Communication from the ASGE Training Committee

CORE CURRICULUM

ASGE American Society for Gastrointestinal Endoscopy

Core curriculum for endoscopic ablative techniques

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This is one of a series of documents prepared by the American Society for Gastrointestinal Endoscopy Training Committee. This document contains recommendations for a training curriculum intended for use by endoscopy training directors, endoscopists involved in teaching endoscopy, and trainees in endoscopy. It was developed as an overview of techniques currently favored for the performance and training for endoscopic ablation and to serve as a guide to published references, videos, and other resources available to the trainer.

Abbreviations: APC, argon plasma coagulation; RFA, radiofrequency ablation.

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Acquiring the skills to perform gastrointestinal (GI) mucosal ablative techniques requires a thorough understanding of the histology and pathology of the GI tract and indications, technical performance, risks, and limitations of the techniques. Trainees should be experienced in upper endoscopy, colonoscopy, and hemostasis before pursuing training in mucosal ablative techniques.[1-3] Trainees should also be knowledgeable in management of the potential adverse events that may occur involving these procedures, such as bleeding (clipping, injection, and thermal treatment), perforation (closure with clips or other devices), and stricture formation (dilation and temporary stent placement).[4,5] Specifics on quality metrics and competency assessment are separate topics and not the focus of this curriculum. The core technical, nontechnical, and cognitive skills necessary for training in endoscopic mucosal ablative techniques are shown in Table 1.

Commonly used ablative techniques include radiofrequency ablation (RFA), cryotherapy, and argon plasma coagulation (APC). RFA is primarily used for esophageal dysplastic lesions and early-stage malignancy; however, it is also used in the treatment of gastric antral vascular ectasia (GAVE) and radiation proctopathy.[6-11] Cryotherapy is also used in the esophagus, stomach, and rectum for similar indications.[12-14] Other ablative techniques such as APC and hybrid APC[15,16] are also used throughout the luminal GI tract. To apply these procedures safely and effectively, trainees should have an understanding of the anatomy of the entire GI tract.

GOALS OF TRAINING

On completion of training, trainees should be prepared to appropriately recommend mucosal ablative techniques as indicated by the findings of endoscopic evaluation and

TABLE 1. Core technical, nontechnical, and cognitive skills necessary for training in endoscopic mucosal ablative techniques

Technical	Nontechnical	Cognitive
• Evaluate extent of lesion with high-definition endoscopy and mucosal enhancement technology (eg, chromoendoscopy, narrow-band imaging, blue-light imaging) • Perform ablation therapy until the target area is fully treated	• Obtain consent by explaining the risks and benefits of the procedure and expected outcomes • Evaluate the patient's cardiovascular risk and fitness for upper or lower endoscopy, in consultation with the anesthesia specialists in selected cases • Select the appropriate treatment modality and technique • Understand the ablation effects and be able to change settings if necessary • Communicate effectively with the endoscopy assistant during the procedure • Generate a detailed procedure report with accurate description of interventions and type of devices used	• Understand indications and contraindications for ablative techniques for dysplastic and superficial malignant lesions and other bleeding etiologies • Understand appropriate settings for ablation devices • Know the appropriate postprocedure care of patients after ablation (diet, pain control, anticoagulation, and follow-up) • Know signs and symptoms of adverse events (perforation, bleeding, and stricture)

perform these procedures safely. They should be able to recognize and appropriately manage adverse events when they occur, acknowledge the limitations of mucosal ablative techniques and personal skills, know when to request help, and understand the principles of quality measurement and improvement.[17,18] Trainees should be familiar with the appropriate management of anticoagulation, taking into consideration the potential risk of delaying reinitiation of anticoagulants or antiplatelet agents.[19] Additionally, trainees need to clearly communicate findings, treatment performed, postprocedure instructions, and follow-up recommended to the patient and family and to communicate with referring and primary physicians.

Trainees should be taught to obtain informed consent and explain all potential adverse events of the specific procedure being recommended, including the advantages and disadvantages of the procedure when compared with other management options. Trainees must understand the risks and benefits of various ablative techniques and be able to provide the patient with a tailored risk assessment and informed consent.

Faculty

In general, teaching faculty should not only be experienced endoscopists who are committed to the entire training process but also facile in the skills involved in ablation. Programs need to ensure that an adequate number of such individuals are available to ensure optimal teaching. The faculty member must be dedicated to teaching these advanced procedures and have time available to instruct and evaluate the trainees.

Facilities

Institutions that provide advanced training should have the capability for mucosal enhancement technology (eg, high-definition endoscopy, narrow-band imaging, blue-light imaging, chromoendoscopy). Training institutions do not need to have all the ablative techniques available, but trainees should be aware of the available techniques and modalities and the literature supporting each.

ENDOSCOPIC EXPERIENCE

Mucosal ablative techniques in the esophagus

Radiofrequency ablation. RFA is an ablative technique approved for the treatment of dysplastic Barrett's esophagus. Trainees should know the evidence-based literature that supports the use of RFA in dysplastic Barrett's esophagus.[6-11,20-22] The role of RFA after EMR of superficial cancers with remnant dysplastic mucosa should also be understood by trainees.

Trainees should learn and understand the technical equipment for RFA and be familiar with available devices and accessories. Accurate measurement and characterization of the Barrett's mucosa, knowing when and how to use the available ablative devices, use of a mucolytic before therapy, and removal of the eschar before second ablation are all essential parts of this technique.[20] Trainees should formulate a treatment plan that includes selection of circumferential versus focal RFA devices based on the length and circumference of the Barrett's esophagus and understand the risks of overlapping treatment areas. Trainees should be aware of the potential side effects and adverse events of RFA, particularly postprocedure chest pain and stricture formation.

Trainees should be well versed in the aftercare of patients undergoing RFA, including the need for potent acid suppression, diet modifications, and adequate pain control postprocedure. Trainees should also have a thorough understanding of the risk of recurrence of Barrett's esophagus and the need for long-term clinical and endoscopic follow-up after eradication.[23,24]

Cryotherapy. Cryotherapy is an ablative technique that uses cryogenic gas to freeze metaplastic, dysplastic, and

malignant tissue within the GI lumen. Compared with RFA, cryotherapy has been less widely studied for dysplastic and superficial cancers of the esophagus.[6,7] Trainees should be familiar with the different devices, type of cryogen, and delivery system used in their practice environment.[7,25,26] Accurate assessment of the mucosa along with an understanding of mucosal changes observed during cryotherapy are all essential elements of this technique. They should understand the duration and number of freeze-and-thaw cycles required to ablate mucosa and be able to continually assess their patients for excessive insufflation. Trainees must have a thorough understanding of the operation of the equipment, techniques used, and various equipment models available to perform cryotherapy. Familiarity with the decompression tubes needed to remove cryogen with spray cryotherapy from the GI lumen is essential. Trainees should appreciate the contraindications of cryotherapy and early and late adverse events associated with cryotherapy. In particular, trainees should be knowledgeable in the aftercare of patients undergoing cryotherapy, including the need for potent acid suppression, diet modification, and adequate pain control.

Conventional APC and hybrid APC. Various APC systems are available for use, and trainees should be familiar with the generator used in their practice environment. Trainees should recognize the potential problems with APC, including over-insufflation and mucosal contact with the probe tip. Hybrid APC is a newer system that allows a submucosal injection before mucosal ablation to facilitate safe and effective eradication of Barrett's esophagus.[16] Trainees should learn the appropriate wattage and water pressure settings to safely perform hybrid APC.

Mucosal ablative techniques in other organs

Radiofrequency ablation. RFA can be performed for the treatment of vascular abnormalities including GAVE and radiation proctopathy with any focal RFA devices. Trainees need to know appropriate energy settings of RFA for these vascular abnormalities and technical differences from RFA for the eradication of Barrett's esophagus.[9,27]

Cryotherapy. Cryotherapy can also be performed for the control of bleeding from GAVE and radiation proctopathy, although clinical data showing its advantage compared with other ablative techniques are limited.[13,28-30] Trainees should know the number of freeze–thaw cycles and time per cycle when cryotherapy is performed to eradicate these vascular disorders.

Argon plasma coagulation. Power settings (watts), argon flow rates (L/min), and various spray modes should be chosen based on location in the GI tract and desired depth of tissue destruction. Trainees should be aware that organs with thinner walls, such as the small bowel and right-sided colon segment, require lower power settings and flow rates. Thicker-walled organs, such as the stomach and rectum, allow the use of higher power settings and flow rates for ablation of tissue or bleeding lesions.[15,16,27] Trainees should also be aware of the requirement of a full bowel cleanse before colonic APC. When APC is performed during wide-field colorectal EMR to eradicate small residual adenomatous tissue, trainees need to know how to evaluate the resection margins and resection bed using high-definition endoscopy and mucosal enhancement technology and to choose the appropriate energy setting depending on the lesion location.[31]

SUMMARY

This core curriculum for mucosal ablative techniques is meant to serve as a platform for education, training, and practice. By providing information to endoscopy trainers about the common practices used by experts in these techniques, the American Society for Gastrointestinal Endoscopy hopes to improve the teaching and performance of mucosal ablation.

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