REVIEW Print ISSN 2234-2400 / On-line ISSN 2234-2443
Clin Endosc 2014;47:285-294 http://dx.doi.org/10.5946/ce.2014.47.4.285

Open Access

Highlights from the 50th Seminar of the Korean Society of Gastrointestinal Endoscopy

Eun Young Kim[1], Il Ju Choi[2], Kwang An Kwon[3], Ji Kon Ryu[4], Seok Ho Dong[5] and Ki Baik Hahm[6]

[1]Department of Internal Medicine, Catholic University of Daegu School of Medicine, Daegu, [2]Center for Gastric Cancer, National Cancer Center, Goyang, [3]Department of Gastroenterology, Gachon University Gil Medical Center, Gachon University of Medicine and Science, Incheon, [4]Department of Internal Medicine and Liver Research Institute, Seoul National University College of Medicine, Seoul, [5]Department of Internal Medicine, Kyung Hee University School of Medicine, Seoul, [6]Department of Gastroenterology, CHA Bundang Medical Center, CHA University, Seongnam, Korea

The July issue of *Clinical Endoscopy* deals with selected articles covering the state-of-the-art lectures delivered during the 50th seminar of the Korean Society of Gastrointestinal Endoscopy (KSGE) on March 30, 2014, highlighting educational contents pertaining to either diagnostic or therapeutic gastrointestinal (GI) endoscopy, which contain fundamental and essential points in GI endoscopy. KSGE is very proud of its seminar, which has been presented twice a year for the last 25 years, and hosted more than 3,500 participants at the current meeting. KSGE seminar is positioned as one of premier state-of-the-art seminars for endoscopy, covering topics for novice endoscopists and advanced experts, as well as diagnostic and therapeutic endoscopy. The 50th KSGE seminar consists of more than 20 sessions, including a single special lecture, concurrent sessions for GI endoscopy nurses, and sessions exploring new technologies. Nine articles were selected from these prestigious lectures, and invited for publication in this special issue. This introductory review, prepared by the editors of *Clinical Endoscopy*, highlights core contents divided into four sessions: upper GI tract, lower GI tract, pancreatobiliary system, and other specialized topic sessions, including live demonstrations and hands-on courses.

Key Words: *Clinical Endoscopy;* Seminar; Highlight; Live demonstration; Hands-on course

INTRODUCTION

The Korean Society of Gastrointestinal Endoscopy (KSGE) has held seminars twice a year for the last 25 years. The 50th seminar of the KSGE was hosted on March 30, 2014, with more than 3,500 attendees. Over 20 sessions were presented, covering from the basic to advanced fields of diagnostic and therapeutic gastrointestinal (GI) endoscopy, with important educational contents.

In this July issue of *Clinical Endoscopy*, we have selected and presented review articles from the state-of-the-art lectures delivered during the 50th seminar of KSGE. This introductory review paper, titled "Highlights from the 50th Seminar of the Korean Society of Gastrointestinal Endoscopy," has been prepared by the editors to help readers to scan the contents of the 50th seminar at a glance.

Received: July 4, 2014 **Accepted:** July 8, 2014

Correspondence: Ki Baik Hahm
Department of Gastroenterology, CHA Bundang Medical Center, CHA University, 59 Yatap-ro, Bundang-gu, Seongnam 463-712, Korea
Tel: +82-31-780-5005, **Fax:** +82-31-780-5219, **E-mail:** hahmkb@cha.ac.kr

HIGHLIGHTS OF THE UPPER GI ENDOSCOPY SESSIONS

Learning basic skills from the experts

Preparation and insertion

Upper GI endoscopy is the basic skill that all endoscopists should master. Adequate examination requires careful preparation and well-trained endoscopic technique. Before initiating endoscopy, clinical indications, the subject's medical condition, informed consent, endoscopic equipment, and the administration of premedication should all be examined. Detailed endoscopic procedures and techniques, from insertion to removal of the endoscope, were explained in this session.

Examination of the intraluminal space from esophagus to duodenum

Complete endoscopic evaluation requires proper knowledge and training regarding the endoscopy unit, anatomic landmarks, basic techniques for complete evaluation of each anatomic segment from esophagus to duodenum, and any lesion characteristics that might be encountered during endoscopy. Special care should be taken to detect any lesions located in blind spots.

Know-how for tissue acquisition: when, where, and how many?

Pathological diagnosis of GI lesions can be reached using biopsy specimens from lesions. Communication between the attending endoscopist and pathologist should clearly state what clinical information was found during the endoscopic examination. Obtaining adequate biopsy specimens is the most important step in reaching an accurate diagnosis. The topics covered included general principles for biopsy, types and characteristics of forceps, tips for performing biopsy at various locations, and possible complications that accompany biopsy.

Make a record of endoscopic examinations

Documentation of the endoscopic examination allows for recordkeeping and communication between medical personnel. Endoscopy provides visual information that is most accurately documented using photos or movie clips. At least eight photos should be taken from predetermined sites during endoscopy, to assess the adequacy of the endoscopic examination. Description of endoscopic findings requires detailed information regarding location, size, and morphologic characteristics of any lesions.

Common but challenging findings

Columnar lined esophagus, is it Barrett's esophagus?

Barrett's esophagus is diagnosed if columnar lined esophagus (CLE) is detected during the endoscopic examination, and specialized intestinal metaplasia, including goblet cells, is confirmed at the histopathological examination. Recently, questions have been raised regarding the necessity of obtaining biopsy specimens in Korean cases that have a very low possibility of esophageal adenocarcinoma.[1] In this session, the definition and diagnosis of Barrett's esophagus, CLE in lower esophagus, and the controversy regarding the necessity of biopsy for confirmation and risk assessment in cases with suspected Barrett's esophagus were presented.

Incidentally detected gastric subepithelial mass

Subepithelial masses are often found during screening endoscopy of participants in the National Cancer Screening Program. These incidentally detected subepithelial masses are typically small, and the chance of malignancy is considered quite low. In this session, tips for endoscopic evaluation and characteristic endoscopic ultrasound (EUS) findings that are useful for differential diagnosis were presented. Although obtaining a tissue specimen is quite difficult, the "bite-on-bite biopsy" technique, strip biopsy, fine needle aspiration, or core biopsy can all be used for tissue acquisition. Treatment should be guided by risk stratification, using the size of the tumor and mitotic index. Benign lesions, including lipoma, heterotopic pancreas, and cysts no longer require surveillance endoscopy.

Gastric atrophy and intestinal metaplasia

Glandular atrophy and intestinal metaplasia are considered premalignant conditions in the stomach, although endoscopic diagnosis of the lesions has low sensitivity and specificity. Moreover, interobserver agreement regarding the presence and severity of glandular atrophy is not high, even among experienced endoscopists. In this topic, endoscopic classification of the atrophy and guidelines for risk stratification were reviewed. Surveillance techniques and the *Helicobacter pylori* treatment strategy were discussed as methods to prevent or potentially reverse these conditions.

What should we do for "atypical cells and regenerating atypia" on forceps biopsy examination?

Clinicians use biopsy specimens to reach a definitive diagnosis for gastric lesions, but they often receive pathological reports describing cellular atypia, atypical glands, or regenerating atypism. Vienna classification has been introduced to reduce the discrepancy in pathological diagnoses provided by Western and Japanese pathologists.[2] Atypical cells or regenerating atypia can now finally be diagnosed as an inflammatory condition, adenoma, or adenocarcinoma. Thus, communication between pathologist and endoscopist is essential, and a strategy for reaching a definitive diagnosis is usually needed (depending on the suspicion of malignancy), which potentially includes follow-up biopsy or endoscopic resection.

Role of endoscopy and treatment modalities in emergencies

Safe ways of removing foreign bodies from upper GI tract

Incidentally or intentionally swallowed foreign material can be trapped by the narrow points of the esophagus, and may cause serious complications. In this session, basic evaluations and procedures were presented to address this emergency situation. Indications and timing of endoscopic removal may differ according to the type, size, and shape of the ingested mate-

rial. Preprocedural evaluation and assessment, including history taking, physical examination, and radiological evaluation, are all essential for safe and successful procedure. The principle goal of the endoscopic procedure is rapid, accurate, and safe removal of the ingested material. Various specialized endoscopic techniques and accessories are used, depending on the type and shape of foreign body, and overtube insertion or general anesthesia is often required for safe procedures. Prevention and management of complications during, or after, the procedure is essential.

Treatment for nonvariceal upper GI bleeding

Peptic ulcers are still the most common cause of upper GI bleeding, although the incidence is decreasing thanks to proton pump inhibitor use and *H. pylori* eradication. Mallory-Weiss syndrome, bleeding from vascular anomaly, or upper GI tract malignancies are also important causes of upper GI bleeding. Blatchford or Rockall scores for clinical assessment, and Forrest classification for endoscopic evaluation, can all be helpful for risk assessment. Endoscopic procedures and medical management for these conditions are discussed. Endoscopic procedures using injection, clips, ligation, or coagulation were also discussed.[3]

Treatment for variceal bleeding

Acute variceal bleeding is a potential life-threatening complication of liver cirrhosis. Endoscopic treatment of active bleeding, and adequate preventive measures, are essential for preventing deterioration of the patient's condition. In this session, severity assessment and obtaining hemodynamic stability, medical therapy including administration of splanchnic constrictors (e.g., terlipressin or octreotide), and administration of prophylactic antibiotics were discussed.[4] Since endoscopic variceal ligation is the main therapy for acute variceal bleeding, it should be performed as soon as the patient becomes hemodynamically stable. Endoscopic treatment for gastric varices, salvage therapy after failure of endoscopic hemostasis, including balloon tamponade, transjugular intrahepatic portosystemic shunt, balloon-occluded retrograde transvenous obliteration, and surgical treatment options were also presented.

Evaluation and proper management for acid and alkali ingestion

Ingestion of acid or alkaline substances causes serious caustic injury to the esophagus and stomach. The nature and degree of injury is determined by the type (acid vs. alkali), amount, concentration, and physical status (solid vs. liquid) of the ingested substance, as well as the duration of its contact with the GI tract mucosa. Details of substances causing caustic injury, pathophysiology, clinical presentation, endoscopic evaluation, patient management during the acute phase, and measures to prevent stricture were all described.[5]

Interesting upper GI cases

Topics included in this session were as follows: 1) esophageal cancer- "Are we performing accurate diagnosis for esophageal cancer?"; 2) gastric cancer- "Is it possible to diagnose gastric cancer using a gastroscopy?" Various difficult cases were discussed, including benign gastric ulcer mimicking cancer, Bormmann type IV advanced gastric cancer, gastric mucosa-associated lymphoid tissue lymphoma, and metastatic cancer to stomach; 3) infection- "Could you find infectious disease in upper gastrointestinal tract?" dealt with candida esophagitis, viral esophagitis, tuberculosis of esophagus, and gastric syphilis; and 4) intractable benign gastric ulcer- "Is it possible to heal all ulcerative lesions?"

HIGHLIGHTS OF THE LOWER GI ENDOSCOPY SESSIONS

Beginning colonoscopy: my own know-how

Prerequisites and tailored bowel preparation

Hong and Lim[6] described how proper prerequisites and a tailored bowel preparation should be performed for all colonoscopy procedures. Modulation of antithrombotic agents should be considered based on the procedure-related bleeding risk and any potential thromboembolic risks associated with discontinuation of the medication. The proper choice of sedation, bowel cleansing, and diet modification should be based on patients' underlying disease, age, and medication intake. Education of patients are important for proper bowel preparation.

Optimal insertion and withdrawal technique

When initiating colonoscopy, the main challenge is to insert the colonoscope without pain or complication. To achieve this goal, endoscopists need to understand the structure of the colon, as well as insertion techniques such as right turn shortening, hooking the fold, and sliding. In order to pursue optimal colonoscopy, endoscopists should be fully aware of the limitations of colonoscopy. Optimal withdrawal techniques involve examination of the proximal sides of the ileocecal valve, all flexures, all haustral folds, and the rectal valves. Average withdrawal time of more than six minutes is recommended. Dynamic position change improves the adenoma detection rate.[7] Efforts to minimize blind spots during colonoscopy should also be continued.

How and where to take a biopsy? Endoscopic findings and presumptive diagnoses

Cohen[8] addressed the impact of tissue sampling on endoscopy efficiency in his review. Tissue sampling can be a tedious and time-consuming process, although accurate sampling remains a critical component of what we do, and is occasionally the most important component of an endoscopic procedure. Efforts to improve efficiency in tissue sampling will have an impact on not only endoscopic time management, but also costs and patient outcomes.[8]

How to take good pictures and make accurate reports

It is important that reports of colonoscopy should include a certain number of illustrations, as these will provide confirmation that the whole of the colon had been examined thoroughly.[9] The following key subject areas should be included in colonoscopy reports: patient demographics and history, assessment of patient risk and comorbidity, procedure indication(s), technical description of the procedure, colonoscopy findings, assessment, interventions/unplanned events, follow-up plan, and pathology.[10]

How to use image enhancements and optical techniques in colonic diseases

Differential diagnosis of polyps: chromoendoscopy

During colonoscopy, estimation of the depth of invasion in early colorectal lesions is crucial for adequate therapeutic management. Magnifying chromoendoscopy (MCE) has been proposed and used for these estimations. Determination of invasive or noninvasive patterns using MCE is a highly effective *in vivo* method for predicting the depth of invasion of colorectal neoplasms.[11]

Differential diagnosis of polyps: NBI/FICE/I-Scan are all useful

Koo[12] described how image-enhanced endoscopy (IEE) can highlight the lesion, which can improve colorectal adenoma detection rate and diagnostic accuracy. Equipment-based IEE such as narrow band imaging (NBI), Fuji intelligent chromo endoscopy (FICE), and I-Scan are all used to observe the mucosal epithelium, with good visualization of the microstructure and capillaries of the lesion, and are also helpful in the detection and differential diagnosis of colorectal tumors.

Appropriate use of IEE in inflammatory bowel diseases

The new generation of high-definition endoscopes with electronic filter technology provides an opportunity to visualize mucosal inflammation in greater detail. Application of these new technologies in inflammatory bowel disease (IBD) is in its infancy, but the benefits are beginning to be appreciated. Assessment of both dysplasia and inflammation may benefit from the use of high-definition endoscopy with filter technology. In addition, the advent of confocal laser endomicroscopy provides an opportunity to explore real-time histology, thus redefining our understanding of the nature and pathogenesis of inflammation in IBD.[13]

New optical techniques: which ones are promising?

Confocal endomicroscopy, an adaption of confocal laser scanning microscopy, and endocytoscopy, an adaption of white-light microscopy, have both been introduced into the endoscopic armamentarium in the past decade. Both techniques yield on-site histological information, and multiple trials have demonstrated their ability to obtain and interpret microscopic images from the GI tract during endoscopy. Such microscopic information has been successfully used by experts to minimize sampling error using "smart," microscopically targeted biopsies, and to guide endoscopic interventions.[14]

Colonoscopic polypectomy: A to Z

Instruments for polypectomy: electrosurgical units, snares, and others

Electrosurgical units (ESUs) and snares are the most important devices for performing colonic polypectomy. Various types of ESU and snares have been developed, although ideal ESUs and snares are not yet available. Therefore, proper devices must be chosen according to the characteristics of the lesion. Endoscopists should have a comprehensive understanding of the basic principles of ESU, optimal techniques to minimize the complications of colon polypectomy, such as bleeding or perforation, and the ability to obtain suitable tissue samples for histological review. Modern ESUs have microprocessor-controlled feedback mechanisms, which can vary generator output in response to changes in tissue resistance, potentially reducing the risk of stalling during resection of a large volume of captured tissue or a thick stalk. However, this theoretical advantage has not been well studied in humans.[15] There is little uniformity, and no standardization, regarding ESU settings used for polypectomy. Suggested generator settings for various ESUs and procedures have been described.[15]

Snare polypectomy and other variant techniques

Safe snare polypectomy requires the ability to break off a polyp, while achieving hemostasis and maintaining the integrity of the colon wall. Conventional snare polypectomy is a powerful technique for removal of colon polyps without submucosal solution injections. Snares are available in a wide variety of shapes and sizes, and the method of removal is deter-

mined by the shape and size of the polyp. There are many different types of snares, each with specific advantages, which can be chosen depending on the situation. Oval and hexagonal snares are most commonly used. A barbed snare can be used when tissue is hard to grasp, as can be the case with flat or sessile polyps, or when the snare slipping off the polyp seems to be an issue. Crescent snares are often used in endoscopic mucosal resection (EMR). A rotatable snare is useful when the snare initially comes out of the scope in such a way that is not optimal for snaring the polyp, and therefore must be rotated to a more suitable angle. A miniature snare can be used for the cold snaring of smaller polyps, or for removal of a small amount of residual tissue after piecemeal polypectomy. Use of a combination snare-injection needle enables rapid injection prior to opening the snare, and avoid the need to change out the injection needle wire for the snare (iSnare system).[16] Endoloops and clips can be used for prevention of post-polypectomy bleeding. The endo-loop, a detachable oval-shaped nylon snare, is deployed in the same way as a standard snare but is then tightened around the stalk or base of the polyp, prior to polypectomy.[16]

Piecemeal resection vs. endoscopic submucosal dissection

Endoscopic piecemeal mucosal resection (EPMR) and endoscopic submucosal dissection (ESD) are resection techniques used for colon polyps larger than 2 cm. EPMR is a relatively safe procedure and can be easily performed, although the recurrence rate is high (3% to 29%), and examining the histopathologic status of resection margin is difficult. However, ESD can be performed for en bloc resection of lesions and has a low recurrence rate, and the exact histopathologic status of resection margin can be examined. Unfortunately, ESD has a longer procedure time and a higher perforation rate (1.4% to 10.0%). However, if *en bloc* resection is required, even though the risk of complication is high, ESD should be chosen for treatment of colon polyps larger than 2 cm.[17] Otherwise, EPMR can be performed for laterally spreading tumors larger than 2 cm.

Management of colonoscopic polypectomy complications

After colonoscopic polypectomy, there are often complications such as bleeding, perforation, and postpolypectomy syndrome. Bleeding usually occurs between 1 and 14 days after polypectomy. The incidence of postpolypectomy bleeding varies from 0.19% to 24%, and perforation increases with age and the presence of diverticular disease. Delayed perforation is an indication for surgery. Postpolypectomy syndrome occurs in 0.5% to 2% of polypectomies, and is common after the removal of large (>2 cm) sessile polyps. Transmural burn in this syndrome does not cause actual perforation, although its symptoms can resemble localized perforation.[18]

Catching up with advanced techniques of colonoscopy

Beginning colorectal ESD

Novice endoscopists should first observe and assist at colorectal ESD procedures, increase their skill and knowledge of ESD by performing simulations using animal models, and attend a live demonstration before starting colorectal ESD. Colorectal ESD is recommended after the endoscopist can safely perform gastric ESD, and is familiar with managing complications of gastric ESD. Starting with the lesion of the gastric antrum, under an experienced endoscopist's supervision, is recommended. However, persons with adequate experiences in the treatment of complications can begin performing colorectal ESD without experience in gastric ESD.

Tips for easy and safe colorectal stenting

In obstructive colorectal cancer, resolving the occlusion is relatively easy using self-extending metal stents (SEMSs). However, there are still complications to be addressed, such as perforation, migration, and reocclusion. The length of SEMS should be approximately 3 to 4 cm longer than the length of the stenosis, and should be inserted fluoroscopically. To avoid perforation, endoscopists should limit the amount of air insufflation used during the procedure, especially in patients with dilated cecum, as well as avoid dilation before or after stent insertion.

EUS and fine-needle aspiration in the colon and rectum

EUS is superior to magnetic resonance imaging in differentiating between T1 and T2 rectal cancers. EUS-guided fine-needle aspiration or biopsy is useful for metastatic lesions of unknown origin in perirectal area, as well as a tissue diagnosis of subepithelial tumors, such as GI stromal tumors. Successful EUS-guided transcolonic and transrectal drainage of abdominopelvic abscesses has been reported.

Endoscopic balloon dilation for colorectal strictures: when and how?

Endoscopic balloon dilation is used for benign colorectal strictures, including postoperative anastomotic strictures and Crohn's disease with stricture. The balloon is positioned under visual control or fluoroscopy in the stricture, and inflated with water to attain a gradually increasing diameter. Inflation time varies from 1 to 3 minutes. The procedure is repeated until the colonoscope can pass through the stricture.[19]

Diagnostic codes of colonic mucosal cancer and carcinoid: C or D, which one is adequate?

A clinician's and pathologist's view

There is no current consensus regarding which diagnostic codes, such as benign or malignant, should be given to colorectal mucosal cancers and carcinoids. No unified definition of colonic mucosal cancer exists, since it includes intraepithelial carcinoma, carcinoma *in situ*, and intramucosal carcinoma. Despite debates regarding colonic mucosal cancer, a recent trend has emerged, using D01 coding of carcinoma *in situ* instead of C coding.[20] Thus, there is an urgent need for unified consensus through further research. Traditionally, carcinoid tumors have been known as low grade, malignant tumors of neuroendocrine origin. In 2000, the World Health Organization (WHO) suggested that carcinoids be referred to as well-differentiated neuroendocrine tumors (NETs). This convention was updated by WHO in 2010, according to the differentiation and malignant potential, resulting in NETs being classified as NET grade 1, grade 2, and neuroendocrine carcinomas. They suggested that NETs have malignant potential in accordance with histopathologic characteristics, and therefore WHO recommended the behavior code of NETs as malignant. However, the European Neuroendocrine Tumor Society (ENETS) proposed that the behavior of NETs be graded according to histopathologic features as benign, benign or low grade malignant, low grade malignant, and high grade malignant. As well, the American Joint Committee on Cancer (AJCC) has suggested that topography codes of NETs should be defined as malignant. Korean Standard Classification of Diseases (KCD) has also described the different coding of carcinoids (NETs). Therefore, discrepancies exist in the behavioral descriptions and coding systems used by the WHO, ENETS, AJCC, and KCD.[21] A universal, appropriate diagnostic coding system should be prepared, based on either multicenter studies or social consensus meetings.

HIGHLIGHTS OF THE PANCREATOBILIARY SESSIONS

Basic techniques for safe and effective endoscopic retrograde cholangiopancreatography

Preparation and the choice of guide wire for successful procedure

Safe and successful endoscopic retrograde cholangiopancreatography (ERCP) is important for both patients and endoscopists. This session dealt with the preparation before ERCP, ERCP in patients with high risk, and the importance of choosing the guide wire.[22] The guide wire session included the following contents: a detailed introduction to the many kinds of guide wire, the role of wire-guided cannulation for the reduction of post-ERCP pancreatitis (PEP), and guide wire related complications.

Selective cannulation and basic techniques of endoscopic sphincterotomy

This session covered selective cannulation and endoscopic sphincterotomy (EST), which are basic techniques for therapeutic ERCP. For selective cannulation, understanding the anatomy around the ampulla of Vater (AOV) is necessary, and using a pull-type sphincterotome is helpful. If selective cannulation is not successful, changing the technique is recommended. If patients are stable, halting the procedure and repeating ERCP after 1 to 2 days is another option. The basic EST technique was introduced as standard EST using a pull-type sphincterotome.

Precut and needle-knife fistulotomy

Selective cannulation is essential for ERCP, although it is sometimes rather difficult to make the desired duct using standard techniques with cannula or pull-type sphincterotome. Thus, precut and needle-knife fistulotomy are sometimes necessary for selective cannulation. This topic included the complications and risk factors of failed selective cannulation, precut access using the needle-knife, and transpancreatic septostomy.

ERCP in case of congenital anomalies or need of cannulation in minor papilla

Endoscopists regularly encounter congenital anomalies that make selective cannulation difficult. This topic introduced anomalies such as ectopic major duodenal papilla, anomalous union of the pancreatobiliary junction, choledochal cyst, and pancreas divisum. This session also dealt with indications and methods for minor papilla cannulation and sphincterotomy.

The prevention and management of post-ERCP complications

Post-ERCP pancreatitis

PEP is the most common post-ERCP complication, and every endoscopist should attempt to reduce the incidence of PEP. This topic introduced the high-risk group for PEP, the ERCP technique for the prevention of PEP, and various types of drugs for preventing PEP. Among the ERCP techniques, basic ERCP techniques for the prevention of PEP, wire guided cannulation, precut sphincterotomy, and pancreatic duct stenting were introduced. Drugs that can be used to prevent PEP include protease inhibitor (gabexate, ulinastatin, and nafamostat), somatostatin, and nonsteroidal anti-inflammatory drugs.

Post-ERCP bleeding

Post-ERCP bleeding is not common, and is graded as minor, moderate, and severe. This session dealt with the risk factors, prevention, and treatment of post-ERCP bleeding. Definite risk factors included coagulopathy, anticoagulation within three days, cholangitis before procedure, low case volume, and bleeding during procedure. Prevention strategies include the sphincterotomy technique, correction of coagulopathy, and antiplatelet drug prescription. Treatment strategies for post-ERCP bleeding included injection therapy, mechanical tamponade, and thermocoagulation.

Post-ERCP perforation

Post-ERCP perforation is a rare (less than 1%) but very serious complication. Iatrogenic duodenal perforation can be classified into four types, according to the mechanism. This session dealt with defining the types of perforation, clinical presentation of duodenal perforation, and treatment strategies for each type.[23]

Post-ERCP infectious complication

The incidence of post-ERCP bacteremia varies according to the situation, and usually ranges from 0.5% to 3%. The most common risk factor is incomplete or unsuccessful biliary drainage. This topic included the role of prophylactic antibiotics, guidelines for the prevention of post-ERCP infectious complications, and biliary drainage strategy in patients with hilar cholangiocarcinoma.

Techniques for percutaneous transhepatic cholangioscopy

The preparation for percutaneous transhepatic cholangioscopy and the observational method for intra/extra bile ducts

Percutaneous transhepatic cholangioscopy (PTCS) allows direct visualization of the bile ducts, and can be used in case of failed ERCP. This session dealt with basic instruments for PTCS (cholangioscope, equipment for electrohydraulic lithotripsy [EHL], and accessories), making fistulous tract and tract dilatation, and techniques for observation of the bile ducts.

The indications and complications of PTCS

PTCS has both diagnostic and therapeutic roles. The indications for diagnostic PTCS are indeterminate biliary strictures, and determination of the longitudinal extent of hilar bile duct tumors. The therapeutic indications are treatment of bile duct stones, treatment of postoperative anastomotic stricture, and local ablation therapy for bile duct cancer, such as photodynamic therapy.

The roles of PTCS for the intrahepatic and extrahepatic bile duct stones

The most common indication for therapeutic PTCS is intrahepatic bile duct stones. This session dealt with the role of PTCS, techniques for making an adequate fistulous tract, methods for stone removal by basket, EHL and laser lithotripsy, and role of PTCS in patients with extrahepatic bile duct stones.

The roles of PTCS for bile duct cancer

PTCS has both diagnostic and therapeutic roles in patients with bile duct cancer. This session included characteristic images for various types of bile duct cancer, intraductal ultrasonography combined with PTCS, and adequate biopsy methods. The topic of therapeutic PTCS included the role, techniques, and treatment results for PTCS in patients with hilar cancer. Radiofrequency ablation, which is a recently developed technique, was also introduced.

Interesting pancreatobiliary cases

Gallbladder polyps and wall thickening: benign or malignant?

Most gallbladder (GB) polyps are benign cholesterol polyps. However, some polyps that are larger than 1 cm are malignant, and therefore surgery should be considered, given the possibility of GB cancer. Even in polyps that are larger than 1 cm, most resected specimens are benign; unfortunately, it is difficult to distinguish cancerous polyps from benign polyps based on size alone. Focal or segmental GB wall thickening is also a common incidental finding of radiologic abdominal imaging. Common causes of incidental GB wall thickening are adenomyoma or adenomyomatosis, although the possibility of GB cancer should always be kept in mind. In this session, diagnostic strategies for patients with incidental GB polyps and GB wall thickening were introduced, along with interesting cases.

Incidental pancreatic cysts that are progressed invasive intraductal papillary mucinous neoplasm

Incidental pancreatic cysts are commonly detected in older patients after routine computed tomography scanning. The natural course of incidental pancreatic cysts is known to be good. However, mucinous pancreatic cysts, such as mucinous cystic neoplasm and intraductal papillary mucinous neoplasm (IPMN), have malignant potential, and thus close follow-up is necessary in cases of indeterminate incidental pancreatic cysts. This session introduced two cases of incidental pancreatic cysts that had progressed to invasive IPMN during follow-up.

Incidental findings of bile duct dilatation: endoscopic evaluation

Malignant diseases, along with a variety of benign diseases, can cause bile duct stricture and dilatation, and it is occasionally difficult to distinguish benign lesions from malignancies based on imaging alone. In cases of bile duct dilatation without stricture, the benign condition is more common than malignant disease. This session introduced etiologies of bile duct dilatation and endoscopic evaluation strategies, such as EUS and ERCP.

Prominent AOV: endoscopic diagnosis and treatment

As the number of gastroscopy evaluations increase, incidental AOV lesions, such as prominent AOV, are frequently detected. Thus, it is important to differentiate AOV tumors from other benign conditions. This session introduced endoscopic evaluation methods for AOV, typical endoscopic images for each AOV disease, and several cases of prominent AOV lesions.

HIGHLIGHTS OF OTHER SPECIALIZED TOPIC SESSIONS

Concious sedation

The aim of sedation and analgesia is to diminish the patient's anxiety and discomfort, and improve the quality of the examination. Most endoscopic procedures are performed with the patient under moderate sedation, which is referred to as "conscious sedation." The level of sedation should be carefully titrated to provide a safe, comfortable, and technically successful endoscopic procedure. Since each patient differs in their response to sedation, endoscopists should possess the skills necessary to rescue a patient from a deeper level of sedation than was initially intended, as well as knowledge of the pharmacologic profiles of various sedative agents. In this session, several topics were covered, including system and preparation for safe sedation, choices and combinations of sedatives and analgesics, and the controversy regarding endoscopist-directed propofol. The session concluded with a discussion regarding sedative endoscopy in special circumstances, such as in the elderly, pregnant women, pediatrics, etcetera.

Endoscopy in patients taking antiplatelets and anticoagulants

Olds and news in antiplatelets and anticoagulants in current practice

In recent years, many new antiplatelet and anticoagulant drugs have been introduced, including new adenosine diphosphate antagonists, such as prasugrel, ticagrelor, and cangrelor, and new anticoagulants, such as dabigatran, rivaroxaban, and apixaban. Endoscopists should be aware of the characteristics of these new drugs, in order to minimize procedural complications that may occur in patients currently receiving these drugs.

Antiplatelets and anticoagulants from the perspective of GI, cardiology, and cerebrovascular physicians

When deciding how to manage antithrombotics during endoscopic procedures, the risk of bleeding and thromboembolic events during the procedure must be weighed. In order to achieve successful endoscopy in patients taking antithrombotics, it is also important that physicians from three departments (neurology, cardiology, and gastroenterology) are all familiar with the pharmacologic actions of these drugs, and provide multidisciplinary care for the patients. Oh[24] stressed two common mistakes that endoscopists make during endoscopy in patients taking antithrombotics. One common mistake is asking patients to stop taking aspirin without assessment of underlying disease, and the other is not informing patients when they should restart their medication.

Thorough appreciation of guidelines, home and abroad

Existing guidelines are valuable, but should not be a substitute for a careful, personalized risk assessment strategy that involves both patient and physician. There are several useful guidelines for endoscopy in patients with antithrombotic therapy.[25-27]

ENDOSCOPIC ULTRASONOGRAPHY

The EUS session was prepared for the beginners of EUS. To perform EUS, the operator should know well about the echoendoscope and processor. In addition, it is critical to understand the basic mechanics of ultrasound waves, in order to interpret EUS images. When sound wave propagates through the human body, attenuation, reflection, absorption, and scattering all occur, forming many artificial images. To obtain accurate EUS images, and interpret them correctly, novice operators must possess this basic understanding. This session included lectures regarding the indications and diagnostic value of EUS, explanations of the normal anatomy, and station approach. A brief review of EUS-guided interventions was also presented, which included bile duct access and drainage, pancreatic duct access and drainage, pseudocyst drainage, cystic tumor ablation, and plexus neurolysis and blockage.

DISINFECTION AND SCOPE REPROCESSING

Extremely effective disinfection is required for reprocessing of contaminated scopes, in order to make them safe for reuse without a risk of endoscopic transmission of pathogens. Endoscope reprocessing is a multi-stepped process, and meticulous cleaning must be performed promptly after each use. Immersion of the endoscope in a high-level disinfectant for the approved contact time is required, after which the endoscope, suction, and accessory channels are all rinsed with water. The channels are then flushed with alcohol and dried using compressed or forced air. The external surface is easily, quickly, and inexpensively dried by wiping it with 70% to 90% ethanol or isopropanol. Proper handling and storage is also important, and must be performed in a manner that prevents recontamination.

LIVE DEMONSTRATIONS

Live demonstrations of basic and advanced upper and lower GI endoscopic procedures were transmitted using high-speed broadband internet connections and digital video transport system. Four hospitals participated in this session, and operators provided tips and expert advice for scope insertion, mucosal examination, polypectomy, EMR, and ESD.

HANDS-ON COURSES

For the colonoscopy hands-on course, four rooms were prepared, and each was equipped with an Olympus colonoscopy simulator and a trained expert. Three preregistered attendees were trained at the same time in each room, over one-hour sessions. There were three sessions in each room, resulting in participation of 36 trainees. Live demonstration and a hands-on course for endoscope reprocessing were also prepared for nurses.

CONCLUSIONS

The 50th seminar by the KSGE was successful and informative for both primary physicians and academic staff. All participants had the opportunity to gather updated state-of-the-art advice from experts in each field of gastroenterology, covering the upper gut, lower gut, and pancreatobiliary systems. Active participation and networking will hopefully allow novice endoscopists to master new skills and recent advances in the field. *Clinical Endoscopy* will also provide similar state-of-the-art review articles in the coming September issue, touching on the informative contents presented during the 2014 International Digestive Endoscopy Network conference. In the era of advanced information technology and biotechnology, these types of networking conferences will surely facilitate GI endos-

Fig. 1. The core members who contributed to the 50th Seminar of the Korean Society of Gastrointestinal Endoscopy, and members of the organization committee. From left, Jong Ho Moon (Soonchunhyang University Bucheon Hospital), Ho Soon Choi (Hanyang University Seoul Hospital), Jong-Jae Park (Korea University Guro Hospital), Il Kwun Chung (Soonchunhyang University Cheonan Hospital), Yoon Tae Jeen (Korea University Anam Hospital), Oh Young Lee (Hanyang University Seoul Hospital), Ho Gak Kim (Daegu Catholic University Medical Center), Chang-Hun Yang (Dongguk University Gyeongju Hospital), Sung Koo Lee (Asan Medical Center, University of Ulsan College of Medicine), Yong Woon Shin (Inha University Hospital), Dae Hwan Kang (Pusan National University Yangsan Hospital), Myung-Gyu Choi (Seoul St. Mary's Hospital, The Catholic University of Korea College of Medicine), Eun Young Kim (Daegu Catholic University Medical Center), Ki-Nam Shim (Ewha Womans University Mokdong Hospital), Ki Baik Hahm (CHA Bundang Medical Center, CHA University), Se Joon Lee (Gangnam Severance Hospital, Yonsei University College of Medicine), Jeong Seop Moon (Inje University Seoul Paik Hospital), Sam Ryong Jee (Inje University Busan Paik Hospital), Young Seok Cho (Uijeongbu St. Mary's Hospital, The Catholic University of Korea College of Medicine), and Jae Myung Park (Seoul St. Mary's Hospital, The Catholic University of Korea College of Medicine).

copy's 4Ps: personalized, precise, predictive, and preventive medicine. The authors would like to express their sincere thanks to all of the organizing members of the 50th seminar of the KSGE (Fig. 1).

Conflicts of Interest

The authors have no financial conflicts of interest.

REFERENCES

1. Park JJ, Kim JW, Kim HJ, et al. The prevalence of and risk factors for Barrett's esophagus in a Korean population: A nationwide multicenter prospective study. J Clin Gastroenterol 2009;43:907-914.
2. Schlemper RJ, Riddell RH, Kato Y, et al. The Vienna classification of gastrointestinal epithelial neoplasia. Gut 2000;47:251-255.
3. Kim KB, Yoon SM, Youn SJ. Endoscopy for nonvariceal upper gastrointestinal bleeding. Clin Endosc 2014;47:315-319.
4. Kim YD. Management of acute variceal bleeding. Clin Endosc 2014;47:308-314.
5. Park KS. Evaluation and management of caustic injuries from ingestion of acid or alkaline substances. Clin Endosc 2014;47:301-307.
6. Hong KH, Lim YJ. Prerequisites of colonoscopy. Clin Endosc 2014;47:324-329.
7. East JE, Bassett P, Arebi N, Thomas-Gibson S, Guenther T, Saunders BP. Dynamic patient position changes during colonoscope withdrawal increase adenoma detection: a randomized, crossover trial. Gastrointest Endosc 2011;73:456-463.
8. Cohen J. The impact of tissue sampling on endoscopy efficiency. Gastrointest Endosc Clin N Am 2004;14:725-734.
9. Rey JF, Lambert R; ESGE Quality Assurance Committee. ESGE recommendations for quality control in gastrointestinal endoscopy: guidelines for image documentation in upper and lower GI endoscopy. Endoscopy 2001;33:901-903.
10. Lieberman D, Nadel M, Smith RA, et al. Standardized colonoscopy reporting and data system: report of the Quality Assurance Task Group of the National Colorectal Cancer Roundtable. Gastrointest Endosc 2007;65:757-766.
11. Matsuda T, Fujii T, Saito Y, et al. Efficacy of the invasive/non-invasive pattern by magnifying chromoendoscopy to estimate the depth of invasion of early colorectal neoplasms. Am J Gastroenterol 2008;103:2700-2706.
12. Koo JS. Equipment-based image-enhanced endoscopy for differentiating colorectal polyps. Clin Endosc 2014;47:330-333.
13. Iacucci M, Panaccione R, Ghosh S. Advances in novel diagnostic endoscopic imaging techniques in inflammatory bowel disease. Inflamm Bowel Dis 2013;19:873-880.
14. Goetz M, Malek NP, Kiesslich R. Microscopic imaging in endoscopy: endomicroscopy and endocytoscopy. Nat Rev Gastroenterol Hepatol 2014;11:11-18.
15. ASGE Technology Committee, Tokar JL, Barth BA, et al. Electrosurgical generators. Gastrointest Endosc 2013;78:197-208.
16. Fyock CJ, Draganov PV. Colonoscopic polypectomy and associated techniques. World J Gastroenterol 2010;16:3630-3037.
17. Terasaki M, Tanaka S, Oka S, et al. Clinical outcomes of endoscopic submucosal dissection and endoscopic mucosal resection for laterally spreading tumors larger than 20 mm. J Gastroenterol Hepatol 2012;27:734-740.
18. Choo WK, Subhani J. Complication rates of colonic polypectomy in relation to polyp characteristics and techniques: a district hospital experience. J Interv Gastroenterol 2012;2:8-11.
19. Gustavsson A, Magnuson A, Blomberg B, Andersson M, Halfvarson J, Tysk C. Endoscopic dilation is an efficacious and safe treatment of intestinal strictures in Crohn's disease. Aliment Pharmacol Ther 2012;36:151-158.
20. Jung ES, Kang YK, Cho MY, et al. Update on the proposal for creating a guideline for cancer registration of the gastrointestinal tumors (I-2). Korean J Pathol 2012;46:443-453.
21. Kim BC, Park CH, Kim TI, et al. Variable clinical classifications and diagnostic coding systems of colorectal neuroendocrine tumor. Intest Res 2013;11:14-22.
22. Lee TH, Jung YK, Park SH. Preparation of high-risk patients and the choice of guidewire for a successful endoscopic retrograde cholangiopancreatography procedure. Clin Endosc 2014;47:334-340.
23. Cho KB. The management of endoscopic retrograde cholangiopancreatography-related duodenal perforation. Clin Endosc 2014;47:341-345.
24. Oh HG. Management of antithrombotic therapy for gastroenterological endoscopy from a cardio-cerebrovascular physician's point of view. Clin Endosc 2014;47:320-323.
25. ASGE Standards of Practice Committee, Anderson MA, Ben-Menachem T, et al. Management of antithrombotic agents for endoscopic procedures. Gastrointest Endosc 2009;70:1060-1070.
26. Veitch AM, Baglin TP, Gershlick AH, et al. Guidelines for the management of anticoagulant and antiplatelet therapy in patients undergoing endoscopic procedures. Gut 2008;57:1322-1329.
27. Boustière C, Veitch A, Vanbiervliet G, et al. Endoscopy and antiplatelet agents. European Society of Gastrointestinal Endoscopy (ESGE) Guideline. Endoscopy 2011;43:445-461.