

CHAPTER 1

Welcome to Endoscopy

If you are reading this book, you have likely just embarked on a journey to master the art and science of gastrointestinal endoscopy. Many of the experienced teachers you encounter along the way will sail through their examinations as if the scope is an extension of their hands, with a myriad of unconscious maneuvers and fast-thinking visual processing of what appears on the screen. They will make what appear to you to be near-instantaneous assessment and judgment calls as to how to respond to the information that comes into view. It can be easy for them to forget the wonderment of the first exposure to endoscopy that drew them into the field and now hopefully excites you to follow suit. At the same time, it is understandable for you to feel a bit overwhelmed by the apparent magnitude of the challenge you face to reach their level of proficiency.

Here are some reassuring thoughts to accompany your introduction to endoscopy. With time, practice, self-challenge, reflection, good role models, and feedback, you will be able to master what initially appears so daunting. By breaking down the many technical, cognitive, and non-technical skills into the components detailed in this book, and with equal doses of patience and persistence, becoming a high-quality endoscopist is well within your reach. Knowing that you will eventually develop the skills is comforting, but another source of support is the many resources available to you to make this learning trajectory far less bumpy and more expeditious. Several of these are listed at the end of this chapter. Hopefully, this book on the *fundamentals* of endoscopy will demystify the first steps of the learning process for you by clearly outlining the skills to learn and will make the path forward far less intimidating.

What general skills, knowledge, and mindset do you need to best set off to learn endoscopy? Contrary to common belief, you do not need to be a master video gamer or star athlete with already honed hand-eye coordination, although such skills may come in handy early in the learning curve for technical skills. Perhaps the most essential ingredient is having eagerness and motivation to learn. In doing so, you will also need to combine parallel threads of knowledge. This characteristic of endoscopy education is common to all medical specialties and highlights the importance of building one's fund of knowledge and making connections within it. You will no doubt have some of this understanding when you start to learn endoscopy, but the key to making progress is to use the circumstances

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of each patient endoscopic encounter to augment your knowledge as it relates to the particular case at hand.

The technical skills required to navigate the endoscopic instruments and accessories, covered in detail in subsequent chapters in this book, are a second layer of knowledge that must be learned via observation, demonstration, deconstruction into component maneuvers, practice, feedback, reflection, and refinement. You will find this aspect to be novel and to require your full attention in the early phase of learning. A common mistake of teachers is to overload clinical training with lessons about visual image interpretation while a novice is focusing on mastering the basic manipulative physical aspects of performing endoscopy. Key to success in this effort is the attitude and understanding that progress is incremental, and one can *always* improve. Great teachers are themselves always striving to refine their skills and asking themselves the question “How can I do better?” Once you find yourself successfully completing components of the technical procedures without assistance, avoid complacency and push yourself to perform them better: more precise movements, less loop formation in the colon, smoother intubation of the oropharynx, etc. This will be the way to excel at endoscopy. Expertise is not innate; it is achieved by continually engaging in *deliberate* practice that is purposeful, feedback-informed, and conducted with the specific goal of improving performance.

The next major novel frontier for the student of endoscopy is re-learning how to look at images. By the time a prospective endoscopist passes an endoscope for the first time, the mechanics of assessing visual inputs has long since become automatic and immediate. For instance, imagine a hike through a forest. As you walk along the trail, you may notice some of the rocks and trees and the occasional bird as you pass by, but seldom do you stop and analyze the frames presented as you pass to truly notice patterns, assess the content, discern when something stands out as novel or atypical from the norm, decide what that unusual feature might signify, and choose whether to take a photo (or sample) or move on. Unless you happen to be a naturalist, you have probably become used to viewing your surroundings in a much more passive manner.

As you begin your endoscopy education, you will find it advantageous to consciously change the way you look. In the endoscopy suite, when your trainer asks you what you see on the screen, resist the temptation to blurt out a label or an interpretation, but rather start with a simple description. This requires you to notice and appreciate the features—the color, the contours, changes in the surface pattern, and the topography of the surface layer (bumpy or smooth, raised or depressed). Even when you learn the features associated with normal versus abnormal mucosa in various organs and with specific pathological diagnoses, pattern recognition begins with detailed observation and appreciation of the images that come into view. This is a learned skill that can be overlooked in the rush to label and correctly name what you see. Once you characterize the features, you will start to match what you are seeing to what you expect to find in a particular organ under normal circumstances and in

various common disease states. This analytical type of data collection and processing is no different from that used by a novice botany student learning to recognize and name the vegetation along a hike through the forest. With practice, you will rapidly be able to detect when something is abnormal and figure out what the abnormality is. You will learn, too, how to respond to what you see as you progress in your cognitive skill development. Just as important a habit to form at the beginning of your training is a meticulous tendency to inspect completely and leave no blind spots in your examinations. To some extent, this overlaps with the technical skills required to maneuver your endoscope to visualize any hard-to-reach areas. The chapters in this book will guide you in how best to do this. However, the diligence that drives you not to overlook any area, and to go back and reinspect regions that you did not get a great look at the first time around, is a critically important practice.

As you get your first exposure to patients undergoing endoscopy, whether initially as an observer or with scope in hand, be mindful of everything happening in the suite. When you are observing a case in which the instructor is handling the endoscope, the tendency is to stare intently at the video monitor to see what the scope is imaging. However, it is often equally or more important to notice what your teacher is doing with their hands. Another key aspect to appreciate is how they are communicating and interacting with the rest of the staff in the suite. We all learn by reading, watching, listening to verbal instructions, and manually practicing and refining skills by tactile feedback. Trainees rely on each of these modes of learning to varying extents. You will soon figure out what works best for you.

Once you come to appreciate the magnitude of the different technical, cognitive, and non-technical skills you must master to perform high-quality endoscopy, you may again become overwhelmed. You certainly cannot learn all the skills at once, and the concept of cognitive overload will be discussed later in this book. A good rule of thumb that will help keep you on track and avoid becoming disheartened is to ensure that each procedure in which you participate provides you with at least one take-home lesson or opportunity to improve one skill, technical, non-technical, cognitive, or otherwise. After each case, review in your mind or with your trainer what you have just learned. Focused feedback discussions are essential to promote learning. Before each case, ensure that you set one to two learning goals, which may need to be adjusted depending on what you encounter during the actual procedure. For example, if you hoped to work on passing a gastroscope into the duodenum, but the patient has a large ulcer in the stomach, the main lessons from the case will necessarily deviate from the original plan. You may still try to achieve duodenal intubation, but the educational value of the experience will shift according to the circumstances that arise. This opportunity-based education is in contrast to a didactic A-to-Z learning agenda and remains an exciting aspect of proctored live endoscopy performance as a principal teaching tool in endoscopy.

You will soon appreciate that learning to perform endoscopy is a highly iterative process. Repetition, reflection, assessment,

feedback, and monitoring progress are key features. You will notice that your best teachers will not only enjoy teaching but will themselves still be striving to continually improve and learn throughout their career. You will also see that they are always thinking about the patient and putting patient care first. Keeping these attitudes foremost in mind will serve you well, both as you learn to become an excellent endoscopist and as you progress throughout your professional career.

If this “welcome to endoscopy” seems to be more of a pep talk, well . . . that is what this is!

Resources and links

Websites

There is a huge amount of valuable material on the internet, posted largely by the main endoscopy societies around the world. These include many thoughtful guidelines for practice and training.

The main (Western) society resources are:

- American College of Gastroenterology (ACG): www.gi.org
- American Gastroenterological Association (AGA): www.gastro.org
- American Society for Gastrointestinal Endoscopy (ASGE): www.asge.org
- British Society of Gastroenterology (BSG): www.bsg.org.uk
- Canadian Association of Gastroenterology (CAG): www.cag-acg.org
- European Society for Gastrointestinal Endoscopy (ESGE): www.esge.com
- European Society for Paediatric Gastroenterology, Hepatology and Nutrition (ESPGHAN): www.espghan.org
- North American Society for Pediatric Gastroenterology, Hepatology and Nutrition (NASPGHAN): www.naspghan.org
- Society of American Gastrointestinal and Endoscopic Surgeons (SAGES): www.sages.org
- World Endoscopy Organization (WEO): www.worldendo.org

Online endoscopy educational resources include:

- American Society for Gastrointestinal Endoscopy (ASGE) core curricula: www.asge.org
- European Society for Gastrointestinal Endoscopy (ESGE) core curricula: www.esge.com
- ImageSIM (endoscopy image cognitive simulation tool): www.imagesim.com
- The Gastrointestinal Endoscopy Quality and Safety (GIEQs) Foundation: www.gieqs.com

Endoscopy books

Adler DG. *Upper Endoscopy for GI Fellows*. Cham, Switzerland: Springer International Publishing, 2017.

Chandrasekhara V, Elmunzer BJ, Khashab MA, Muthusamy VR. *Clinical Gastrointestinal Endoscopy* (3rd edition). Philadelphia, PA: Elsevier, 2019.

Chun HJ, Yang SK, Choi MG. *Clinical Gastrointestinal Endoscopy: A Comprehensive Atlas* (2nd edition). Singapore: Springer Singapore, 2018.

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- Schoenwolf GC, Bleyl SB, Brauer PR, Francis-West PH. *Larsen's Human Embryology* (6th edition). Philadelphia, PA: Elsevier, 2021.
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- Waye JD, Aisenberg J, Rubin PH. *Practical Colonoscopy*. Chichester, United Kingdom: John Wiley & Sons, 2013.
- Waye JD, Rex DK, Williams CB. *Colonoscopy: Principles and Practice* (2nd edition). Hoboken, NJ: Wiley Blackwell, 2009.
- Wilcox CM, Muñoz-Navas M, Sung JY. *Atlas of Clinical Gastrointestinal Endoscopy* (3rd edition). Philadelphia, PA: Saunders Elsevier, 2012.

Journals with major endoscopy focus

- American Journal of Gastroenterology*. Official journal of the American College of Gastroenterology.
- Digestive Endoscopy*. Official journal of the Japan Gastroenterological Endoscopy Society.
- Endoscopy*. Official journal of the European Society of Gastrointestinal Endoscopy, and 20 affiliated national societies.
- Gastrointestinal Endoscopy*. The official journal of the American Society for Gastrointestinal Endoscopy.
- Gastrointestinal Endoscopy Clinics of North America*. Quarterly publication of state-of-the-art reviews on the use of endoscopic procedures for the diagnosis and treatment of digestive diseases.
- Gut*. Official journal of the British Society of Gastroenterology.
- Journal of Pediatric Gastroenterology and Nutrition*. Official journal of the North American Society for Pediatric Gastroenterology, Hepatology and Nutrition and European Society for Paediatric Gastroenterology, Hepatology and Nutrition.
- Surgical Endoscopy*. Official journal of the Society of American Gastrointestinal Endoscopic Surgeons and European Association for Endoscopic Surgery.