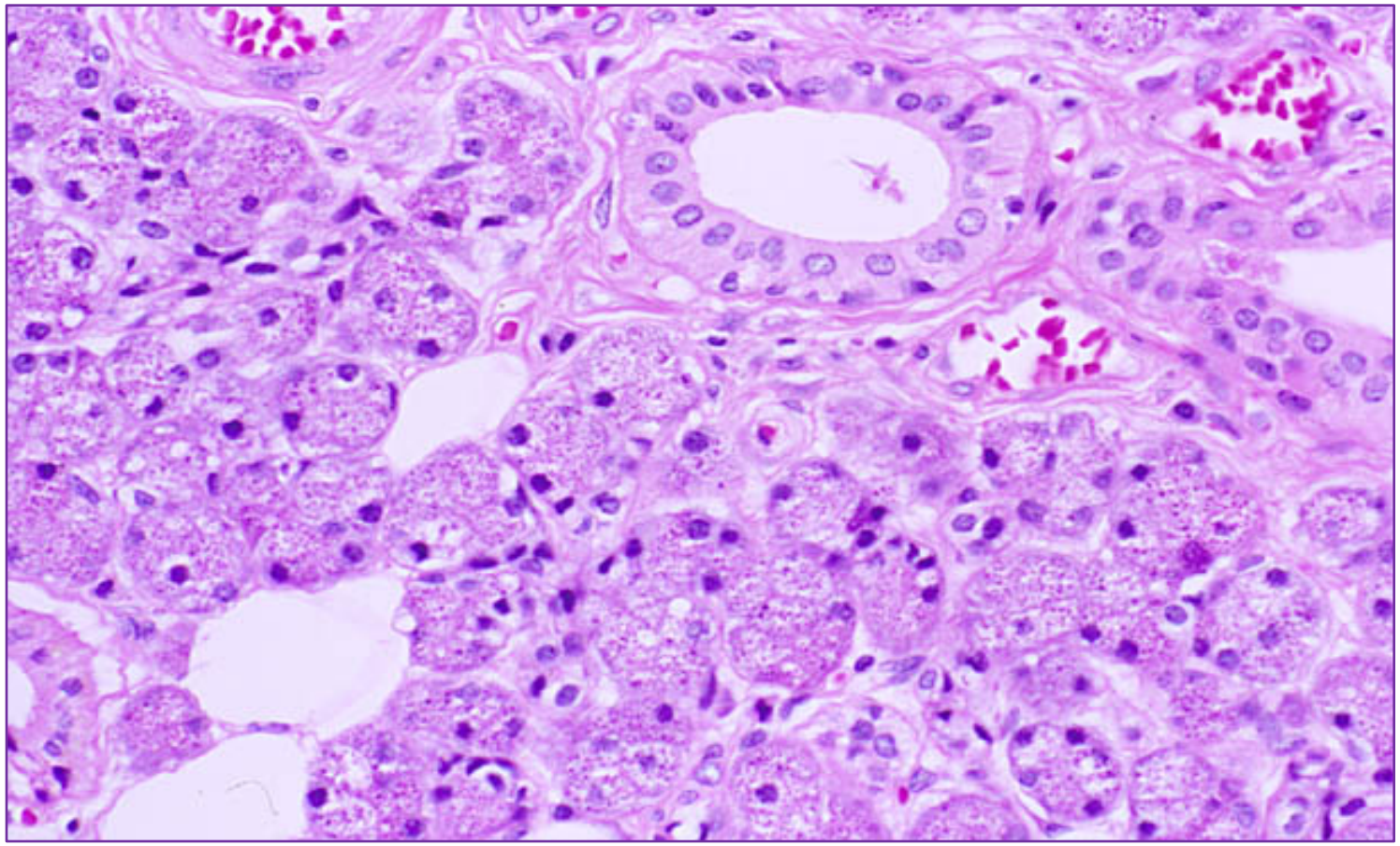
GIT BLOCK

PATHOLOGY PRACTICAL

Dr Shaesta Naseem Zaidi

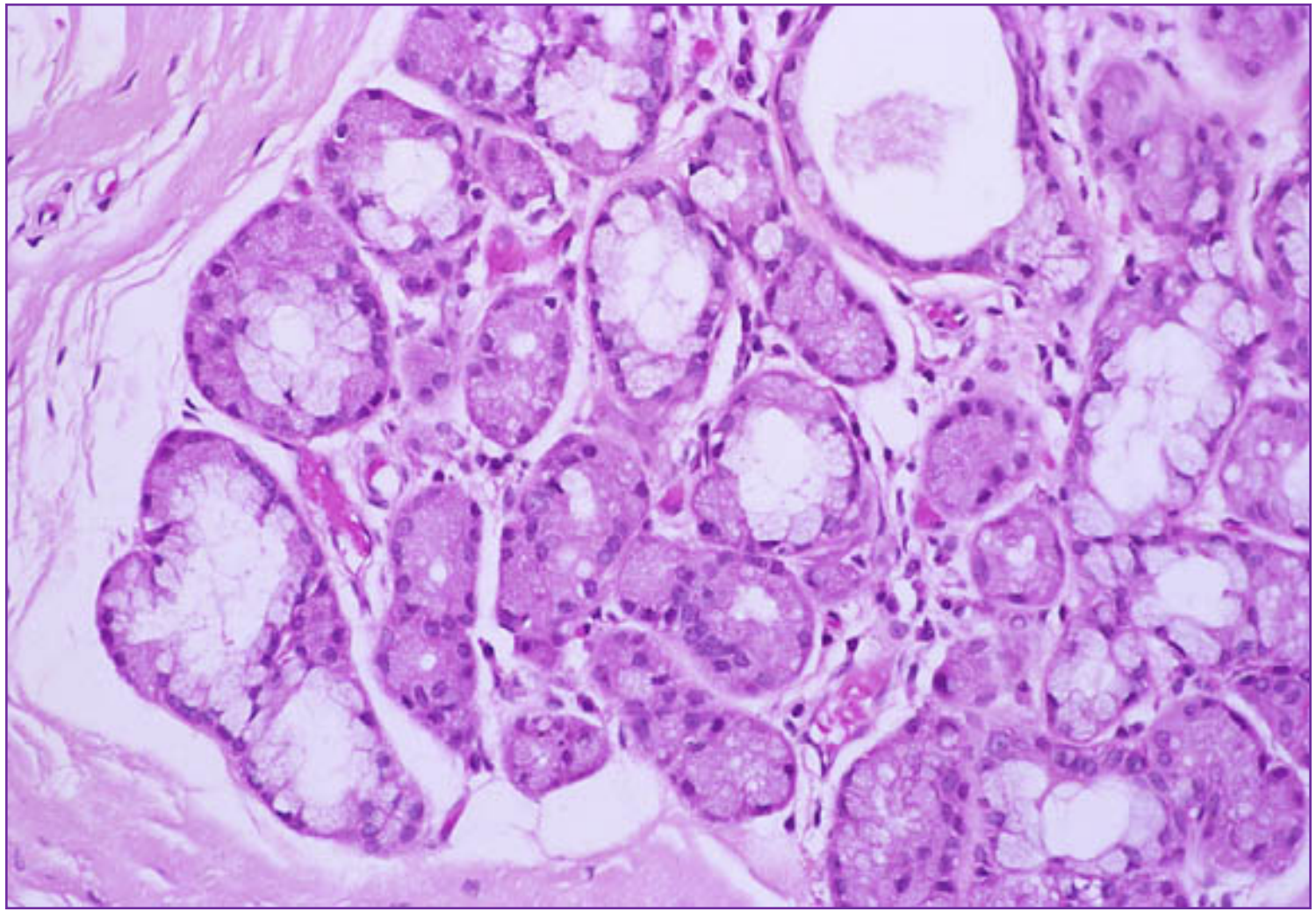
SALIVARY GLAND

Parotid Gland – Normal Histology



Clusters of large, pale-staining mucous cells occasionally are present in the parotid gland, but the acini are overwhelmingly of serous type. Each serous acinus is composed of several pyramidal-shaped cells with basal nuclei and basophilic cytoplasmic granules.

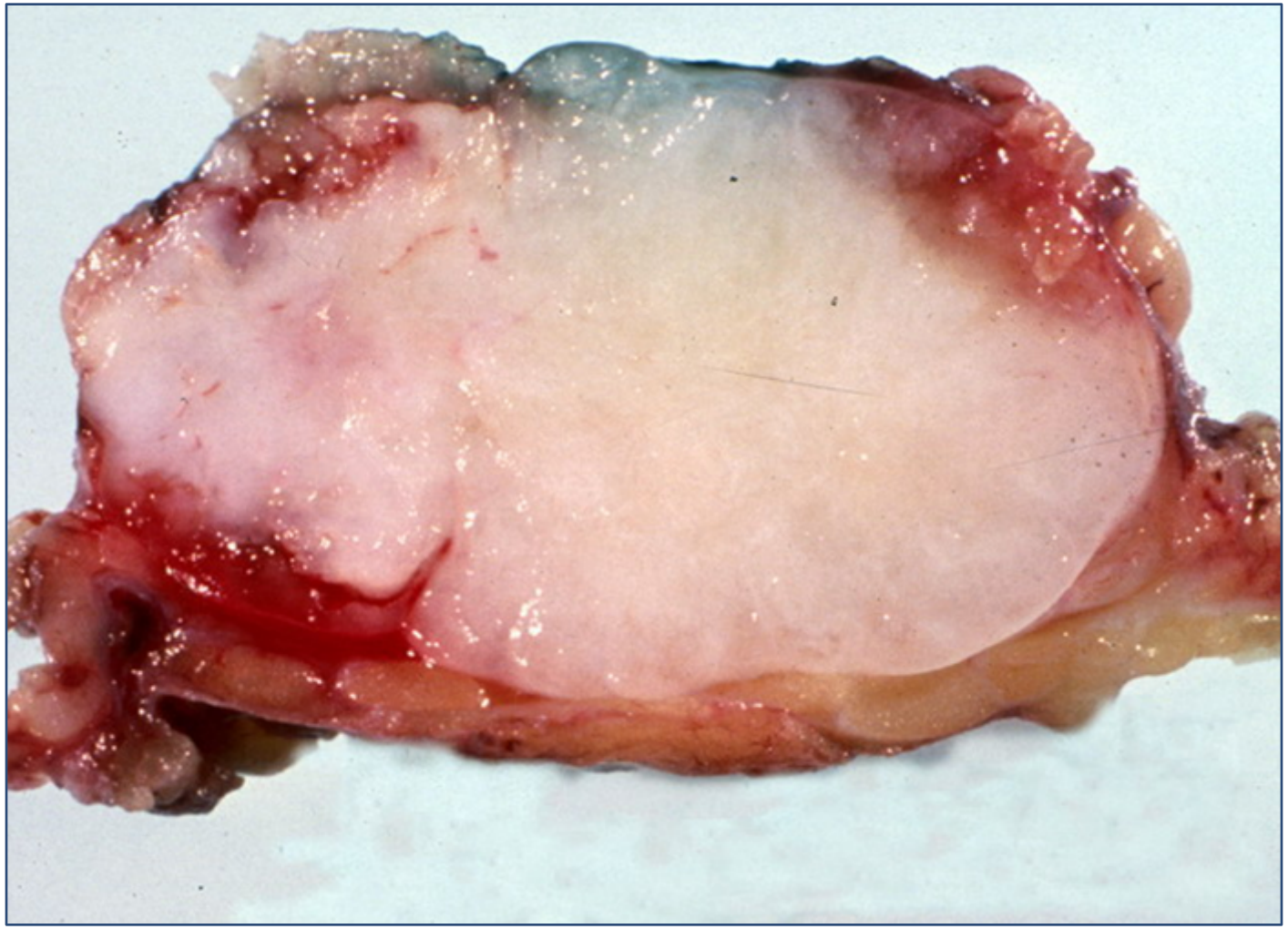
Salivary Gland – Normal Histology



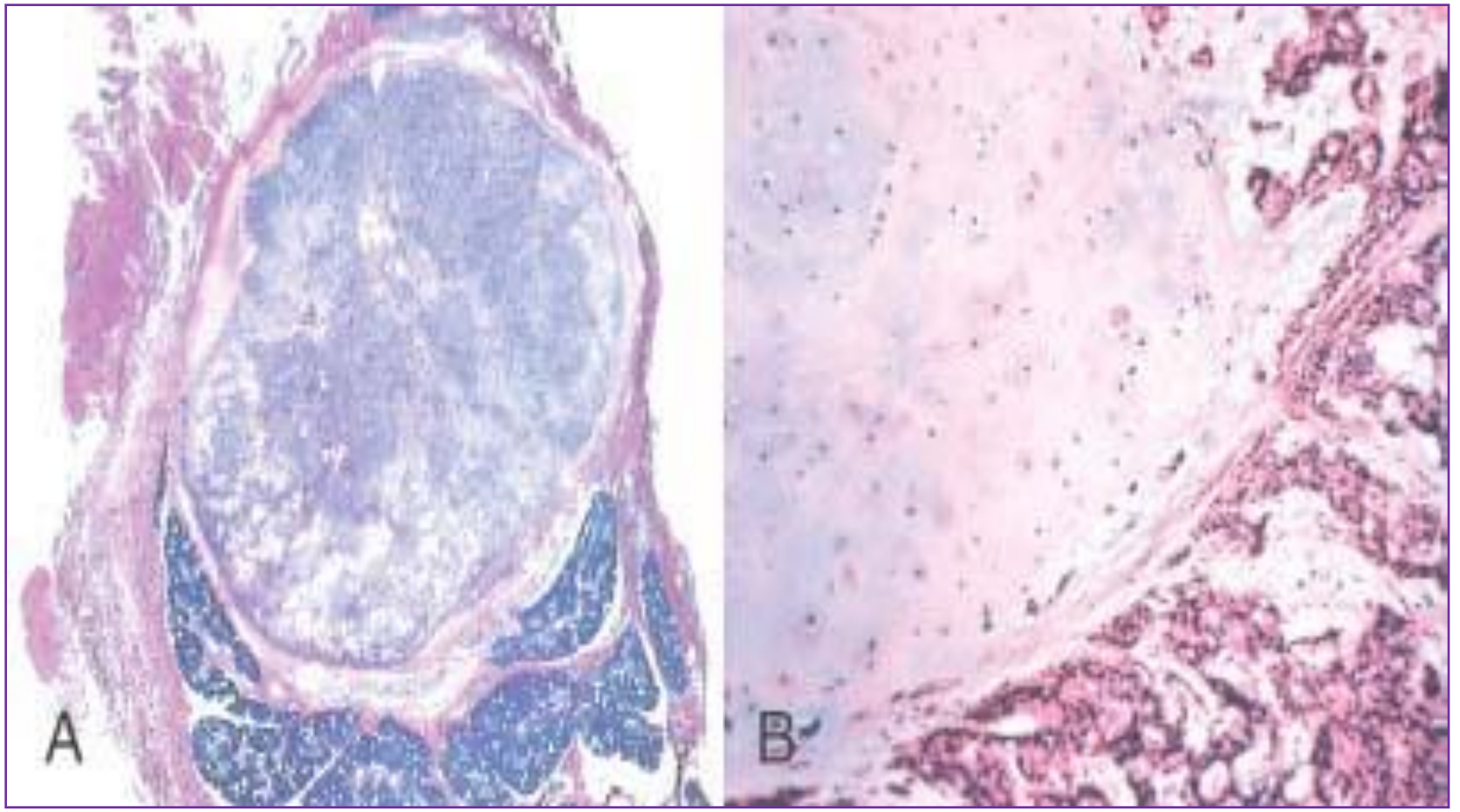
PAROTID GLAND SWELLING – Clinical

The classic place for any visible parotid swelling or tumor is present between the tip of the ear and the tip (angle) of the mandible

PLEOMORPHIC ADENOMA (MIXED TUMOR) - Gross

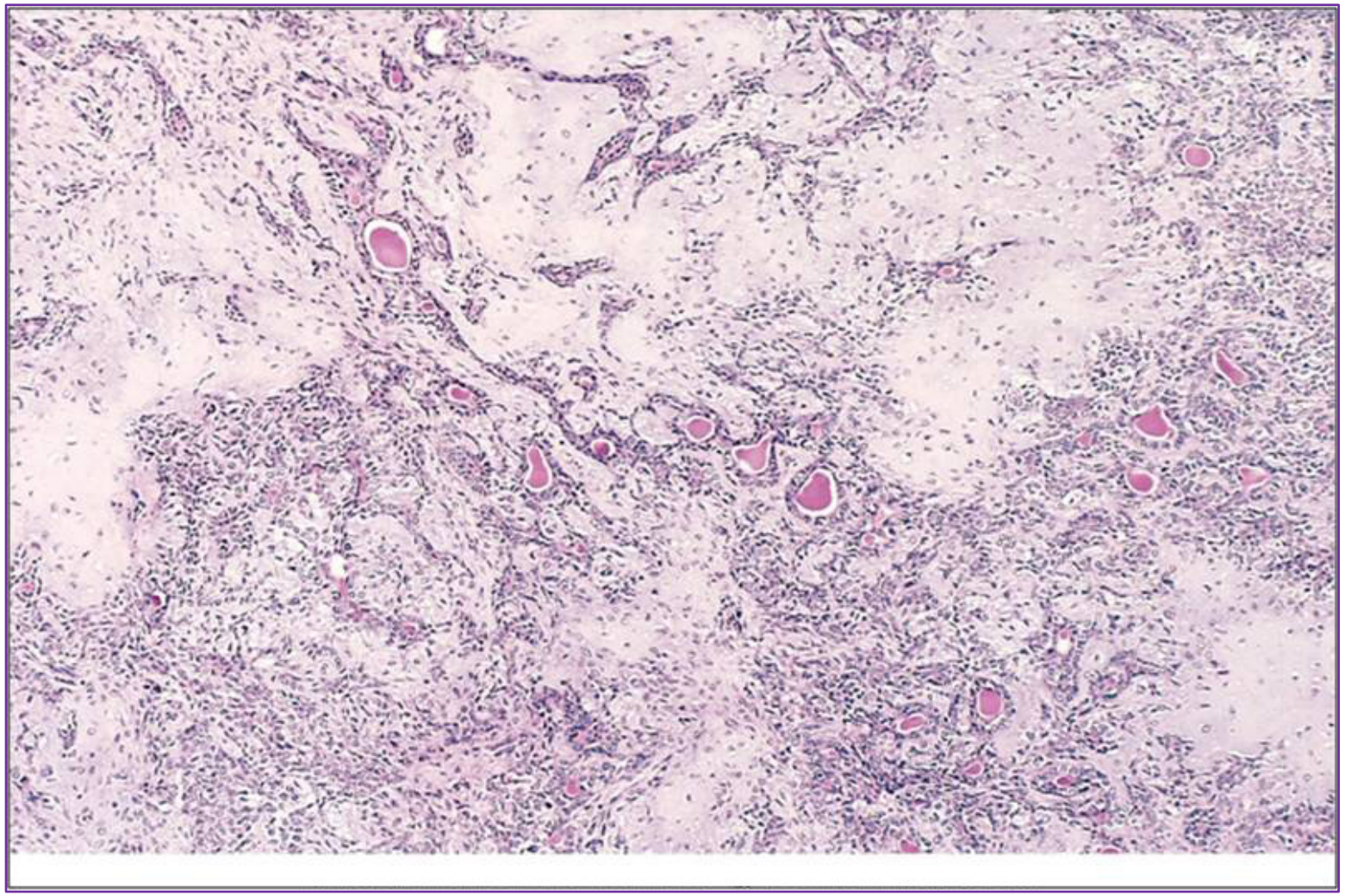


PLEOMORPHIC ADENOMA (MIXED TUMOR)



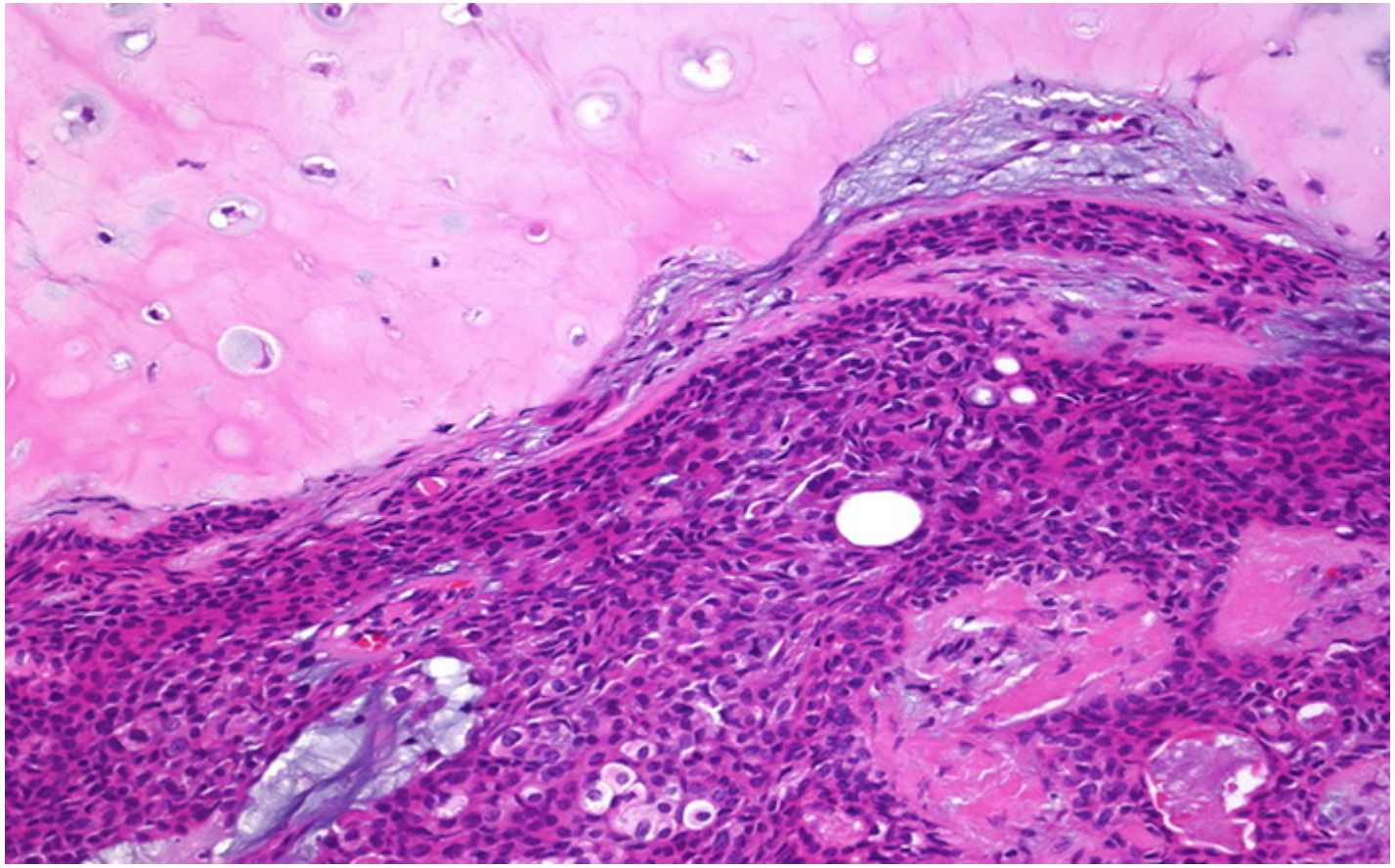
Mixed tumors are generally benign, have BOTH connective tissue (i.e., usually cartilagenous) components as well as glandular components, hence the name pleomorphic or mixed, they generally look and feel like little round soft cartilage balls.

PLEOMORPHIC ADENOMA - Microscopically



Mixed tumor of the parotid gland contains epithelial cells forming ducts, myoepithelial cells and chondromyxoid stroma

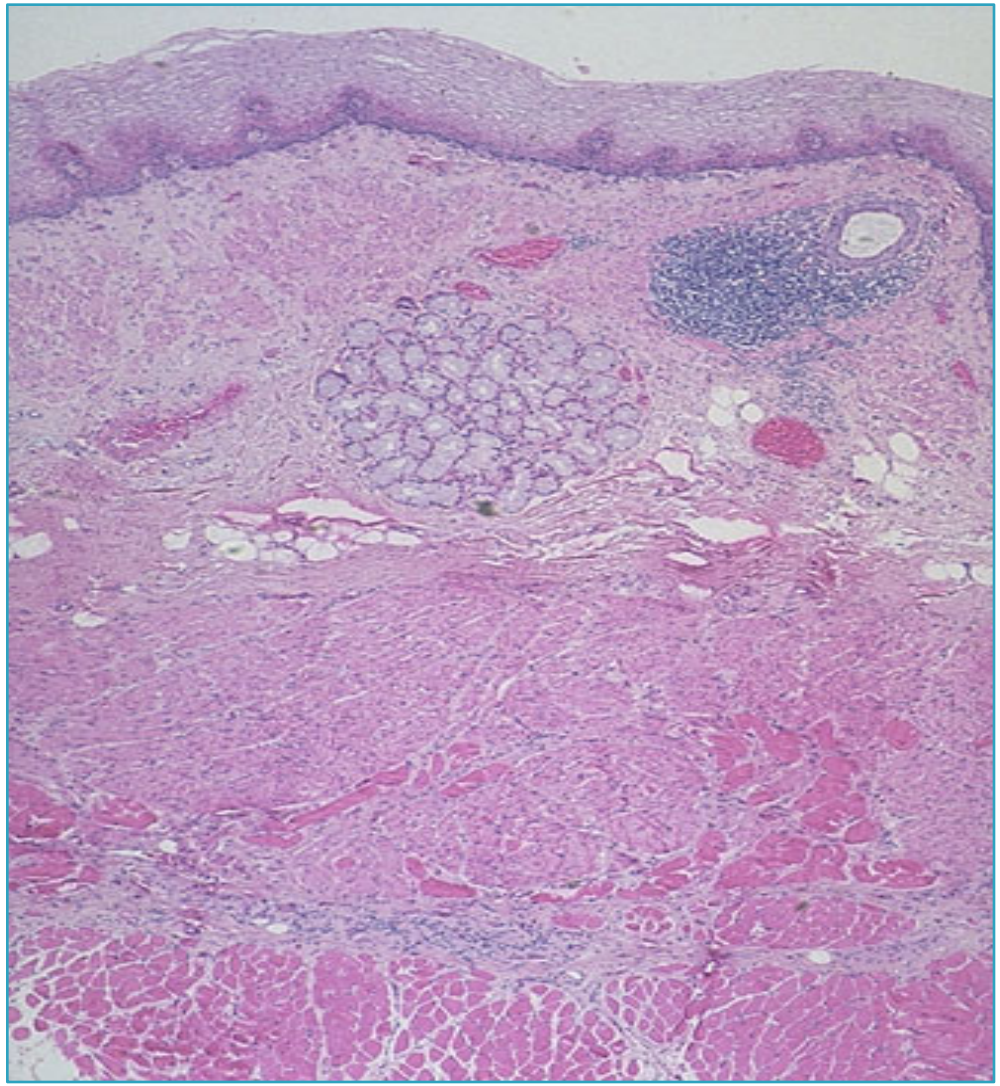
PLEOMORPHIC ADENOMA - Microscopically



Tumour shows mixed cellular components like epithelial, myoepithelial, chondriod and myxoid elements. Epithelial areas shows small ducts, acini and strands or sheets of cells. Myxoid areas are formed of loose myxomatous tissue and chondroid areas consist of pale blue matrix.

ESOPHAGUS

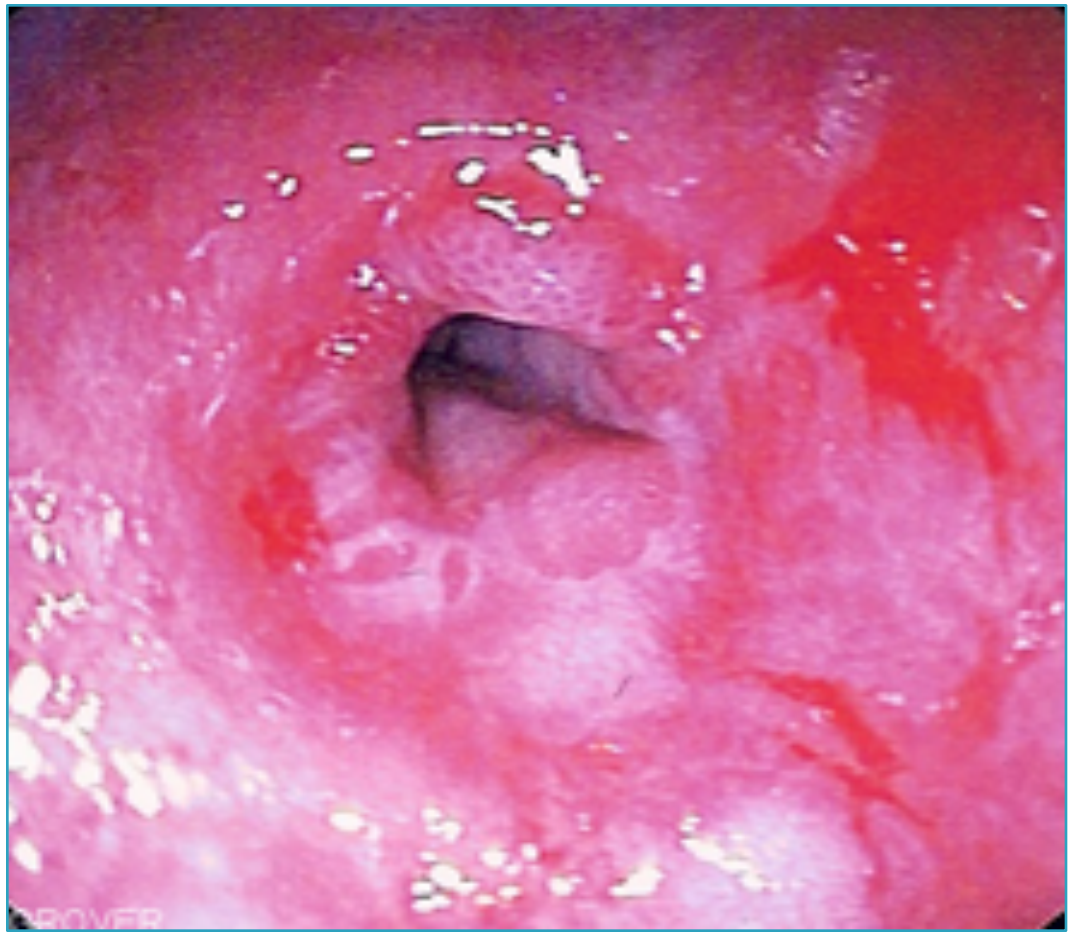
Histology of Normal Esophagus



This is normal esophageal squamous mucosa at the left, with underlying submucosa containing mucus glands and a duct surrounded by lymphoid tissue. The muscularis is at the right.

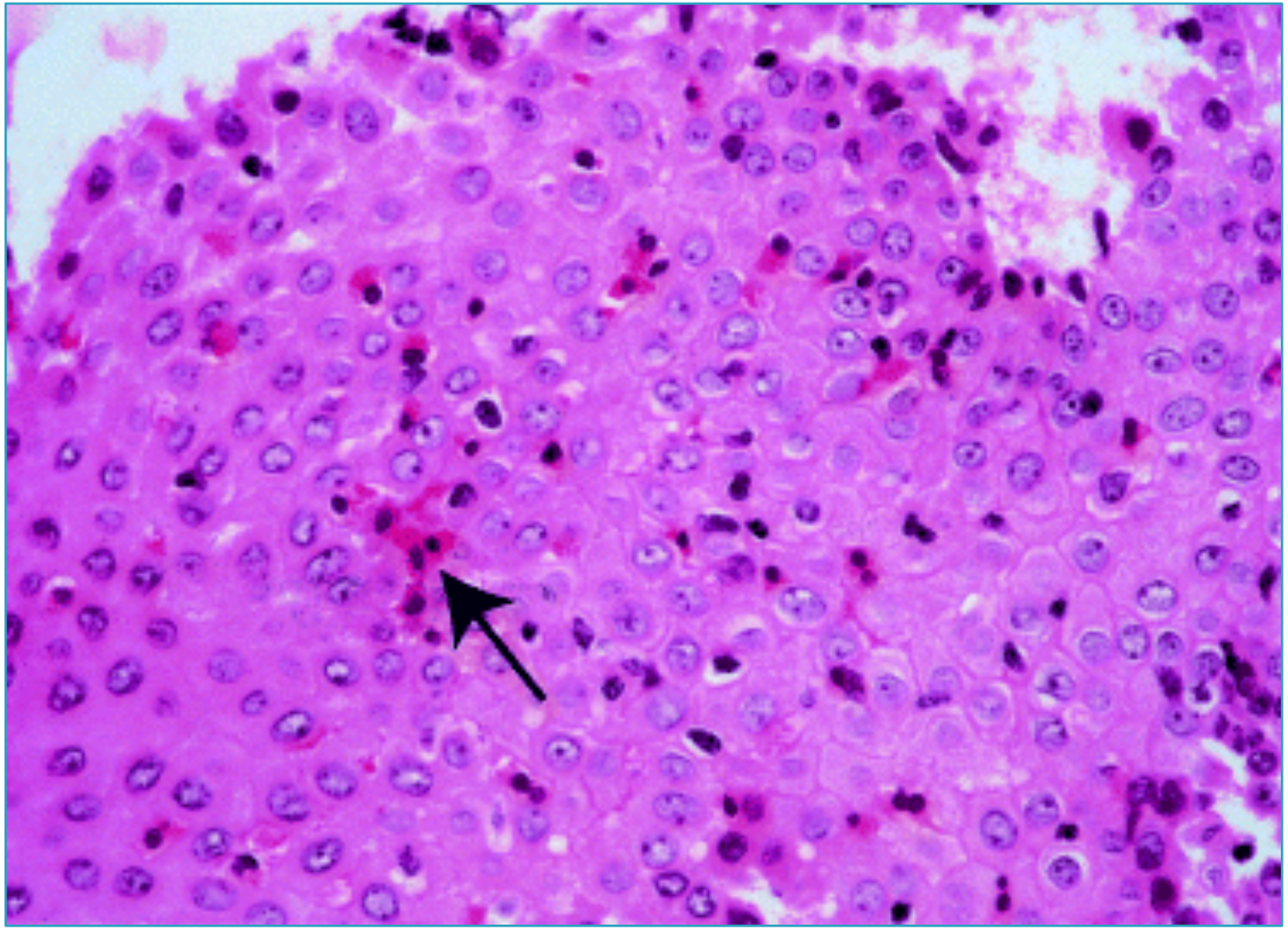
Gross and histopathology

GERD – Endoscopy view



Reflux esophagitis – necrosis of esophageal epithelium causing ulcers near the junction of the stomach and esophagus

GERD – Microscopically HPF

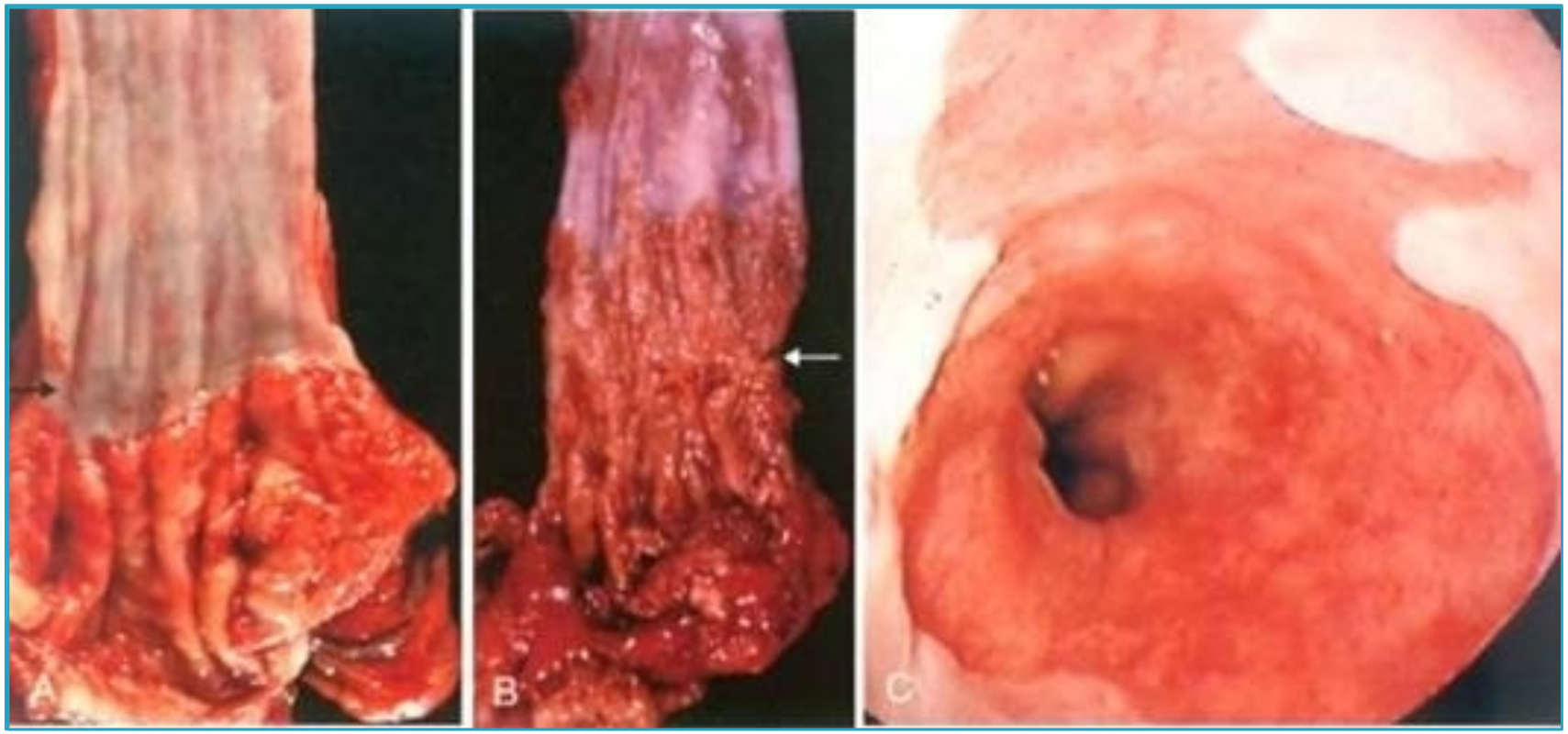


Intraepithelial eosinophils (arrow) and basal cell hyperplasia (high power, H/E stain).

GASTROESOPHAGEAL REFLUX DISEASE (GERD)

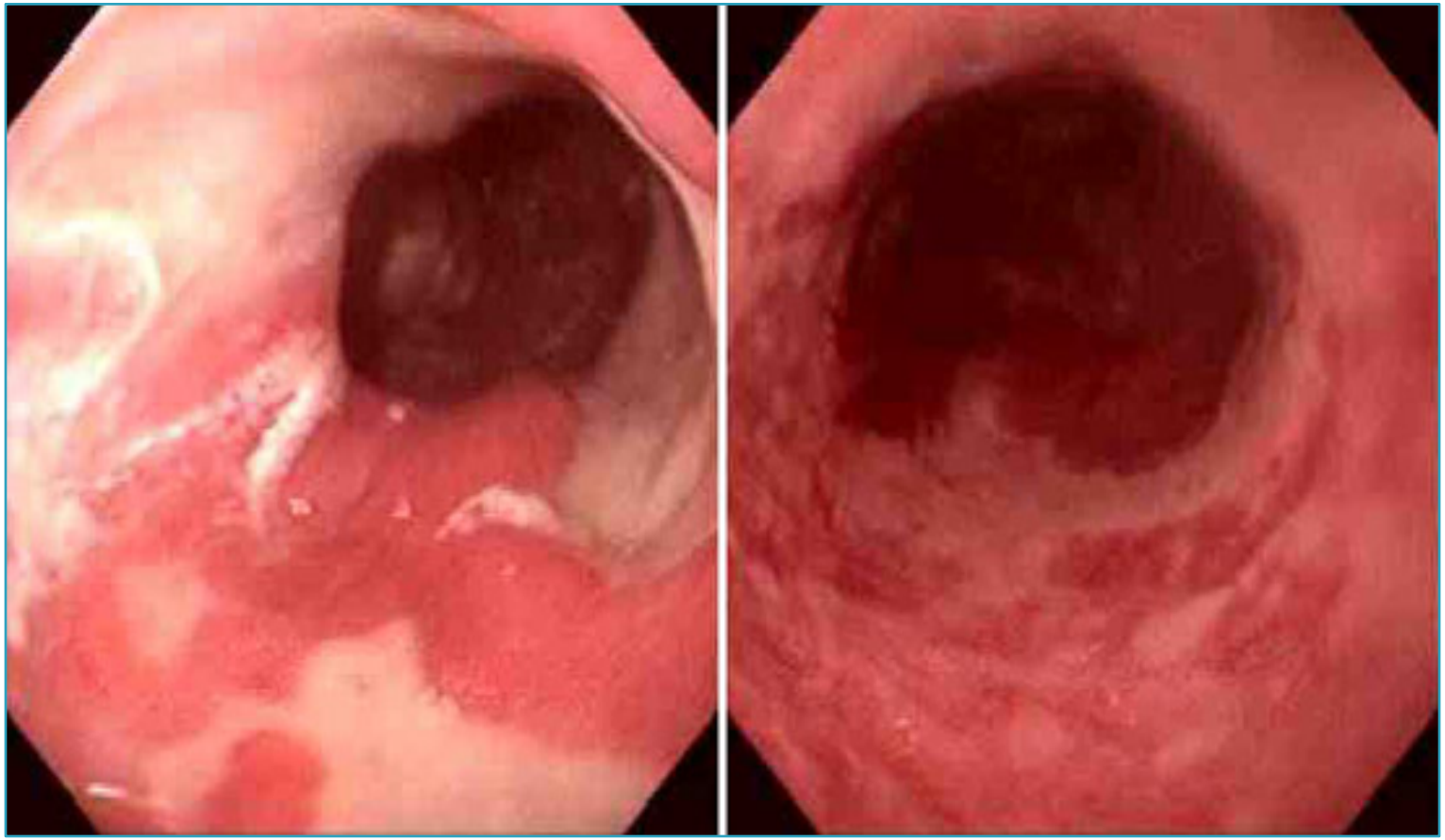
- **Inflammatory Cells:**
  - *Eosinophils*
  - *Neutrophils*
  - *Lymphocytes*
- **Basal zone hyperplasia**
- **Lamina Propria papillae elongated and congested**

BARRETT'S ESOPHAGUS



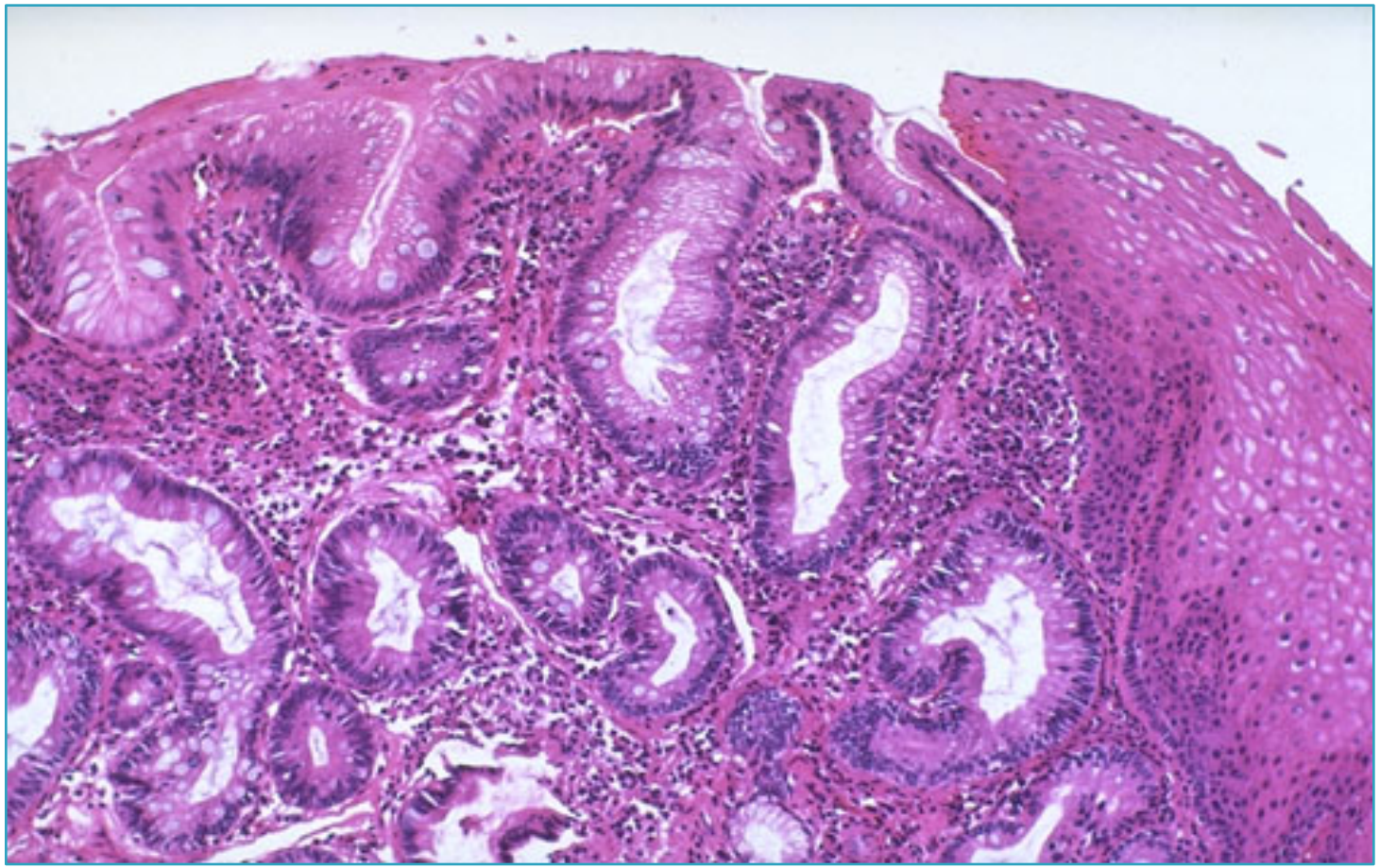
Intestinalized metaplastic mucosa is at risk for glandular dysplasia. Searching for dysplasia when BARRETT's is present is of utmost importance. Most/All adenocarcinomas arising in the esophagus arise from previously existing BARRETT's . Newly named Columnar lined esophagus

Barrett's Esophagus – Endoscopic view



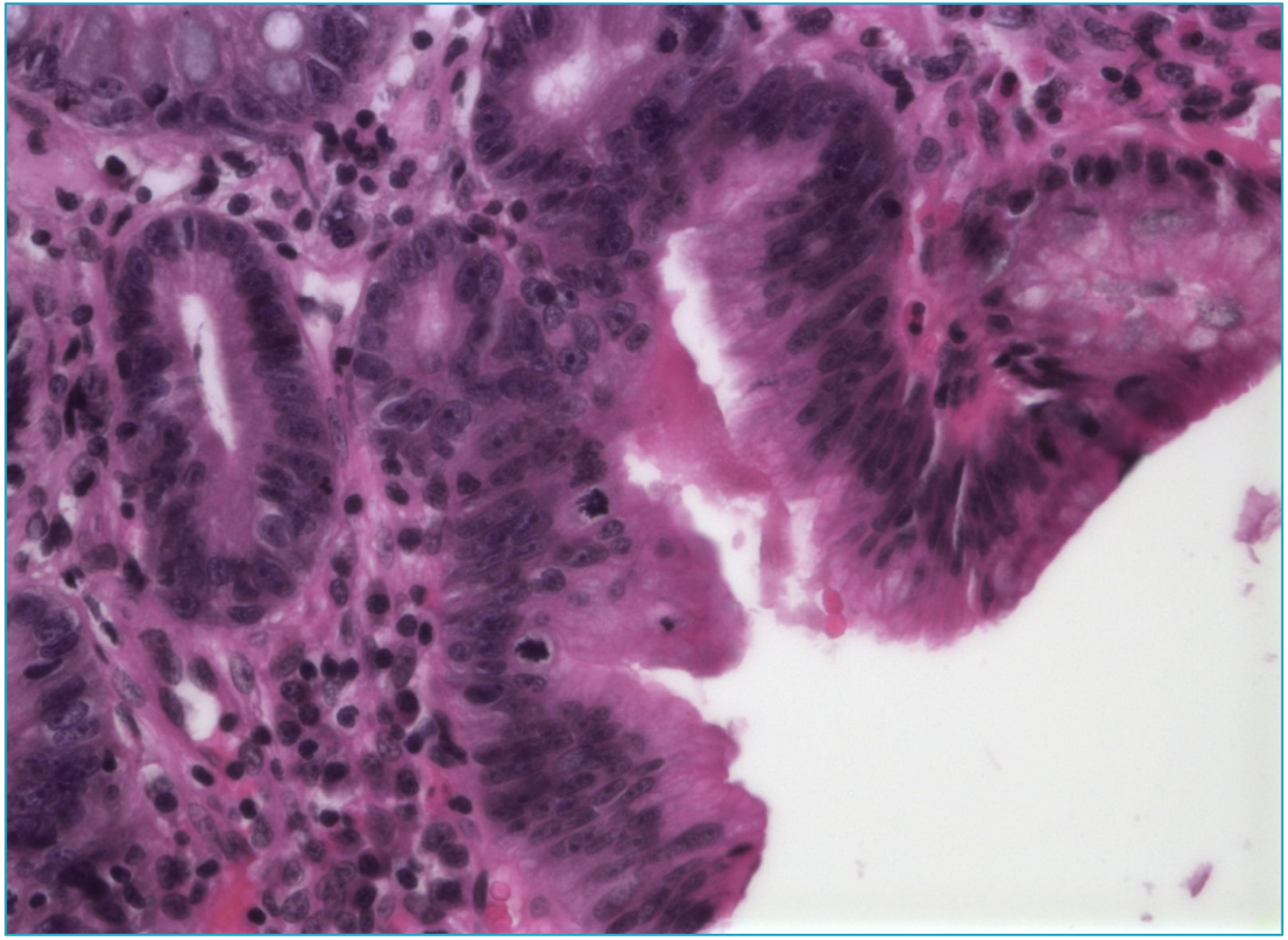
These two endoscopic views demonstrate Barrett esophagus areas of mucosal erythema of the lower esophagus, with islands of normal pale esophageal squamous mucosa.

Barrett's esophagus – Microscopic view

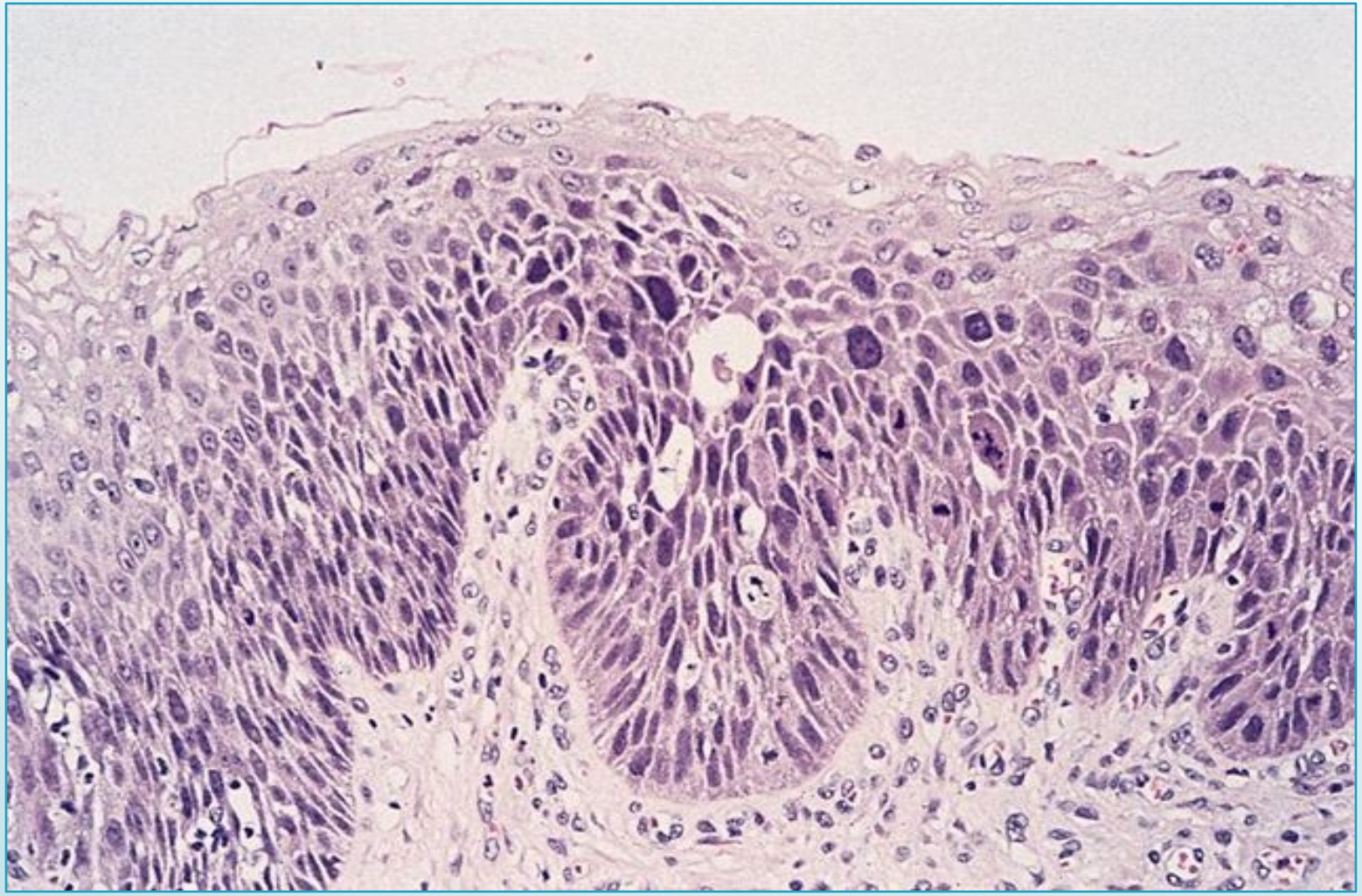


There is gastric-type mucosa above the gastroesophageal junction. Note the columnar epithelium to the left and the squamous epithelium at the right. Typical Barrett's mucosa shows intestinal metaplasia with chronic inflammation (note the goblet cells in the columnar mucosa).

Glandular " Dysplasia" - HPF



Squamous Dysplasia of the Esophagus - HPF



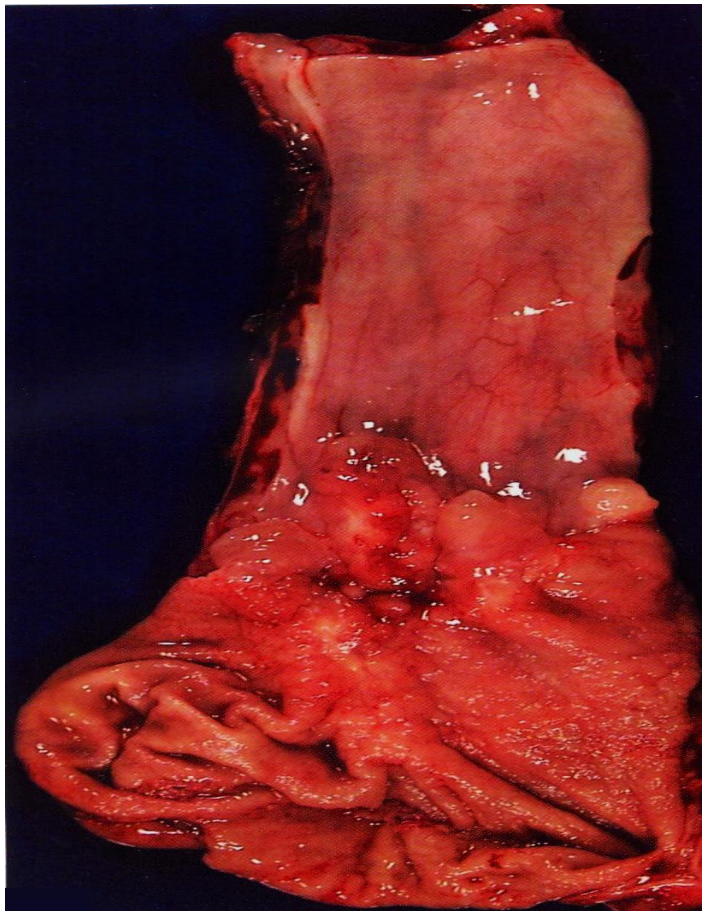
Squamous dysplasia of the esophagus may develop with time into squamous cell carcinoma

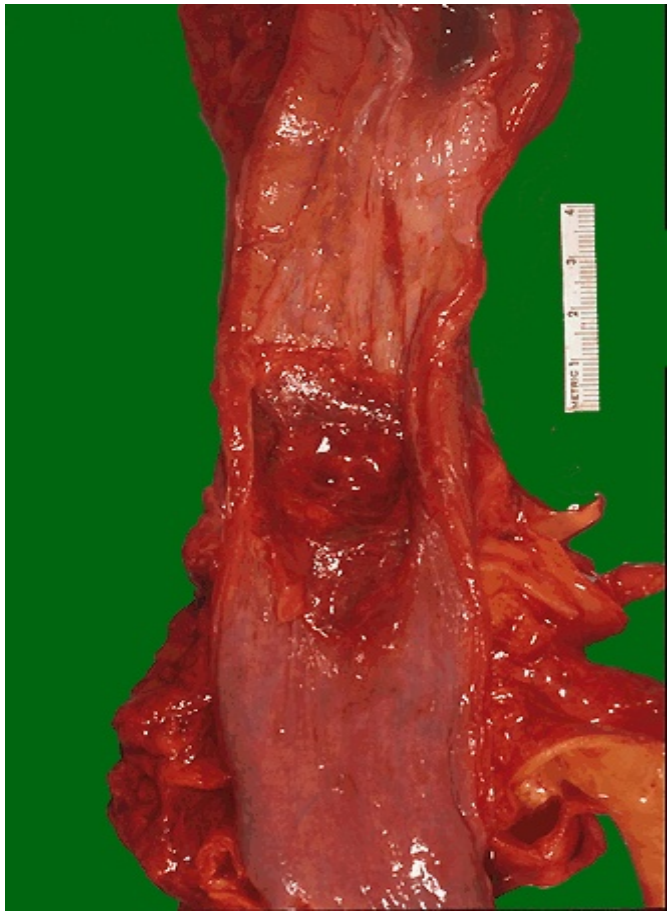
Carcinoma of the esophagus

Carcinoma of the Esophagus - Gross

This gross photograph illustrates a squamous cell carcinoma of the esophagus in a patient who presented with progressive dysphagia. The oval structure adjacent to the esophagus represents metatastic squamous cell carcinoma within a lymph node.

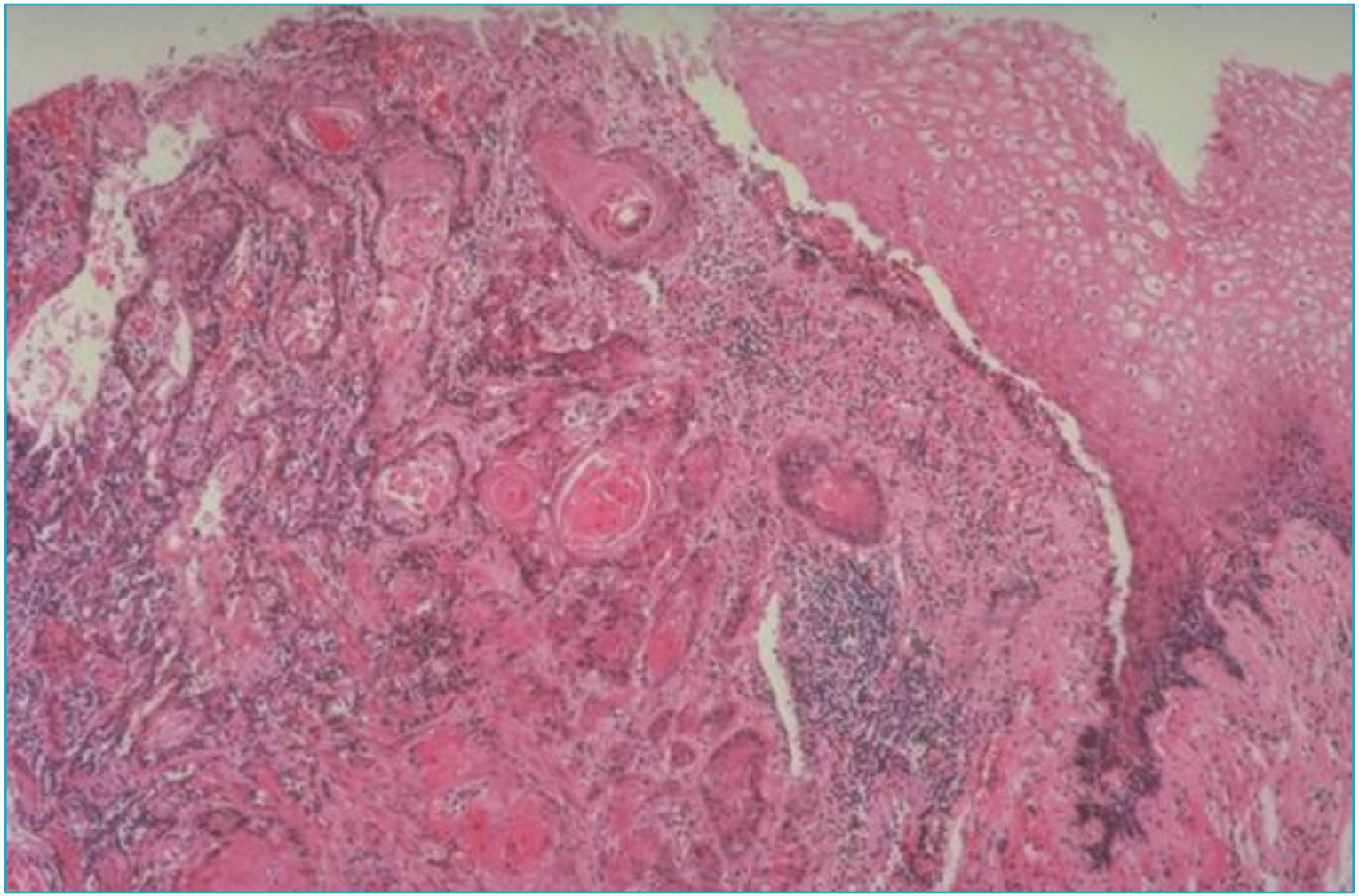
Carcinoma of the Esophagus - Gross





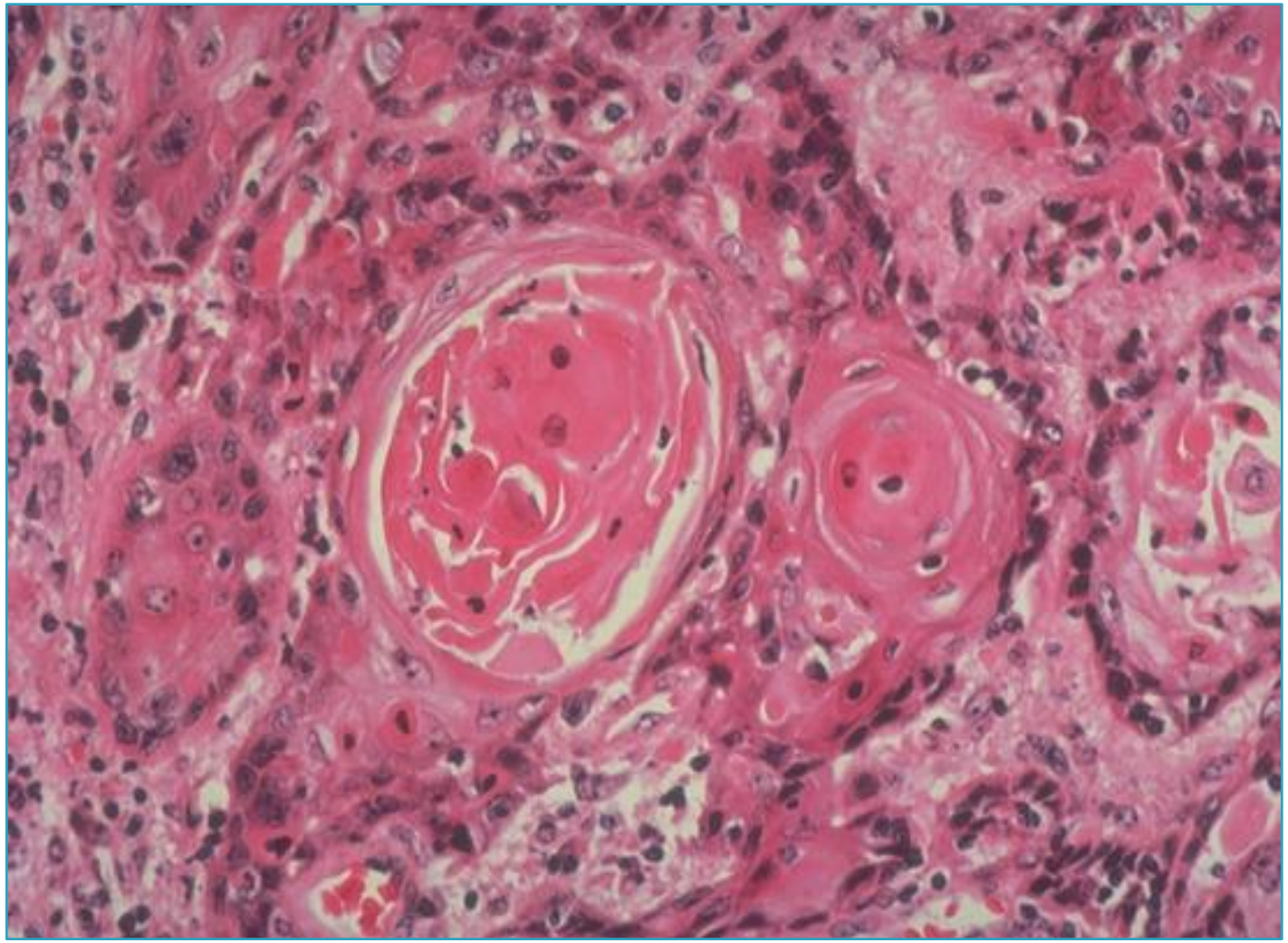
This irregular reddish, ulcerated exophytic mid-esophageal mass as seen on the mucosal surface is a squamous cell carcinoma. Endoscopic views of an ulcerated mid-esophageal squamous cell carcinoma causing luminal stenosis .

Squamous Cell Carcinoma of the Esophagus - LPF



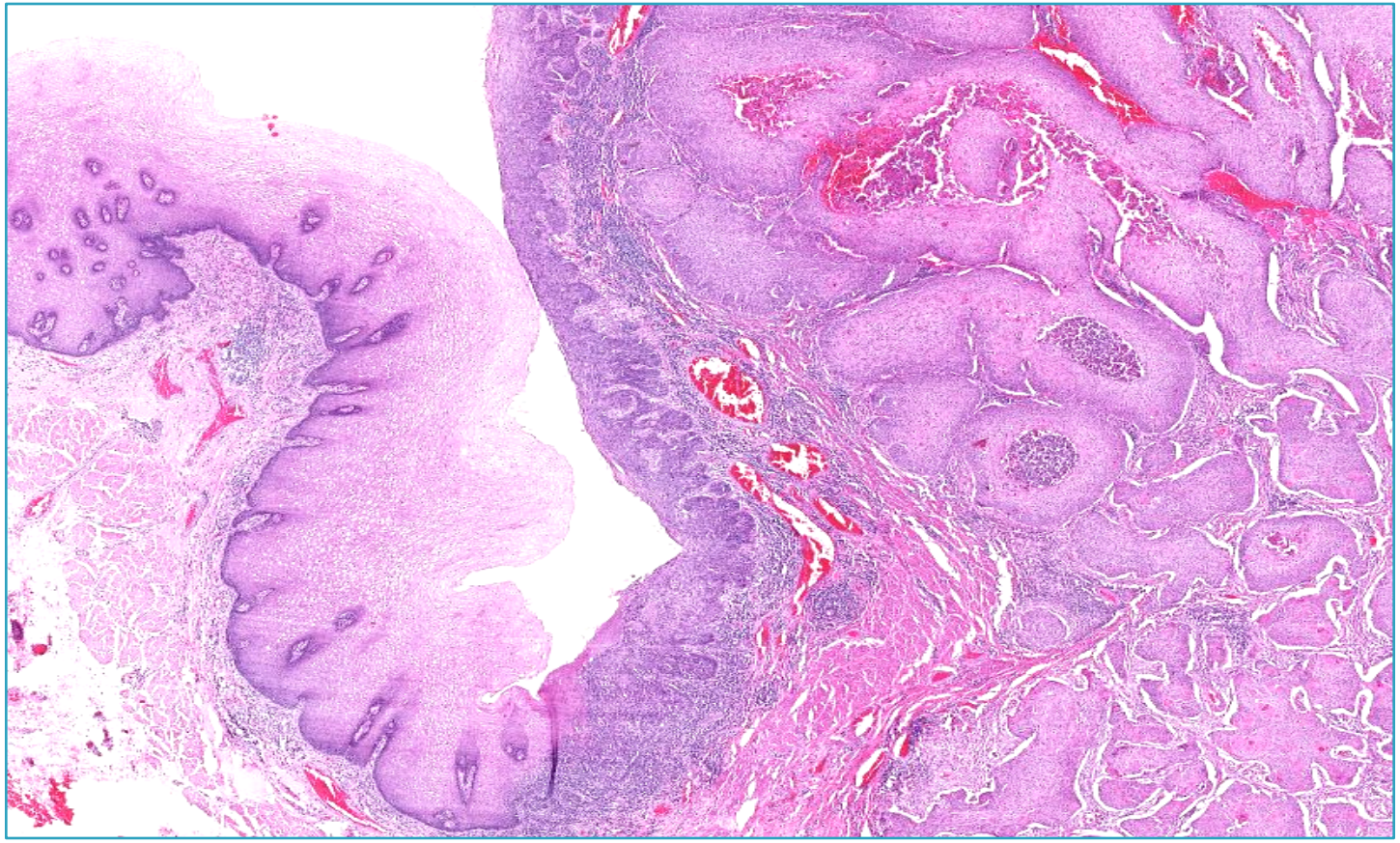
Infiltrating nests of neoplastic cells

Squamous Cell Carcinoma of the Esophagus - HPF



Solid nests of neoplastic cells having abundant pink cytoplasm and distinct cell borders

Squamous Dysplasia of the Esophagus - LPF

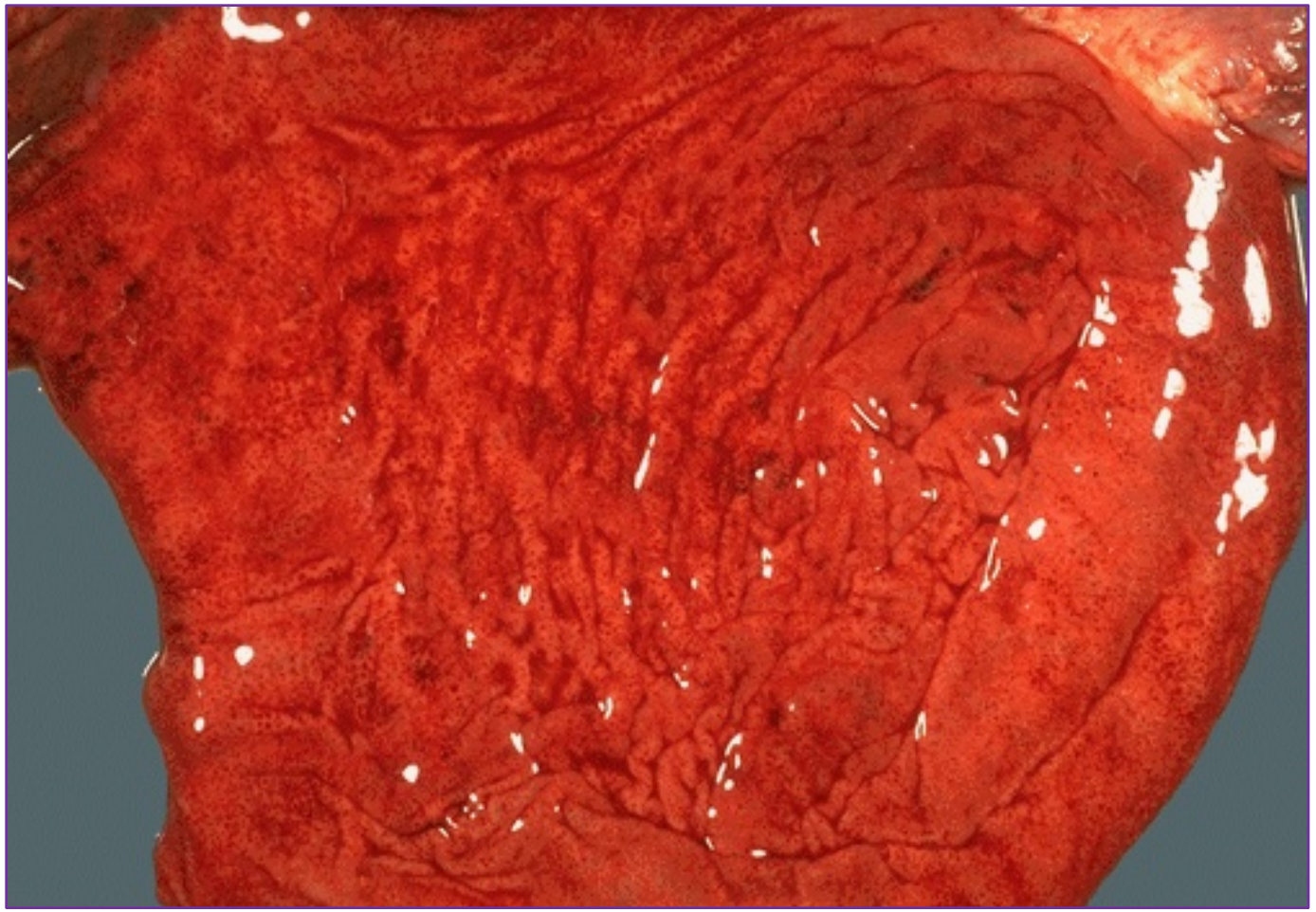


There are atypical squamous cells with disorganized architecture and abnormal differentiation within the epithelium. These features are obvious in high grade dysplasia. The nuclei are larger and more hyperchromatic than normal, and there is increased mitotic activity

STOMACH

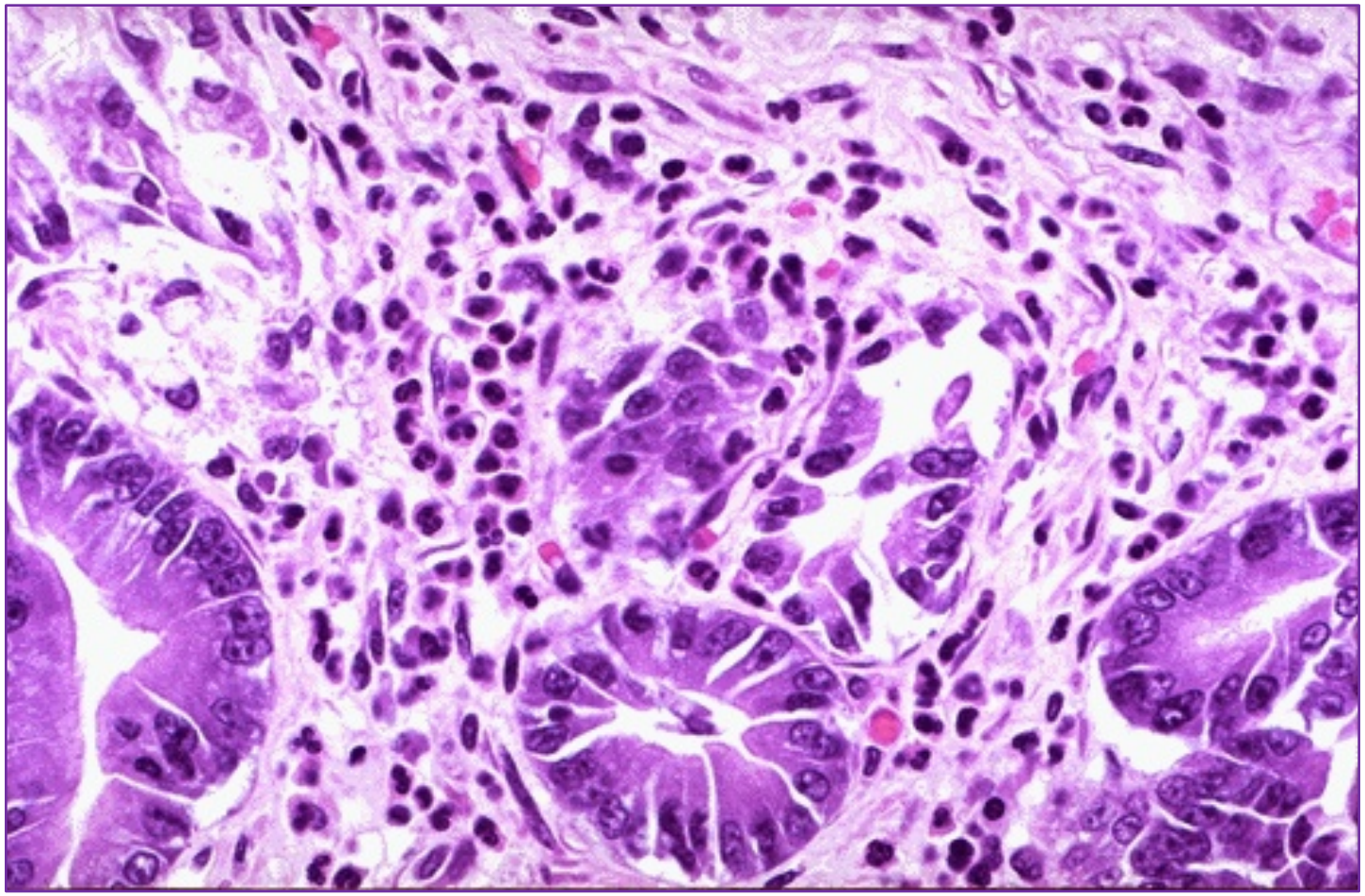
ACUTE GASTRITIS

Acute Gastritis – Gross endoscopic view



This is a more typical acute gastritis with a diffusely hyperemic gastric mucosa. There are many causes for acute gastritis: alcoholism, drugs, infections, etc.

Acute Gastritis - HPF

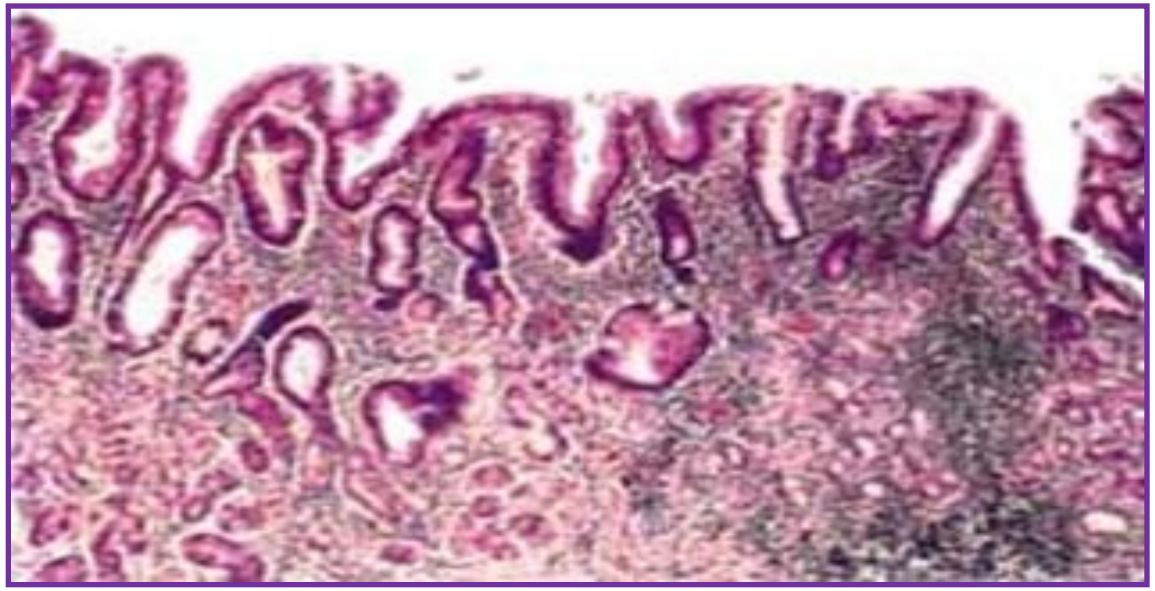


Acute gastritis: At high power, gastric mucosa demonstrates infiltration by neutrophils..

CHRONIC GASTRITIS

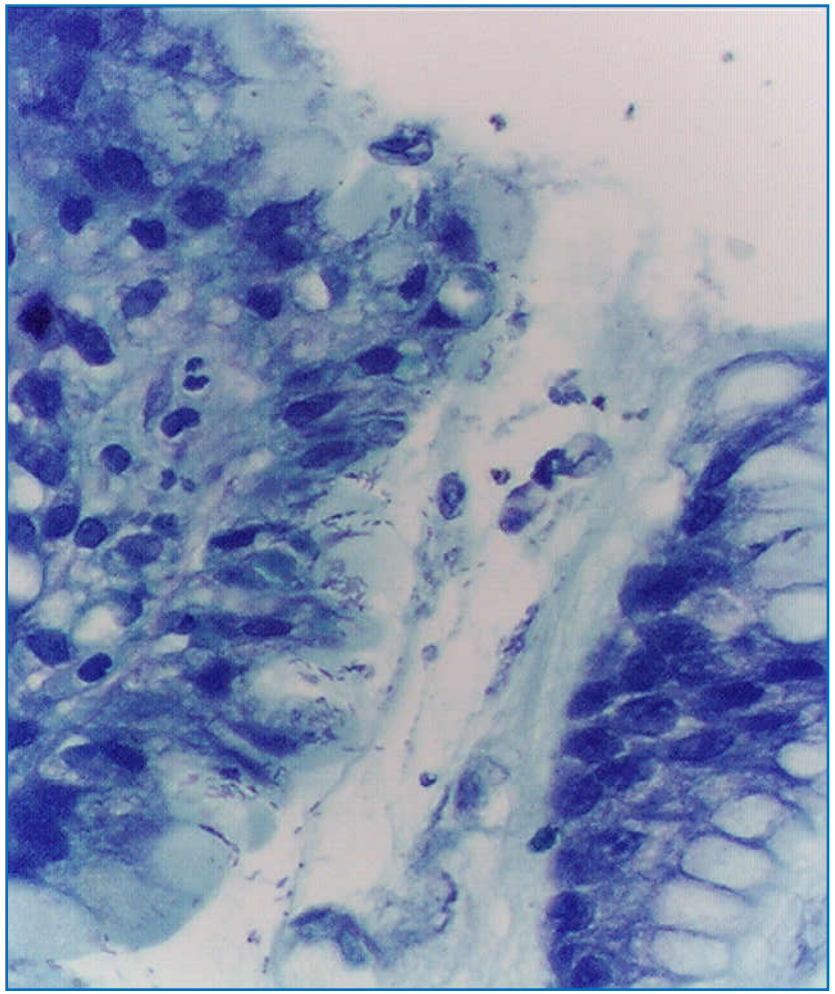
Chronic Gastritis

- ***CHRONIC*, NO EROSIONS, NO HEMORRHAGE**
- ***PERHAPS SOME NEUTROPHILS***
- ***LYMPHOCYTES, LYMPHOID FOLLICLES***
- ***REGENERATIVE CHANGES***
  - ***METAPLASIA* (Intestinal)**
  - ***ATROPHY* : Mucosal Hypoplasia, "thinning"**
  - ***DYSPLASIA***



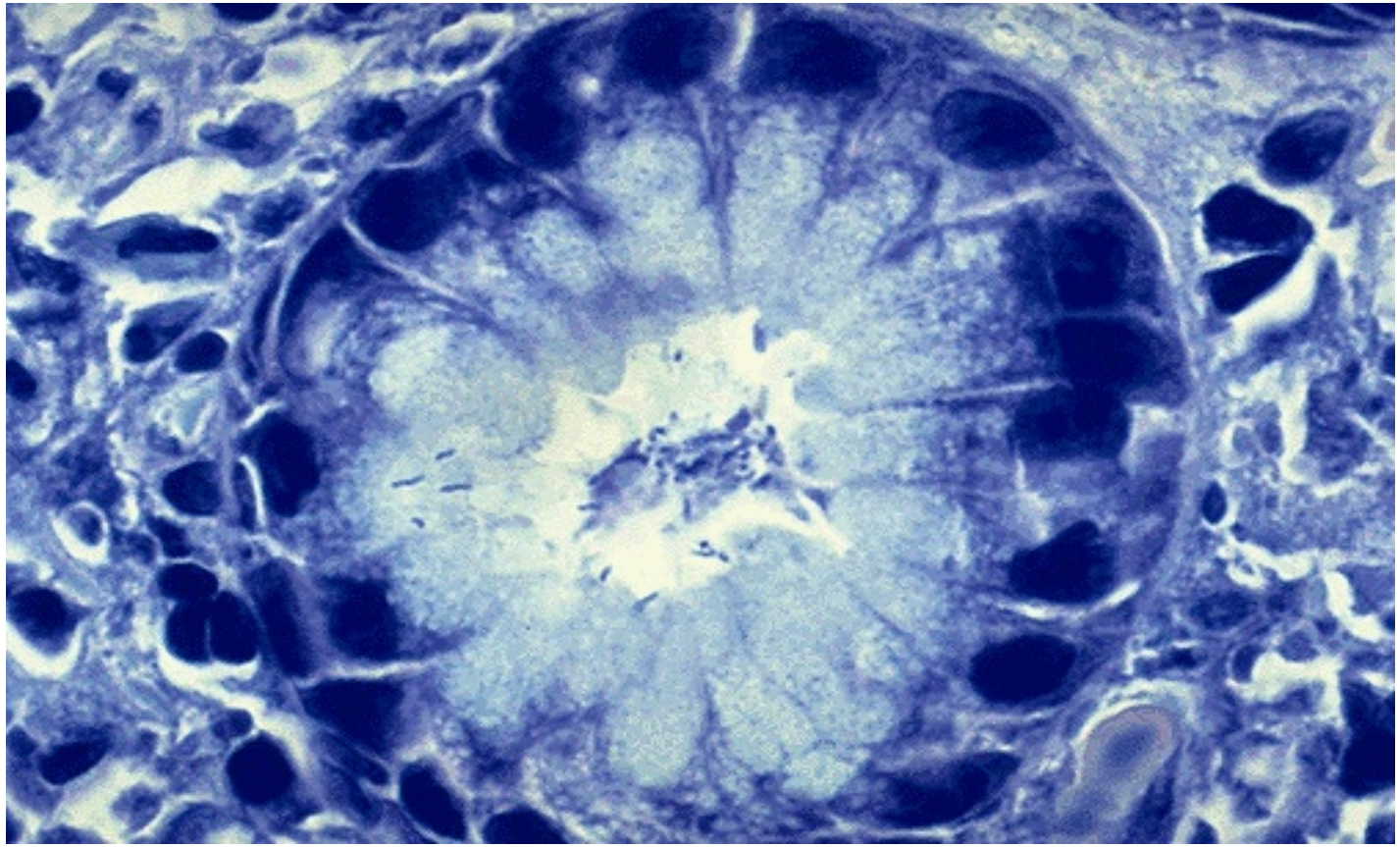
GASTRITIS :
Helicobacter-induced

Helicobacter pylori



Helicobacter pylori, gastric biopsy:
Silver stain on left, Giemsa stain on right.

Helicobacter pylori in stomach – Microscopic view

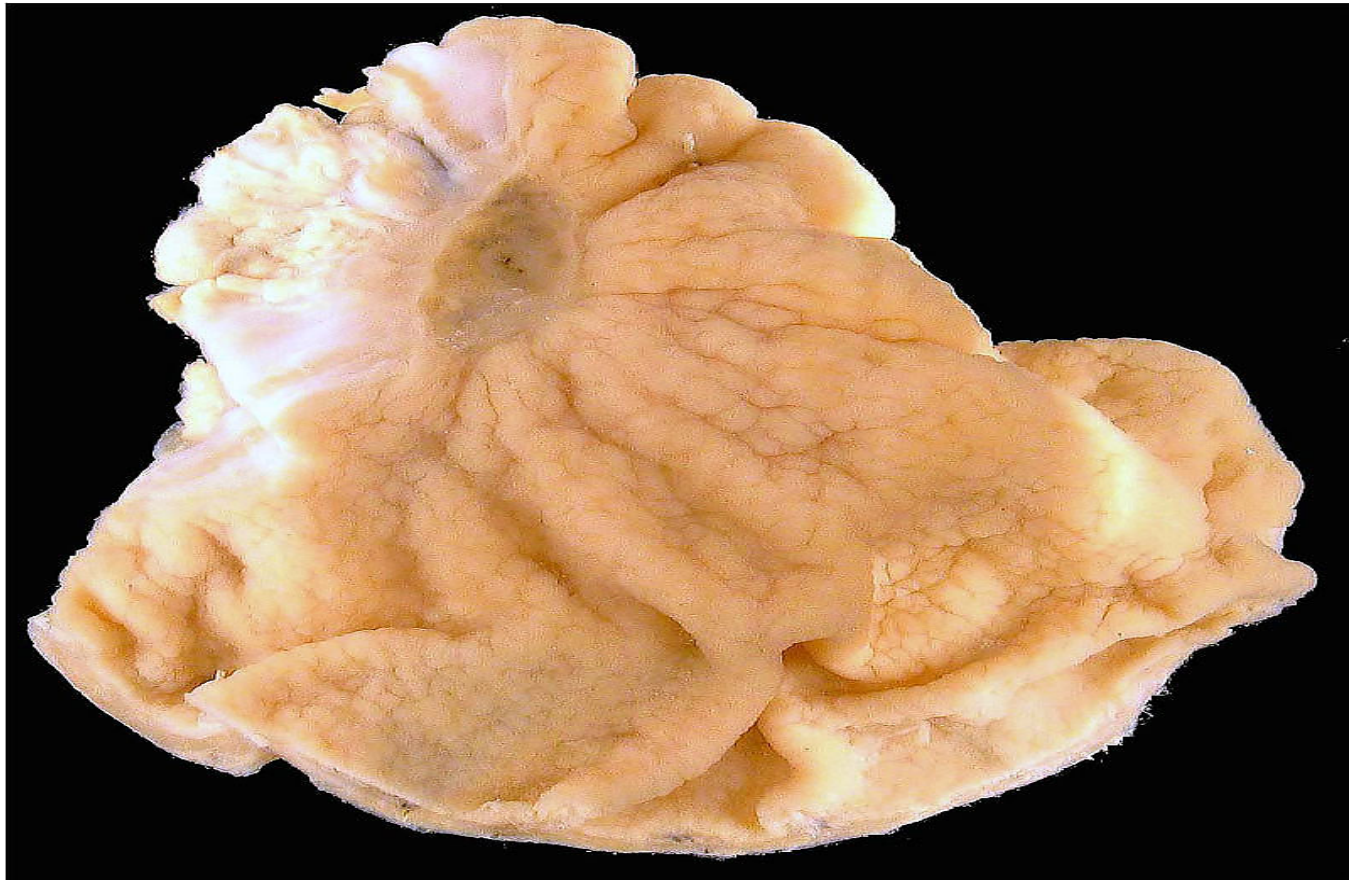


Gastritis is often accompanied by infection with Helicobacter pylori. This small curved to spiral rod-shaped bacterium is found in the surface epithelial mucus of most patients with active gastritis. The rods are seen here with a methylene blue stain

Peptic Ulcers

- "PEPTIC" implies acid cause/aggravation
- Ulcer vs. Erosion (muscularis mucosa intact)
- Mucosa → Submucosa→ Muscularis → Serosa
- Chronic, solitary (usually), adults
- 80% caused by H. pylori
- NSAIDs
- Stress

Peptic Ulcer - Gross



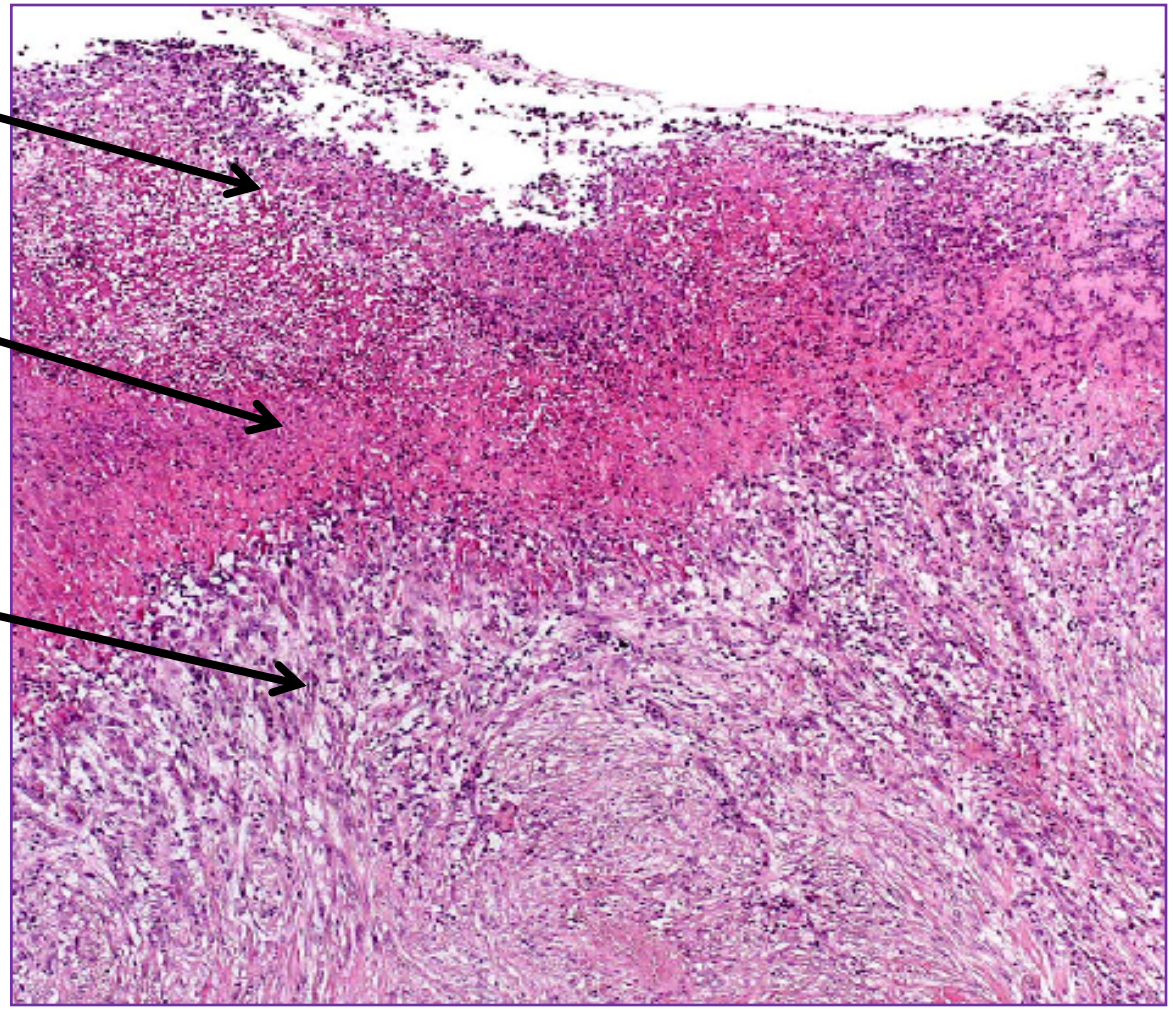
The specimen consists of an irregular portion of gastric wall. The ulcer is oval in shape and deeply penetrating. Necrotic debris covers the base. The specimen has been cut to show the submucosa, muscle coat and adventitial connective tissues in the region of the ulcer

Peptic Ulcer: Microscopic

Cellular Debris:
Numerous viable and degenerate polymorphs.

Fibrinoid Necrosis:
Inflammatory cells and granulation tissue.

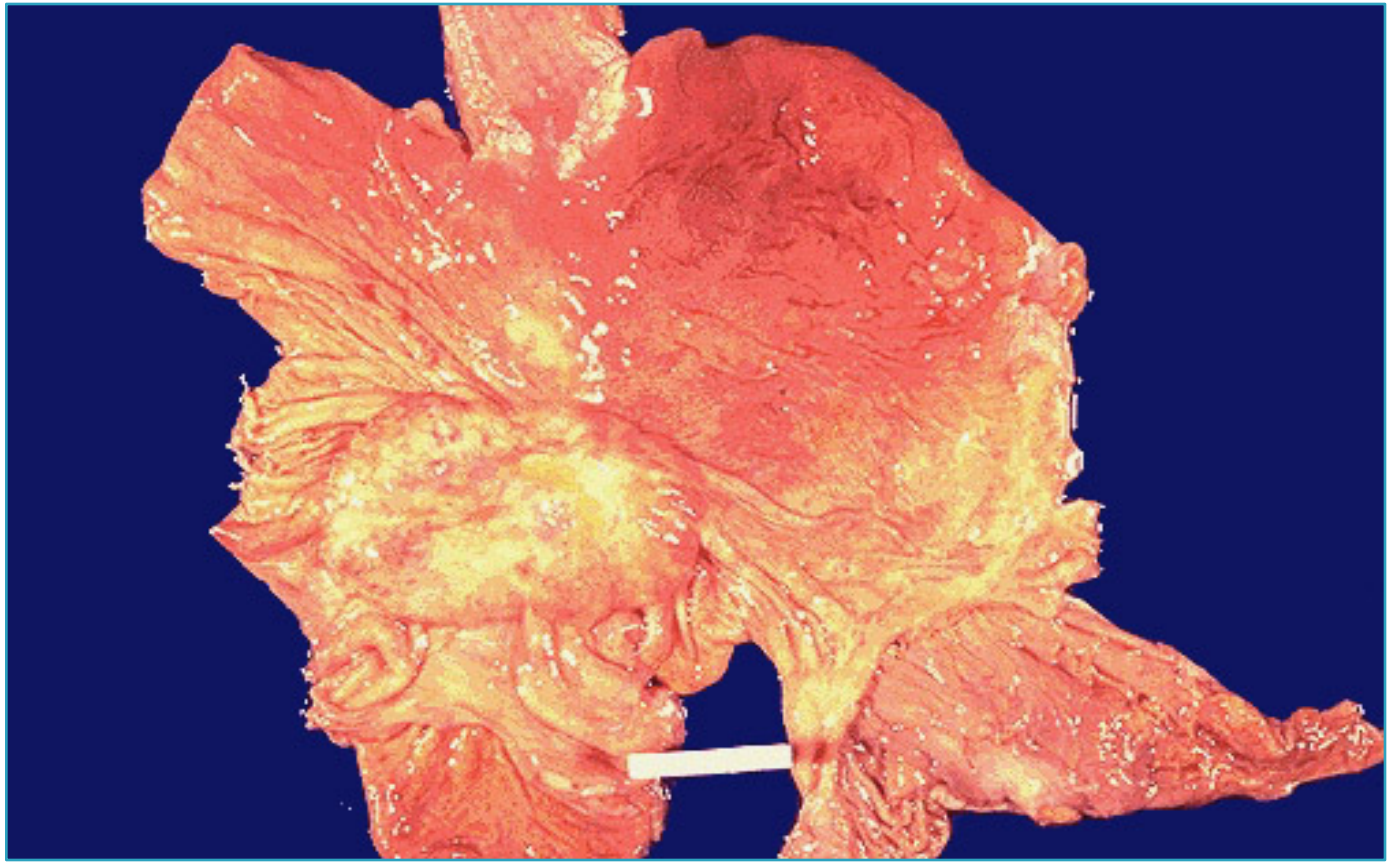
Granulation Tissue:
Variable sized capillary channels are separated by fibroblastic connective tissue heavily infiltrated with lymphocytes, neutrophils, and eosinophils.



Microscopic examination shows the typical features of a chronic peptic ulcer. The ulcer is located in the antrum

CARCINOMA OF THE STOMACH

Gastric Adenocarcinoma - Gross



Gastric Neoplasia is not uncommon. Here is a gastric adenocarcinoma. ALL gastric ulcers and ALL gastric masses must be biopsied, because it is not possible to tell from gross appearance alone which are benign and which are malignant

Gastric Adenocarcinoma with ulcer - Gross

Here is a gastric ulcer in the center of the picture. It is shallow and is about 2 to 4 cm in size. This ulcer on biopsy proved to be malignant, so the stomach was resected as shown here

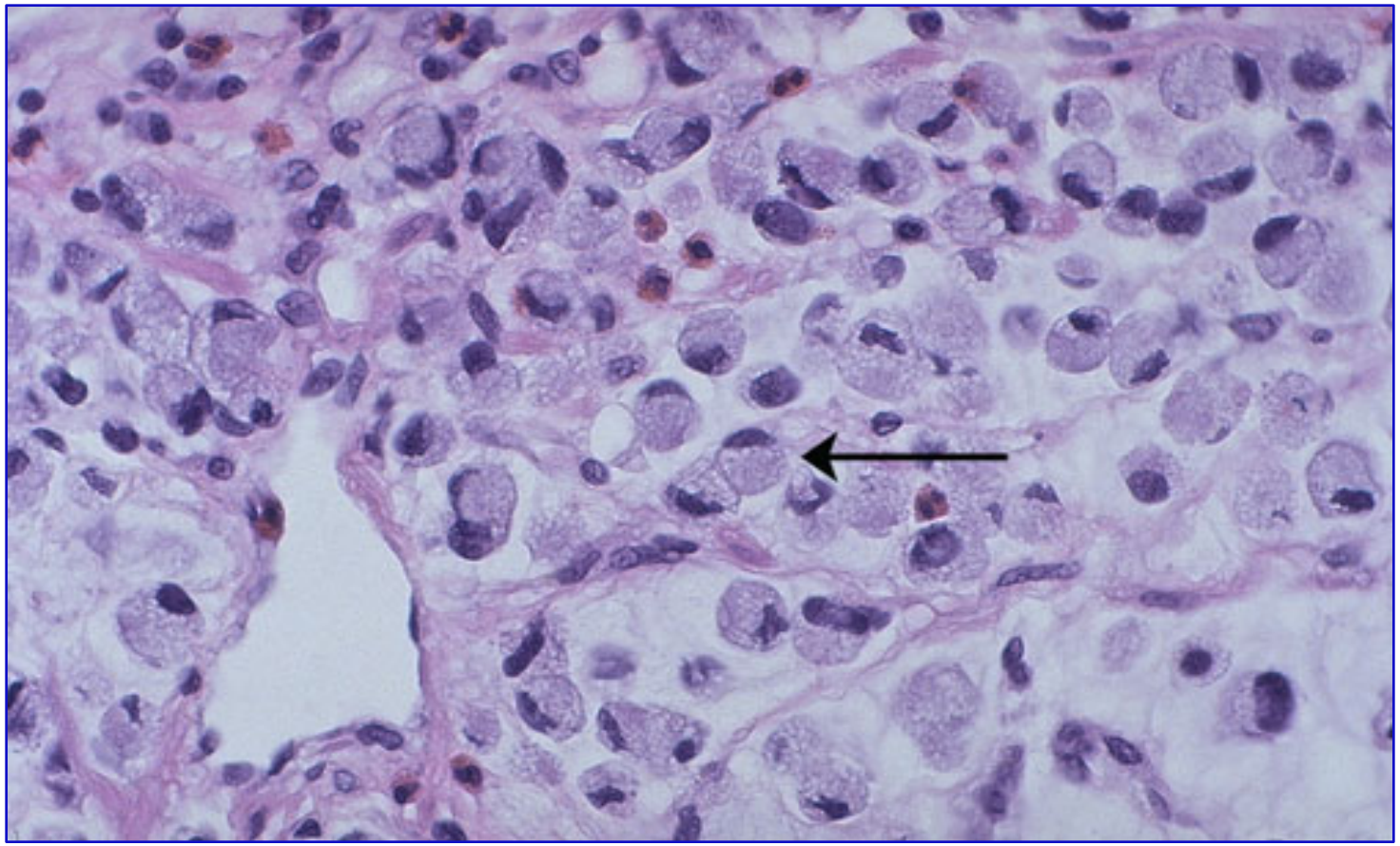
Gastric Adenocarcinoma ; Lentis Plastica- Gross

An example of Linitis Plastica, a diffuse infiltrative gastric adenocarcinoma which gives the stomach a shrunken "leather bottle" appearance with extensive mucosal erosion and a markedly thickened gastric wall. This type of carcinoma has a very poor prognosis

Gastric Adenocarcinoma; Lentis Plastica- Gross

The LINITIS PLASTICA is the most spectacular, and most feared, of all gastric adenocarcinomas. It grows diffusely through all layers of the stomach, greatly thickening its wall, and giving the stomach a classic leather bottle appearance. It has a horrible prognosis.

Gastric Adenocarcinoma- Signet Ring Cell -HPF

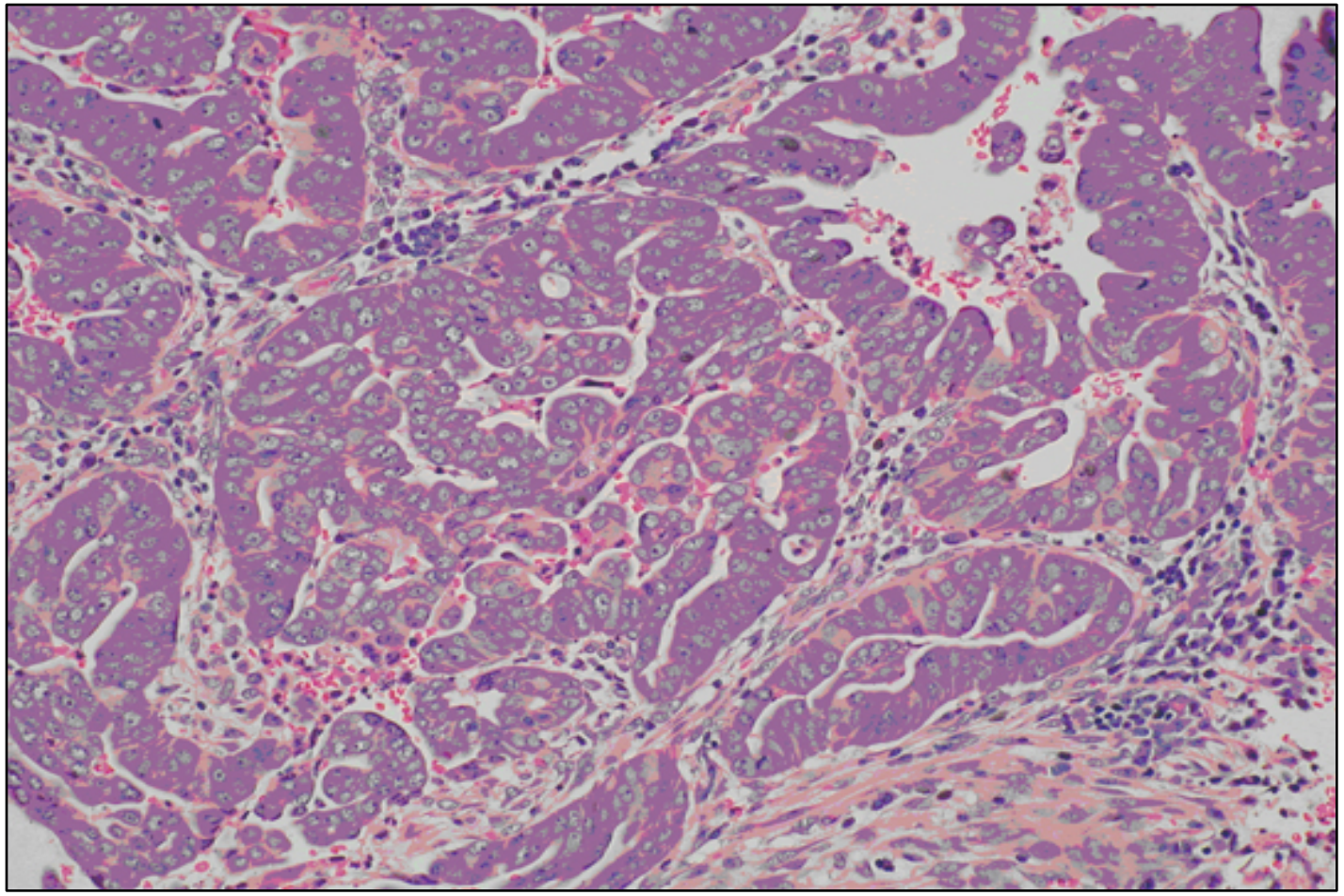


This is a signet ring cell pattern of adenocarcinoma in which the cells are filled with mucin vacuoles that push the nucleus to one side, as shown at the arrow.

Gastric Adenocarcinoma- Signet Ring Cell - HPF

Signet ring cells are poorly differentiated adenocarcinoma cells, and are often seen with Lentis Plastica. Those large "holes" in the cytoplasm represents intracellular mucin which push the nucleus to the periphery giving the cell signet ring appearance .

Gastric Adenocarcinoma- Intestinal type

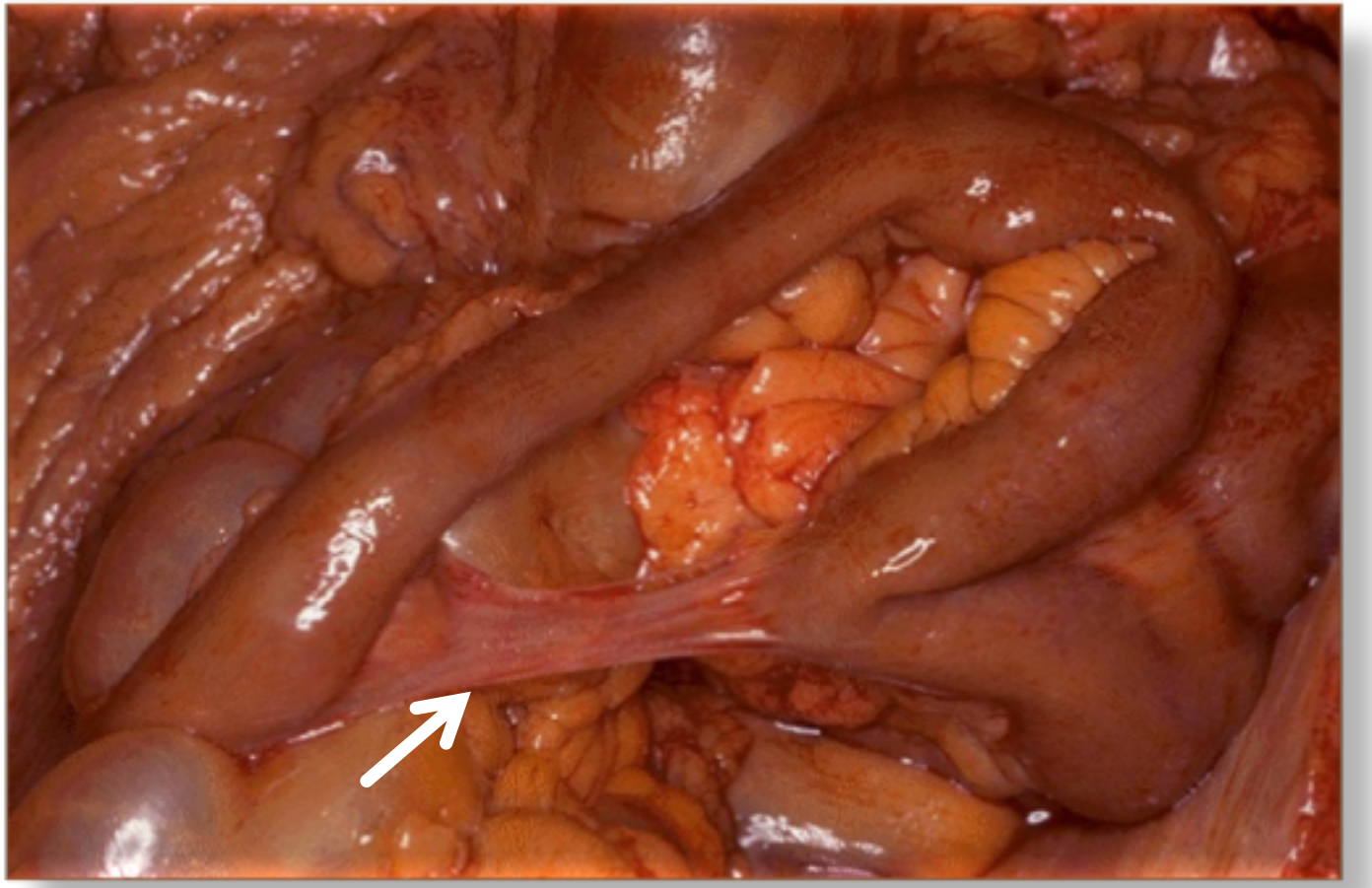


Photomicrograph of a poorly differential intestinal type adenocarcinoma of the stomach

SMALL INTESTINE

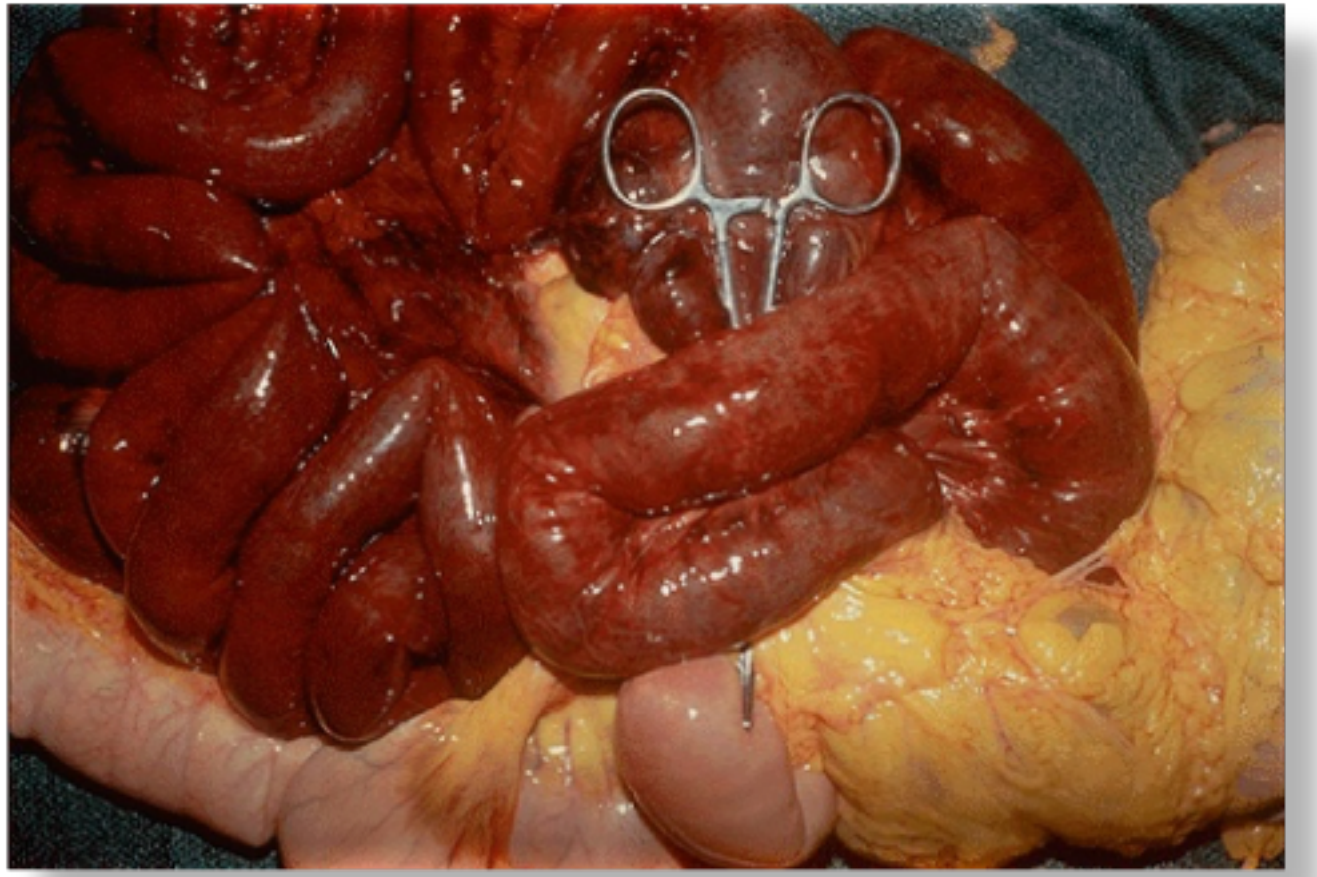
Gross and histopathology

Adhesions, peritoneum, small intestine - Gross



This is an adhesion between loops of small intestine. Such adhesions are typical following abdominal surgery. More diffuse adhesions may also form following peritonitis.

Small intestinal infarction - Gross



The dark red infarcted small intestine contrasts with the light pink viable bowel. The forceps extend through an internal hernia in which a loop of bowel and mesentery has been caught. This is one complication of adhesions from previous surgery. The trapped bowel has lost its blood supply.

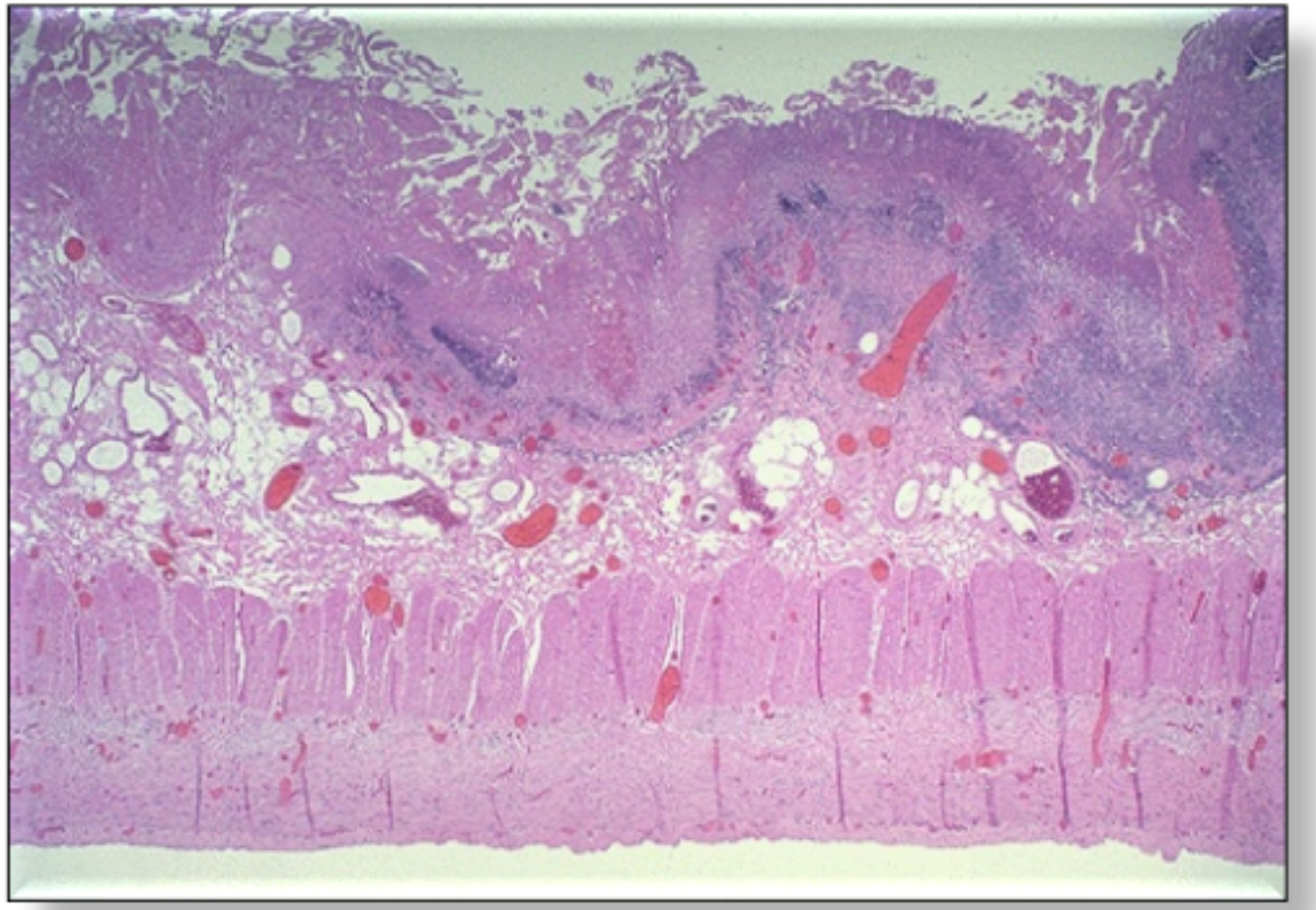
Ischemic Enteritis - Gross

The small intestinal mucosa demonstrates marked hyperemia as a result of ischemic enteritis. Such ischemia most often results from hypotension (shock) from cardiac failure, from marked blood loss, or from loss of blood supply from mechanical obstruction (as with the bowel strangulated in a hernia or with volvulus or intussusception). If the blood supply is not quickly restored, the bowel will infarct.

Ischemic Enteritis – Gross [ENDOSCOPY]

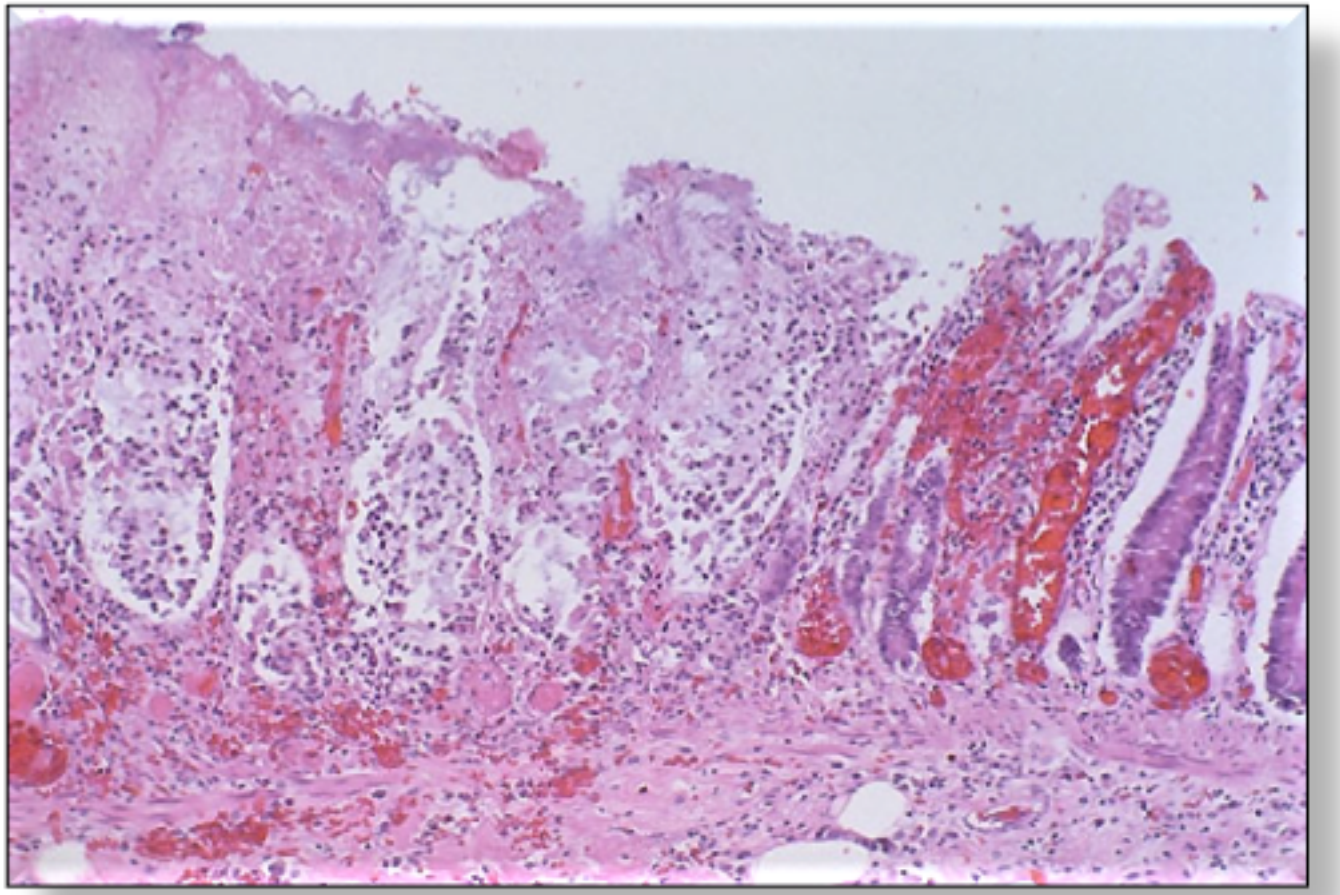
On closer inspection, early ischemic enteritis involves the tips of the villi. In general, bowel is hard to infarct from atherosclerotic vascular narrowing or thromboembolization because of the widely anastomosing blood supply. Thus, most cases of bowel ischemia and infarction result from generalized hypotension and decreased cardiac output.

Ischemic Enteritis – LPF



The mucosal surface of the bowel seen here shows early necrosis with hyperemia extending all the way from mucosa to submucosal and muscular wall vessels. The submucosa and muscularis, however, are still intact.

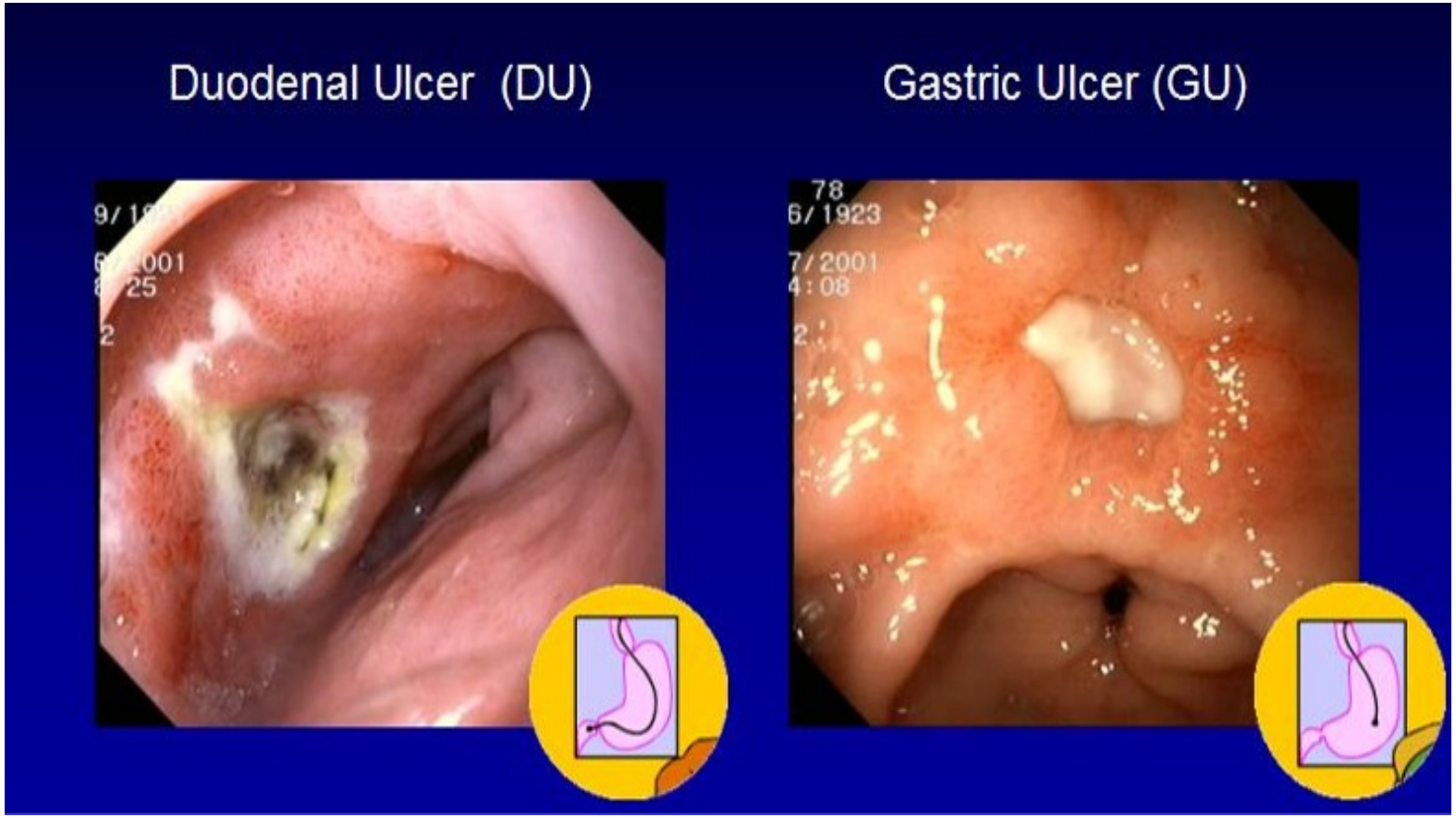
Ischemic Enteritis – MPF



At higher magnification with more advanced necrosis, the small intestinal mucosa shows hemorrhage with acute inflammation in this case of ischemic enteritis.

Chronic duodenal ulcer

Chronic Duodenal Ulcer vs Gastric ulcer – Gross

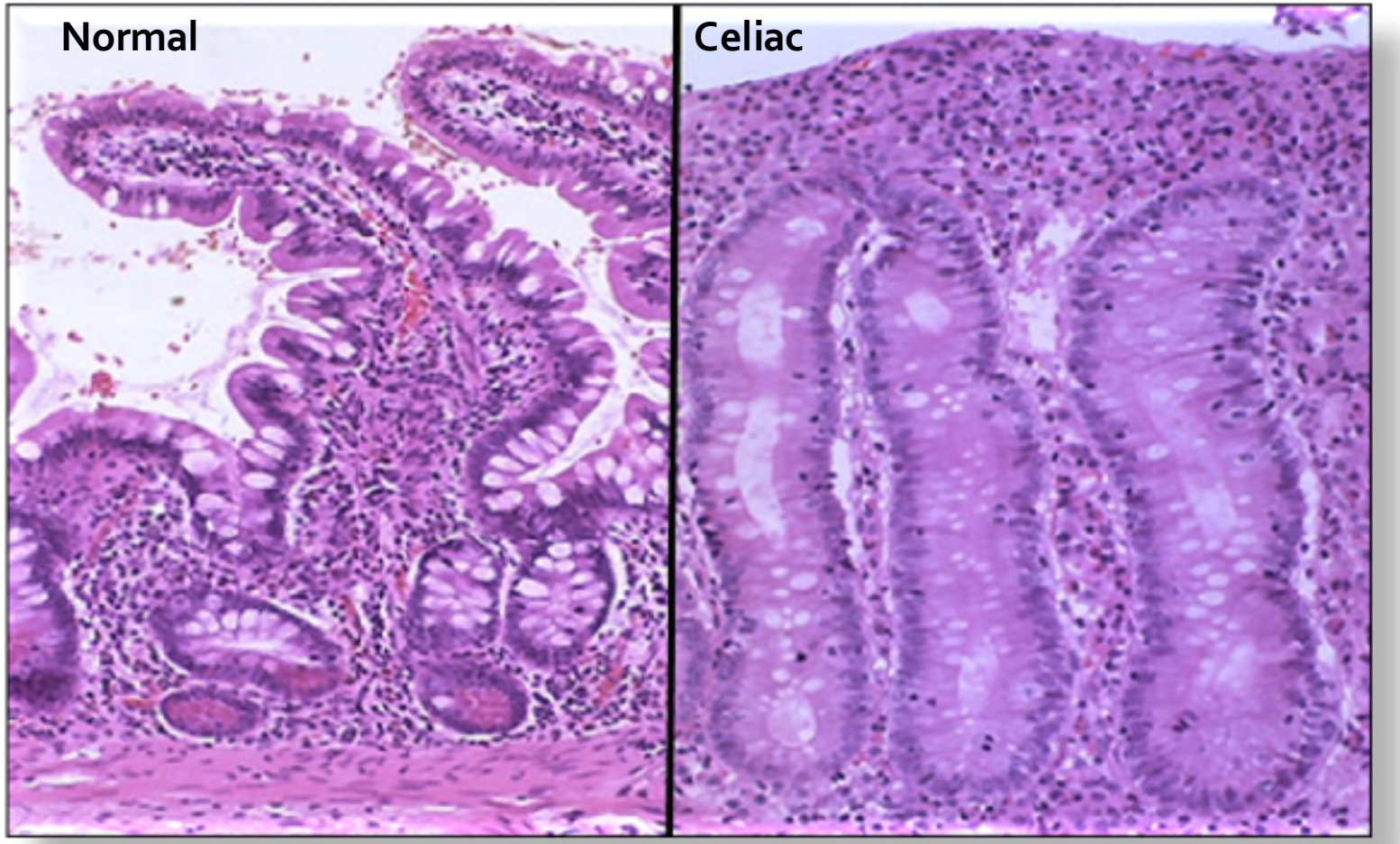


The white base of the ulcer is marked by a blackish area signaling a recently bleeding vessel

The ulcer has a clean white base and some swelling around its edges

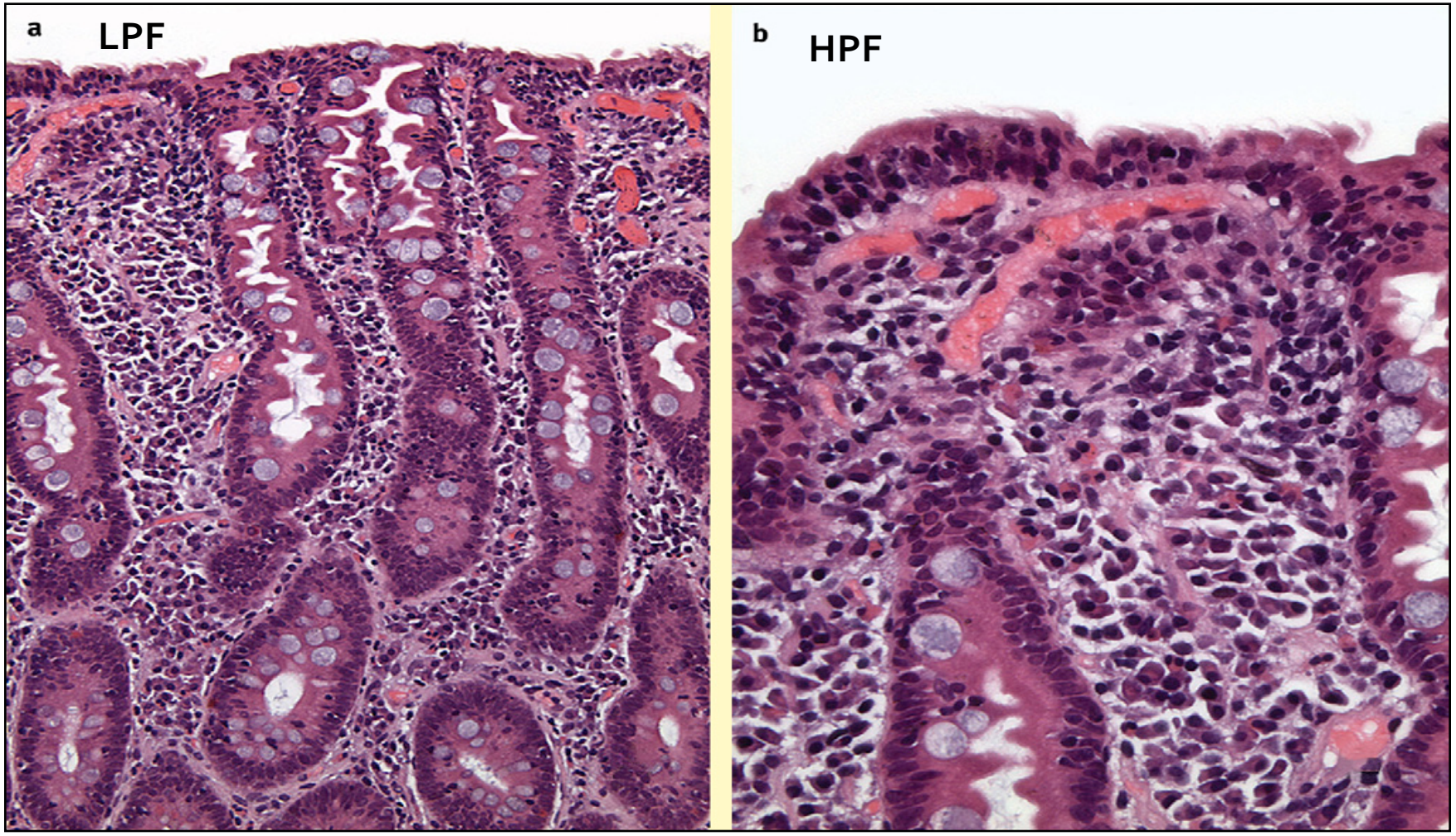
Celiac disease

Normal vs Celiac Disease (Sprue) – LPF



Normal small intestinal mucosa is seen at the left. The mucosa involved by celiac disease (sprue) at the right has blunting and flattening of villi. Celiac disease most often becomes apparent either in infancy, or in young to middle age adults.

Celiac Disease (Sprue) – LPF & HPF

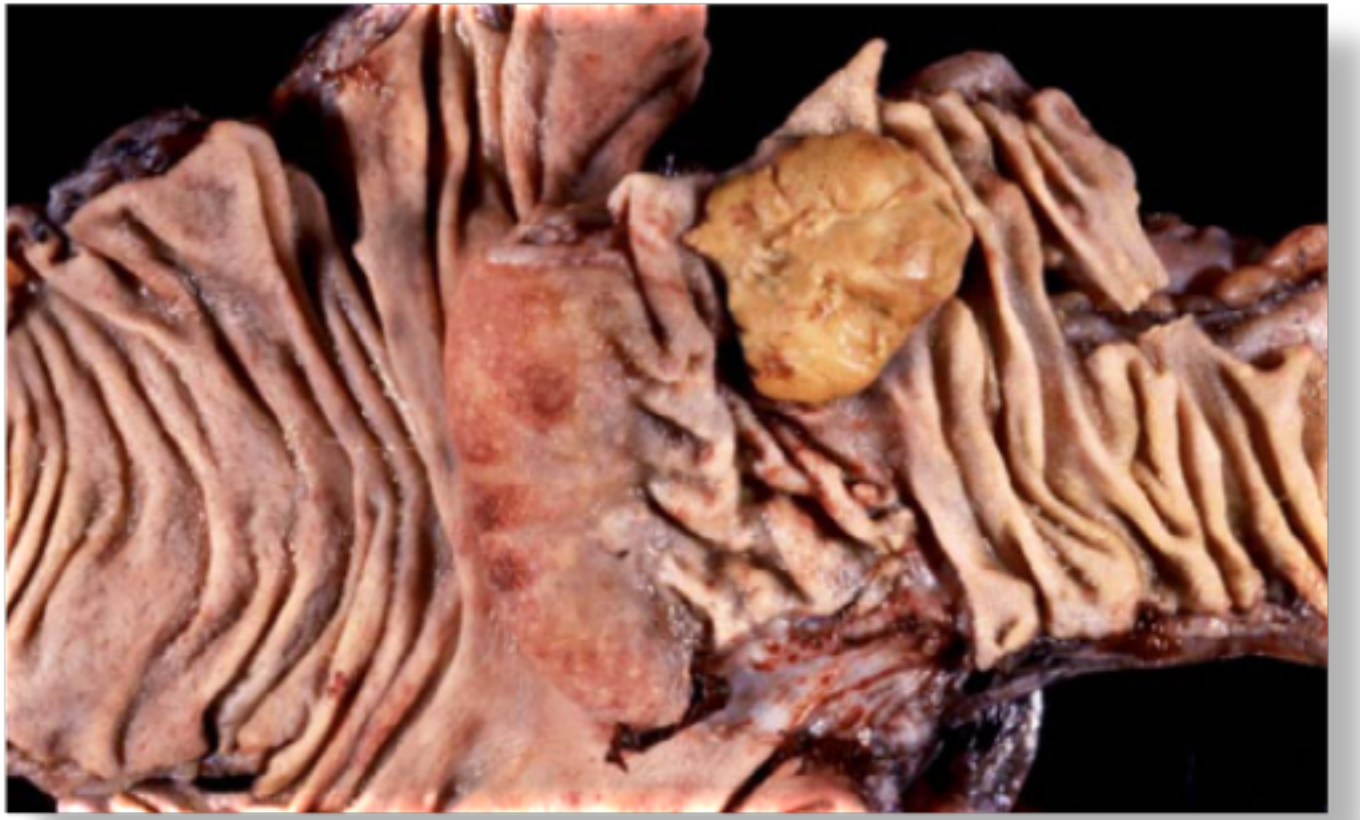


Low-power view of fully developed sprue-type changes. Note the elongated crypts with complete lack of villi.

High-power view showing damaged surface epithelium with large numbers of intraepithelial lymphocytes.

Carcinoid tumor of Small Intestine

Carcinoid tumor of small intestine - Gross

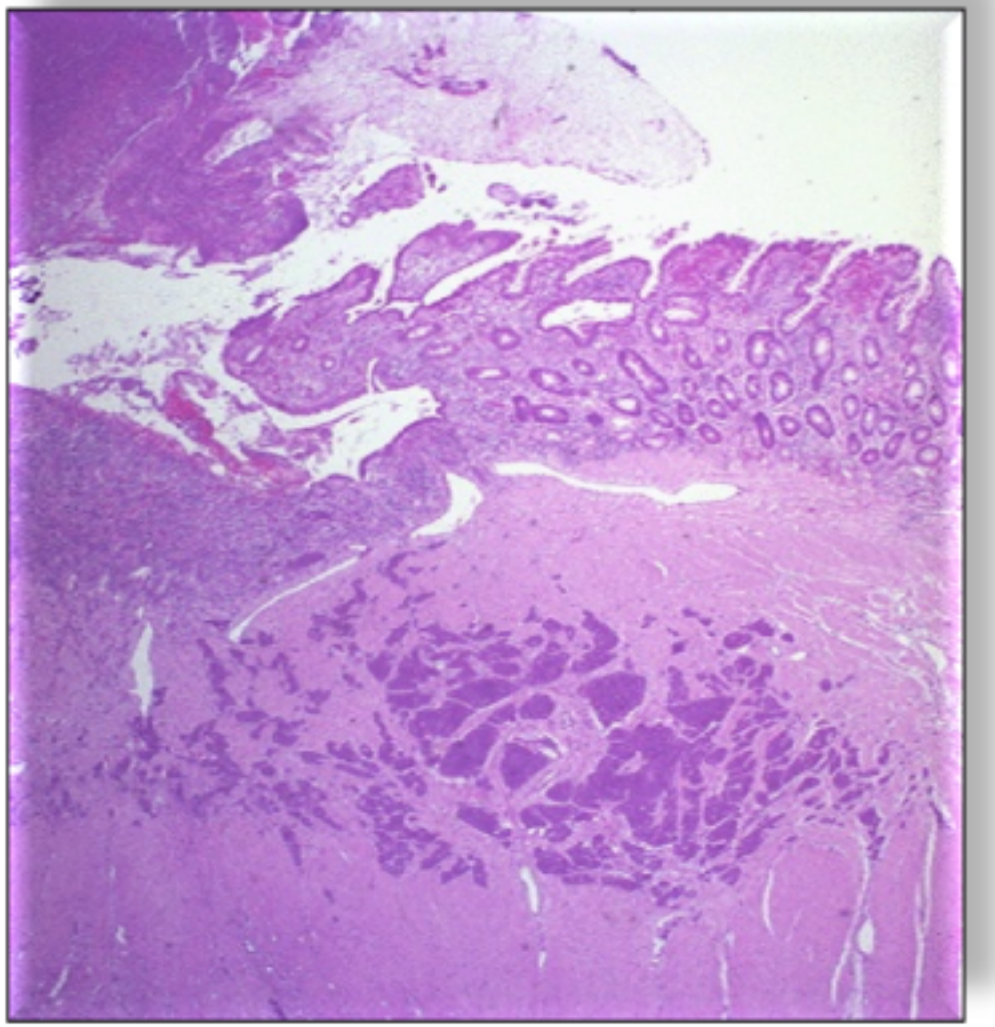


Benign tumors of small intestine can include leiomyomas, fibromas, neurofibromas, and lipomas. Seen here at the ileocecal valve is another tumor that has a faint yellowish color.

This is a carcinoid tumor.

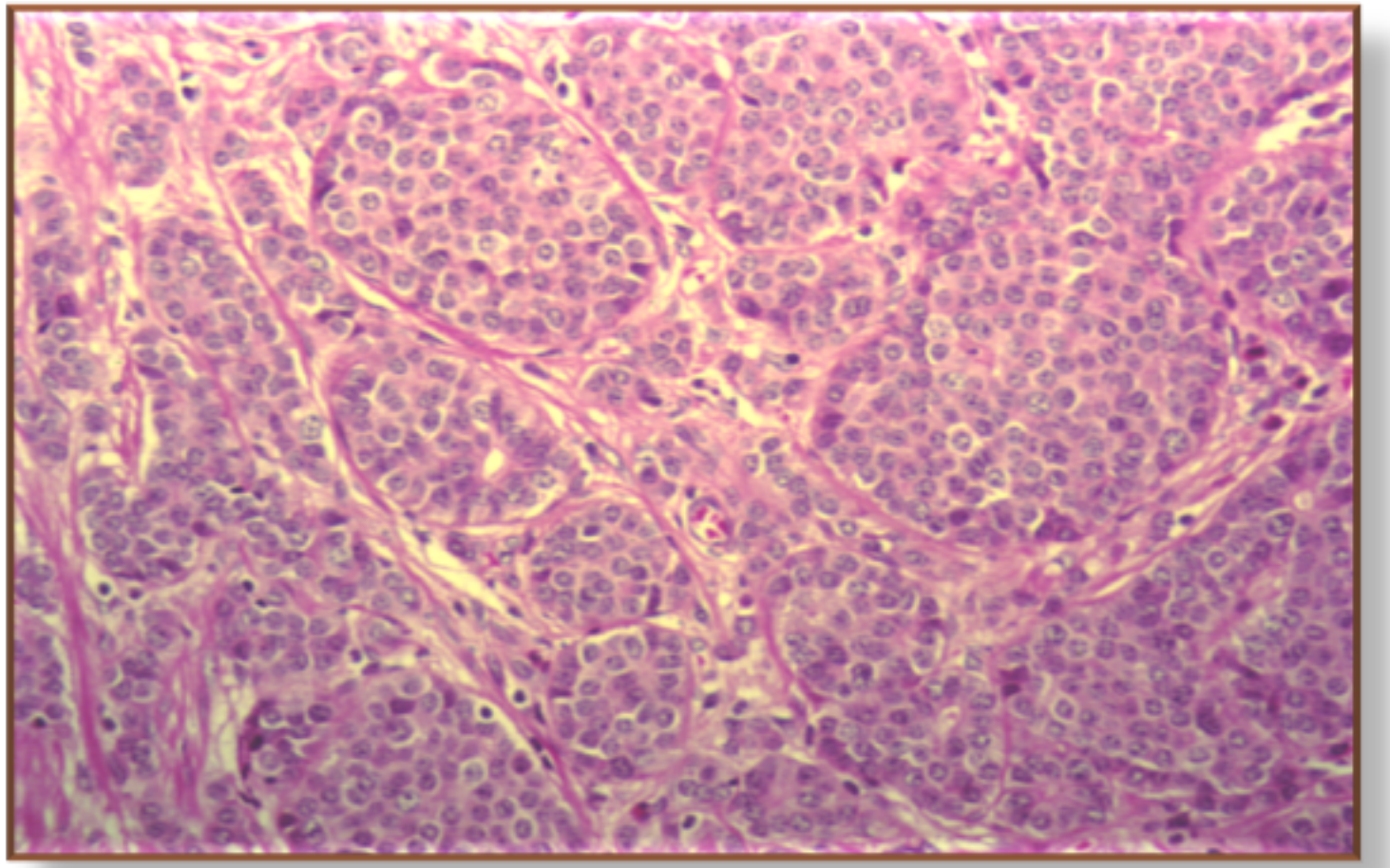
Most benign tumors are incidental submucosal lesions, though rarely they can be large enough to obstruct the lumen.

Carcinoid tumor of small intestine - LPF



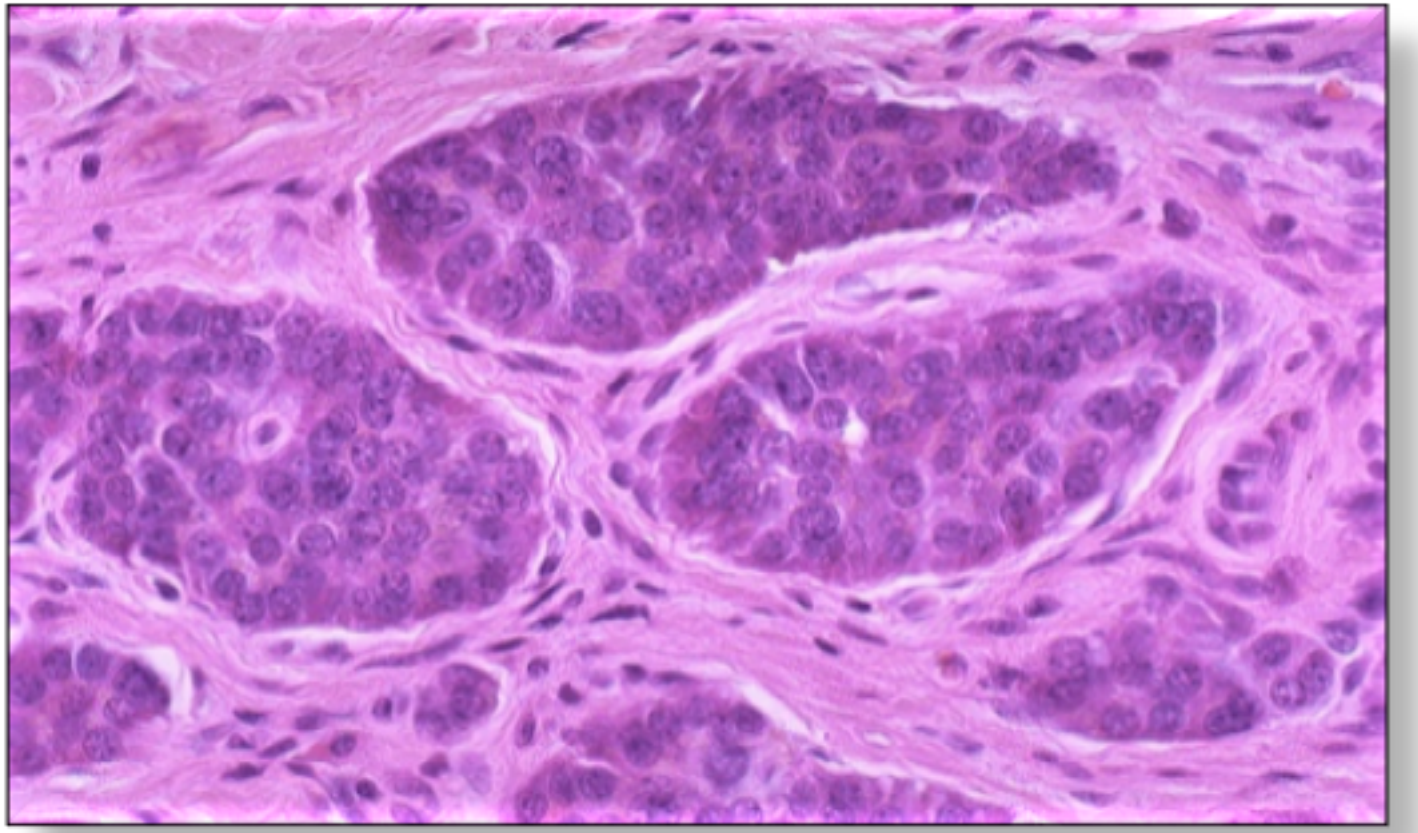
Mass of multiple nests of small blue cells in the submucosa.

Carcinoid tumor of small intestine - MPF



Tumour consists of groups and clumps of small uniform polygonal cells having centrally placed round nuclei and abundant granular cytoplasm.

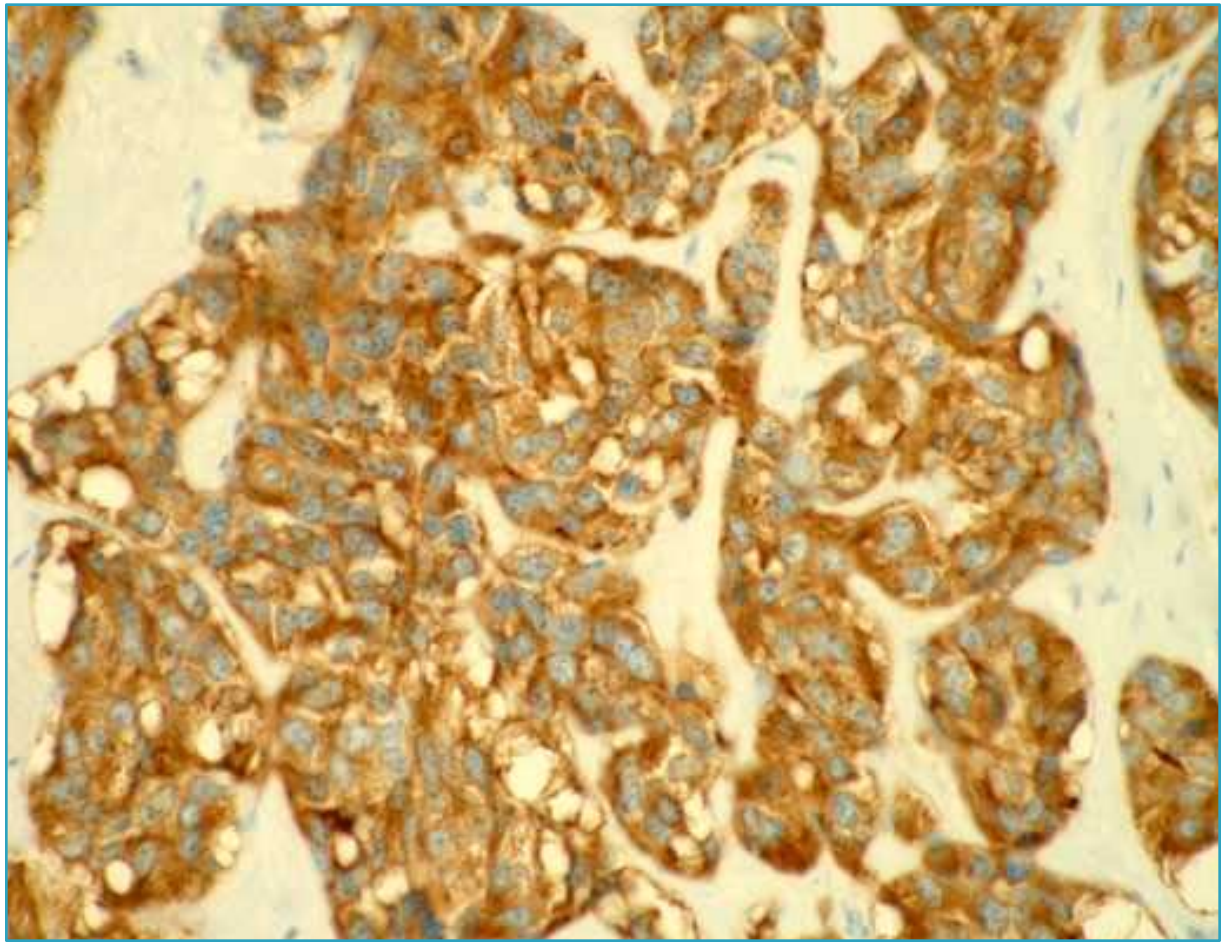
Carcinoid tumor of small intestine - HPF



The patient with **carcinoid syndrome** which can cause:
a- Cutaneous flushes.
b- Asthmatic attacks.
c- Diarrhea, nausea, vomiting.
d- Signs and symptoms related to pulmonary and tricuspid valve stenosis.

- *Group and clusters of tumor cells.*
- *Small uniform nuclei showing salt and pepper chromatin.*
- *Granular cytoplasm.*
- *Metastatic carcinoid to the liver can rarely result in the carcinoid syndrome.*

Carcinoid tumor of small intestine – IHC stain



Immuno histochemical Stain → ***Synaptophysin***
It help in diagnosis by *confirming the neuroendocrine nature of this neoplasm.*

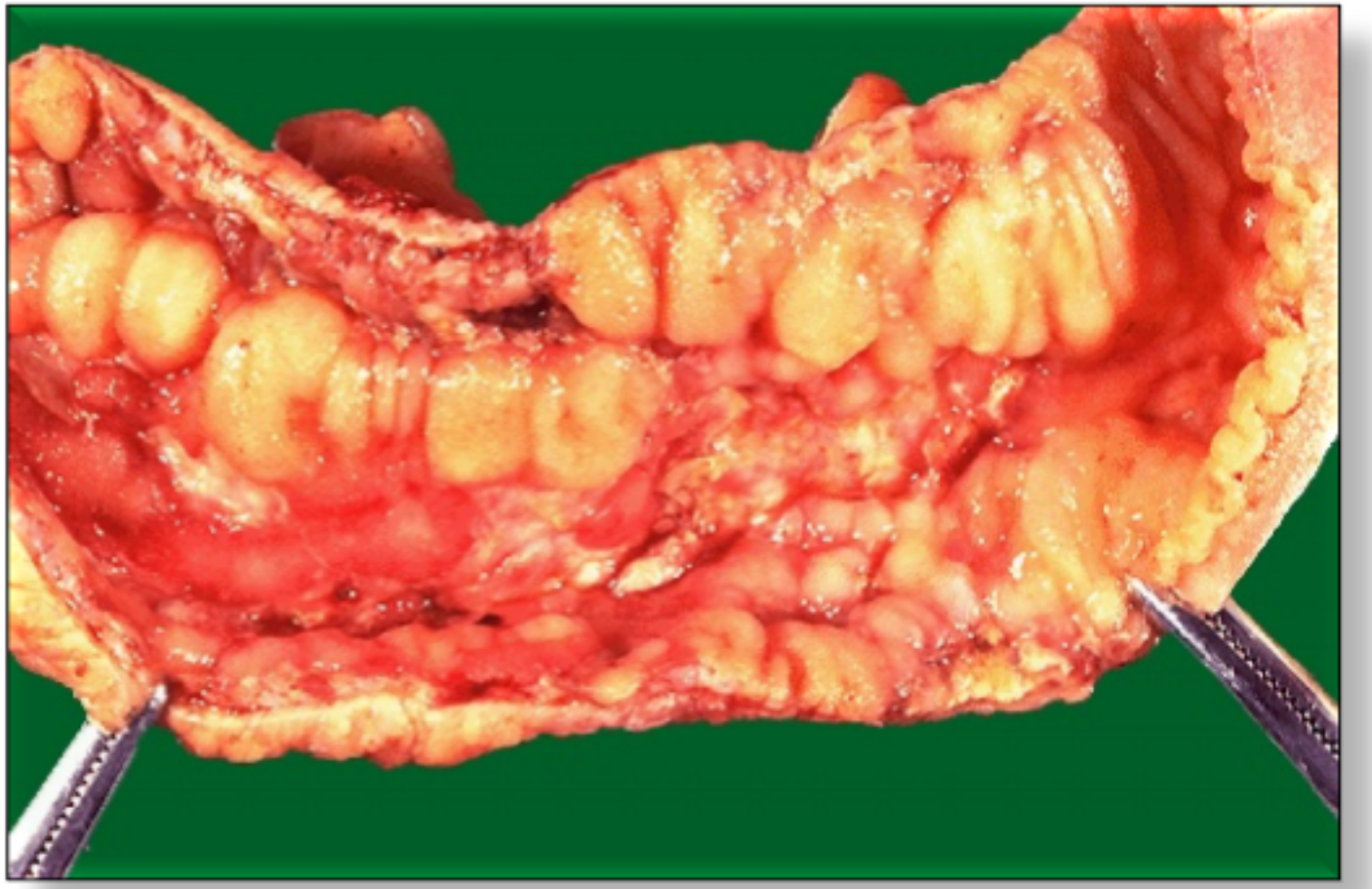
LARGE INTESTINE

Crohn's disease

Crohn's Disease- Gross

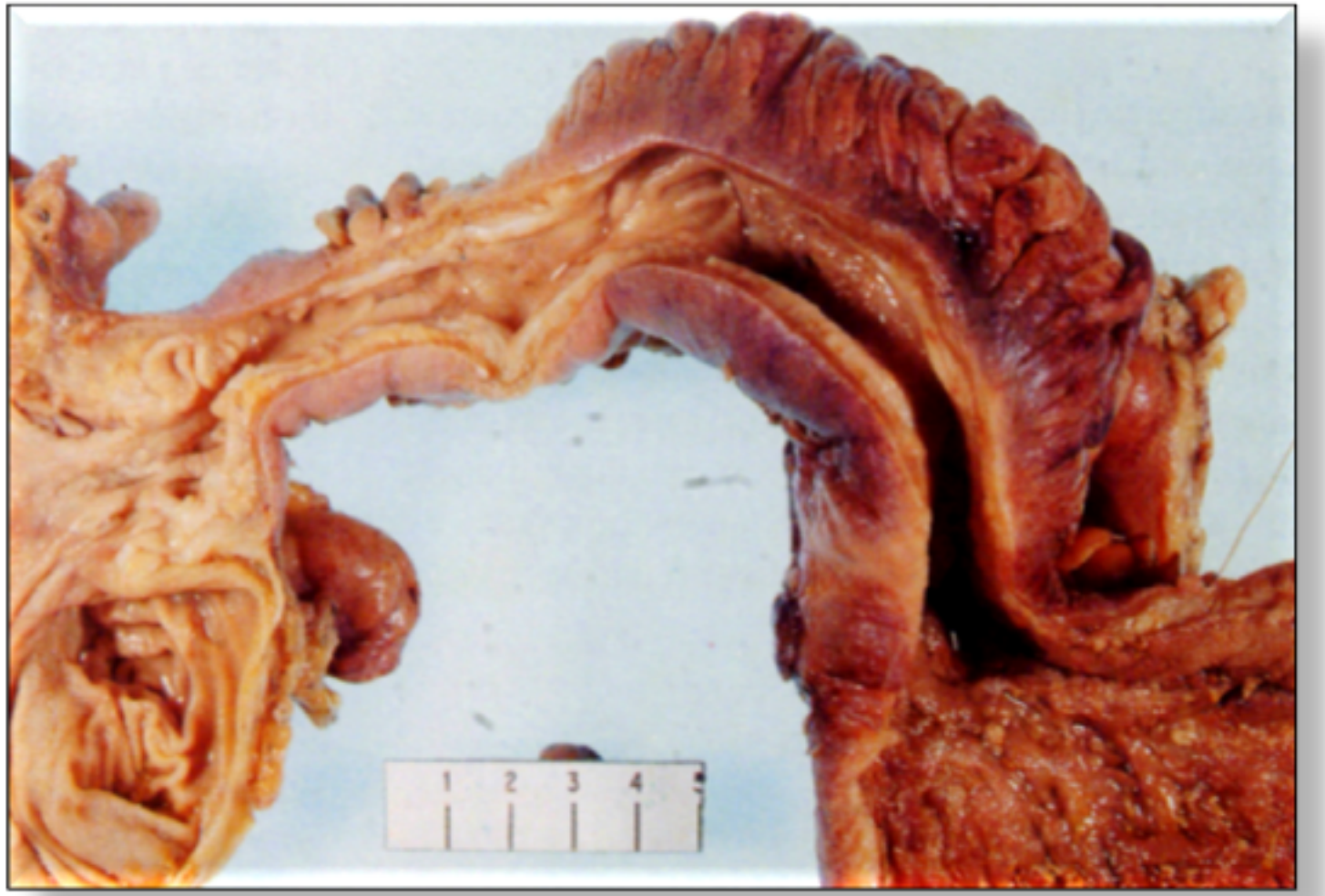
Here the inflammation has produced large, irregularly shaped to rake-like ulcers that are separated from each other by mucosa that appears close to normal.

Crohn's Disease- Gross



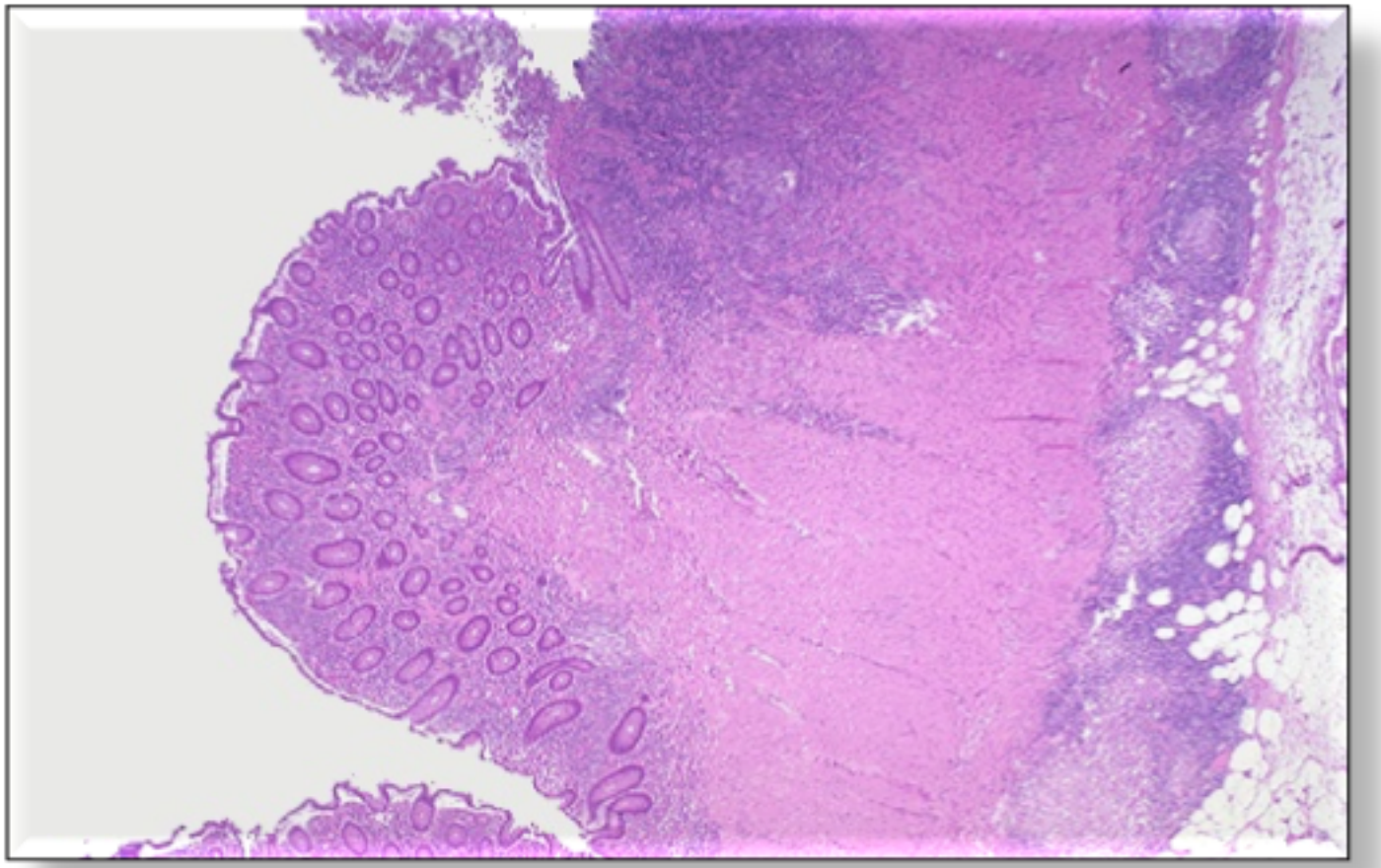
This is another example of Crohn's disease involving the small intestine. Here, the mucosal surface demonstrates an irregular nodular appearance with hyperemia and focal superficial ulceration.

Crohn's Disease vs Normal Colon



Section of large bowel shows alternating normal and ulcerating mucosa

Crohn's Disease- LPF

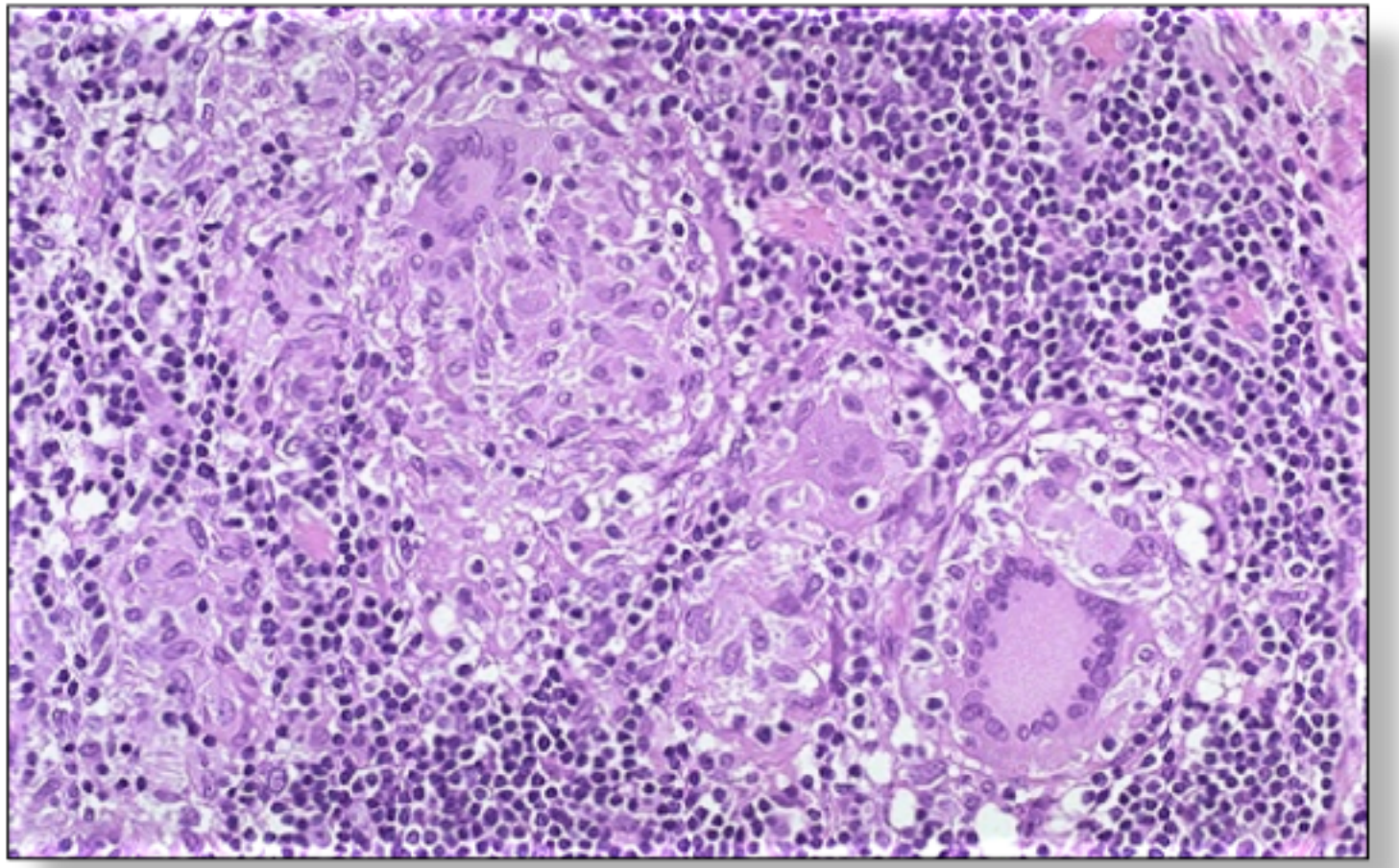


Microscopically, Crohn's disease is characterized by transmural inflammation. Here, inflammatory cells (the bluish infiltrates) extend from mucosa through submucosa and muscularis and appear as nodular infiltrates on the serosal surface with pale granulomatous centers.

Crohn's Disease- HPF

All layers of intestinal wall show transmural chronic inflammatory cell infiltrate, lymphoid aggregates and mild fibrosis. Subserosa contains few epithelioid granulomas

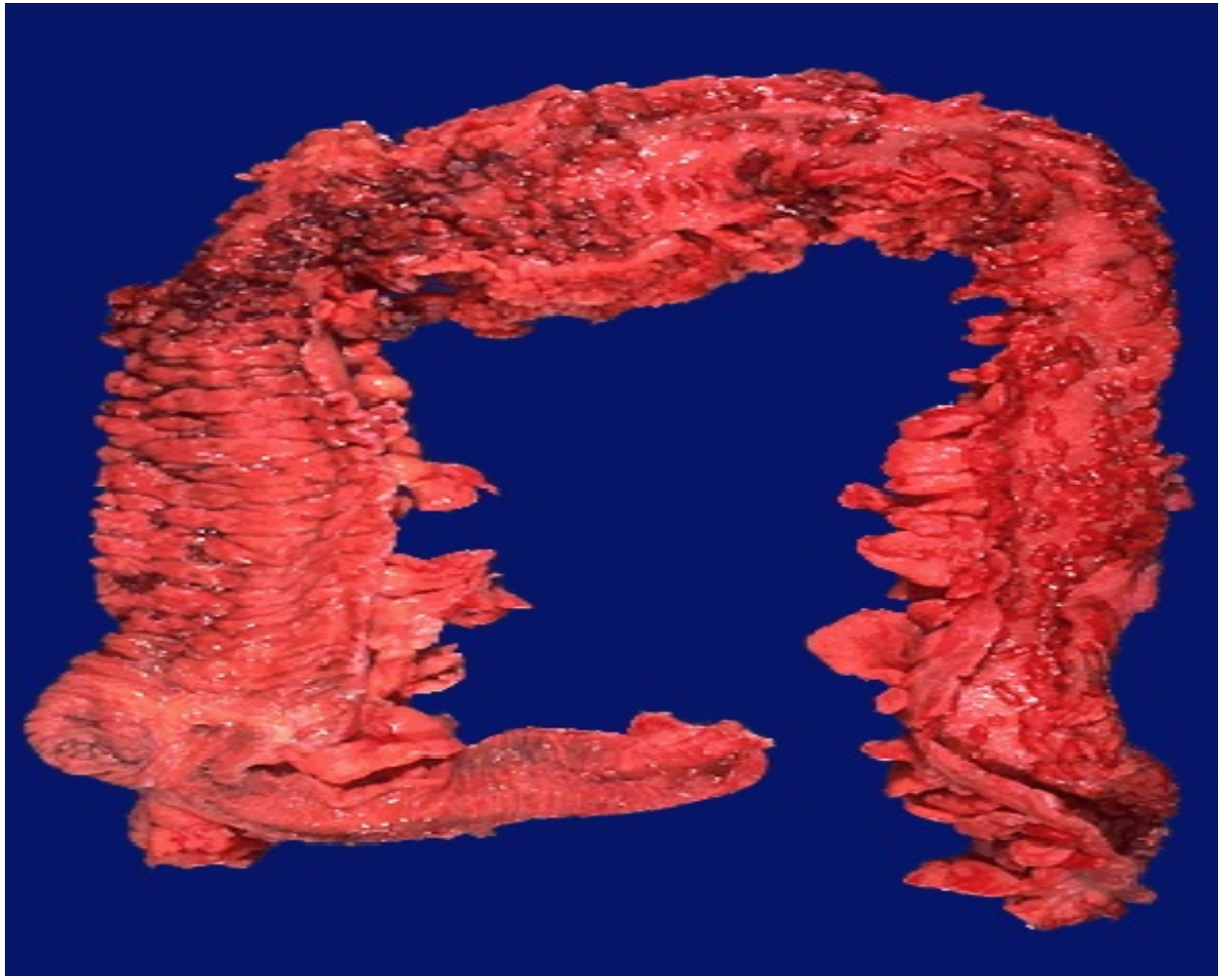
Crohn's Disease- HPF



At high magnification the granulomatous nature of the inflammation of Crohn's disease is demonstrated here with epithelioid cells, giant cells, and many lymphocytes. Special stains for organisms are negative.

Ulcerative colitis

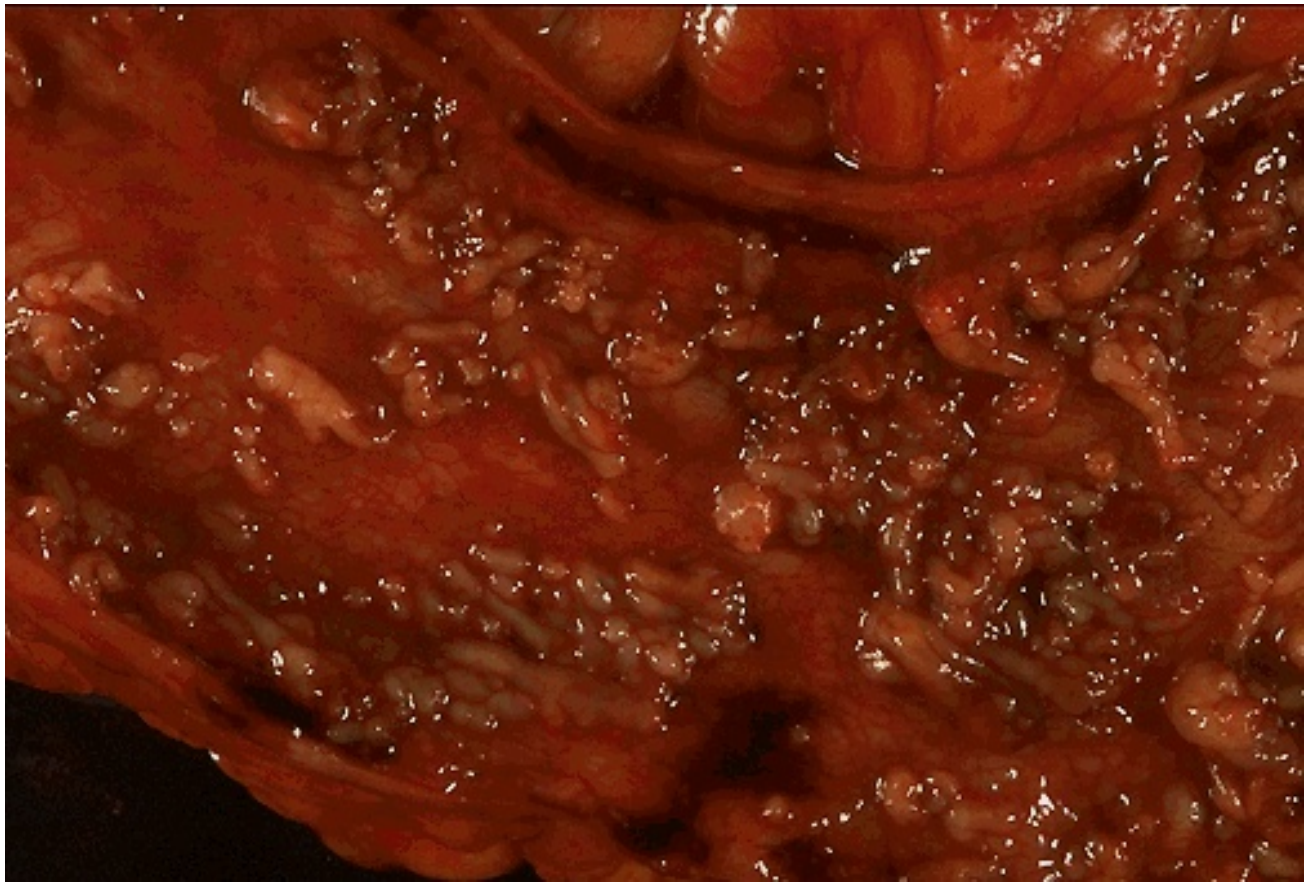
Chronic Ulcerative Colitis - Gross



The most intense inflammation begins at the sigmoid colon (Right) and extends upward and around to the ascending colon.

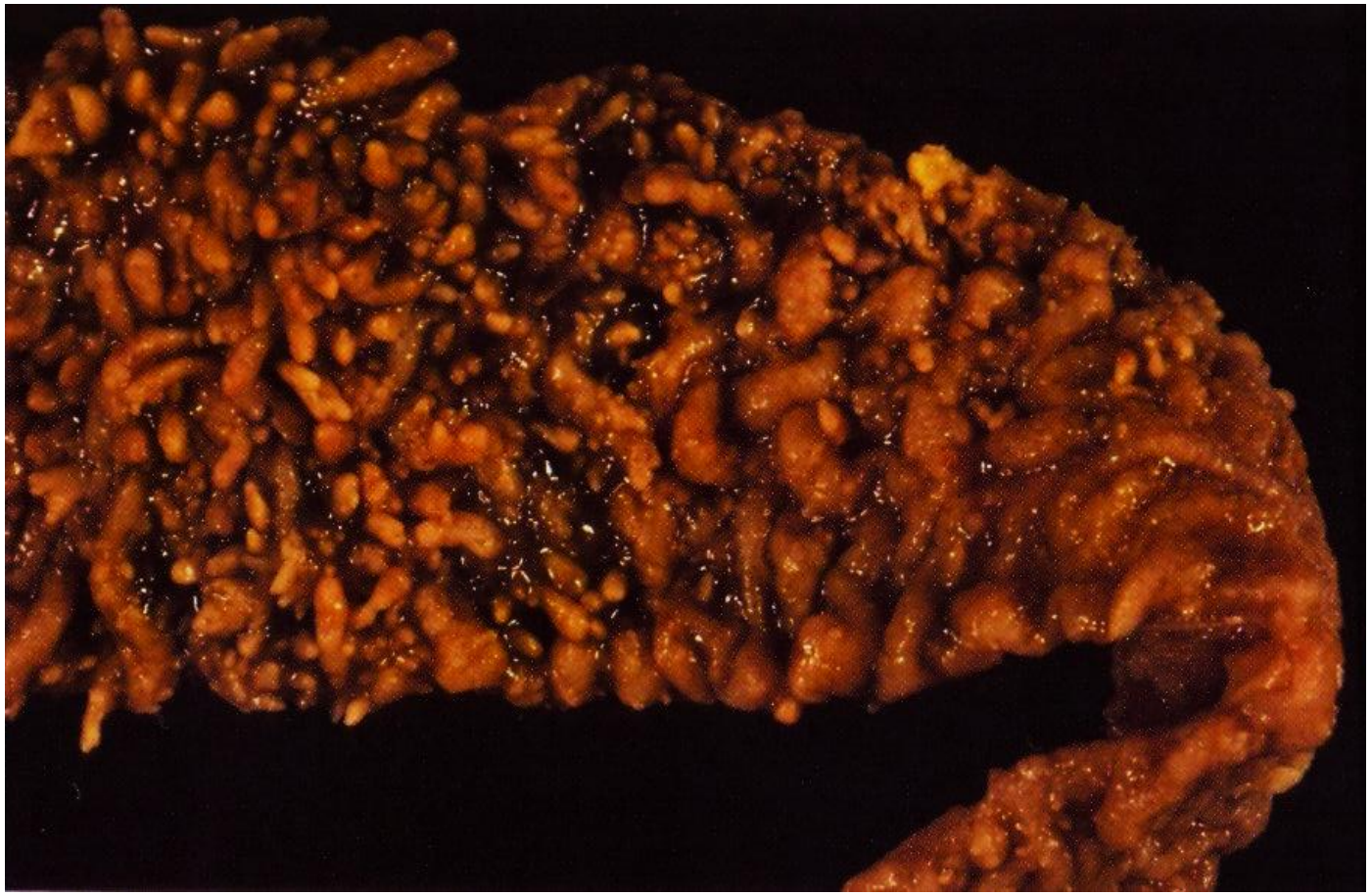
At the lower left is the ileocecal valve with a portion of terminal ileum that is not involved.

Pseudopolyps - Gross



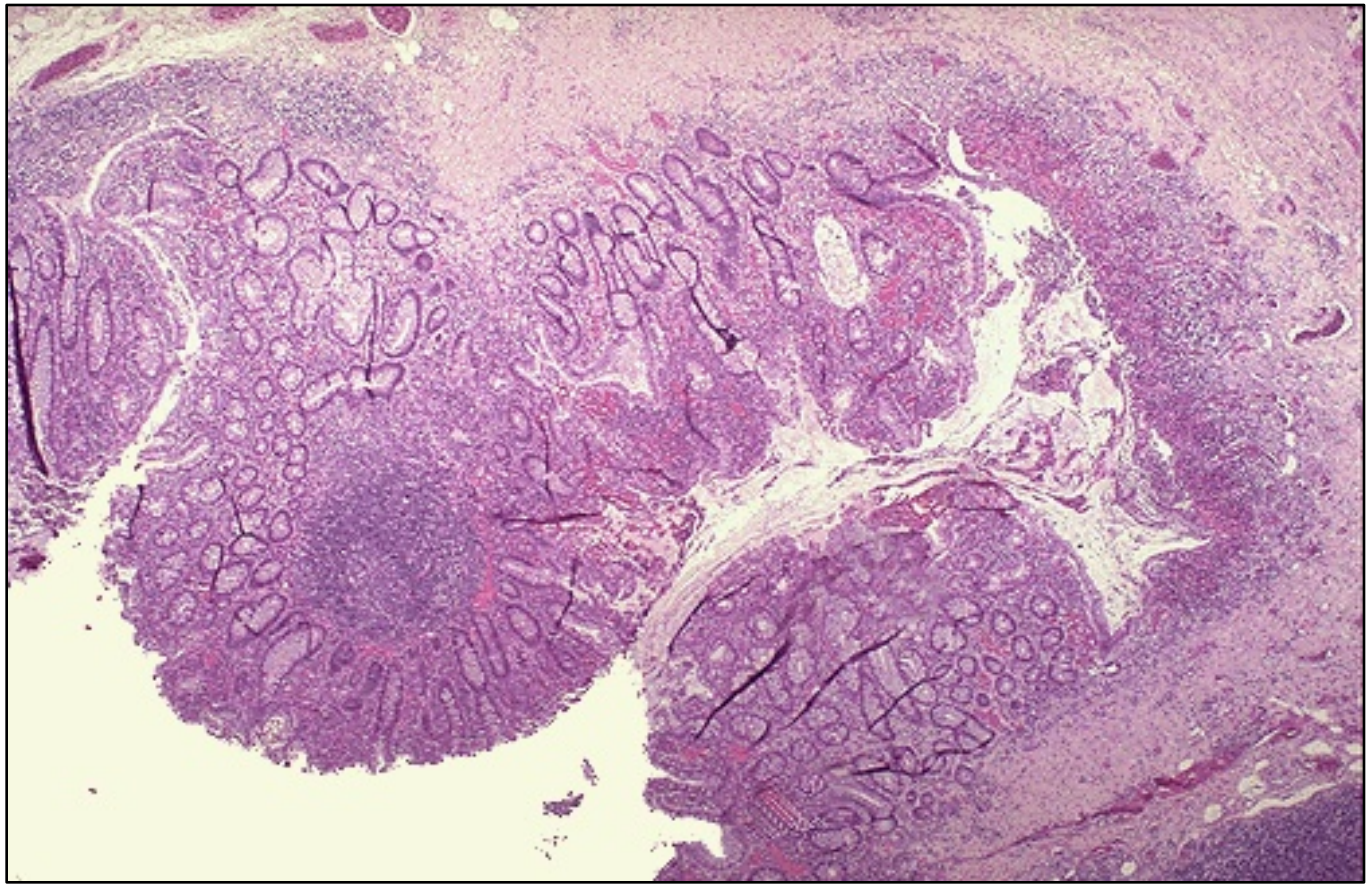
- Dilated ulcerated colon showing numerous inflammatory pseudo polyps.

Pseudopolyps - Gross



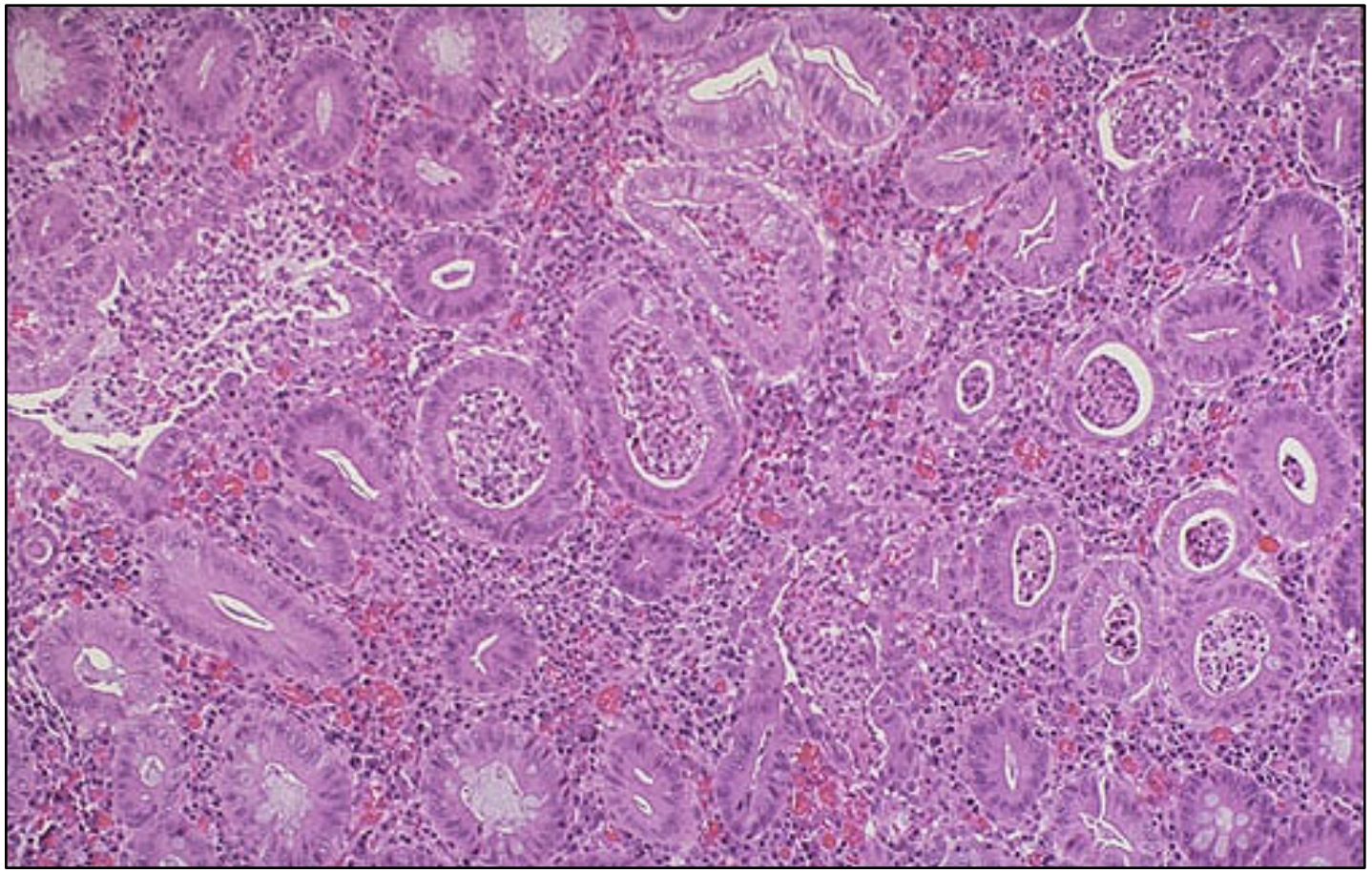
The picture shows pseudo polyps formation . Toxic mega colon, glandular dysplasia and adenocarcinoma are the main complications .

Chronic Ulcerative Colitis - LPF



Microscopically, the inflammation of ulcerative colitis is confined primarily to the mucosa.

Ulcerative Colitis with Crypt Abscesses - MPF



a- Crypt abscesses.

b- Goblet cells depletion.

c- Marked acute on chronic inflammation in lamina propria.

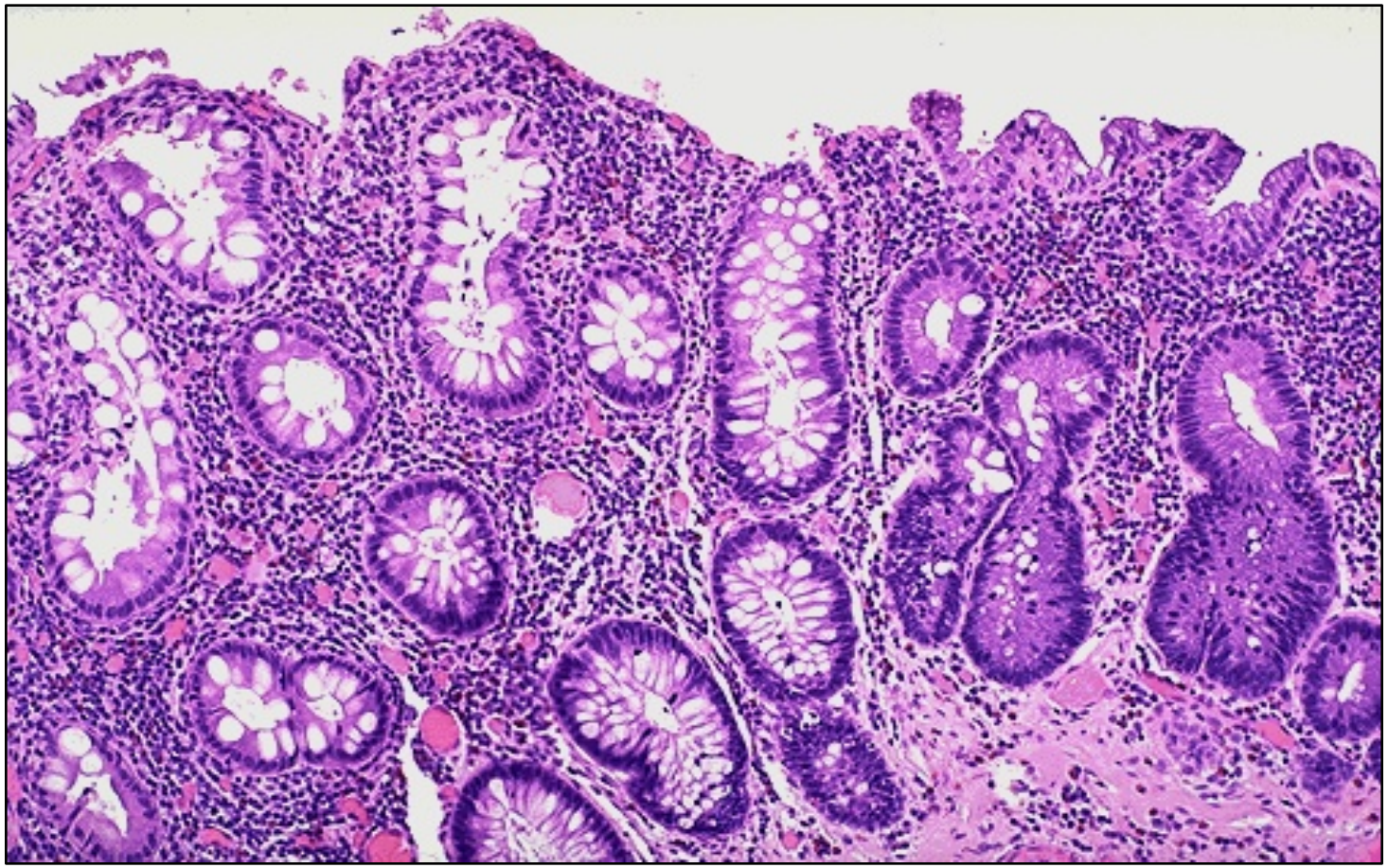
Ulcerative Colitis with Crypt Abscesses - HPF

Crypt abscesses are a histologic finding more typical with ulcerative colitis. Unfortunately, not all cases of inflammatory bowel disease can be classified completely in all patients

Chronic Ulcerative Colitis - Complications

a- Increased risk of carcinoma.
b- Toxic megacolon.
c- Massive haemorrhage.
d- Perforation and peritonitis.
e- Electrolytes derangements because of severe diarrhea.

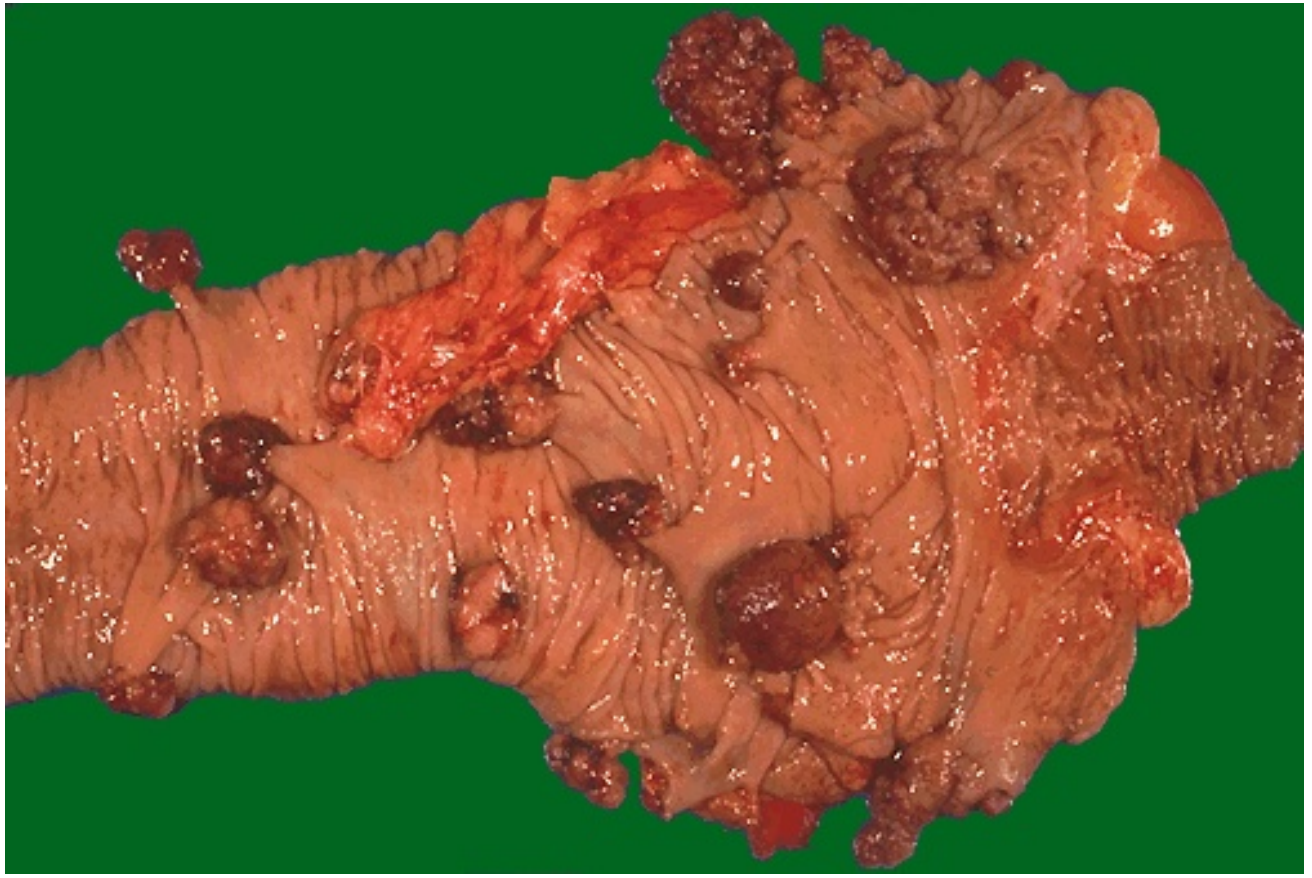
Chronic Ulcerative Colitis with Dysplasia- MPF



Over time, there is a risk for adenocarcinoma with ulcerative colitis. Here, more normal glands are seen at the left, but the glands at the right demonstrate dysplasia, the first indication that there is a move towards neoplasia.

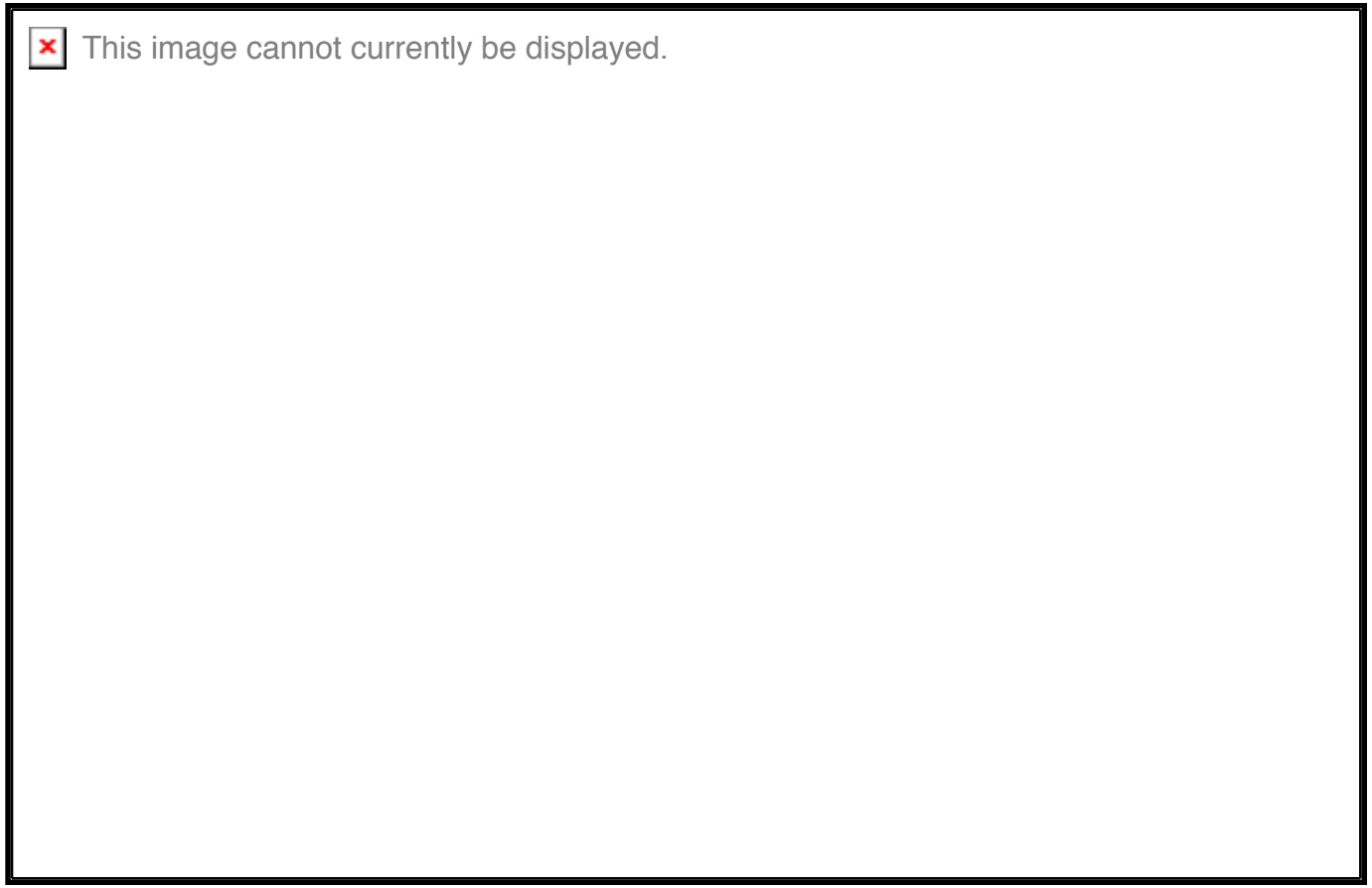
Adenomatous polyps of rectum / colon

Adenomatous polyp of the colon - Gross



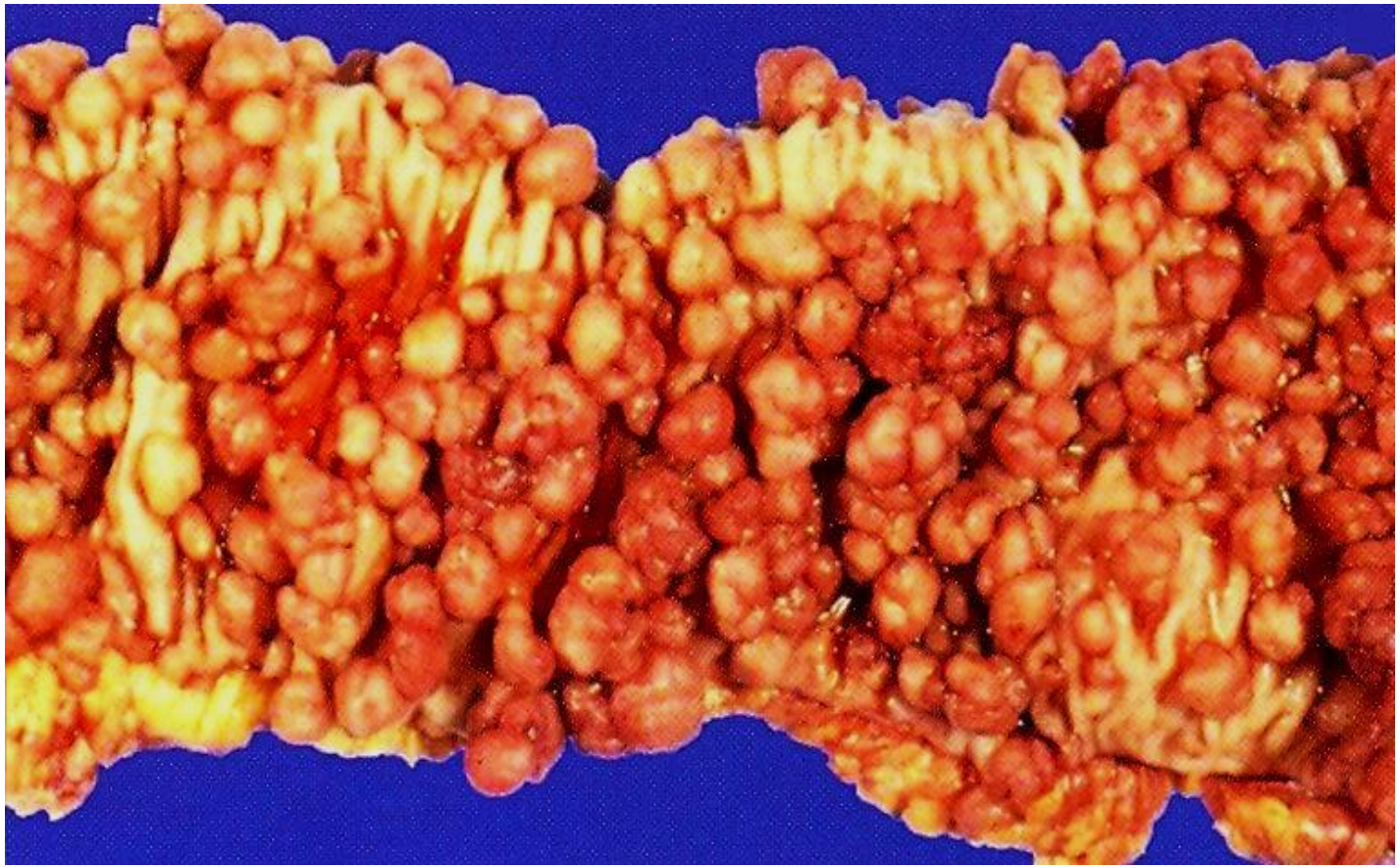
Multiple adenomatous polyps (tubulovillous adenomas) of the cecum are seen here in a case of familial adenomatous polyposis, a genetic syndrome in which an abnormal genetic mutation leads to development of multiple neoplasms in the colon

Adenomatous polyp of the colon - Gross



This adenomatous polyp has a hemorrhagic surface (which is why they may first be detected with stool occult blood screening) and a long narrow stalk. The size of this polyp--above 2 cm--makes the possibility of malignancy more likely, but this polyp proved to be benign

Familial polyposis of the colon - Gross

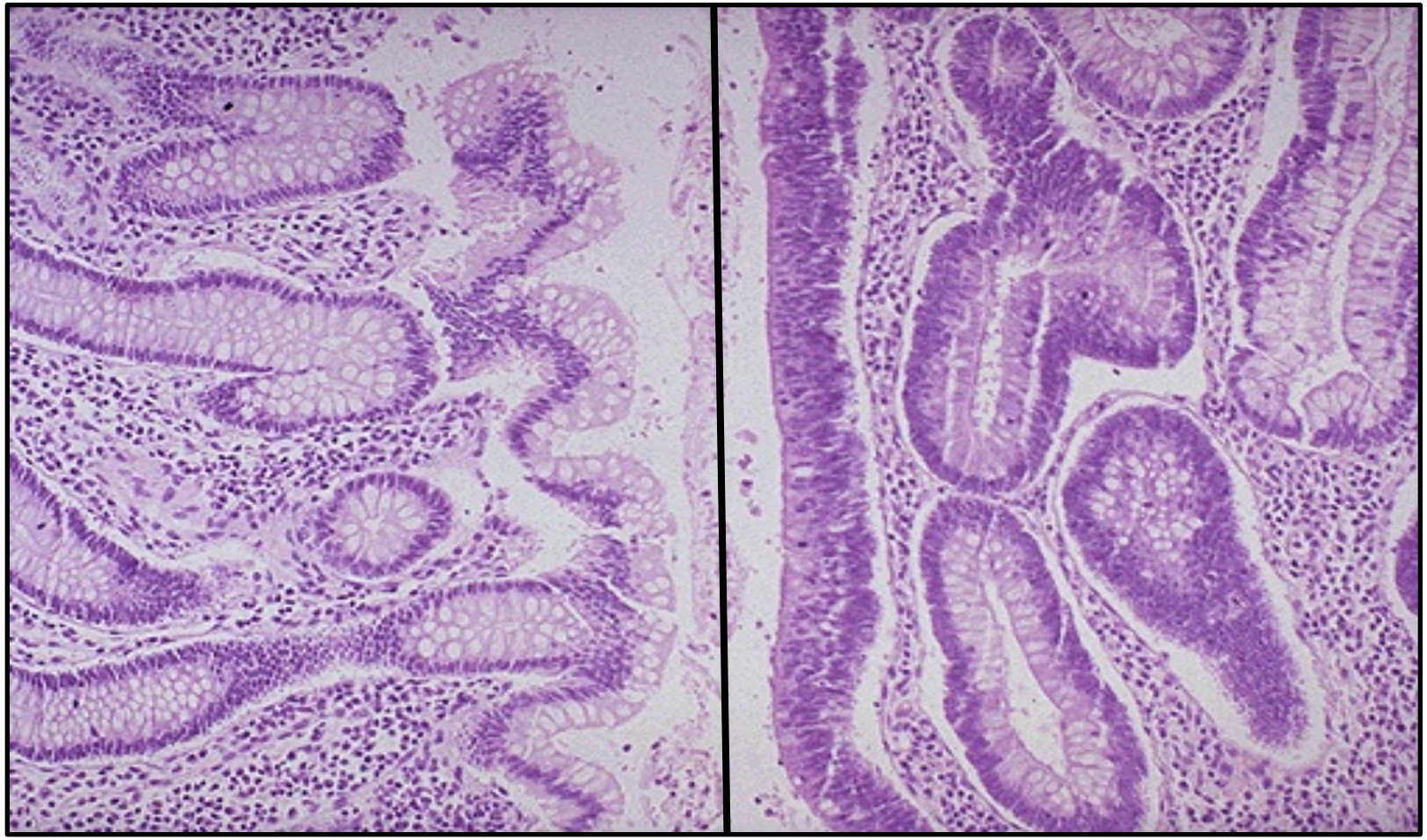


It is caused by mutations of the adenomatous polyposis coli , or APC gene . The major complication is development of adenocarcinoma of the colon.

Adenomatous polyp of the colon - LPF

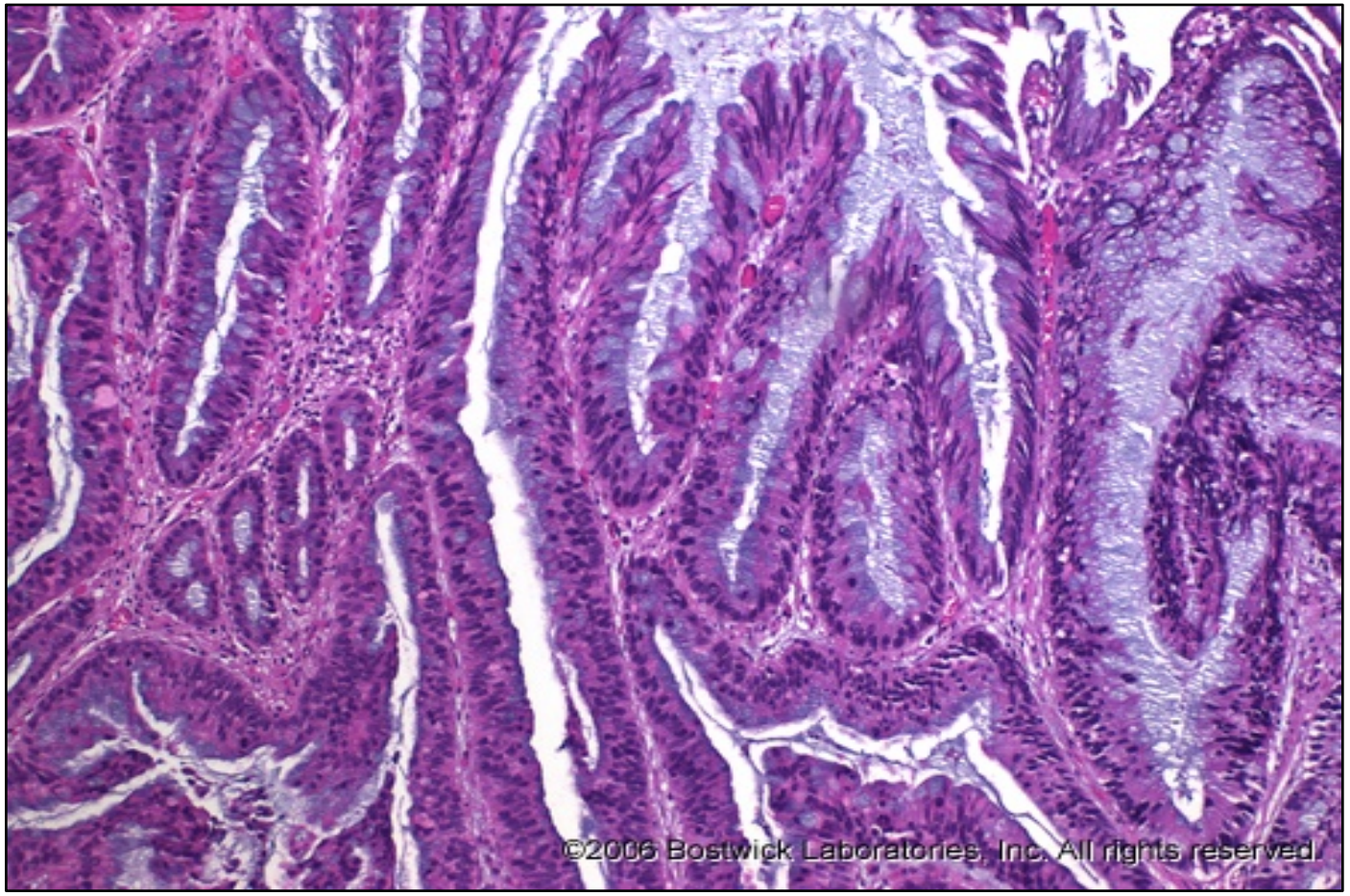
This small adenomatous polyp (tubular adenoma) on a small stalk is seen microscopically to have more crowded, disorganized glands than the normal underlying colonic mucosa. Goblet cells are less numerous and the cells lining the glands of the polyp have hyperchromatic nuclei

Normal vs Adenomatous polyp of the colon - MPF



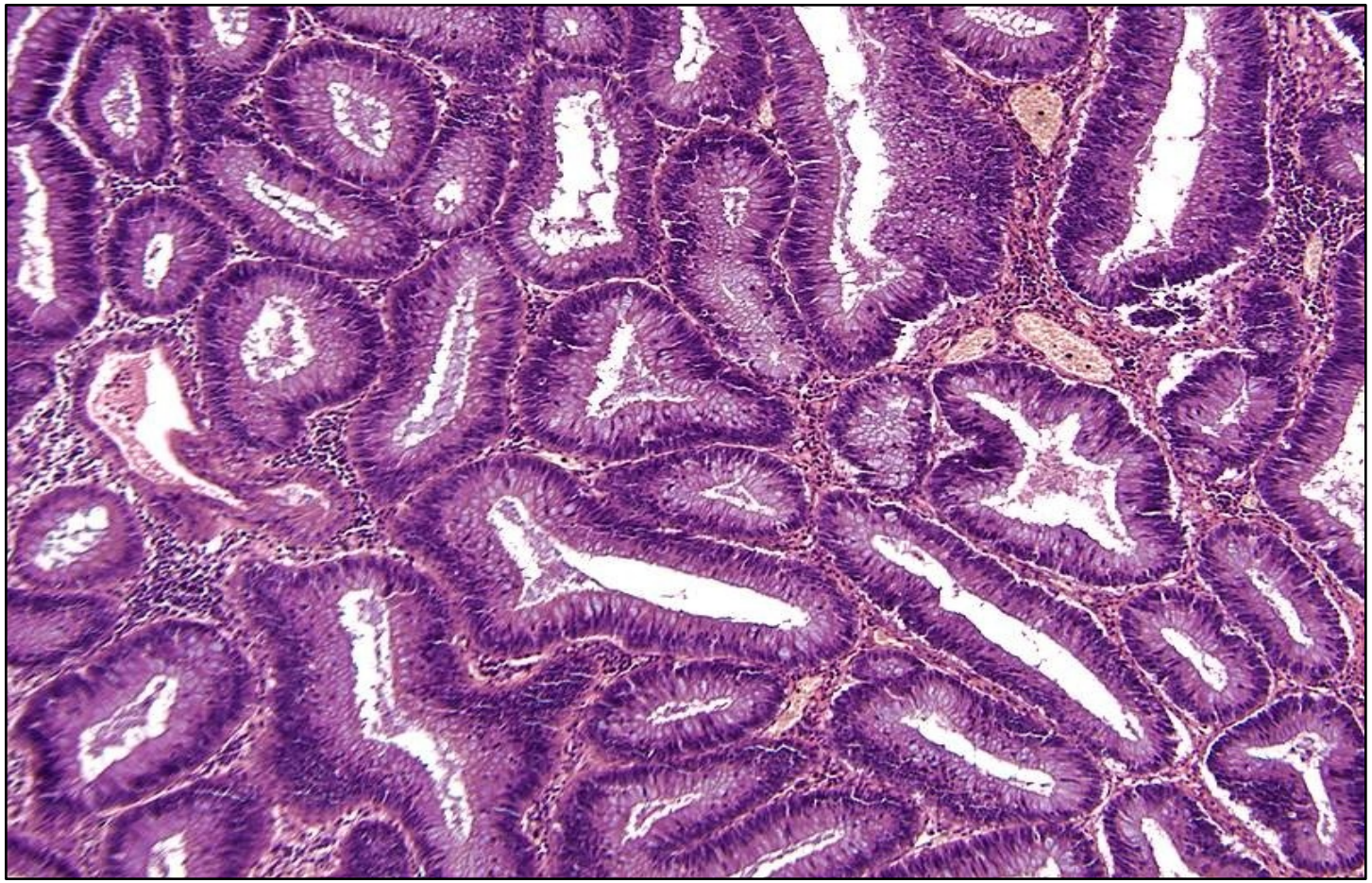
A microscopic comparison of normal colonic mucosa on the left and that of an adenomatous polyp (tubular adenoma) on the right is seen here. The neoplastic glands are more irregular with darker (hyperchromatic) and more crowded nuclei

Adenomatous Polyp (Villous) - MPF



Villous adenomas behave more aggressively than tubular adenomas. They have a HIGHER rate of developing into frank adenocarcinomas than the "tubular" patterns.

Adenomatous Polyp (Tubular) - MPF



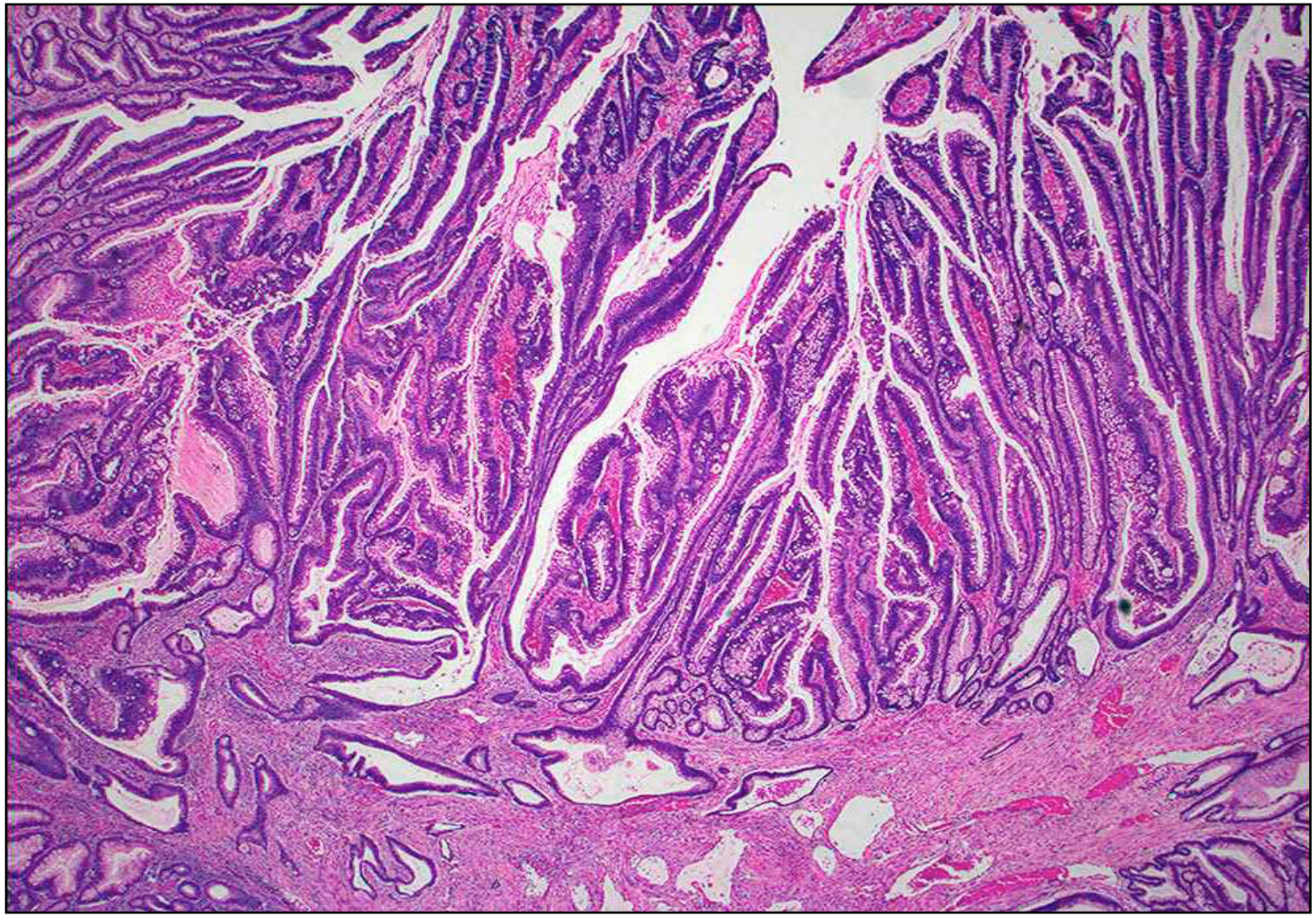
TUBULAR adenoma with crowded dysplastic glands and chronic inflammation.

Adenocarcinoma of the large intestine

Adenocarcinoma of the Colon - Gross

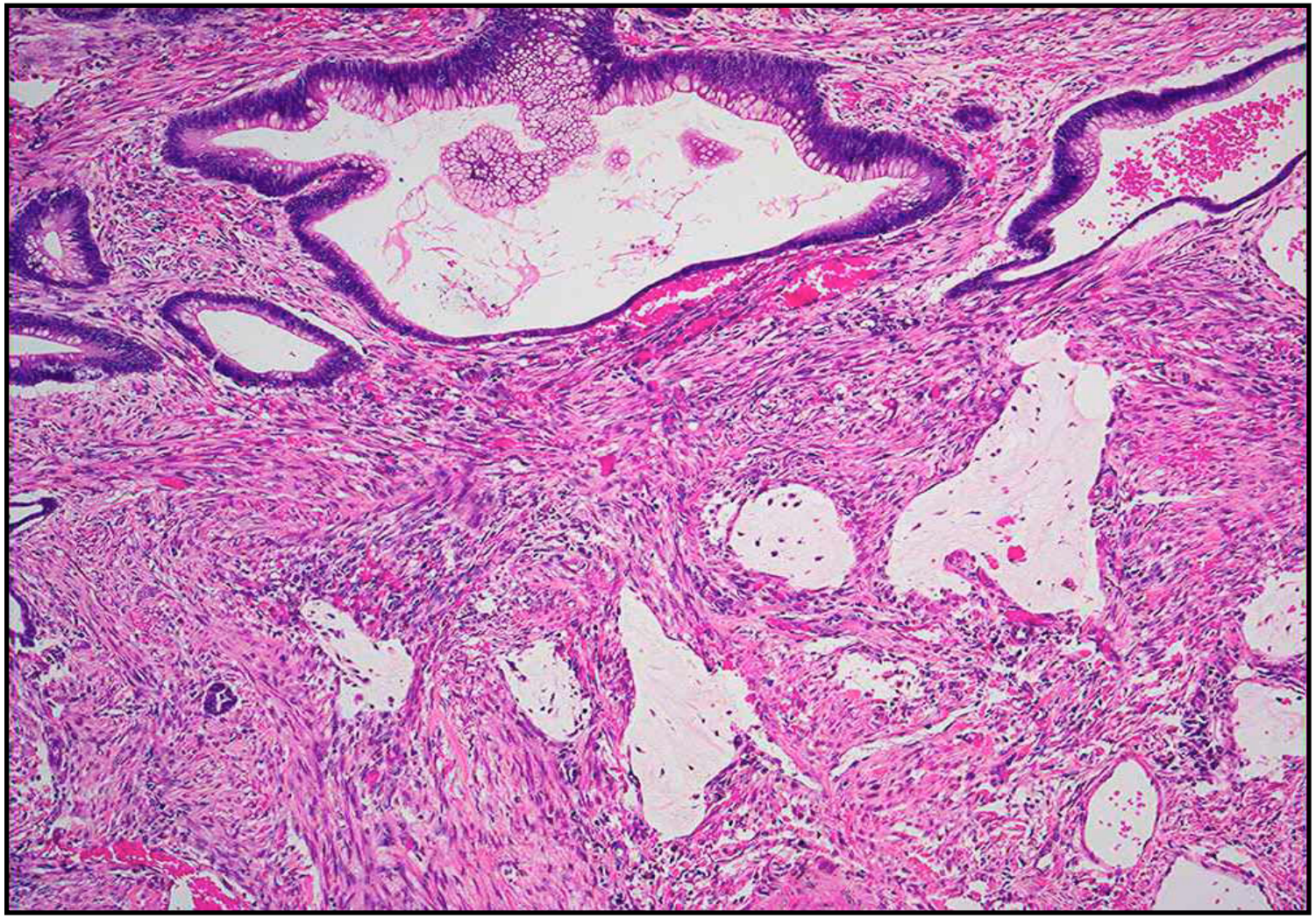
This is an adenocarcinoma arising in a villous adenoma. The surface of the neoplasm is polypoid and reddish pink. Hemorrhage from the surface of the tumor creates a guaiac positive stool. This neoplasm was located in the sigmoid colon

Adenocarcinoma of the Colon - LPF



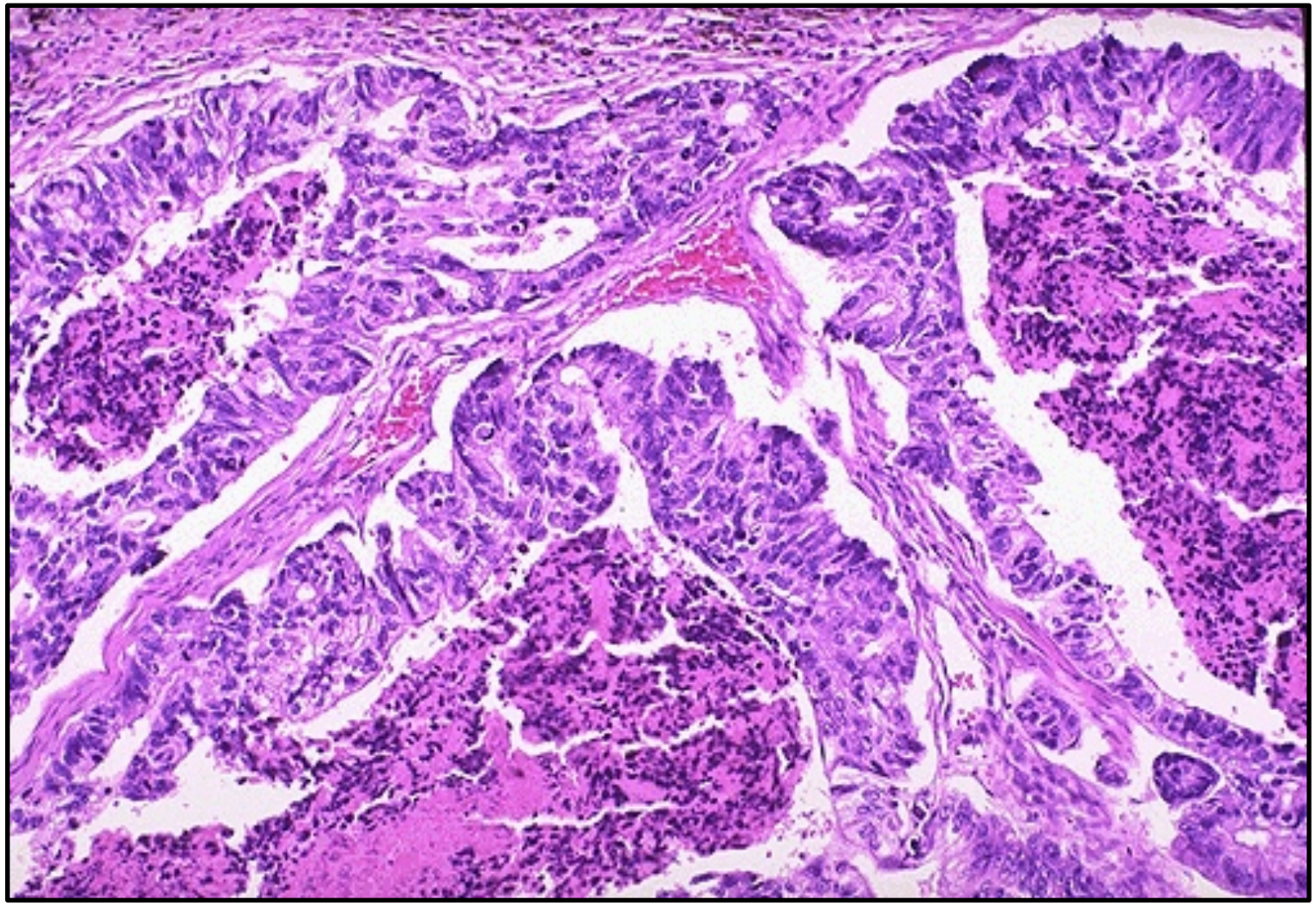
Tumour consists of crowded irregular malignant acini separated by thin fibrovascular stroma.

Adenocarcinoma of the Colon - LPF



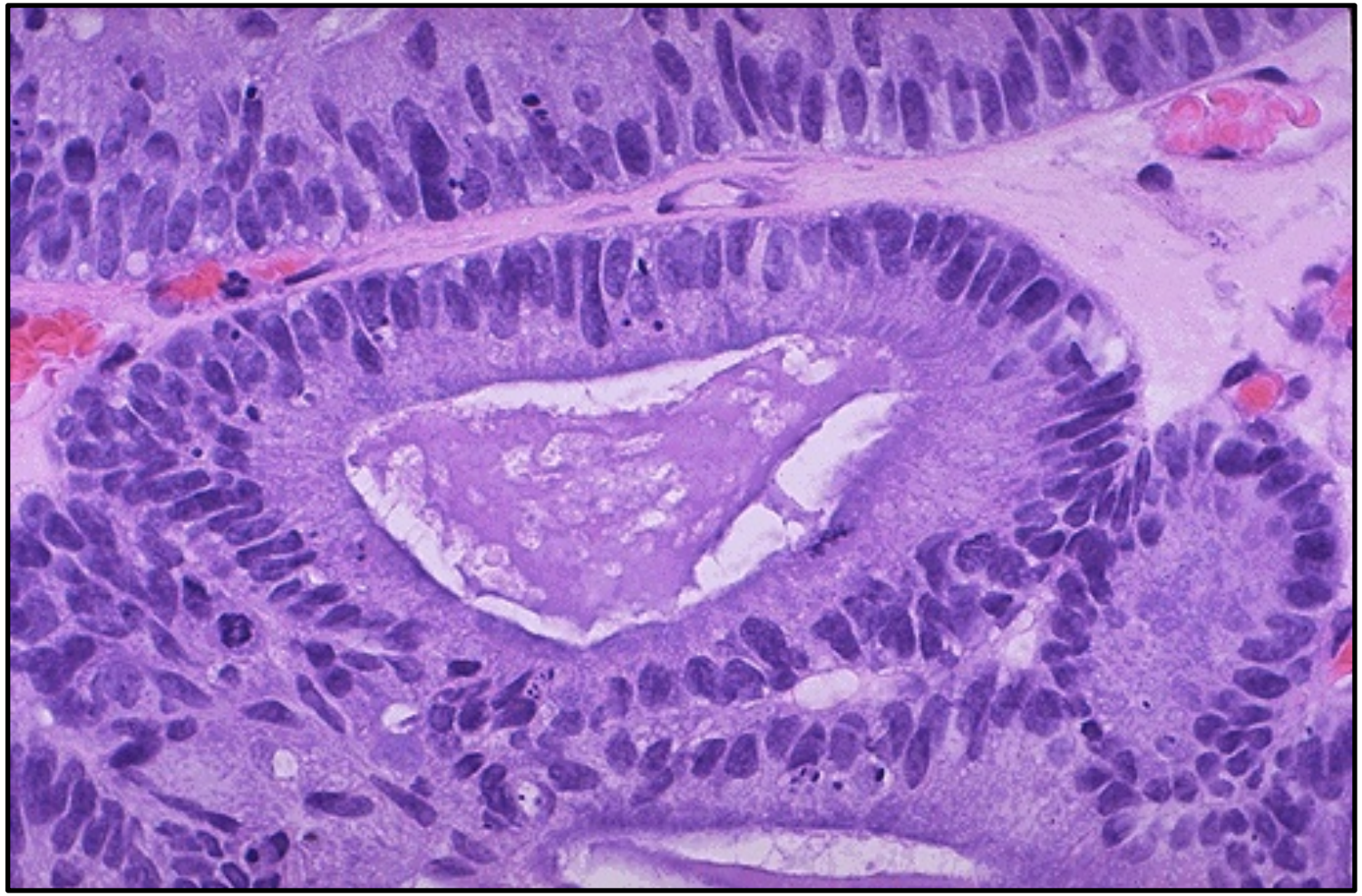
The acini are lined by one or several layers of neoplastic cells with papillary projection showing pleomorphism, hyperchromatism and few mitoses.

Adenocarcinoma of the Colon - MPF



Here is an adenocarcinoma in which the glands are much larger and filled with necrotic debris.

Adenocarcinoma of the Colon - HPF



At high magnification, the neoplastic glands of adenocarcinoma have crowded nuclei with hyperchromatism and pleomorphism. No normal goblet cells are seen