

GIT BLOCK

PATHOLOGY PRACTICAL

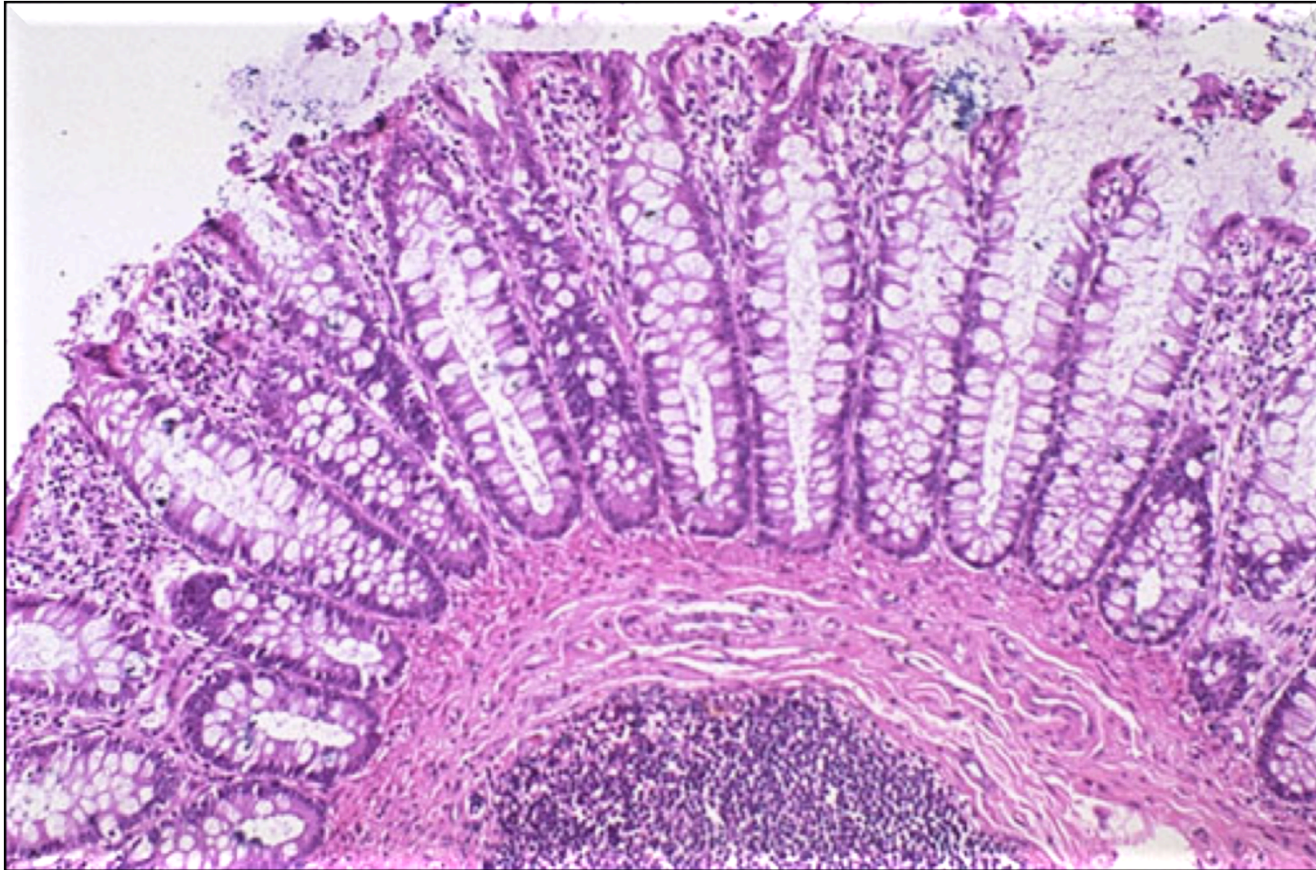
Prepared by:

- *Prof. Ammar Al Rikabi*
- *Dr. Sayed Al Esawy*
- *Dr. Marie Mukhashin*
- *Dr. Shaesta Zaidi*

Head of Pathology Department: Dr. Abdulmalik Al Sheikh

LARGE INTESTINE

Normal mucosa of large intestine



This is normal colonic mucosa. Note the crypts that are lined by numerous goblet cells. In the submucosa is a lymphoid nodule. The gut-associated lymphoid tissue as a unit represents the largest lymphoid organ of the body

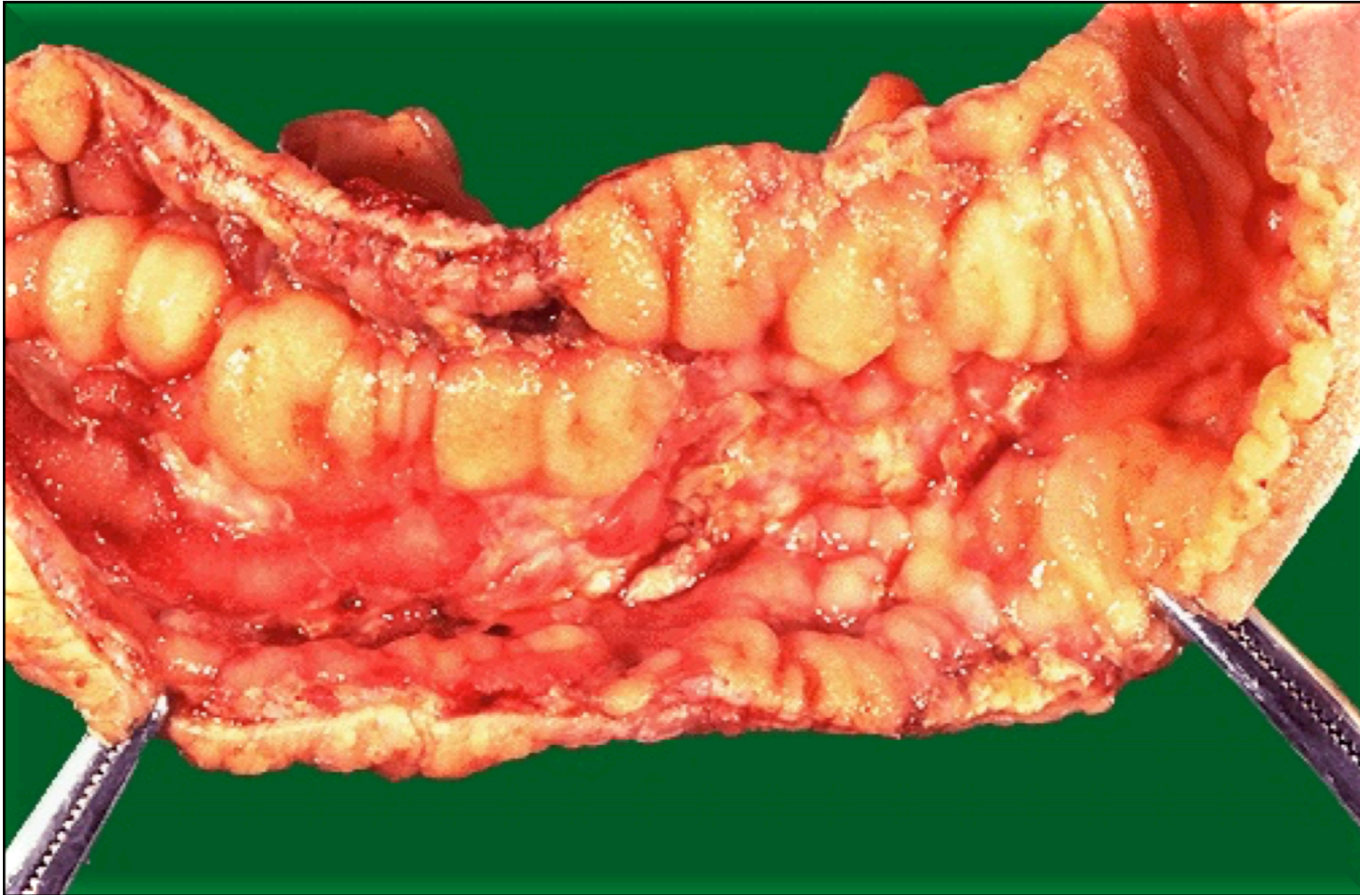
Crohn's disease

Crohn's Disease- Gross



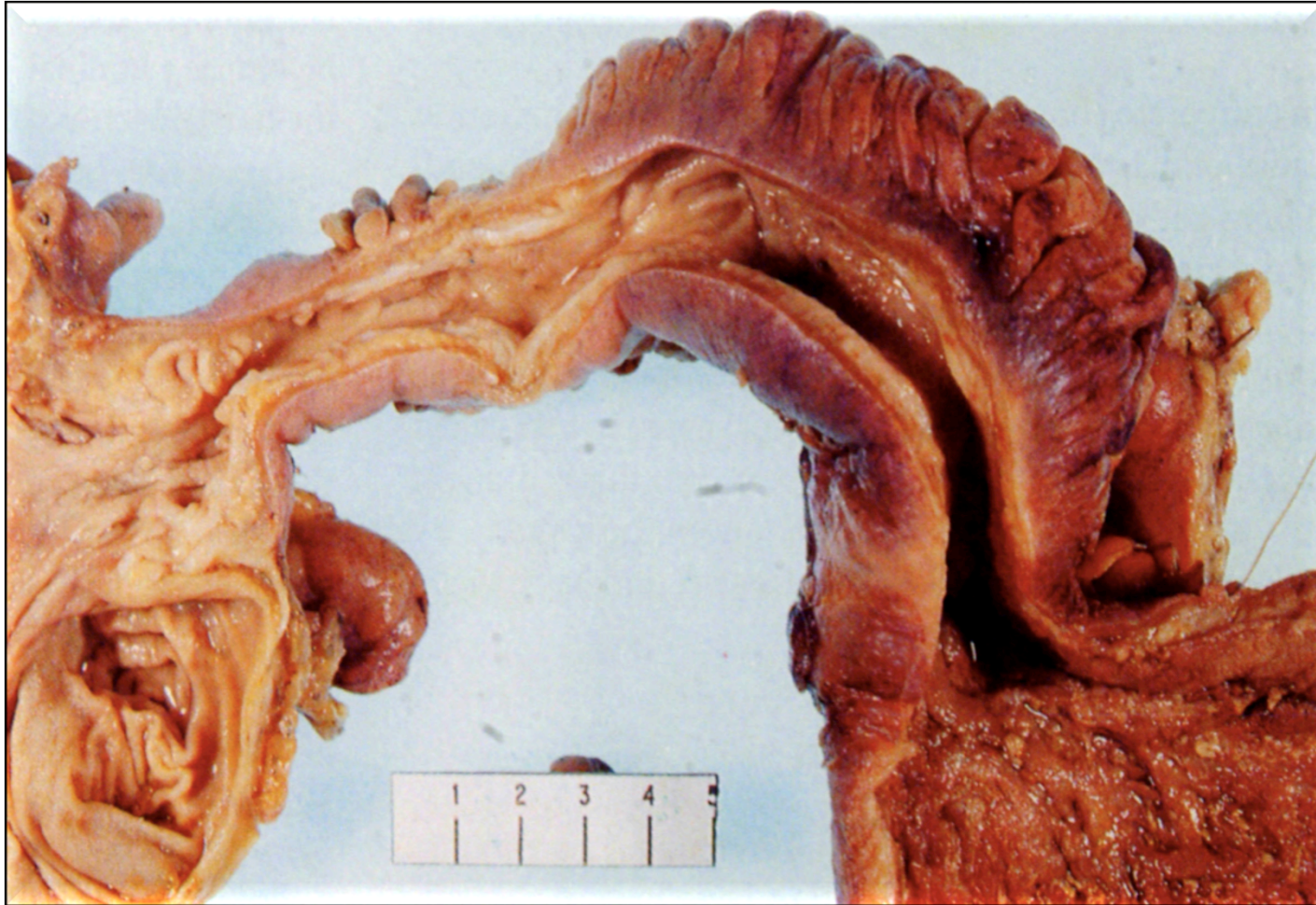
Here the inflammation has produced large, irregularly shaped to rake-like ulcers that are separated from each other by mucosa that appears close to normal.

Crohn's Disease- Gross



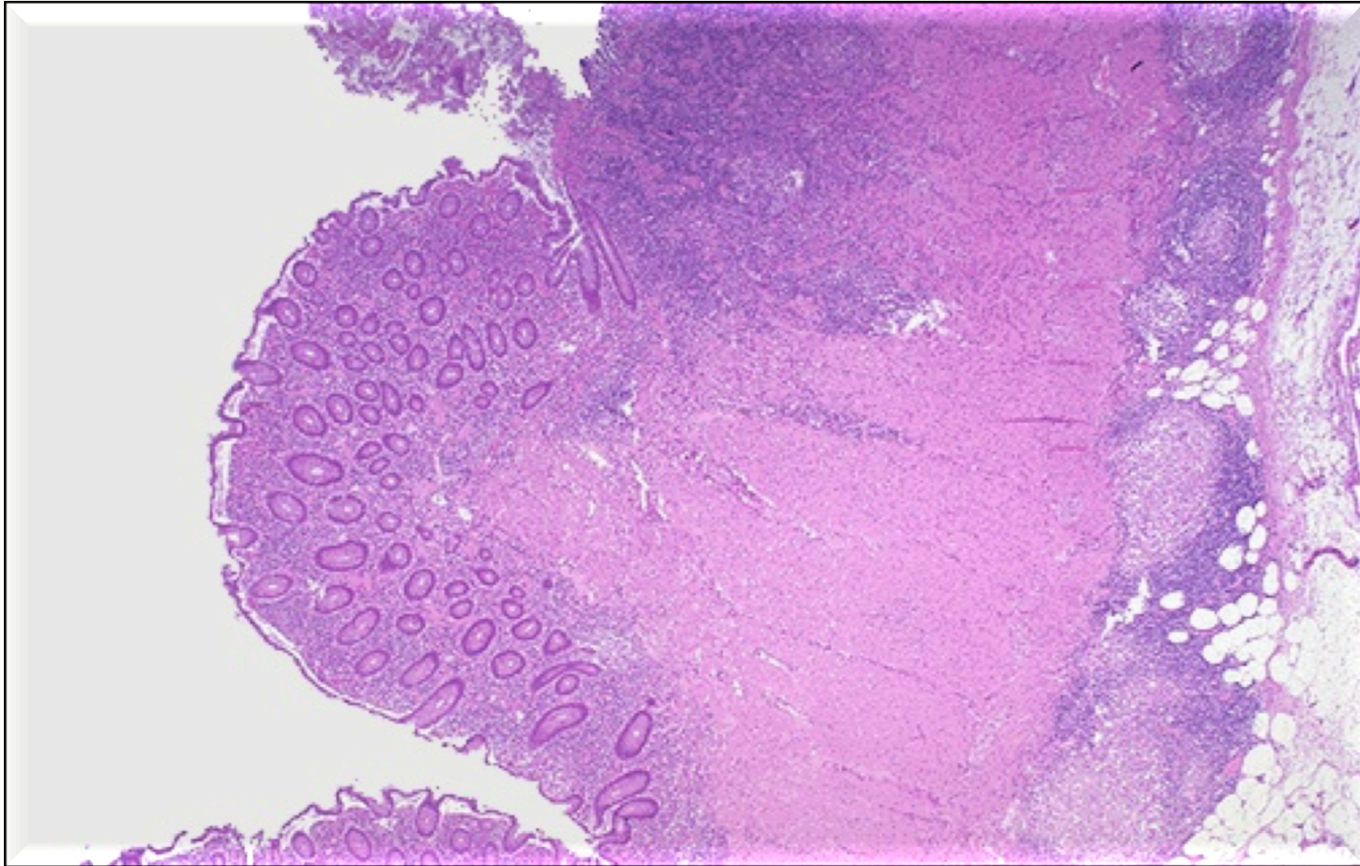
This is another example of Crohn's disease involving the small intestine. Here, the mucosal surface demonstrates an irregular nodular appearance with hyperemia and focal superficial ulceration.

Crohn's Disease vs Normal Colon



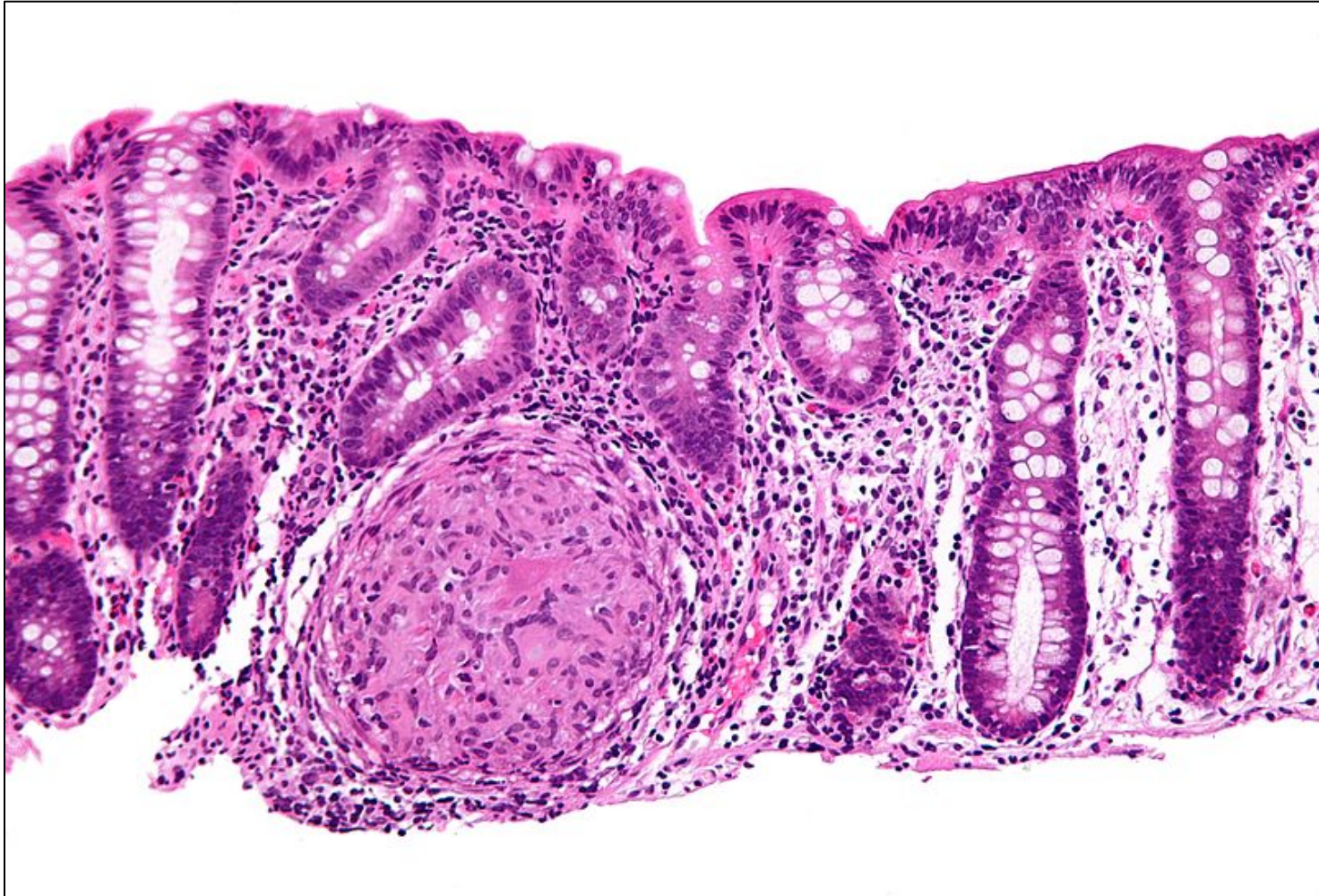
Section of large bowel shows alternating normal and ulcerating mucosa

Crohn's Disease- LPF



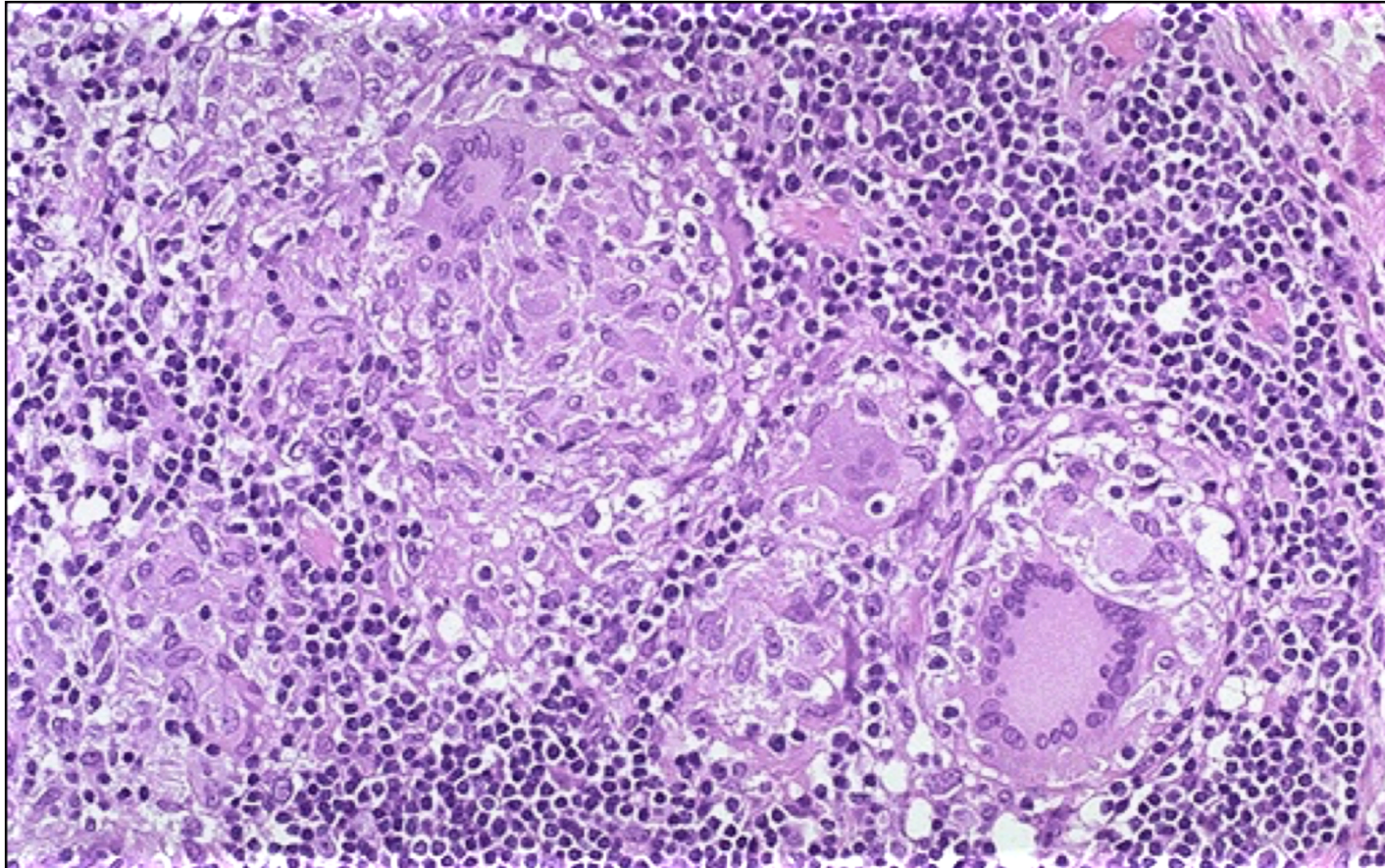
Microscopically, Crohn's disease is characterized by transmural inflammation. Here, inflammatory cells (the bluish infiltrates) extend from mucosa through submucosa and muscularis and appear as nodular infiltrates on the serosal surface with pale granulomatous centers.

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*

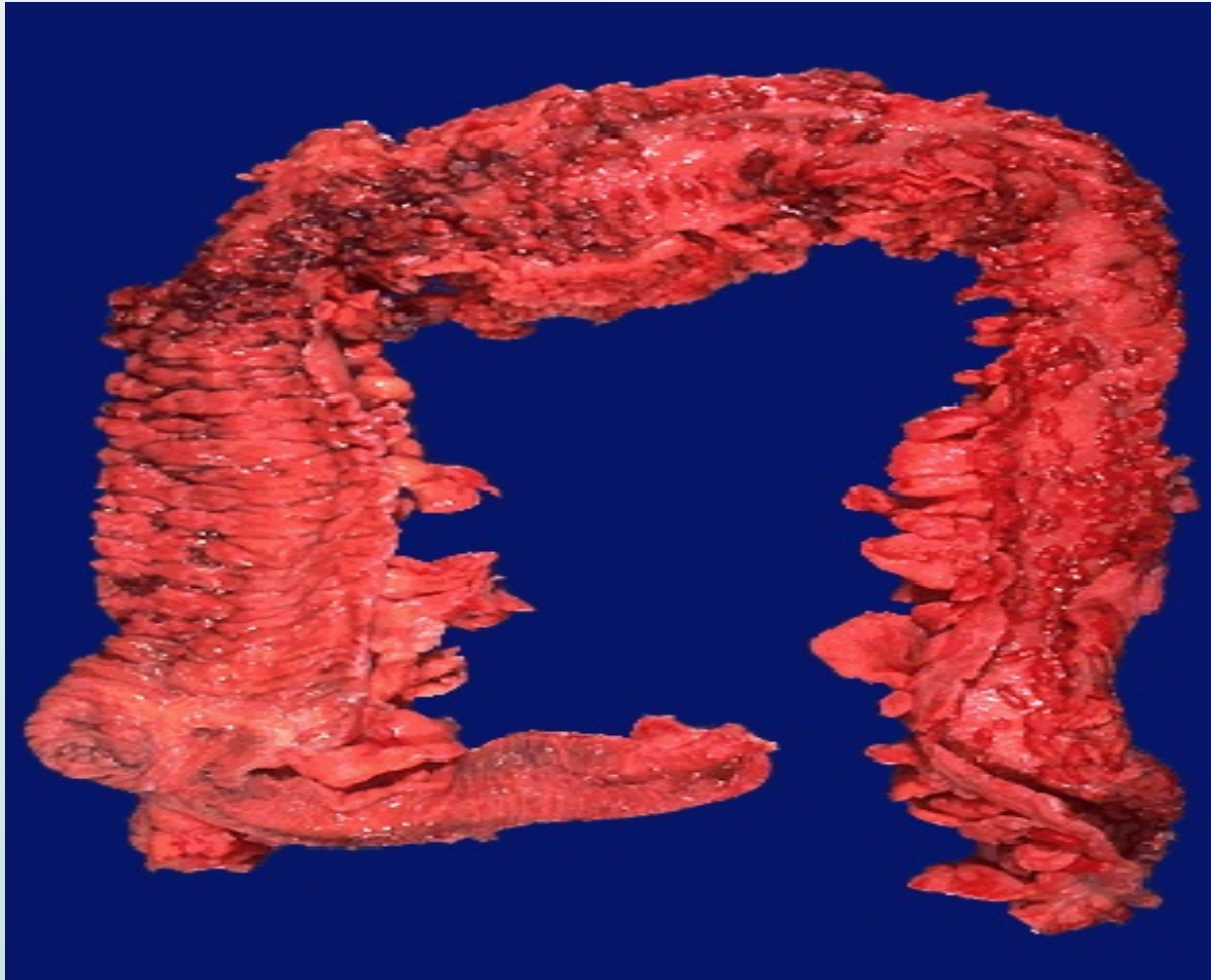
Crohn's Disease- HPF



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.

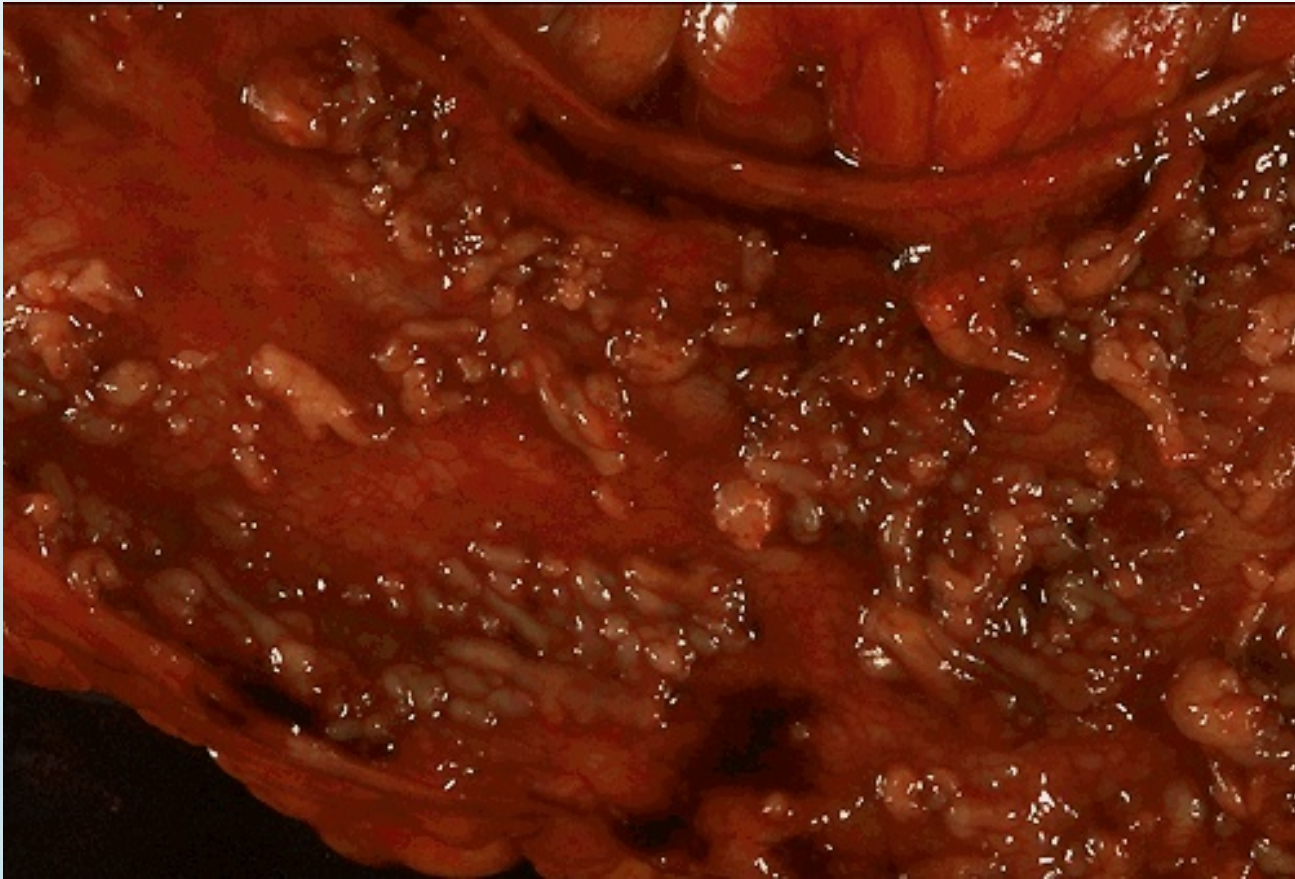
Ulcerative colitis

Chronic Ulcerative Colitis - Gross



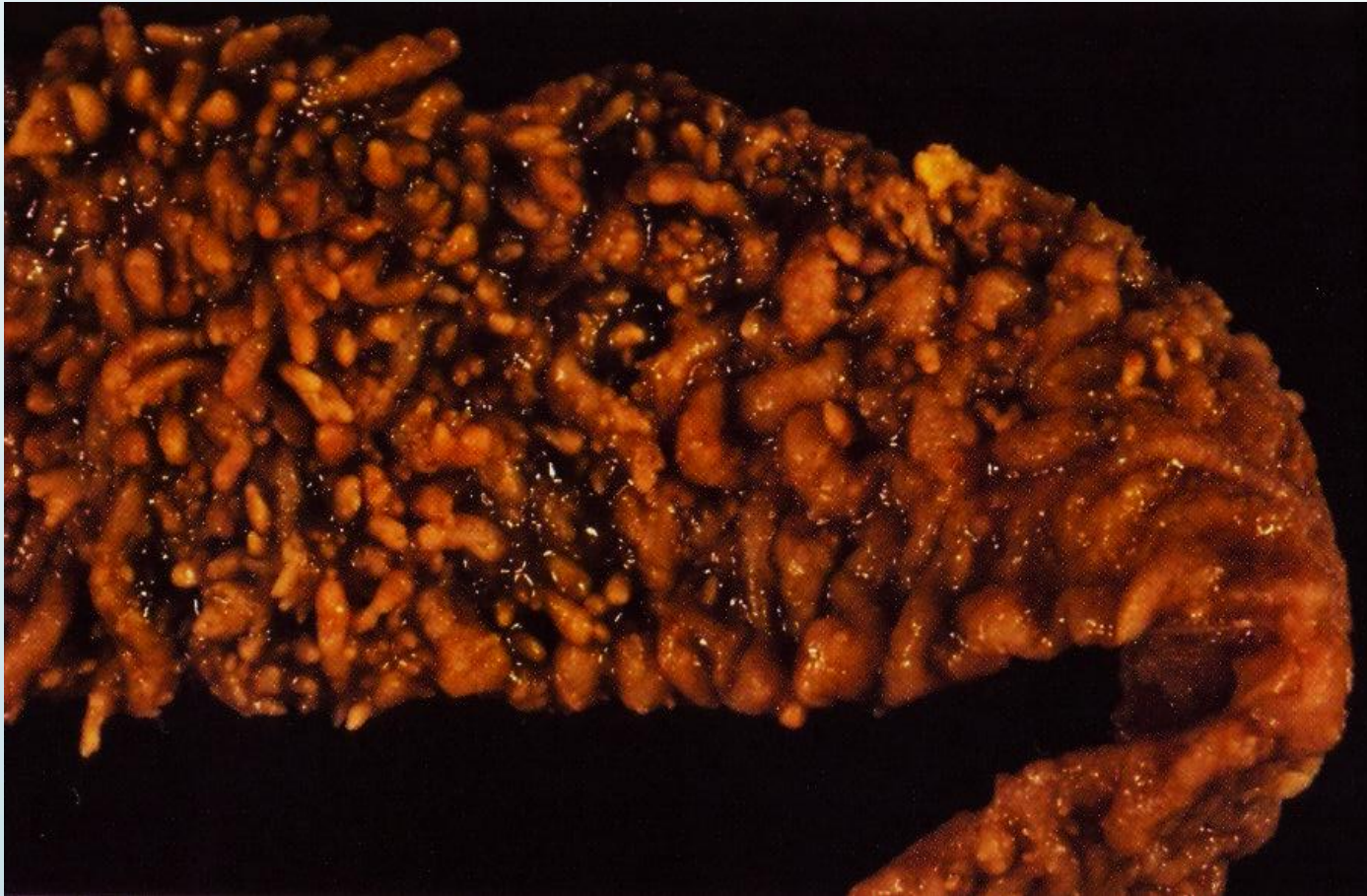
The most intense inflammation begins at the sigmoid colon (Right) and extends upward and around to the ascending colon. At the lower left is the ileocecal valve with a portion of terminal ileum that is not involved.

Pseudopolyps - Gross



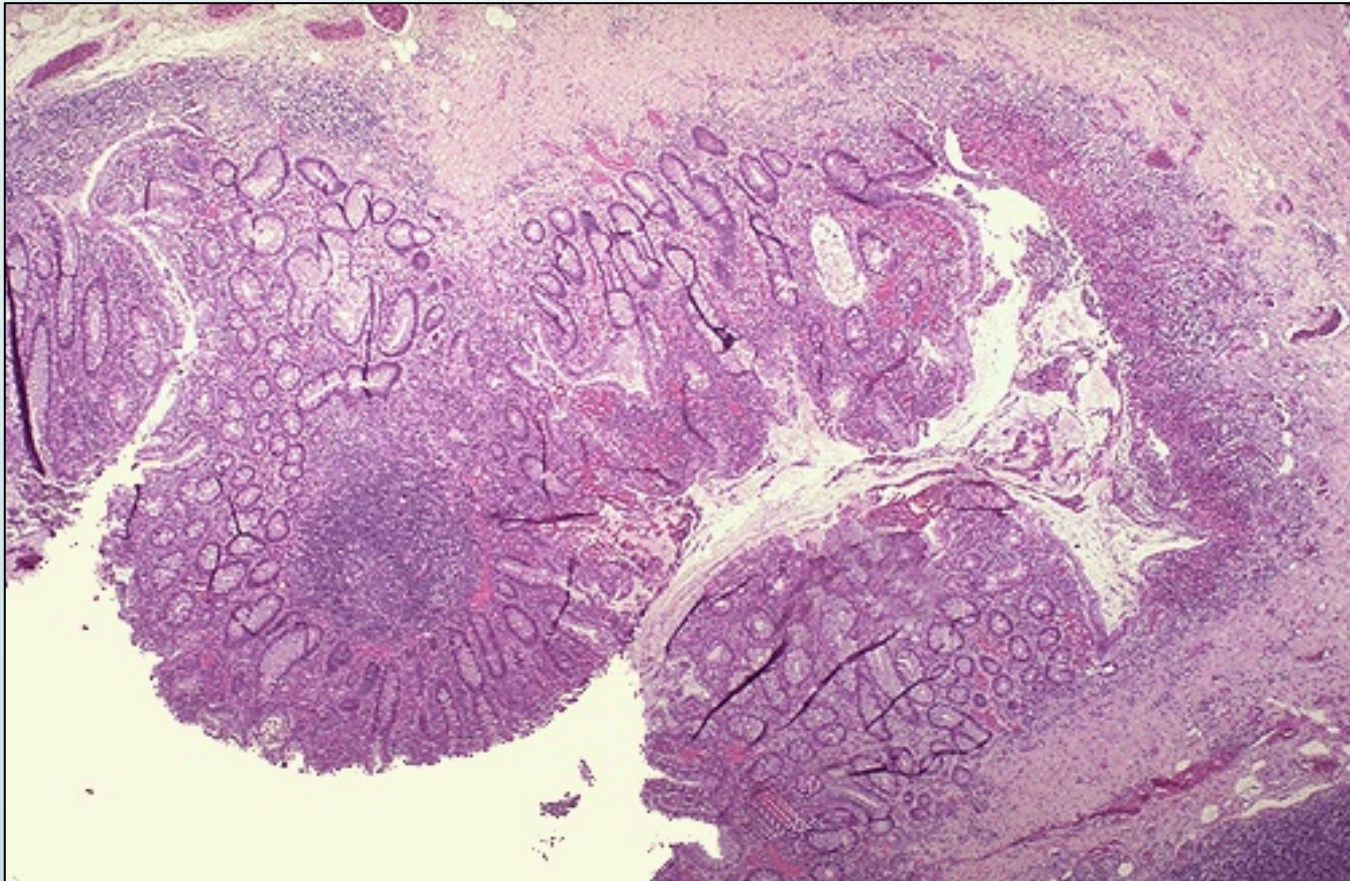
Pseudopolyps are seen here in a case of severe ulcerative colitis. The remaining mucosa has been ulcerated away and is hyperemic.

Pseudopolyps - Gross



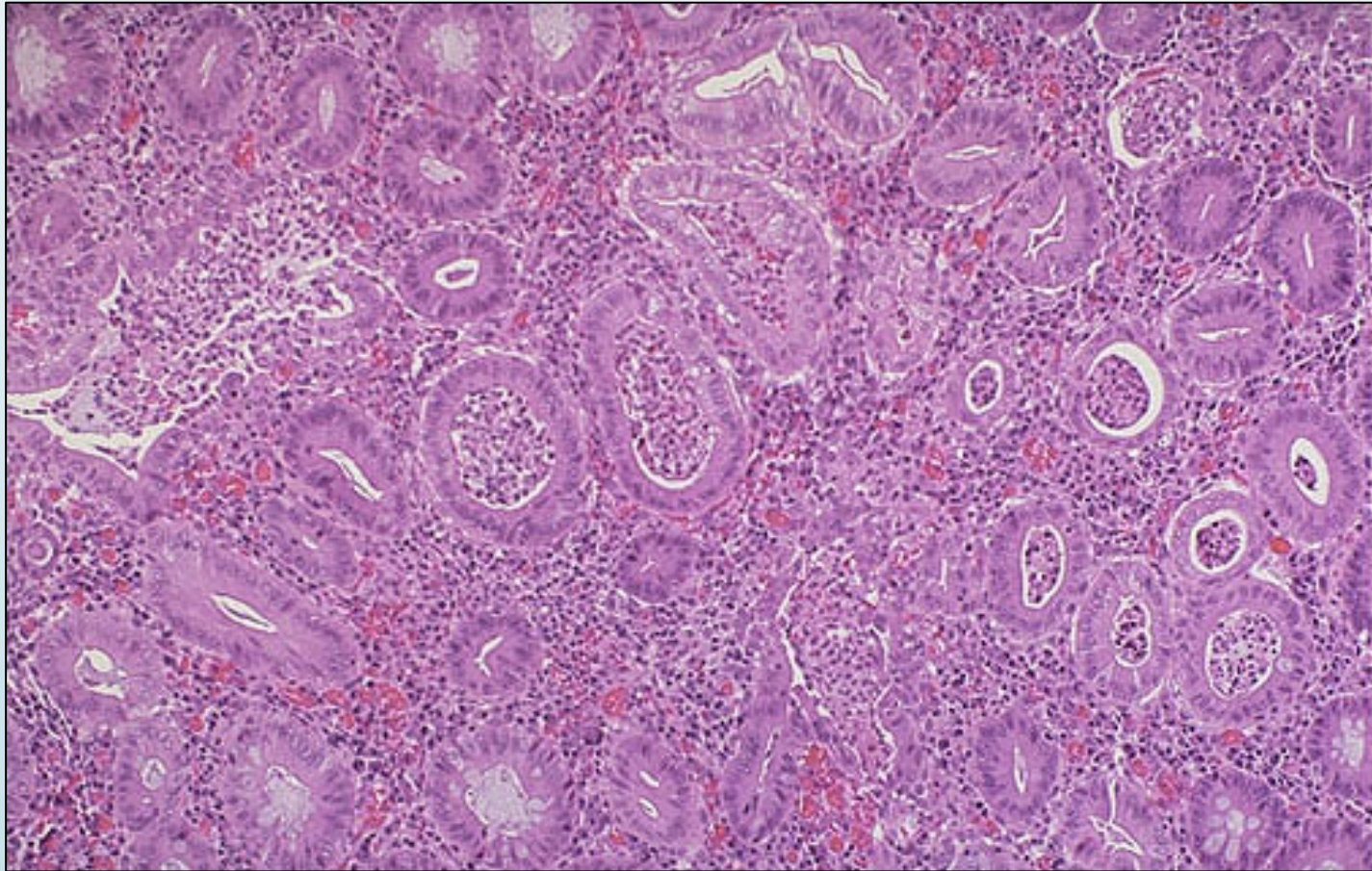
*The picture shows pseudo polyps formation .
Toxic mega colon, glandular dysplasia and
adenocarcinoma are the main complications .*

Chronic Ulcerative Colitis - LPF



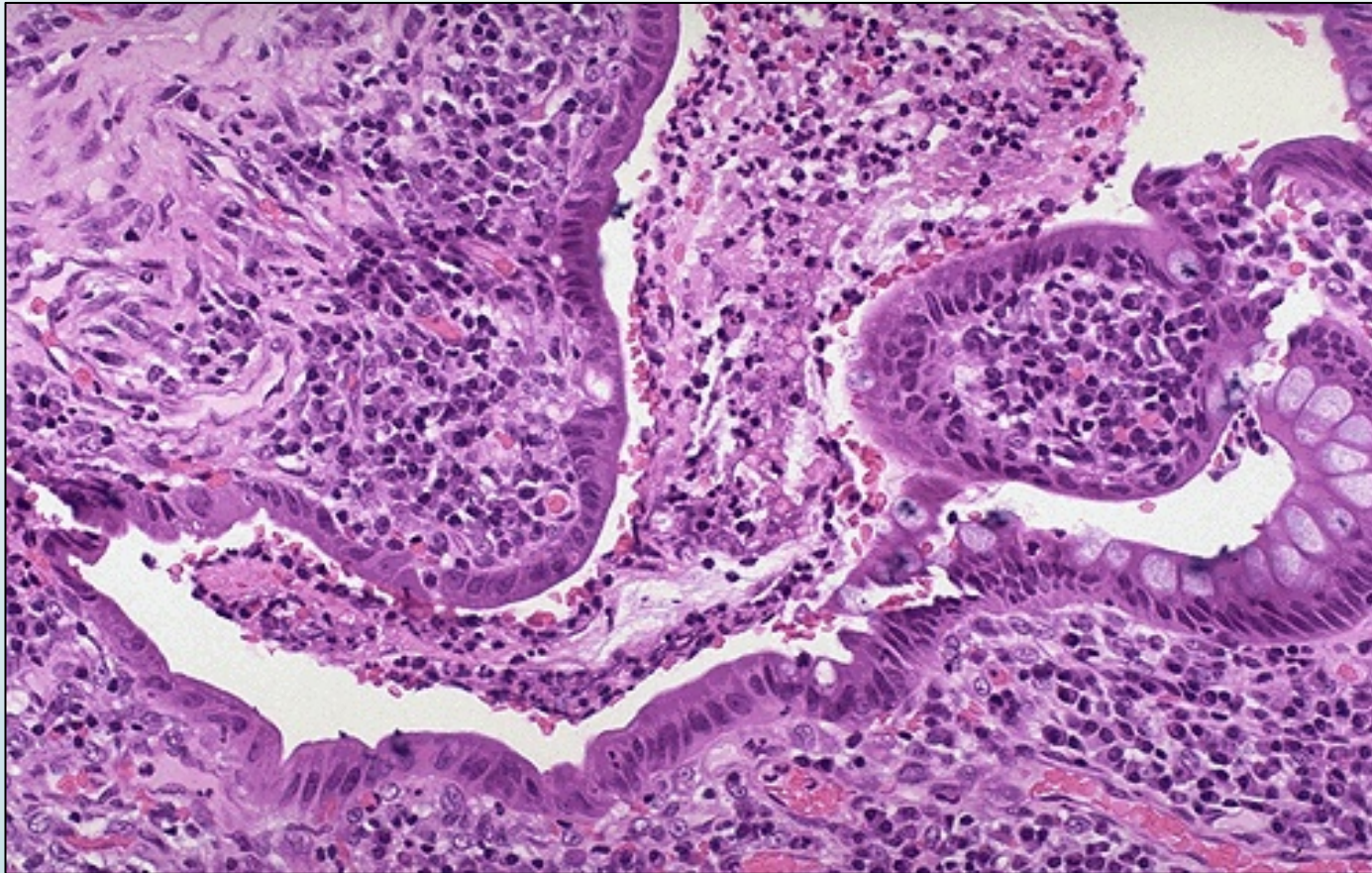
Microscopically, the inflammation of ulcerative colitis is confined primarily to the mucosa. Here, the mucosa is eroded by an ulcer that undermines surrounding mucosa.

Ulcerative Colitis with Crypt Abscesses - MPF



The colonic mucosa of active ulcerative colitis shows "crypt abscesses" in which a neutrophilic exudate is found in glandular lumens. The submucosa shows intense inflammation. The glands demonstrate loss of goblet cells and hyperchromatic nuclei with inflammatory atypia.

Chronic Ulcerative Colitis - HPF



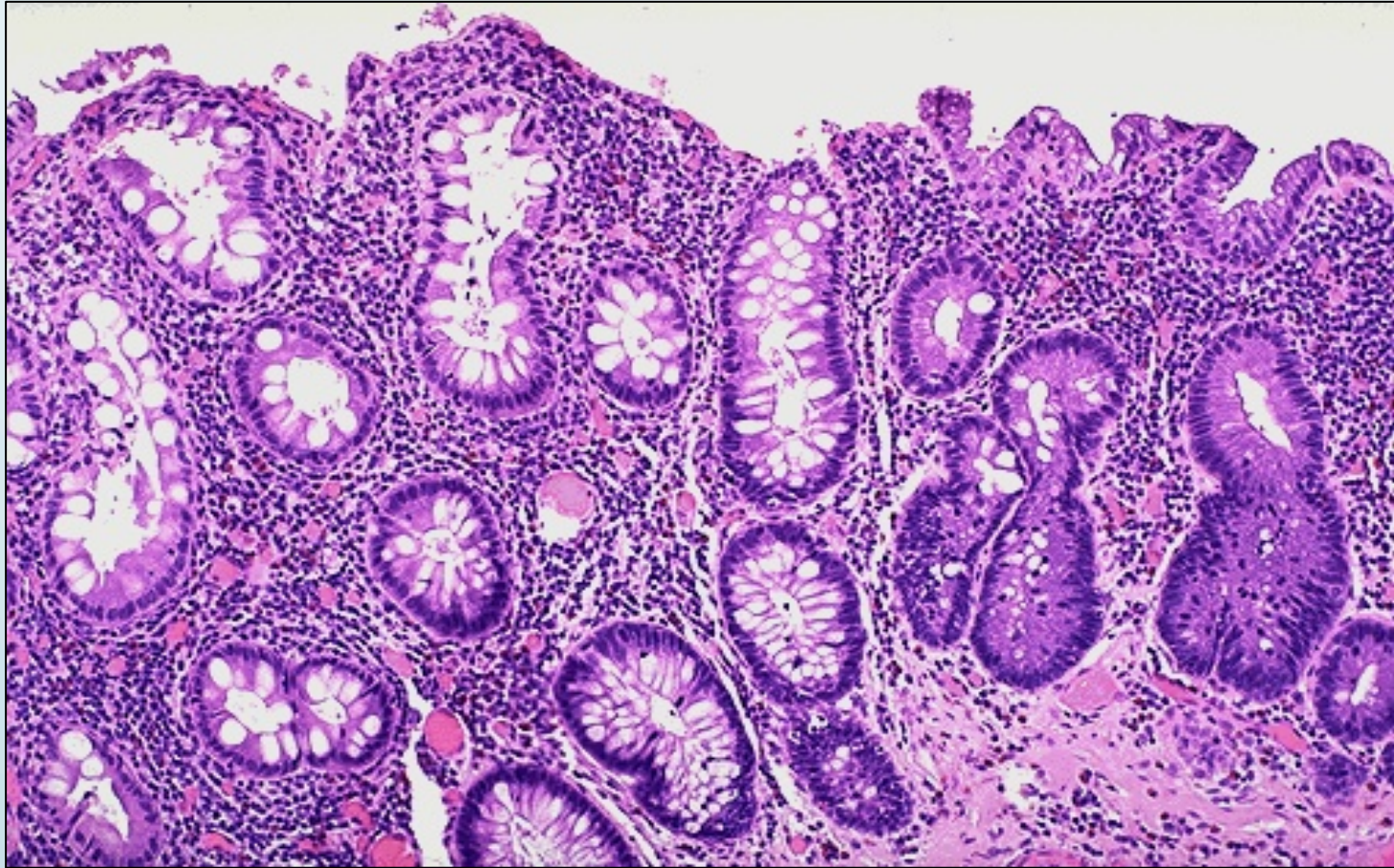
At higher magnification, the intense inflammation of the mucosa is seen. The colonic mucosal epithelium demonstrates loss of goblet cells. An exudate is present over the surface. Both acute and chronic inflammatory cells are present

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

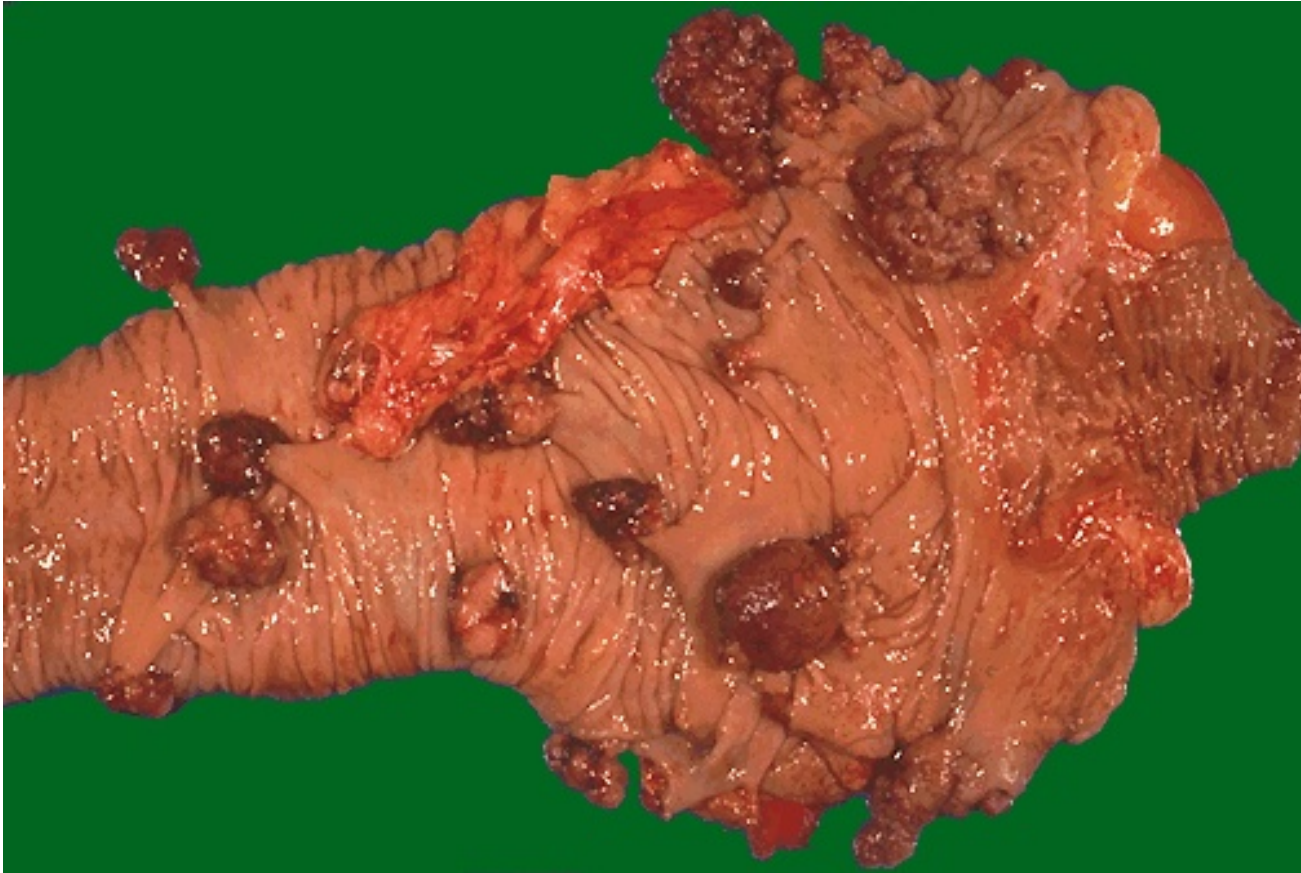
Chronic Ulcerative Colitis with Dysplasia- MPF



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



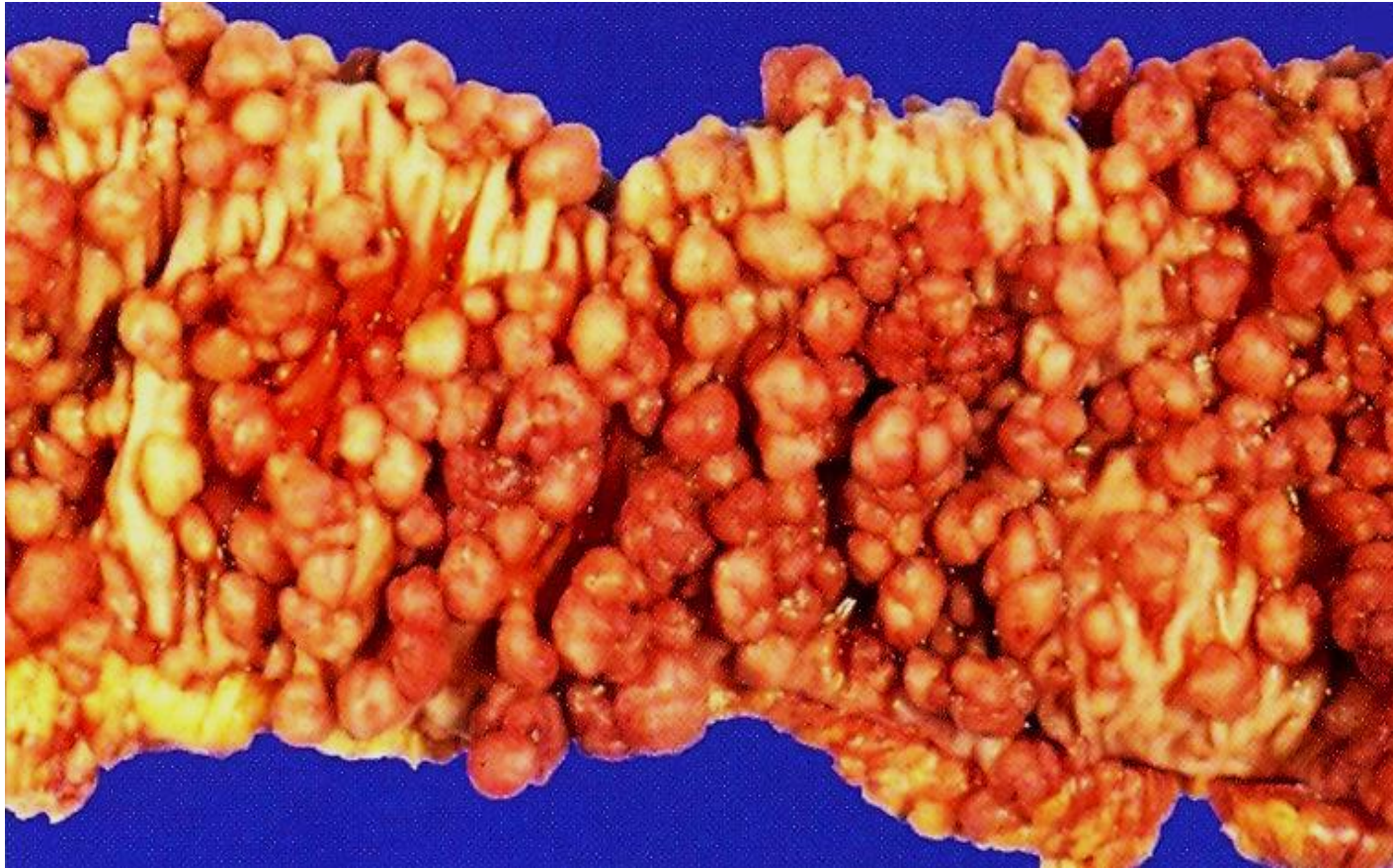
Multiple adenomatous polyps (tubulovillous adenomas) of the cecum are seen here in a case of familial adenomatous polyposis, a genetic syndrome in which an abnormal genetic mutation leads to development of multiple neoplasms in the colon

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



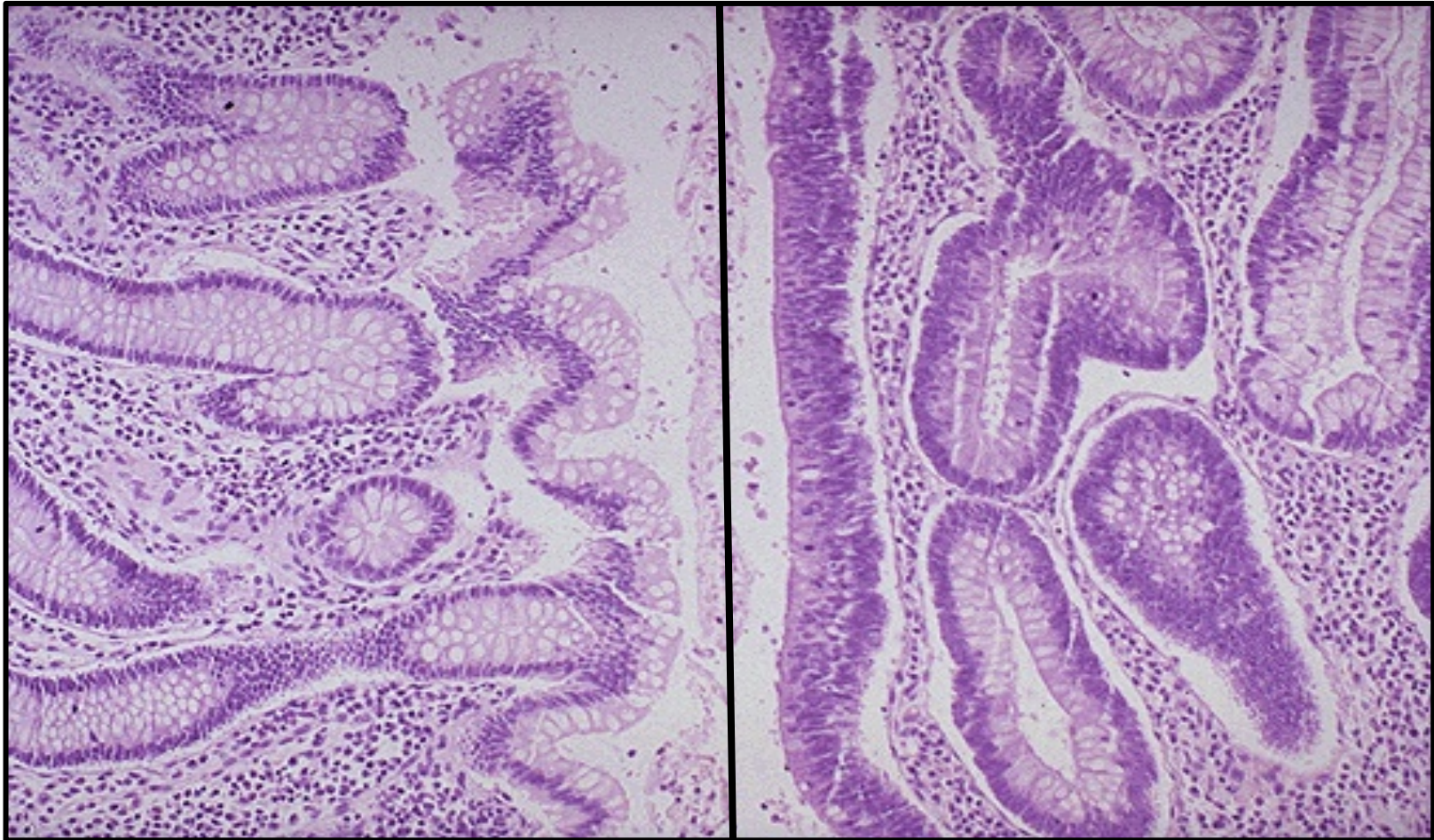
It is caused by mutations of the adenomatous polyposis coli , or APC gene . The major complication is development of adenocarcinoma of the colon.

Adenomatous polyp of the colon - LPF



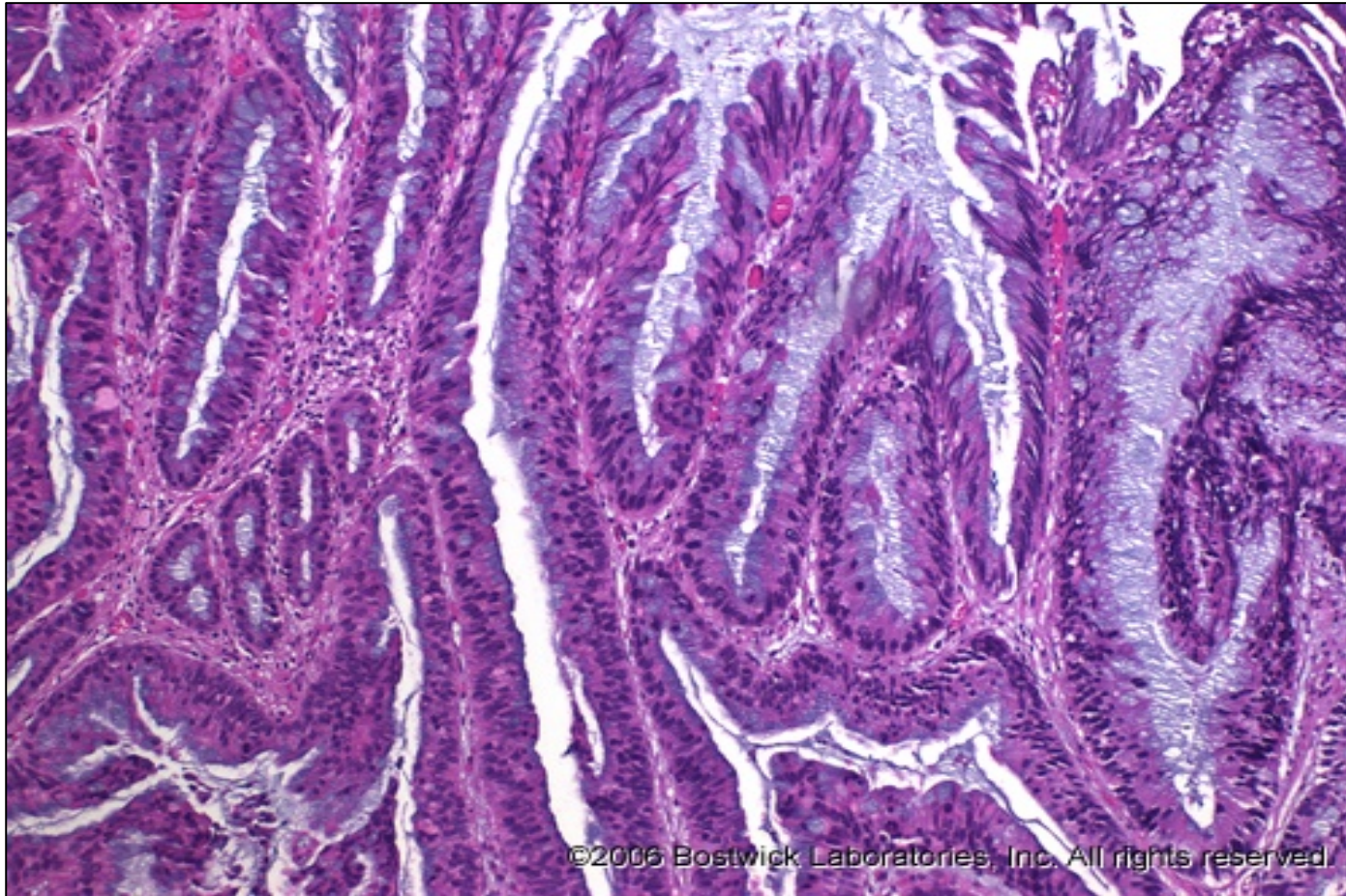
This small adenomatous polyp (tubular adenoma) on a small stalk is seen microscopically to have more crowded, disorganized glands than the normal underlying colonic mucosa. Goblet cells are less numerous and the cells lining the glands of the polyp have hyperchromatic nuclei

Normal vs Adenomatous polyp of the colon - MPF



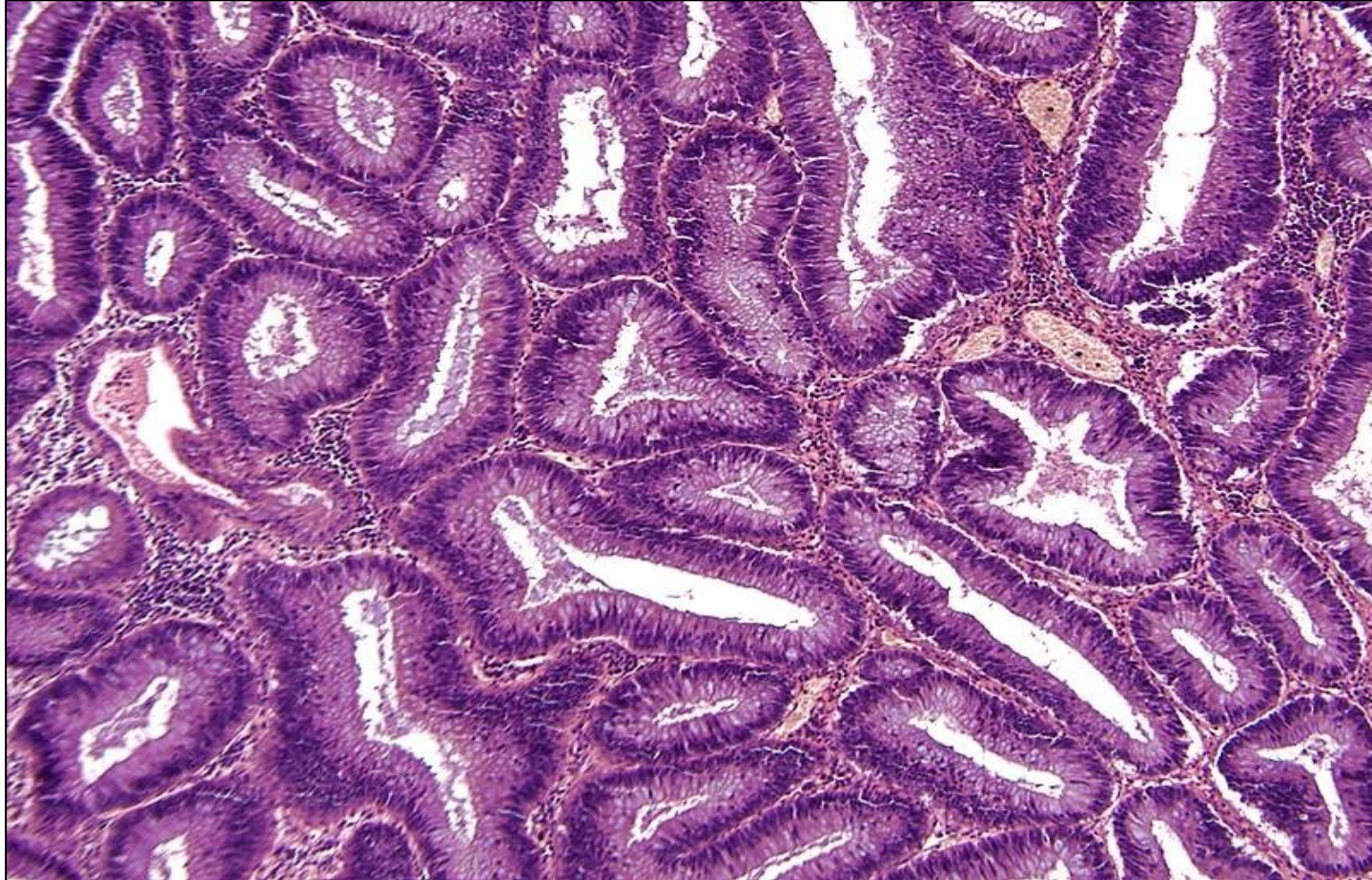
A microscopic comparison of normal colonic mucosa on the left and that of an adenomatous polyp (tubular adenoma) on the right is seen here. The neoplastic glands are more irregular with darker (hyperchromatic) and more crowded nuclei

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.

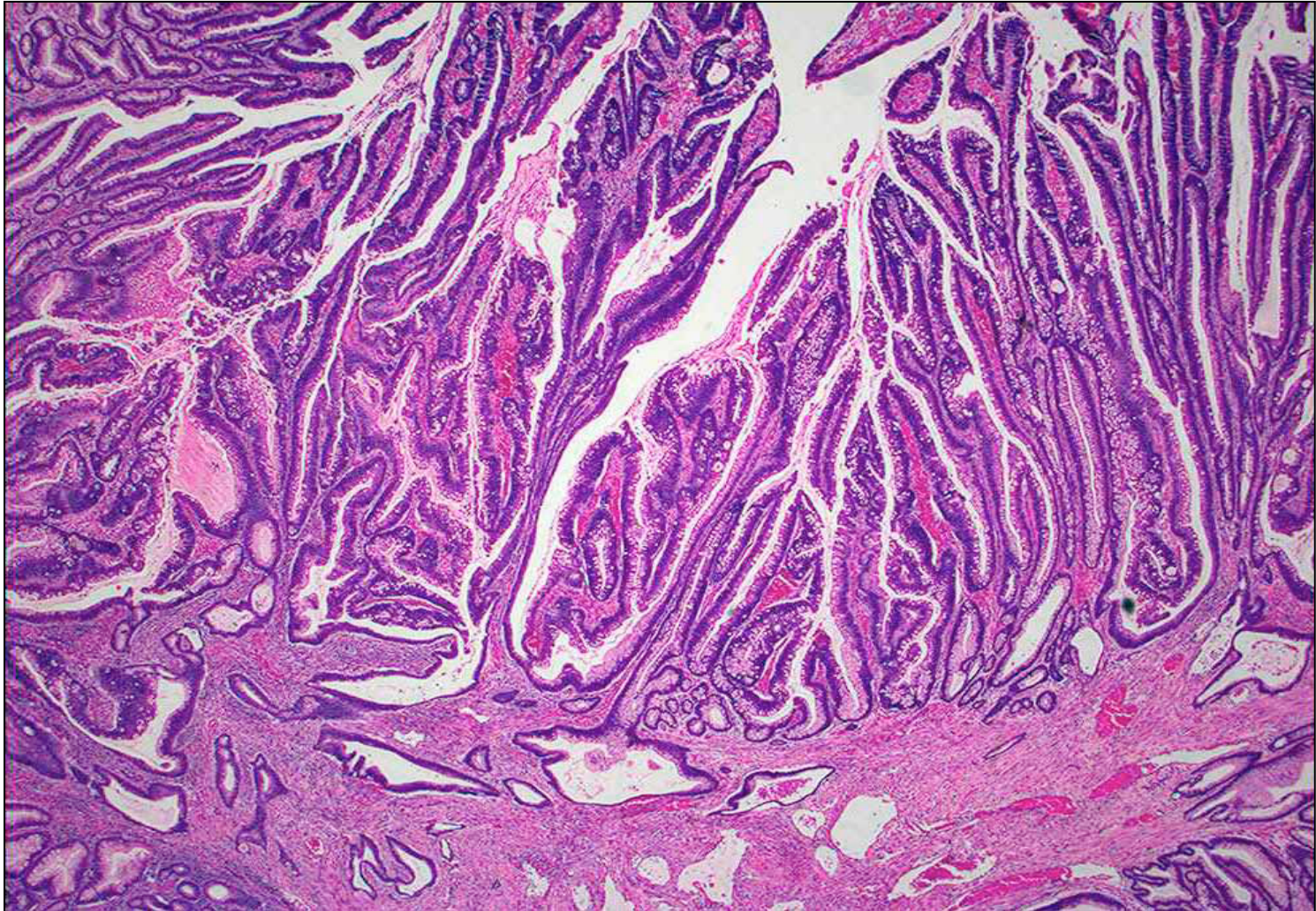
Adenocarcinoma of the large intestine

Adenocarcinoma of the Colon - Gross



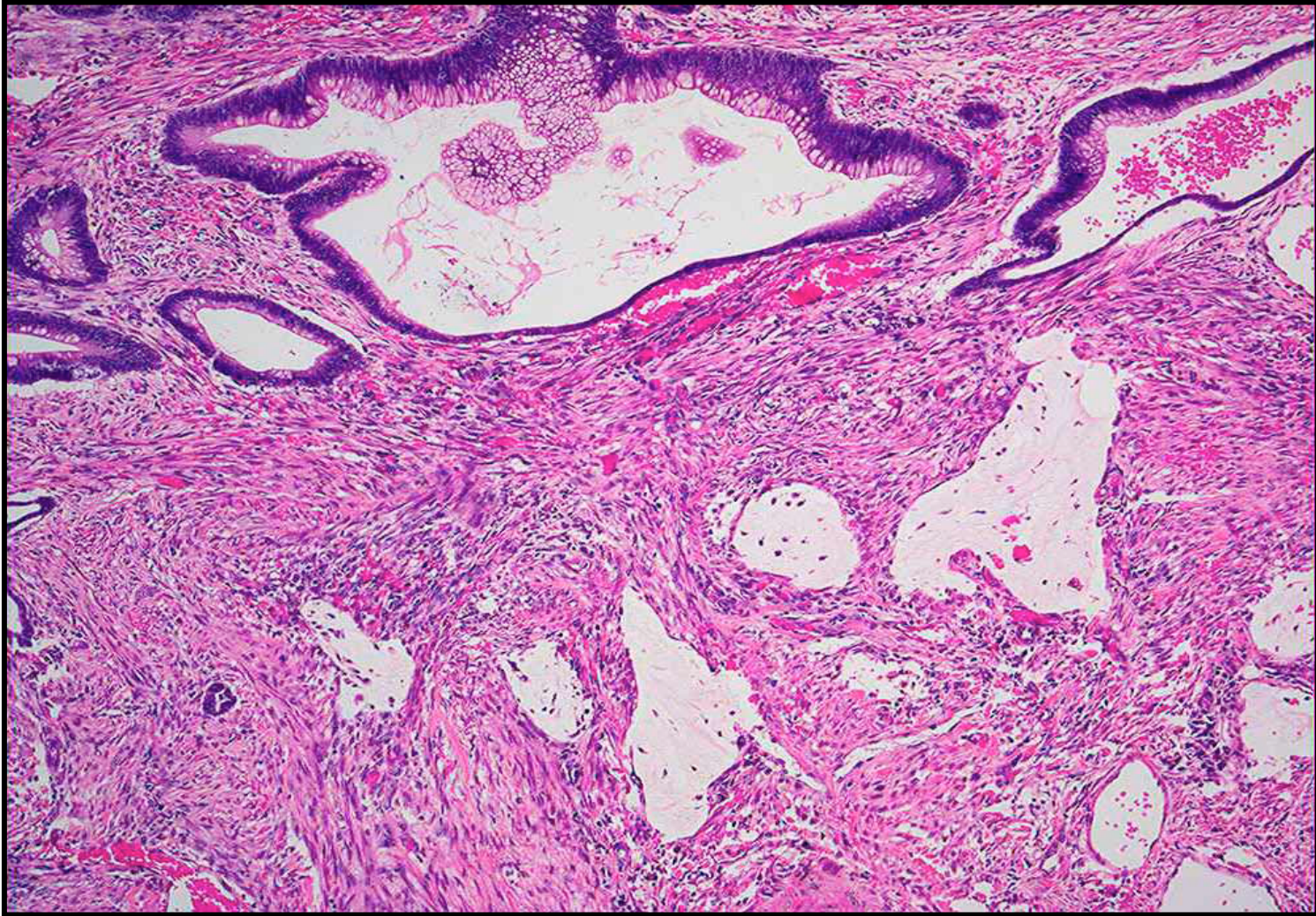
This is an adenocarcinoma arising in a villous adenoma. The surface of the neoplasm is polypoid and reddish pink. Hemorrhage from the surface of the tumor creates a guaiac positive stool. This neoplasm was located in the sigmoid colon

Adenocarcinoma of the Colon - LPF



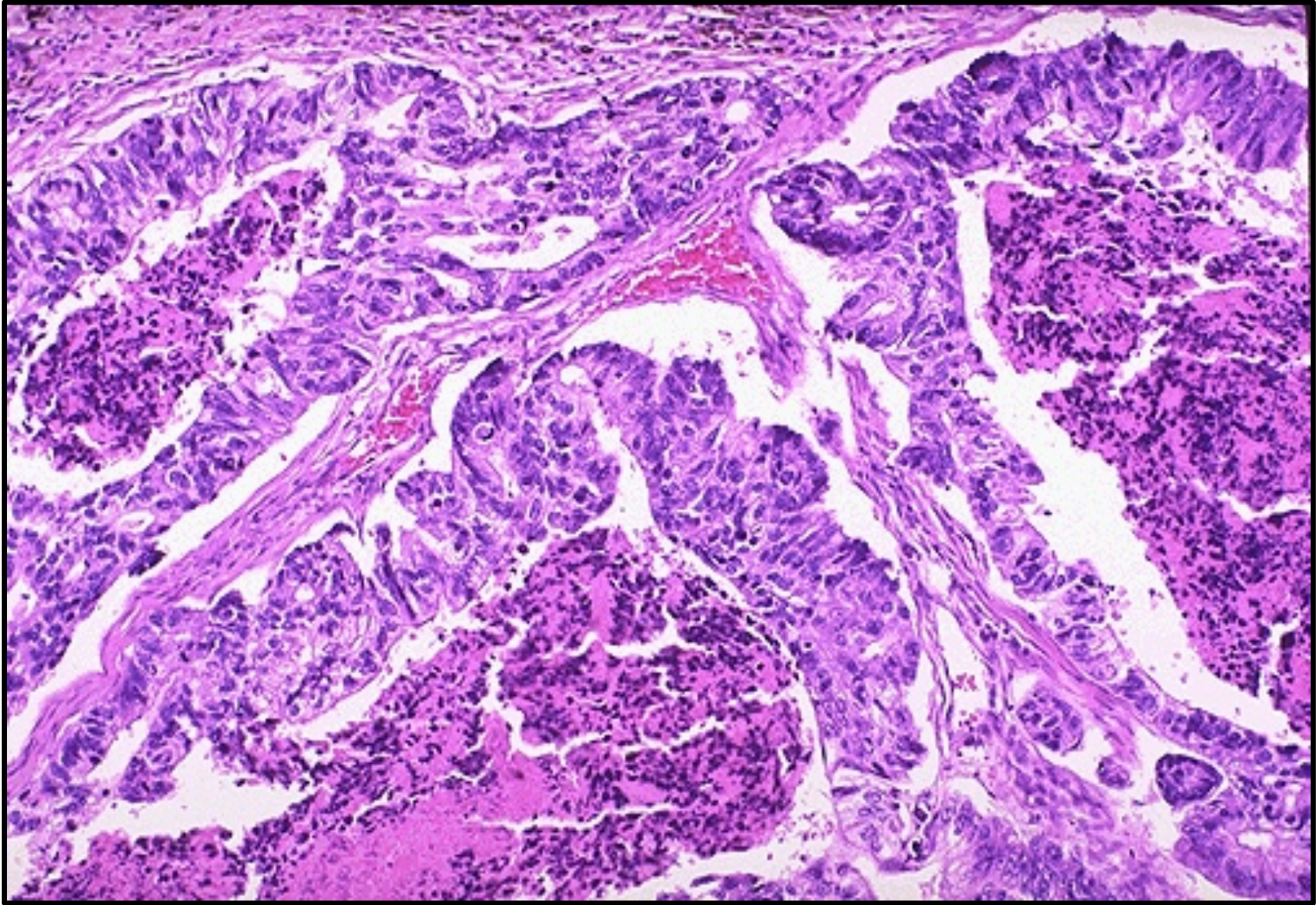
Tumour consists of crowded irregular malignant acini separated by thin fibrovascular stroma.

Adenocarcinoma of the Colon - LPF



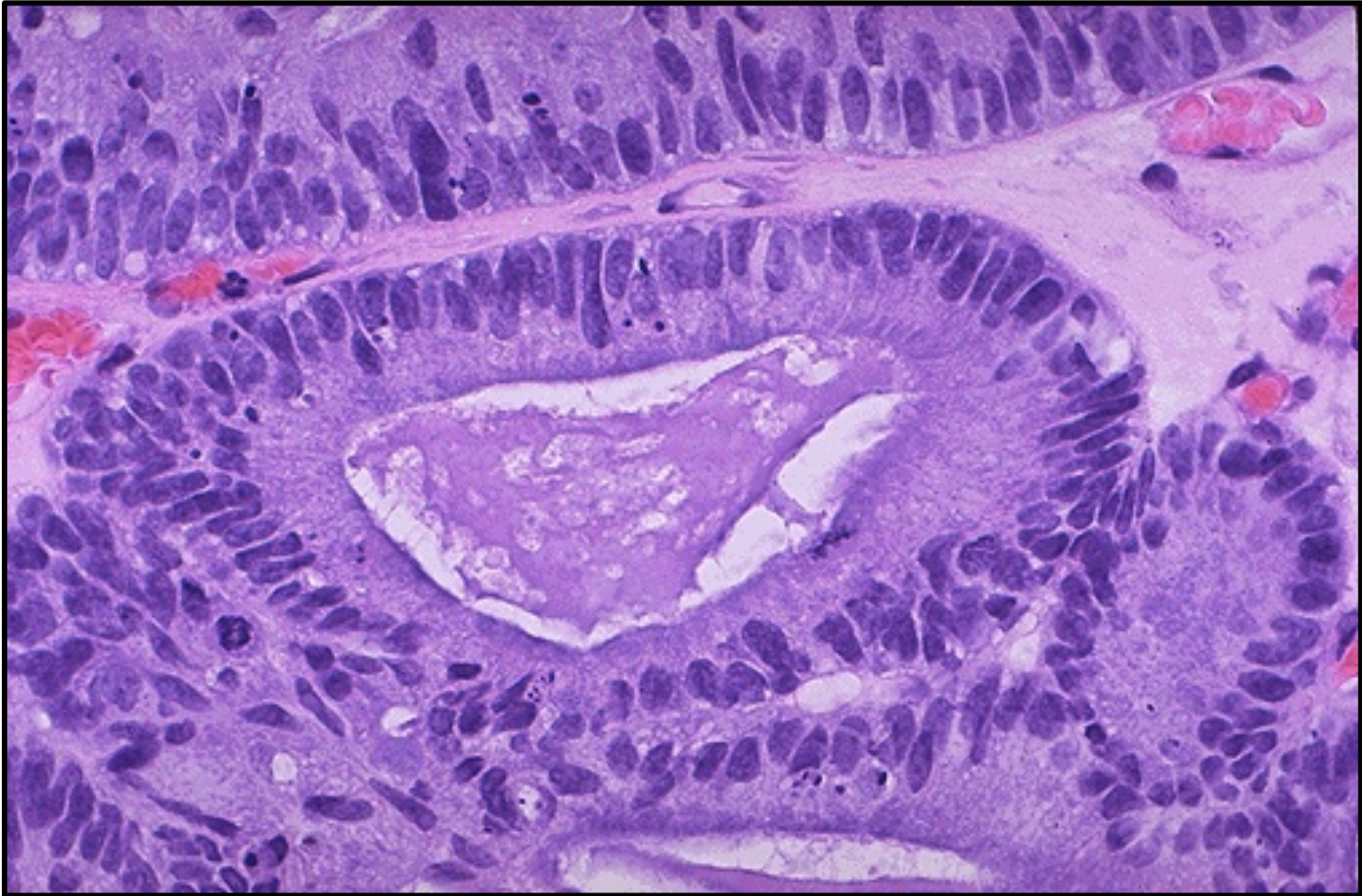
The acini are lined by one or several layers of neoplastic cells with papillary projection showing pleomorphism, hyperchromatism and few mitoses.

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

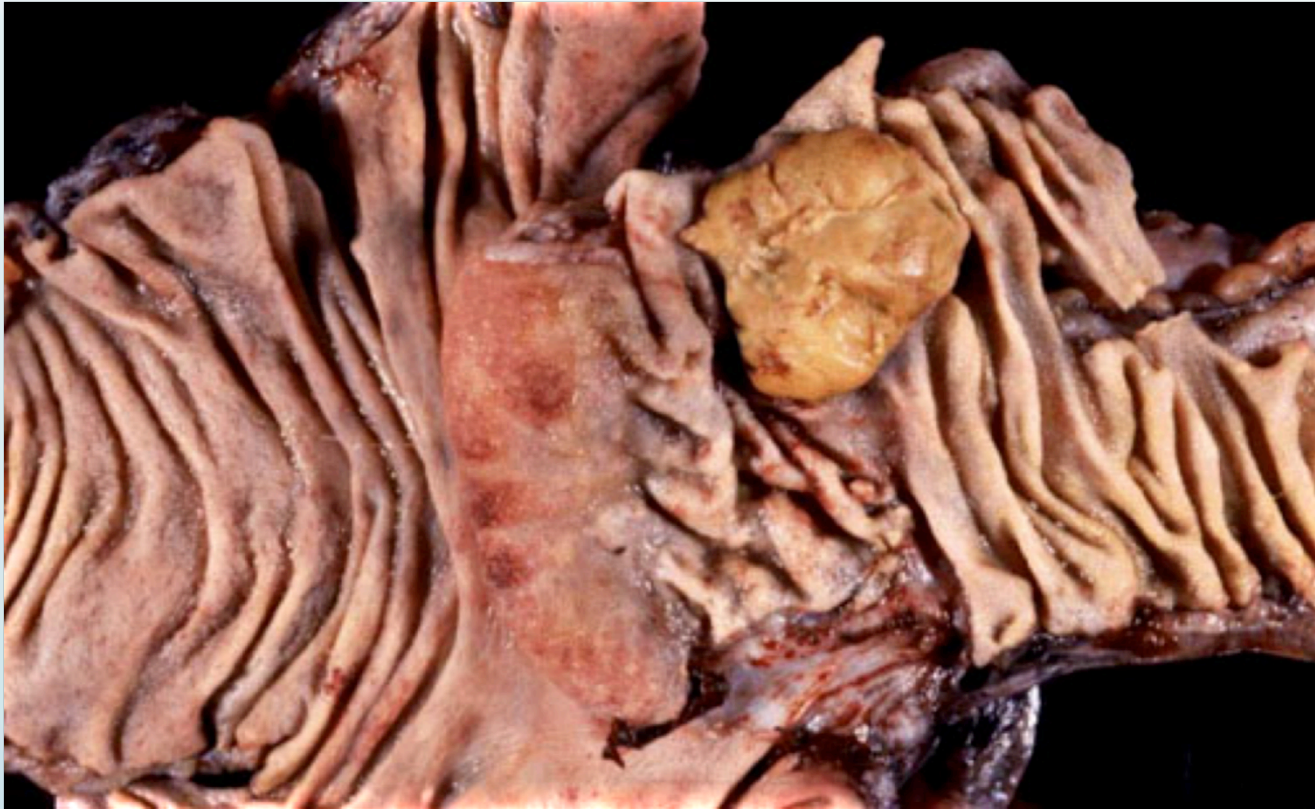


At high magnification, the neoplastic glands of adenocarcinoma have crowded nuclei with hyperchromatism and pleomorphism. No normal goblet cells are seen



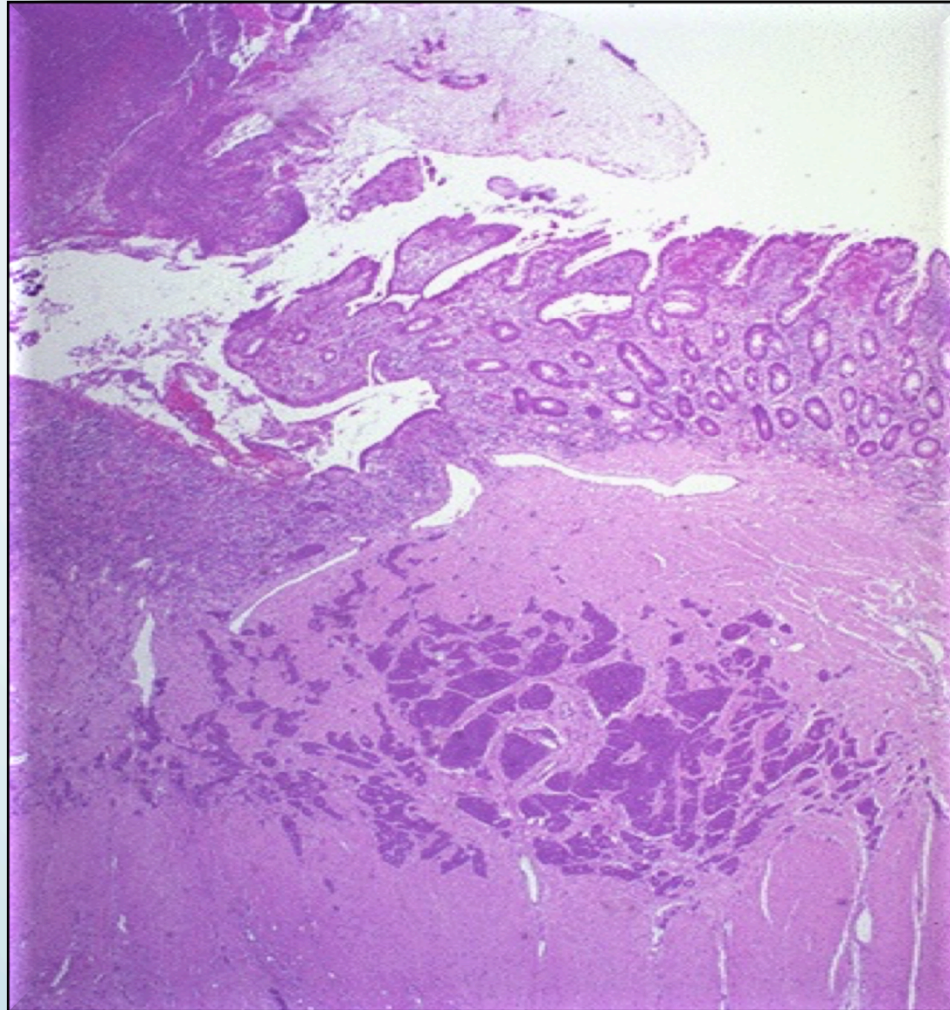
Carcinoid tumor of Small Intestine

Carcinoid tumor of small intestine - Gross



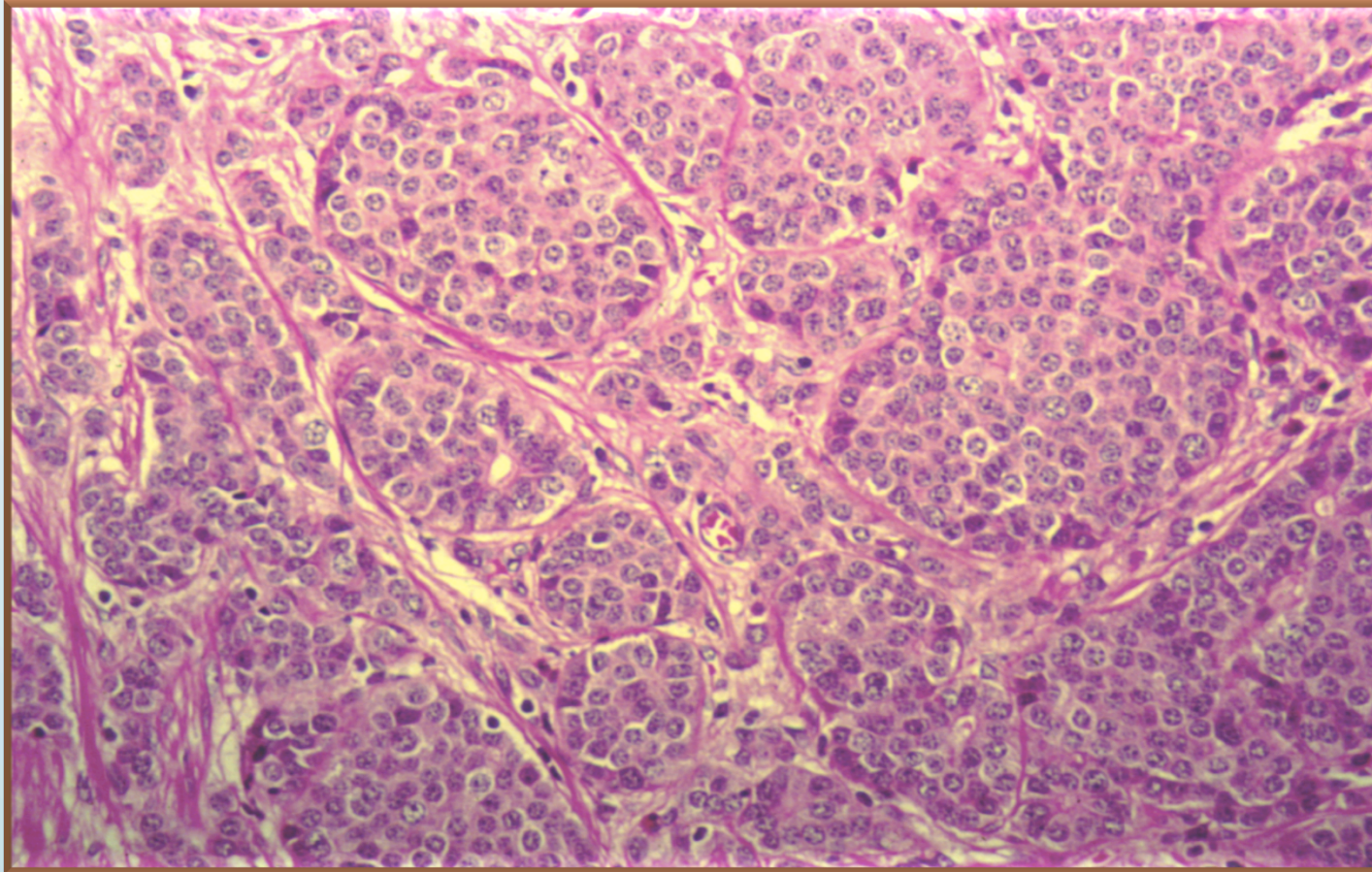
Neoplasms of the small intestine are uncommon. Benign tumors can include leiomyomas, fibromas, neurofibromas, and lipomas. Seen here at the ileocecal valve is another tumor that has a faint yellowish color. This is a carcinoid tumor. Most benign tumors are incidental submucosal lesions, though rarely they can be large enough to obstruct the lumen.

Carcinoid tumor of small intestine - LPF



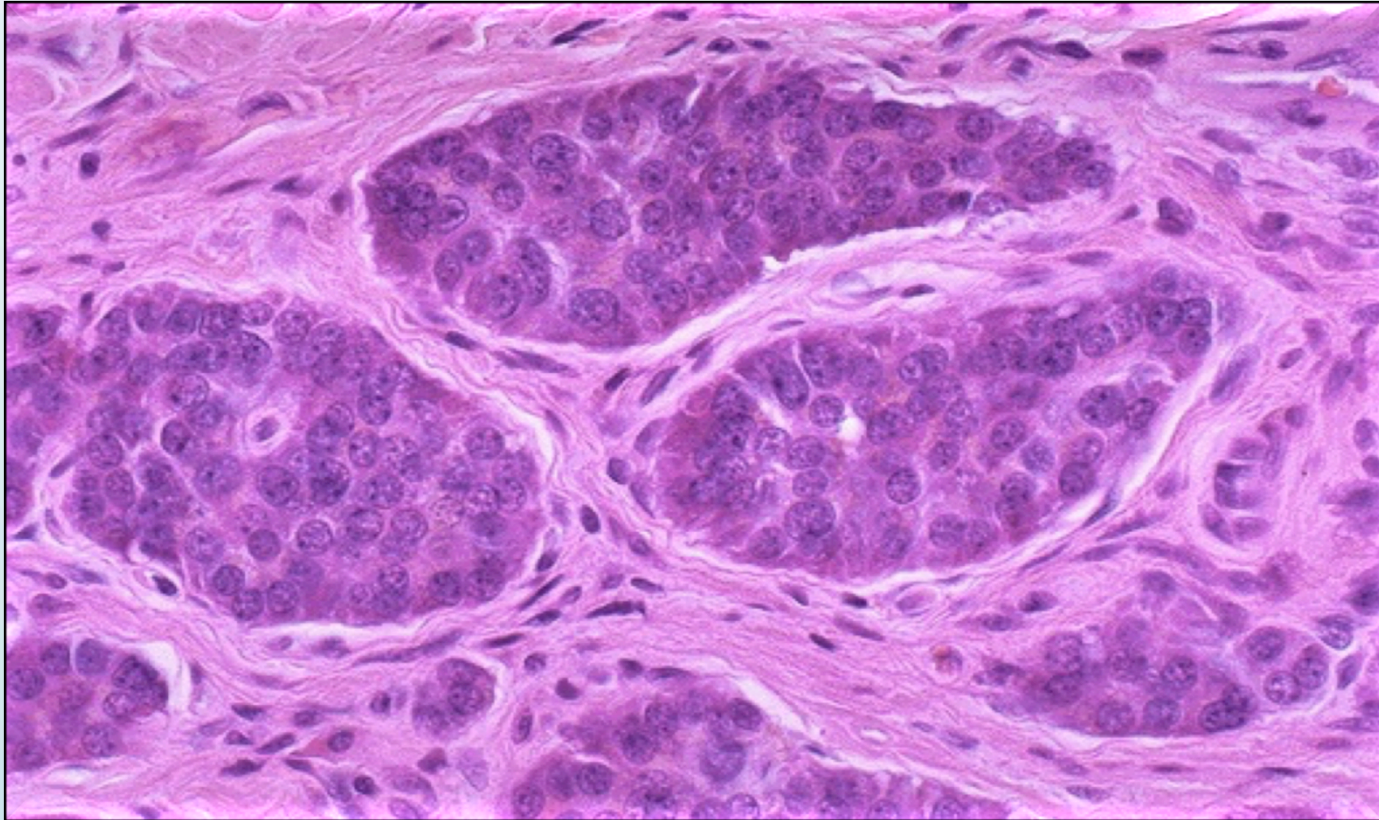
The carcinoid tumor is seen here to be a discreet, though not encapsulated, mass of multiple nests of small blue cells in the submucosa.

Carcinoid tumor of small intestine - MPF



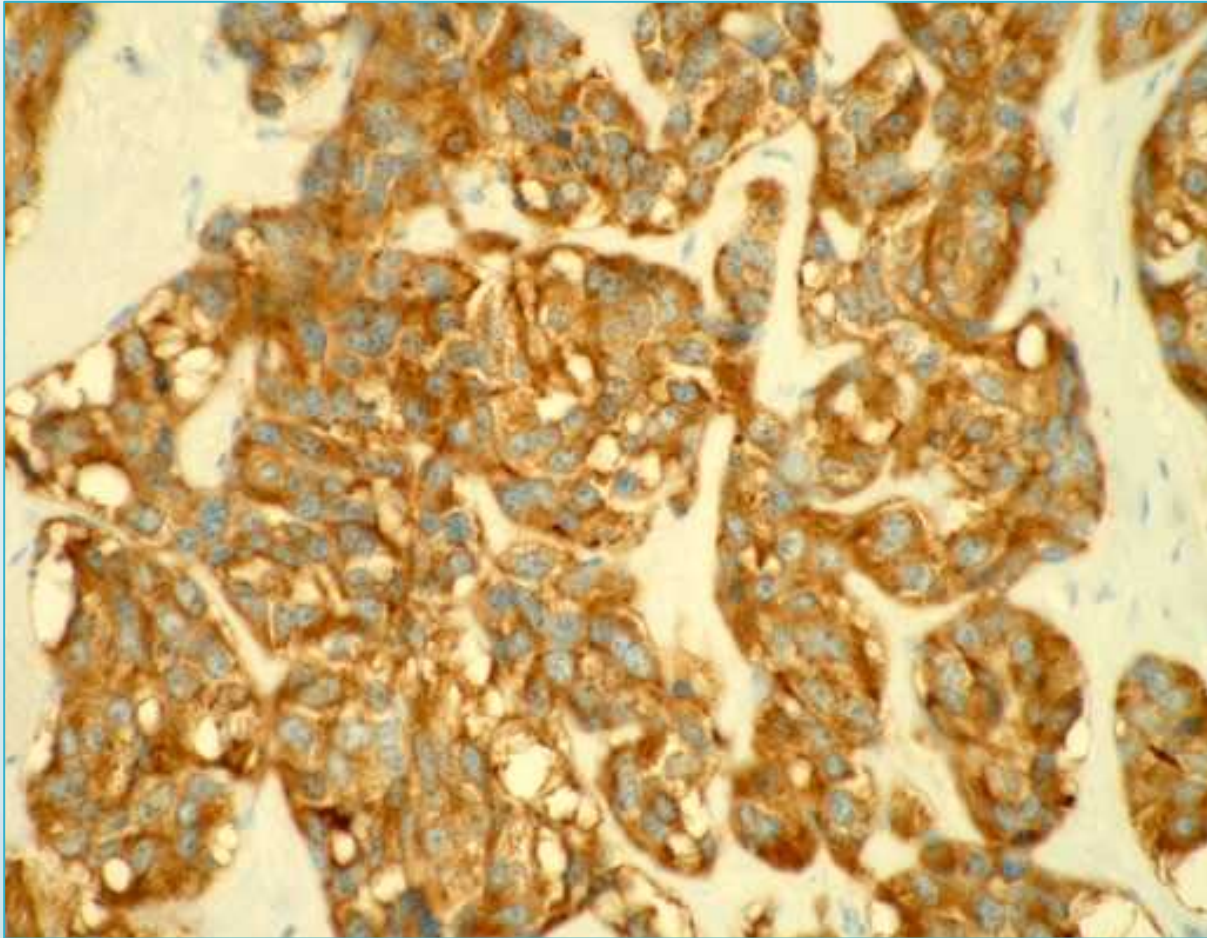
Tumour consists of alveolar groups and clumps of small uniform polygonal cells having centrally placed round nuclei and abundant granular cytoplasm.

Carcinoid tumor of small intestine - HPF

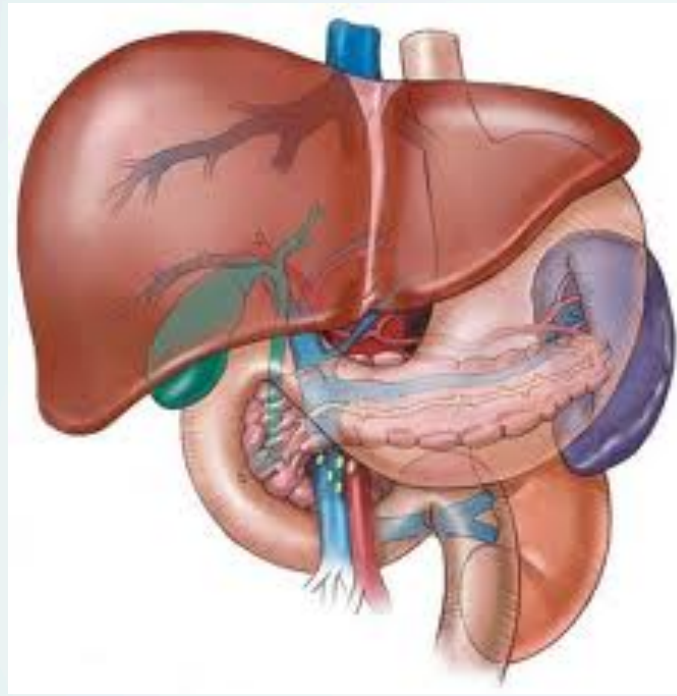


At high magnification, the nests of carcinoid tumor have a typical endocrine appearance with small round cells having small round nuclei and pink to pale blue cytoplasm. Rarely, a malignant carcinoid tumor can occur as a large bulky mass. Metastatic carcinoid to the liver can rarely result in the carcinoid syndrome.

Carcinoid tumor of small intestine – IHC stain



Carcinoid tumor showing strong positive staining with the synaptophysin immunohistochemical stain (IHC stain). This finding confirms the neuroendocrine nature of this neoplasm.



Hepatobiliary system



Normal anatomy and histology

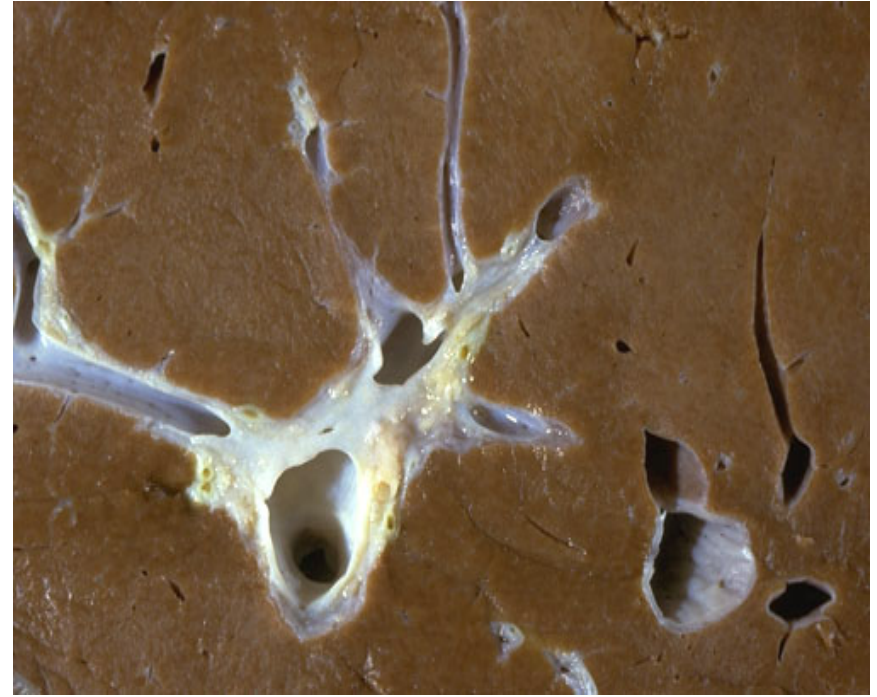
Normal Liver anatomy - Gross & Cut surface

External surface

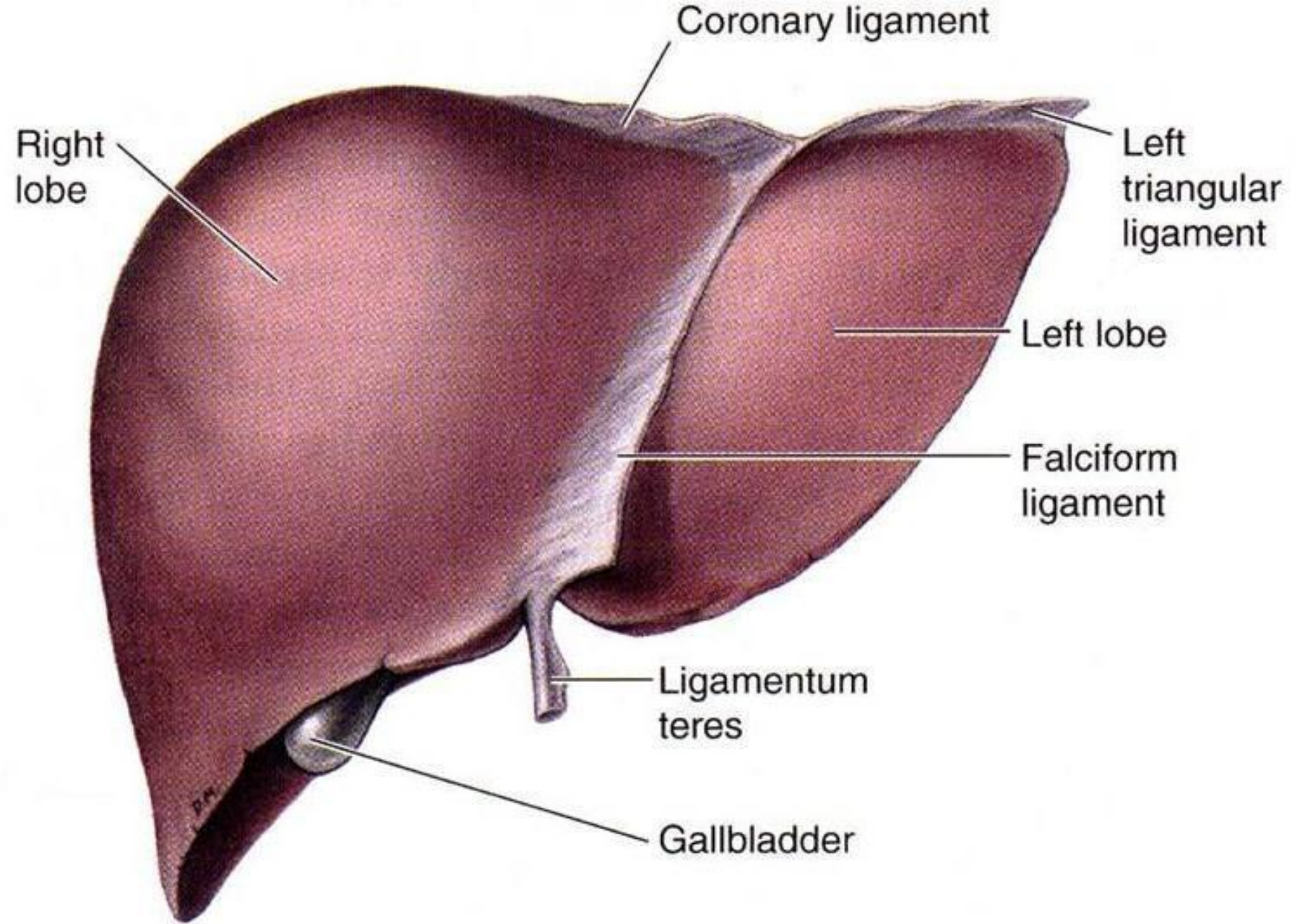


This is the external surface of a normal liver. The color is brown and the surface is smooth. A normal liver is about 1200 to 1600 grams.

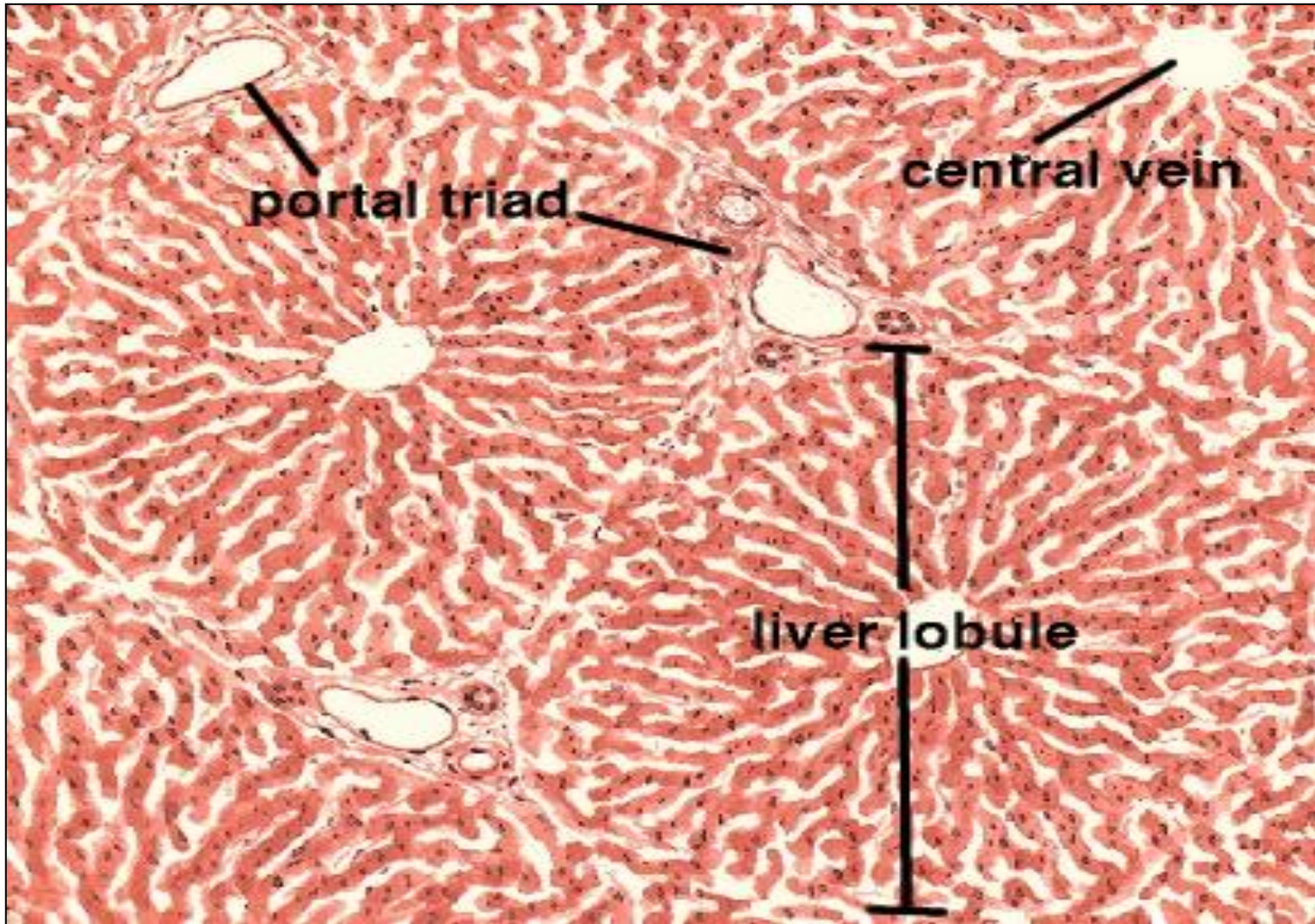
Cut surface



Near the hilum, note the portal vein, which branches at center left, with accompanying hepatic artery and bile ducts. At the lower right is a branch of hepatic vein

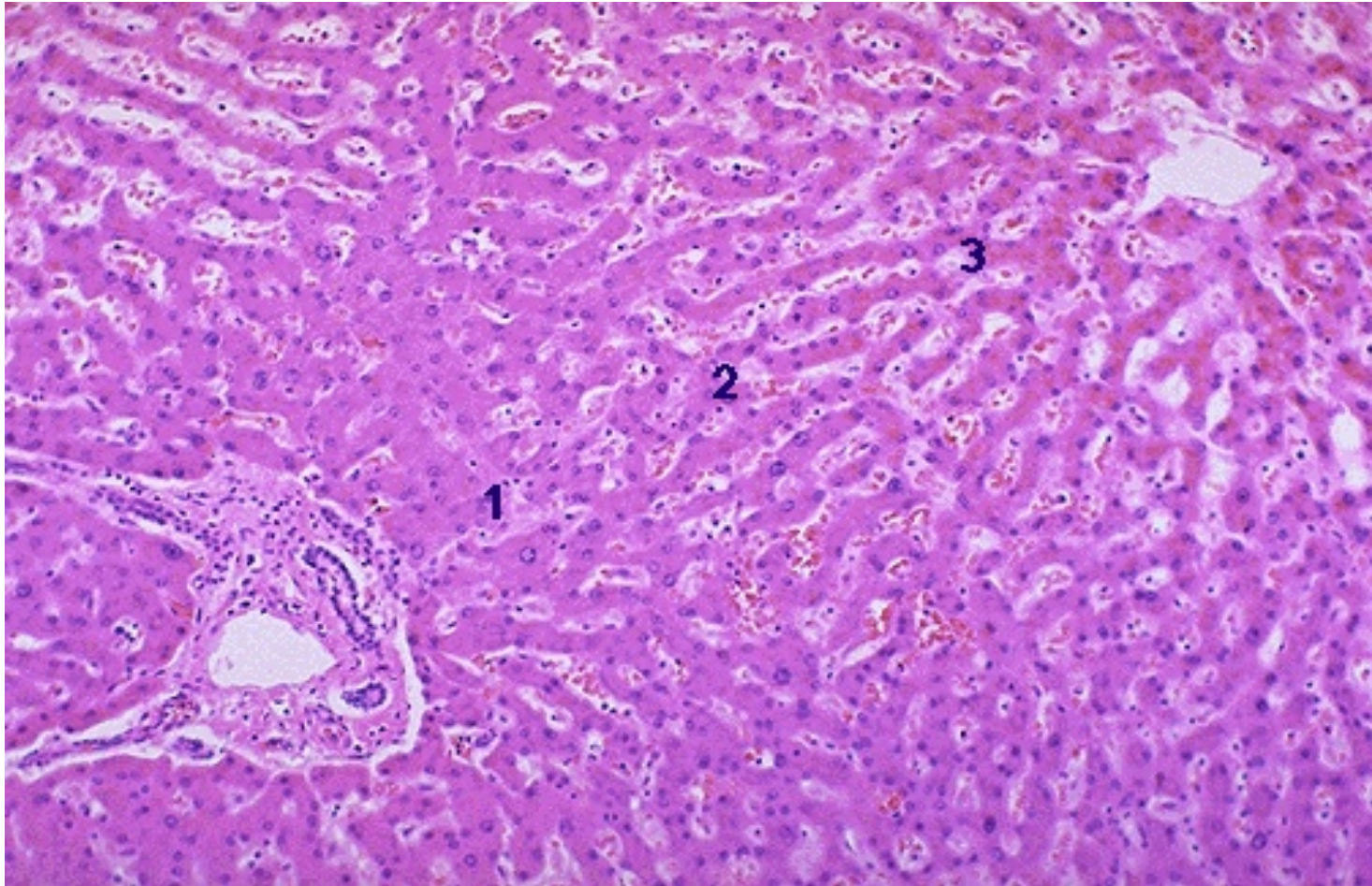


Normal Liver Histology - Gross



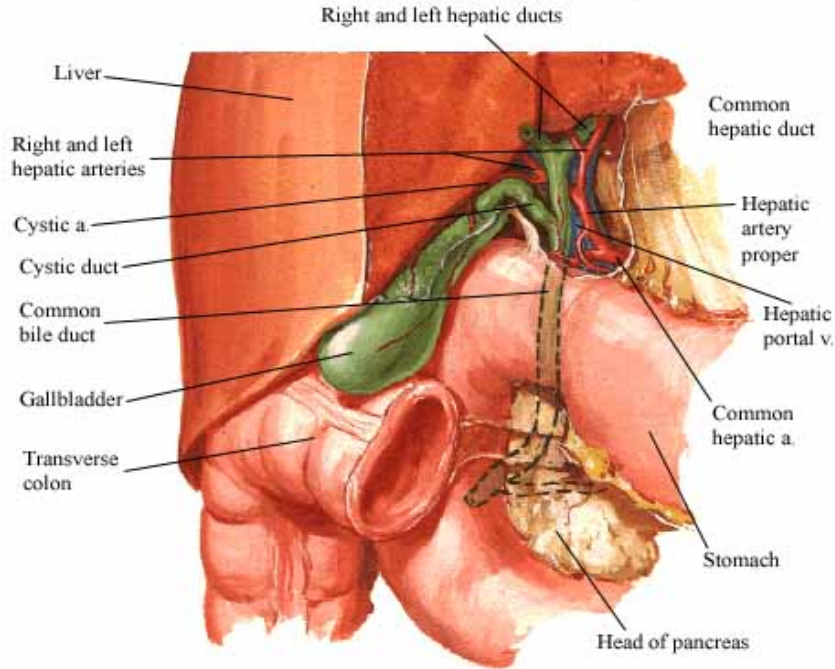
The classical view of liver tissue from a liver biopsy, H&E stained

Normal Liver Histology



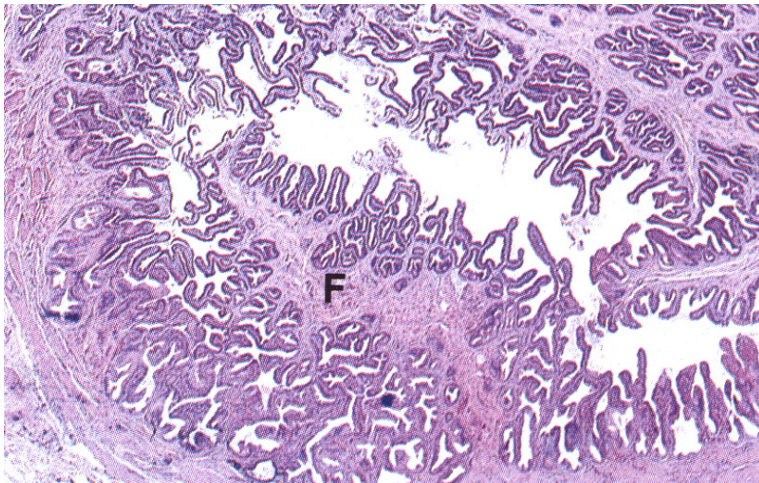
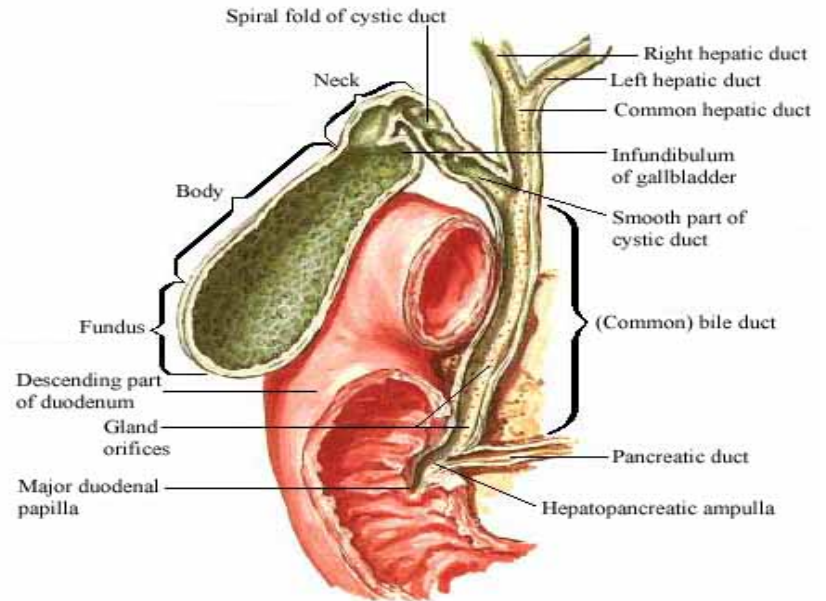
Liver is divided histologically into lobules. The center of the lobule is the central vein. At the periphery of the lobule are portal triads. Functionally, the liver can be divided into three zones, based upon oxygen supply.

Gallbladder and Extrahepatic Bile Ducts



Gallbladder and Extrahepatic Bile Ducts

Sectioned



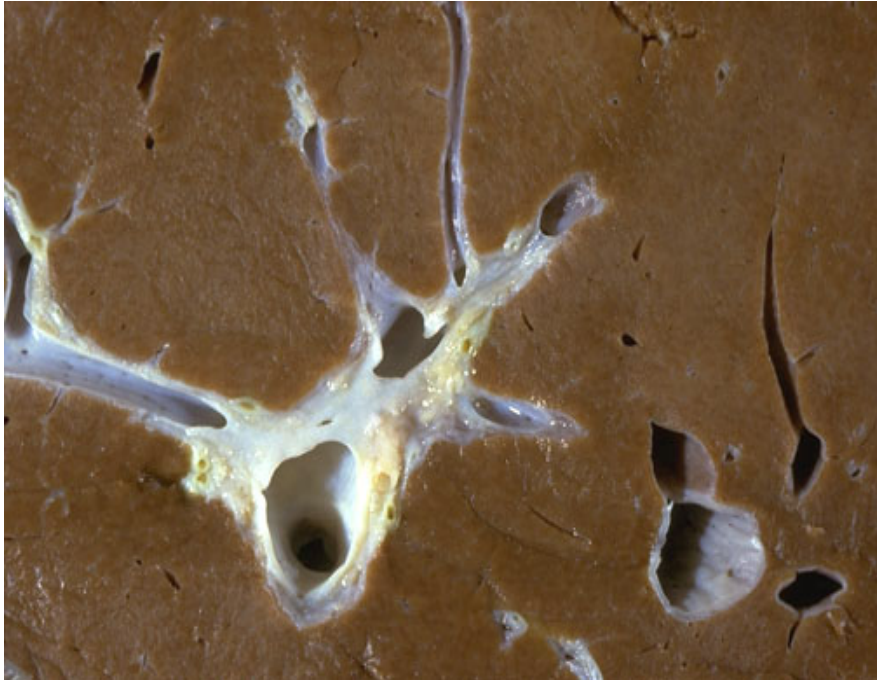


Gross and histopathology



Chronic VIRAL hepatitis (HBV & HCV)

Cut Section of Normal Liver & Ch. Hepatitis

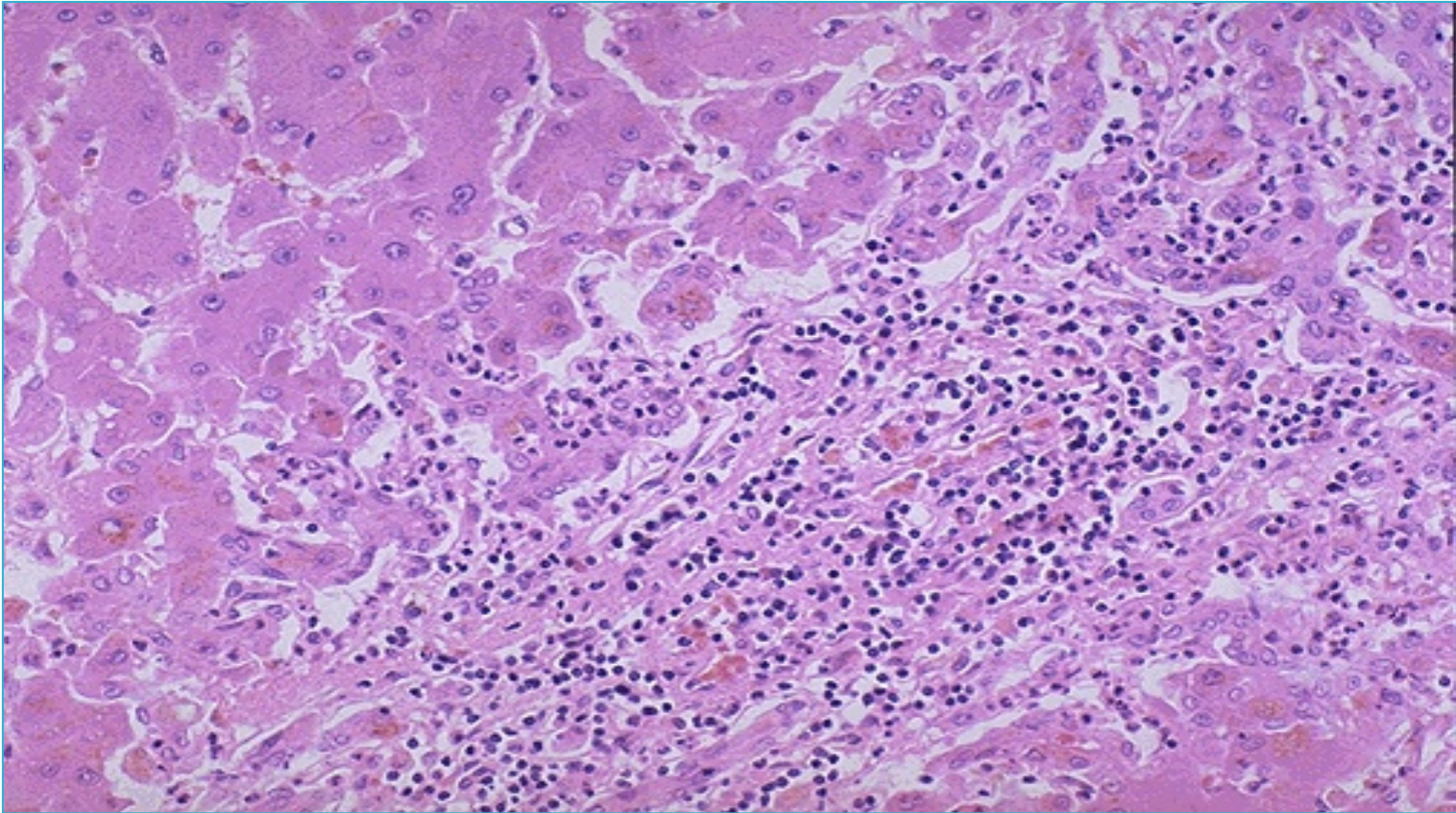


Normal Liver: has a brown color. Near the hilum here, note the portal vein carrying blood to the liver, which branches at center left, with accompanying hepatic artery and bile ducts. At the lower right is a branch of hepatic vein draining blood from the liver to the inferior vena cava.



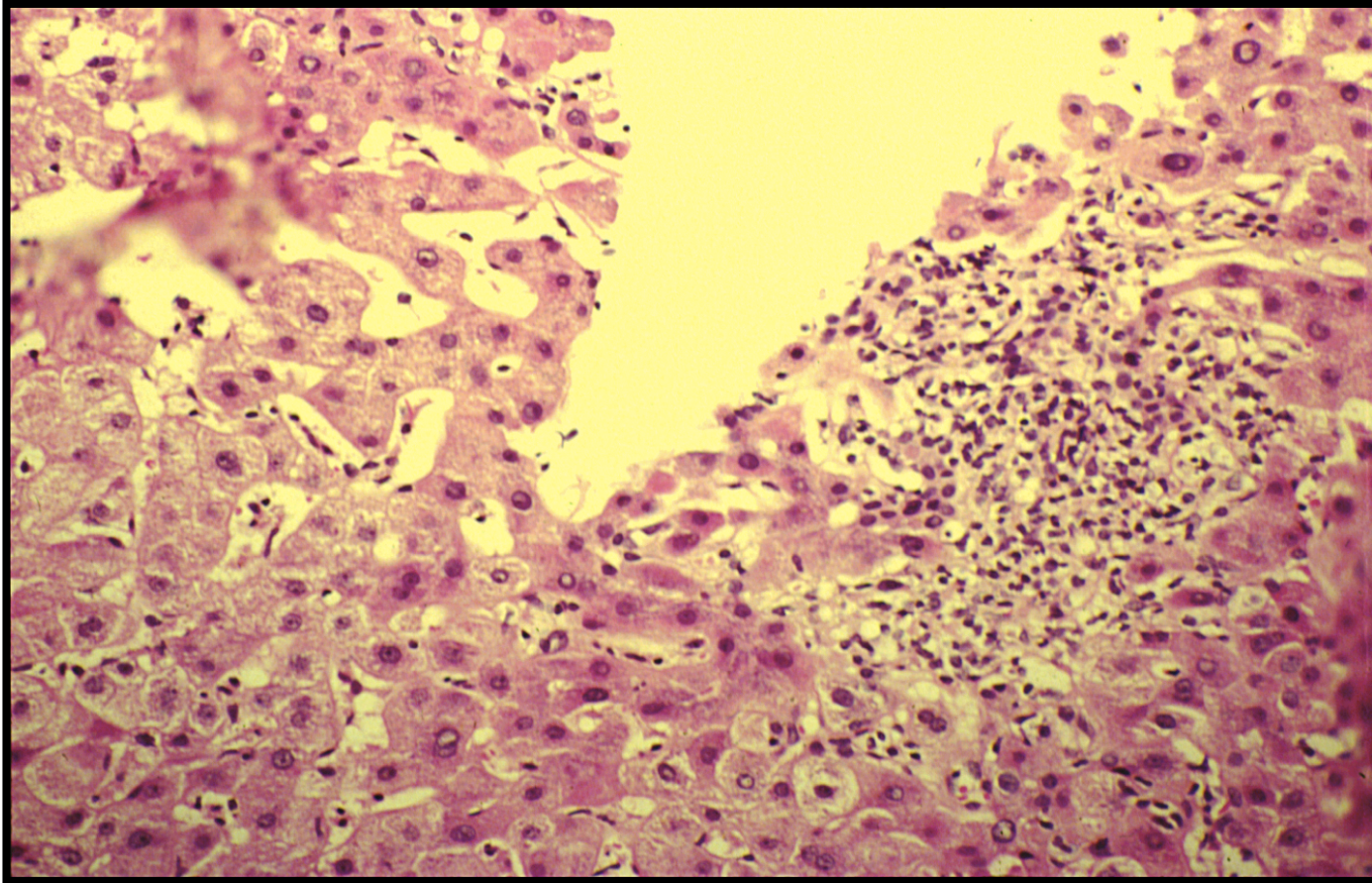
Chronic Hepatitis: The necrosis and lobular collapse is seen here as areas of hemorrhage and irregular furrows and granularity on the cut surface of the liver.

Chronic Viral Hepatitis B – Microscopic view



Viral hepatitis leads to liver cell destruction. A mononuclear inflammatory cell infiltrate extends from portal areas and disrupts the limiting plate of hepatocytes which are undergoing necrosis, the so-called "piecemeal" necrosis of chronic active hepatitis. In this case, the hepatitis B surface antigen (HBsAg) and hepatitis B core antibody (HBcAb) were positive.

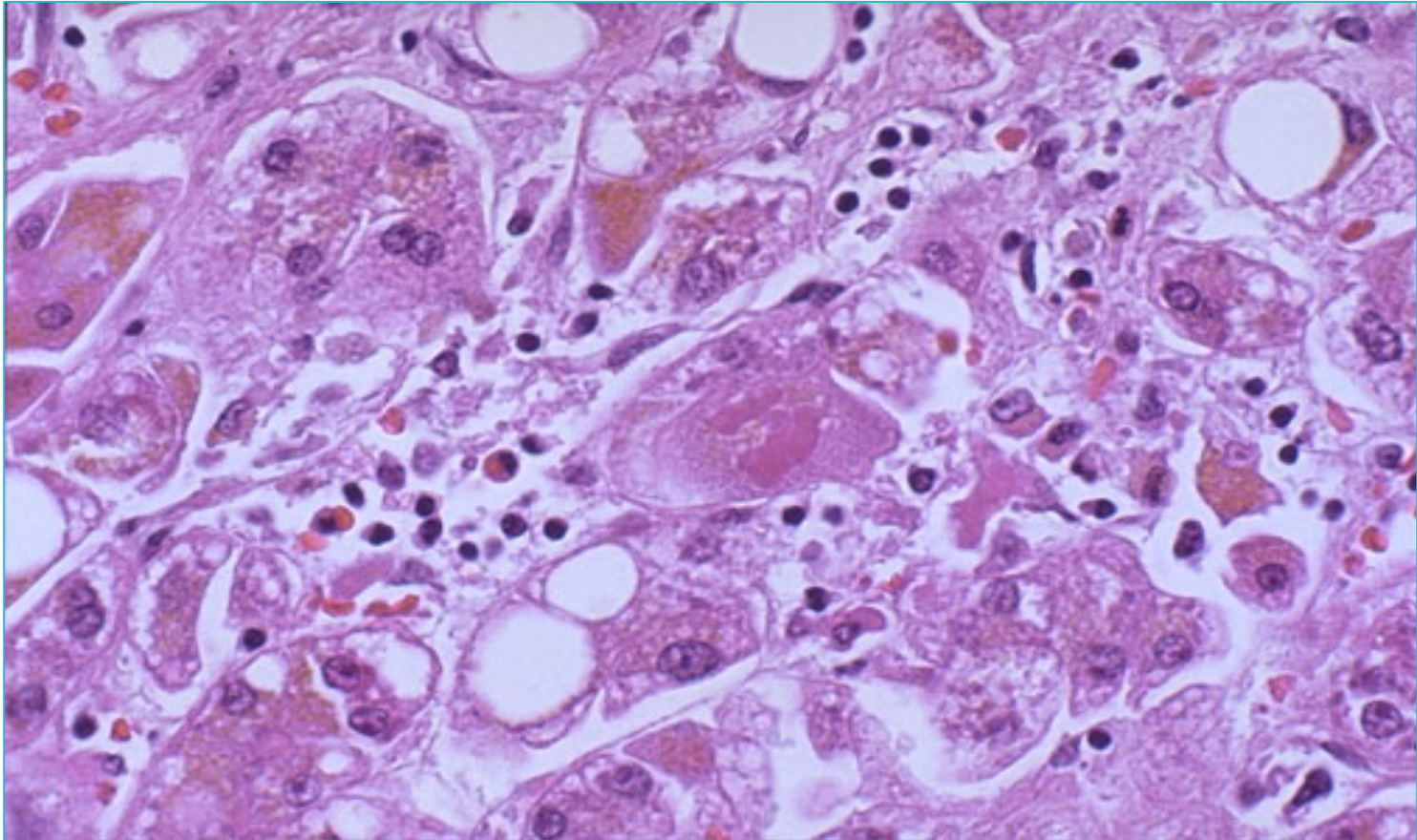
Chronic Viral Hepatitis B – HPF



Moderate chronic inflammatory cells infiltration consisting of lymphocytes and histiocytes in both portal tracts and liver parenchyma. Piecemeal necrosis, hepatocytes swelling and "spotty" hepatocytes necrosis are also noticed.

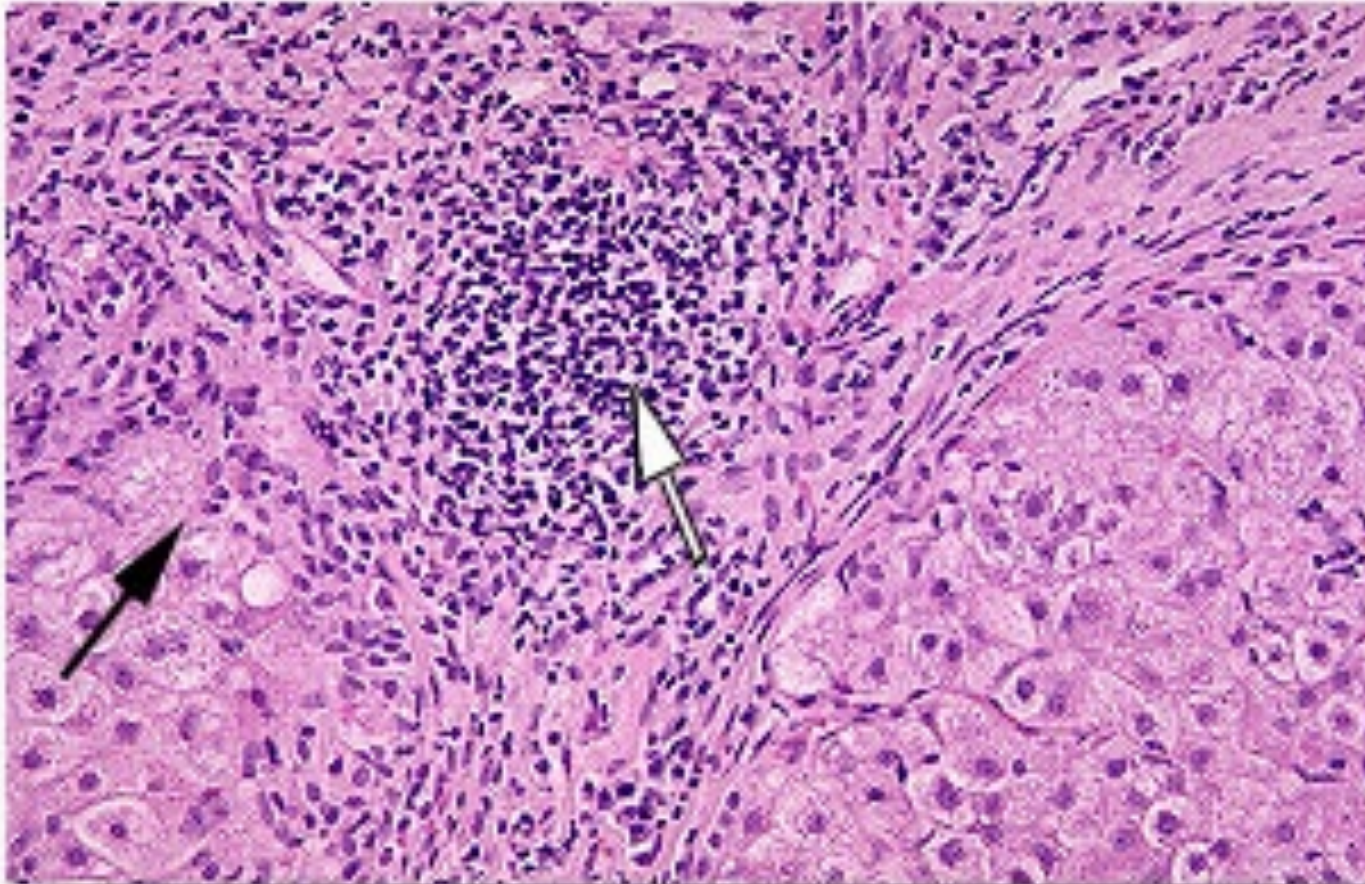
No evidence of cirrhosis or malignancy noted

Chronic Viral Hepatitis C – HPF



This is a case of viral hepatitis C, which in half of cases leads to chronic liver disease. The extent of chronic hepatitis can be graded by the degree of activity (necrosis and inflammation) and staged by the degree of fibrosis. In this case, necrosis and inflammation are prominent, and there is some steatosis as well.

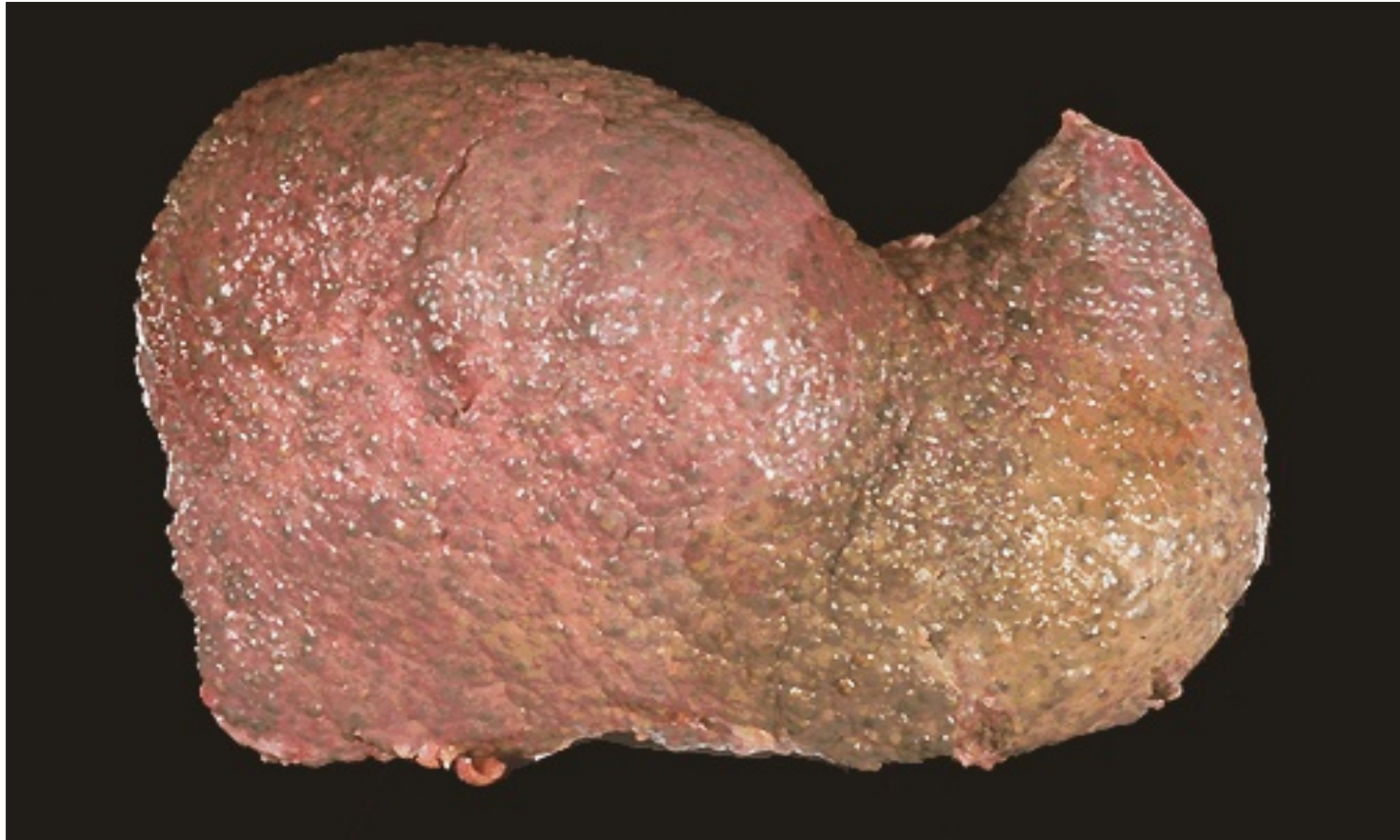
Portal Inflammation in Chronic Hepatitis - HPF



More severe portal infiltrates with sinusoidal infiltrates also

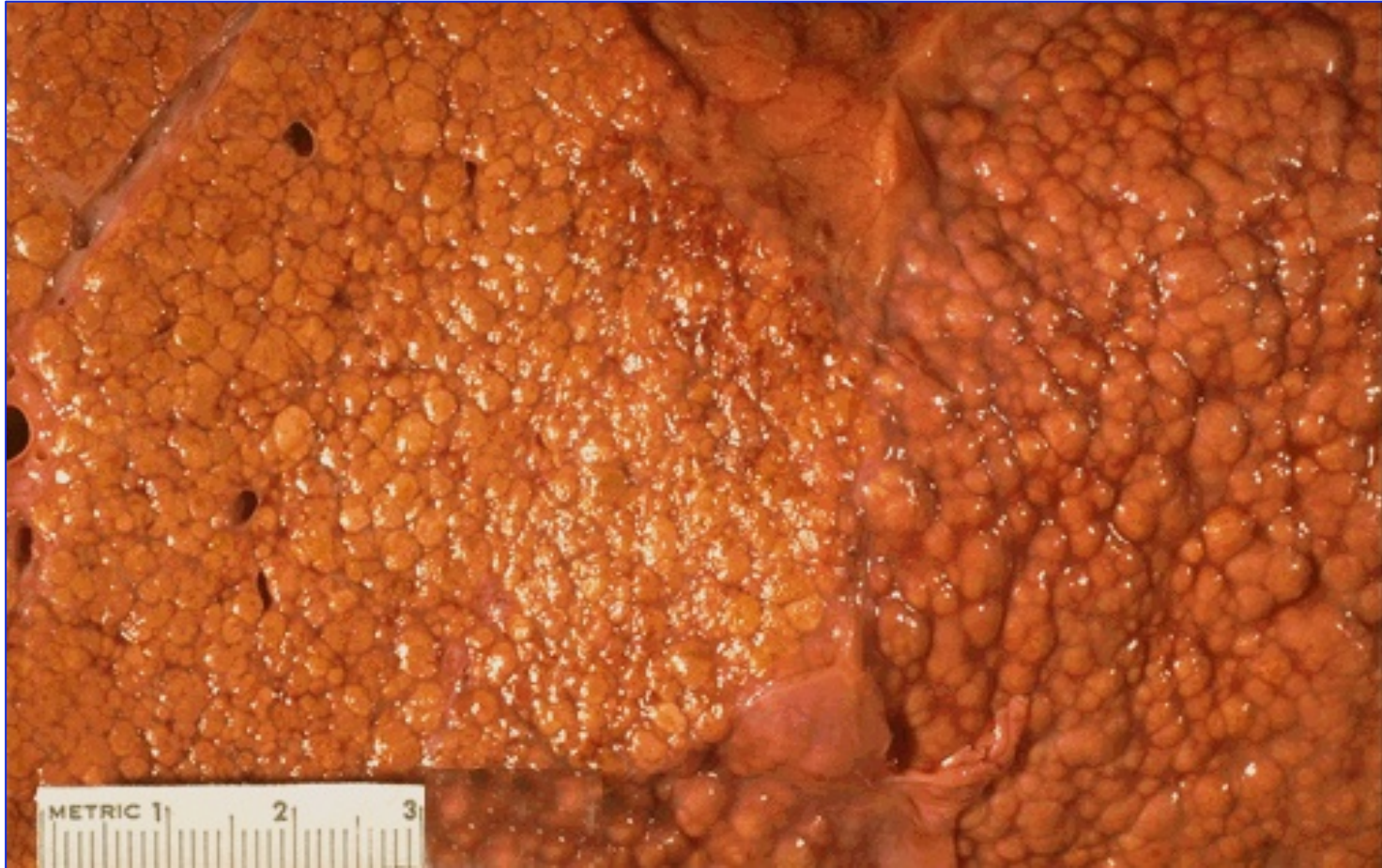
Hepatic cirrhosis

Micronodular Hepatic Cirrhosis - MRI



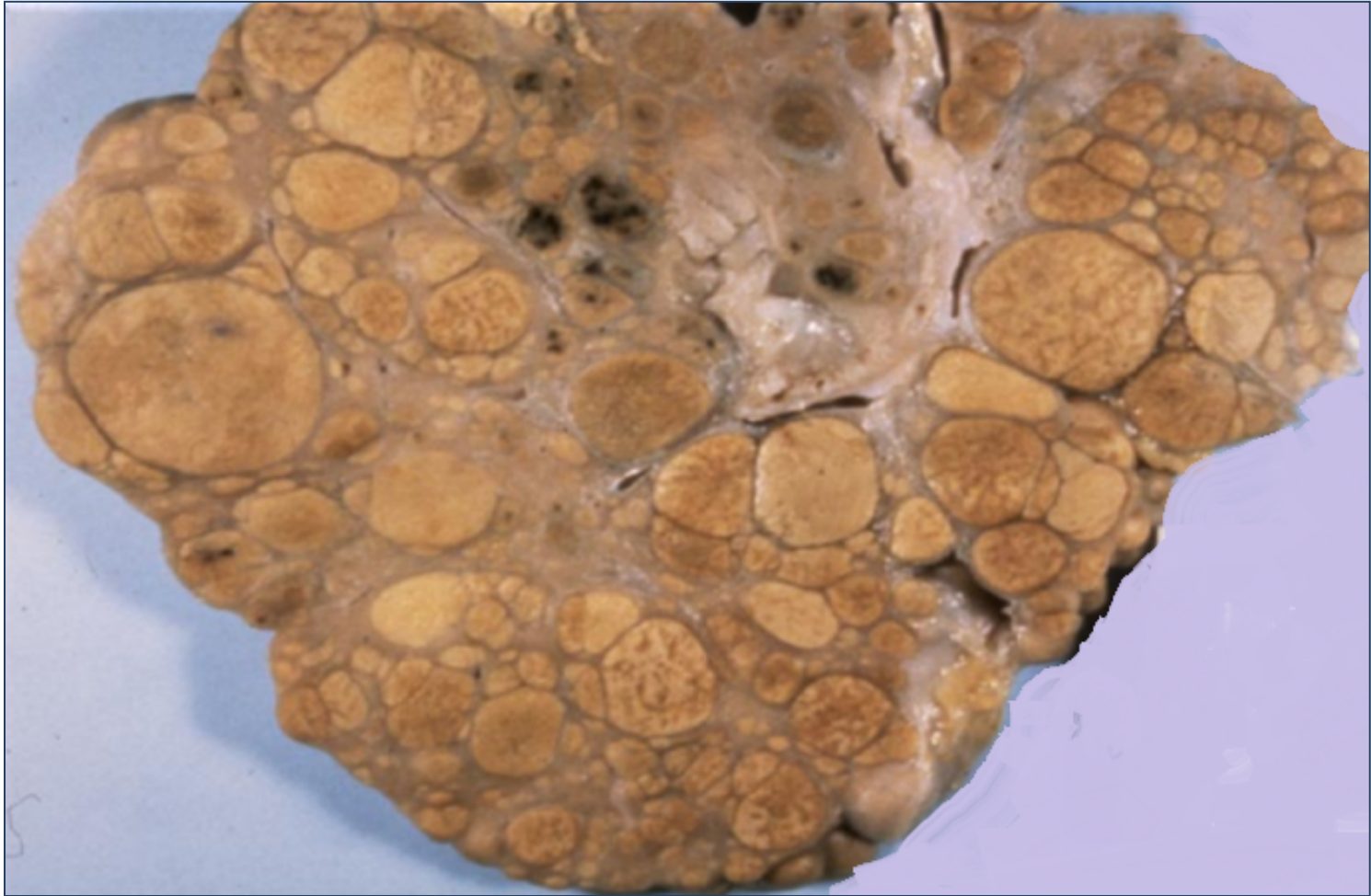
This is an example of a micronodular cirrhosis. The regenerative nodules are quite small, averaging less than 3 mm in size. The most common cause for this is chronic alcoholism. The process of cirrhosis develops over many years.

Micronodular cirrhosis with fatty liver- Gross



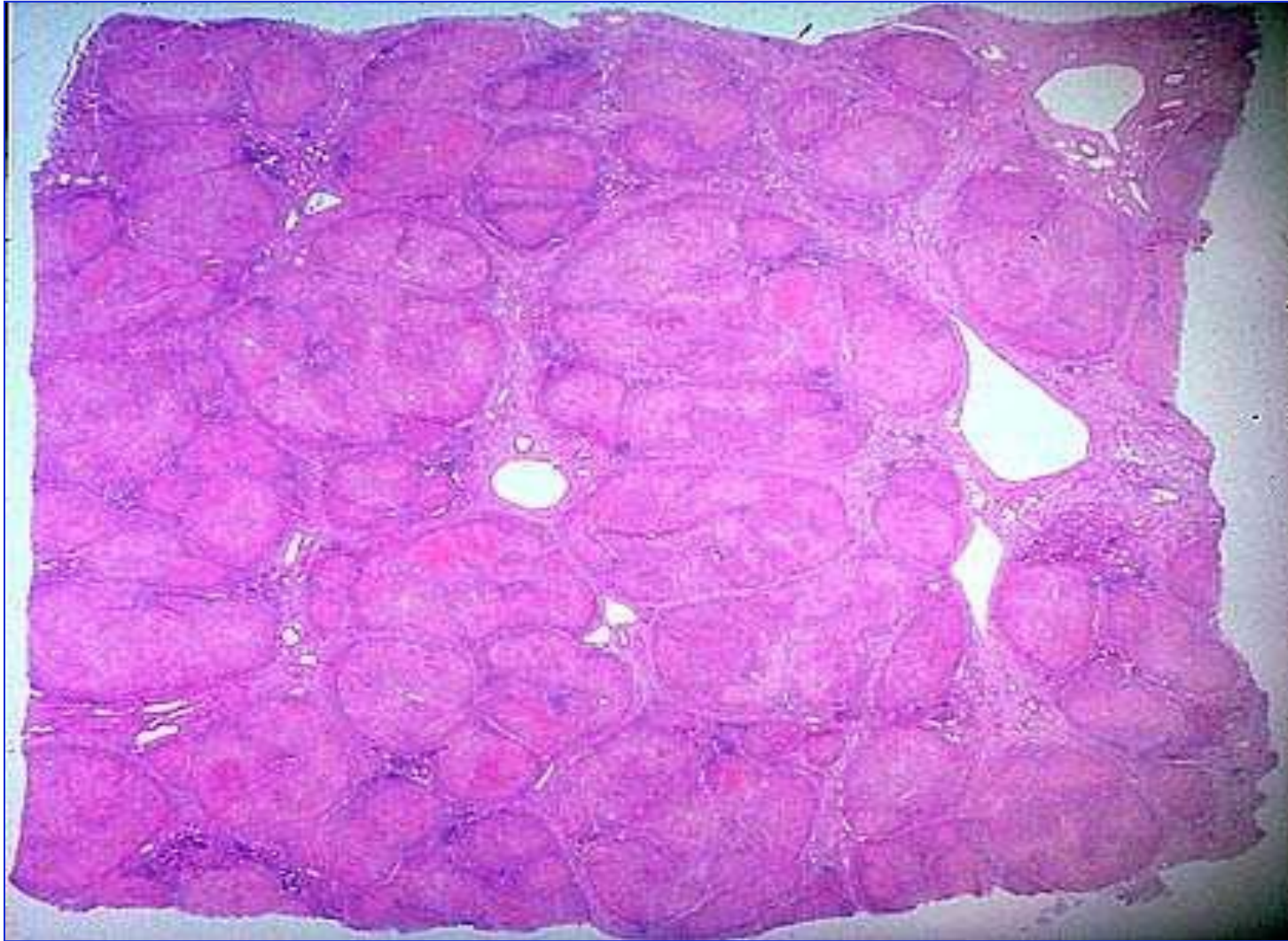
A close-up view of a micronodular cirrhosis in a liver with fatty change demonstrates the small, yellow nodules. Micronodular cirrhosis may also be seen with Wilson's disease, primary biliary cirrhosis, and hemochromatosis.

Hepatic Macronodular Cirrhosis – Gross



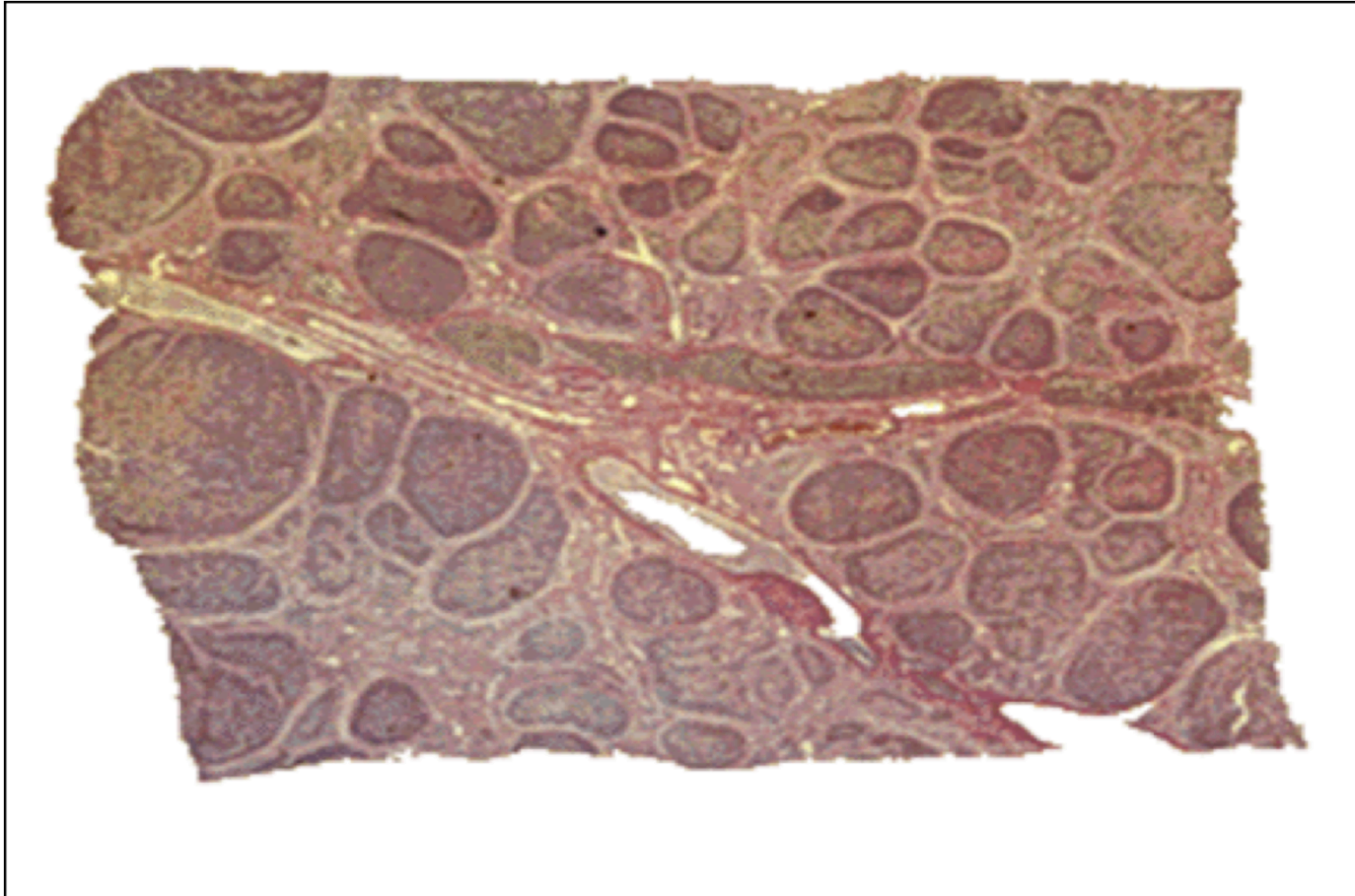
Gross picture shows multiple nodules of variable sizes with fibrosis. The major complications are portal hypertension, hepatic failure and hepatocellular carcinoma.

Hepatic cirrhosis – LPF



Irregular nodules separated by Portal to Portal fibrous bands

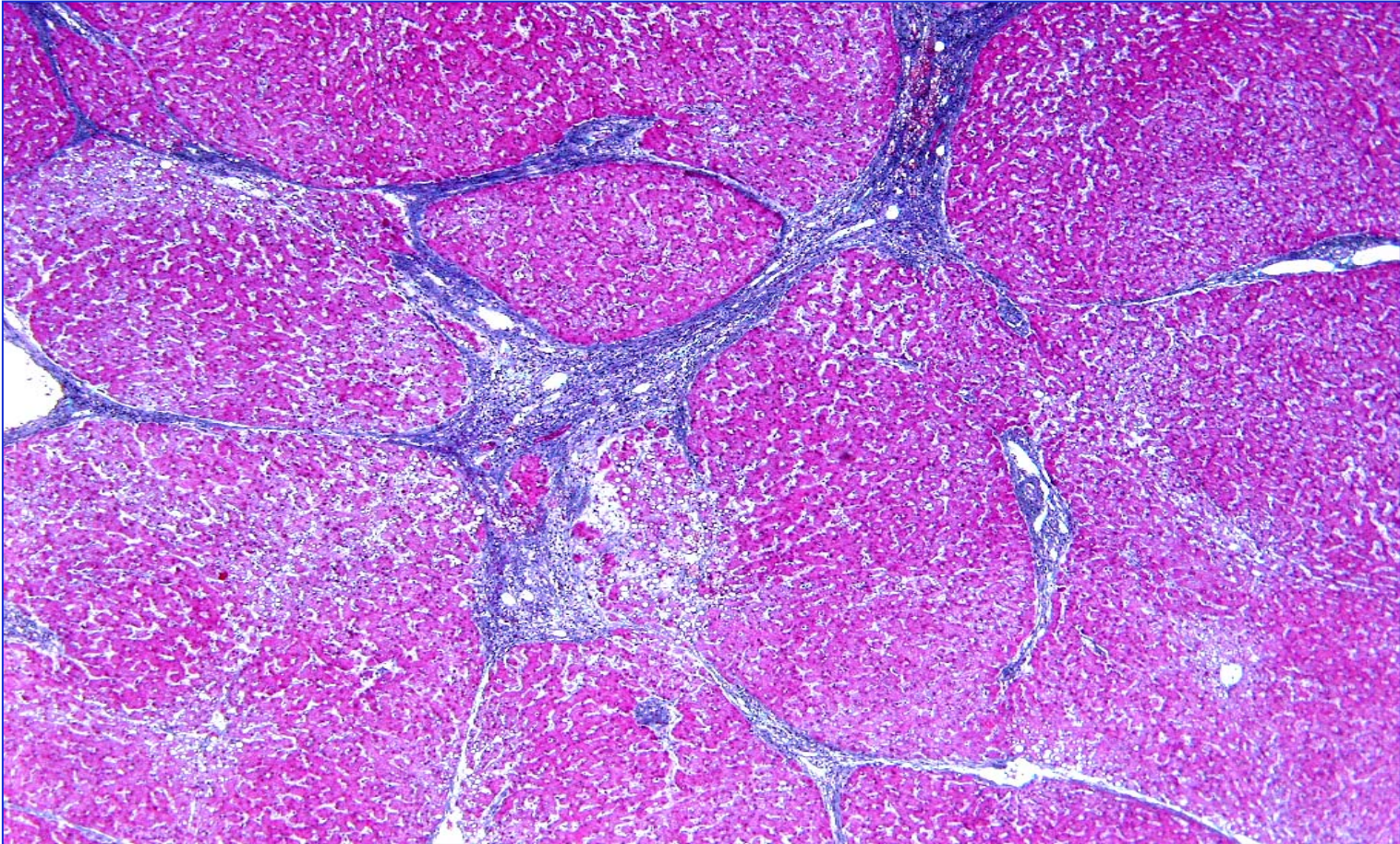
Hepatic cirrhosis – LPF



Hepatic Cirrhosis - LPF

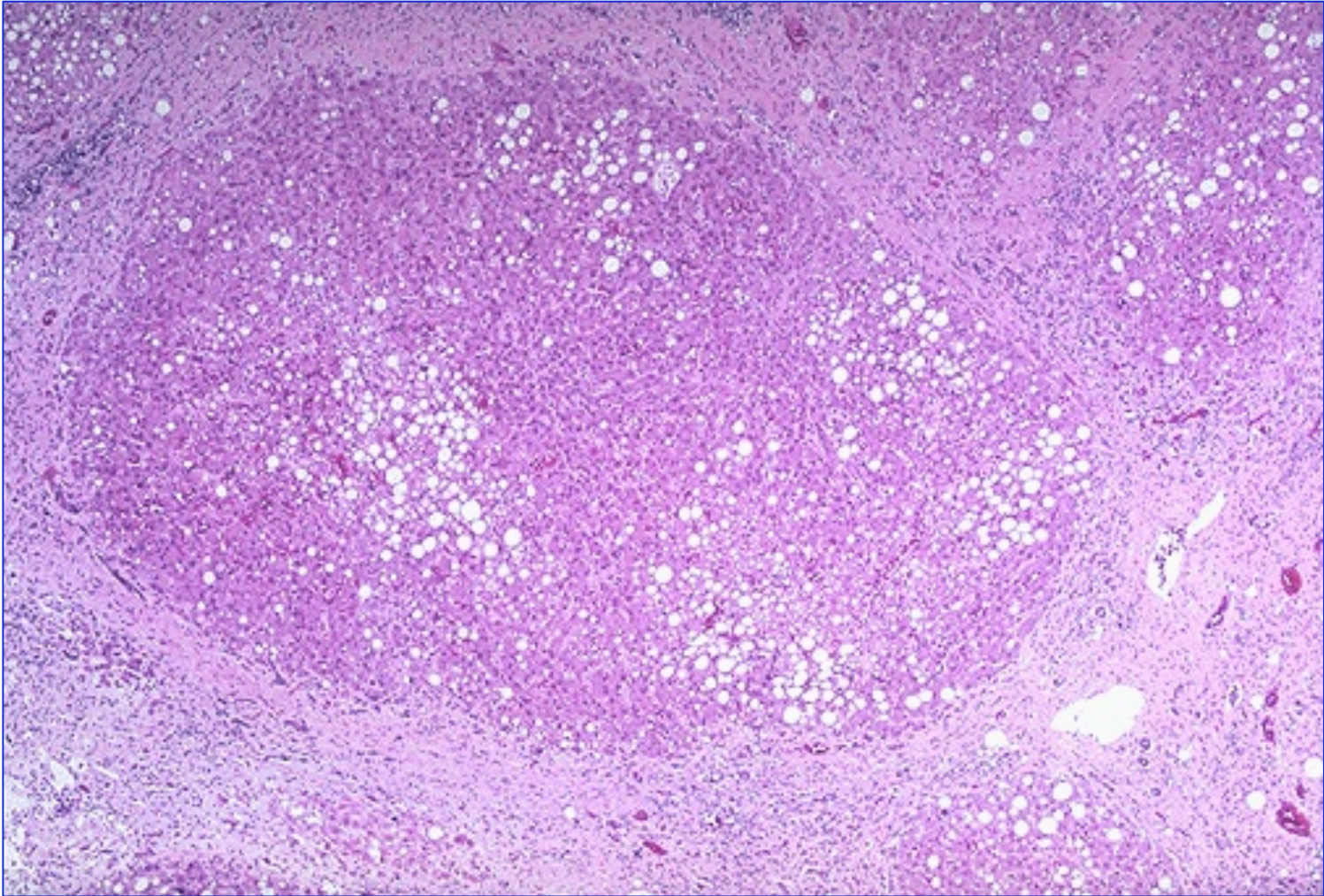
- *The parenchyma shows darker tan nodules of varying sizes.*
 - *These nodules are composed of hepatocytes.*
 - *The paler areas in between are collagen.*

Hepatic cirrhosis – Trichrome stain



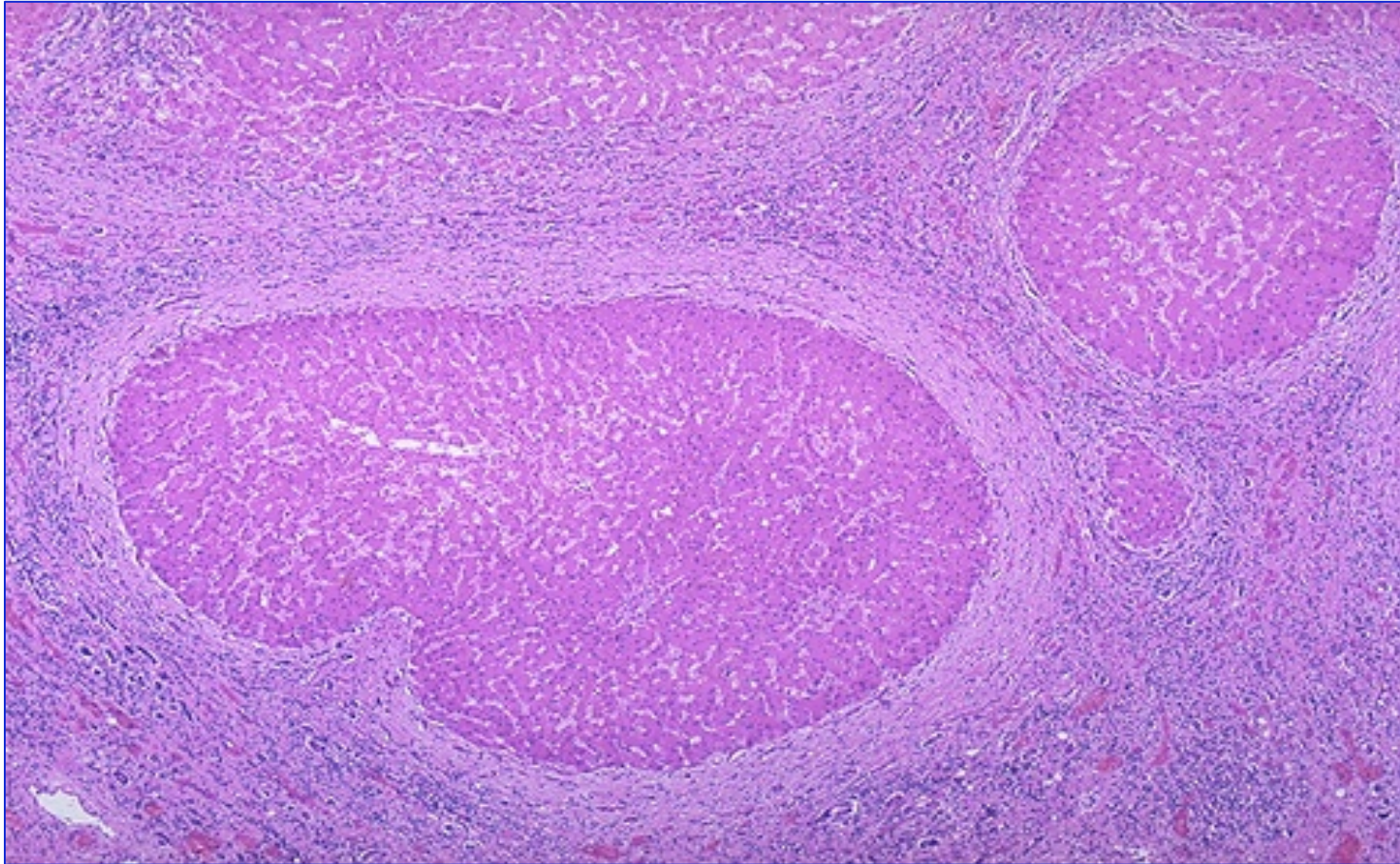
Loss of lobular architecture and formation of regenerative nodules of variable size and shape, surrounded by fibrous tissue. Each nodules consists of liver cells without any arrangement and with no central vein. Large number of proliferated bile ducts and chronic inflammatory cells are present in fibrous tissue.

Micronodular cirrhosis with fatty liver- LPF



***Micronodular cirrhosis is seen along with moderate fatty change.
Note the regenerative nodule surrounded by fibrous connective tissue
extending between portal regions.***

Hepatic cirrhosis – LPF



Microscopically with cirrhosis, the regenerative nodules of hepatocytes are surrounded by fibrous connective tissue that bridges between portal tracts. Within this collagenous tissue are scattered lymphocytes as well as a proliferation of bile ducts

HEPATIC ADENOMA

Hepatic Adenoma - Gross



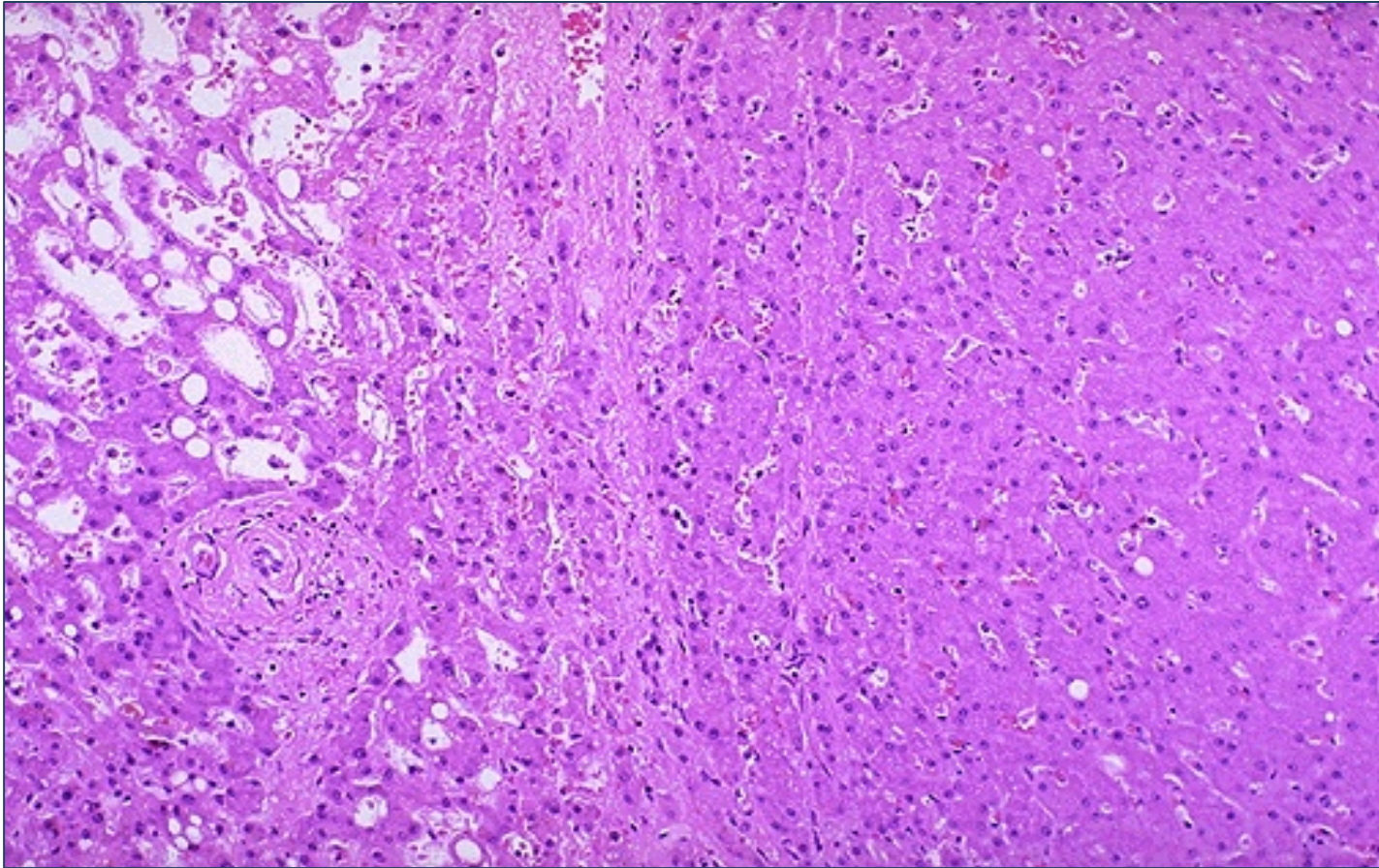
At the upper right is a well-circumscribed neoplasm that is arising in liver. This is an hepatic adenoma.

Hepatic Adenoma – Cut Section Gross



The cut surface of the liver reveals the hepatic adenoma. Note how well circumscribed it is. The remaining liver is a pale yellow brown because of fatty change from chronic alcoholism.

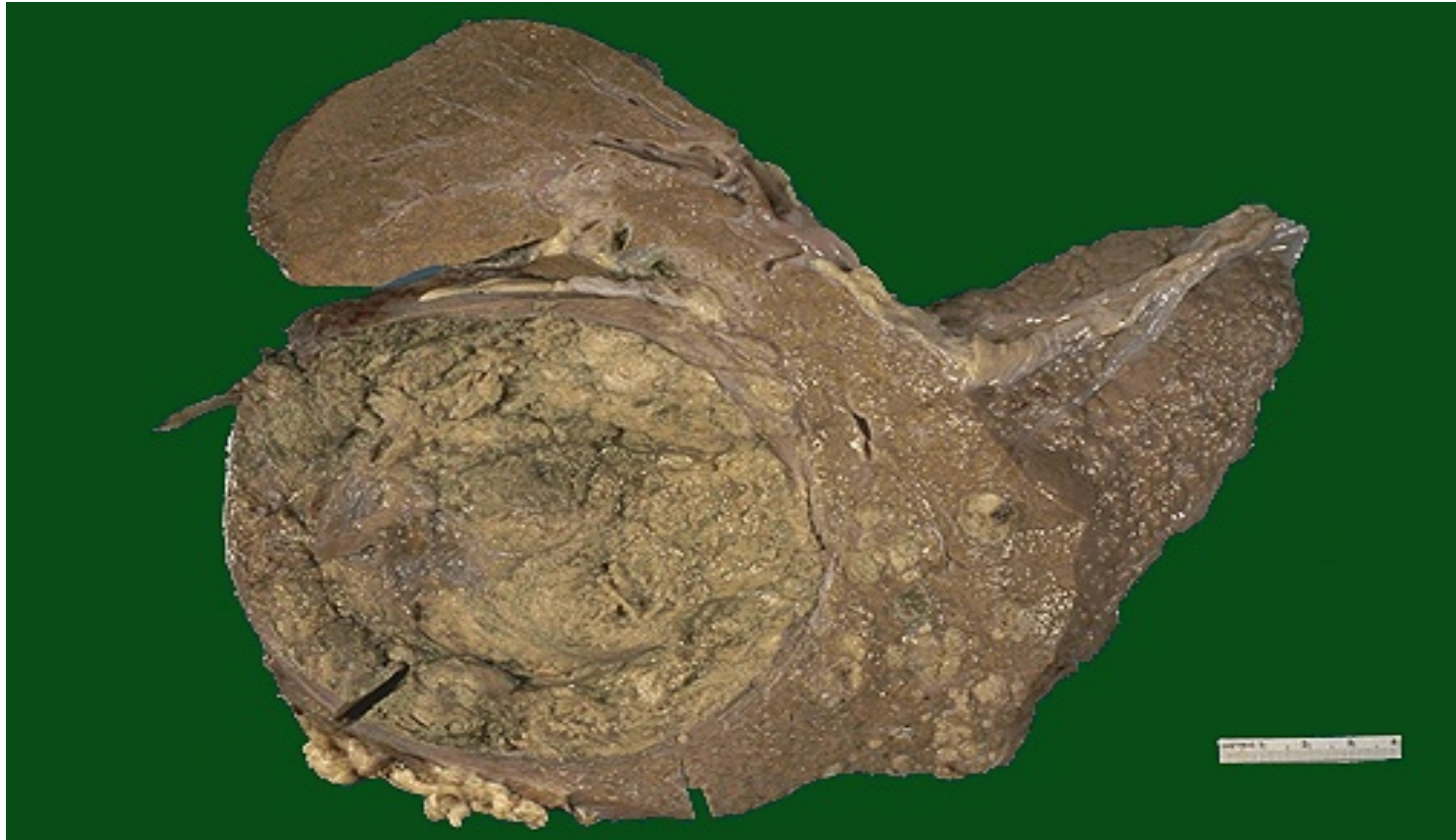
Hepatic Adenoma – Microscopic view



Normal liver tissue with a portal tract is seen on the left. The hepatic adenoma is on the right and is composed of cells that closely resemble normal hepatocytes, but the neoplastic liver tissue is disorganized hepatocyte cords and does not contain a normal lobular architecture.

HEPATOCELLULAR CARCINOMA

Hepatocellular Carcinoma - Gross



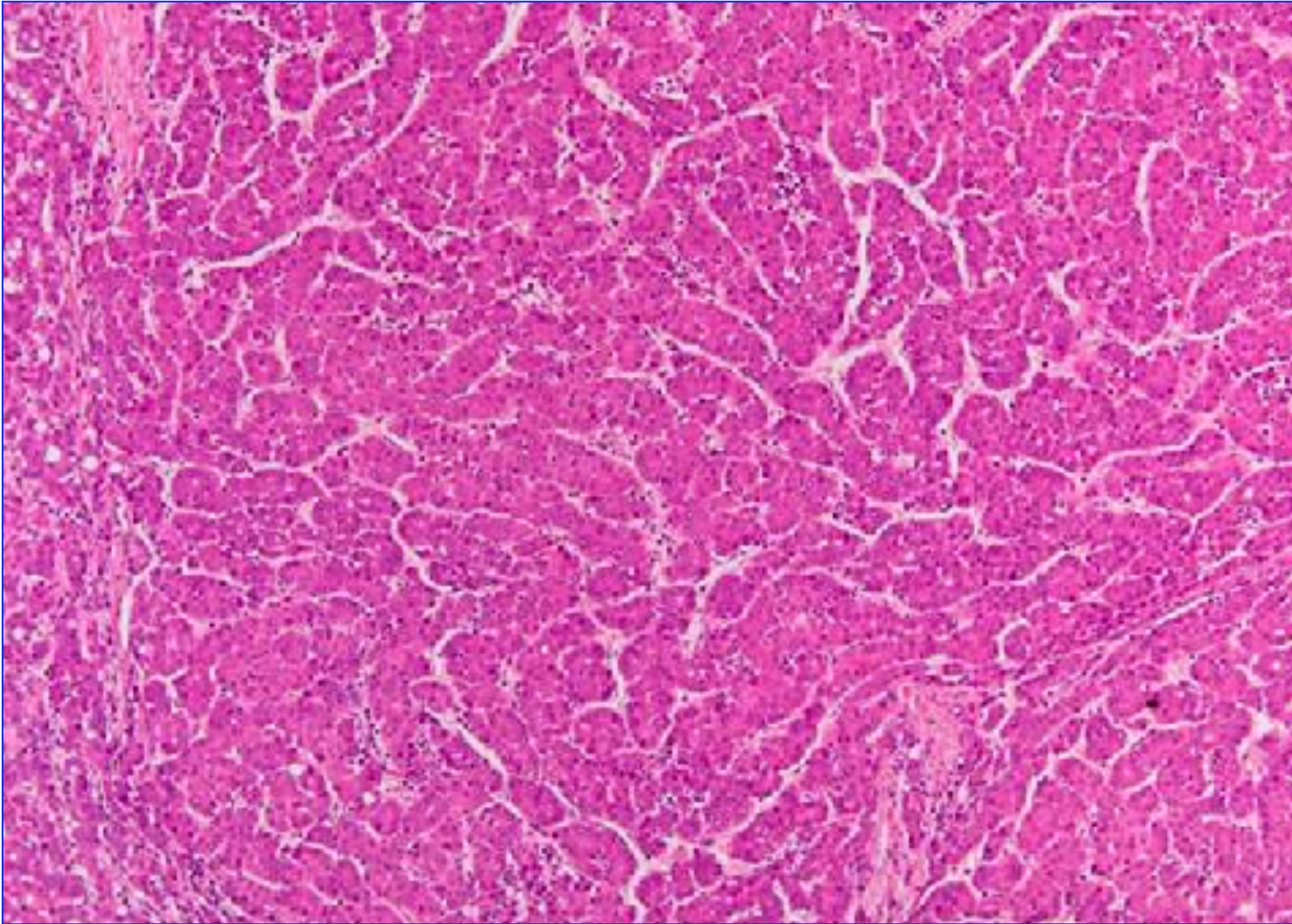
Here is an hepatocellular carcinoma. Such liver cancers arise in the setting of cirrhosis. Worldwide, viral hepatitis is the most common cause, but in the U.S., chronic alcoholism is the most common cause. The neoplasm is large and bulky and has a greenish cast because it contains bile. To the right of the main mass are smaller satellite nodules.

Hepatocellular Carcinoma - Gross



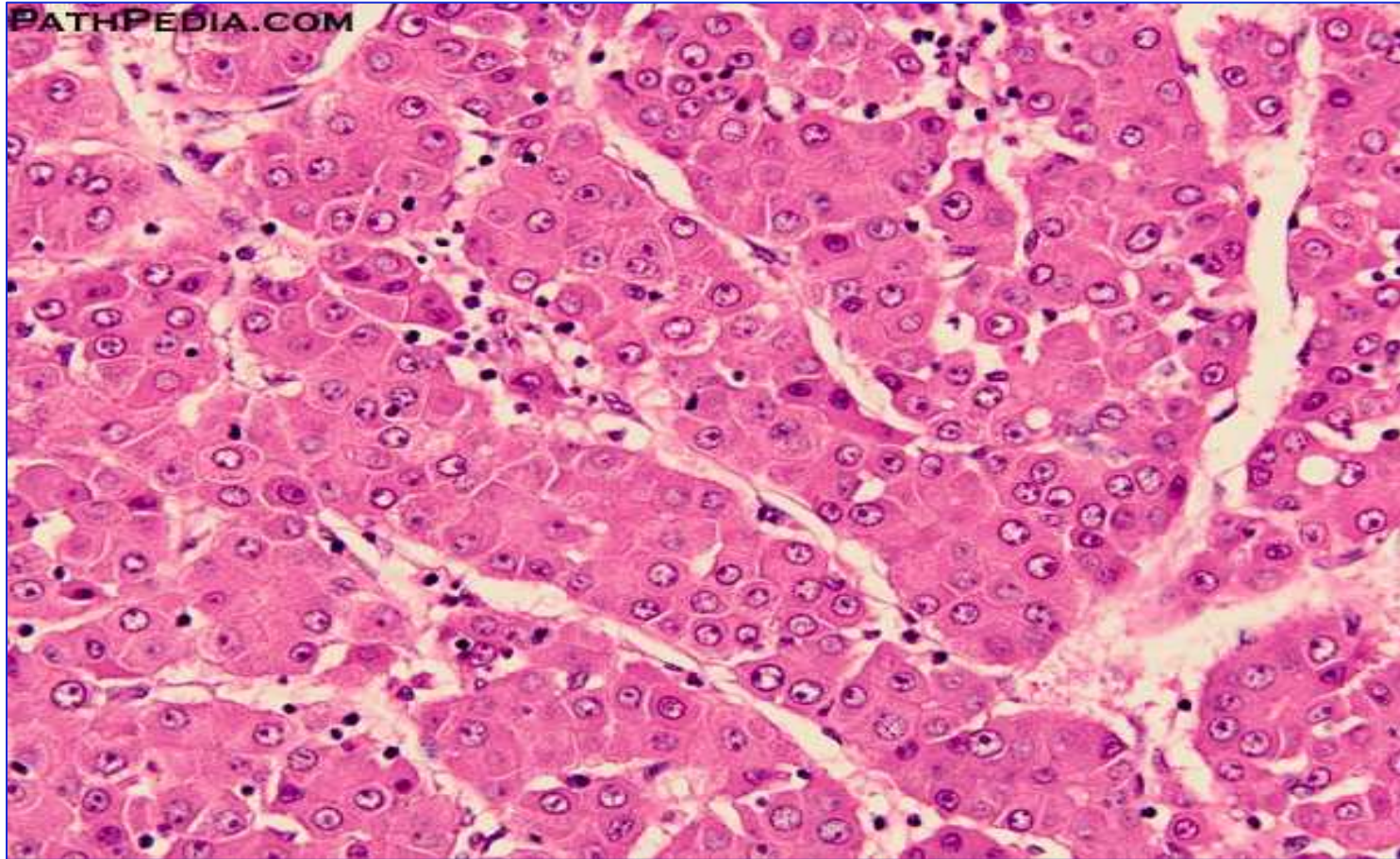
Here is another hepatocellular carcinoma with a greenish yellow hue. One clue to the presence of such a neoplasm is an elevated serum alpha-fetoprotein. Such masses may also focally obstruct the biliary tract and lead to an elevated alkaline phosphatase

Hepatocellular Carcinoma - LPF



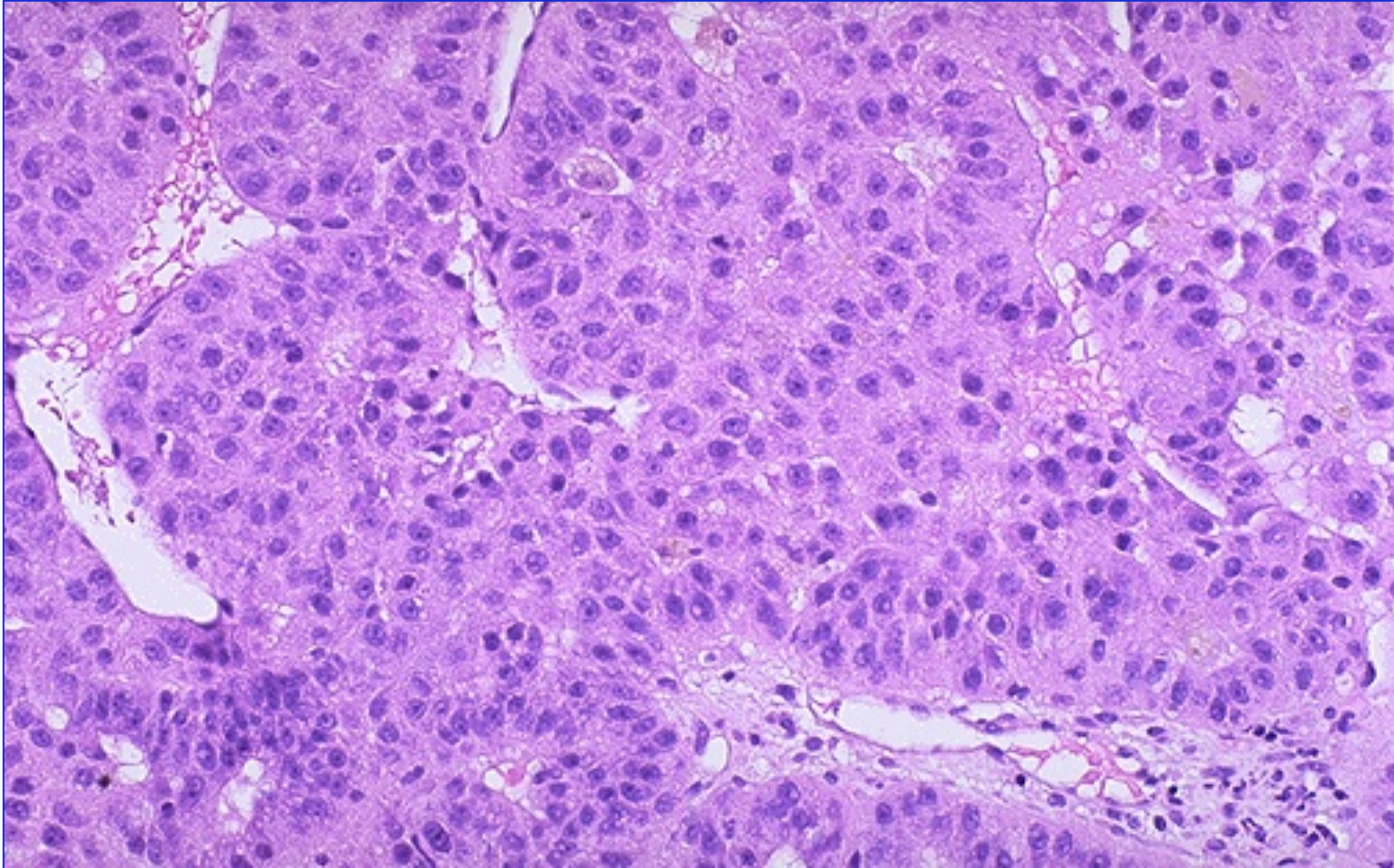
This example of well-differentiated HCC shows a trabecular pattern with intervening sinusoids.

Hepatocellular Carcinoma - MPF



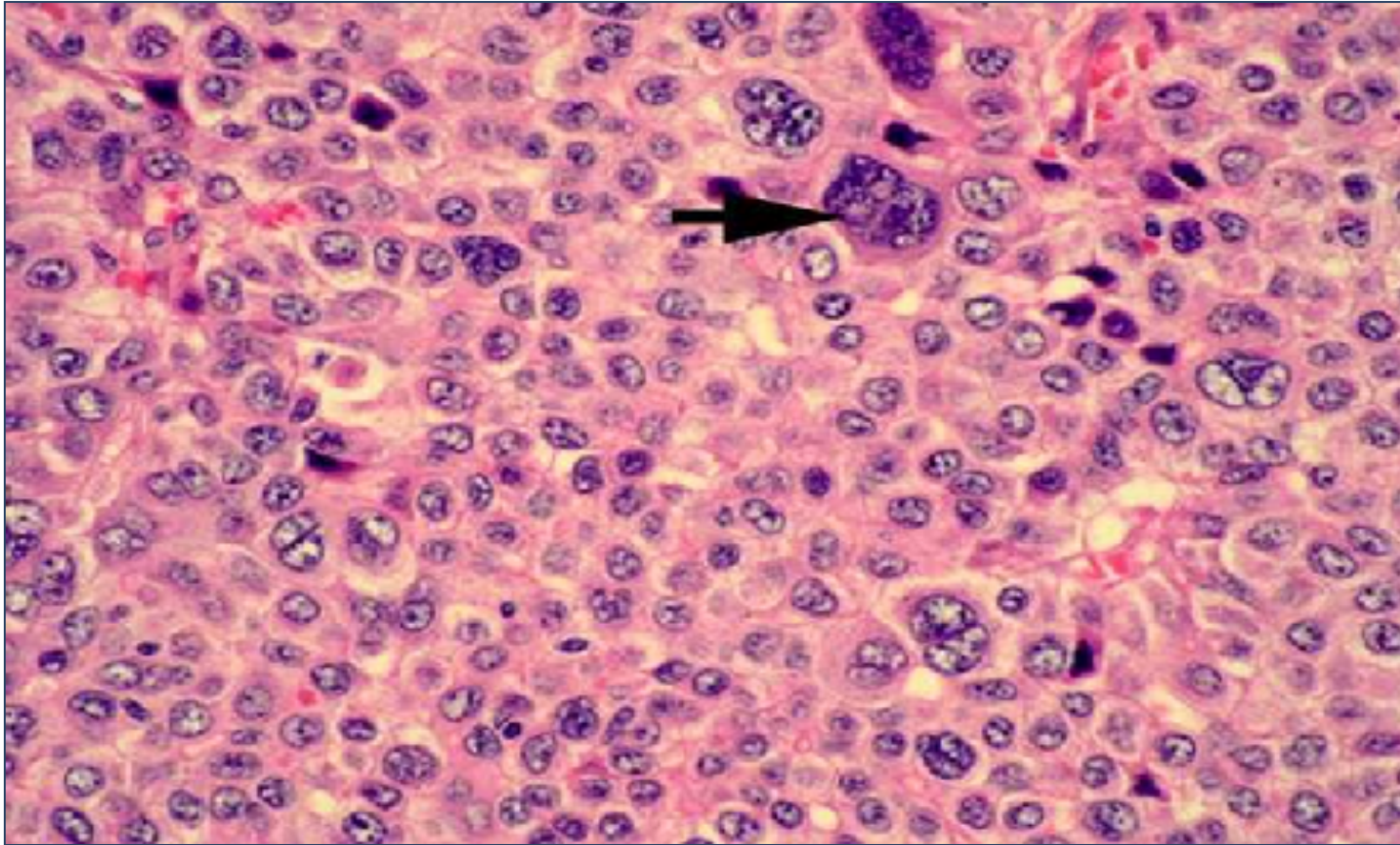
The key to the identification of HCC is its resemblance to hepatocytes, the presence of more than 2-3 cell-thick hepatocellular plates/cords, nuclear atypia, and absence of portal tracts. Note the hepatic plates are separated from each other by sinusoids.

Hepatocellular Carcinoma - MPF




Note that this hepatocellular carcinoma is composed of liver cords that are much wider than the normal liver plate that is two cells thick. There is no discernable normal lobular architecture, though vascular structures are present.

Hepatocellular Carcinoma - Microscopic



Anaplastic tumor giant cells can be seen in poorly differentiated HCC (arrow). Mitoses are numerous. Malignant liver cells are pleomorphic, binucleated or forming giant cells with hyperchromatic nuclei.



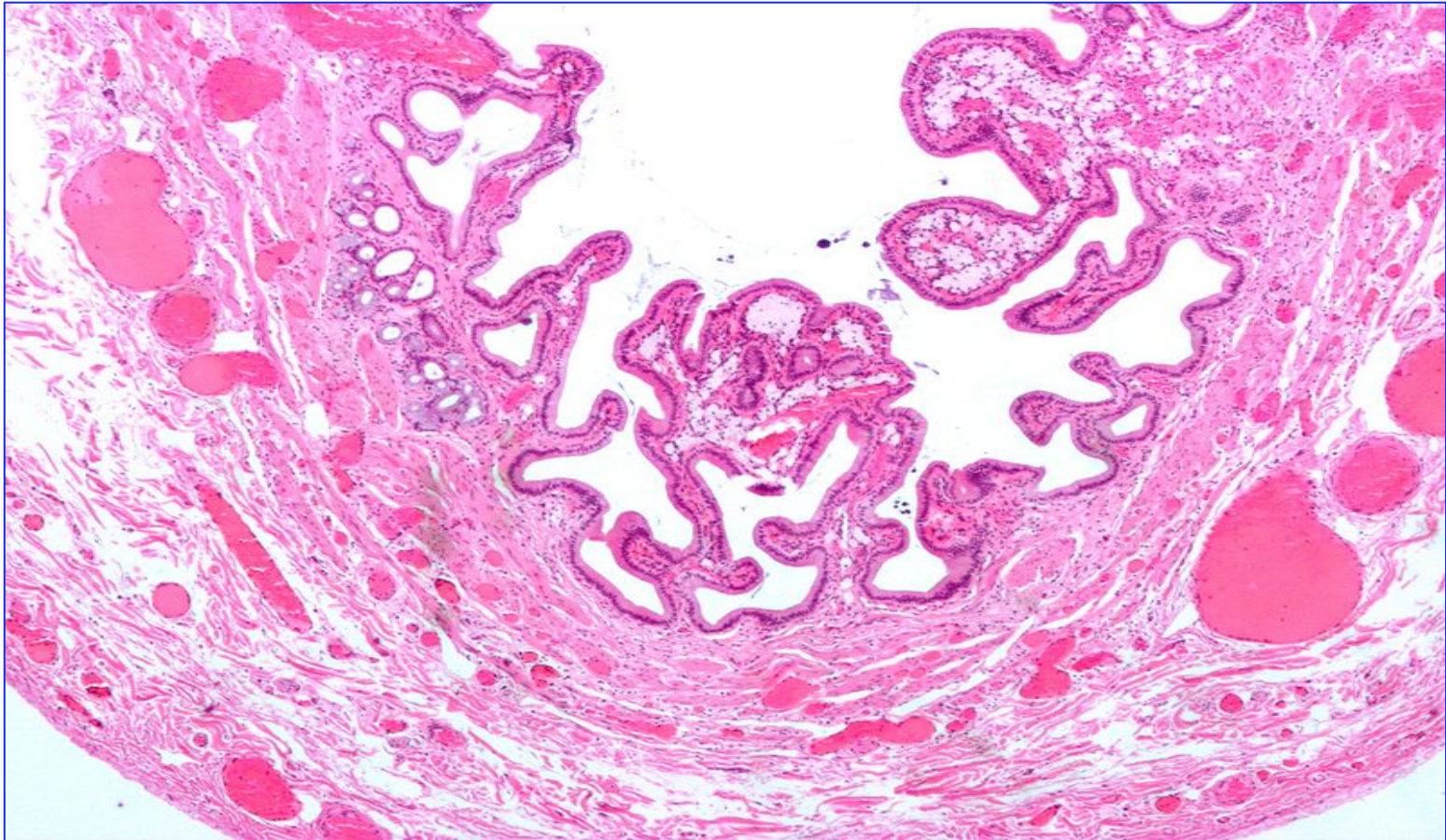
CHRONIC CHOLECYSTITIS WITH STONES

Chronic Cholecystitis with Gall stones - Gross



Gross appearance of gallbladder after sectioning longitudinally. Notice thickness of gallbladder wall, abundant polyhedral stones and small papillary tumor in the cystic duct.

Chronic Cholecystitis – Microscopic view



Dead lipid laden macrophages (foam cells) are seen in the finger-like projections into the gallbladder lumen. It should be apparent that this is gallbladder, as no muscularis mucosae is present (as elsewhere in the gastrointestinal tract). The blood vessels are congested and the subserosa edematous.

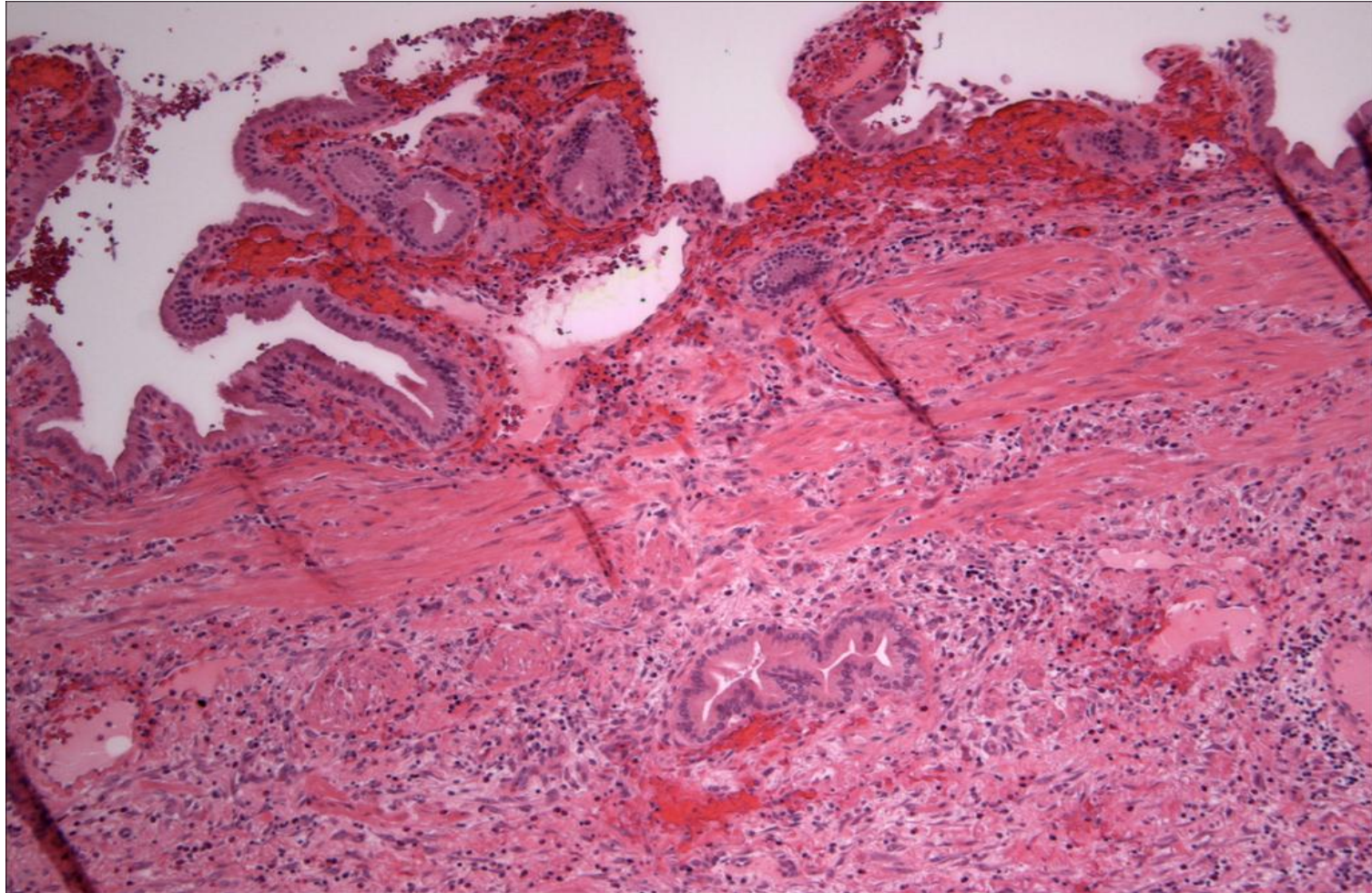
Chronic Cholecystitis – Microscopic view



***Irregular mucosal folds and foci of ulceration in mucosa.
Wall is penetrated by mucosal glands which are present in
muscle coat (Rokitansky- Aschoff sinuses).***

All layers show chronic inflammatory cells infiltration and fibrosis.

Chronic Cholecystitis – Microscopic view

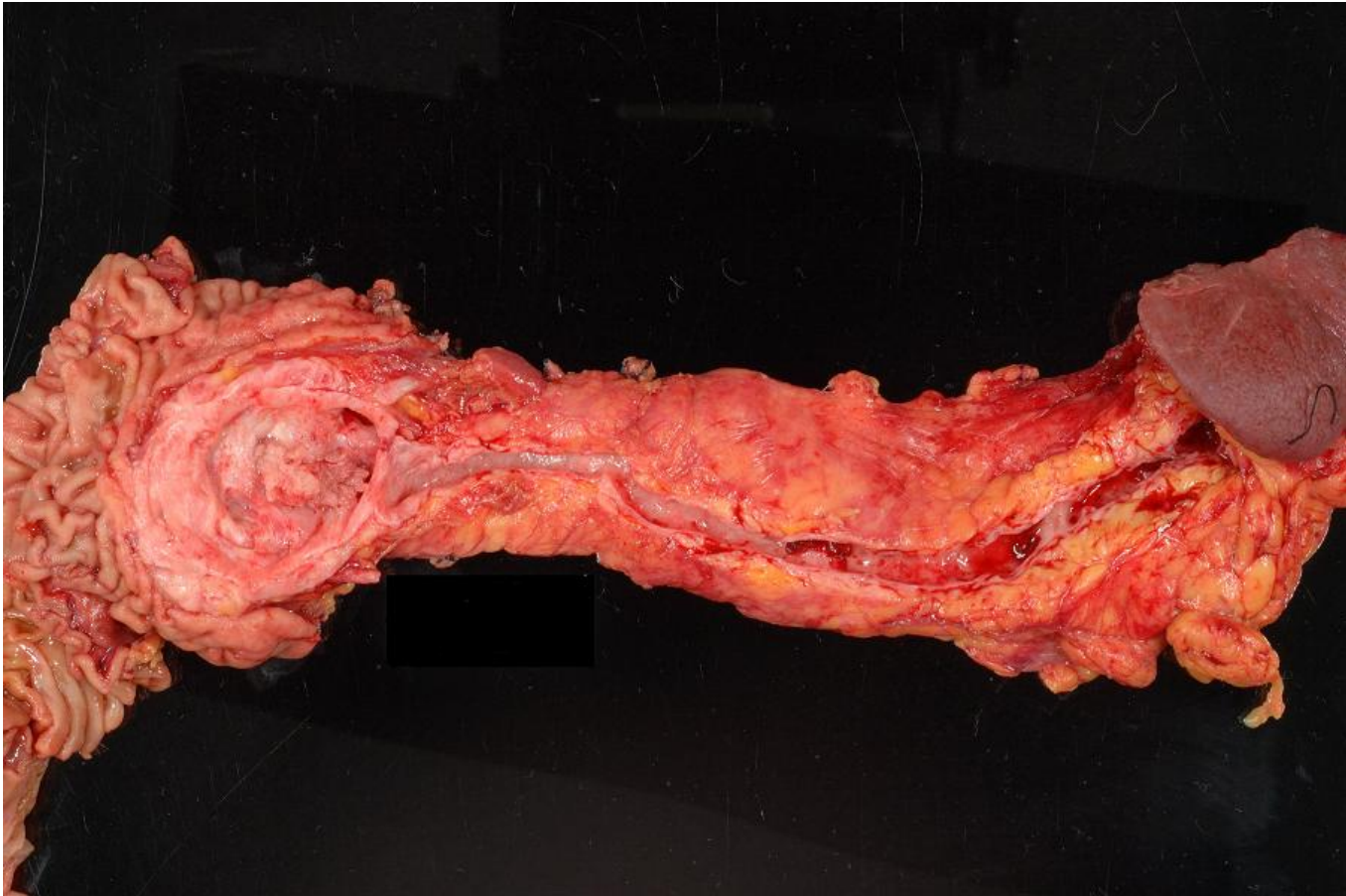


***Mucosa wall is penetrated by mucosal glands which are present in muscle coat (Rokitansky- Aschoff sinuses).
All layers show chronic inflammatory cells infiltration and fibrosis.***

PANCREAS

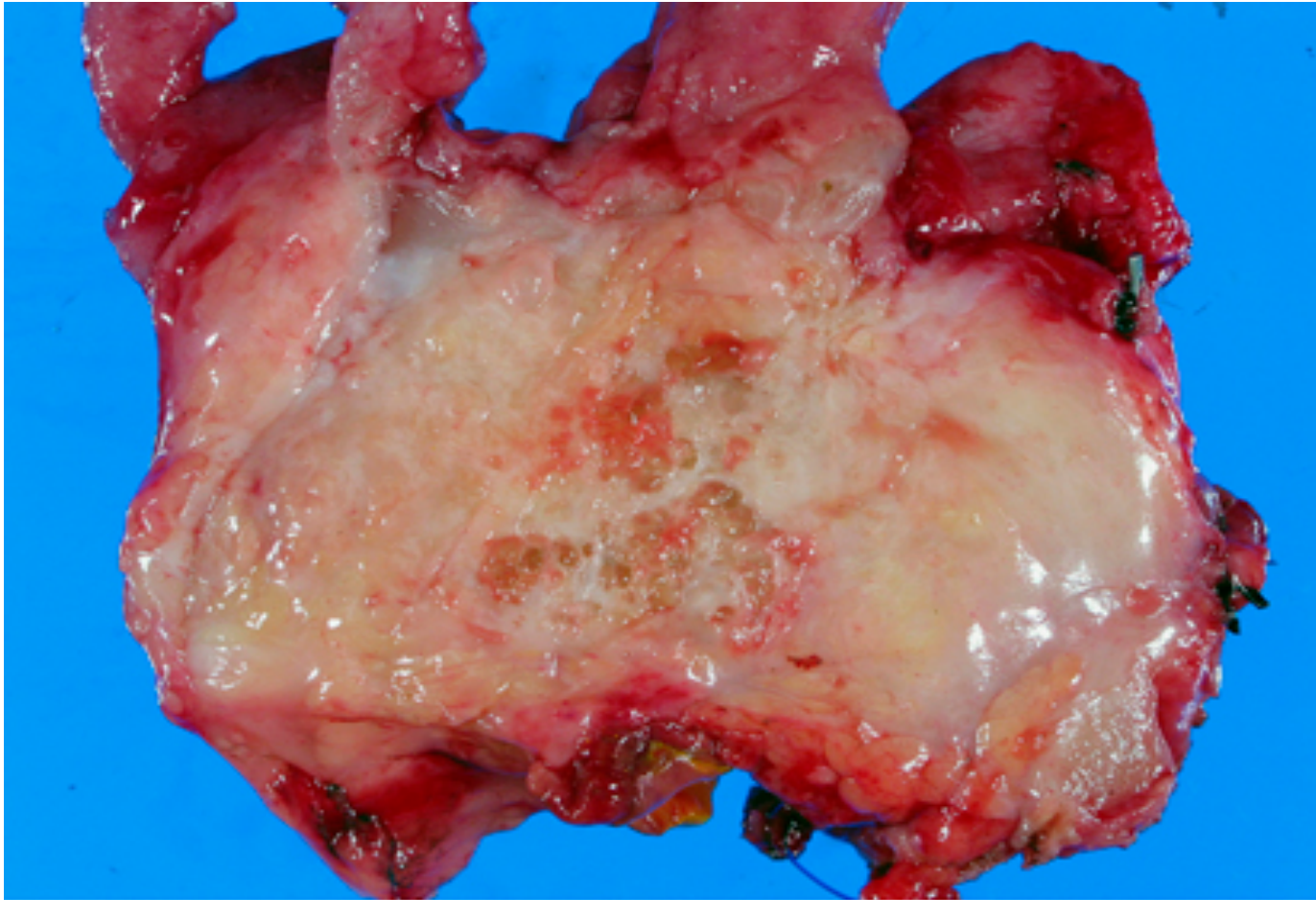
Pancreatic adenocarcinoma

PANCREATIC ADENOCARCINOMA – Gross



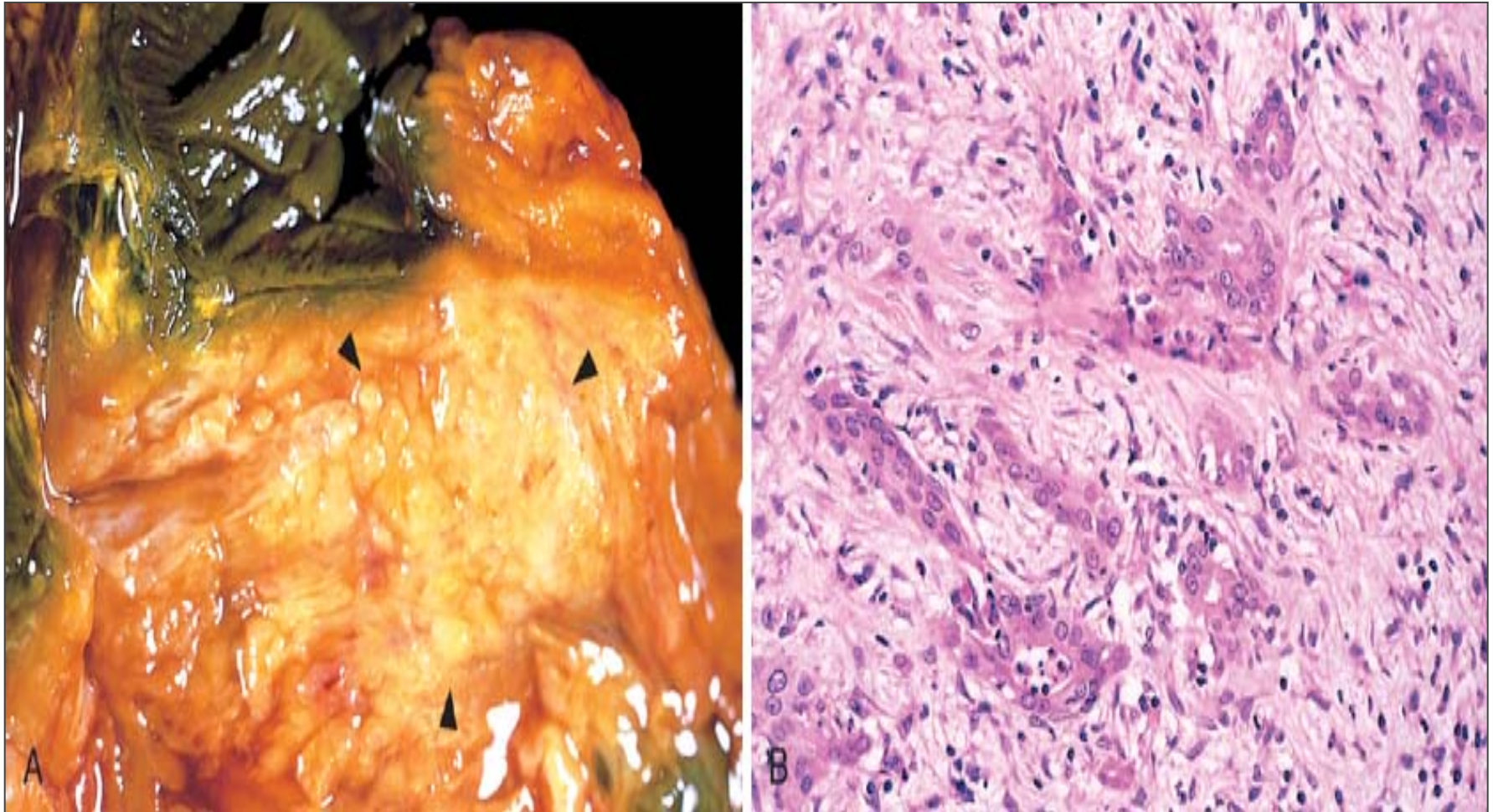
Horizontal section of pancreas showing a well circumscribed tumor nodule at the head of pancreas. Note the presence of a dilated main pancreatic duct. Part of the duodenum is seen on the left and the spleen on the right side.

PANCREATIC ADENOCARCINOMA – Cut surface



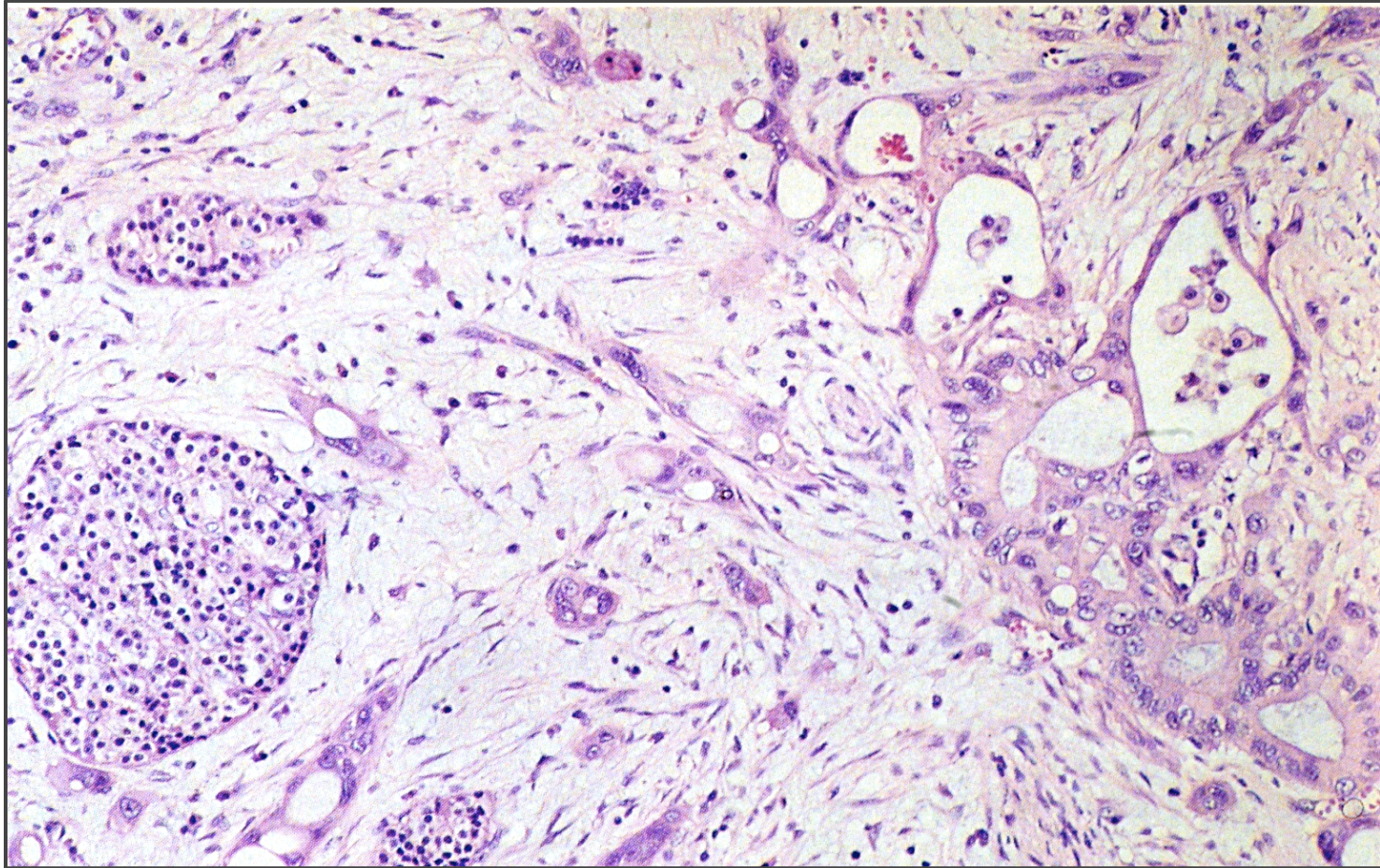
Gross appearance of large duct type ductal adenocarcinoma. A microcystic pattern with cysts measuring from millimeters up to 1 cm.

PANCREATIC ADENOCARCINOMA – Gross & LPF



***Gross picture shows ill defined pale and firm pancreatic mass (left).
Microscopic picture shows malignant glands or acini surrounded by
desmoplastic fibrous stroma (right) .***

PANCREATIC ADENOCARCINOMA – LPF



Deeply infiltrative growth pattern with irregular shape and distribution , Desmoplasia , Marked nuclear pleomorphism with nucleoli, Loss of polarity and Mitotic figures

THE END