

Resolution™ Clip

Global Technique Spotlight

CASES PRESENTED BY:

Naveen Arya, M.D.

Halton Healthcare Services, Oakville, Ontario, Canada

Marco Carniel, M.D.

Landeskrankenhaus Wiener Neustadt, Wiener Neustadt, Austria

Nestor Chopita, M.D.,

Bárbara Agustina Amendolara, M.D.,

Francisco Tufare, M.D. and Nelson Condado, M.D.

Hospital San Martín de La Plata, Buenos Aires, Argentina

Robert S. Dean, M.D.

Vassar Brothers Medical Center

Poughkeepsie, NY, USA

Robert D. Fanelli, M.D., F.A.C.S.

Berkshire Medical Center and Surgical

Specialists of Western New England, P.C., USA

David A. Florez, M.D.

Elms Endoscopy Center/ Trident Gastroenterology,

Charlestown, South Carolina, USA

Francisco Igea, M.D.

Hospital Rio Carrion, Palencia, Spain

Houssam Kharrat, M.D.

Covenant Medical Center, Lubbock, TX, USA

Luis F. Lara, M.D.

The University of Texas

Southwestern Medical Center at Dallas, USA

Adolfo Parra-Blanco, M.D.

Canarias University Hospital, Santa Cruz de Tenerife, Spain

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CLOSURE OF A PERFORATION AFTER A SALINE-ASSISTED POLYPECTOMY

Naveen Arya, M.D.

Gastroenterology and Therapeutic Endoscopy Department, Halton Healthcare Services, Oakville, Ontario, Canada



Figure 1



Figure 2

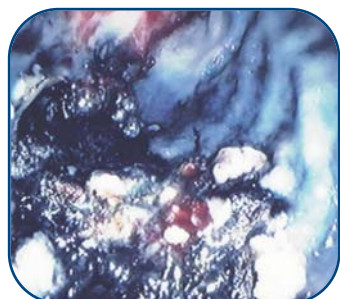


Figure 3

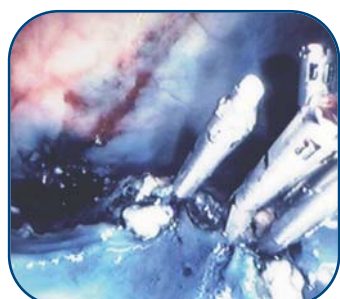


Figure 4

HISTORY

An 87-year-old male presented with a three month history of rectal bleeding. The patient had no weight loss, change in bowel habit or abdominal pain. His past medical history was relevant for coronary artery disease with coronary bypass, hypertension and hyperlipidemia. He was on Coumadin™, Altace™, Lipitor™ and Atenolol. Upon examination, the abdomen was found to be obese.

PROCEDURE

The patient had a colonoscopy carried out by a general surgeon and was found to have an 8cm rectal mass. The biopsy proved to be a tubulovillous adenoma with high grade dysplasia and the patient was referred for a polypectomy. The risks of the procedure such as perforation, bleeding or serious side effects were discussed with the patient and he consented to the procedure.

The polyp was endoscopically removed with saline-assisted injection in a piecemeal fashion (Figure 1). The edges were coagulated with Argon plasma coagulation at 40W (Figure 2). During the procedure it was noted that the middle of the polypectomy base was open and the plane was obviously through the submucosa (Figure 3). The base of the polyp was then clipped closed with 16 Resolution™ Clips (Figures 4, 5 and 6).

After the procedure the patient was taken to recovery, given antibiotics IV and three views of the abdomen were taken with no free air seen. The patient was stable and wanted to go home. He was put on PO antibiotics for seven days. The patient was seen within one week and had no symptoms or signs of perforation and was stable.

POST PROCEDURE

Six months later, the patient had a flexible sigmoidoscopy and there was no evidence of residual polyp. A scar was found and biopsies taken from it revealed normal mucosa.

This case demonstrates the utility of clips and gives endoscopists another modality to increase their therapeutic arsenal.



Figure 5

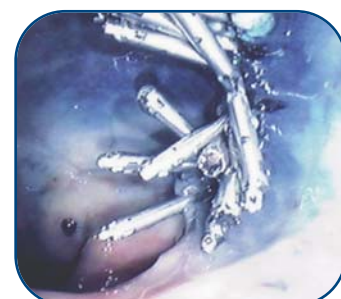


Figure 6

Coumadin™ is a trademark of Bristol-Myers Squibb. Altace™ is a trademark of King Pharmaceuticals. Lipitor™ is a trademark of Pfizer.



CLOSURE OF AN IATROGENIC PERFORATION AFTER AN ENDOSCOPIC MUCOSAL RESECTION

Marco Carniel, M.D.

Head of Endoscopy, Landeskrankenhaus Wiener Neustadt, Wiener Neustadt, Austria

HISTORY

A 72-year-old female was referred to our centre for an endoscopic mucosal resection. The patient has a history of coronary heart disease, st.p. myocardial infarction in 2000, arterial hypertension, hyperlipidaemia and osteoporosis.

In February 2005, the referring hospital performed a partial rectal polypectomy. In the last pre-colonoscopy examination, a recurrent flat polypoid formation was discovered in the rectum.

PROCEDURE

An approximately 2.5cm flat adenoma could be seen in the rectum at 8cm. In the centre of the lesion, scar tissue after the partial polypectomy in 2005 was readily distinguishable (Figure 1).

Fluid infiltration of the polyp revealed good lifting sign. Utilising a straight suction cap, the lesion was totally resected in four fragments using a piecemeal technique with a cautery snare.

A 12mm perforation was revealed upon retrieval of the last fragment (Figure 2). By applying 7 Resolution™ Clips, the perforation edges could be properly aligned step-by-step and the perforation successfully closed (Figures 3, 4 and 5).

HISTOLOGICAL FINDINGS

Flat tubular partially tubulovillous adenoma with low to moderate grade intraepithelial neoplasia, the muscularis mucosae overall intact – resection in toto.

POST PROCEDURE

The patient was kept under clinical observation for several days. There was no increase of inflammatory parameters upon serological examination and no clinical signs of peritonitis. After two days, the patient was introduced to a dietary regimen which was well tolerated. A surgical intervention was not necessary and after four days the patient was discharged.



Figure 1



Figure 2



Figure 3

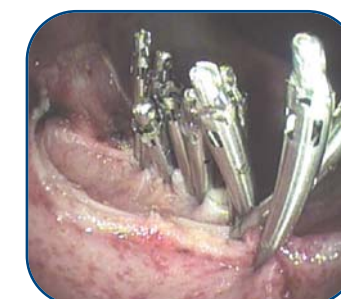


Figure 5

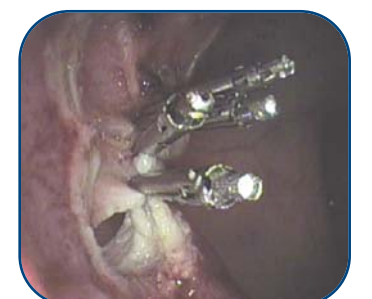


Figure 4

TREATMENT OF POST-EMR BLEEDING WITH ENDOSCOPIC CLIPS



Nestor Chopita, M.D., Bárbara Agustina Amendolara, M.D.,
Francisco Tufare, M.D., Nelson Condado, M.D.
Gastroenterology Department, Hospital San Martín de La Plata, Buenos Aires, Argentina

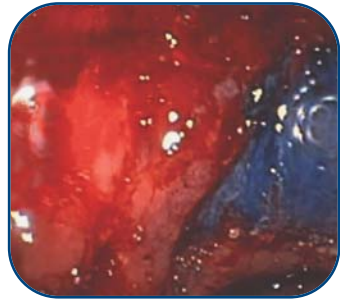


Figure 1

HISTORY

A 62-year-old male with cirrhosis (Child B) and a history of variceal bleeding was admitted to our hospital for gastric polyposis resection.

PROCEDURE

The endoscopy showed gastric polyposis and there was an abnormal area of mucosa on the gastric incisura. Biopsy taken from the site revealed intra-mucosal carcinoma and an endoscopic mucosal resection was performed (Figure 1).

The patient had haemodynamic instability, haematemesis and haematocrit dropped at 22% 12 hours after the procedure. Another endoscopy showed active bleeding in the EMR site (Figure 2). The bleeding was successfully managed with the use of two Resolution™ Clips (Figures 3 and 4).

POST PROCEDURE

During the follow up, the patient was in good condition and there were no complications (Figure 5). Histological results confirmed early gastric cancer (EGC).

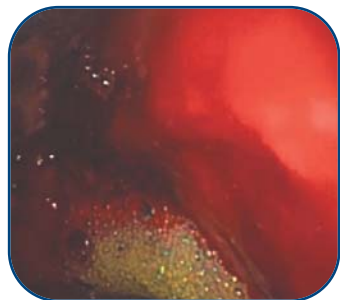


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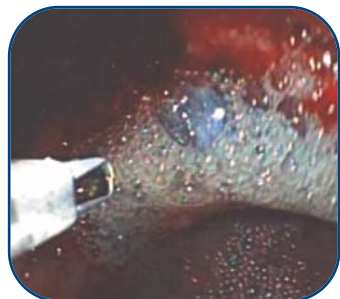


Figure 3



Figure 4

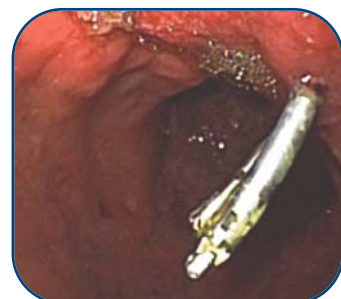


Figure 5

PREVENTION OF POST-POLYPECTOMY HAEMORRHAGE USING THE RESOLUTION CLIP DEVICE



Robert S. Dean, M.D.
Vassar Brothers Medical Center, Poughkeepsie, NY



Figure 1

HISTORY

A 91-year-old man presented with a history of anaemia and haematochezia. The patient was on chronic anticoagulation therapy with Coumadin™ due to porcine mitral valve replacement. Other past medical history includes a two vessel CABG, TIA, and seizure disorder. A colonoscopy was deemed necessary to explore potential sources of hematochezia. Concern was given in particular to the need for continuing anticoagulation therapy. The patient was counselled to discontinue his Coumadin therapy five days prior to the scheduled colonoscopy. Low-molecular-weight heparin was used to maintain anticoagulation until the evening prior to the procedure.

PROCEDURE

A colonoscopy was performed, during which time a 2cm polyp, on a thick stalk, was observed in the descending colon. This polyp was removed using a Captivator™ II Single-use Snare and cautery techniques. Reinspection of the resection margin revealed pooling of fresh blood at the polyp stalk base (Figure 1). Two Resolution™ Clips were placed at the polyp stalk base with good haemostasis (Figures 2 and 3).

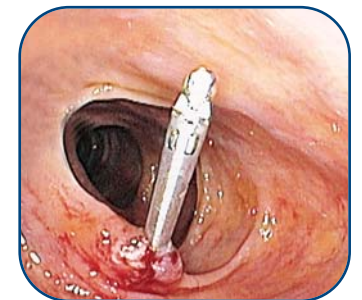


Figure 2

POST PROCEDURE

Low-molecular-weight heparin was resumed the morning after the procedure. There was no residual bleeding from the colon noted. Coumadin therapy was resumed 14 days post procedure and the patient has not had any further haematochezia.



Figure 3

PREVENTION OF POST-POLYPECTOMY HAEMORRHAGE



Robert D. Fanelli, M.D., F.A.C.S.

Director of Surgical Endoscopy, Berkshire Medical Center and Surgical Specialists of Western New England, P.C.

HISTORY

A 73-year-old man presented for outpatient consultation because of progressive dysphagia. During the consultation, it was discovered that he had not yet undergone screening colonoscopy. With his consent, he was scheduled for sequential oesophagogastroduodenoscopy and colonoscopy in the outpatient endoscopy unit.

PROCEDURE

The upper endoscopy revealed a distal oesophageal reflux-related stricture. Biopsies were taken using Radial Jaw™ 3 Large Capacity Forceps and then the stricture was dilated using an 18-19-20mm CRE™ Fixed Wire Balloon Dilator without incident. Screening colonoscopy revealed, what appeared to be, seven adenomatous polyps distributed throughout the colon. One of the polyps was a long, slender, finger-like polyp in the proximal ascending colon (Figure 1). When cautery snare polypectomy was performed, the substance of the polyp was stripped off of the underlying arterial structure that was central to its stalk (Figure 2). The vessel was not bleeding or visibly pulsing, but was turgid and standing erect. It was felt that this vessel would definitely start bleeding at some point soon (Figure 3). A single Resolution™ Clip was placed across the vessel at the base of the polyp, closing and reopening the clip until the perfect location was identified to occlude the vessel. The Resolution Clip was then deployed. The artery was immediately deflated and collapsed as the blood pressure within the structure was reduced to zero, virtually eliminating the risk of delayed polypectomy site haemorrhage. The shrivelled-up artery collapsed at the base of the polyp, just above the Resolution Clip (Figure 4).

POST PROCEDURE

Pathologic inspection of the polyps removed during this screening colonoscopy revealed three tubular adenomas and four tubulovillous adenomas. No post-polypectomy haemorrhage occurred, and the patient's dysphagia was completely abated after oesophageal dilation and the institution of proton pump inhibitor therapy.



Figure 1



Figure 2



Figure 3

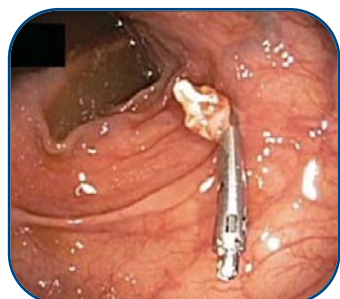


Figure 4

MANAGEMENT OF A LARGE GASTRIC POLYP



David A. Florez, M.D.

Medical Director, Elms Endoscopy Center/Trident Gastroenterology, Charlestown, South Carolina

HISTORY

An 81-year-old woman was referred for evaluation of weight loss and persistent nausea. Prior attempts at managing her symptoms with proton pump inhibitor therapy and promotility agents by her primary physician had failed. An EGD demonstrated a large gastric polyp at the pylorus (Figure 1), causing a functional gastric outlet obstruction. Radial Jaw™ 3 Standard Capacity Biopsy Forceps showed the polyp to be a benign hyperplastic inflammatory polyp. She was subsequently referred to me for endoscopic ultrasound evaluation (EUS) of the polyp and possible gastric polypectomy for definitive therapy.

PROCEDURE

The patient underwent EUS examination. The gastric polyp was scanned with a radial echoendoscope, revealing a large mucosal based lesion (Figure 2). There were no significant blood vessels within the polyp. Additionally, there were no malignant features and no evidence of invasion to deeper layers of the gastric wall. No significant celiac or peri-gastric lymphadenopathy was appreciated. A standard EGD scope was then passed and the polyp was removed in a piecemeal fashion with a Sensation™ Polypectomy Snare. The polyp fragments were then withdrawn through the mouth with a basket retrieval device.

The polypectomy ulcer was then re-inspected. There was mild, persistent oozing of blood at the site. Given the patient's advanced age and the fact that she lived in a rural area with considerable drive time to the nearest medical facility, I elected to attempt primary closure of the site with Resolution™ Clips. The defect edges were reapproximated with three Resolution Clips achieving adequate haemostasis. The patient tolerated the procedure well and there were no peri-operative complications. Twice daily proton pump inhibitor therapy was prescribed.

POST PROCEDURE

Final pathologic diagnosis of the polyp revealed a benign inflammatory polyp without dysphagia. On follow up, the patient's nausea had resolved and her weight had normalised.



Figure 1



Figure 2

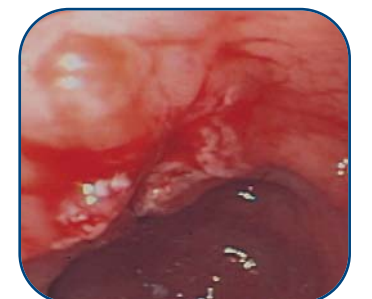


Figure 3



Figure 4

CLOSURE OF AN IATROGENIC COLON PERFORATION WITH ENDOSCOPIC CLIPS



Francisco Igea, M.D.

Gastroenterology Department, Hospital Rio Carrion, Palencia, Spain



Figure 1

HISTORY

An 82-year-old woman with abdominal pain and change in bowel habits was remitted to our endoscopy unit for a total colonoscopy. The procedure was done under continuous propofol sedation. A difficult and angulated sigma was noticed and multiple attempts in different positions were done. During one advancing manoeuvre, an iatrogenic perforation was noticed.

PROCEDURE

A big hole showing mesenteric fat and vessels was seen (Figure 1). Immediate suction in order to minimise pneumoperitoneum and close the hole was applied (Figure 2). The first Resolution™ Clip was placed closing the lips of the hole (Figure 3). Then another two Resolution Clips were placed until complete suture of the perforation was achieved (Figures 4 and 5).

POST PROCEDURE

The patient was admitted to our hospitalisation unit and nil per os and I.V. fluids and antibiotics (cefuroxime and metronidazol) were given, two hours later, an abdominal CT scan with contrast enema was done showing no leakage (Figures 6, 7 and 8). Pneumoperitoneum and retroperitoneum was clearly demonstrated. Only slight pain was present during the first 48 hours.

The patient reintroduced oral intake 72 hours later and was discharged seven days after without further interventions.

One month later the patient was doing fine without further complications.



Figure 2



Figure 3



Figure 4



Figure 5

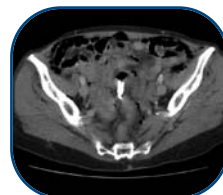


Figure 6

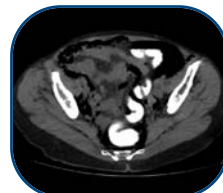


Figure 7



Figure 8



Houssam Kharrat, M.D.

Gastroenterologist, Covenant Medical Center, Lubbock, TX

BLEEDING DIVERTICULUM CLOSURE

HISTORY

An 83-year-old man presented with shortness of breath, generalised weakness and had been passing bright red blood from his rectum for 48 hours.

Past medical history was significant for Chronic Obstructive Pulmonary Disease (COPD), Chronic Heart Failure (CHF) and Hypertension (HTN). Patient was treated with blood pressure medication and ASA 81mg daily. Vital signs and physical exam appeared normal at the time of admission. Labs showed: WBC 7.3, Hgb 9.2, hematocrit 26.8, platelets 211 and an INR of 0.97. The patient had a negative bleeding scan and was prepped for a colonoscopy the following day.

PROCEDURE

Patient prep was suboptimal. No active bleeding was seen, diverticulosis was observed up to the cecum, and bright red blood was found in the right colon. An EGD was performed, to rule out an upper-GI source of the bleeding, which was unremarkable. The patient was transfused and a repeat colonoscopy was done the following day.

A bleeding diverticulum was noted in the sigmoid colon (Figures 1 and 2). An injection of epinephrine 1:10000 did not control the bleed. A Resolution™ Clip was used to approximate the diverticulum edge. A total of six Resolution Clips (Figures 3 and 4) were deployed successfully to close the edge of the diverticulum.

FOLLOW-UP

Good haemostasis was established at the end of the procedure. The patient did not require any additional transfusion and he was discharged shortly after. A three month follow up did not show any evidence of bleeding.



Figure 1



Figure 2



Figure 3



Figure 4

BLEEDING FROM A COLON TUMOUR AFTER BIOPSY WITH FORCEPS



Luis F. Lara, M.D.

Assistant Professor of Internal Medicine
Division of Digestive and Liver Diseases, The University of Texas, Southwestern Medical Center at Dallas



Figure 1

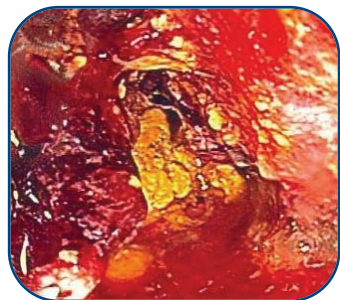


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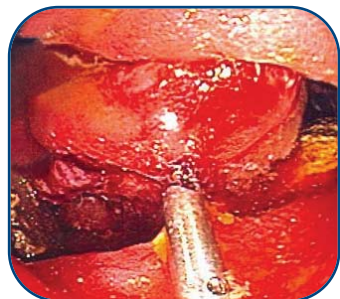


Figure 3



Figure 4

HISTORY

A 42-year-old white male diagnosed with cystic fibrosis, who had a bilateral lung transplant in 1997 with a single previous episode of rejection and diabetes mellitus, was referred to evaluate episodic mild haematochezia and new onset constipation requiring intermittent laxative use. The patient had a previous spontaneous diverticular perforation for which he had a diverting colostomy that had been repaired three years earlier.

PROCEDURE

The colonic anastomosis appeared normal. A circumferential, friable mass occluding the lumen to about 12mm and measuring 4cm in length was seen in the distal transverse colon. A standard biopsy forceps was used to biopsy the mass (Figure 1). Bleeding continued from one of the biopsy sites (estimated to be 8mm in size), which did not stop after five minutes of irrigation and observation (Figure 2). A Resolution™ Clip was used to approximate the sides of the biopsy site, achieving haemostasis, which was confirmed before scope withdrawal (Figure 3). Follow-up confirmed there was no further bleeding (Figure 4).



Adolfo Parra-Blanco, M.D.

Department of Gastroenterology, Canarias University Hospital, Santa Cruz de Tenerife, Spain

TREATMENT OF MUCOSAL TEARS IN THE OESOPHAGUS WITH ENDOSCOPIC CLIPS

HISTORY

A 73-year-old male underwent an upper endoscopy for the study of long-standing reflux symptoms. The examination was done under conscious sedation with poor tolerance, in spite of the administration of 100 µg of fentanyl and 7 mg of Midazolam, and nausea occurred repeatedly during the procedure.

During the initial passage of the endoscope in the oesophagus, a long segment of Barrett's oesophagus was detected, with no other gross abnormalities. On withdrawal, two tears were found in the lower end of the columnar epithelium, proximally to the cardia: a shallow 1cm tear (located at 6 o'clock – Figure 1) and a deep 3cm tear (located at 3 o'clock – Figure 1).

PROCEDURE

The affected area was flushed with water in order to have a clear view of the lesion. The bottom of the tear was inspected in detail and no signs of perforation were evident. There was some oozing from the tear and a decision was made to suture the mucosal defect in order to prevent further complications such as delayed bleeding or perforation.

Five Resolution™ Clips were applied and attached consecutively in a distal to proximal order (Figure 2). The reason for this is that the clips initially applied may hamper the precise application of further clips, and it is easier to check the mucosal defect remaining to be sutured if the direction is from distal to proximal. This aspect is important, because although clipping is considered to be almost devoid of any risks, there is a possibility that a clip incorrectly placed at the bottom of a mucosal defect instead of grasping normal mucosa at the edge of the lesion can result in a perforation.

The tear was successfully sutured with five Resolution Clips, which were placed easily (Figure 3). The extent of the Barrett's oesophagus was C5M8 according to the Prague Classification. No biopsies were taken to confirm the diagnosis. The patient remained asymptomatic and was discharged after observation.

POST PROCEDURE

The patient was on high dose PPI. Four months later in a second endoscopy, no trace of the tear was found, but random biopsies revealed high-grade dysplasia in the Barrett's epithelium. A third endoscopy was performed in order to try to locate any dysplastic areas, and two small erosions were found in a Barrett's tongue (Figure 4). Biopsy taken from both areas revealed high-grade dysplasia and an endoscopic mucosectomy is planned.

Mucosal tears in the oesophagus may occur during diagnostic or therapeutic endoscopy, but they are very infrequent and underlying conditions such as eosinophilic oesophagitis should be ruled out. Resolution Clips are a valuable tool for the management of intraprocedural complications (bleeding, and perforations).

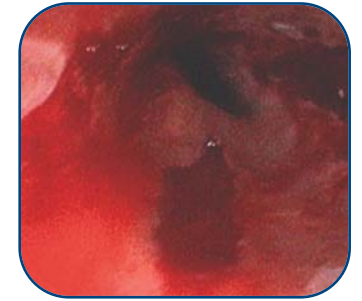


Figure 1

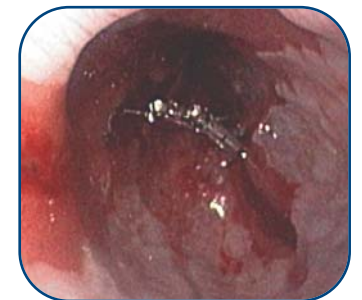


Figure 2



Figure 3

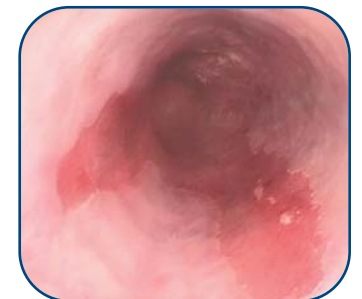


Figure 4

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