Coding For "Scopes" Gastroenterology

Nancy Reading BS, CPC, CPC P, CPC I





is now a part of **KENSOURCE**



Learning Goals

- Gain a working knowledge of the anatomy, physiology and pathophysiology associated with the GI system
- The attendee will be able to appropriately code GI procedures e.g. Colonoscopy, EGD, and ERCP
- Introduce new codes and policies
- Explore new AI based technology for GI

March Madness?

- National Colorectal Awareness Month
 - 2nd leading cause of Cancer death in US
 - 3rd leading cause of Cancer in US
 - 1 in 23 men have a lifetime risk of developing colon cancer
 - 1 in 25 women have a lifetime risk of developing colon cancer

Organs of Digestion

- Feeding tube from mouth to anus
- Smooth muscle
- Involuntary movement is called peristalsis
- Processes food and fluids for use by the body
- Secretes digestive fluids
- Absorption of nutrients
- Expel solid waste

The GI SYSTEM

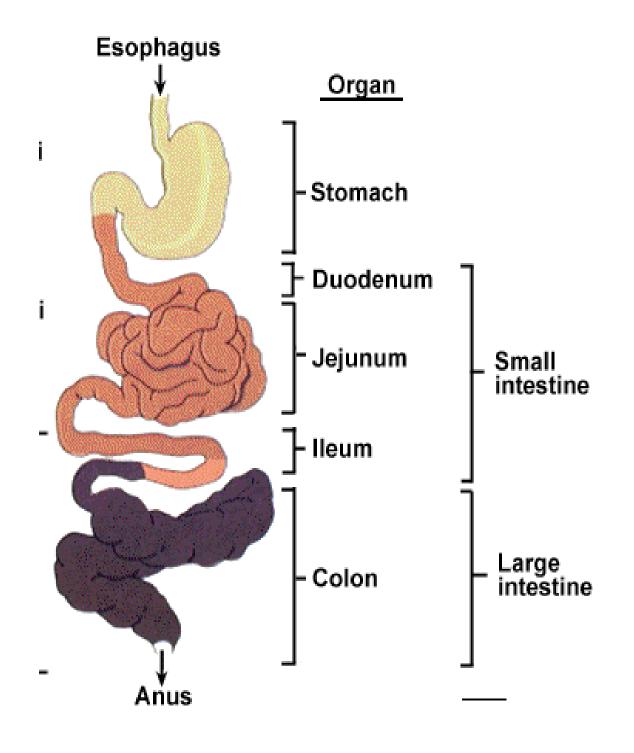
- Mouth
- Esophagus
- Stomach
- Small Intestine
- Large Intestine
- Rectum

Accessory Organs of Digestion

Salivary Glands

Pancreas

Liver



Exocrine Glands of Digestion

- Mouth
 - Salivary Glands Amylase
- Stomach
 - Parietal Cells HCL and Intrinsic Factor
 - Chief Cells Pepsinogen
- Pancreas
 - Alpha Cells Lipase, Amylase, 4 Zymogens
- Liver Bile
- Small Intestine
 - Intestinal Villi Aminopeptidases, disaccharidases

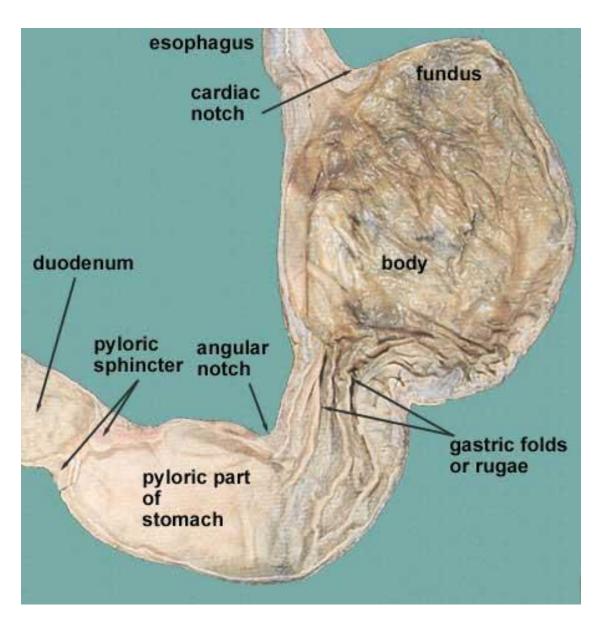
Human Digestion

- Oral Cavity
 - Dentition
 - Lingua
 - Salivary Glands
 - Chewing
- Esophagus
 - Peristaltic Movement
 - Transport food to the stomach

Human Digestion

- Stomach
 - -Gastric Glands
 - 400-800 ml of gastric juices per meal
 - H+ ions cause pH to be less than 1
 - -Prevent infection by killing most bacteria
 - Break up food into smaller components to provide greater surface area for enzymatic digestion
 - End product of gastric digestion is Chyme

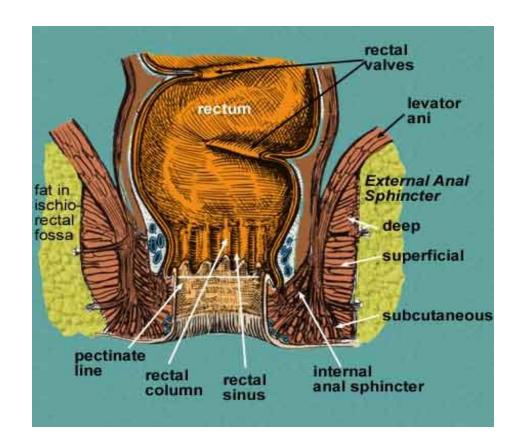
Stomach



The Bowel

- Small Intestines
 - Jejunum
 - Duodenum
 - Ileum
- Ileocecal valve
- Large intestines
 - Ascending
 - Transverse
 - Descending
 - Sigmoid Colon
 - Anal canal

- Pectinate line or Dentate line
 - Anorectal junction



Picture per Wesley Norman, PhD,

DSc http://mywebpages.comcast.net/wnor/pelvis.htm

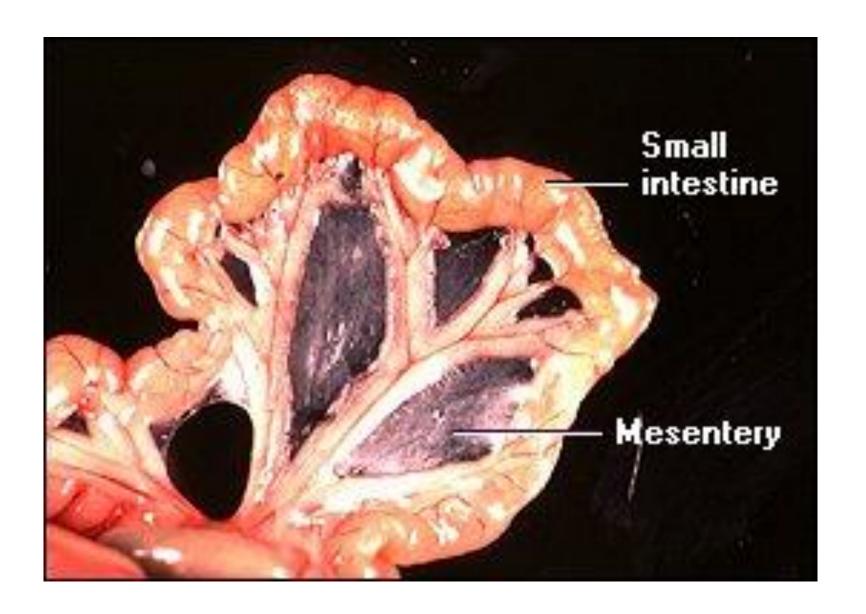
Human Digestion

- Small Intestine
 - -3 Distinct Parts
 - Duodenum,
 - Jejunum,
 - Ileum
 - -2 Valves
 - Pyloric valve stomach to duodenum
 - Ileocecal valve Ileum to Large Intestine

Human Digestion

- Small Intestine
 - Digestion occurs here
 - Bile release in duodenum to emulsify fat
 - Pancreatic Lipases complete fatty breakdown
 - Proteins Pancreatic peptidases
 - Carbohydrates Pancreatic Amylases
 - Brush Border enzymes complete the process for Protein and carbohydrates

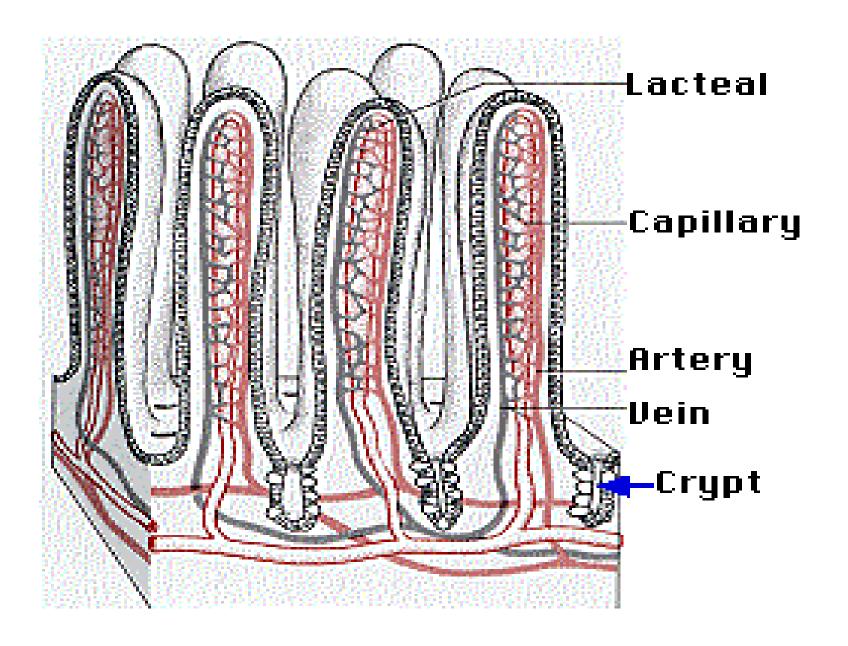
Small Bowel



Absorption

- Small Intestine
 - Mucosal Folds Plica Slow down peristalsis
 - Found mostly in Jejunum and upper Ileum
 - Have Villi coating the Plica
 - Villi composed of absorptive columnar cells
 - Each columnar cell has microvilli which create a surface called brush boarder
 - Villi composed of mucous secreting goblet cells
 - Fluids and nutrients are absorbed between the cells.

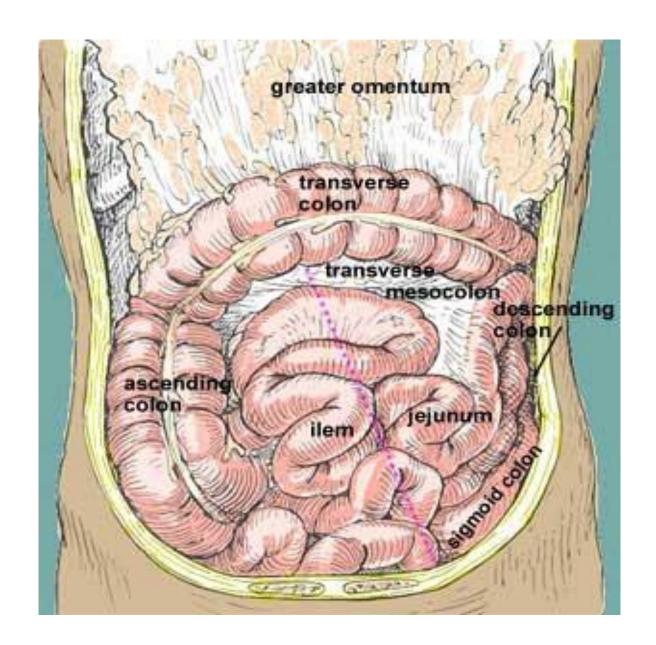
Microvilli



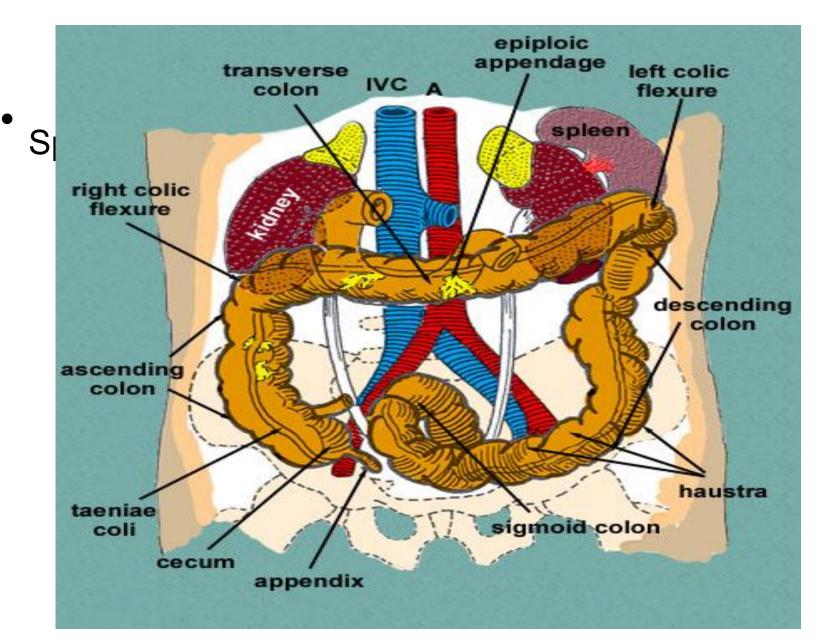
Large Intestine

- Ileocecal valve to sigmoid colon Typically 1-1.5 meters in length
- 3 distinct sections
 - Ascending Colon
 - Transverse Colon
 - Descending Colon
- Structures
 - Tenai coli
 - Haustra
 - Rugae (no villi)
 - Lieberkuhn crypts The crypts present in the colon are dominated by goblet cells, enteroendocrine cells, cells in the process of differentiation, and stem cells.
 - Mucous secreting goblet cells
- Intestinal Flora
- Absorption water and electrolytes
- Formation of feces

Large Intestine



Colon



Pectinate Line

- Superior to pectinate line
 - endoderm derivation (hindgut)
 - mucosal lining (simple columnar cells) = above pectinate line
 - Hemorrhoids above line are referred to as internal (46221)
- Inferior to pectinate line
 - ectoderm derivation
 - stratified squamous epithelium = below pectinate line
 - Hemorrhoids below line are referred to as external (46250)

Endoscopy

- Minimally invasive
- Diagnostic or Therapeutic
- View internal structures of the body
- Can take photos or videos
- Rigid or flexible tube attached to Viewing monitor
- Natural orifice or surgically created opening

The Endoscope



Age Matters

- The American Cancer Society recommends that people at average risk* of colorectal cancer start regular screening at age 45.
 This can be done either with a sensitive test that looks for signs of cancer in a person's stool (a stool-based test), or with an exam that looks at the colon and rectum (a visual exam).
- Colorectal Cancer Guideline | How Often to Have Screening Tests | American Cancer Society

CMS Policy Update

- Colorectal cancer screening using multitarget stool DNA (MT-sDNA) and blood-based biomarker tests:
 - Patients with Medicare Part B who meet these criteria:
 - Aged 45–85 years
 - Asymptomatic
 - At average colorectal cancer risk

CMS Policy Update

- Screening colonoscopies, fecal occult blood tests (FOBTs), flexible sigmoidoscopies, and computed tomography (CT) colonography:
 - Patients with Part B who meet at least 1 of these criteria:
 - Aged 45 and older at normal colorectal cancer risk (there's no minimum age requirement for screening colonoscopies)
 - At <u>high colorectal cancer risk</u>

Follow Up To Positive Non-Invasive Screening

- If the patient initially has a non-invasive screening test (FOBT or MT-sDNA test) and gets a positive result, CMS also covers a follow-up colonoscopy as a screening test.
- Identify the complete colorectal cancer screening context by adding the KX modifier to the claim for the screening colonoscopy.
- The patient pays nothing for the screening test if their doctor or other qualified health care provider accepts assignment.
- The frequency limitations described for screening colonoscopies in Tables 1 and 2 don't apply in this scenario.

Screening versus Diagnostic Testing

- Screening A subscribed population of asymptomatic individuals at risk are put through an inexpensive diagnostic test
- Diagnostic Used to establish or confirm a diagnosis, in a symptomatic patient.
- Surveillance used to monitor patients with highrisk history, prior cancer diagnosis or other disease state requiring check ups at regular intervals.

Colorectal Screening

MLN006559 – Medicare Preventive Services

- 00812 Anesthesia for lower intestinal endoscopic procedures, endoscope introduced distal to duodenum; screening colonoscopy
- 74263 Computed tomographic (CT) colonography, screening, including image postprocessing
- 81528 Oncology (colorectal) screening, quantitative real-time target and signal amplification of 10 DNA markers (KRAS mutations, promoter methylation of NDRG4 and BMP3) and fecal hemoglobin, utilizing stool, algorithm reported as a positive or negative result

Colorectal Screening

- 82270 Blood, occult, by peroxidase activity (e.g., guaiac), qualitative; feces, consecutive collected specimens with single determination, for colorectal neoplasm screening (i.e., patient was provided 3 cards or single triple card for consecutive collection)
- O464U Oncology (colorectal) screening, quantitative real-time target and signal amplification, methylated DNA markers, including LASS4, LRRC4 and PPP2R5C, a reference marker ZDHHC1, and a protein marker (fecal hemoglobin), utilizing stool, algorithm reported as a positive or negative result
- **0537U** Oncology (colorectal cancer), analysis of cell-free DNA for epigenomic patterns, next-generation sequencing, >2500 differentially methylated regions (DMRs), plasma, algorithm reported as positive or negative

Colorectal Screening

- G0104 Colorectal cancer screening; flexible sigmoidoscopy
- G0105 Colorectal cancer screening; colonoscopy on individual at high risk
- G0121 Colorectal cancer screening; colonoscopy on individual not meeting criteria for high risk
- G0327 Colorectal cancer screening; bloodbased biomarker
- G0328 Colorectal cancer screening; fecal occult blood test, immunoassay, 1-3 simultaneous

Screening Versus Diagnostic

- G0107 Fecal occult blood tests
- New alternative as of 01/01/04
 - G0328 Colorectal Cancer Screening;
 immunoassay, fecal-occult blood test, 1-3
 simultaneous determinations
 - Both tests are covered under clinical diagnostic lab fee schedule, except reasonable costs is paid to CAHs
- Z12.11 Encounter for screening for malignant neoplasm of colon
- Z12.12 Encounter for screening for malignant neoplasm of rectum

Frequency

Table 1. Patients Not Meeting High-Risk Criteria

Service	Timeframe
MT-sDNA and blood-based biomarker tests	Once every 3 years
Screening FOBT	Once every 12 months
Screening flexible sigmoidoscopy	Once every 48 months (unless the patient doesn't meet high-risk colorectal cancer criteria and had a screening colonoscopy within the past 10 years; if so, we may cover a screening flexible sigmoidoscopy only after at least 119 months passed following the month the patient got the screening colonoscopy)
Screening colonoscopy	Once every 120 months (10 years) or 48 months after a previous sigmoidoscopy
CT colonography	After at least 59 months since the month the patient got their last screening CT colonography After at least 47 months since the month the patient got their last screening flexible sigmoidoscopy or screening colonoscopy

Frequency

Table 2. High-Risk Patients

Service	Timeframe
Screening FOBT	Once every 12 months
Screening flexible sigmoidoscopy	Once every 48 months
Screening colonoscopy	Once every 24 months (unless patient got a screening flexible sigmoidoscopy; then we may cover a screening colonoscopy only after at least 47 months)
CT colonography	After at least 23 months since the month the patient got their last screening CT colonography or screening colonoscopy

Preventive Care

- For commercial insurance
 - 45378 Colonoscopy, flexible; diagnostic, including collection of specimens(s) by brushing or washing, when performed (separate procedure).
- Append modifier 33 to show the procedure was performed as a *Preventive* Service
 - This will trigger the preventive benefits (no cost-sharing) to the patient.

Preventive Care

- Modifier PT A colorectal cancer screening test converted to diagnostic test or other procedure
- Append to the procedure code if a screening endoscopy turned into a diagnostic procedure.

*Modifier PT

- For dates of service in calendar year (CY) 2023 through CY 2026,
 - when the PT modifier is appended to at least one code on the claim to indicate that a screening colorectal cancer procedure, HCPCS G0104, G0105, or G0121, has become a diagnostic or therapeutic service, contractors shall continue to waive deductible, and shall apply a reduced coinsurance of 15% for all procedure codes that meet the requirements stated above and are performed on that date of service and billed on the same claim.

Medicare Screening Z12.11

- G0105 Colorectal cancer screening;
 colonoscopy on individual at high risk or
- G0121 Colorectal cancer screening;
 colonoscopy on individual not meeting
 criteria for high risk, as appropriate.
- Note! Do not use Modifier 33 with these codes

High Risk Criteria

- Has one or more of the following
 - Close relative (as in immediate family) has cancer or adenomatous polyp
 - Familial history of adenomatous polyposis
 - Family history of nonpolyposis colorectal cancer
 - Personal history of adenomatous polyposis
 - Personal history of colorectal cancer
 - Inflammatory bowel disease includes
 Crohn's and ulcerative colitis

High Risk Diagnosis Codes

- Z15.09 Genetic susceptibility to other malignant neoplasm
- Z80.0 Family history of malignant neoplasm of digestive organs
- Z83.710 Family history of adenomatous and serrated polyps Z83.711 Family history of hyperplastic colon polyps
- Z83.718 Other family history of colon polyps
- Z83.719 Family history of colon polyps, unspecified
- Z83.72 Family history of familial adenomatous polyposis

High Risk Diagnosis Codes

- Z85.038 Personal history of other malignant neoplasm of large intestine
- Z85.048 Personal history of other malignant neoplasm of rectum, rectosigmoid junction, and anus
- **Z86.004** Personal history of in-situ neoplasm of other and unspecified digestive organs
- Z86.0100 Personal history of colon polyps, unspecified
- Z86.0101 Personal history of adenomatous and serrated colon polyps
- Z86.0102 Personal history of hyperplastic colon polyps
- Z86.0109 Personal history of other colon polyps

Online Resource

- List is updated quarterly see:
 210.3ColoCScreenpmbs032825f.pdf
- There are two lists below:
 - List 1: Partial List of Dx Codes Indicating High Risk: Only applicable to G0105 and G0120 (high risk colorectal screening). End date G0120 effective 12/31/2024. Add coverage for 74263 effective 1/1/2025 for high risk patients.
 - List 2: Applicable to 81528 (Cologuard), 0464U
 (Cologuard PlusTM), 0537U (ShieldTM), and G0327 (Blood-based Biomarker Tests).
 - Add coverage for 74263 effective 1/1/2025 for patients not at high risk.

Diagnostic Endoscopy

- Use endoscope to view lumen of GI tract
- Look for abnormalities
- Look for disease processes
- Look for bleeding
- IF a SURGICAL TECHNIQUE is EMPLOYED then the diagnostic scope is included in the surgical procedure.
- Diagnostic endoscopy procedures are designated as (Separate Procedures) in CPT

Surgical Endoscopy

- Usually, a 10-day global or 000 day global
 - Per CMS NCCI decision to perform minor surgery is included in the surgery
 - A 25 may be appended to a separate
 significant problem/E/M service

2025 NCCI Manual

If a procedure has a global period of 000 or 010 days, it is defined as a minor surgical procedure. In general, E&M services on the same date of service as the minor surgical procedure are included in the payment for the procedure.

2025 NCCI Manual

The decision to perform a minor surgical procedure is included in the payment for the minor surgical procedure and shall not be reported separately as an E&M service. However, a significant and separately identifiable E&M service unrelated to the decision to perform the minor surgical procedure is separately reportable with modifier 25.

Repetitive Services

- Multiple therapeutic services
 - Same e.g., multiple biopsies
 - Code once
 - Different e.g., Snare polypectomy and hot forceps
 - If there is not a more comprehensive service to cover both then
 - code each
 - CMS NCCI

CMS NCCI

- Integral Parts of the procedure are bundled
 - IV access
 - Infusion or Injection
 - Non-Invasive Oximetry
 - Anesthesia by Surgeon

<u>- 06-chapter6-ncci-medicare-policy-manual-</u><u>2025_final_clean.pdf</u>

Midlevel Providers

Can perform and bill for

Sigmoidoscopies (G0104)

- Must be permitted per state licensure

Discontinued Scope

- CMS directs the coder to put a -53 on a discontinued scope and
- AMA CPT directs the coder to use a -52
- Go with Carrier direction
- See NCCI manual chapter 9

Upper GI Endoscopy

- Esophagus, Stomach and Duodenum
 - Esophagoscopy 43180-43232
 - Esophagogastroduodenoscopy 43235 #43210
- Endoscopic Retrograde
 Cholangiopancreatography
 - ERCP 43260-43273

Lower GI Endoscopy

- Rectum and Sigmoid Colon
 - Proctosigmoidoscopy 45300-45327
- Sigmoid Colon (may include portion descending colon)
 - Sigmoidoscopy 45330-45350
- Colon
 - Colonoscopy 45378- 45398

Colonoscopy

Approach

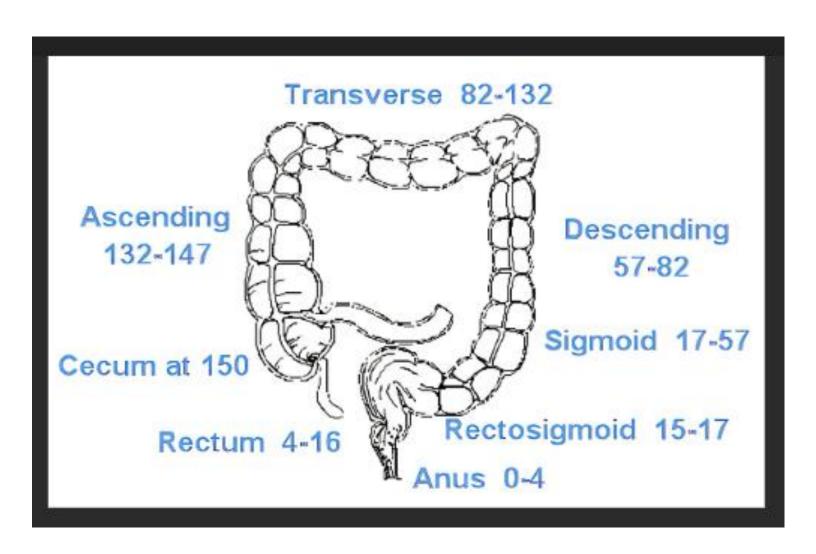
-Anus (45378)

-Colostomy (44388)

Colonoscopy

- Must take scope past the splenic flexure
- Usually go to ileocecal valve
- Diagnostic, look around, take samples
- Therapeutic treat problem

Colonoscopy Measurements



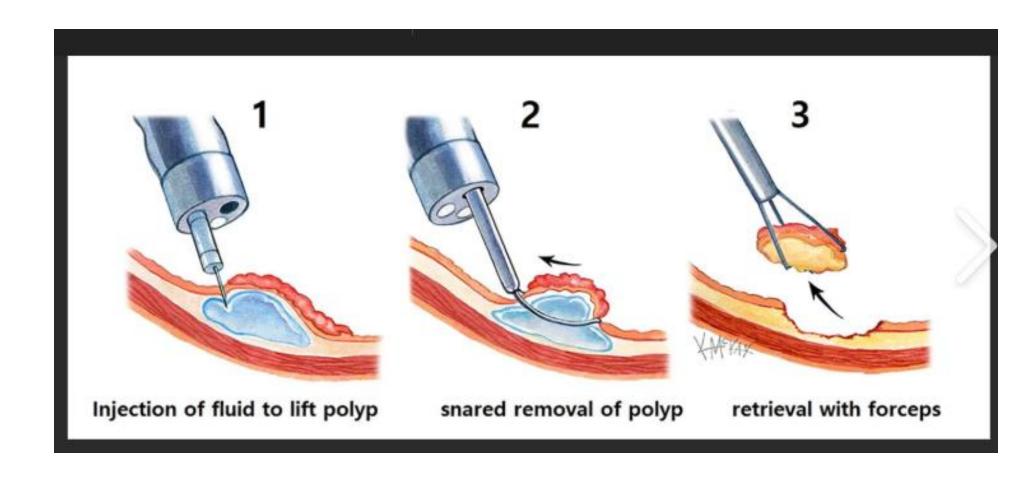
Colonoscopy Measurements (cm) from Anal Verge | SEER Training

Techniques to Removing Polyps

•	Biopsy	(Cold Forceps)	45380
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- Ablation 45388
- Hot Biopsy Forceps 45384
- Snare 45385

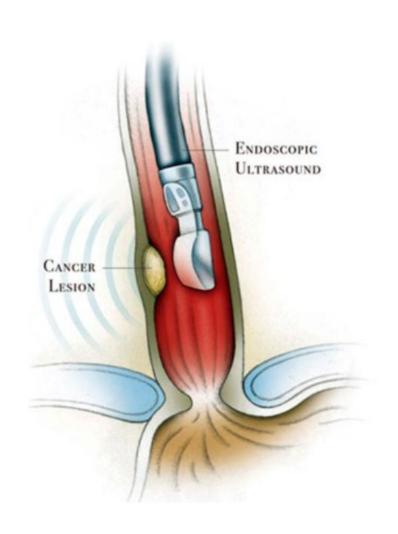
Snare Technique



Hot Biopsy Forceps



Endoscopic Ultrasound



EUS

- Ultrasound through the endoscope
- Can't code 76942 or 76975
- 43231 Esophagoscopy U/S
- 43259 UGI endoscopy U/S
- 45341 Sigmoidoscopy U/S
- 45391 Colonoscopy U/S

Intestinal Tattooing

- Marks place on external intestinal wall for open resection of polyps
- Use 45381
- Dye Used
 - Carbon Black is the only permanent tattoo appropriate for use in the colon according to the Journal of Gastroenterology & Hepatology (May 2018-Vo;ume 14, Issue 5
 - FDA Approved
 - Found in India Ink, however Spot Ex is recommended

These Lesions Get Tattooed

- Suspected Cancerous Lesions
 - Pedunculated Adenomas >= 2 cm in size or with endoscopic features of cancer,
 - Large Flat sessile lesions removed in piecemeal by mucosal or submucosal endoscopic resection.
- Not done in the cecum as it is reliable landmark.

J-Pouch

ileal J-Pouch

An internal pouch -- which looks like the letter "J" -- is created from 10 to 12 inches of small bowel (ileum) as a reservoir for waste to replace the function of the rectum.

J Pouch- Pouchoscopy

- Use sigmoidoscopy to check patency of lumen and security of sutures or staples
- Pouchoscopy synonym
- May be in global
 - Need modifier appropriate to circumstances

Endoscopy Small Intestinal Pouch

- 44385 is endoscopic evaluation of small intestinal pouch, diagnostic
- 44386 is endoscopic evaluation of small intestinal pouch, with biopsy, single or multiple

Esophageal Dilation

- A non-endoscopic esophageal dilation (e.g., CPT codes 43450, 43453) fails
- Followed by an endoscopic esophageal dilation procedure (e.g., CPT codes 43213, 43214, 43233),
- Only the endoscopic esophageal dilation procedure may be reported. The provider/supplier shall not report the failed procedure.
- <u>06-chapter6-ncci-medicare-policy-manual-</u> <u>2025_final_clean.pdf</u>

Esophageal Dilatation

- If done with bougie or sound (43450-43458)
 - Unsuccessful
- Followed by endoscopic procedure
- Only Endoscopic dilatation procedure may be coded
 - CMS NCCI

Endoscopic Drug-Coated GI Ballon: Codes 0884T-0886T

- 0884T Esophagoscopy, flexible, transoral, with initial transendoscopic mechanical dilation (e.g., nondrug-coated balloon) followed by therapeutic drug delivery by drug-coated balloon catheter for esophageal stricture, including fluoroscopic guidance, when performed
 - ► (Do not report 0884T in conjunction with 43191, 43195, 43196, 43200, 43213, 43214, 43220, 43226, 76000) <

Endoscopic Drug-Coated GI Ballon: Codes 0884T-0886T

- 0885T Colonoscopy, flexible, with initial transendoscopic mechanical dilation (e.g., nondrug-coated balloon) followed by therapeutic drug delivery by drug-coated balloon catheter for colonic stricture, including fluoroscopic guidance, when performed
- ► (Do not report 0885T in conjunction with 45378, 45386, 76000, 0886T) <
- ► (For endoscopic balloon dilation of multiple strictures during the same procedure, use 0885T with modifier 59 for each additional stricture dilated) <

Endoscopic Drug-Coated GI Ballon: Codes 0884T-0886T

- 0886T Sigmoidoscopy, flexible, with initial transendoscopic mechanical dilation (egg, nondrugcoated balloon) followed by therapeutic drug delivery by drug-coated balloon catheter for colonic stricture, including fluoroscopic guidance, when performed
- ► (Do not report 0886T in conjunction with 45300, 45303, 45330, 45340, 76000, 0885T)
- For endoscopic balloon dilation of multiple strictures during the same procedure, use 0886T with modifier 59 for each additional stricture dilated)

Description of Procedure (0884T)

Position the patient in the operating room. The physician performs a flexible esophagoscopy to the level of the stricture. Pass a guidewire beyond the stricture and pass a nondrug-coated balloon catheter over the guidewire and through the lumen of the stricture. Dilate the stricture in the standard fashion and then remove the nondrug coated catheter. The physician then selects the appropriate DCB(drug coated balloon) catheter so that the balloon diameter is slightly greater or equal to the diameter of the predilated channel and long enough to extend beyond the stricture. Under endoscopic vision, position the DCB appropriately and leave it in place for one minute to allow hydration of the drug coating. Using a mixture of saline and contrast and an inflation device, slowly inflate the balloon to approximately one atmosphere of pressure over 30 seconds until the desired balloon diameter is achieved and left in place for 10 minutes to allow the paclitaxel to penetrate the scar tissue. Visually check the position of the balloon or check by fluoroscopy to confirm that the balloon has achieved its full diameter along the stricture. After the secondary drug delivery is complete, deflate and remove the DCB and the endoscope.

Multiple Approaches

- ERCP via biliary T Tube
- Esophagogastroduodenoscopy
 - Via natural orifice, mouth
- Code both and append a −51

- CMS NCCI

ERCP Diagnostic and Therapeutic

- Endoscopic retrograde cholangiopancreatography, or ERCP,
 - A specialized technique used to study the bile ducts, pancreatic duct and sometimes, the gallbladder.
 - Ducts are drainage tubes or channels.
 - The drainage channels from the liver to the intestine are called bile ducts and
 - The drainage ducts from the pancreas to the intestine are called pancreatic ducts.
 - The main pancreatic duct and the main bile duct come together into one common bile duct just before emptying into the intestine.

Anatomy of the Pancreatobiliary System

Description

Endoscopic technique for radiologic visualization of the biliary and/or pancreatic ducts.

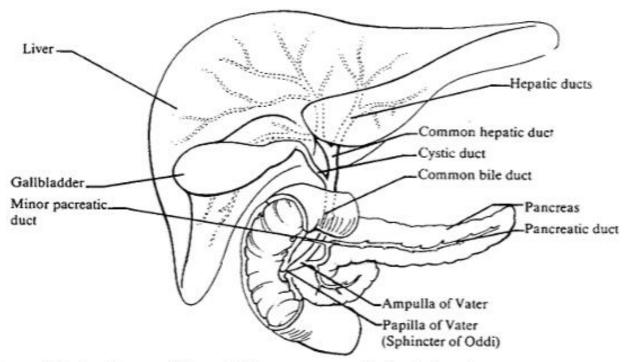


Figure 21: Anatomy of liver, biliary, pancreatic ductal systems

Indications

- 1. Jaundice of undetermined etiology.
- 2. Biliary obstruction, extrinsic or intrinsic (e.g., stones, tumor, stricture, sclerosing cholangitis, papillary stenosis).
- 3. Suspected or known pancreatic disease, including pancreas divisum.
- 4. Pancreatitis acute, recurrent or chronic.
- 5. Suspected or known pseudocyst.
- 6. Pancreatic neoplasm.
- 7. Unexplained abdominal pain of suspected biliary or pancreatic origin.
- 8. Suspicion of disease in a non-jaundiced patient.

Indications

- 9. Preoperative evaluation.
- 10. Manometric evaluation of common biliary and pancreatic ducts.
- 11. Abnormal abdominal radiologic study (ultrasound, CT Scan, MRCP, endoscopic ultrasound, percutaneous transhepatic cholangiogram, biliary scintigraphy).
- 12. Persistent elevation in liver enzymes in patient predisposed to biliary disease.
- 13. Pancreatic duct obstruction.
- 14. Post operative complications (i.e. after liver transplantation).
- 15. Treatment of ampullary adenomas.

PROCEDURE

- An upper GI endoscopy is performed.
- When the endoscope reaches the common bile duct in the duodenum a catheter is inserted at the Ampulla of Vater
- Contrast material is injected.
 - The components of the biliary tree fill showing the liver, hepatic ducts, gall bladder, cystic duct, common bile duct, pancreatic duct and the pancreas.
- CPT code 43235 is reported if unable to cannulate/inject

Esophagogastroduodenoscopy, flexible, transoral; diagnostic, including collection of specimen(s) by brushing or washing, when performed (separate procedure)

ERCP

- Radiologic codes 74328, 74329, 74330 are separately reported as appropriate
- Append modifier 26 in the facility
- A separate paragraph must be included in the procedure note to cite findingsOR.....
- A separate report can be dictated with the professional interpretation of the study.

43264 ERCP with Removal of Calculi

- Endoscopic retrograde cholangiopancreatography (ERCP); diagnostic (43260) is included
- Incidental dilation due to instrument passage is included
- Do not report if findings are without debris or calculi, even when balloon used
- Do not report with 43265
- Percutaneous calculus/debris removal (47544)
- Code also sphincteroplasty when dilation necessary to access debris/stones (43277)

ERCP with Stent(s)

- CPT code 43274 Endoscopic retrograde cholangiopancreatography (ERCP); with placement of endoscopic stent into biliary or pancreatic duct, including pre- and post-dilation and guide wire passage, when performed, including sphincterotomy, when performed, each stent
 - Placement of each stent in pancreatic duct, common bile duct, right and left hepatic duct or side by side in same duct report 43274 with modifier 59 for each subsequent stent.
- Includes Dilation in same duct
- Includes placement of a tube for drainage

ERCP with Stent Exchange

- 43276 is listed per each stent exchanged
- When more than one stent is exchanged list each stent on a separate line and append modifiers as appropriate per payer policy
 - Modifier 76 or
 - -Modifier 59 or
 - -Modifier XS

Chromoendoscopy

- Dyes, pigments and stains are used to help locate dysplasia
- Used in high-risk patients with chronic inflammatory bowel disease
- Techniques include
 - Chromoendoscopy
 - Electronic chromoendoscopy using narrow band imaging
 - Spectral imaging color enhancement
 - i-scan
- Provides detailed contrast enhancement of the gastrointestinal mucosa

Colon Polyp



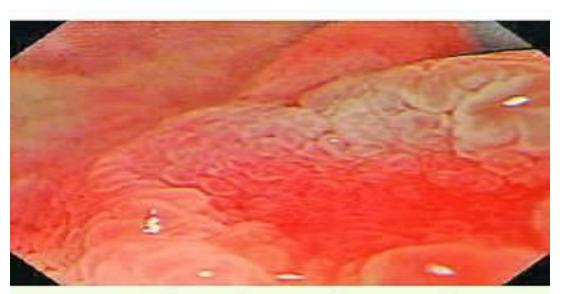


Figure 4 Enhanced magnification endoscopy (with 1.5% acetic acid) revealed an irregular fine microstructure in the depressed lesion.

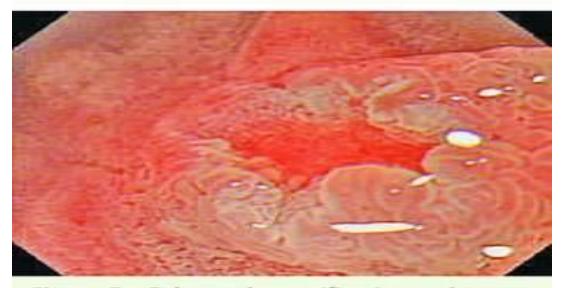


Figure 5 Enhanced magnification endoscopy (with 1.5% acetic acid) showed normal villi surrounding the depressed lesion.

Chromoendoscopy

- 3 types of Stains
 - Contrast
 - Reactive
 - Absorptive (Vital)
 - Electronic chromoendoscopy using narrow band imaging, Spectral imaging color, enhancement, and i-scan do not require stains.

Reimbursement

- No CPT code for this use unlisted 44799 or 45399.
- Check for Local Coverage Decision in your area
- It is never considered reasonable and necessary to order special stains prior to history and physical.
- If you do use one of these techniques include rational/medical necessity in the procedure note.

Al

- Machine Learning
- Deep Learning,
- Computer Aided diagnosis, CADx
- Computer aided detection CADe
- Uses include AI assisted lesion detection and lesion differentiation or Optical Biopsy.

Al Technology and GI Endoscopy

- Used to aid in diagnosing GI conditions due to small population of seasoned endoscopists
- According to the report of the 2018 Global Cancer Statistics, esophageal cancer is the seventh most frequent malignant tumor and the sixth leading cause of cancer-related death
- Diagnosis of early esophageal cancer is based on direct endoscopic visualization coupled with biopsy.
- Despite the development of endoscopic techniques, such as narrow-band imaging and magnifying endoscopy, many lesions such as early Barrett's neoplasia as well as superficial esophageal squamous cell carcinoma are missed because these early lesions have subtle visual changes on endoscopy and are difficult to recognize.

ww.sciencedirect.com/science/article/pii/S168719792300120X

Al Technology and Gl Endoscopy

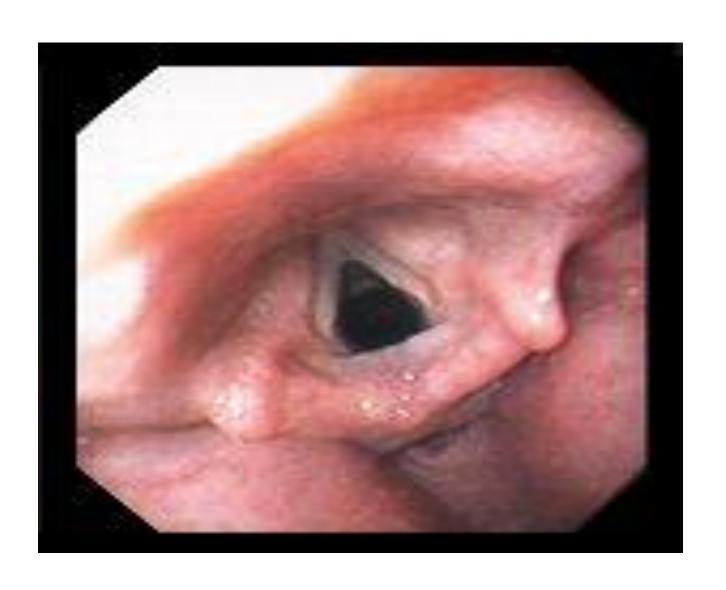
- By analyzing endoscopic image automatically, AI could improve the detection rate of esophageal neoplastic changes and targeted biopsies of the lesions
 - Barrett's neoplasia, it was reported that AI system could detect these lesions with an accuracy of 90 %, sensitivity of 91 %, and specificity of 89 % during real-time endoscopy
 - compared with non-expert endoscopists, the DL system achieved higher sensitivity and specificity (sensitivity: 88 % vs 72 %; specificity: 89 % vs 74 %) [11].
 - For early squamous cell carcinoma and precancerous lesions, AI was also helpful in detection, with 98.0 % sensitivity and 95.0 % specificity [12].

Smart Capsule Endoscopy?

- Third Generation Capsule
- An article in Gastrointestinal Endoscopy,
 Leenhardt et al report the use of
 convolutional neural networks, a common
 platform in deep learning, to improve the
 detection of GI angiectasias in the small
 bowel identified on small-bowel Capsule
 Endoscopy (CE.)
- This has shown to be 100% to 96% effective in sensing GI angiectasis.

<u>Artificial intelligence and capsule endoscopy: Is the truly "smart" capsule nearly here?</u> <u>- Gastrointestinal Endoscopy</u>

Vocal Cords



Vocal Cords

- With Barrett's and Carcinoma of Left cord
- Polyp of Vocal Cord





Sliding Hiatal Hernia (Stomach Protruding)



Schatzki Ring K22.2



Schatzki Ring

- Smooth, benign, circumferential,
- Narrow ring of tissue in the lower end of the esophagus
- Located just above the junction between the esophagus and the stomach.
- Occurring in more than 6% of the population.
- Cause not clearly understood,
 - Believe it is caused by long term damage from acid reflux.



A PICTURE IS WORTH 1000 WORDS!

Barrett's Ulcers K22.10 - K22.11



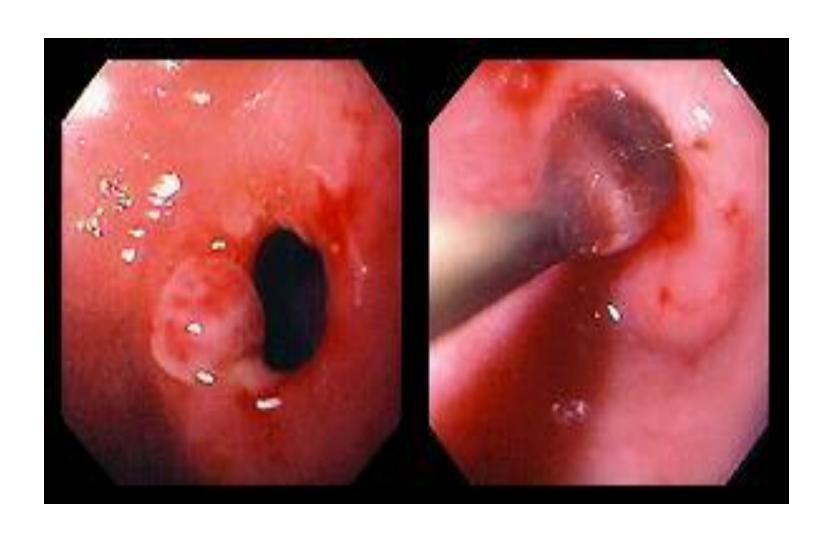


Adenocarcinoma- Esophagus C15.9, C78.89, D000.1





Pyloric Stenosis K22.2



Perforated Gastric Ulcer K25.1 (Can see the Liver)

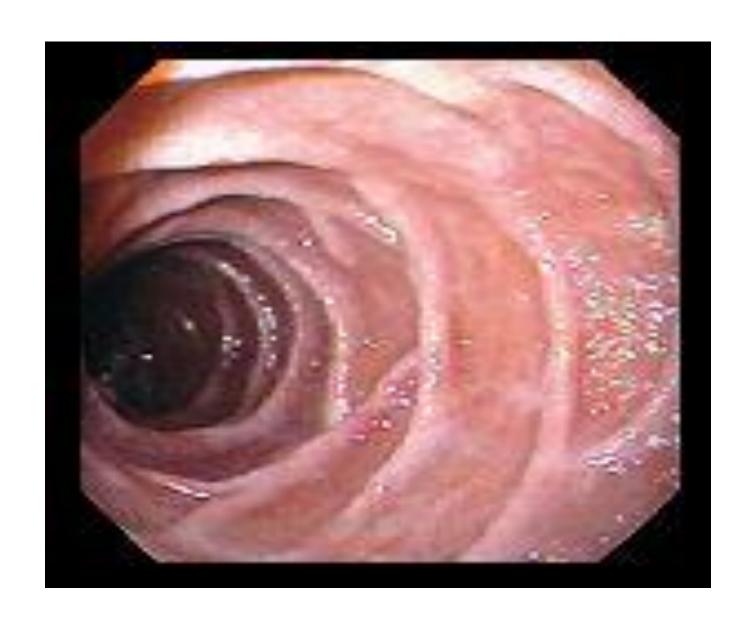


Bleeding Ulcer, K25.0 or K25.4 Before and After Banding





Normal Duodenum



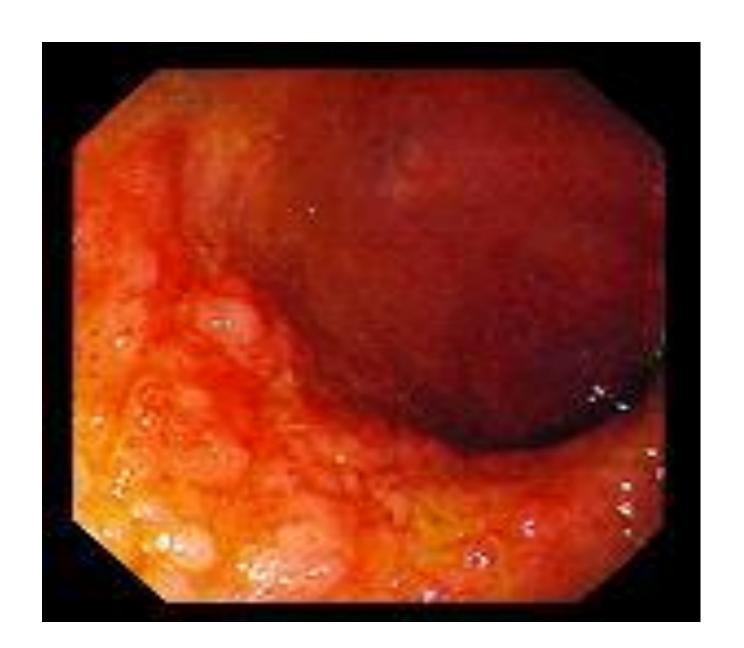
Duodenal Diverticulum K57.10



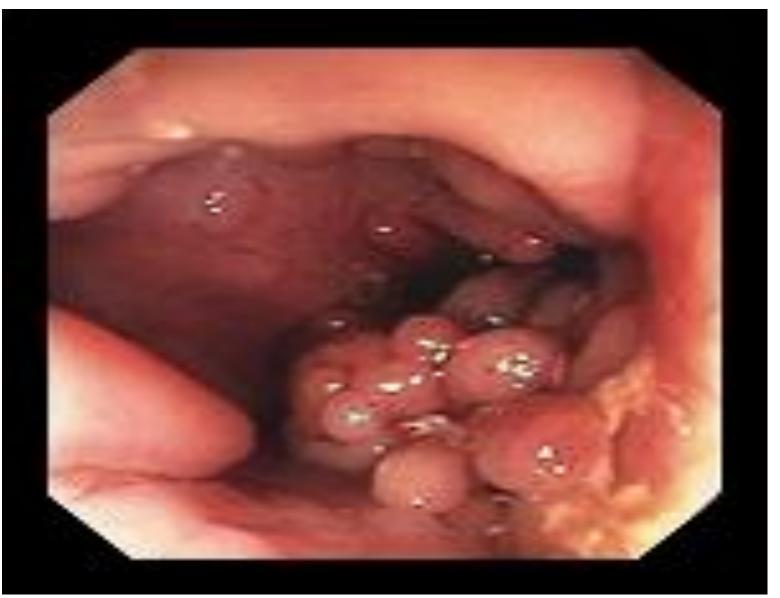
Bilateral Ulcers Duodenal Bulb K26.3 –K26.7



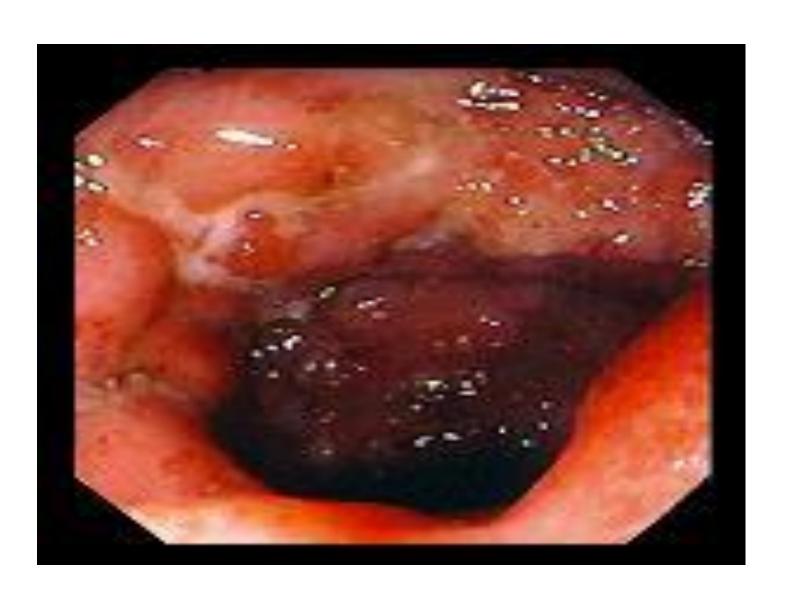
Crohn's Disease K50.90



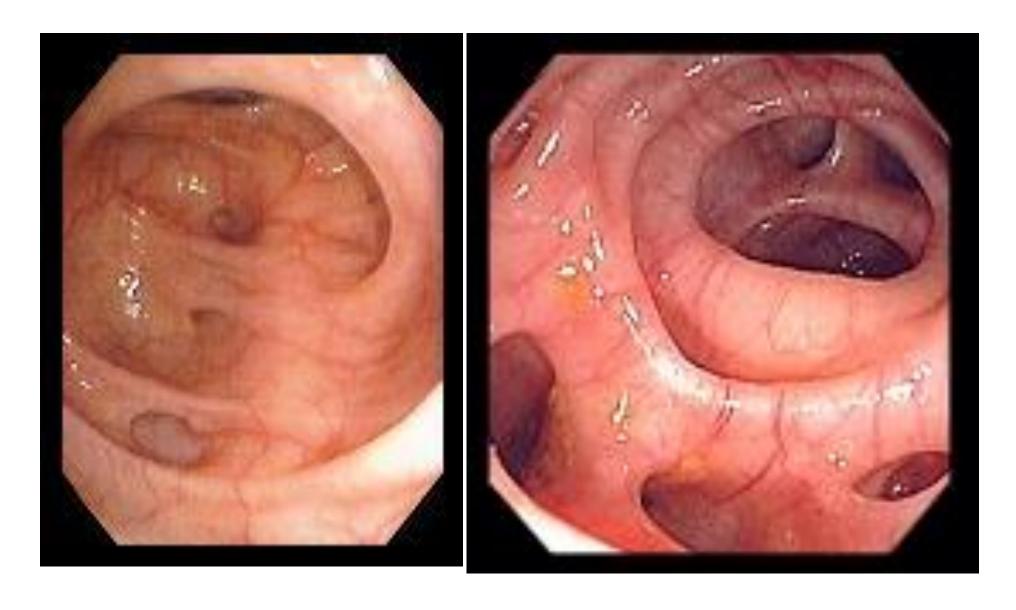
Crohn's Pseudopolyps K50.918



Colitis with Inflammation Ulceration and Edema K51.00



Diverticulosis K57.30



Diverticulitis K57.32

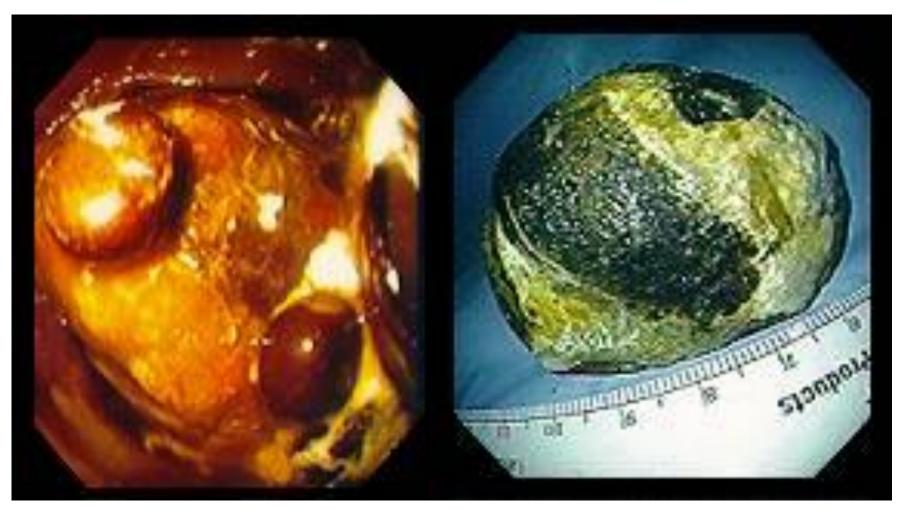


Diverticular Polyp K63.5



Gallstones

 Gallstones in the Duodenum Gallstone Impacting the Lumen of Duodenum



Varices 185.__, 186.4

Esophageal Varices
 Fundal Varices



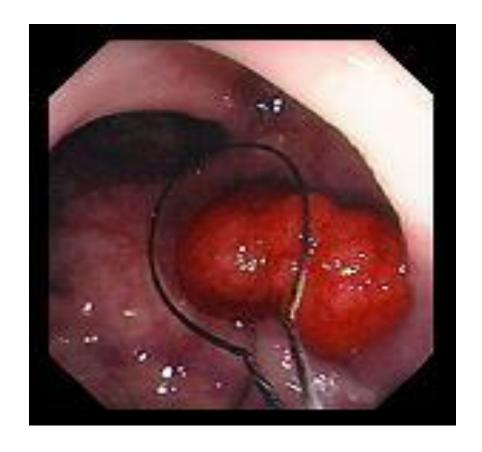


Pedunculated Polyp

Polyp

• Snare



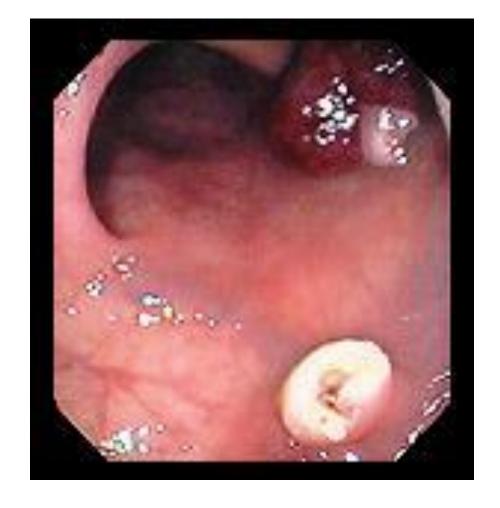


Pedunculated Polyp

Polyp



Hot Forcep Cautery

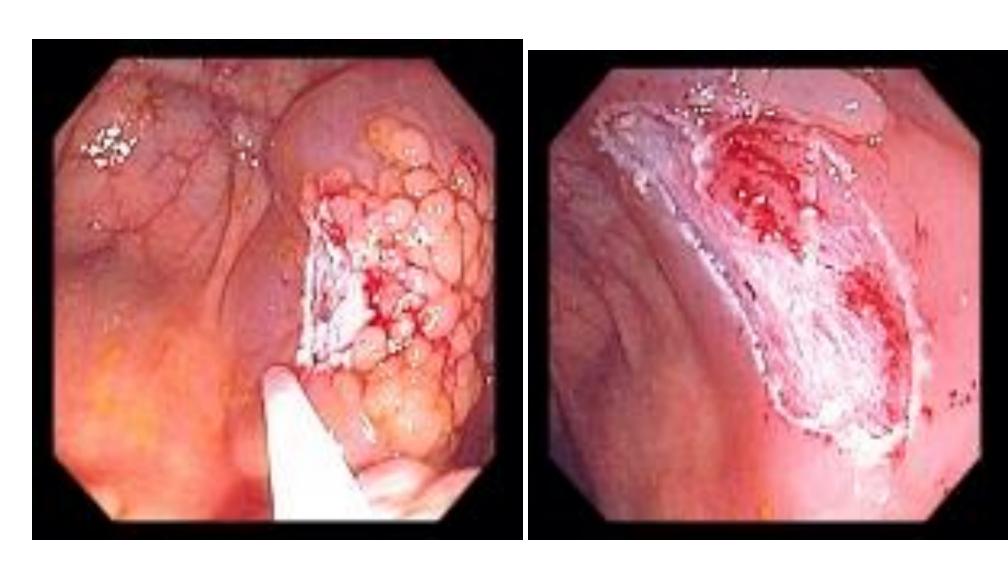


Sessile Polyp





Sessile Polyp



Questions





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THANK YOU

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