

Update on endoscopic research presented at 2007 Asia Pacific Digestive Disease Week, Kobe

Report prepared by:

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The Endoscopy program of the APDW 2007 consisted of a one day live workshop, a one-day postgraduate course, special lectures, eight symposia, and sessions with oral and poster presentations. The one-day live workshop was transmitted from Kitasato University University East Hospital. Live cases included biliary metal stenting of hilar tumor and intraductal endoscopic ultrasound, EUS and FNA of stromal tumor, endoscopic submucosal dissection of early esophageal and stomach cancers as well as lateral spreading tumor of the colon using the hook knife and the modified IT knife. The use of magnifying endoscopy and different staining methods e.g. 0.05% crystal violet in defining lateral margins of early cancers and characterization of pit pattern were discussed. The special lectures included an overview of the history of digestive endoscopy given by Professor Hirohumi Niwa, an account on the new development of capsule endoscopy specifically the use of colon capsule given by Professor Joseph Sung, and an update on natural orifice transluminal endoscopy surgery [NOTES] was given by Dr. Reddy from Hyderabad. Dr. Reddy reported a case series of transvaginal cholecystectomy (n=3). In addition to the introduction of a flexible endoscope via the posterior fornix of the cervix, a 5mm laparoscopic trocar was inserted.

There were eight symposia on: endoscopic submucosal dissection for GI tumors, management of malignant biliary strictures, magnifying endoscopy, treatment strategy of esophageal cancer, diagnosis and treatment by small intestinal endoscopy, therapeutic endoscopy in bilio-pancreatic diseases, endoscopic management of ampullary tumor and endoscopic management of early colorectal cancer.

The present report focuses on endoscopy research with selected presentations were abstracted.

**Symposium E1: Endoscopic submucosal dissection for upper GI tumors
Wednesday, October 17, 2007
9:20 am – 11:00 am**

Results and current status of ESD for gastric tumors in Korea

JAE J. KIM

Division of Gastroenterology, Sungkyunkwan University School of Medicine, Korea

Kim reported a multi-center (n=13) retrospective study on the use of endoscopic mucosal resection for early gastric cancer. From January 2000 to December 2002, 514 EGCs in 506 patients were treated by EMR in 13 institutions in Korea. The most commonly used technique was circumferential precutting followed by snare resection (EMR-P, n=269, 52.3%). Local recurrence was detected in 24 cases (6.0%) with a median interval between EMR and recurrence of 17.9 months (range, 3.5-51.7). In his institution, 283 patients with EGC have been treated by EMR from January 2000 to June 2005. The methods of EMR were mainly snare resection after circumferential precutting (EMR-P, n=162) and endoscopic submucosal dissection (ESD, n=91). The median duration of follow-up was 21 months (range 3-66 months). The rate of curative resection was highest with ESD (80.2%), followed by EMR-P (70.3%). Five patients died during the follow-up period, but there was no death related to gastric cancer.

Endoscopic submucosal dissection of esophageal cancer and GEJ cancer

HWOON-YONG JUNG

University of Ulsan College of Medicine, Asan Medical Center, Korea

Endoscopic submucosal dissection (ESD) for esophagus and GEJ including cardia is relatively difficult to perform. Frequently, submucosal fibrosis, large-bored submucosal vessels and bleeding are encountered during ESD at cardia. Jung et al reported the tips of proper selection of accessories including various knives and coagulation devices as well as technical strategies to successfully perform ESD at GEJ. For esophageal lesion, Jung et al advocated sufficient submucosal injection and complete cutting of mucosal layer including muscularis mucosae. Proper coagulation of large-bored submucosal vessels before cutting is essential to safely perform ESD for cardiac and GEJ lesions.

Experience of endoscopic submucosal dissection for superficial esophagogastric cancers in Hong Kong

ENDERS K.W. NG, PHILIP W.Y. CHIU

Prince of Wales Hospital, The Chinese University of Hong Kong, Hong Kong, China

Ng and colleagues reported a single institution experience on ESD to 54 early upper GI cancers (42 gastric and 12 esophageal) over 4 years. Endoscopic ultrasonography was used routinely to determine T-staging of lesions. Chromo-endoscopy and magnifying endoscopy were used to delineate margins of the lesion. A combination of IT knife and triangular tip (TT) knife was used. The mean operating time was 84.3 minutes and the mean size of lesion removed was 8.5 cm². Bleeding occurred in 3 patients (2 within first 6 hours of procedure and one patient returned on day 5). These were treated by endoscopic clipping. There was no perforation or mortality in the series. The authors concluded good results of ESD for superficial esophagogastric cancer can be achieved outside Japan.

Treatment results and complications of upper gastrointestinal ESD

TAKASHI TOYONAGA¹, EISEI NISHINO², TOMOOMI HIROOKA¹

*1Department of Gastroenterology, Kishiwada Tokushukai Hospital, Japan,
2Department of Pathology, Kishiwada Tokushukai Hosopital, Japan*

Toyonaga and colleagues described the use of a water jet short needle knife (Flush knife) in carrying out ESD. They treated 1097 lesions (115 in the esophagus, 982 in the stomach) between June 2002 and October 2006. En-bloc and complete resection was performed in 1067 (97.3%) lesions (111 in the esophagus, 956 in the stomach). Perforation was closed by clipping in 18 (1.7%) cases. The authors concluded that the use of a Flush knife enables a clear view and submucosal injection without replacement of devices.

Current status and future prospect in endoscopic treatment for superficial gastric neoplasia

MITSURU KAISE¹, MASAYUKI KATO¹, JIN YONEZAWA¹, YUKINAGA YOSHIDA¹, KAZUKI SUMIYAMA¹, NOBORU YOSHIMURA¹, HIROSHI TOYOIZUMI¹, KENICHI GODA¹, KEIICHI IKEDA¹, HISAO TAJIRI²

1Department of Endoscopy, The Jikei University School of Medicine, Japan,

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School of Medicine, Japan

Kaise and colleagues reviewed their experience in endoscopic mucosal resection of early gastric neoplasms and found a local recurrence rate of 7.4% (25 of 339 gastric neoplasia). Recurrence after non-ESD techniques such as EMR-L was significantly higher than that after ESD (11.2%, 22/196 vs. 2.1%, 3/143, P=0.001). A multivariate analysis indicated that neoplasia-positive margin of resected specimens significantly predicted local recurrence. The authors also evaluated the use of magnifying endoscopy coupled with narrow band imaging (ME-NBI) on 99 superficial gastric cancers and 96 non-cancerous lesions. Disappearance of 'fine mucosal pattern' (FMP) or irregular FMP was found in 100% of depressed cancers and 66% of elevated cancers. Irregular micro-vascular pattern was found 95% and 55% of depressed cancers and elevated cancers, respectively. The authors then reported a prospective study correlating MVPs as seen on ME-NBI and histological findings in 225 superficial depressed gastric cancers. MVPs were classified into two patterns. The fine network pattern appears as a mesh, and abundant microvessels are well connected with one another. In opposite, the corkscrew pattern has isolated and tortuous microvessels. Fine net work pattern was recognized in 104 (68.4%) of 152 well differentiated adenocarcinomas. Corkscrew pattern was observed in 64 (85.3%) of 75 poorly differentiated adenocarcinomas.

The authors also compared local recurrence rates between periods before and after the introduction of ME-NBI into ESD marking. Local recurrence after ESD occurred in 5 (1.5%) of 327 gastric cancer patients. Recurrence rates were significantly (P=0.0012) higher in the early period (7.5%, 3/40) than in the recent period (0.7%, 2/287). NBI-ME may therefore better define resection margins and enhance curability of ESD in gastric neoplasia.

Magnifying endoscopy

Symposium E2: Magnifying Endoscopy
Wednesday, October 17, 2007^h
9:20 – 11:00 a.m.

Magnifying endoscopy for accurate treatment, endoscopic resection and laparoscopic surgery

FUMIO ISHIDA, SHIN-EI KUDO

Digestive Disease Center, Yokohama Northern Hospital, Showa University, Yokohama, Japan

Ishida and colleagues reported the use of magnifying chromoendoscopy (MC) determine the depth of invasion in colonic neoplasm. The pit patterns of mucosal surface are classified to 6 types as Kudo's classification. Lesions with Type I and II patterns correspond to non-neoplastic lesions. Type IIIS, IIIL, IV are adenomas or intra mucosal carcinomas. Type V is subdivided to type V I as mucosal cancer or slightly submucosal invasion and type V N as massive submucosal invasion or more. Among 628 carcinomas with submucosal invasion, no nodal metastasis was observed in type V I lesions (0/187). On the other hand, lymph nodes metastases were observed in the lesions with type V N lesions (39/406, 9.6%). The authors concluded that Type IIIS, IIIL, IV and V I lesions should be treated by endoscopic resection while type V N lesions should be resected by surgery.

"Clinical classification" of magnifying colonoscopy

TAKAHIRO FUJII

Takahiro Fujii Clinic, Japan

Lesions with Kudo's pit pattern type IIIS, IIIL, and IV are adenoma or intramucosal carcinoma (M) including submucosal superficially invasive cancer (SM1). Type V pit pattern has been subdivided into the following 3 types, mild irregular V pit (Type VI -mild), highly irregular V pit (Type VI-highly), and non structure type V (Type VN) Type VI pit-mild pattern suggests M or SM1, Type VI -highly or Type VN suggests submucosal deeply invasive cancer (SM2 or SM3). The aim of this sub-typing is to enable clinicians to decide between endoscopic resection and surgery. Dr. Fujii proposed a new "clinical classification of magnifying colonoscopy" in which there are 3 groups, 'non-neoplastic', 'non-invasive' and 'invasive'. Basically, type I and II pit patterns are considered as non-neoplastic patterns. Additionally, IIIS, IIIL, IV, and irregular and/or distorted pits without a demarcated area (VI noninvasive) are classified as non-invasive patterns. An invasive pattern (VI-invasive) is defined as irregular and/or distorted pits observed in a demarcated area such as a depression, a large nodule, or a reddish area, as a submucosal deeply invasive cancer usually shows a demarcated area on the surface on histology. Namely, from the standpoint of treatment, we have categorized Type V pit pattern into VI-non invasive and VI-invasive pattern based on the absence or presence of a demarcated area.

Magnifying colonoscopy using narrow band imaging (NBI) system

YASUSHI SANO

Gastrointestinal Center, Sano Hospital, Japan

The technology of the narrow band imaging (NBI) system is based on modifying the spectral features by narrowing the bandwidth of spectral transmittance using optical

filters. NBI enhances capillary pattern as well as surface structures, features that enable us to differentiate neoplastic lesion from non-neoplastic lesion. Dr. Sano used the terms 'optical chromoendoscopy' with NBI replacing the need for dye spraying. In an earlier study by the group [Machida et al, Endoscopy; 2004;36:1094-98.] on 43 colorectal lesions, NBI was superior to conventional endoscopy in delineating pit pattern and was comparable to chromo-endoscopy in differentiating neoplastic from non-neoplastic lesions.

Dr. Sano also proposed the term "meshed capillary: MC" for the distinction between non-neoplastic and neoplastic and a capillary classification "capillary pattern: CP" for the differential diagnosis of colorectal lesions. The presence of meshed brown capillary vessels by magnified observation under NBI may be a sign of angiogenesis, a feature of neoplastic transformation.

Symposium E3: Management of malignant biliary stricture
Wednesday, October 17, 2007
2:15 -3:45 p.m.

Strategy of biliary stenting for non-resectable malignant biliary strictures

ICHIRO YASUDA¹, TSUYOSHI MUKAI², MASAMICHI ENYA³, SHINPEI DOI¹, TAKUJI IWASHITA¹, KEISUKE IWATA², EIICHI TOMITA², HISATAKA MORIWAKI¹

1First Department of Internal Medicine, Gifu University Hospital, Japan,

2Department of Gastroenterology, Gifu Municipal Hospital, Japan,

3Department of Gastroenterology, Takayama Red Cross Hospital, Japan

Yasuda and colleagues reviewed their experience in biliary stenting with the aim to define strategies in stenting for malignant distal and hilar bile duct strictures. Over 15 years (1992-2007), a total of 518 patients (hilar 160, distal 358) underwent biliary stenting. In patients with distal bile duct strictures, plastic stents (PS) were inserted in 199 of them, 43 with metal stents (MS) and 116 with covered metal stents (CMS). Mean patency was longer with CMS and MS than PS (217 vs. 186 vs. 123 days respectively). Adjunctive chemotherapy or radiotherapy was shown to improve patency. The main cause of occlusion was clogging with sludge in PS and CMS, and tumor ingrowth in MS. Stent exchange or insertion of a new stent through the original stent proved impossible in 9 (41%) of MS compared to 28 (21%) of the PS group, 9 (13%) of the CMS group. Occluded CMS were removed in 33 patients (54%).

CMS was not used in hilar strictures because of possible membrane occlusion of side branches and contralateral hepatic duct. Again patency was longer with MS (n=95) than PS (n=65) [mean of 363 vs. 164 day, P<.001]. Stent occlusion occurred in 41 patients (43%) of the MS group and in 40 patients (62%) of the PS group. The exchange or insertion of a new stent was impossible in 6 patients (15%) from the PS group and in 19 patients (46%) of the MS group.

The authors concluded that a CMS is the most suitable for the distal bile duct stricture, Re-intervention in hilar stricture is difficult following MS. PS may be more convenient. Furthermore, subsequent re-intervention is easier with unilateral than bilateral stents. Unilateral stenting is preferred, if it can provide a sufficient relief of jaundice. .

Management of unresectable malignant biliary stricture

TAKAO ITOI, ATSUSHI SOFUNI, FUMIHIDE ITOKAWA, TOSHIO KURIHARA, SHUJIROU TSUJI, KENTARO ISHII, NOBUHITO IKEUCHI, FUMINORI MORIYASU

Department of Gastroenterology and Hepatology, Tokyo Medical University, Japan

The authors presented their multidisciplinary approach using radiotherapy, percutaneous laser ablation therapy, and/or chemotherapy in addition to biliary stenting in the management of patients with bile duct tumors. Fifty-seven patients with a known outcome and hilar bile duct cancers were studied retrospectively. 34 of 57 patients underwent a multidisciplinary treatment. The median survival time was longer for the group receiving multidisciplinary treatments (534 vs. 155 days).

Covered self-expandable metallic stents for distal malignant biliary obstruction
TAKESHI TSUJINO, HIROYUKI ISAYAMA, OSAMU TOGAWA, YOUSUKE
NAKAI, MASAO OMATA

Department of Gastroenterology, Tokyo University, Japan

The authors presented their experience in the evolving techniques in biliary stenting. A handcrafted polyurethane-covered Wallstent was placed in 21 patients (Gastrointest Endosc 2002; 55:366-70) before commercially available covered stents became available. Mean stent patency was 206 days. No tumor ingrowth was observed. Subsequently the authors conducted a multicenter randomized controlled trial of covered vs. uncovered Diamond stent for the palliation of distal malignant biliary obstruction (Gut 2004; 53:729-34). During a mean follow-up period of 246 days after stent insertion, stent occlusion occurred in 14% of patients in the covered group and 38% of the uncovered group ($p < 0.001$).

Silicone-covered Wallstents were subsequently inserted in 69 consecutive patients. (Gastrointest Endosc 2005; 62:742-8). Mean patency was 200.9 days. Although none of the 69 patients developed tumor ingrowth, early and late complications occurred in 16 patients (23.1%); cholangitis in 5 patients (7.2%), stent migration in 4 (5.8%), acute cholecystitis in 4 (5.8%), and acute pancreatitis in 4 (5.8%).

The authors also reported their initial experience in the use of a covered EMS (ComVi stent). No comparative data is available thus far. The authors concluded that covered EMSs should be used in distal bile duct malignancies.

Anti-neoplastic drug-eluted metallic stent for malignant biliary obstruction
DONGKI LEE

Department of Internal Medicine, Yonsei University, Korea

Dr. Lee reported the use of a metallic stent covered with paclitaxel-incorporated membrane (MSCPM) first in porcine bile duct and subsequently in 21 patients with unresectable malignant biliary obstruction. The mean (median) survival of patients was 350 (281) days (range 68-811). The mean (median) patency of stent was 420 (270) days (range 68-810) and cumulative rates at 3, 6, and 12 months were 100%, 71%, and 36%, respectively. The highest concentration of paclitaxel in the blood was found between 1 and 10 days after insertion. The occlusion of the MSCPM was observed in 9 patients and was caused by bile sludge or clog in 4, tumor overgrowth in 3, and tumor ingrowth in 2 patients. Late complications included obstructive jaundice in 6, cholangitis in 3, and 1 patient showed stent migration with cholecystitis.

Symposium E4; Treatment strategy of esophageal cancer
Wednesday, October 17, 2007
4:00 -5:30 p.m.

The treatment strategy of superficial esophageal cancer

KUMIKO MOMMA

Komagome Hospital, Japan

Dr. Momma reviewed 402 cases of superficial esophageal cancer treated by EMR (T1a-EP 179 cases, T1a-LPM 137, T1a-MM 61, SM1 25) that were followed up for at least 2 years. In patients with T1a-MM or SM1 disease, additional chemo-radiotherapy or radiotherapy was given to 17, chemotherapy to 3, and surgery to 4 cases with. 62 cases of T1a-MM (52) or SM1 (10) disease received no additional treatment.

In cases with T1a-EP and LPM cancer (316 cases), local recurrences were found in 12 cases (4%). Recurred cases underwent EMR (10 cases) and radiotherapy (2). In cases with T1a-MM (61 cases), local recurrence was found in 7 cases (11%), lymph node metastasis in 2 cases and bone metastasis in one case. Patients with local recurrence were successfully treated by EMR (6 cases) and radiotherapy (1). Two cases were lost after recurrence. In cases with SM1 (25 cases), 3 cases (12%) developed lymph node metastasis subsequently treated by esophagectomy (2) and regional lymphadenectomy followed by chemo-radiation

The author concluded EMR is a reliable technique in treating superficial esophageal cancer. Treatment to MM or SM1 disease should be individualized. Additional treatment should be considered after EMR.

Symposium E5: Diagnosis and treatment by small intestinal endoscopy
Thursday, October 18, 2007
9:15 – 11:00 a.m.

Usefulness of double balloon endoscopy in suspected small bowel disease

JEONG-SIK BYEON

Division of Gastroenterology, Department of Internal Medicine, University of Ulsan College of Medicine, Asan Medical Center, Korea

Dr. Byeon reported a single center experience with the use of DBE in 58 patients from Jan 2005 to Jan 2006. Indications were suspected small bowel bleeding in 37 patients, chronic abdominal pain in 11, chronic diarrhea in 4, and radiological abnormality in 6. Overall diagnostic yield was 72% (42/58) and diagnostic yield in suspected small bowel bleeding was 70% (26/37). The most common abnormal findings were ulcers or erosions in 16 patients. Tumors such as GIST were the next common pathology. Complete small bowel evaluation was possible in 11 of 18 patients attempted. Median examination time was 103 minutes (range, 25-330 minutes). DBE therapies included: polypectomies (4 patients with Peutz-Jeghers small bowel polyps and one patient with a solitary jejunal hamatomatous polyp), argon plasma coagulation (2 patients with jejunal angiodysplasia and one patient with a NSAID erosion) and removal of an impacted capsule in Crohn's stricture.

The author also presented a Korean multicenter study for the evaluation of the role of DBE in patients with suspected small bowel bleeding. Overall diagnostic yield of DBE was 71% (105/148). Diagnostic yield was not different between overt and occult bleeding. DBE detected abnormalities in 30 patients (65%) out of 46 with negative small bowel series. Only one perforation and one aspiration pneumonia developed in the series.

Double balloon endoscopy: its diagnostic and therapeutic yield -an Indian experience

KARMABIR CHAKRAVARTTY, U. BHAKAT, M.K. AGARWAL, K.K. GHOSH, S. CHAKRAVARTTY, EESHA CHAKRAVARTTY

Department of Gastroenterology, Kothari Medical Centre and Medical College, India

The authors reported their experience of DBE on 245 patients over 2 years. A total number of 345 procedures: oral route - 99, anal route - 46, both - 100. Time range for oral route was 20-95 mins, for anal route 24-110 mins and for both anal and oral routes between 66 and 168 mins. Total enteroscopy was always attempted sequentially on the same day. This was possible in 78% of cases. Indications for examination were as follows; small bowel bleeding n = 97, abdominal pain (n =88); chronic diarrhea (n =33), iron deficiency anemia (n =8), suspected intestinal obstruction (n =13), biliary access for anastomosis stricture (n =3). The highest diagnostic yield was in the group with bleeding (96%). No pathology was found in 19 of 88 patients with pain and 7 of 33 with chronic diarrhea. 40 out of 245 patients in addition received therapy which argon plasma coagulation, stricture dilation and hemostatic treatment. One patient developed aspiration pneumonia and 3 with post-procedural abdominal pain, one of them diagnosed to have acute pancreatitis.

Diagnosis and treatment of small-bowel bleeding and obstruction by enteroscopy

NAOKI OHMIYA¹, MASANAO NAKAMURA¹, WATARU HONDA¹, OSAMU SHIRAI¹, AYUMU TAGUCHI¹, AKIHIRO ITOH¹, YOSHIKI HIROOKA², NIWA YASUMASA¹, OSAMU MAEDA¹, TAKAFUMI ANDO¹, HIDEMI GOTO¹

*1*Department of Gastroenterology, Nagoya University Graduate School of Medicine, Japan, *2*Department of Endoscopy, Nagoya University Hospital, Japan

Dr. Ohmiya and colleagues evaluated the diagnostic yields of DBE, CT, and fluoroscopic enteroclysis (FE), and the outcome of enteroscopic treatment in patients with occult GIB (n=162) or obstruction (n=60). Capsule endoscopy (CE) and DBE were compared in 74 patients. Of 162 patients with OGIB, 95 (59%) were diagnosed with small bowel diseases. Of 95, vascular diseases (39%) including angiodysplasia, Dieulafoy's lesion, ulcers or erosions (28%) including Behcet's disease, tumors or polyps (22%) diverticula (11%) including Meckel's. They were treated by medical, enteroscopic, and surgical therapies (n=35, 30, and 30 respectively). Comparison of overall diagnostic yield was 64% and 54% with DBE and CE respectively.

Of 60 patients with SBO, the diagnoses were Crohn's disease (33.3%) ischemic stricture (10.0%), metastatic small-bowel tumors (10%), malignant lymphoma (8.3%), intussusception of benign tumors or polyps (6.7%), intra-abdominal (6.7%), postoperative adhesions (6.7%) and others. The diagnostic yields of CT, FE, and DBE for SBO were 63%, 69%, and 93%, respectively. Of 41 enteroscopic balloon dilation procedures in 19 patients, 40 (98%) were successful. Five of 13 patients with Crohn's disease relapsed after dilation. Two treated by repeat dilation and 3 surgery. The authors presented an initial experience with dilation via DBE in patients with SB strictures. This represents an alternative to surgery.

Role of double-balloon endoscopy for the diagnosis of small intestinal pathology: Comparison with other modalities

TAKAYUKI MATSUMOTO, MITSUO IIDA

Department of Medicine and Clinical Science, Kyushu University, Japan

The authors compared diagnostic yield of DBE in patients examined by video-capsule endoscopy (CE) (49 patients) and small bowel radiography (SBR) (76 patients).

The overall diagnostic yield was not different between DBE and CE (55% vs. 61%).

DBE was similar to SBR in diagnostic yields (57% vs. 59%). DBE was better in the diagnosis of bleeding cases than SRB (50% vs. 22%, $0.5 < p < 0.1$).

The authors also reported the use of DBE in 12 patients with familial adenomatous polyposis. DBE found SB adenomas in 9 of them. This was compared to the use of intra-operative enteroscopy (IOE) in 29 such patients with a diagnostic yield of 15 (52%). The adenomas occurred predominantly in the jejunum.

Dr. Matsumoto concluded that CE may be the first imaging modality in patients with small bowel bleeding.

Symposium E6: Therapeutic endoscopy in bilio-pancreatic diseases
Thursday, October 18, 2007
1:30 – 3:10 p.m.

New paradigm for the treatment of difficult common bile duct stone

DONGKI LEE

Department of Internal Medicine, Yonsei University, Korea

Dr. Lee described the technique of a combined endoscopic papillary large balloon dilation (EPLBD) preceded by a mid-incision endoscopic sphincterotomy (m-EST) for the removal of large bile duct stones. 15-20 mm balloons are used for dilation. Contraindications to the use of this combined technique include a CBD diameter <10mm and a small stone and the presence of a stricture in the distal bile duct due to repeated cholangitis. The technique reduces the use of endoscopic mechanical lithotripsy and its associated complications. In addition, it reduces the complications associated with a full-incision EST and procedure times. The occurrence of major complications, such as pancreatitis was not observed. A comparative group was not available in the series.

Endotherapy of chronic pancreatitis: An Asian perspective

D. NAGESHWAR REDDY

Asian Institute of Gastroenterology, India

Dr. Reddy proposed an endoscopic classification of tropical pancreatitis. Type I diseases are those with normal main pancreatic duct (MPD) and involvement of its side branches only. Endotherapy is considered primarily in type II - IV disease (Type II, dilated MPD, no strictures or stones, type III, dilated MPD, dominant stone or stricture in the head, type IV, dilated MPD, stones along entire duct but without strictures). EPS alone is used in Type II tropical pancreatitis. A combination of the use of ESWL, EPS or stenting and endoscopic stone extraction is used in type III and IV disease. Type V (gross MPD dilation, stones and strictures along the entire duct) is referred for surgery.

Dr. Reddy reported a retrospective analysis of 688 patients of nonalcoholic chronic calcific pancreatitis (CCP) requiring endotherapy in the period 1996-2004. ESWL combined with endotherapy was done in 586 patients. EPS and/or stenting were done in the remaining 102 patients with no ductal calculi. 80% reported significant pain relief. 58 % were pain free at 2 year follow up. The fragmentation rates of ESWL were 91% and led to complete stone clearance in 373 (63.7%) patients. Partial stone clearance was seen in an additional 161 (27.47%) patients. 48% of these patients had complete pain relief at 2 year follow up. The intensity of pain was reduced in 29% patients.

Evaluation of transpapillary stenting in patients with pancreatic disease

TAKESHI ISHIHARA, OSAMU YOKOSUKA

Department of Medicine and Clinical Oncology, Graduate School of Medicine, Chiba University, Japan

Dr. Ishihara and colleagues evaluated the use of pancreatic stents in 55 patients (mean age: 48.7years) symptomatic from strictures to main duct from chronic pancreatitis.

Stent dysfunction was indicated by new onset of pain, dilation of PD on abdominal ultrasound and increase in blood/urinary amylase. Repeat ERP would be performed a week after removal of PD. Repeat stenting was then performed if there was stagnation of contrast in the PD. In total, 107 stents were placed in 55 patients. Pain relief was attained in 47 patients (85%). The median indwelling periods were 369 (10Fr s-type stent), 207 (10Fr Solopass stent), 101 (10Fr tube stents) and 63 (7Fr Flexima stent) days respectively. Distal migration of the stent occurred 0, 8, 3 and 6 respective cases. No proximal migration of the stent and no serious complication occurred.

Endoscopic treatment for biliary and pancreatic strictures

KAZUO INUI, JUNJI YOSHINO, KAZUMU OKUSHIMA, HIRONAO MIYOSHI, YUTA NAKAMURA

Department of Internal Medicine, Fujita Health University, Second University Hospital, Japan

Inui and colleagues reported the clinical usefulness of percutaneous transhepatic cholangioscopy for differentiating malignant from benign biliary strictures. During cholangioscopy, the hemoglobin indices were obtained over the involved and uninvolved mucosa. The mean hemoglobin index ratio in patients with bile duct or pancreatic carcinoma was significantly higher than in patients with benign stricture.

The authors also reported percutaneous dilation of benign biliary strictures in 6 patients to size 16F (mean age, 74.5 years). The duration of stenting by percutaneous transhepatic biliary drainage catheter ranged 8 to 178 days, mean was 78 days. With a follow-up period ranged from 242 to 1,812 days, all patients were free of percutaneous transhepatic biliary drainage catheter after this treatment. All of 6 patients with benign stricture were successfully dilated by the method, and have been without biliary stenting.

The authors reported the use of an 8 or 10mm polyurethane covered Diamond stents in dilation of pancreatic stricture in 5 patients with recurrent pancreatic stones. Endoscopic pancreatic sphincterotomy was initially made and the pancreatic stones were extracted. The metallic stent was removed 3 to 7 days after insertion. There were no severe complications except abdominal pain. All patients have been without recurrence of pancreatic stones for mean observation period of about 40 months.

Symposium E7: Endoscopic management of ampullary tumor
Thursday, October 18, 2007
3:30 – 5:00 p.m.

Present status of endoscopic papillectomy and its problems

KUNIYUKI TAKAHASHI, HIROYUKI MAGUCHI, SHINPEI MATSUSAKI
Center for Gastroenterology, Teine-Keijinkai Hospital, Japan

Dr. Takahashi reported a series of 22 cases (20 adenoma, 1 carcinoma in adenoma, 1 carcinoma) that underwent endoscopic papillectomy between April 1997 and May 2007. En-bloc resection was achieved 86.4% (19/22) and piecemeal resection was achieved 13.6% (3/22). 2. Early complications occurred (within 30 days) in 31.8% (7/22), including 4 pancreatitis (serious in 1), 3 hemorrhage, 1 cholangitis, and 1 perforation. Late complication rate was 18.2% (4/22): 3 cases of papillary stricture, 2 pancreatitis, and 1 cholangitis respectively. 3. The average follow-up period was 872 days; remnant recurrence rate was 9.2% (2/22), with two cases undergoing a second endoscopic papillectomy at 2 months, and 8 months respectively. All the patients show no signs of metastasis although one patient died due to an unrelated illness.

Endoscopic resection therapy of ampullary tumor

AKIHIRO ITOH¹, YOSHIKI HIROOKA², HIROKI KAWASHIMA¹, KAZUO HARA¹, HIROKI UCHIDA¹, KOJI NONOGAKI¹, TOSHIFUMI KASUGAI¹, EIZABURO OHNO¹, NAOKI OHMIYA¹, YASUMASA NIWA¹, HIDEMI GOTO¹

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Over 14 years, 86 patients (mean age 67.1 years) underwent snare endoscopic papillectomy for ampullary adenoma or early cancer without intraductal infiltration. Pancreatic stenting was performed immediately after resection in 72 cases. Pathologic diagnoses were 57 adenomas, 25 cancers, 2 inflammatory polyps and 2 hyperplastic lesions. Fifty-seven of 82 neoplasms underwent complete resection. Twenty-two of the other 25 cases were lesion free at second endoscopy. Two of the three cases with residual tumor underwent pancreatoduodenectomy, and the other case has been followed-up because of advanced age.

Bleeding without requiring transfusion occurred in 23 of 86 cases (26.7%) and acute pancreatitis occurred in 6 of 86 (7.0%). No perforation of the duodenum was seen. Recurrence occurred in 3 cases and the one of them was referred surgical treatment. The authors concluded that endoscopic papillectomy can be performed safely and as a curative treatment of tumor of the major duodenal papilla including early cancer cases.

Techniques of endoscopic snare papillectomy for ampullary tumors to avoid complication

JONG HO MOON

Department of Internal Medicine, Soon Chun Hyang University School of Medicine, Korea

En bloc resection is fundamental in the treatment of adenomatous lesion of the papilla and allows precise histopathologic evaluation of the resected specimen. Complications related to snare endoscopic papillectomy occur in up to 25% of

patients. These include pancreatitis, bleeding, duodenal perforation, cholangitis, and papillary stenosis. The two most common complications are bleeding and pancreatitis. Most bleeding can be managed by conservative management and endoscopic hemostasis. Prophylactic placement of a pancreatic duct stent prevents severe pancreatitis after endoscopic papillectomy. Pancreatic stenting also reduces the risk of papillary stenosis after papillectomy. Wire-guided endoscopic snare papillectomy in selected patients is one of useful techniques to maintain pancreatic access for stenting.

Endoscopic papillectomy for tumors of the major duodenal papilla

KOICHI AIURA¹, TAIZO HIBI², KAN HANDA², MASAYUKI KOJIMA², YUKO KITAGAWA², KOICHIRO KUMAI¹

1Center for Diagnostic and Therapeutic Endoscopy, Keio University School of Medicine, Japan, 2Department of Surgery, Keio University School of Medicine, Japan

Dr. Aiurai presented a retrospective analysis of 14 patients who underwent EP over a 7-year period (2000-2007). Indications for EP were: i) benign tumors proved by endoscopic biopsy, ii) lesions confined to the major duodenal papilla (i.e. negative ductal spread in the distal bile duct or the main pancreatic duct with no evidence of regional lymph node enlargement confirmed by intraductal ultrasonography and endoscopic ultrasonography). General anesthesia was used routinely.

The tumor was slightly elevated by submucosal injection of glycerol with epinephrine, followed by semi-circular mucosal precutting of the anal border of the lesion to facilitate correct snare position. In 9 cases, a balloon catheter was placed in the common bile duct in order to aid accurate grasping of the tumor, leading to more efficient en bloc resection. The inflated balloon was pulled back gently toward the duodenal lumen, and the snare was then opened encircling the base of the papillary tumor completely. En bloc resection was carried out with monopolar electrosurgical cutting current. All patients had an endoscopic nasobiliary drainage tube (5 Fr) placed in the intrahepatic bile duct. A pancreatic stent (5 Fr, 5 cm) was inserted only in the patients with non-patent minor papilla, if the outflow of contrast media through the duct of Santorini could not be proved by ERCP. Postoperative morbidity included hemorrhage (n = 8), mild pancreatitis (n = 1), and perforation (n = 1). Cholangitis did not occur. Early postoperative bleeding was observed in 4 patients; with 3 noticed by hemobilia through the ENBD tube. In other 4 cases requiring endoscopic hemostasis, bleeding was detected at scheduled follow-up endoscopy on day 4 after procedure. Serum amylase was significant higher in patients with non-patent minor papilla when compared to those with patent minor papilla (559 +/- 18.5 IU/l, 117 +/- 27.5 IU/l). Histopathological diagnoses were adenoma (n = 10), adenocarcinoma (n =3), and carcinoid (n = 1). Of the 3 cancer cases, the depth of invasion was limited to the mucosa in 2 and reached the sphincter of Oddi in 1. Local recurrence after endoscopic papillectomy was detected in 3 patients. Salvage procedures were endoscopic ablation by argon plasma coagulation, endoscopic re-resection, and surgical eradication respectively.

Symposium E8: Endoscopic management of early colorectal cancer
Thursday, October 18, 2007
3:30 – 5:00 p.m.

Endoscopic management of early colorectal cancer

HAN-MO CHIU, HSIU-PO WANG, MING-SHIANG WU, YI-CHIA LEE, JAW-TOWN LIN

Department of Internal Medicine, National Taiwan University Hospital, Taiwan

Dr. Chiu provided an overview in the endoscopic management of colonic adenomas and early colorectal cancer in Taiwan. The overall incidence of colorectal cancer (CRC) is increasing in Asian populations. Colorectal neoplasm arisen de novo are often flat and depressed and appears to have arisen from alternative pathway of colorectal carcinogenesis in addition to the well known adenoma-carcinoma sequence. They are difficult to be identified during screening or surveillance in contrast to their exophytic counterparts. Both chromoendoscopy and narrow band imaging (NBI) can help discriminate between neoplastic to non-neoplastic colorectal lesions. By means of chromoendoscopy (usually with crystal violet dye) with magnifying observation, one can further distinguish mucosal cancer or superficial submucosal cancer, both can be well treated with endoscopy, from submucosal massive or deeper cancer which require surgical intervention.

The main indication of EMR is flat and depressed colorectal neoplasia. Larger lesions can be resected by EMR-P (or piecemeal resection). However, lesion like large lateral spreading tumor – non granular type (LST-NG) has a significantly higher frequency of sm invasion than the granular type and en bloc resection using ESD is warranted.

Diagnosis and therapy on early colon cancer under the endoscope

BO JIANG, SIDE LIU, YANG BAI, WEI GONG

Department of Gastroenterology, Nanfang Hospital, Southern Medical University, Guangzhou, China

From June to September, 2006, the authors performed NBI and magnifying chromoscopy to detect colon lesions and compared their accuracy for the diagnosis of colon neoplasia and non-neoplasia lesions. Of 302 cases, 98 were selected for the trial. In each patient, conventional colonoscopy, NBI and magnifying chromoscopy were used respectively to detect the microvasculature type and pit pattern of colonic adenomas. The accuracy of the three methods was correlated with pathological diagnosis. In 89 cases, 147 new lesions were found in total. With conventional colonoscopy, 133 lesions (90.5%) were found, compared with 145 lesions with NBI (98.6%) ($P < 0.01$). Missed lesions by conventional colonoscopy were mainly flat lesions. Correlation with pathological diagnosis was 91.8% with NBI and 82.3% with magnifying chromoscopy ($P < 0.01$).

The role of chromoendoscopy and high frequency ultrasound probes for curative endoscopic therapy of early colorectal carcinomas

YUSUKE SAITOH¹, MIKIHIRO FUJIYA², SINJI TANAKA³

¹Digestive Disease Center, Asahikawa City Hospital, Japan, ²Third Department of Internal Medicine, Asahikawa Medical College, Japan,

³Department of Endoscopy, Hiroshima University, Japan

Dr. Saitoh reported a prospective multicenter study in which 180 of submucosal carcinomas were analyzed. Overall accuracy rate of invasion depth diagnosis (discrimination between <1000 and >1000 mm) was 74.7%. There was no significant difference of diagnostic accuracy in each lesion's size nor macroscopic type, i.e. 'polypoid' and 'flat and depressed' type. The accuracy rate was significantly lower (62.7%) in the lesions with 500-1500 mm sm invasion distance than those with another invasion distance. Expansion appearance, stiffness, irregular shape, coarse surface, converging folds toward the tumor and deformity of the colonic wall were specific colonoscopic findings in the polypoid type sm cancers with >1000 sm invasion distance. In addition to these findings, protrusion in the depression surface, uneven depression surface, swelling of the tumor surroundings and negative air deformity were endoscopic invasive property in flat and depressed sm cancers.

High frequency ultrasound probe (HFUP) can visualize the muscularis mucosae. The authors retrospectively compared the sm invasion distance in the HFUP picture (D-sm) and histological specimens (d-sm). 65 lesions sm cancers were evaluated. Sm invasion distance measured in HFUP picture correlated with that in histological specimens ($D\text{-sm}=1.115\times d\text{-sm}+210.4$ mm: $R=0.889$, $p<0.001$). Preoperative submucosal invasion distance was accurately measured by using HFUP. Diagnostic values of invasion distance (<1000 or >1000 mm) by HFUP was as follow, accuracy; 95%, sensitivity; 98%, specificity; 88%, positive predictive value; 94%. These were significantly higher than those by conventional colonoscopy and chromoendoscopy (85%, 90%, 71%, 90% respectively).

Endoscopic management of early colorectal cancer: endoscopic diagnosis and EMR by magnifying endoscope

HIRO-O YAMANO, K. KURODA, K. YOSHIKAWA, K. SATO, T. KIMURA, M. INUI, Y. IMAI

Division of Gastroenterology, Akita Red Cross Hospital, Akita, Japan

The authors retrospectively correlated pit patterns as defined by the Kudo's classification to histology. In the authors' own data, adenoma was diagnosed in 96.7% of lesions, which showed type III pit pattern. Mucosal cancers were diagnosed in 15.8% of lesions with type IV pit pattern. 2.9% of them showed slight invasion. In lesions that showed type VI pit pattern, severe atypia, mucosal cancer and invasive cancer was observed in 22.6%, 32.6% and 22.2% respectively. Invasive cancers were observed in 60.3% of type VN lesions. The authors concluded that VN lesions should be treated by surgery.

Treatment strategy for laterally spreading tumors (LSTs) based on their clinicopathological features and the results of endoscopic treatments

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¹Department of Endoscopy, Hiroshima University Hospital, Japan, ²Department of Medicine and Molecular Science, Division of Frontier Medical Science, Programs for Biomedical Research, Graduate of Biomedical Sciences, Hiroshima University, Japan

Dr. Okai and colleagues studied 647 laterally spreading tumors (LSTs) larger than 20mm in diameter treated at Hiroshima University Hospital over 16 years. The lesions

were divided into 278 non-granular (NG) type (263 IIa, 15 pseudo-depressed type (PD)) and 384 granular type (G).

LST-NG-PD lesions had a significantly higher frequency of cancer (87%) than LST-NG-IIa (49%) and LST-G (57%) ($p < 0.01$). LST-NG-PD lesions had a significantly higher frequency of submucosal invasive cancer (67%) than LST-NG-IIa (10%) and LST-G (9%) ($p < 0.01$). LST-Gs lesions showed tubular/ tubulovillous components in all cases, regardless of size.

The authors reported a 2% (11 of 542) local recurrence rate after endoscopic mucosal resection/ endoscopic piecemeal resection (EMR/EPMR). The rate of bleeding after the procedure and perforation was 5.9% (32/542) and 0.4% (2/542), respectively.

ESD was performed for 84 LSTs larger than 20mm in diameter. The en bloc resection rate was 76.7% (66/86). The mean operation time was 67 minutes. The rate of bleeding after the procedure and perforation were 1.2% (1/86) and 11.6% (10/86), respectively. Surgical resection was performed for 2 of the 10 lesions with perforation in an early period. The other 8 perforations were treated by clipping. There has been no recurrent case with ESD.

The authors concluded that EMR/EPMR is a useful treatment method for even large LSTs. ESD should be used for en bloc resection of large LST-NG (particularly PD) lesions.

Selected oral and poster presentations

Tuesday, October 16, 2007

Analysis of endoscopic electronic image of intramucosal gastric carcinoma using a software program for calculating hemoglobin index

GWANG HA KIM¹, CHEUL WOONG CHOI¹, TAE IN HA¹, SUN MI LEE¹, TAE OH KIM¹, DAE HWAN KANG¹, GEUN AM SONG¹, KWANG BAEK KIM², JONG YUN JEONG³, HYONG WOOK KIM⁴

1Department of Internal Medicine, Pusan National University School of Medicine, Republic of Korea, 2Department of Computer Engineering, Silla University, Busan, Korea, 3Department of Internal Medicine, Saegyaero Hospital, Busan, Korea, 4Division of Gastroenterology, Department of Internal Medicine, Bong Seng Memorial Hospital, Busan, Korea

Kim and colleagues measured mucosal hemoglobin volume using a software program on electronic endoscopic images. The mean values of the hemoglobin index for carcinoma and for its surrounding non-cancerous mucosa were calculated in 75 intestinal-type and 34 diffuse-type intramucosal gastric carcinomas. The ratio in the intestinal-type carcinoma group was significantly higher than that in the diffuse-type carcinoma group ($p < 0.001$). In the diffuse-type carcinoma group, the ratio in the body was lower than that in the antrum ($p = 0.02$). The accuracy rate, sensitivity, specificity, and the positive and negative predictive values for the differential diagnosis of the diffuse type carcinoma from the intestinal-type carcinoma were 94.5%, 94.1%, 94.7%, 88.9% and 97.3%, respectively. The carcinoma to normal mucosa ratio is helpful for distinguishing the diffuse-type carcinoma from the intestinal-type carcinoma.

Clinical experience with a new prototype double layer stent with side holes for biliary drainage in malignant lower biliary strictures

KEN ITO, YOSHINORI IGARASHI, TOMIHIRO MIURA, NAOKI OKANO, TAKAHIKO MIMURA, TAKUYA SUZUKI, YASUKIYO SUMINO, KAZUMASA MIKI

Department of Gastroenterology and Hepatology, Toho University Omori Medical Center, Japan

The authors performed biliary drainage in malignant biliary strictures using a new prototype double-layer stent (DLS, Olympus, Tokyo, Japan) with side holes. The results were retrospectively compared with conventional DLS, and uncovered MS. A total of 55 patients with unresectable malignant lower biliary strictures were treated; conventional DLS ($n = 21$), uncovered metal stents ($n = 17$) and prototype DLS with side holes ($n = 17$). The mean time to stent occlusion was 69 ± 41 , 197 ± 141 and 187 ± 135 days respectively. Patency of prototype DLS compares favorably with uncovered metal stents in lower bile duct strictures.

Can we reduce complications and reinsertion of the pancreatic stent in the chronic pancreatitis cases?

HIROKI KAWASHIMA¹, YOSHIKI HIROOKA², AKIHIRO ITOH¹, HIROKI UCHIDA¹, KAZUO HARA¹, KOJI NONOGAKI¹, TOSHIFUMI KASUGAI¹, EIZABURO OHNO¹, NAOKI OHMIYA¹, YASUMASA NIWA¹, HIDEMI GOTO¹,

1Department of Gastroenterology, Nagoya University Graduate School of Medicine, Japan, 2Department of Endoscopy, Nagoya University Hospital, Japan

The authors proposed an intraductal ultrasound score (IDUS) for pancreatic duct stricture and suggested that the score could be useful in determining when to removal pancreatic stent (PS). It was a composite score adding together a stricture segment score and a branch dilatation score. The stricture segment score was defined as follows: without hyperechoic band 0; with severe hyper echoic band 2 and intermediate case 1. The branch dilatation score was defined as follows; without branch dilatation 0, severe branch dilatation 2 and intermediate 1. In a cohort of 40 patients with follow-up of longer than 180 days after stent removal, stent re-insertion was required in 10 (25%). An IDUS score >3 (odds ratio 9.75; 95%CI 1.88-50.6) predicted the need for re-insertion after initial PD insertion. Other risk factors included hyperlipidemia (odds ratio 5.00; 95%CI 1.04-24.0), continued alcohol consumption (odds ratio 6.40; 95%CI 1.16-35.4).

Additional APC therapy could improve and sustain the efficacy of endoscopic treatment of esophageal varices

KOICHI SAKURAI, KOICHI MATSUMOTO, YUTAKA SASAKI

Department of Gastroenterology and Hepatology, Graduate School of Medical Sciences, Kumamoto University, Japan

The authors advocated additional APC treatment to the region of gastro-esophageal junction after endoscopic variceal ligation (EVL) or injection sclerotherapy (EIS). They retrospectively examined incidence of relapse and recurrent bleeding after these treatments. One hundred and 24 patients (Child-Pugh grade A n=41, grade B n=61, grade C n=22) were studied. The authors performed triple combination therapy (EVL, EIS and APC) for grade A or B (n=72), combination therapy of EVL and APC for grade C (n=26), and EVL monotherapy for patients with Vp or in severe condition (n=26). Relapse was defined as occurrence of RC sign, and recurrent bleeding was defined as hemorrhage from recurrent varices or treatment-induced esophageal ulcer. Relapse was detected in 28 patients [triple combination: (19.4%), EVL and APC: (19.2%); EVL mono-therapy: (34.6%)]. In addition, recurrent bleeding was detected in 12 patients [triple combination: (5.6%), EVL and APC: 11.5%; EVL mono-therapy; 19.2%]. The authors suggested additional APC therapy could improve the efficacy of endoscopic treatment for esophageal varices.

New endoscopic characteristic features of portal hypertensive enteropathy by use of double balloon endoscopy

NAOYUKI HIGAKI, HIDEHIRO MURAKAMI, NAOZUMI SHIBATA, HIROFUMI YAMANISHI, MASAMOTO TORISU, HIDETAKA MATSUI, MORIKAZU ONJI

Department of Gastroenterology and Hepatology, Ehime University Graduate School of Medicine, Japan

Twenty-two patients with liver cirrhosis underwent DBE. Telangiectasia and erythema were observed in 2 (9.1%) and 5 patients (21.0%), respectively. In particular, the small intestinal mucosa of 8 patients (36.4%) was edematous with swelling and rounded villi. This was similar in appearance to herring roe. The herring roe appearance was associated with the presence of porto-hypertensive gastropathy,

increased spleen volume, and decreased platelet count. All patients with herring roe appearance had advanced liver cirrhosis.

A prospective randomized comparison of ultrathin versus thin esophago-gastro-duodenoscopy in unsedated outpatient practice

JUNG HO EUM, DONG YOUB CHA, KYUNG ROK LEE, KEE MYUNG LEE, BYUNG MOO YOO, KWANG JAE LEE, JIN HONG KIM

Department of Gastroenterology, Ajou University School of Medicine, Korea

A prospective randomized study was carried out in unsedated patients to compare performance and patient tolerance among ultrathin transnasal (UN), thin transnasal (TN) and ultrathin oral (UO) EGD. Each patient was given the choice of a transnasal or a per-oral approach. 200 patients who chose the transnasal approach, were randomly assigned to UN or TN. 100 patients who chose per oral approach were assigned to UO. Two prototype endoscopes (Olympus GIF-N 260, diameter 5.2mm for UN and UO, Olympus GIF-XQ 260, diameter 6.5mm for TN) were used. Operator assessed global quality of exam, vision, handling, easiness to pass the pylorus, procedure time, and gag reflex frequency. Patient quantified global satisfaction, nausea, throat pain, choking sense by a 10 point visual analogue scale. The procedure was successfully completed in 100 of 100 patients in the UO group. The transnasal group, when compared with the ultrathin group, accounted for a significantly higher portion of failure (14% vs. 3%, $P=0.000$), epistaxis (11% vs. 3% $P=0.013$), and more complaints of nasal pain (17% vs. 6%, $P=0.016$). The global quality of exam was significantly higher in the UN group (UN, 8.7; TN, 8.1; UO, 8.2; $P=0.04$). Gag reflex frequency was significantly lower in ultrathin nasal group (UN, 1.26; TN, 1.48; UO, 2.94; $P=0.000$). The patients' score for the global satisfaction was higher in the UN group (UN, 8.5; TN, 7.8; UO, 7.7; $P=0.006$). Nausea was significantly reduced in the UN group (UN, 8.2; TN, 7.8; UO, 7.3; $P=0.003$). Patients in UN group were more willing to repeat the same procedure (UN, 82%; TN, 65%; UO, 71%; $P=0.046$). The authors concluded that ultrathin transnasal endoscopy is more acceptable to endoscopists and patients when compared with the thin transnasal endoscopy or when compared with either instrument passed per orally.

The efficacy of endoscopic submucosal dissection for gastric neoplasm using insulated-tipped diathermic knife

HAE YEON KANG, SANG GYUN KIM, JONG PIL IM, JOO SUNG KIM, HYUN CHAE JUNG, IN SUNG SONG

Department of Internal Medicine and Liver Research Institute, Seoul National University College of Medicine, Korea

The authors report their experiences of ESD for early gastric neoplasm using insulated-tipped diathermic knife (IT-knife). 490 lesions from 452 patients treated by a single gastroenterologist were prospectively enrolled. The en bloc resection rate was 100%. The overall complete resection rate was 96.1% (471/490); 93.5% (230/246) for EGC and 98.8% (241/244) for gastric adenoma, respectively. A total of 19 cases of incomplete resection included 5 remnant adenomas treated with subsequent argon plasma coagulation (APC) and 2 remnant EGC treated with repeat ESD. Of 9 cases who underwent subsequent gastrectomy, only 2 cases had remnant tumors. The mean time for ESD procedure was 25 ± 16 min (range 4-104 min). Bleeding occurred in 21 cases (4.3%), in which 20 cases were treated with endoscopic hemostasis and 1 case

with angio-embolization. Perforation occurred in 9 cases (1.8%), which were all treated with endoscopic clipping method without surgical intervention. There was no procedure-related mortality.

SEMS for gastric outlet obstruction by stomach cancer: a study using a newly designed double-layered pyloric stent

JAE SUP EUM, DAE HWAN KANG, KWANG HA KIM, HYOUNG YOEL PARK, TAE IN HA, CHUL UNG CHOI, GEUN AM SONG

Department of Gastroenterology and Hepatology, Pusan National University Hospital, Korea (South)

The authors evaluated the use of a double-layered pyloric stent (an outer uncovered stent to reduce migration and an inner PTFE-covered stent to prevent tumor ingrowth) in 11 patients with gastric outlet obstruction from unresectable stomach cancer. Technical success was achieved in 11 of 11 (100%). Clinical success was achieved in 10 patients. Late complications included migration in 1 and tumor overgrowth in 1 patient respectively. There was no tumor ingrowth.

Comparing the haemostatic efficacy for bleeding peptic ulcers between endoscopic epinephrine injection, argon plasma coagulation and hemoclippping

MING-YAO SU, CHENG-TANG CHIU, PANG-CHI CHEN

Department of Gastroenterology and Hepatology, Chang Gung Memorial Hospital, Linkou Medical Center, Chang Gung University College of Medicine, Taiwan

The authors performed a prospective, randomized trial to compare the haemostatic efficacy between these three types of endoscopic therapy. Sixty patients with stigmata of ulcer bleeding were randomly assigned to receive either epinephrine injection (n=20), APC (n=20) or hemoclippping (n=20) treatment. Bleeding was initially controlled in 19 of the injection group, 18 of the APC group, and all of the HEC group. Rebleeding occurred in 2 of the epinephrine injection group, none of the APC group, and 1 of the HEC group. There was no emergent operation in all the three groups. The stay in hospital was 6.7 days in injection group, 5.6 days in APC group, and 5.4 in HEC group. There was no mortality in all these groups.

Clinical efficacy of endoscopic submucosal dissection with snare polypectomy (partial ESD) for gastric neoplasm

KYU HONG KIM, JAE WOO KIM, JUNG MIN KIM, KI TAE SUK, PARK DONG HUN, MOON YOUNG KIM, SOON KOO BAIK *Department of Gastroenterology and Hepatology, Yonsei University Wonju College of Medicine, Korea*

Kim and colleagues retrospectively reviewed the data of 100 lesions (31 early gastric cancers and 69 gastric adenomas) from 93 patients. The procedures included 63 partial ESD and 37 ESD. En bloc resection rate was higher in ESD group than in partial ESD group (94.6% vs. 73.0%; $p < 0.05$). The complete resection rate (94.6% vs. 81.0%), delayed bleeding rate (16.2% vs. 11.1%), perforation rate (3.0% vs. 3.0%), mean size of lesion ($2.93 \pm 0.85\text{cm}$ vs. $2.87 \pm 0.98\text{cm}$) and mean procedure time (47.8 ± 22.3 minutes vs. 57.8 ± 41.6 minutes). The authors suggested that partial ESD may increase the feasibility of ESD during learning phase of the procedure.

The role of gastrectomy after endoscopic resection for early gastric cancer: A clinicopathological analysis and outcome in a single center

IN DU JEONG, SUNG WOOK KIM, JIN WOO PARK, BYEONG MAHN LEE, SEOK WOON JUNG, SUNG-JO BANG, DO HA KIM

Department of Internal Medicine, University of Ulsan College of Medicine, Ulsan University Hospital, Korea

This study analyzed 174 cases of EGC in patients treated by ER between 2001 and 2006. Among 31 patients who identified to have had incomplete resection, 15 patients underwent gastrectomy (positive lateral margin 3, positive submucosal invasion 10 and both 2). Residual tumors were found in 2 of 15 specimens. The positive lymph node rate was 0% (0/15). No local recurrence in ER sites and lymph node metastasis was found in the group treated by additional EMR during follow-up. The authors concluded that gastrectomy should be considered in very limited patients with suspicious incomplete ER for EGC.

The effect of OPD-based argon plasma coagulation treatment for gastric adenoma

HAK WOO, JUNG HO EUM, DONG YOUB CHA, KYUNG ROK LEE, SANG JO CHOI, HYEOK CHOON KWON, JAE CHUL HWANG, SUNG JAE SHIN, KEE MYUNG LEE, KWANG JAE LEE, JIN HONG KIM

Department of Gastroenterology, Ajou University Medical School, Korea

Woo and colleagues reported a case series of 64 gastric adenoma (57 patients) with low grade dysplasia. These adenomas were treated by submucosal injection of saline followed by APC to the lesion and surrounding mucosa as an outpatient procedure. The macroscopic type was superficial elevated type (IIa) in 58 lesions and superficial elevated plus depressed type (IIa + IIc) in 6. Complications included pneumoperitoneum (1), Mallory-Weiss tear (1) and delayed overt bleeding (1) at 2- week. These were managed conservatively. During 12.7 months of follow-up, 3 cases (4.7%) of residual adenoma were found and treated with additional APC-SSI. Four cases of (7.0%) of patients have metachronous lesions at another site in follow-up endoscopy.

Percutaneous endoscopic gastrostomy using an ultrathin transnasal endoscope (TN-PEG) for patients with trismus or gastrointestinal stenosis

TAKASHI OGATA¹, TETSUO SUMI¹, YOSHIAKI SUZUKI¹, KAZUSHIGE ITO¹, YASUHIRO YASUDA¹, TETSUO ISHIZAKI¹, TOMOHISA NOMURA¹, TAKA AKI MATSUDO¹, MOTOHIDE SHIMAZU¹, KIMINORI ABE², MASA AKI MIYAOKA²,

AKIHIKO TSUCHIDA³, TATSUYA AOKI³, TAKASHI KAWAI⁴

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An ultrathin transnasal endoscope has a tip diameter of 4.9 mm. It allows PEG to be performed in patients with trismus and gastrointestinal stenoses such as those with pharyngeal or esophageal cancer. Seventy-five patients (30 with trismus or

gastrointestinal stenosis) underwent PEG using ultrathin scope. In all cases, a 15 Fr gastrostomy tube was successfully anchored to the abdominal wall. Results in those with or without trismus or gastrointestinal stenoses were compared. Procedure time (14±2.1/15±2.6 minutes) and intra-operative hemodynamics including oxygen saturation were similar between two groups.

An oblique-viewing endoscope facilitates ERCP and associated procedures in Billroth II and Roux-en-Y postgastrectomy patients

MASATAKA KIKUYAMA, TORU MATSUHASHI, RITSUKO HIRAI, YUZO SASADA, SHIGEKI KOIDE, YUJI OTA, JUN NAKAHODO

Department of Gastroenterology, Hamamatsu Rosai Hospital, Japan

The authors performed ERCP in 33 Billroth II (BII) patients and 9 Roux-en-Y (RY) patients from 1996 to 2007 with an oblique-viewing endoscope (XK200, Olympus, Japan). ERCPs were completed in 93.8% and 66.7% of patients with BII and RY gastrectomy, respectively. ERCPs included EST, EPD, and EMS placement. Complications were experienced in 3 patients (hemorrhage; 1, pancreatitis; 1, perforation; 1).

Effectiveness of EUS-guided fine-needle aspiration and Trucut biopsy of mediastinal lymphadenopathy

TAE YEON JEONG, JUNG HWAN LEE, KYUNG SUN OK, JIN GOOK HUH, SOO HYUNG RYU, YOU SUN KIM, JEONG SEOP MOON

Department of Internal Medicine, Seoul Paik Hospital, Inje University, Seoul, Korea

The authors retrospectively reviewed the database of 34 patients (mean age 62) with mediastinal lymphadenopathy who underwent chest CT, EUS-FNA and Trucut biopsy. EUS FNA was performed using a 22-gauge needle and Trucut biopsy using a 19-gauge needle via trans-esophageal route. Lymphadenopathy was defined as lymph node more than 1 cm in size. Final diagnoses were cancer in 20 cases (58.8%), sarcoidosis in 2 cases (5.9%), tuberculosis in 2 cases (5.9%), mediastinal inflammatory change of unknown cause in 2 cases (5.9%), and reactive hyperplasia in 8 cases (23.5%). CT image had a sensitivity of 70%, specificity of 42.9% and accuracy of 58.8%. EUS image itself had a sensitivity of 90%, specificity of 57.1% and accuracy of 76.5%. EUS-FNA was done in 28 patients and only 1 patient had an inadequate diagnosis. Trucut biopsy was done in 6 patients and none had misdiagnoses. All the patients had no complications associated with the procedure. It was concluded that EUS with FNA or trucut biopsies on the mediastinal lymphadenopathy is more accurate than CT image.

Wednesday October 17, 2007

IRI (infra red imaging) system has a potential to prevent posttherapeutic bleeding after endoscopic therapy for the colon polyps

NAOTO TAMAI¹, KOJI MATSUDA¹, KIMIO ISSHI¹, MASAHIKO KAWAMURA¹, TAKASHI NAKAYOSHI¹, YASUYUKI NAKAMURA¹, NORICHIKA NARUMIYA¹, HISAO TAJIRI²

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The study aimed to evaluate the efficacy of IRI system to prevent post polypectomy or EMR bleeding. The IRI system consists of a light source: CLV-U40D, the image processing unit: EVIS LUCERA SPECTRUM, and the prototype colonoscopes: XCF-200IR and XPCF-Q240ZI-IR. A total of 852 polypoid lesions in 445 patients were enrolled in this study. All patients were classified into two groups: Group I (with IRI) and II (normal white light system). In Group I, all mucosal defects were classified into three types Type A (non-enhancement with IRI): 69 lesions, Type B (blue or gray spots with IRI): 178 lesions, Type C (oozing or spurting bleeding under the white light view): 47 lesions. All mucosal defects in Type B and C were closed with endoclips, whereas no endoclips were used in Type A. Before endoclips were deployed, the stumps of minute vessels were carefully observed to assist the more accurate "pin-point" hemostasis. In group II, each endoscopist decided whether to use endoclips only under the traditional endoscopic view. The usage of endoclips in Group I (225/294: 76.5%) was significantly lower than in Group II. (502/558: 90.0%). (P<0.01) Post-therapeutic bleeding in Group I (1/294, 0.34%) was significantly lower than in Group II (19/558, 3.4%).

Comparison of self-expanding metallic stent insertion with emergency surgery as an initial treatment for obstructive colorectal cancer

JUNG PIL SUH, SANG WOO KIM, IN SIK CHUNG, MYUNG GYU CHOI, IN SEOK LEE, YU KYUNG CHO, JAE MYUNG PARK

Department of Gastroenterology, the Catholic University of Korea, Korea

This was a retrospective analysis on postoperative complications in 21 patients with who received elective surgery after stent to relieve malignant colonic obstruction and 18 patients who received emergency surgery without stent. In 21 patients who received elective surgery after stent, one patient received emergency surgery due to bowel perforation and 20 patients received elective surgery in mean 5.2 days. The postoperative complications in the stent group included pneumonia in 1 patient and wound infection in 1 patient. In the emergency operation group, the postoperative complications included sepsis in 1 patient, deep vein thrombosis in 1 patient, wound infection in 3 patients, anastomosis leakage in 1 patient and postoperative bleeding in 1 patient (38.9%). The postoperative complications were less in the stent group than the emergency operation group (p=0.032). The ratio of one-staged operation was higher in the stent group compared with emergency operation group (85.7% vs. 55.6%; p=0.039). The stoma rate was lower in the stent group (14.3% vs. 50%; p=0.017). SEMS is recommended to be a bridge to elective surgery in patients with colonic obstruction.

Endoscopic treatment for gastric adenocarcinoma at an early stage: results, estimation of technical feasibility and safety

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Lee and colleagues reported ESD to 112 patients with early gastric cancer. En bloc resection was possible in 108(96.4%) of patients. In 106 patients (94.6%), complete resection was possible. The median procedure time was 70min (15 to 600min). Late bleeding was observed in 3.5% (4/112), and perforation was seen in 1.7% (2/112) of the lesions. All complications were treated endoscopically, except one patient with perforation who received surgery. With a follow up period of 2 years, no cancer related death or metastatic disease occurred.

Analysis of lymph node metastasis according to expanded criteria of ER for EGC: A clinicopathological analysis in a single center

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The authors retrospectively analyzed 434 patients who had undergone radical gastrectomy with lymph node dissection for EGC. Lymph node metastases were observed in 50 patients (11.5%). In mucosal cancer, lymph node metastases were observed in 7 of 245 patients (2.8%). In submucosal cancer, lymph node metastases were observed in 43 of 189 patients (22.7%). None of the 96 differentiated and 29 undifferentiated intramucosal cancers of less than 20 mm diameter and without ulcerations were associated with lymph node metastases. But lymph node metastases were observed in 1 of 13 signet ring cell intramucosal cancer (7.6%) of less than 20 mm diameter without ulceration. None of the 34 differentiated intramucosal cancers of more than 20 mm diameter without ulceration were associated lymph node metastasis. None of the 21 differentiated intramucosal cancer of less than 30 mm diameter with ulceration was associated lymph node metastases. The 17 differentiated superficial submucosal cancers of less than 30 mm diameter were free of nodal metastases. These cases belonging to expanded criteria B proposed by Gotoda et al. Undifferentiated intramucosal cancer of less than 20 mm diameter except signet ring cell carcinoma can be considered for endoscopic treatment in selected patients.

Therapeutic outcome of endoscopic submucosal dissection for early gastric cancer based on extended criteria

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This study was designed to examine the therapeutic outcome of ESD for early gastric cancer (EGC) based on the extended criteria (EC) for ESD (Gotoda T, et al. Gastric Cancer, 2000) and the lesions out of the criteria. This study included 116 lesions based on the EC and 33 lesions out of the extended criteria. The rate of en- bloc

complete resection of the lesions based on the EC was 87.9% (102/116). The rate of en-bloc complete resection in lesions outside of extended criteria was 58.8% (20/33). Many lesions resected outside the extended criteria proved to be difficult with a high rate of positive deep margins. The authors concluded that lesions outside of extended criteria should fall outside indications for ESD.

Endoscopic submucosal dissection (ESD) versus non-ESD for early gastric cancer and gastric adenoma

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Jang and colleagues analyzed 102 lesions that underwent mucosectomy [ESD with IT knife 72 lesions (42 adenomas and 30 EGCs)] and conventional EMR [(strip biopsy, endoscopic mucosal resection with cap, endoscopic mucosal resection with ligation for 30 lesions (20 adenomas and 10 EGCs)]. The mean size of lesions in ESD group was larger than in EMR group. 2) En bloc resection rate in the ESD group (97.2%) was higher than in the EMR (76.7%). The rate of resections with tumor-free margin in the ESD group (85.7%) was higher than in the EMR (56.7%). The bleeding rate after ESD (40.3%) was not more frequent than after EMR (23.3%). The recurrence rate in ESD group (2.8%) was lower than in EMR (20%) (P=0.008). The authors concluded that ESD with IT knife was more efficacious in en bloc and complete resection than conventional EMR for EGC and gastric adenoma and with lower recurrence rate.

Long-term outcomes of gastric artificial ulcers after endoscopic submucosal dissection

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The study aimed to describe the long-term outcomes of ulcers after ESD. 195 patients who underwent ESD for gastric neoplasm were followed for 6 months up to 60 months after ESD. Anti-ulcer treatment was continued for 2 months after ESD. Patients underwent routine EGD at intervals regardless of symptoms. Ulcers were categorized as active ulcers, healing ulcers and scar (red or white). Mean observation period was 15.6 months. Mean diameter of the ulcer was 37 mm (range 15 to 113 mm). No active ulcer was seen during the follow up period. At 6 months after ESD, red and white scar was observed in 69 % (56 / 81) and 30 % (24 / 81) of patients. At 12 months, red and white scar was observed in 27 % (25 / 91) and 71% (65 / 91) of patients. Although ulcer scars remain for a long period, there has been no ulcer recurrence after ESD. Long-term anti-ulcer treatment is unnecessary for ulcers after ESD.

Clinical evaluation of hemostatic method for hemorrhages in colonic diverticula

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The authors evaluated clinical and colonoscopy findings from 25 patients whose colonic diverticula hemorrhages underwent hemostasis by colonoscopy. The site of the hemostasis included the sigmoid colon in 10 patients (40 %), ascending colon in 9 patients (36 %), descending colon in 4 patients (16 %), cecum in 1 patient (4 %), and a combination of descending and sigmoid colons in 1 patient (4 %). Methods of hemostasis included the local administration of hypertonic saline and epinephrine (HSE) to the basal or cervical parts of colonic diverticula in 21 patients (84 %), a clipping method in 3 patients (12 %), and a combination of both aforementioned methods in 1 patient (4 %). Three patients developed recurrent hemorrhages within 7 days of hemostasis. Clipping method was used in 2 patients. An angiography was conducted in one patient, but active hemorrhaging was not found. None of the patients required surgical interventions. The authors concluded that local administration of epinephrine to colonic diverticula is a safe and effective hemostatic method.

The colonoscopic miss rate of colorectal polyps

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The authors performed a retrospective review of 196 patients who had colonoscopic polypectomy within 90 days after the initial colonoscopy. Patients with clinical history of FAP, large bowel operation, advanced malignancy, multiple (>6) polyps and poor bowel preparation were excluded. 66 cases (33.7%) had 113 (20.7% of total) missed polyps. The miss rate was higher with more initial polyps. (single polyp on initial examination; 16.8%, to 5 polyps; 60%) The hepatic flexure was the most common site (39.0%, $p=0.003$) and the sigmoid colon had the lowest miss rate (14.1%, $p=0.03$). The most frequent size of missed polyp was smaller than 5mm (32.2%). Only 6.2% of the missed polyps were larger than 10mm.

The role of double-balloon enteroscopy in the diagnosis and management of obscure GI bleeding

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The authors reported the use of DBE in 73 patients (mean age 59.6 years) with obscure gastrointestinal bleeding (68 overt bleeding, 5 occult bleeding). A total of 84 procedures (53 per oral route and 31 per rectal route) were performed. A small bowel lesion was identified in 57 (78%) of 73 patients including 19 angiodysplasias, 16 polypoid lesion (6 gastrointestinal stromal tumors, 1 lipoma, 1 MALT lymphoma, 2 adenocarcinomas, 2 lymphangiectasia, 4 polyps), 7 ulcers, 2 varices, 7 diverticulosis, 3 crohn's disease, 1 CMV enteritis, 1 jejunal polyp, and 1 Peutz-Jeghers polyposis. Endoscopic treatments including APC coagulation, polypectomy & endoscopic mucosal resection were performed in 42 patients (73.9%). Patients with GISTs and adenocarcinomas received laparoscopic surgery after endoscopic tattooing for localization. Two patients with active bleeding angiodysplasia failed received laparoscopic resection after Indian ink tattooing. No complication occurred and these procedures were well tolerated. During a mean follow up period of 327 days,

recurrent bleeding occurred in 14 patients (19.2%) after endoscopic or surgical treatment.

Development of one man method for double balloon endoscopy

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The authors described a 'One-man' method in operating the DBE (197 procedures). The technique involves steadying the overtube with thumb and index finger while maneuvering endoscope with palm and third finger. This was compared with 73 procedure performed earlier using the conventional two man method. Time taken for per oral and retrograde intubation and examination were similar between one and two-man method (95.5 and 103 min. vs. 96.7 and 111 min respectively). The rate of total enteroscopy was 56.8% with the one man method and 57.4% with the two man method.

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A prospective study of the impact of clinical parameters and EUS in the management of suspected choledocholithiasis

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The authors studied 83 patients (mean age 55.1 years), who presented with acute biliary obstruction and normal trans-abdominal ultrasound, with initial EUS and selected ERCP. Clinical presentation included acute pancreatitis (14.5%), jaundice (39.8%), cholangitis (30.1%) and cholestasis (15.7%). EUS detected a bile duct lesion in 74.7% (CBD stones: 68.7%; pancreatic cancer: 2.4%; ampulla tumor: 2.4%; cholangiocarcinoma: 1.2%). The sensitivity, specificity, accuracy, PPV and NPV of EUS were 98.4%, 100%, 98.8%, 100% and 95.2% respectively. EUS avoided 28.9% unnecessary ERCP (53.8% in cholestasis, 36.4% in obstructive jaundice, 33.3% in pancreatitis and 4% in acute cholangitis). The mean cost per patient for EUS and ERCP based strategies were 1328 and 1199 euros respectively.

Is primary precut for direct access to biliary duct safe and justified? A prospective randomized study

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The authors sought to determine the safety of primary precut using a modified Erlangen papillotome. During a 19-month period, consecutive patients who were scheduled for first-time endoscopic sphincterotomy (ES) were randomized into two groups: wire-guided cannulation followed by ES over the guide-wire. PC was performed if cannulation failed, and primary PC followed by wire-guided ES. A total of 291 patients were recruited (146 patients to standard technique and 145 to primary precut group). In the conventional technique group, wire-guided cannulation of CBD failed in 42 patients. Subsequent precut and cannulation was successful in 41 of these patients leading to an overall success rate of 99.3%. In the primary precut group, the success rate of ES was 100%. The mean procedural time (from begin of cannulation attempt and precut, respectively until successful CBD cannulation) was shorter for the primary precut group (6.9 ± 1.8 minutes vs. 8.3 ± 2.1 minutes, $p < 0.001$). The incidence of pancreatitis was similar in two groups (2.9% vs. 2.1%) No severe pancreatitis or perforation was observed. The authors concluded that primary PC using modified Erlangen papillotome is as effective and safe as conventional wire-guided approach. It might reduce risk of pancreatitis and save time in cases with difficult cannulation.

Endoscopic access to the papilla of Vater for ERCP in patients with Billroth II or Roux-en-Y gastrojejunostomy

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The authors evaluated the use of OVE (GIF XK 200; Olympus, Tokyo, Japan) in 32 patients with Billroth II gastrojejunostomy and the use of DBE in 5 patients with Roux-en-Y anastomosis. The indications for ERCP in 32 patients with Billroth II gastrojejunostomy were bile duct stones (20 patients) and tumor stenoses (12 patients). The authors successfully reached the ampulla of Vater with OVE in 30 of 32 of the patients with Billroth II gastrojejunostomies and accessed bile duct in all 30 patients. Therapies included; papillotomy 7, balloon sphincter dilation 6, biliary stenting 10). The indications for ERCP in 5 patients with Roux-en-Y reconstructions were bile duct stones (3 patients), pancreatic cancer (1 patient) and bile leak after hepatectomy (1 patient). The papilla could be reached in all 5 patients with the use of DBE. Cannulation was successful in 4 of 5 patients.

Endoscopic molecular imaging using infrared fluorescence endoscopy

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The study aimed to develop endoscopic molecular imaging in GI tract cancers using infrared fluorescence endoscope (IRFE) and labeled antibodies with ICG-derivative. IRFE is equipped with excitation (710-790nm) and barrier (810-920nm) filters. The researchers have developed indocyanine green (ICG) N-hydroxy sulfo-succinimide ester (ICG-sulfo-OSu) and 3-ICG-acyl-1,3-thiazolidine-2-thione (ICG-ATT) as a infrared fluorescent-labeling reagent. ICG-derivative-labeled anti-human carcinoembryonic antigen (CEA) antibody and MUC1 antibody were synthesized. In ex vivo studies, freshly resected specimens with gastric cancer were observed by IRFE after incubation with ICG derivative labeled antibodies. Positive fluorescence at the tumor site could be observed using IRFE. In vivo observation of superficial gastric tumor under ICG injection showed close correlation of fluorescence signal to tumor depth. It was concluded that an antibody with affinity for cancerous lesions and labeled with ICG-derivative can be imaged specifically with IRFE. IRFE may be useful in diagnosing submucosal invasion in gastric cancers.

Successful elimination of subepithelial tumors of upper gastrointestinal tract by endoscopic submucosal dissection

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A total of 30 lesions in 29 patients with subepithelial tumors (stromal tumors) of UGI tract underwent initial EUS to determine their layer of origin and size (esophageal 7, stomach 23). Tumors were then resected using an IT knife and ESD techniques. Sixteen out of 23 gastric SETs were derived from the muscularis propria (MP) layer, and 7 from the submucosal (SM) layer. But all the esophageal SETs originated from the submucosal layer. Complete resection rate was achieved at 92.8% (13/14) for tumors which originating from the SM layer, but only 68.7% (11/16) for tumors from MP layer (p<0.05). Perforation occurred in one case of gastric SET from MP.

Appropriate management of bleeding using hemostatic forceps in endoscopic submucosal dissection (ESD)

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The aim of this study was to evaluate the efficacy of hemostatic forceps during procedure. From January 2002 to March 2007, 342 gastric cancers were treated by ESD in our hospital. The authors evaluated retrospectively the methods for stopping bleeding during the procedure and methods of preventing hemorrhage after ESD. Setting for the high-frequency generator (Erbotom ICC200 or VIO 350, ERBE Germany) was soft coagulation mode (output 50-70 W). When bleeding occurred during the procedure, the bleeding vessels were grasped and coagulated via hemostatic forceps, after washing out the blood using a water-jet system.

The visible vessels were treated using hemostatic forceps and hemoclips were then applied after tumor resection. There were 14 cases (4.1%) that required a hemostatic procedure after ESD, and only one case (0.29%) required a blood transfusion; In all remaining cases, post-ESD hemorrhage could be prevented by hemostatic forceps and hemoclips.

Endoscopic full thickness resection (EFTR): circumferential method using a dual-bending sphincterotome

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The authors reported the use of a dual-bending sphincterotome in EFTR. The device was similar to a modified sphincterotome with a second wire operating at 180 degrees to the original wire. Sutured closure of defect resulted from resection was accomplished using a flexible sheathed needle, metal tag and thread at the tip, passed through a 2.8mm accessory channel. Knot-tying devices secured the sutured defect. Circumferential EFTR was studied in nonsurvival (n=6) and survival (n=8) experiments in pigs. Full-thickness resections and sutured closure of stomach wall were possible in all 14 pigs. Average resection specimen size was 2.8 x 2.6 mm. All 8 pigs survived these experiments without complications

Clinical impact of novel single balloon enteroscopy

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The authors reported 45 SBE procedures in 24 patients (mean age 49.0 years). The indications for the examination were suspected gastrointestinal bleeding (n=8), Crohn's disease (n=9), abdominal pain (n=4), and abdominal tumor (n=3). The mean procedure time was 67.6±22.6 min and 68.0±16.3 min for the oral route and the anal route, respectively. Among the 7 patients without intestinal adhesions and stenosis, the entire small intestine was explored in 4 patients. Balloon dilatations for ileal strictures were performed on 3 Crohn's patients and there were no complications.

Indications and diagnostic yield in a series of 848 cases with suspected small bowel disease by double-balloon enteroscopy

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Between July 2004 and March 2007, 848 consecutive cases were evaluated with DBE for suspected small-bowel diseases in 5 hospitals (mean age 60.4 years). The major indications for DBE included suspected small-bowel bleeding (n=388), abnormalities by other diagnostic methods (n=120), abdominal pain/discomfort (n=66), stenotic symptoms (n=63). Diagnosis was obtained by DBE in 253 cases, including Crohn's disease (n=65), ulcers/erosions (n=54), angiodysplasia (n=53). In the 427 DBE cases with obscure bleeding or anemia, 37 cases revealed angiodysplasia followed by ulcers/erosions (n=24) and Crohn's disease (n=21). Other diagnoses included cancer, malignant lymphoma, and submucosal tumor. No pathology was found in 259 cases (60.7%).

Endoscopic submucosal dissection using hook knife for large colorectal tumors

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A total of 78 patients (80 lesions) who had large colorectal tumors underwent ESD using a hook knife over a 7- year period. En-bloc resection rate was 93.8% (75/80) and complete en-bloc resection rate was 83.8% (67/80). Median procedure time was 120 minutes. Mean tumor size was 30.5mm. Location of the lesions were rectum in 22, sigmoid colon in 9, descending colon in 2, transverse colon in 16, ascending colon in 18 and cecum in 13. Macroscopic type were laterally spreading tumor (LST)-granular type(G) (mixed type) in 20, LST-G (homogenous type) in 23, LST-nongranular type in 32, and miscellaneous in 5. Pathological type were intramucosal cancer in 32, adenoma (severe atypia) in 21, adenoma (moderate atypia) in 17,

submucosal invasive cancer in 8 and miscellaneous in 2. Rates of perforation and late bleeding were 7.5% (6/80) and 1.3% (1/80), respectively. All perforation occurred during the process of submucosal dissection. No local recurrence occurred at follow up colonoscopy.

Endoscopic treatment of biliary complications after right-lobe living-donor liver transplantation with duct-to-duct biliary anastomosis

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Biliary complications occurred in 99 of 273 (36.3%) patients who underwent RL-LDLT with duct-to-duct biliary reconstruction. They included 88 biliary strictures (83 anastomotic and 5 nonanastomotic) and 16 bile leakages. The strictures and leakages were treated by endoscopic placement of multiple stents above the sphincter of Oddi and nasobiliary drainage, respectively. Stents were successfully placed in 62 (74.7%) of the 83 anastomotic strictures, and 8 (50.0%) of the bile leaks. The authors concluded that endoscopic stent insertion is efficacious in treating biliary complications related to RL-LDLT and should be attempted before surgical revision.

Diagnosis and treatment of small-intestinal tumors using double balloon enteroscopy (DBE) and videocapsule endoscopy (VCE)

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Eighty-eight patients with small intestinal tumors or polyps were studied. They underwent contrast-enhanced CT and double contrast fluoroscopic enteroclysis. VCE was performed in 31 selected patients. Small-intestinal tumors were as follows; lymphangiomas (n=37), Peutz-Jeghers polyps (n=10), malignant lymphomas (n=8), gastrointestinal stromal tumors (n=8), polyps associated with familial adenomatous polyposis (n=7), metastatic tumors (n=7), inflammatory polyps (n=6), adenocarcinomas (n=3), carcinoids (n=2), lipoma (n=2), ileal adenoma (n=1), aberrant pancreas (n=1), leiomyoma (n=1), and adenomyoma (n=1). DBE had the higher detection rate for small intestinal tumors compared with CT but not with enteroclysis. Eighteen tumors or polyps were successfully treated by EMR or polypectomy. Of 29 patients who also underwent VE, tumors or polyps in 18 were detected, but 11 (5 lymphangioma, 3 inflammatory polyps, 2 GIST, one metastatic tumor) were overlooked.

Experience with confocal laser endomicroscopy for esophageal disease

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Iguchi and colleagues reported the use of confocal laser endomicroscopy in 57 subjects; 12 squamous cell carcinomas of the esophagus, one esophageal dysplasia, two Barrett's adenocarcinoma, and 49 normal findings were found. Intravenous fluorescein was administered. Confocal images were compared with magnification endoscopic findings and histological findings. Images in the esophagus showed squamous cells with intra-papillary capillary loops (IPCL). Irregularity of squamous cells arrangement was seen in dysplasia. In cancerous mucosa, further irregularity of squamous cell arrangement was observed together with dilatation, weaving, changes in caliber and variety of shape in IPCL. These changes correlated well to those seen with magnifying endoscope.

Use of Fujinon intelligent color enhancement (FICE) for differentiation of neoplastic from non-neoplastic small polyps in magnification non-dye colonoscopy

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The study aimed to evaluate the role of FICE in magnification non-dye colonoscopy. The authors included lesion of 5 mm or less and a diagnosis (neoplastic vs. non-neoplastic) was made based upon: (1) capillary diagnosis on FICE and (2) pit diagnosis on non-FICE. In capillary diagnosis on FICE, when the capillary network is visible on the magnified view, the lesion is defined as neoplastic. Pit pattern was evaluated on non-FICE after indigocarmine spray with additional use of acetic acid if the pit pattern image was not clear. The targeted lesions were resected using standard endoscopic techniques. 107 polyps (mean size 3.3mm) were analyzed. Histology of the 107 polyps comprised 80 adenomas (78 adenomas with low grade dysplasia, 2 serrated adenomas) and 27 non-NP (17 hyperplastic polyps, 6 inflammatory polyps and 4 normal mucosa). Accuracies of capillary diagnosis were 93% (74/80) with neoplastic and 70% (19/27) with non-neoplastic) Accuracy of pit diagnosis was 90% (72/80) and 74 % (20/27) respectively. The authors concluded that capillary diagnosis using FICE is equivalent to pit pattern diagnosis for predicting histology of small colorectal polyps.