:

1. identify normal female pelvic anatomy;
2. identify divergence from normal anatomy;
3. identify and endoscopically trace major pelvic blood vessels, ureters, bowel, anatomic hallmarks, and abdominal wall ligaments, among other features;
4. know major branches of anterior and posterior division of the internal iliac artery and the implication of injury to a particular branch;
5. name the major nerve supplies to the pelvis (e.g., superior and inferior hypogastric plexuses, obturator nerve, and ilioinguinal and genitofemoral nerves);
6. understand the physiology and principles of creating and maintaining pneumoperitoneum;
7. understand the principles of electrosurgery;
8. know the difference between monopolar and bipolar electrosurgery;
9. understand the principles of ultrasonic energy;
10. understand the theory of the various laser energy sources used in endoscopic surgery; and
11. be familiar with plasma-generating devices, argon beam, and ultrasonic surgical systems and their application to gynecologic laparoscopy.

As the trainee finishes the first quarter of training, an online AAGL-administered test consisting of approximately 30 questions directly related to the topics described will be administered. The questions will be compiled by an AAGL committee or task force and, if necessary, will go through a validation process separate from the already validated Fundamentals of Laparoscopic Surgery (FLS) program. Residency directors or fellowship preceptors must provide a 30- to 45-minute session for the trainee to take the test and ensure adequate proctoring during the examination. It will be the responsibility of the resident or fellow interested in MIS to sign up for AAGL membership and testing privileges. The AAGL will maintain the scores of all test takers for future reference. In case of failure to pass the test, a second attempt may be allowed after a brief interval. This time should be sufficient for review and practice of test taking. If the testee fails to achieve a passing score after the second attempt, a written statement to the AAGL Educational Committee explaining the circumstances of multiple failures will be required before a decision can be made about the certification process for this particular physician.

The second quarter of training will encompass patient selection, preoperative planning and preparation, and patient counseling. The preceptee should be able to perform safe diagnostic laparoscopy and hysteroscopy with understanding of potential complications and appropriate management. By the end of the second quarter, the trainee must demonstrate the following:

1. appropriate patient selection and preoperative assessment including risks-and-benefits counseling;
2. ability to communicate with operating room and anesthesia staff about patient positioning and preparation for laparoscopic or hysteroscopic surgery;
3. ability to perform safe abdominal entry;
4. knowledge of major limitations and pitfalls of laparoscopic abdominal entry;
5. familiarity with the current literature about vascular and visceral complications of various types of abdominal entry;
6. ability to describe different and alternative sites of abdominal entry and their indications including establishment of pneumoperitoneum;
7. ability to perform safe diagnostic laparoscopy;
8. knowledge of the differences between multifunctional electrosurgical, vessel-sealing, and tissue-dissecting devices;
9. knowledge of and ability to differentiate diagnostic from operative hysteroscopy including different distention media and hysteroscopic instruments;
ability to perform safe and efficient diagnostic hysterectomy including cervical dilation and maintenance of the hysteroscopic field;

ability to recognize uterine perforation and understand the various approaches to management;

knowledge and recognition of the potential complications associated with each distention medium and ways to prevent them (e.g., active fluid management); and

ability to communicate the emergency protocol to the operating room and anesthesia staff if needed.

At the end of the second quarter, an online test is administered via the AAGL website. This test should incorporate the knowledge gained in the first quarter with the more technical skills acquired during the second quarter. We propose that the validated questions (45-60 in number) be deductive, requiring more than simple yes or no reasoning. Sixty minutes should be allotted for this test. Those questions should be compiled by active members of the AAGL and other laparoscopic societies (e.g., the Society of Laparoscopic Surgeons and the American Society for Reproductive Medicine) actively practicing laparoscopic surgery. The same pass/fail protocol described will be applicable to this testing period.

The third quarter of training should be dedicated to acquiring specific surgical skills using basic knowledge and practice learned before. By the end of the third quarter, the trainee must be able to:

(1) recognize difficult abdominal entry and use an alternative approach as required (e.g., Palmer’s point and xyphoid);

(2) recognize and manage minor complications of abdominal entry (e.g., bleeding from inferior epigastric vessels);

(3) choose appropriate instruments for certain laparoscopic procedures (e.g., graspers, electrosurgical devices, and morcellators);

(4) perform simple adnexal surgery (e.g., oophorectomy, uncomplicated cystectomy, salpingectomy, ectopic management, and tubal ligation);

(5) perform safe peritoneal sampling and destruction of peritoneal lesions such as adhesiolysis and mild endometriosis;

(6) know the boundaries of pelvic spaces and avert damage to major blood vessels, ureters, and bowel;

(7) use techniques necessary to perform safe and effective laparoscopic procedures (e.g., hydrodissection and traction/countertraction);

(8) perform laparoscopic suturing, both intracorporeal and extracorporeal;

(9) use various automatic suturing and stapling devices;

(10) conduct a laparoscopic procedure with essential hemostasis and appropriate tissue handling;

(11) understand the principles of adhesion prevention, and choose and use available agents for the prevention of adhesions after laparoscopic surgery;

(12) perform safe abdominal exit, deflation, and closure of trocar sites and camera port;

(13) choose appropriate candidates and perform hysteroscopic endometrial ablation using available instruments (e.g., rollerball or loop, and resection vs global ablation);

(14) perform hysteroscopic resection of submucosal myomas and endometrial polyps using appropriate instrumentation and fluid options (monopolar vs bipolar resectoscope and hysteroscopic morcellator); and

(15) understand available literature about efficiency of each endometrial or hysteroscopic ablation technique and the rates of complications associated with each system (e.g., success/failure rates, and risks).

At the end of the third quarter, the trainee must take and pass a skills-assessment test in endoscopy. We propose use of FLS testing centers, established under the umbrella of the Society of American Gastrointestinal and Endoscopic Surgeons and the American College of Surgeons with support of industry (e.g., Karl Storz Endoscopy; Ethicon Endo-Surgery, Inc; and Covidien AG). The FLS package, available for individual or multiple-user institutions online includes 2 CD ROMs with self-learning and assessment skills (preoperative considerations, intraoperative considerations, basic laparoscopic procedures, postoperative care and complications, and manual skills instructions and analysis), a laparoscopic training box for practice, and a proctored examination at 1 of the 23 FLS centers in the United States and Canada.

Although FLS was created for general surgery, more than 75% is applicable to any endoscopic specialty, especially patient selection, anesthesia, instrumentation, and perioperative management, which is included in the didactic portion of the FLS. Insofar as the pelvic trainer and technical aspects, the basics of endoscopy apply to all specialties. Because it was established in the late 1990s, the current format will require updating, especially with regard to energy sources, instrumentation, and robotics. We suggest collaboration between FLS and AAGL to update the curriculum for gynecology, even for general surgeons.

At the time of this proposal, Covidien had established the Covidien Educational Fund with $1.8 million. “This...gift supports the introduction of the FLS Educational program into North American residency and fellowship training. Through this grant, FLS is available to program directors to use as a standardized educational tool for teaching and verification of learning of their trainees. The Covidien Educational Fund brings no-cost training and testing directly to more than 250 surgical residency programs in the United States and Canada, reaching thousands of surgeons-in-training over a three-year course, as well as MIS/hepato-pancreato-biliary/colorectal fellowships for 1 year.” Currently, this grant neither is available to programs that provide training in gynecologic endoscopy, nor is it an announced resource. One of the goals...
of the AAGL in the development of a formal curriculum would be to ensure proper knowledge and availability of such educational resources to programs and trainees interested in pursuing gynecologic endoscopy.

The fourth quarter of the training period will be dedicated to the development of independent analytical and surgical skills in gynecologic endoscopy using and building on training and knowledge acquired. The pinnacle of the training would be not only excellent patient care but also the development of leadership skills in gynecologic endoscopy. By the end of the fourth quarter, the trainee should be able to:

- **First Quarter Basic Laparoscopic and Hysteroscopy Training**
  - AAGL administered online Testing (for AAGL Members only)
    - 30-45 Multiplechoice questions
    - AAGL maintains the score in the computer database

- **Second Quarter Laparoscopic and Hysteroscopy Training**
  - AAGL administered online Testing (Members only)
    - 60 Multiplechoice questions
    - AAGL maintains the score in the computer database
    - Physicians with sufficient training may take both part 1 and part 2 testing at the same time

- **Third Quarter Laparoscopic and Hysteroscopy Training**
  - Fundamentals of Laparoscopic Surgery (FLS)
    - Use of grant for testing
    - FLS Certification
    - AAGL collaboration with FLS and record keeping of the certificate for future reference
  - Fundamentals of Hysteroscopic Practice (FHP)
    - AAGL/ACGE administered and guided testing
    - Implementation of ACGE-developed panel on FHP
    - Development of proctorship program
    - Collaboration with residency directors and CREOG/ABOG
    - Use of industry grant for establishing test centers and equipment acquisition
    - Promotion and information on formal certification process
    - AAGL administered of FHP testing
    - FHP certification

- **Fourth Quarter Laparoscopic and Hysteroscopy Training**
  - Development of leadership skills
  - Promotion of AAGL principles

Fig. 1. Formal endoscopic curriculum with incorporated American Association of Gynecologic Laparoscopists (AAGL) and Fundamentals of Laparoscopic Surgery (FLS) testing and certification. ABOG, American Board of Obstetrics and Gynecology; ACGE, Academic Consortium for Global Education; CREOG, Council on Resident Education in Obstetrics and Gynecology; FHP, Fundamentals of Hysteroscopic Practice.
independently develop and implement an appropriate surgical and medical treatment plan for a particular endoscopic procedure;
(2) understand and, if available, use computer-enhanced laparoscopic instrumentation and techniques;
(3) compose and present educational material in the field of gynecologic laparoscopy such as lectures and grand rounds;
(4) perform widely used and accepted laparoscopic and endoscopic procedures with minimal supervision from the preceptor;
(5) critically analyze and make appropriate inferences from the literature about the multitude of laparoscopic and endoscopic techniques;
(6) understand the principles and limitations of computer-enhanced robotic surgery; and
(7) teach and assist other surgeons with various endoscopic techniques and unusual scenarios.

The progression of the proposed education and testing is shown in Fig. 1. During the MIS training period, whether it is a few months as a resident or 1 to 2 years as a fellow, program directors and preceptors must ensure protected time for endoscopic training. The fundamentals and skills of obstetrics are well covered during the years of residency. For physicians interested in obstetrics and high-risk pregnancies, a multitude of fellowship programs are available to pursue in-depth training in this field. We believe that the weight of obstetrical practice affects the ability to focus on developing necessary laparoscopic skills. The same suggestion is applicable to primary care training in the endoscopic curriculum. As much time as necessary should be dedicated to developing preoperative and postoperative clinical care, with emphasis on proper patient selection and counseling, and postoperative follow-up.

Physicians in practice who are interested in taking the AAGL/FLS testing should be allowed to do so with AAGL approval. This will ensure enrollment in the membership ranks, upholding the society’s maxim of advancing minimally invasive gynecology worldwide. Availability of the same testing to physicians taking proctored workshop courses in gynecologic endoscopy might provide additional membership benefits for the society, spreading its recognition beyond the narrow circles of gynecologic laparoscopists. Eventually, if effectively implemented, similar programs might be developed in other countries. The AAGL, with its experience and resources, will act as a guidance counselor and role model in the successful realization of formal endoscopic curriculum around the world.

The specific role of the AAGL will be multifaceted. It will (1) provide first- and second-quarter online testing for AAGL members; (2) develop constructive partnership with FLS (the Society of American Gastrointestinal and Endoscopic Surgeons and the American College of Surgeons) for logistics and implementation of joint certification; (3) maintain the records of test results, including FLS-issued certificates; (4) develop a productive relationship with the endoscopic industry for the allocation of necessary resources for the implementation of a testing program; and (5) once established, provide information and means of testing knowledge and skills in endoscopy among residency and fellowship programs.

New Development

Having centralized testing, such as offered through FLS, will ensure unified and appropriate laparoscopic training, which will lead to increased standards in patient safety. It may help to eliminate issues related to obtaining hospital privileges in gynecologic endoscopy. The AAGL, in partnership with FLS, will maintain certification protocol and keep the records of gynecologists who have taken and passed (or failed) the examination. Currently, laparoscopy applies to all specialties, and the FLS could be the foundation for assessment in any specialty. For gynecology, it is essential to add hysteroscopy.

In the future, with increased availability of robotics and computer-enhanced technology, training and assessment in this field should be added as well. An example of establishing credentialing guidelines for robotic surgery can be found in the proposal of Visco and Advincula [3] recently reported in Obstetrics and Gynecology. However, robotic surgery credentialing should be seen as a supplement to, not replacement of, FLS training. Fundamental skills in laparoscopy are essential in any aspect of MIS regardless of the use of hand- or robotic-assisted surgery. In essence, most preparation for robotic surgery lies in laparoscopic surgery. Insofar as the specific plan of Visco and Advincula, we suggest that their proposal regarding preceptorship/proctoring be revised by changing “accredited residency and fellowship programs” to “structured residency and fellowship programs.” In this way, programs such as the AAGL/SRS fellowship and others (urogynecology and reconstructive pelvic surgery) that are not accredited still can be included.

Because no training or testing in hysteroscopy is included in the FLS curriculum, the next logical step would be implementation of an AAGL-based program in hysteroscopic education for residents and fellows in obstetrics and gynecology and for physicians interested in improving their hysteroscopic skills. As with formal laparoscopic training and testing using the AAGL and established FLS centers, the core curriculum in diagnostic and operative hysteroscopy will be implemented under the direct supervision of the AAGL. Appropriately named Fundamentals of Hysteroscopic Practice (FHP), it will also provide the stepwise blended-learning approach to training in hysteroscopic techniques.

Tailored after FLS and conducted under the umbrella of the revitalized Academic Consortium for Global Education (ACGE), the hysteroscopic curriculum would consist of didactics and basic knowledge presented on multimedia (CD or DVD) and a hysteroscopic trainer. The curriculum will be compiled by the active members of the AAGL in collaboration with other societies. The segmental online testing in
the form of multiple-choice questions will be based on the information contained on the CD or DVD. Testing could be easily administered by the AAGL as described in the “Core Curriculum” section.

The goal is to provide a grassroots approach in expanding hysteroscopic education to existing obstetrics and gynecology training programs. The principles of FHP will be distributed to residency program directors, suggesting allocation of specific time for didactics and hands-on training. Most of the training programs would be able to use their existing faculty and internal resources for training purposes in hysteroscopy such as hysteroscopic training in all cases of dilation and curettage and endometrial biopsy, for example. Training using widely available uterine models and a surgically extracted uterus at the end of a hysterectomy might be a practical alternative for some programs.

Testing of hysteroscopic knowledge and skills could be conducted in such centers operated by the AAGL/ACGE. Industry has been providing educational grants and donating equipment for the establishment and operational goals of training centers. Recently, industry affiliation has been under increased scrutiny and is changing toward increased surveillance and restriction and may not be as dependable as in the past. However, we believe ongoing scrutiny is necessary and healthy and will build public trust and, it is hoped, improve the situation for those organizations and individuals who have developed legitimate, appropriate partnerships. Structured and appropriate collaborations between industry and scientific societies are not problematic but can be progressive and constructive.

We also propose the establishment of a pool of voluntary traveling faculty (made up of AAGL members) for those obstetrics and gynecology residency programs or individual physicians who are unable to undertake independent training and testing in hysteroscopy. The AAGL-appointed faculty members will travel to the designated residency program or a testing center for the periodic proctored exercise. Funding for such travel, accommodations, and testing would be anticipated to come from industry in the form of educational grants specifically designed for that purpose. The final goal is to provide low-cost or no-cost testing facilities for individuals and programs and to improve educational standards of hysteroscopy.

The AAGL, as the administering and supervising body of formal hysteroscopic education, will maintain the records of test results by those physicians who have participated in online testing. On successful completion of the FHP testing, a certificate of achievement in formal hysteroscopic education would be issued to the qualified trainee. Those certificates will also be maintained at AAGL for future reference. The expanded endoscopic training, encompassing laparoscopy and hysteroscopy, as well as FLS and ACGE testing, is shown in Fig. 1.

Conclusion

The AAGL, as a centralized and overseeing organization, should have a critical role in establishing and maintaining standards for endoscopic surgery in gynecology. A full-scale certification process including basic and practical knowledge testing could potentially be conducted under the umbrella of the AAGL. Ideally, it will encompass all aspects of standardized training and testing in MIS. Meanwhile, certificates issued by FLS and AAGL/FHP joint venture might end the seemingly endless debate about the place of endoscopy in the field of gynecology. With time, the unification of protocols and standardized testing will attract more physicians and hospitals, and more important, patients, to the idea of specialty training in gynecologic endoscopy.

References


Suggested Reading


