The SAGES University Masters Program Series
Editor-in-Chief: Brian Jacob

The SAGES Manual of Colorectal Surgery

Patricia Sylla
Andreas M. Kaiser
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To Paul, for his unwavering support and shared passion for academic excellence.

Patricia Sylla, MD, FACS, FASCRS

With the hope that a seed put into the ground will grow into a promising harvest, I dedicate this book to the hard-working army of enthusiastic individuals who share my belief that learning remains a lifelong necessity. At some point, I may need to have the confidence to put my life in their skilled hands.

Andreas M. Kaiser, MD, FACS, FASCRS

To Charles Barkley: When I was in fifth grade and absolutely certain I was going to become a professional basketball player, you told me that I had no chance. You told me that I had a better chance of becoming a doctor. So that's what I did.

To my late grandfather, Dr. Irvin M. Gerson: I have hoped to model my life and career on the way he dedicated his to his patients and family.

Most importantly, to Cristina: your patience and loyal support while holding down the chaos at home have not gone unnoticed.

Daniel Popowich, MD

Preface

Nearly 30 years after its inception, laparoscopy has been established as the preferred surgical approach in the treatment of most benign and malignant colorectal conditions. Minimally invasive surgery (MIS) not only mitigates the adverse effects of surgical trauma, but when incorporated in standardized enhanced recovery programs, a laparoscopic approach significantly reduces opioid consumption and length of hospital stay and abbreviates recovery time relative to open surgery. Long-term benefits of MIS may not have been entirely captured yet but promises cost savings from reduced readmission and reoperation for adhesion- and hernia-related complications.

Over the past decade, the adoption of MIS in colon surgery among general surgeons has steadily increased through the implementation of the Fundamentals of Laparoscopic Surgery (FLS) curriculum and teaching and training in standardized techniques for various colorectal procedures. With the introduction of robotic surgery, the adoption of MIS for pelvic surgery and rectal resections in particular has steadily grown with decreasing conversion rates among surgeons beyond their learning curve. Other emerging minimally invasive techniques with potential clinical benefit include intracorporeal anastomosis and transrectal specimen extraction, which can be performed using standard laparoscopic or robotic approaches.

Acquisition of the fund of knowledge and technical skills required to perform high-quality MIS colorectal surgery is not without challenges. The implementation of standardized techniques for various procedures and development of a structured curriculum has been recognized as instrumental in educating and training the next generation of surgeons. The *SAGES Manual of Colorectal Surgery* provides essential didactic content for the SAGES University Masters Program Colorectal Surgery Curriculum. Surgeons seeking to complete the competency, proficiency, or mastery curriculum of the Masters Colorectal Pathway for a particular anchoring colorectal procedure will find relevant educational content in this SAGES Manual.

The editors have compiled a textbook with practical contributions from experts in the field. Each chapter provides detailed guidance on preoperative and periprocedural considerations for right and left elective and emergency colorectal resections, for both benign and malignant pathologies. Technical pearls and strategies to manage pitfalls and complications are also extensively reviewed along with detailed guidance for both laparoscopic and robotic procedures.

We are grateful to SAGES for its vision, leadership, and commitment to develop high-quality educational content to support practicing surgeons, fellows, and surgical residents in bridging the gap in adoption of MIS in colorectal surgery. We are extremely grateful to the members of the SAGES Colorectal Taskforce who have worked tirelessly on a very short timeline to provide expert content for this manual. Finally, we are thankful for this collaboration which has further strengthened our shared passion for surgical education and friendship. We are confident that *SAGES Manual of Colorectal Surgery* will provide a wealth of practical guidance to surgeons along their journey to progress from competency to mastery in various minimally invasive approaches to colorectal surgery.

Acknowledgments

We would like to thank Dr. Anthony D'Andrea for his assistance in editing the chapters. We would also like to thank Elizabeth Corra, Development Editor, for all of her expert guidance in completing this manual in a remarkably short period of time. Finally, we would like to thank Erin Schwartz from SAGES for her tireless support of and engagement with the Colorectal Task Force, which was instrumental to this project.

New York, NY, USA — Patricia Sylla
Los Angeles, CA, USA — Andreas M. Kaiser
New York, NY, USA — Daniel Popowich

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Part I

Masters Program Anchoring Procedures

SAGES University MASTERS Program: Colorectal Pathway

1

Daniel B. Jones, Linda Schultz, and Brian P. Jacob

Introduction

The MASTERS Program organizes educational materials along clinical pathways into discrete blocks of content which will be accessible to surgeons at the SAGES annual meeting or logging into the online SAGES University (Fig. 1.1) [1]. The SAGES MASTERS Program currently includes 8 pathways: acute care, biliary, bariatrics, colorectal, foregut, hernia, flexible endoscopy, and robotic surgery (Fig. 1.2). Each pathway is divided into three levels of targeted performance: competency, proficiency, and mastery (Fig. 1.3). The levels originate from the Dreyfus model of skill acquisition [2], which has five stages: novice, advanced beginner, competency, proficiency, and expertise. The SAGES MASTERS Program is based on the three most advanced stages of skill acquisition: competency, proficiency, and expertise. Competency is defined as what a graduating general surgery chief resident or MIS fellow should be able to achieve; proficiency is what a surgeon approximately 3 years out from training should be able to accomplish; and mastery is what a more experienced surgeon should be able to accomplish after several years in practice.

Adapted with permission of Springer Nature from Jones, DB, Stefanidis D, Korndorffer JR, Dimick JB, Jacob BP, Schultz L, Scott DJ, SAGES University Masters Program: a structured curriculum for deliberate, lifelong learning. Surg Endoscopy, 2017;31(8):3061–71.

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Fig. 1.1 MASTERS Program logo

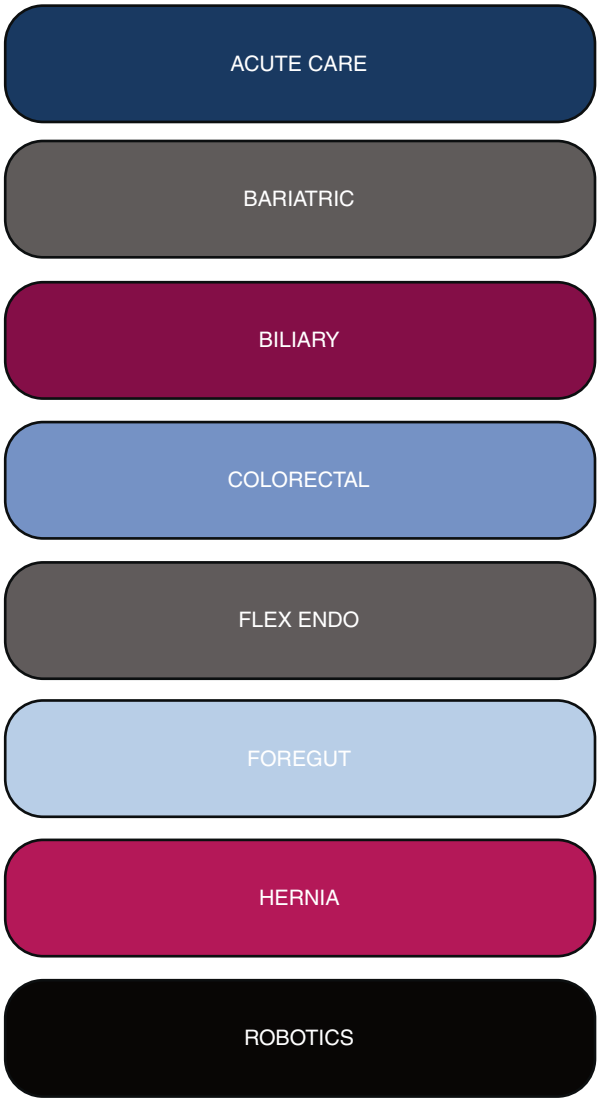

Fig. 1.2 MASTERS Program clinical pathways

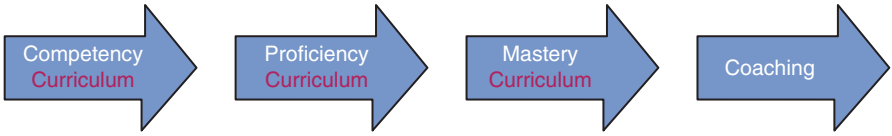

Fig. 1.3 MASTERS Program progression

Mastery is applicable to SAGES surgeons seeking in-depth knowledge in a pathway, including the following: areas of controversy, outcomes, best practice, and ability to mentor colleagues. Over time, with the utilization of coaching and participation in SAGES courses, this level should be obtainable by the majority of SAGES members. This edition of the SAGES Manual of Colorectal Surgery aligns with the current version of the new SAGES University MASTERS Program Colorectal Surgery Pathway (Table 1.1).

Colorectal Surgery Curriculum

The key elements of the Colorectal Surgery curriculum include core lectures for the pathway, which provide 45-minute general overview including basic anatomy, physiology, diagnostic work-up, and surgical management. As of 2018, all lecture contents of the annual SAGES meetings are labeled as follows: basic (100), intermediate (200), and advanced (300). This allows attendees to choose lectures that best fit their educational needs. Coding the content additionally facilitates online retrieval of specific educational material, with varying degrees of surgical complexity, ranging from introductory to revisional surgery.

SAGES identified the need to develop targeted complex content for its mastery level curriculum. The idea was that these 25-minute lectures would be focused on specific topics. It assumes that the attendee already has a good understanding of diseases and management from attending/watching competency and proficiency level lectures. Ideally, in order to supplement a chosen topic, the mastery lectures would also identify key prerequisite articles from *Surgical Endoscopy* and other journals, in addition to SAGES University videos. Many of these lectures will be forthcoming at future SAGES annual meetings.

The MASTERS Program has a self-assessment, multiple choice exam for each module to guide learner progression throughout the curriculum. Questions are submitted by core lecture speakers and SAGES annual meeting faculty. The goal of the questions is to use assessment for learning, with the assessment being criterion-referenced with the percent correct set at 80%. Learners will be able to review incorrect answers, review educational content, and retake the examination until a passing score is obtained.

In addition to this new edition of the SAGES Colorectal Surgery Manual, the MASTERS Program Colorectal Surgery curriculum taps much of the SAGES existing educational products including FLS®, FES™, FUSE™, SMART™, Top

Table 1.1 MASTERS Program colorectal curriculum outline

Curriculum elements	**Competency**
Anchoring procedure – Competency	2
Core lecture	1
Core MCE 70%	1
Annual meeting content	6
Guidelines	1
SA CME hours	6
Sentinel articles	2
Social media	2
SAGES top 21 video	1
FLS	12
Pearls	1
Credits	**35**
Curriculum elements	**Proficiency**
Anchoring procedure – Proficiency	2
Core lecture	1
Core MCE 70%	1
Annual meeting content	5
FUSE	12
Outcomes database enrollment	2
CME hours (SAGES or SAGES-endorsed)	6
Sentinel articles	2
Social media	2
SAGES top 21 video	1
Pearls	1
Credits	**35**
Curriculum elements	**Mastery**
Anchoring procedure – Mastery	2
Core lecture	1
CoreMCE 70%	1
Annual meeting content	6
Fundamentals of surgical coaching	4
Outcomes database reporting	2
CME credits (SAGES or SAGES-endorsed)	6
Sentinel articles	2
Serving as video assessment reviewer and Providing feedback (FSC)	4
Social media	7
SMART enhanced recovery	1
FES	9
Credits	**45**

21 videos, and Pearls (Fig. 1.4a–d). The Curriculum Task Force has placed the aforementioned modules along a continuum of the curriculum pathway. For example, FLS, in general, occurs during the Competency Curriculum, whereas the Fundamental Use of Surgical Energy (FUSE) is usually required during the Proficiency Curriculum. The Fundamentals of Laparoscopic Surgery (FLS) is a

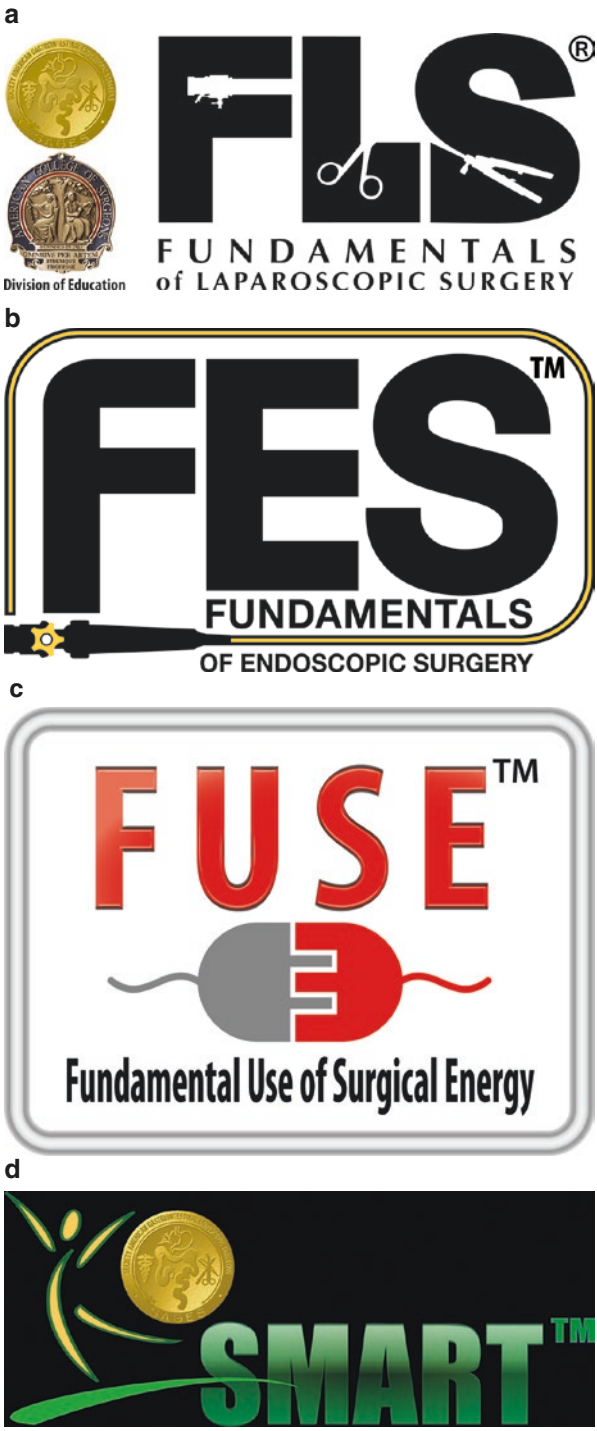

Fig. 1.4 (**a**–**d**) SAGES educational content: (**a**) FLS®; (**b**) FES™; (**c**) FUSE™; (**d**) SMART™. (Trademarks by SAGES)

multiple choice exam and a skills assessment conducted on a video box trainer. Tasks include peg transfer, cutting, intracorporeal and extracorporeal suturing, and knot tying. Since 2010, FLS has been required of all the US general surgery residents seeking to sit for the American Board of Surgery qualifying examinations. The Fundamentals of Endoscopic Surgery (FES) assesses endoscopic knowledge and technical skills in a simulator. FUSE teaches about the safe use of energy devices in the operating room and is available at FUSE.didactic.org. After, learners complete the self-paced modules, and they may take the certifying examination.

The SAGES Surgical Multimodal Accelerated Recovery Trajectory (SMART) Initiative combines minimally invasive surgical techniques with enhanced recovery pathways (ERPs) for perioperative care, with the goal of improving outcomes and patient satisfaction. Educational materials include a website with best practices, sample pathways, patient literature, and other resources such as videos, FAQs, and an implementation timeline. The materials assist surgeons and their surgical team with implementation of an ERP.

Top 21 videos are edited videos of the most commonly performed MIS operations and basic endoscopy. Cases are straightforward with quality video and clear anatomy.

Pearls are step-by-step video clips of ten operations. The authors show different variations for each step. The learner should have a fundamental understanding of the operation.

SAGES Guidelines provide evidence-based recommendations for surgeons and are developed by the SAGES Guidelines Committee following the Health and Medicine Division of the National Academies of Sciences, Engineering, and Medicine standards (formerly the Institute of Medicine) for guideline development [3]. Each clinical practice guideline has been systematically researched, reviewed, and revised by the SAGES Guidelines Committee and an appropriate multidisciplinary team. The strength of the provided recommendations is determined based on the quality of the available literature using the GRADE methodology [4]. SAGES Guidelines cover a wide range of topics relevant to the practice of SAGES surgeon members and are updated on a regular basis. Since the developed guidelines provide an appraisal of the available literature, their inclusion in the MASTERS Program was deemed necessary by the group.

The Curriculum Task Force identified the need to select required readings for the MASTERS Program based on key articles for the various curriculum procedures. Summaries of each of these articles follow the American College of Surgeons (ACS) Selected Readings format.

Facebook™ Groups

While there are many great platforms available to permit online collaboration by user-generated content, Facebook™ offers a unique, highly developed mobile platform that is ideal for global professional collaboration and daily continuing surgical education (Fig. 1.5a, b). These Facebook groups allow for video assessment, feedback, and coaching as a tool to improve practice.

Based on the anchoring procedures determined via group consensus (Table 1.2), participants in the MASTERS Program will submit video clips on closed Facebook groups, with other participants and/or SAGES members providing qualitative feedback. For example, for the colorectal competency pathway, surgeons would submit the critical steps during a laparoscopic right colectomy such as identification of the duodenum or mobilization of the ileocolic vessels. Using crowdsourcing, other surgeons would comment and provide feedback.

Fig. 1.5 (**a**, **b**) Colorectal Surgery Facebook™ Group. (Trademark by Facebook)

Fig. 1.5 Continued

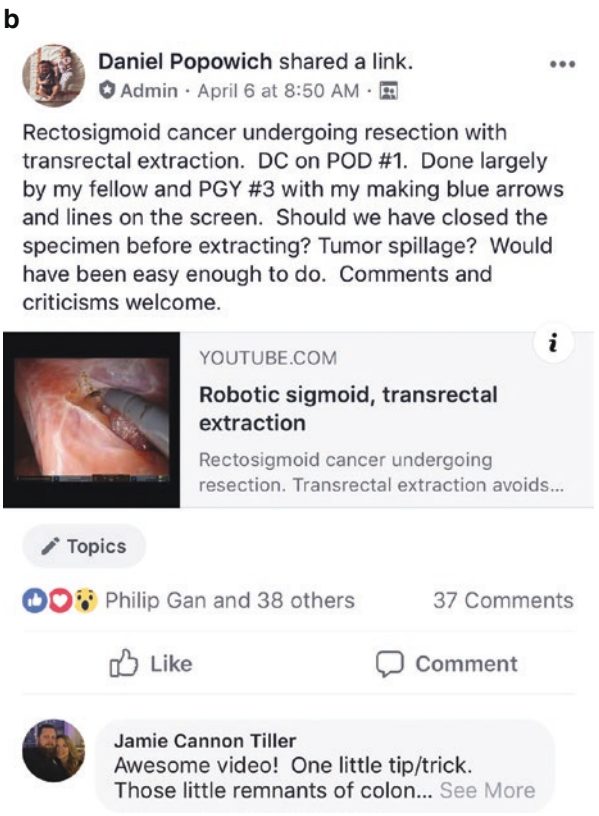

Table 1.2 Colorectal surgery anchoring procedures by pathway

Anchoring procedure by pathway	Level
Colorectal surgery	
Laparoscopic right colectomy	Competency
Laparoscopic simple left colectomy	Proficiency
Laparoscopic complex left colectomy	Mastery

Eight uniquely vetted membership-only closed Facebook groups were created for the MASTERS Program, including a group for bariatrics, hernia, colorectal, biliary, acute care, flexible endoscopy, robotics, and foregut. The Colorectal Surgery Facebook group is independent of the other groups and will be populated only by physicians, mostly surgeons or surgeons in training interested in colorectal surgery. The group provides an international platform for surgeons and healthcare providers interested in optimizing outcomes in a surgical specialty to collaborate, share, discuss, and post photos, videos, and anything related to a chosen specialty. By embracing social media as a collaborative forum, we can more effectively and transparently obtain immediate global feedback that can potentially improve patient outcomes, as well as the quality of care we provide, all while transforming the way a society's members interact.

For the first two levels of the MASTERS Colorectal Surgery Program, Competency, and Proficiency, participants will be required to post videos of the anchoring procedures and will receive qualitative feedback from other participants. However, for the mastery level, participants will submit unedited videos to be evaluated by an expert panel. A standardized video assessment tool, depending on the specific procedure, will be used. A benchmark will also be utilized to determine when the participant has achieved the mastery level for that procedure.

Once the participant has achieved mastery level, they will participate as a coach by providing feedback to participants in the first two levels. MASTERS Program participants will therefore need to learn the fundamental principles of surgical coaching. The key activities of coaching include goal setting, active listening, powerful inquiry, and constructive feedback [5, 6]. Importantly, peer coaching is much different than traditional education, where there is an expert and a learner. Peer coaching is a "co-learning" model where the coach is facilitating the development of the coachee by using inquiry (i.e., open-ended questions) in a noncompetitive manner.

Surgical coaching skills are a crucial part of the MASTERS curriculum. At the 2017 SAGES Annual Meeting, a postgraduate course on coaching skills was developed and video recorded. The goal is to develop a "coaching culture" within the SAGES MASTERS Program, wherein both participants and coaches are committed to lifelong learning and development.

The need for a more structured approach to the education of practicing surgeons as accomplished by the SAGES MASTERS Program is well recognized [7]. Since performance feedback usually stops after training completion and current approaches to MOC are suboptimal, the need for peer coaching has recently received increased attention in surgery [5, 6]. SAGES has recognized this need, and its MASTERS Program embraces social media for surgical education to help provide a free, mobile, and easy to use platform to surgeons globally. Access to the MASTERS Program groups enables surgeons at all levels to partake in the MASTERS Program curriculum and obtain feedback from peers, mentors, and experts. By creating surgeon-only private groups dedicated to this project, SAGES can now offer surgeons posting in these groups the ability to discuss preoperative, intraoperative (even during live feed), and postoperative issues with other SAGES colleagues and mentors. In addition, the platform permits transparent and responsive dialogue about technique, continuing the theme of deliberate, lifelong learning.

To accommodate the needs of this program, SAGES University is upgrading its web-based features. A new learning management system (LMS) will track progression and make access to SAGES University simple. Features of the new IT infrastructure will provide the ability to access a video or lecture on demand in relation to content, level of difficulty, and author. Once enrolled in the MASTERS Program, the LMS will track lectures, educational products, MCE, and other completed requirements. Participants will be able to see where they stand in relation to module completion, and SAGES will alert learners to relevant content they may be interested in pursuing. Until such time that the new LMS is up and running, it is hoped that the SAGES Manual will help guide learners through the MASTERS Program Curriculum.

Conclusion

The SAGES MASTERS Program Colorectal Surgery Pathway facilitates deliberate, focused postgraduate teaching and learning. The MASTERS Program certifies completion of the curriculum but is not meant to certify competency, proficiency, or mastery of surgeons. The MASTERS Program embraces the concept of continued learning after fellowship, and its curriculum is organized from basic principles to more complex content. The MASTERS Program is an innovative, voluntary curriculum that supports MOC and deliberate, lifelong learning.

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Masters Program Colorectal Pathway: Laparoscopic Right Colectomy for Benign Disease

2

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Introduction and Rationale

Being able to perform mobilization, resection, and reestablishment of bowel continuity for right colectomy is an essential set of skills for all general surgeons who perform colon and rectal procedures [1].

In basic terms, laparoscopic colorectal surgery can be broken down into three anatomic building blocks: mobilization of the right colon; mobilization of the left/sigmoid colon; and mobilization with transection of the rectum. Completion of each of these blocks results in that segment of the colon or rectum becoming a mobile midline structure which can then be exteriorized through a periumbilical or other suitable incision.

Of these three essential building blocks, right colectomy is widely considered to be technically the easiest to learn, and the procedure has the best safety profile in terms of having the lowest anastomotic leak rate compared with either sigmoid resection or rectal resection. This chapter focuses on right colectomy for benign disease in order to establish basic principles. The presumption is that benign disease is easy for the novice laparoscopic surgeon and safe for the patient [2]. The provisos are that the two commonest indications (polyp and Crohn's disease) are not complex examples of the cases for those early in the learning curve, i.e., that a right colon polyp is not clinically suspicious for a malignancy or that ileocolic Crohn's disease is not associated with fistulas or a phlegmon. Much less common examples of benign right-sided disease include diverticular disease and cecal volvulus.

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Indications and Contraindications

The commonest indication for right colon resection is neoplasia of the right colon, which includes right colon cancer and right-sided polyps. Resection of the right colon for known malignancy is covered in a separate chapter. Although polyps of the right colon that are too large to be resected endoscopically should also be considered to harbor a risk of cancer and an oncologic resection should be performed, polyps thought to be at low risk for harboring malignancy are generally felt to be a safe model for the novice laparoscopic surgeon.

The next commonest indication is ileocolic Crohn's disease [3]. Early in the learning curve, it is wise to avoid complex Crohn's disease with multiple fistulas or a tethered phlegmon, but simple ileocolic disease is an excellent model for early experience. Knowledge of how to mobilize the right colon and transect the mesentery is also necessary for more extensive colorectal procedures including total colectomy or proctocolectomy for indications such as Crohn's colitis, ulcerative colitis, colonic polyposis syndromes, and colonic inertia.

Other general contraindications to a laparoscopic approach, not related to the specific procedure, also apply, such as marked colonic or small-bowel distention precluding attainment of an adequate pneumoperitoneum; levels of obesity that can also prevent an adequate working space; hemodynamic instability; and intestinal perforation with multiloculated pus or fecal peritonitis. A relative contraindication, dependent on the experience of the surgeon, is advanced tumor with involvement of adjacent organs requiring en bloc resection.

Principles and Quality Benchmarks

Whatever the indication for right colectomy, establishment of the landmarks is critical for a safe procedure. Mobilization of the right colon is the simplest of the three building blocks described above. It introduces skills such as recognition of the retroperitoneal plane and identification of the right ureter, inferior vena cava (IVC), and duodenum and incorporates decision-making regarding delineation of the vasculature and where it should be divided.

The primary distinction between resection for benign disease and resection for malignant disease is that oncologic principles are not in force. For right colon cancer, an oncologic operation requires specific margins of bowel resection, high ligation of the vascular pedicles, and an intact mesenteric envelope to ensure adequate lymph node harvest. In benign disease, e.g., Crohn's ileocolitis, resection margins are determined by the extent of disease, and transection of the mesentery can be a "division of convenience," i.e., dividing the colon where the division is most easily achieved without the potential additional dissection and exposure required for proximal ligation of vascular pedicles.

Another principle in oncologic resection is maintenance of an intact mesentery and standard extent of lymphadenectomy to meet current guidelines for lymph node harvest, and this is captured in the concept of complete mesocolic excision (CME).

During mobilization of the colon, this means in essence remaining in the correct embryologically defined anatomical plane that separates the retroperitoneum from the colon. This is a bloodless plane, and staying in this plane protects the ureter, inferior vena cava (IVC), and duodenum. It is therefore recommended to use this dissection plane also for benign disease, even though there is no oncologic necessity as in a cancer case.

There are no benchmarks specific to the performance of right colectomy for benign disease. However, resection margins for large polyps with a risk of cancer should be identical to a cancer operation. In Crohn's disease the standard of care is to resect to macroscopically and palpably normal bowel.

Preoperative Planning, Patient Workup, and Optimization

As with all patients being considered for an operation, the diagnosis should be reviewed and confirmed. If necessary, further expert opinions should be sought regarding the need for resection, e.g., the role of an adjusted medication regimen in Crohn's disease, or repeated colonoscopic evaluation of a large polyp if the Paris classification were not reported on the original procedure. The location of pathology should be confirmed as far as possible preoperatively, with tattooing, CT imaging, etc. to avoid the need for intraoperative colonoscopy unless the latter is considered part of the procedure (e.g., combined endoscopic resection/laparoscopic visualization of a polyp).

All patients undergoing elective resection of the colon should undergo a general workup to optimize their condition for an operation in addition to the appropriate workup for the specific disease entity. It is now standard of care that specific entities are addressed or corrected for preoperative patient optimization: anemia, poor blood sugar control, malnutrition, smoking, and excessive alcohol use. If time allows, consideration should also be given to preconditioning of the deconditioned patient. The reader is also referred to the relevant chapters on checklist for patients in preparation for laparoscopic colorectal surgery (Chap. 9) and enhanced recovery protocols in colorectal surgery (Chaps. 7 and 8) [4].

Operative Setup

Operating Room Setup

Careful placement of the video screens, insufflator, and light source is required to maximize access to the abdomen and minimize entanglement of cords (Fig. 2.1). The primary view screen is generally on the right side of the patient, with the subsidiary screen on the left. Some ORs will have ceiling-mounted booms that carry the equipment and make this planning simpler. In ORs with cart-mounted equipment, one must anticipate that the surgeon and camera assistant will both need to be on the left side of the patient, facing the right colon, and the bank of equipment needs to be

Fig. 2.1 Operating room setup

able to move between the patient's hip and shoulder in order to maintain the desirable straight line between the surgeon's hands, operative site, and screen, as this helps to minimize surgeon fatigue.

Patient Positioning

Steep position changes are often necessary to facilitate exposure and move small bowel out of the operative field, and it is imperative to prevent slipping. The patient is usually placed in the supine position, on egg crate foam secured to the OR table, or other mechanism to prevent the patient moving during steep position changes. A draw sheet is placed beneath the patient, and behind the foam to maximize patient contact with the foam, to then allow the sheet to be wrapped around the patient's arms to align them alongside the patient after padding of the hands. Alternatively, a combined synchronous position with the patient in low stirrups can be considered to allow for the surgeon to be positioned between the legs to facilitate access during mobilization of the hepatic flexure. This is helpful when mobilization of the hepatic flexure is more complex than usual (phlegmon/large mass at the hepatic flexure, obesity) or if intraoperative endoscopy is anticipated. In this case, the patient's thighs should be flat and aligned with the patient's abdomen to prevent interference of the patient's knees during the use of lower abdominal trocars. During the main portion of the case, both surgeon and assistant will need to be on the left side of the patient, facing the right colon. Preferably, both arms are tucked at the patient's sides, or at least the left arm should be tucked alongside the patient.

Operative Technique: Surgical Steps

There are, quite simply, two approaches to the right colon. One either chooses lateral-to-medial [5] or medial-to-lateral. Multiple other approaches have been described including inferior upwards and top-down from the hepatic flexure. This does not change the fact that there are basically two approaches. The lateral-to-medial approach uses the right lateral peritoneal reflection as a marker for entering the correct retroperitoneal plane. The medial-to-lateral approach starts by isolating the base of the ileocolic pedicle and using this as an entry into the retroperitoneal plane.

This chapter will focus on the technique of extracorporeal creation of the anastomosis following resection. The techniques for intracorporeal anastomosis are covered in a separate chapter.

Trocar Placement

Insertion of trocars should be adapted to the case.

In the most simple cases, i.e., limited ileocolic resection in the patient with BMI <30, it is possible to fully mobilize the right colon and exteriorize it through a periumbilical incision, without needing to divide either the mesentery or the bowel intracorporeally. A triangular configuration, facing the right colon, uses umbilical, suprapubic, and left lower quadrant port sites.

In the event that the case is not simple, requiring an additional port either to divide the mesentery or to mobilize a phlegmon, an additional fourth trocar is placed (Fig. 2.2). This can be positioned in the right lower quadrant or the left upper quadrant, where an instrument through this port is generally deployed by the camera holder.

Mobilization of the Right Colon

Lateral-to-Medial Dissection (Table 2.1)

The main aim of this approach is full mobilization of the right colon to the midline. This makes the right colon a midline structure and allows choices regarding ligation of the vasculature and transection of the mesentery [6].

Classically in this approach, the patient is first placed in Trendelenburg position with the right side inclined up. The right lateral peritoneal reflection alongside the cecum and ascending colon is identified and scored. My preference is for an electrocautery device rather than a bipolar device which when used inappropriately can enter a nonanatomic plane. Once the correct retroperitoneal plane is identified, the cecum is gently swept medially, and the ureter is identified and protected (Fig. 2.3a, b). With the cecum under tension, which means retracting it medially and cephalad, the medial peritoneal reflection alongside the distal terminal ileum can be entered, and the terminal ileal mesentery can be mobilized off of the retroperitoneum.

Fig. 2.2 Trocar placement

The right lateral peritoneum alongside the ascending colon is exposed by retracting the ascending colon towards the midline. The anterior surface of Gerota's fascia should remain intact (Figs. 2.4 and 2.5). The dissection can be continued towards the liver (Fig. 2.6). In a patient with a BMI <30, the ascending colon can be mobilized to the midline, releasing its attachments from the duodenum and allowing visualization of the mesenteric window cephalad to the ileocolic pedicle (Fig. 2.7). In patients of higher BMI, this particular view may not be visible until the mobilization of the hepatic flexure is completed.

The operative table should then be placed in reverse Trendelenburg still with the OR table inclined right side up. The hepatocolic attachments at the hepatic flexure should be identified. These can be better delineated by gently lifting them up noting the movement of the superficial tissues over the underlying retroperitoneal plane. This will help to identify the plane of transection which can be developed between the retroperitoneal plane and the hepatocolic attachments (Fig. 2.8). These attachments often have small blood vessels, and here a vessel sealing device can be helpful (Fig. 2.9).