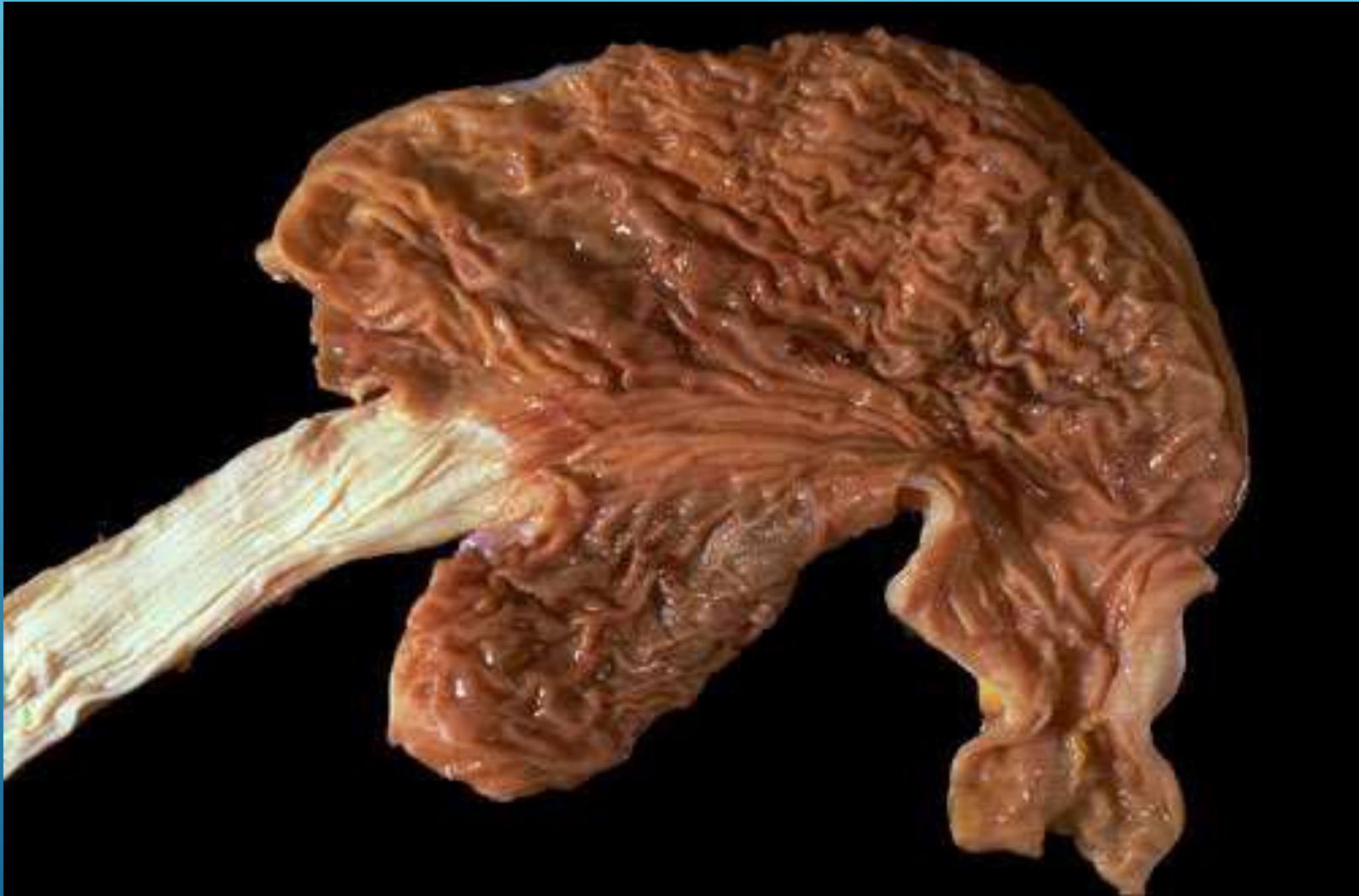


DIGESTIVE SYSTEM PATHOLOGY

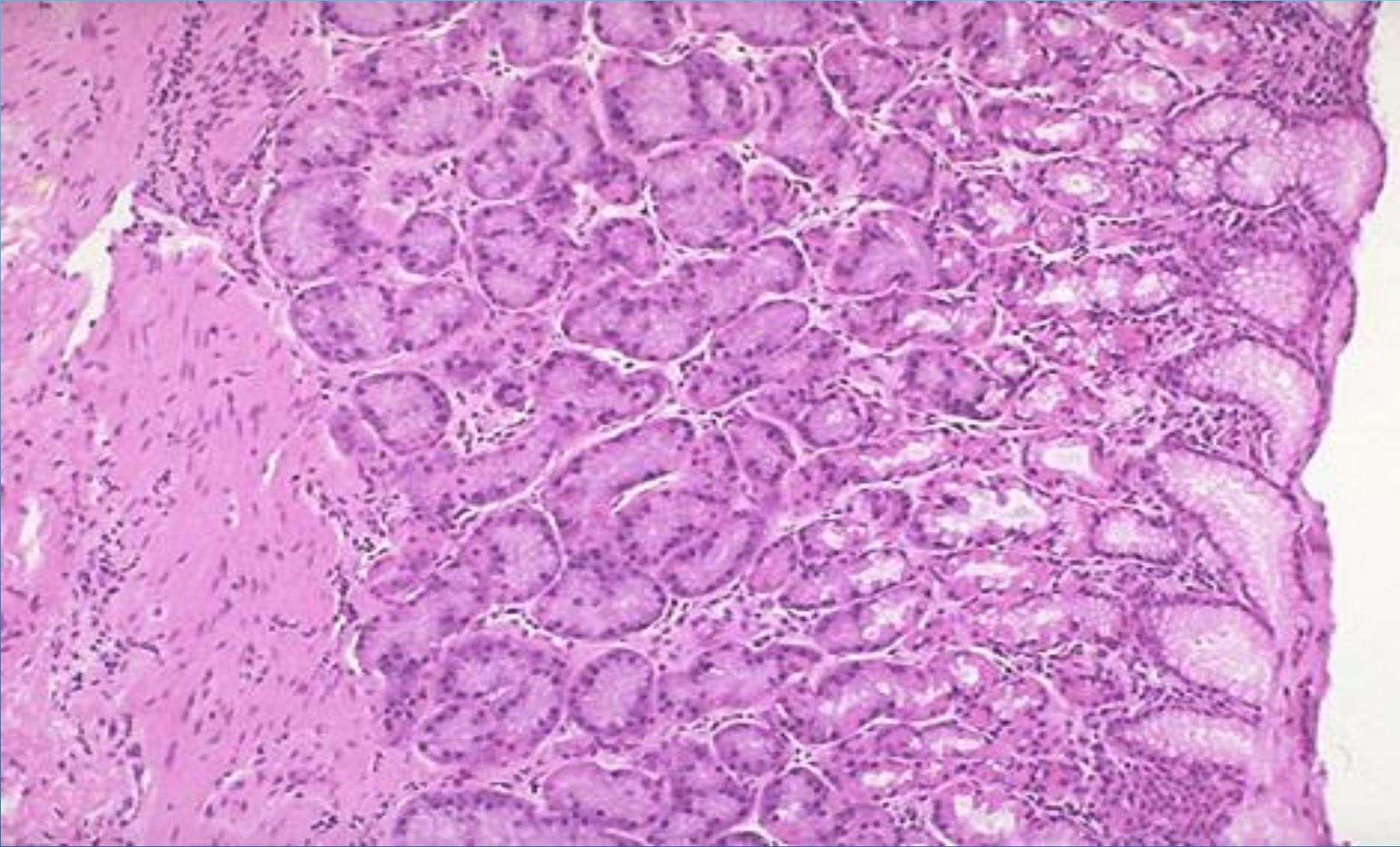
GASTRO-INTESTINAL TRACT
PATHOLOGY

A series of several thin, white, parallel diagonal lines that sweep across the right side of the slide from the bottom-left towards the top-right.

NORMAL ANATOMY – NO GROSS PATHOLOGY



NORMAL gastric mucosa (histology)



- ▶ GASTRITIS – inflammation of gastric mucosa
- ▶ Gastritis occurs when the lining of the stomach becomes inflamed after it's been damaged. It's a common condition with a wide range of causes.

CHRONIC GASTRITIS (NONEROSIVE GASTRITIS) REFERS TO CHRONIC INFLAMMATORY DISEASE OF THE STOMACH THAT RANGE FROM MILD SUPERFICIAL INVOLVEMENT OF THE GASTRIC MUCOSA TO SEVERE ATROPHY.

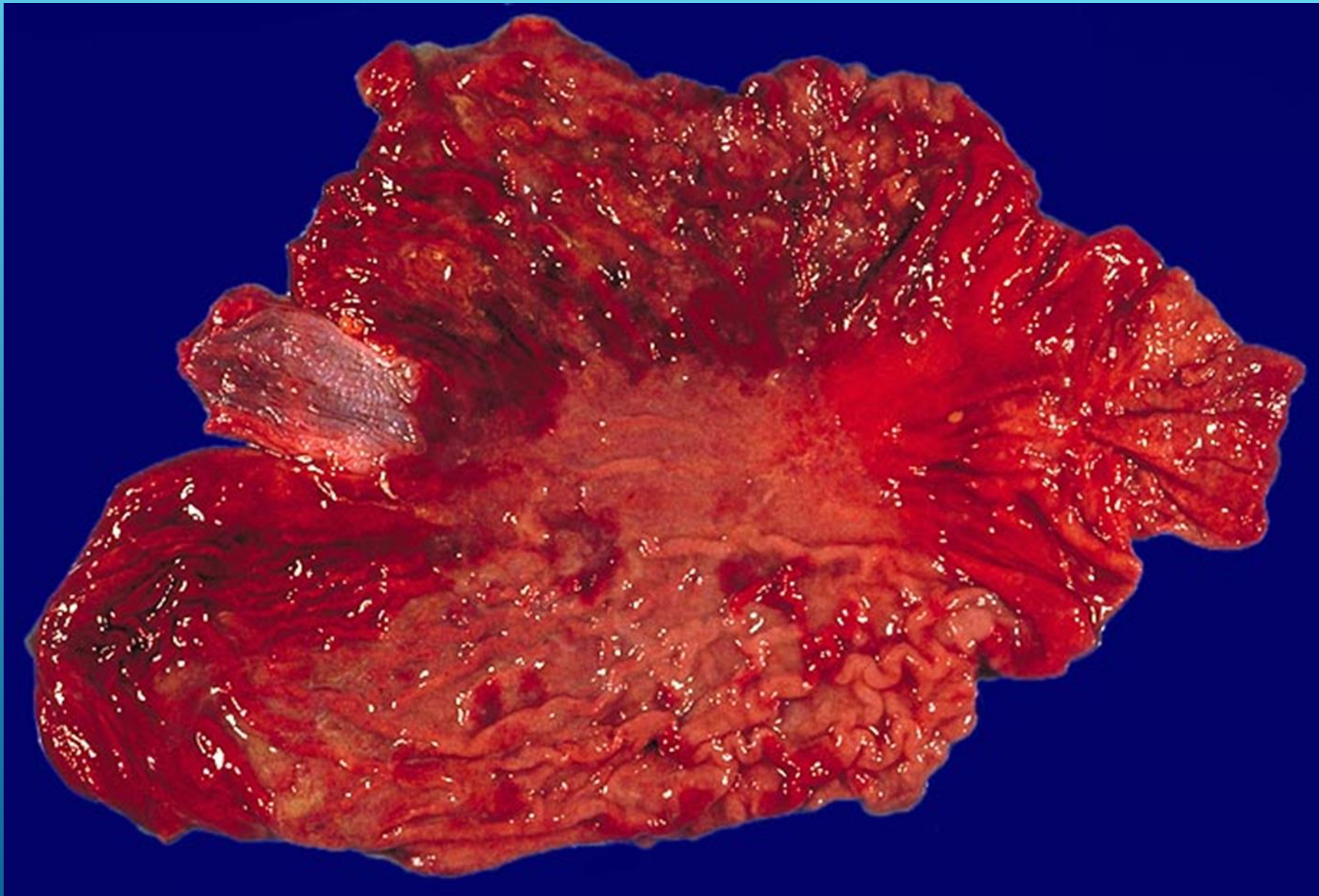
The types are:

- ▶ **autoimmune gastritis** (type A) refers to a chronic, diffuse inflammatory disease of the stomach mucosa that is restricted to the body and fundus and is associated with autoimmune phenomena.
- ▶ **idiopathic gastritis** is by definition a chronic inflammatory disease of the stomach mucosa of unknown etiology.
- ▶ **infectious gastritis** (type B) is a chronic inflammatory disease of the antrum and body of the stomach caused by *Helicobacter pylori*.
- ▶ **reflux gastritis** refers to chronic gastric injury resulting from the reflux of alkaline duodenal contents and bile into the stomach, usually following partial gastrectomy.

The pathologic features of autoimmune and chronic idiopathic gastritis are virtually identical – histopathological, from *superficial* to *chronic atrophic gastritis* to *gastric atrophy*

except for the localization: the autoimmune type confined to the fundus and body; the idiopathic variety mainly to the antrum.

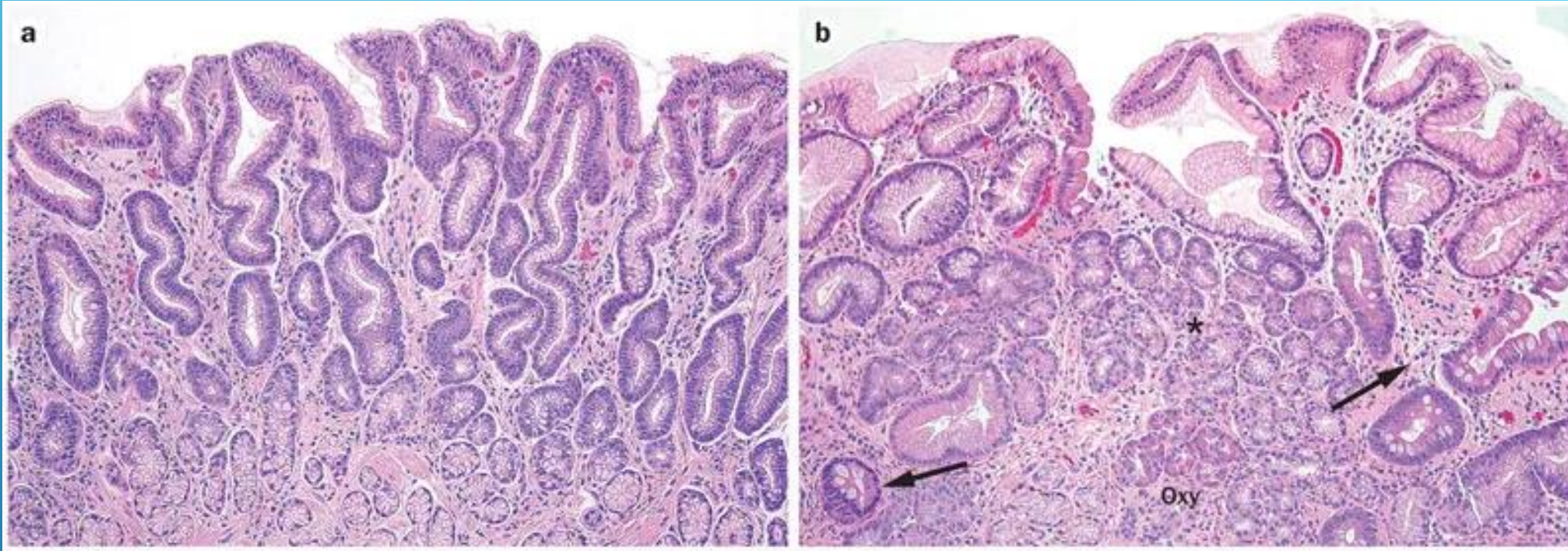
! Persons with atrophic gastritis of the autoimmune or idiopathic type have a high incidence of carcinoma of the stomach.





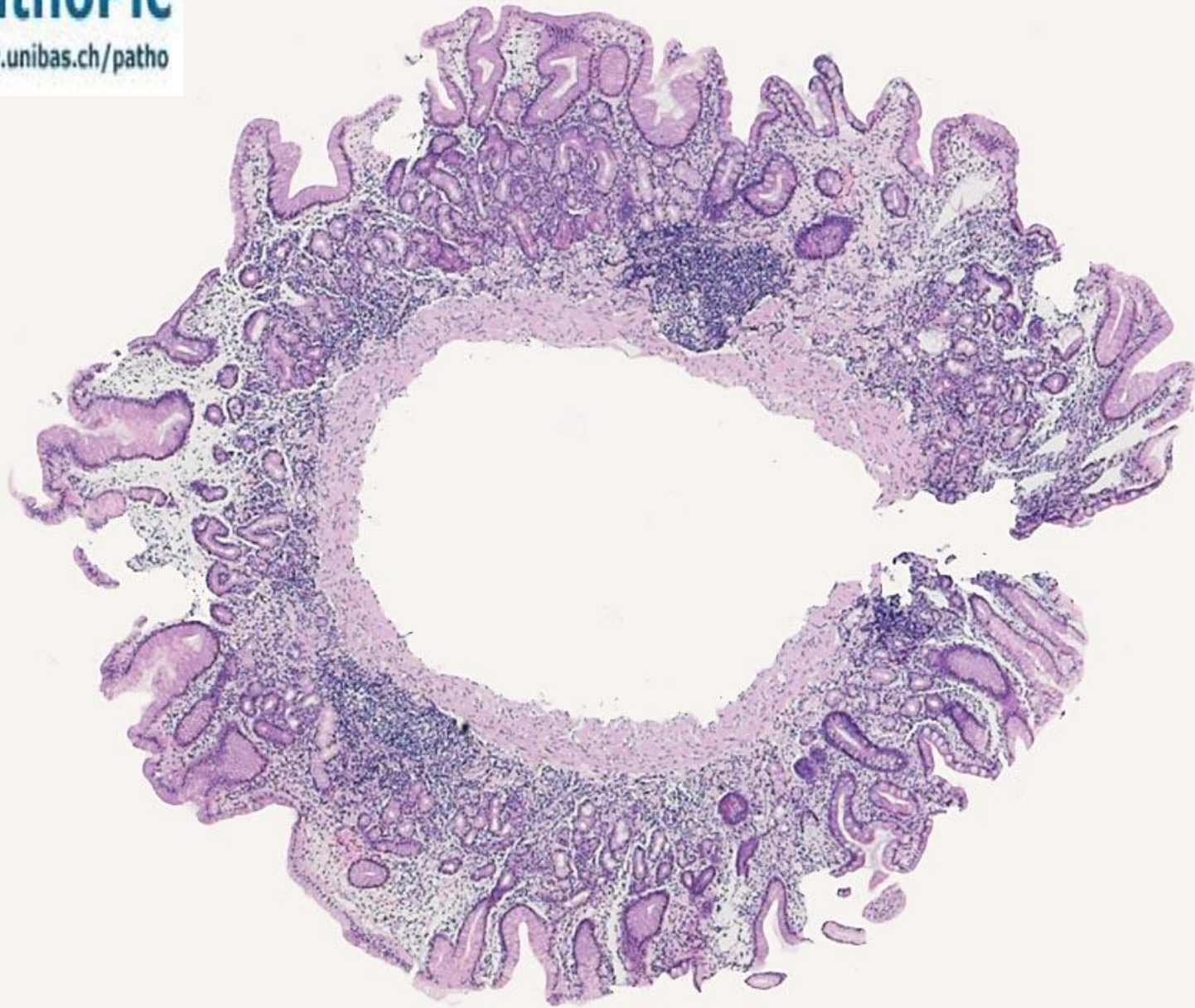
Note the absence of gastric rugae in the completely flattened mucosa of the corpus.

Neumann WL, Coss E, Rugge M, Genta RM. Autoimmune atrophic gastritis—pathogenesis, pathology and management. *Nature Reviews Gastroenterology & Hepatology*. 2013 Sep;10(9):529.



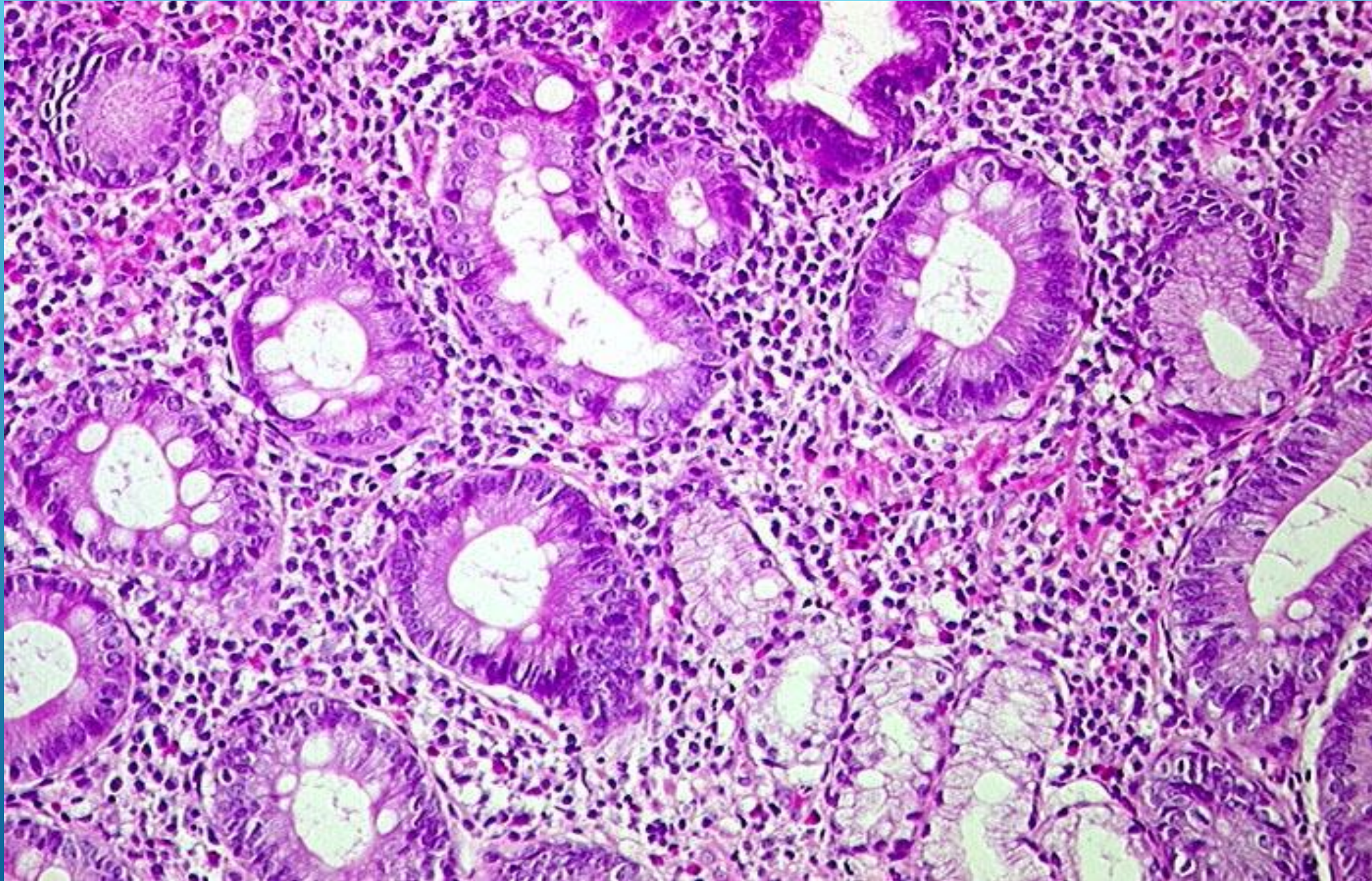
a | The antral mucosa shows moderate foveolar hyperplasia (reactive gastropathy) with neither inflammation nor metaplasia. b | The mucosa of the corpus shows absence of parietal cells, intestinal metaplasia (arrows) and pseudopyloric metaplasia (asterisk). A small cluster of surviving oxyntic glands (Oxy) is seen in the lower portion of the mucosa.

Neumann WL, Coss E, Rugge M, Genta RM. Autoimmune atrophic gastritis—pathogenesis, pathology and management. *Nature Reviews Gastroenterology & Hepatology*. 2013 Sep;10(9):529.



Chronic atrophic gastritis
with intestinal metaplasia

- ▶ Intestinal metaplasia is a common and important histologic feature of both the autoimmune and idiopathic types of nonerosive gastritis. In this response of the injured gastric mucosa, the normal epithelium is replaced by one composed of cells of intestinal type: mucin - containing goblet cells, enterocytes line crypt - like glands, and many Paneth cells, which are not normal inhabitants of the gastric mucosa.

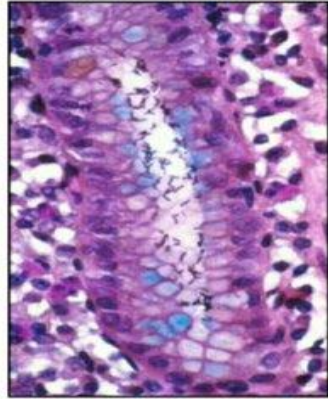


Infectious gastritis (type B)

- ▶ the most common type of chronic nonerosive gastritis, and the organism causes one of the most common chronic infections in humans.
- ▶ *H. pylori* infection is also strongly associated with peptic ulcer disease of the stomach and of the duodenum.
- ▶ and with the development of gastric adenocarcinoma and MALT type primary gastric lymphoma.

H. Pylori related gastric pathology

Gregory Y Lauwers



H. Pylori

Acute Gastritis

Diffuse Non-Atrophic Gastritis (antral)

Duodenal Ulcer

Gastric Ulcer

Multifocal Atrophic Gastritis

IM

HGD

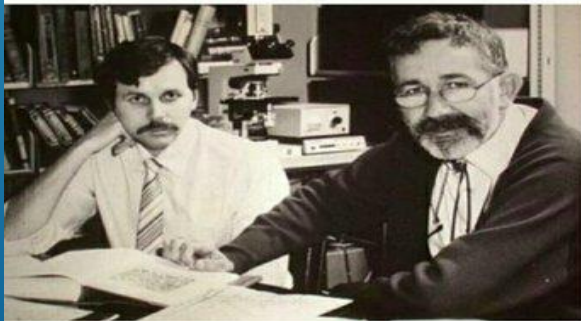
LGD

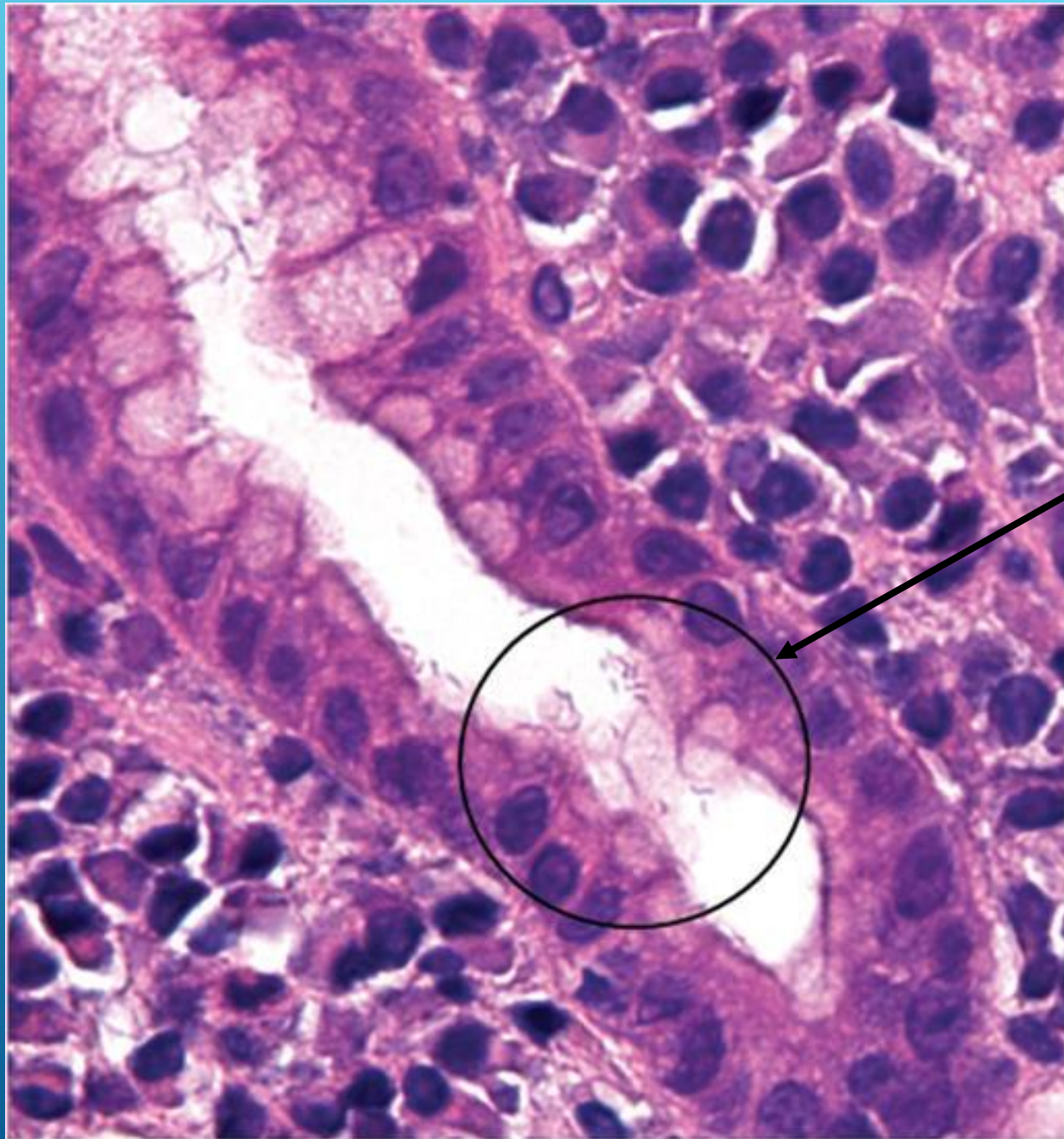
Cancer

B-cell Lymphoid Aggregation

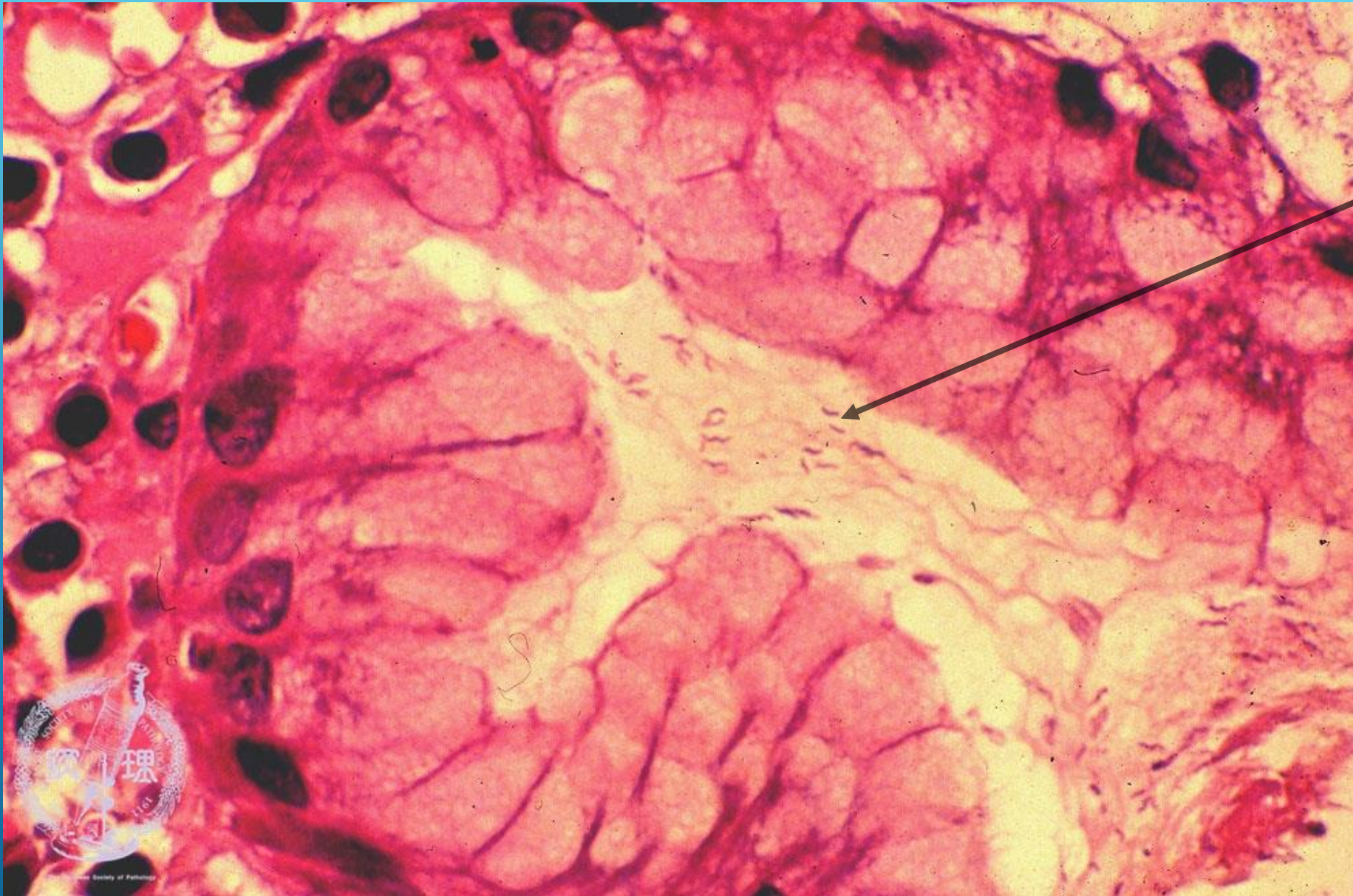
B-cell Lymphoid Hyperplasia

B-cell Lymphoma (MALToma)

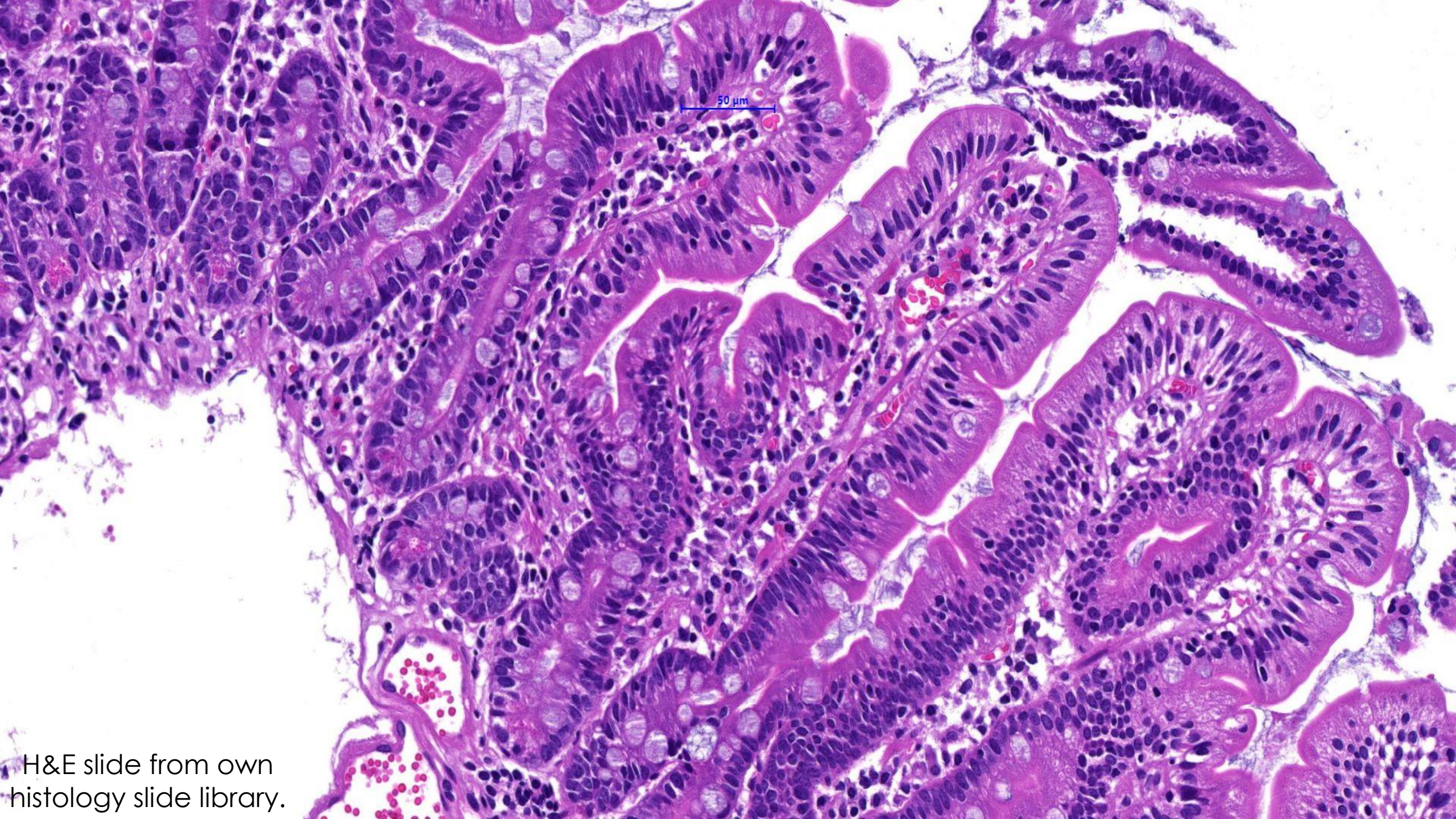




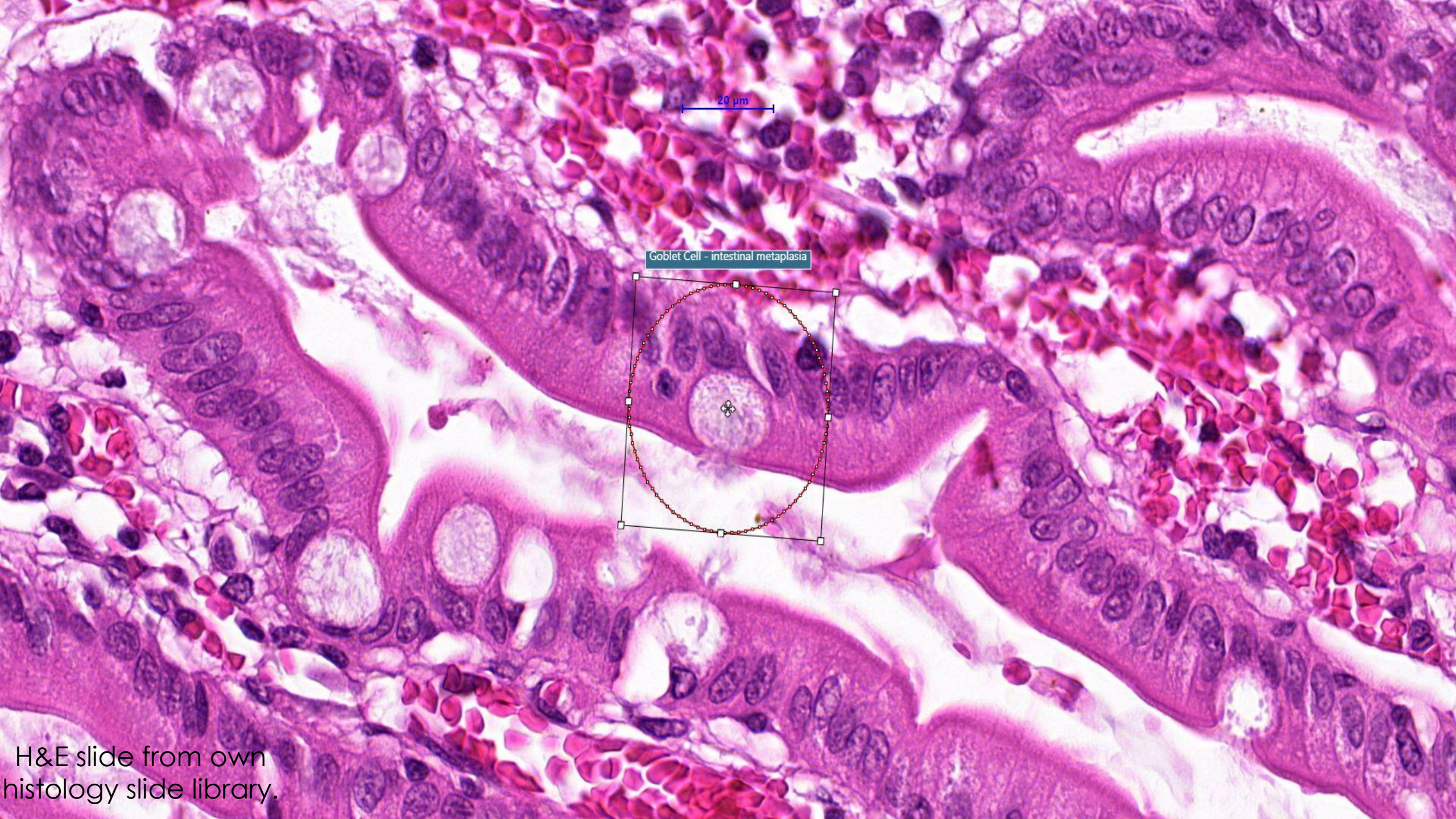
Helicobacter
pylori rods in
gastric mucus



Helicobacter
pylori rods in
gastric mucus



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histology slide library.

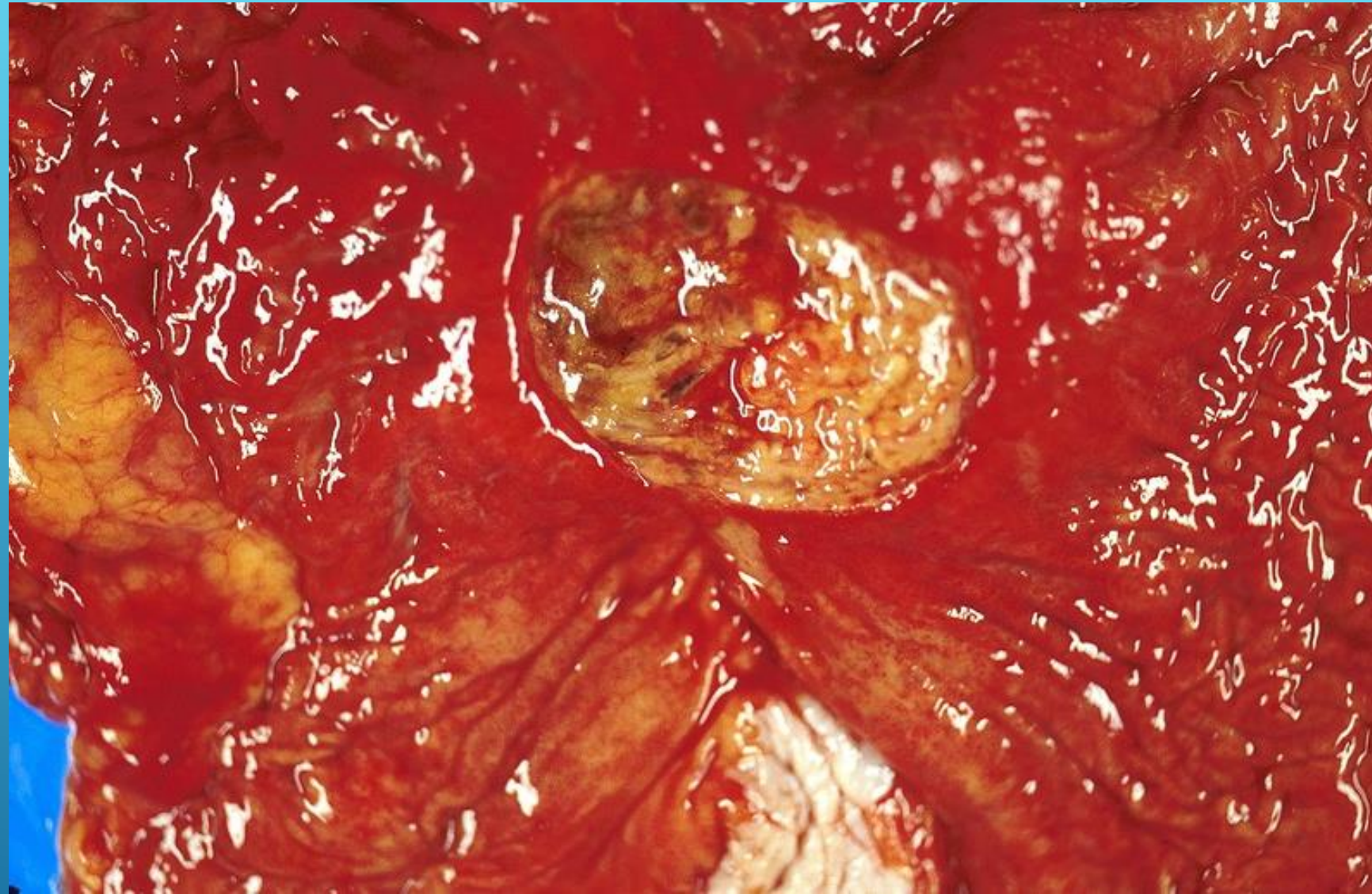


Goblet Cell - intestinal metaplasia

PEPTIC ULCER DISEASE

- ▶ “Peptic ulcer disease” refers to breaks in the mucosa of the stomach and small intestine, principally the proximal duodenum, which are produced by the action of gastric secretions.
- ▶ Current evidence indicates that the production of a duodenal ulcer is the consequence of excess exposure of the duodenal mucosa to the aggressive actions of gastric-acid-pepsin that overwhelm the normal defenses. patients with *gastric ulcers* have low-to-normal levels of gastric acid, but never true achlorhydria. Most of the accumulated data favor the existence of some primary *defect in gastric mucosal resistance*.
- ▶ It is estimated that about 75% of patients with gastric ulcers harbor *H. pylori*. The remaining 25% of the cases may represent an association with other types of chronic gastritis.

Gastric ulcer is usually single and less than 2 cm in diameter, although occasionally they reach a diameter of 10 cm or more, particularly if they are on the lesser curvature. The classic peptic ulcer is a round-to-oval, sharply punched-out defect, with relatively straight walls.

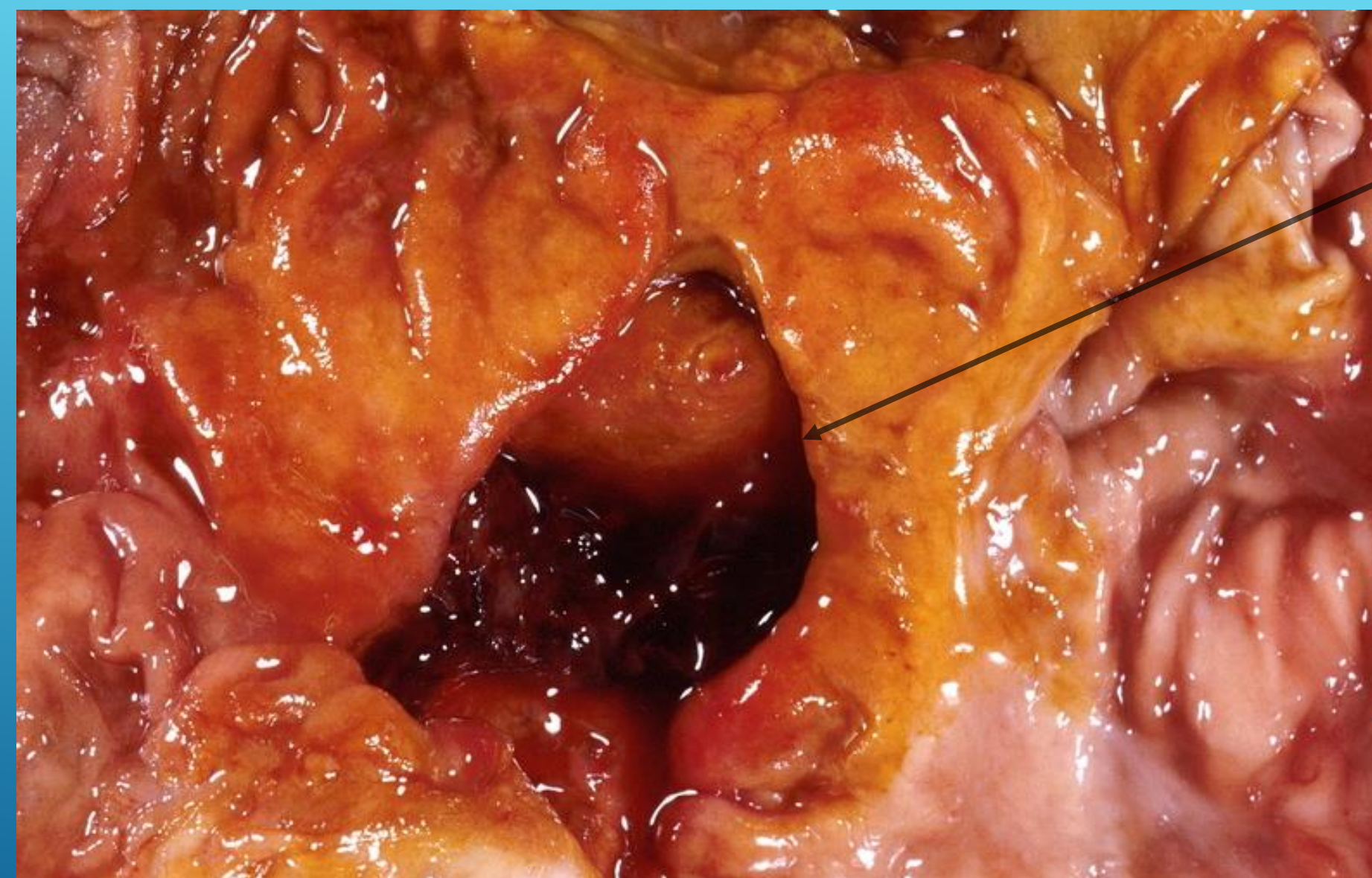


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<https://peir.path.uab.edu/library/picture.php?/10434/category/55>

Duodenal ulcer

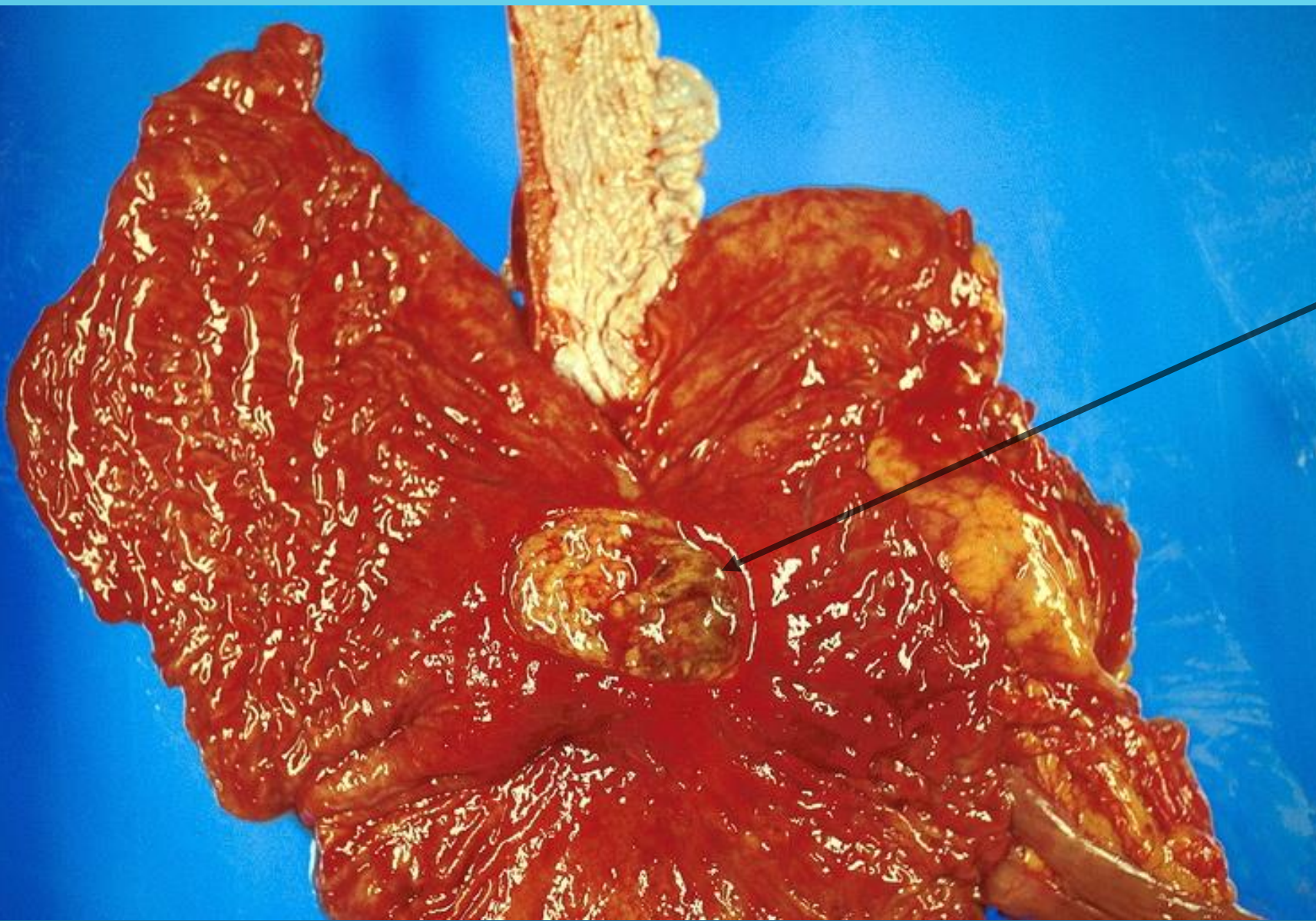
Duodenal ulcers are ordinarily located on the anterior or posterior wall of the first part of the duodenum, within a short distance from the pylorus. The lesion is usually solitary, but is not uncommon to find paired ulcers on both walls, so-called "kissing" ulcers.



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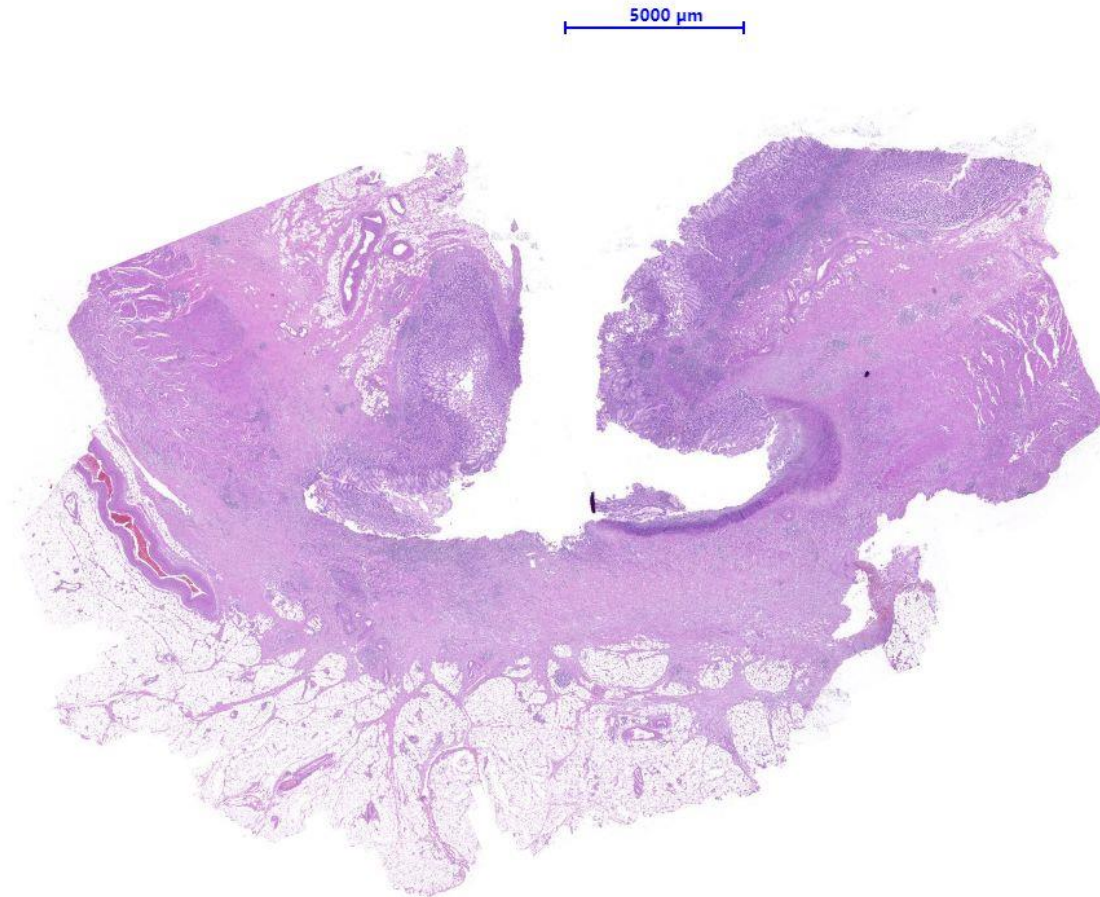
Gastric ulcer



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<https://peir.path.uab.edu/library/picture.php?/10431/category/55>

Microscopically, gastric and duodenal ulcers have a similar appearance. From the lumen outward, the following are noted: (1) a superficial zone of fibrino - purulent exudates and necrotic debris; (2) fibrinoid necrosis and inflammatory cells; (3) granulation tissue; (4) fibrotic tissue at the base of the ulcer, which exhibits variable degree of chronic inflammation.



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histology slide library.

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histology slide library.

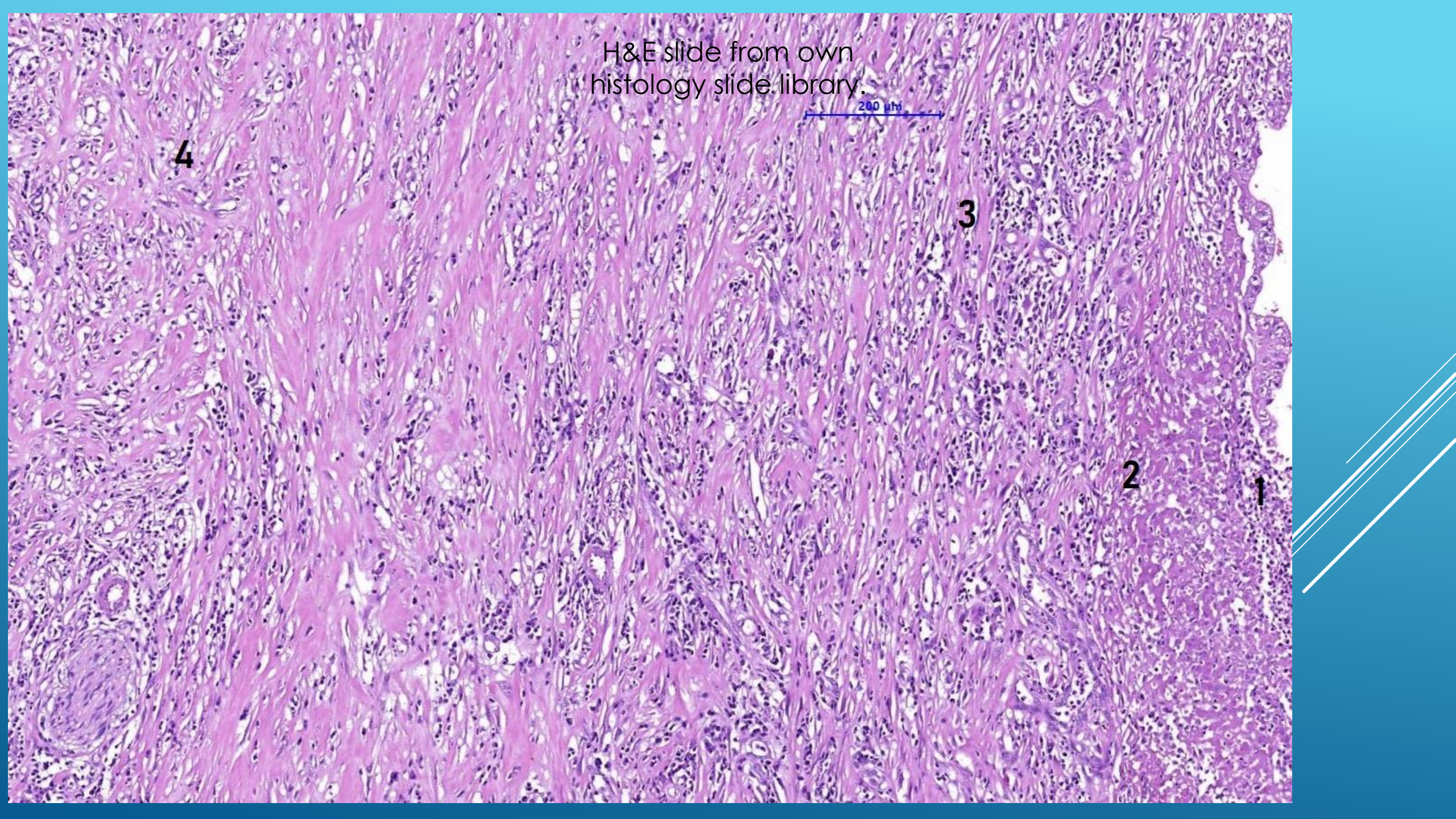
200 μ m

4

3

2

1



Complications. The most common complications of peptic ulcer disease in order of frequency are hemorrhage, penetration with or without perforation, and obstruction. Approximately a third of the patient experience one of these complications at some point during the course of their disease; ulcers most commonly associated with complications are those located in the pyloric channel and in the postbulbar duodenum.

Bleeding occurs when an ulcer erodes into a vessel. The erosion of small vessels is rarely associated with distinctive upper gastrointestinal signs or symptoms; such patients usually present with iron deficiency anemia as a result of the chronic blood loss. Of the major arteries, those most commonly eroded are the gastroduodenal artery in duodenal ulcers, and the left gastric artery in gastric ulcers. Rupture of one of these vessels constitutes a medical emergency, which accounts for approximately 50% of all acute upper gastrointestinal bleeding events.

Perforation results when the ulcer erodes through the serosa of the viscus. The acute free perforation of an ulcer into the abdominal cavity is accompanied by a dramatic intensification of the patient's symptoms; it is often accompanied by pneumoperitoneum and peritonitis and is an indication for immediate surgery.

Malignant transformation of a benign gastric ulcer. It is extremely difficult to distinguish a cancer arising in a preexisting gastric ulcer from an ulcerated carcinoma (malignancy from the beginning). Gross / endoscopic findings (shape, diameter, depth, walls, bottom, surrounding mucosal folds) are of some help, but multiple biopsies from the margins and the base of the defect will show malignant glands only in the walls of the malignant transformed ulcer. The ulcerating gastric carcinoma has the adenocarcinomatous proliferation at the bottom, as well as in the irregular walls.


Lee SM, Kim KM, Ro JY. Gastric carcinoma: Morphologic classifications and molecular changes. Gastric Carcinoma. New insights into Current Management. 2013 Jan 23.
<https://www.intechopen.com/books/gastric-carcinoma-new-insights-into-current-management/gastric-carcinoma-morphologic-classifications-and-molecular-changes>



GASTRIC MALIGNANT TUMORS

Atrophic gastritis, pernicious anemia, subtotal gastrectomy, and gastric adenomatous polyps are factors associated with a high risk of stomach cancer.

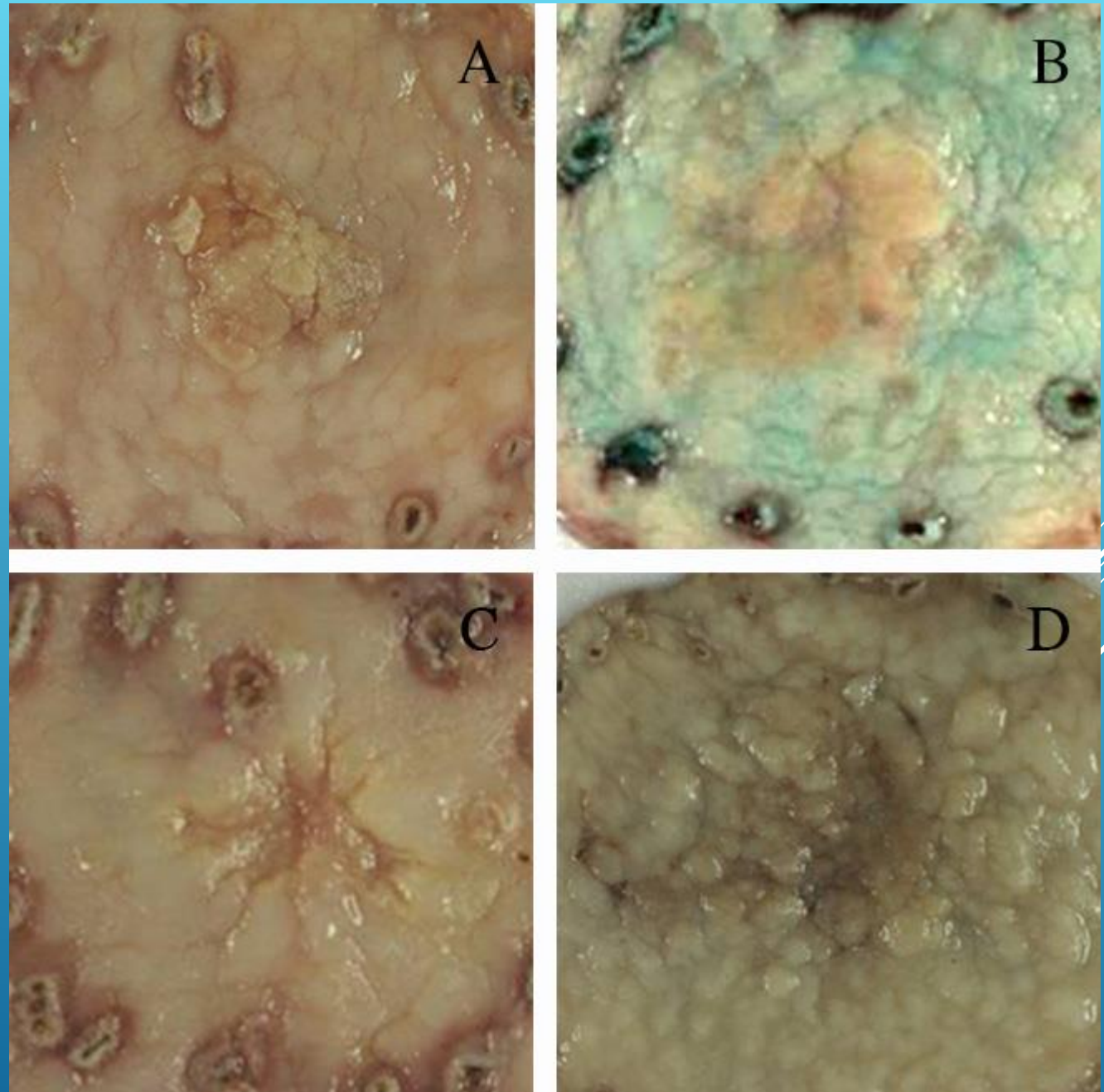
Adenocarcinoma of the stomach accounts for more than 95% of all malignant gastric tumors and originates primarily from mucous cells of the normal superficial epithelium or from areas of intestinal metaplasia. The tumors are most common in the distal stomach, on the lesser curvature of the antrum and in the prepyloric region. Two general types of gastric adenocarcinoma are recognized, namely advanced and early cancers with a consistent prognosis impact - the 10-years survival rate for surgically treated advanced gastric cancer is about 20%, compared with 95% for early gastric cancer.



- ▶ Early gastric cancer was defined by the Japanese gastroenterologists as a tumor that is confined to the mucosa or submucosa.
- ▶ Most early gastric cancers are found in the distal stomach and have been classified by Japanese investigators according to their macroscopic / endoscopic appearance. Three major types are recognized:
- ▶ 1. Type I protrudes into the lumen as a polypoid or nodular mass.
- ▶ 2. Type II is a superficial, flat lesion that may be slightly elevated or depressed.
- ▶ 3. Type III is an excavated malignant ulcer that does not ordinarily occur alone but rather represents ulceration of type I or II tumors.

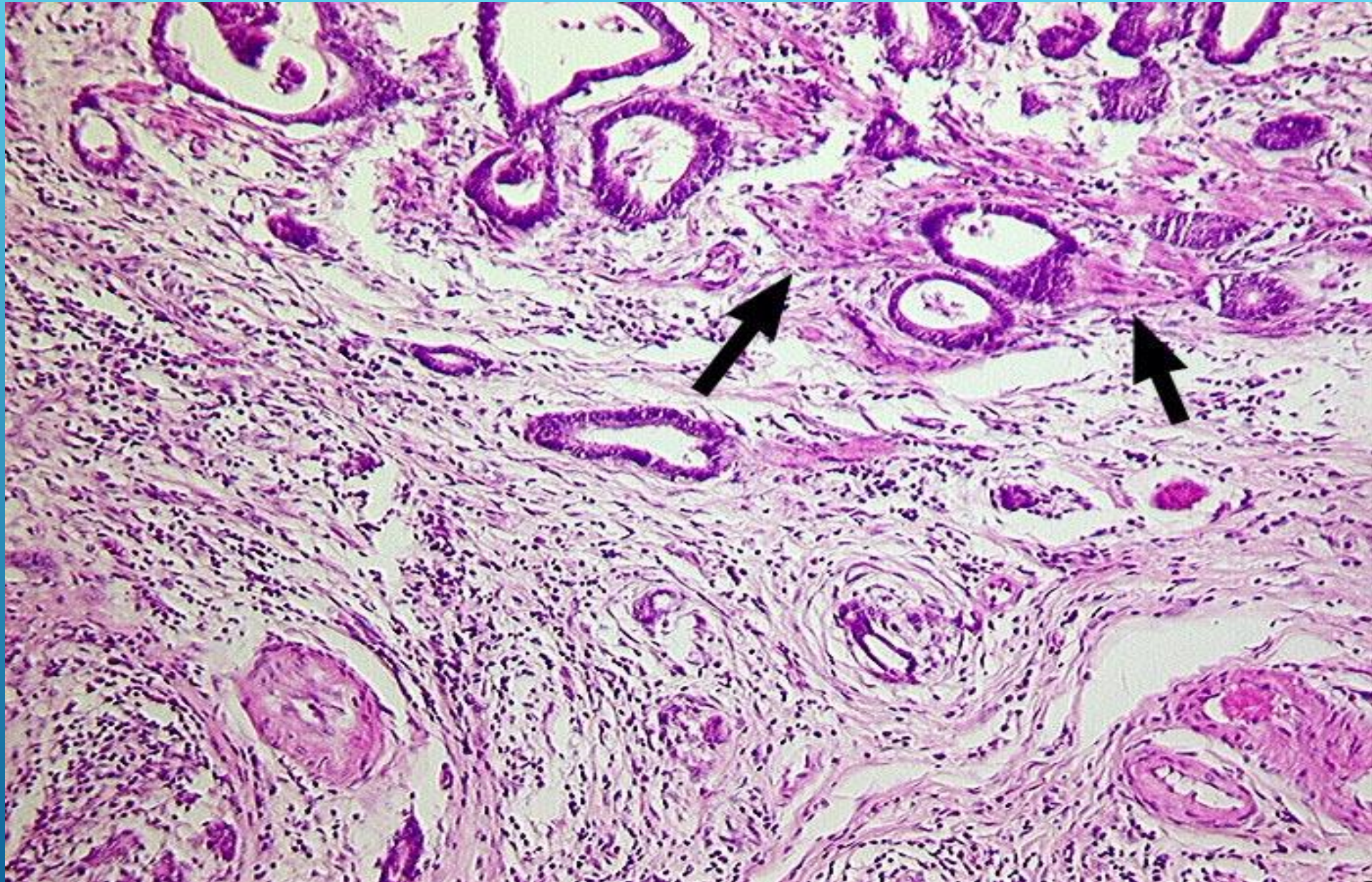
Lee SM, Kim KM, Ro JY. Gastric carcinoma: Morphologic classifications and molecular changes. Gastric Carcinoma. New insights into Current Management. 2013 Jan 23.

<https://www.intechopen.com/books/gastric-carcinoma-new-insights-into-current-management/gastric-carcinoma-morphologic-classifications-and-molecular-changes>





<https://alf3.urz.unibas.ch/pathopic/e/getpic-fra.cfm?id=1317>



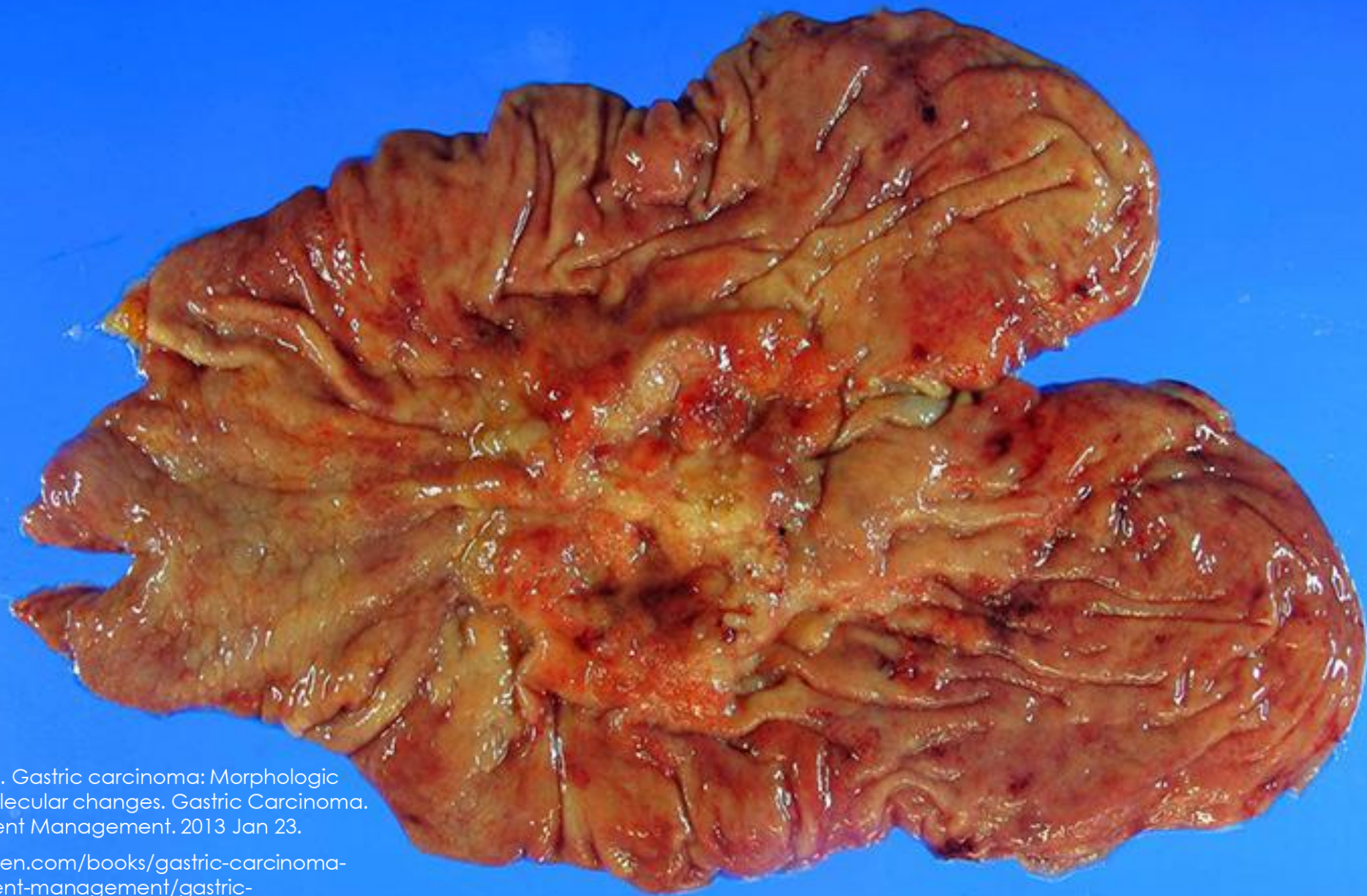
Penetration of malignant glands through muscularis mucosa (tip of the arrows) into submucosa.

Advanced gastric cancer is a cancer that has penetrated beyond the submucosa into the muscularis and may extend through the serosa. The macroscopic appearance of these advanced cancers is of great importance not only to the pathologist but also to the radiologist and the endoscopist, who may be called on to distinguish carcinomas from benign lesions and to assess the degree of spread.

Advanced gastric cancers are divided into three major macroscopic types:

1. Polypoid (fungating / exophytic)
2. Ulcerated / excavated
3. Diffuse / infiltrating





Lee SM, Kim KM, Ro JY. Gastric carcinoma: Morphologic classifications and molecular changes. Gastric Carcinoma. New insights into Current Management. 2013 Jan 23.

<https://www.intechopen.com/books/gastric-carcinoma-new-insights-into-current-management/gastric-carcinoma-morphologic-classifications-and-molecular-changes>



Lee SM, Kim KM, Ro JY. Gastric carcinoma: Morphologic classifications and molecular changes. Gastric Carcinoma. New insights into Current Management. 2013 Jan 23.

<https://www.intechopen.com/books/gastric-carcinoma-new-insights-into-current-management/gastric-carcinoma-morphologic-classifications-and-molecular-changes>

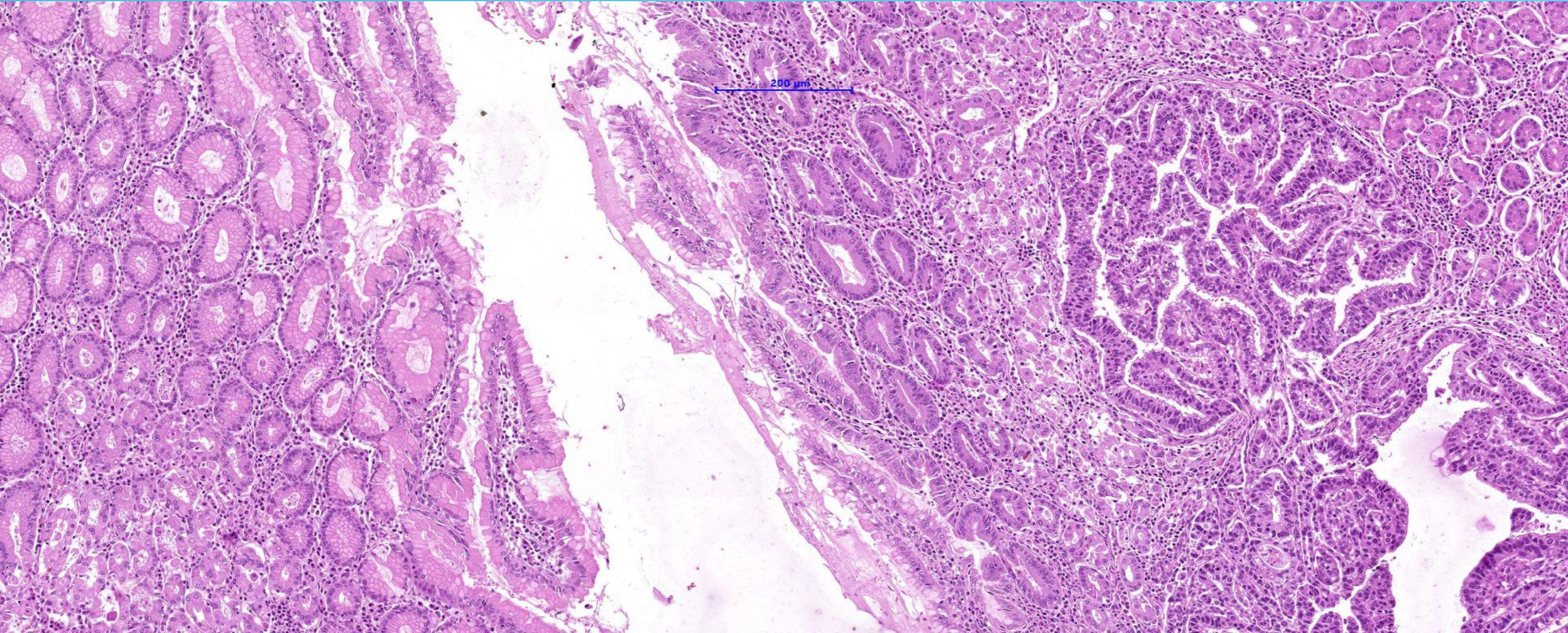


Diffuse / infiltrating advanced gastric carcinoma – *linitis plastica*

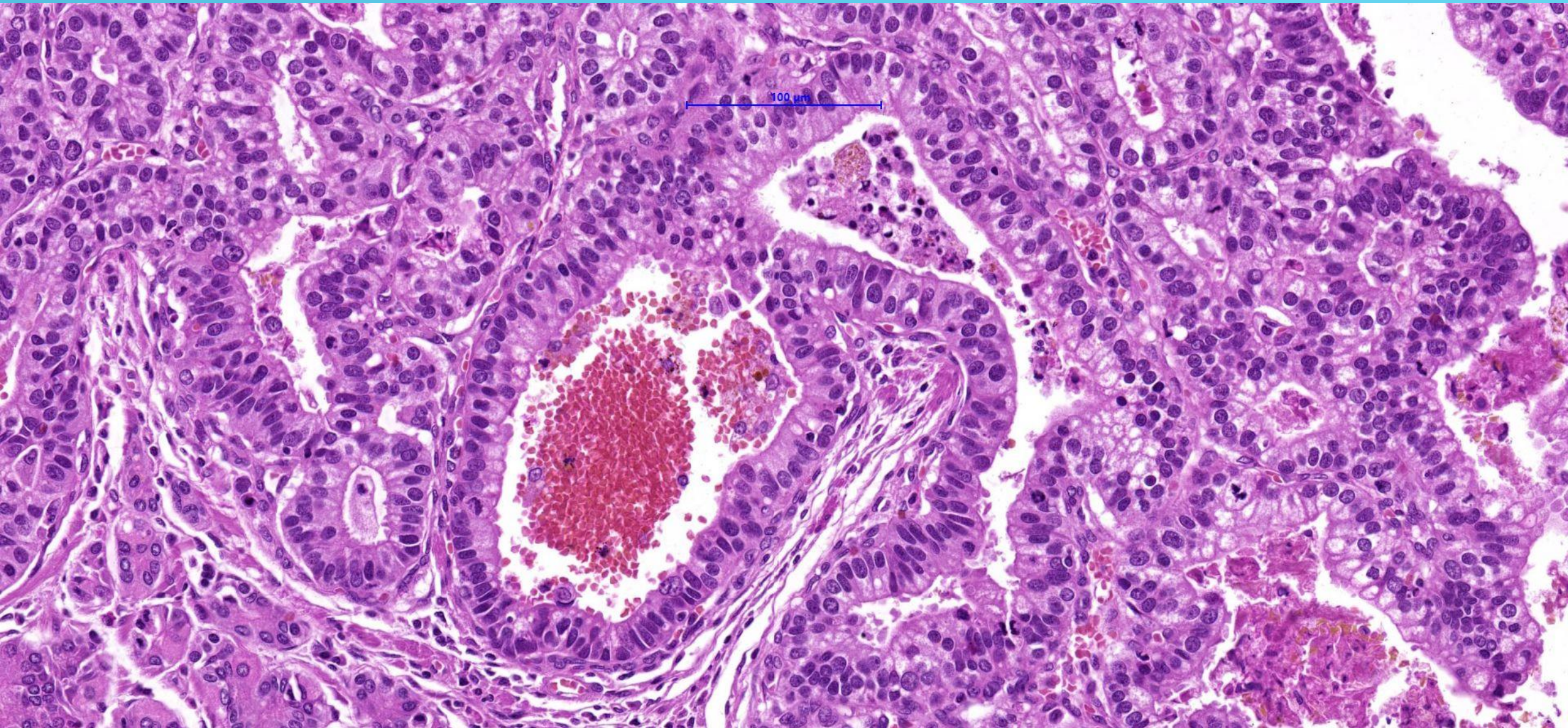
Microscopically, the histologic pattern of advanced gastric cancer varies from a well-differentiated adenocarcinoma to a totally anaplastic tumor, being recognized 2 major forms: intestinal (originated from intestinal metaplasia of gastric mucosa) and diffuse (developing from superficial gastric epithelium) types, with some correlations between gross and histological appearances.

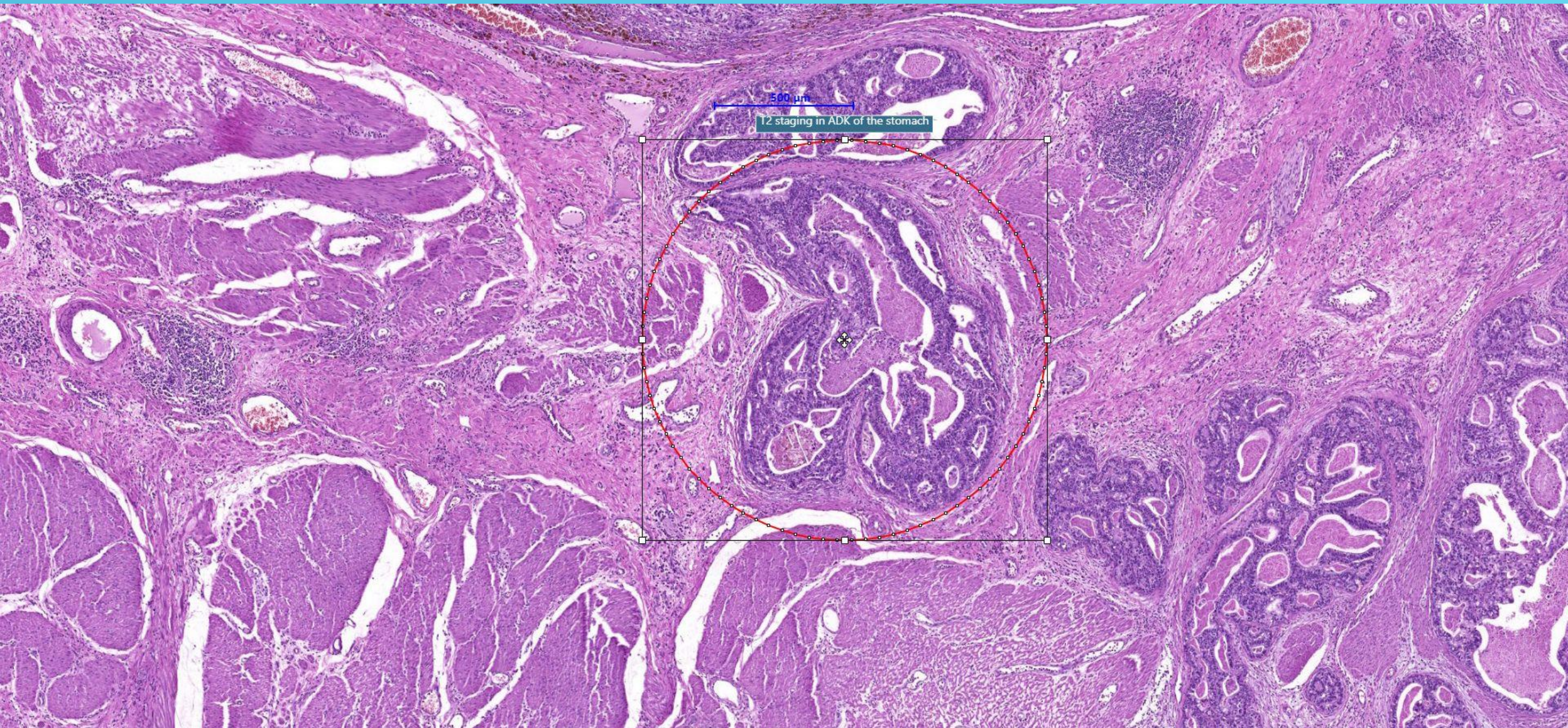
The polypoid variant typically contains well - differentiated glands, whereas *linitis plastica* is characteristically poorly differentiated. Particularly in the ulcerated type of cancer, the tumor cells may be arranged in cords or small foci. Tumor cells may contain clear mucin that displaces the nucleus to the periphery of the cell, resulting in the so-called signet ring cell carcinoma. Extracellular mucinous material may be so prominent that the malignant cells seem to float in a gelatinous matrix, in which case it is called a colloid or mucinous carcinoma. Cancers with papillary inholdings are termed papillary adenocarcinomas, and those that form solid tumor masses with no or little intervening stroma are referred to as medullary carcinomas.

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histology slide library.



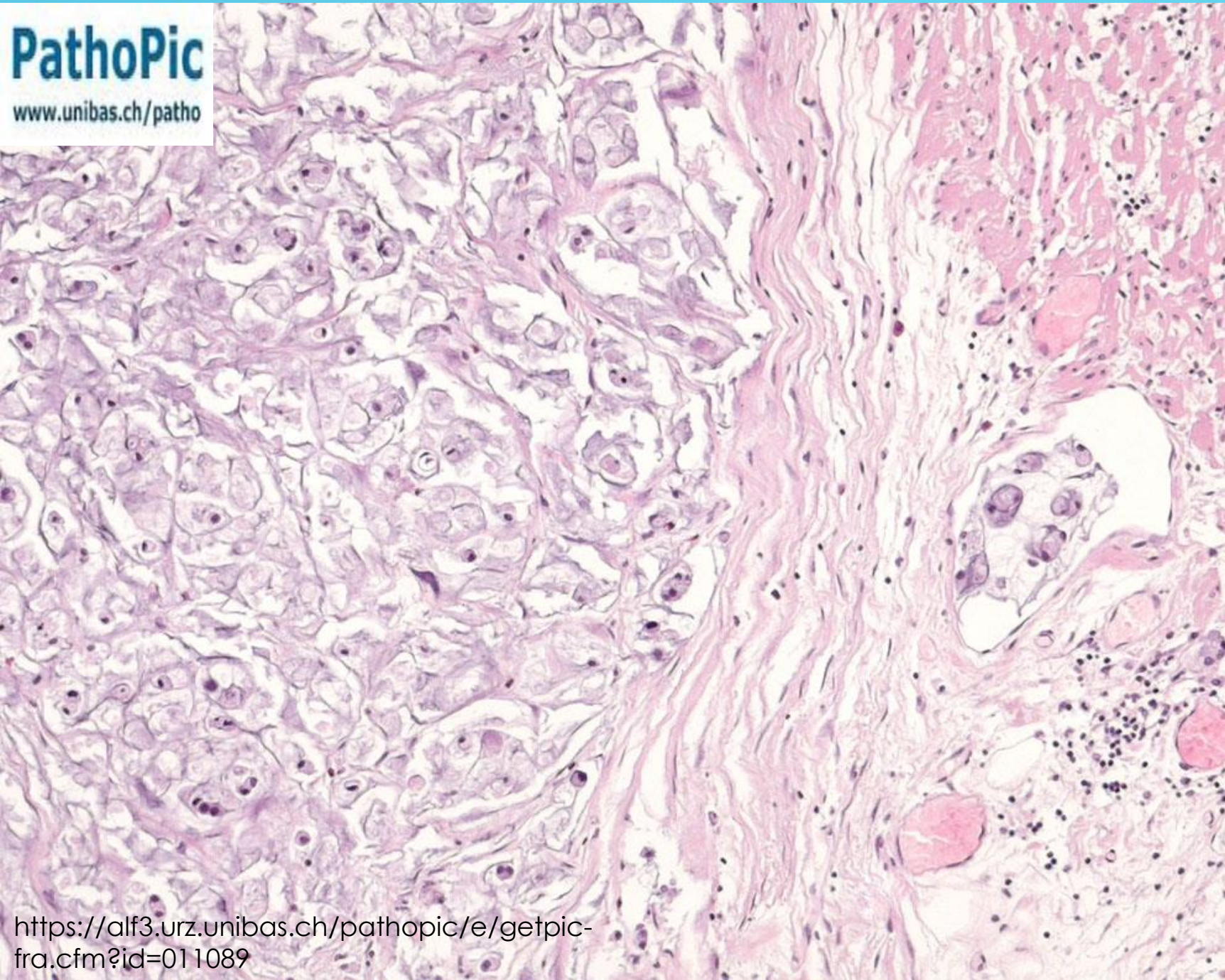
H&E slide from own
histology slide library.





500 μm

T2 staging in ADK of the stomach



A paucicellular tumor consisting of signet ring cells floating in extracellular mucin invades the muscle layer of the stomach. Ectatic lymph vessel containing tumor cells.

Of note:

Virchow's nodes are named after Rudolf Virchow (1821–1902), the German pathologist who first described the nodes and their association with gastric cancer in 1848. The French pathologist Charles Emile Troisier noted in 1889 that other abdominal cancers, too, could spread to the nodes (particularly ovarian, testicular and kidney cancers).

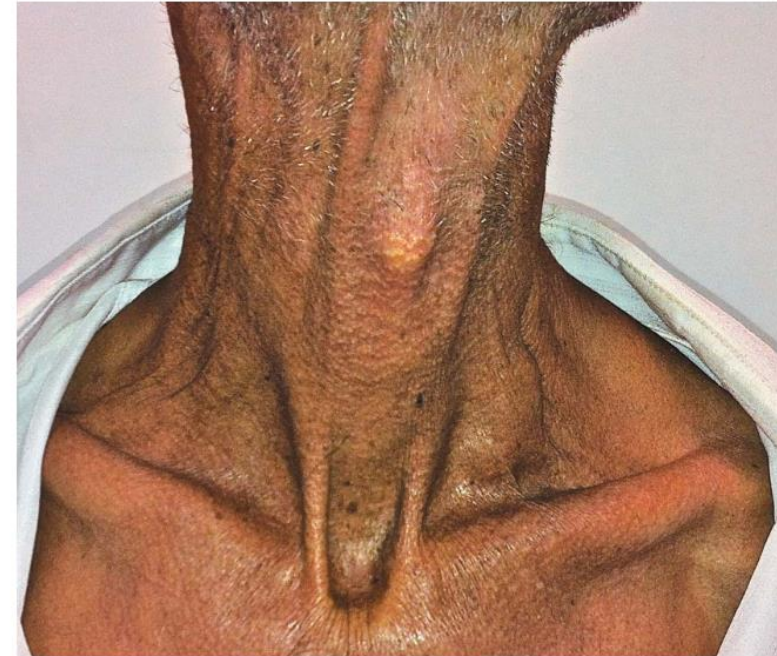
Hematogenous spread may seed any organ, including the liver, lung, or brain.

Direct extension to nearby organs is often encountered.

Carcinoma of the stomach can also spread (in women patients) to the ovary, in which case it is termed a Krukenberg tumor.

Siosaki MD, Souza AT. Virchow's node. N Engl J Med. 2013 Feb 7;2013:6.

Virchow's Node



A 64-YEAR-OLD MAN PRESENTED WITH A 6-MONTH HISTORY OF EPIGASTRIC pain, weight loss, and nausea. In the previous 3 months, he had lost 10 kg. On examination, he was noted to have a nontender, firm, fixed, left supraclavicular lymph node measuring 3.0 by 2.5 cm. Upper endoscopy revealed an adenocarcinoma of the gastric corpus. Computed tomography of the abdomen showed liver metastasis. Virchow's node, or Troisier's node, refers to carcinomatous involvement of the supraclavicular nodes at the junction of the thoracic duct and the left subclavian vein. Usually, nodal enlargement is caused by metastatic gastric carcinoma, although supraclavicular nodal involvement can also be seen in other gastrointestinal, thoracic, and pelvic cancers. Gastric cancers tend to metastasize to this region by means of migration of tumor emboli through the thoracic duct, where subdiaphragmatic lymphatic drainage enters the venous circulation in the left subclavian vein. Given the patient's low performance status, according to his Karnofsky performance-status score and his score on the Eastern Cooperative Oncology Group Performance Status scale, chemotherapy was contraindicated, and he was referred for palliative radiotherapy.

DOI: 10.1056/NEJMim1204740

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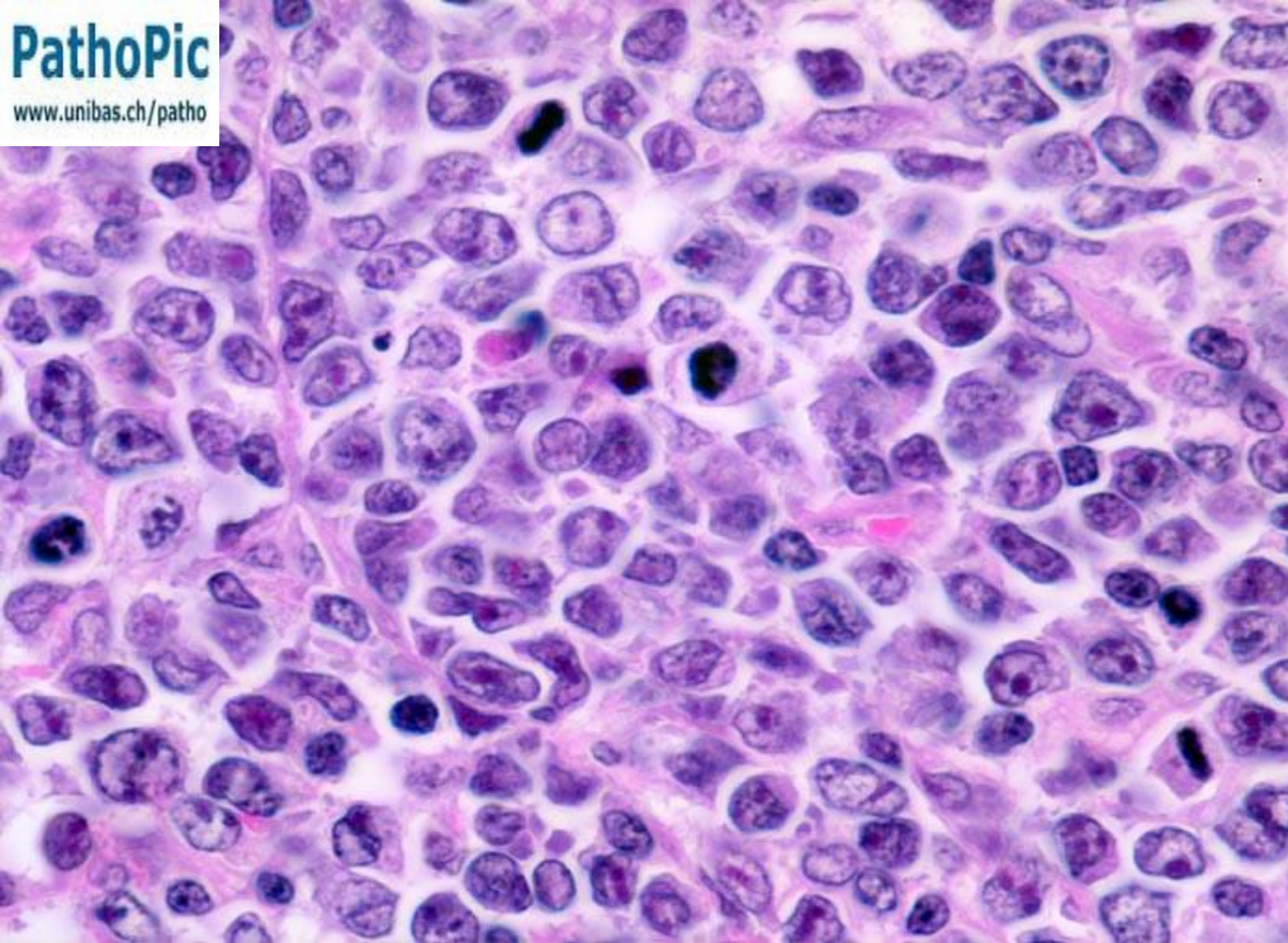
Ana Tarsila Souza, M.D.

Bauru Radiotherapy Center
São Paulo, Brazil

Gastric lymphomas

Gastric lymphomas constitute less than 5% of all malignant stomach tumors, but are the most common of all extranodal non-Hodgkin's lymphomas (20% of such neoplasms). Clinically and radiologically, gastric lymphoma mimics gastric adenocarcinoma. The presenting symptoms of gastric lymphoma - weight loss, dyspepsia, and abdominal pain - are similar to those of gastric adenocarcinoma.

A majority of gastric lymphomas present as high-grade, large-cell immunoblastic lymphomas. These lesions tend to be visible lesions with thickening of the rugal folds and frequent ulceration. Under the microscope, these high-grade lymphomas may be relatively monomorphic, composed of large cells with abundant cytoplasm and vesicular nuclei endowed with prominent nucleoli.

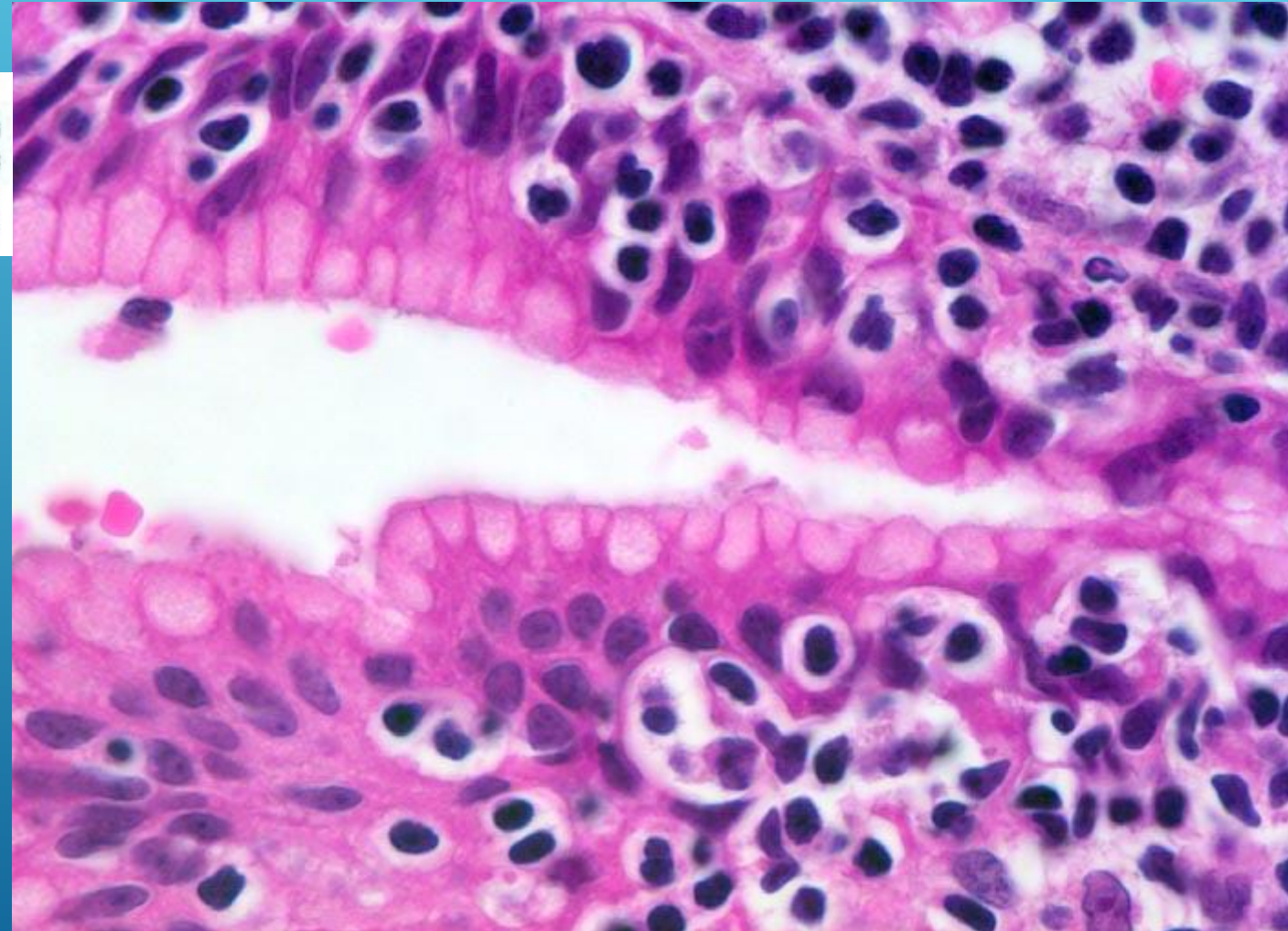
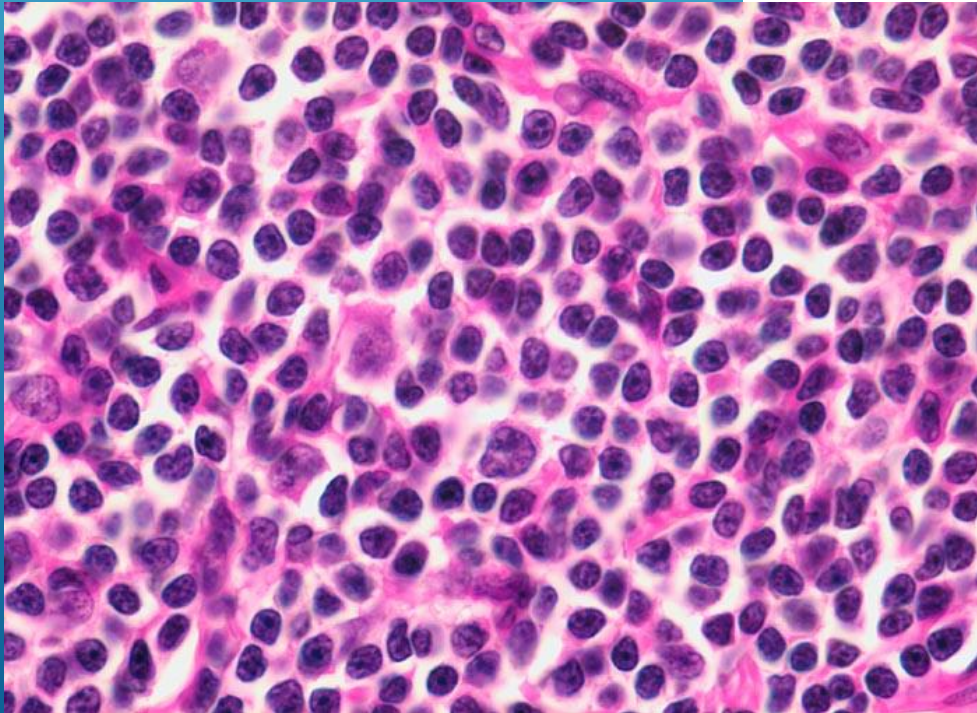


Diffuse large B-cell
lymphoma

Other lymphomas of the stomach are low-grade, small lymphocytic well-differentiated B-cell lymphomas, categorized as MALTomas by Isaacson and coworkers (MALT = mucosa associated lymphoid tissue). These lymphomas are characterized by proliferation of monocytoid cells and by the presence of lymphoepithelial lesions.

Extranodal marginal zone B-cell lymphoma of MALT-type

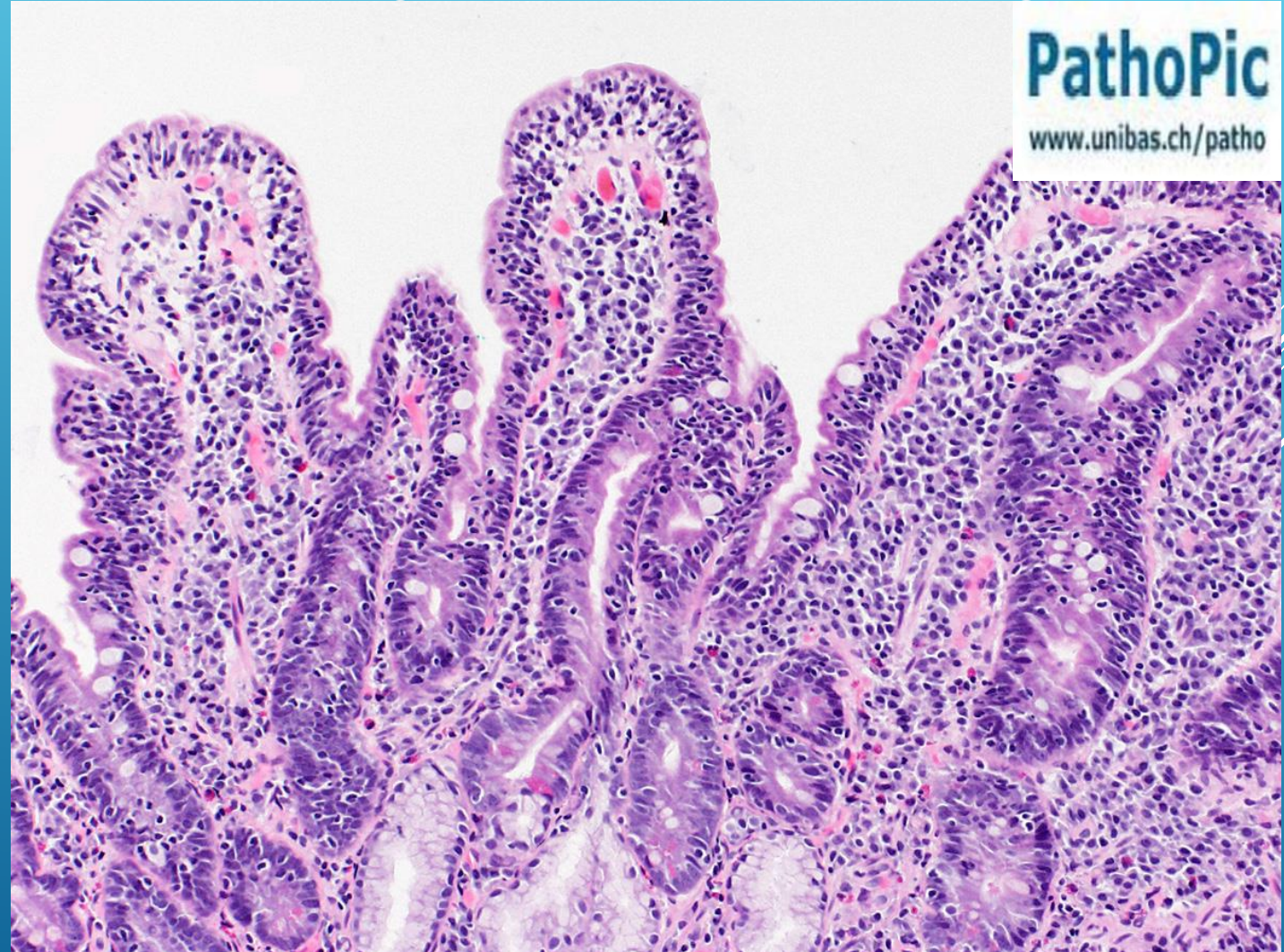
PathoPic
www.unibas.ch/patho



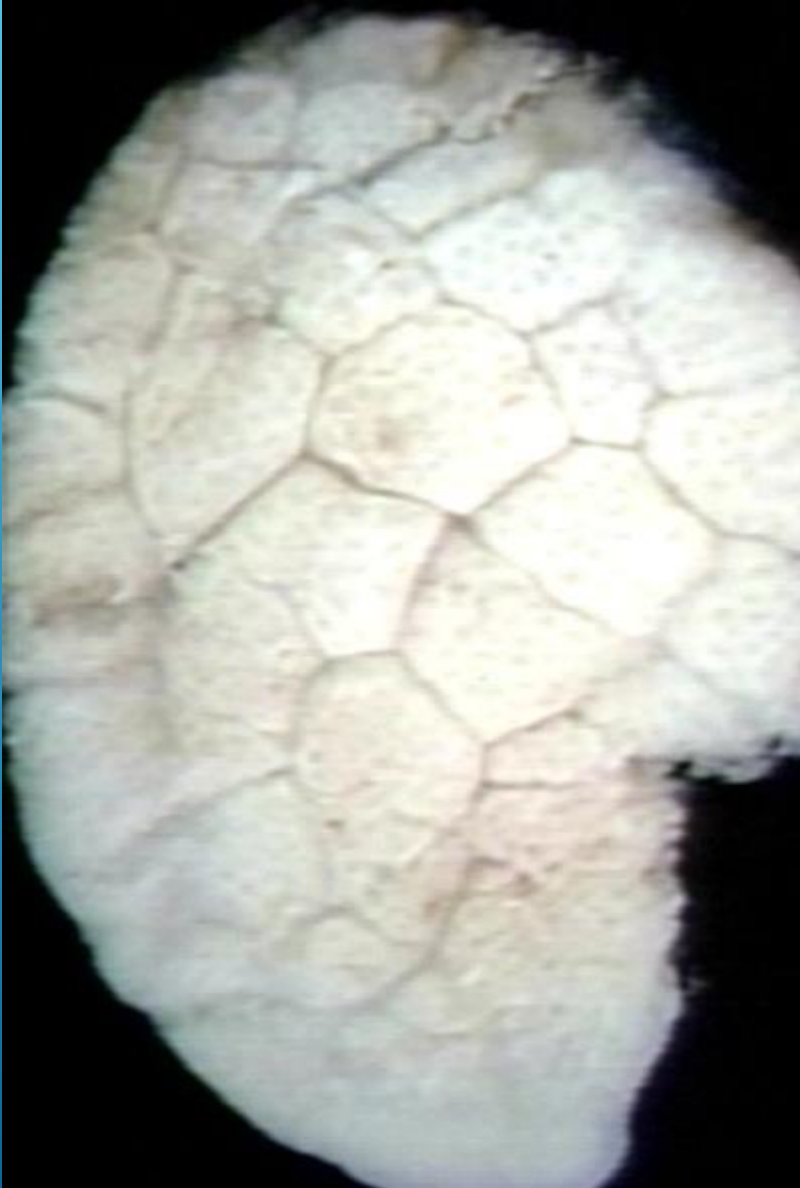
CELIAC DISEASE

(celiac sprue, gluten-sensitive enteropathy) is characterized by generalized malabsorption, small intestinal mucosal lesions and prompt clinical and histopathologic response to withdrawal of gluten-containing foods from the diet.

The microscopic hallmark finding of fully developed celiac disease in small bowel biopsies is a flat mucosa, with (1) blunting or total disappearance of villi, (2) damaged mucosal surface epithelial cells with numerous intraepithelial lymphocytes (T cells), and (3) increased plasma cells in the lamina propria but not in deeper layers



Refractory celiac sprue - Duodenum



GROSS: GASTROINTESTINAL: GI: SMALL BOWEL:
CELIAC DISEASE, TOTAL VILLUS ATROPHY; 4.49
LIFELONG MILD DIARRHEA, MALABSORPTION
SYNDROME

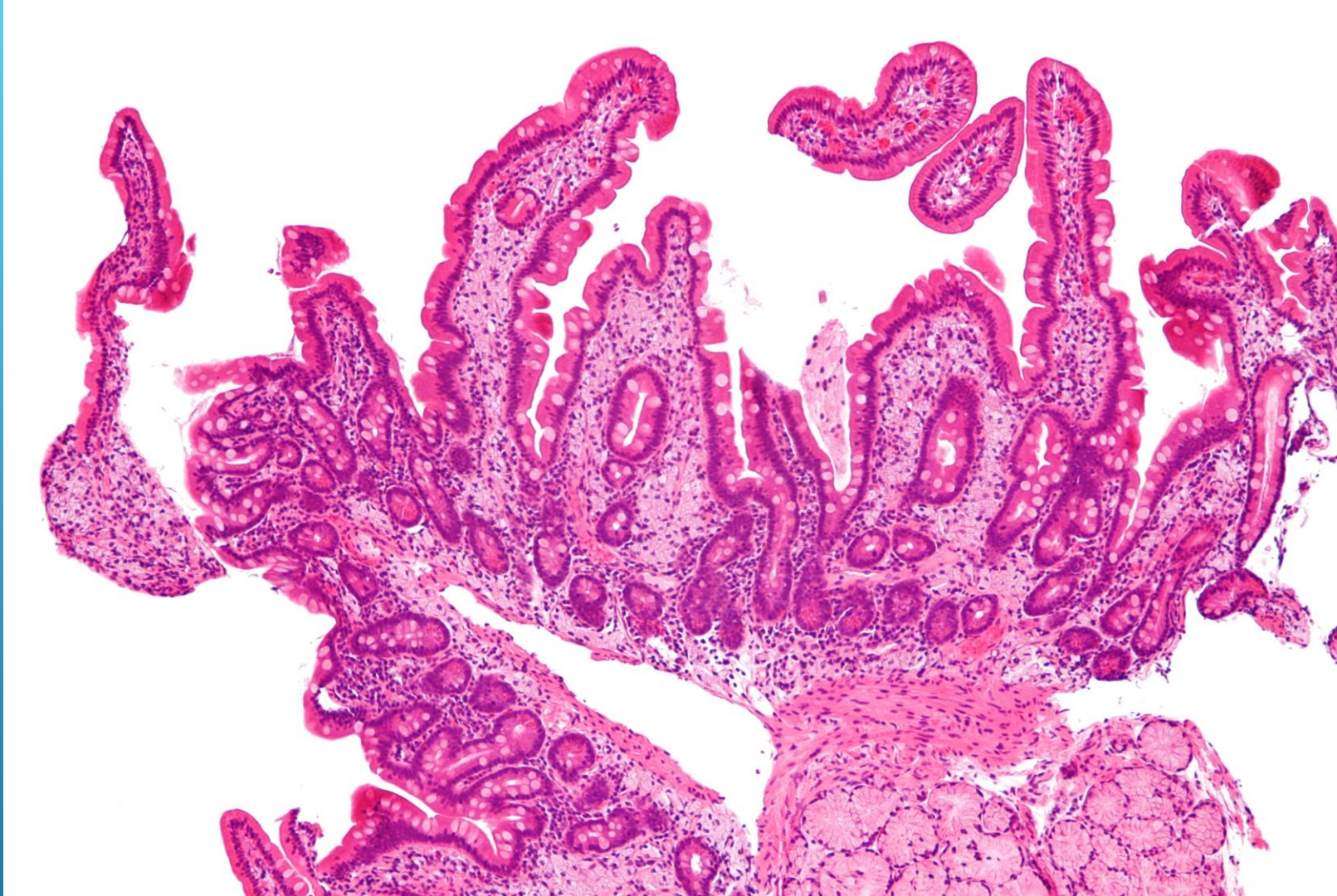
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WHIPPLE DISEASE

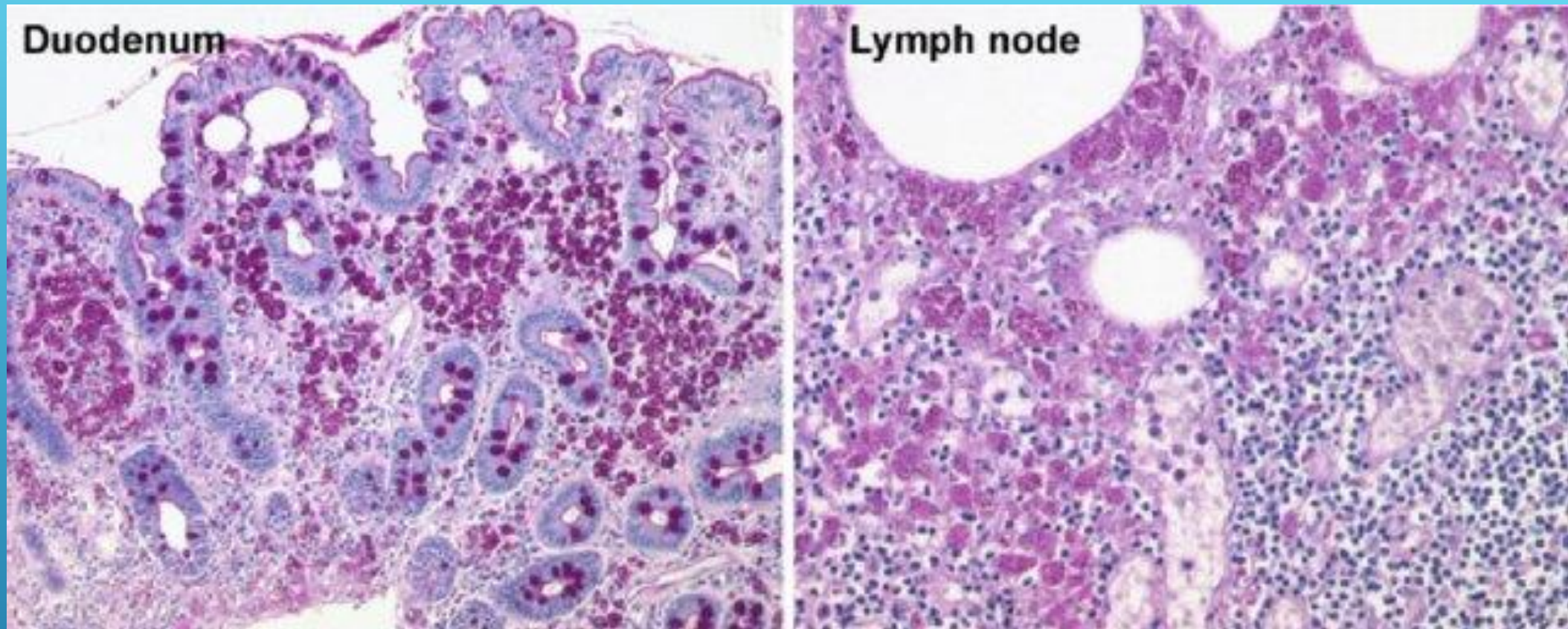
A rare infection of the small bowel, caused by *Tropheryma whippelii* (an actinomycetes) determines malabsorption as the most prominent clinical feature. White men in their 30s and 40s are most affected.

The disease is systemic, and other clinical findings include fever, increased skin pigmentation, anemia, lymphadenopathy, arthritis, pericarditis, pleurisy, endocarditis, and central nervous system involvement.

A series of white lines of varying lengths and orientations are positioned in the bottom right corner of the slide, creating a modern, abstract graphic element.



The bowel wall is thickened and edematous, and mesenteric lymph nodes are usually enlarged. Villi are flat and thickened villi, and the lamina propria is extensively infiltrated with large foamy macrophages whose cytoplasm is filled with large glycoprotein granules that stain strongly with periodic acid Schiff (PAS) see next.



Periodic acid-Schiff (PAS) staining of a duodenal biopsy and a lymph node in Whipple's disease. Numerous PAS-positive intensively red stained macrophages indicate the presence of *T. whippelii* (formerly *T. whippelii*) in the tissue

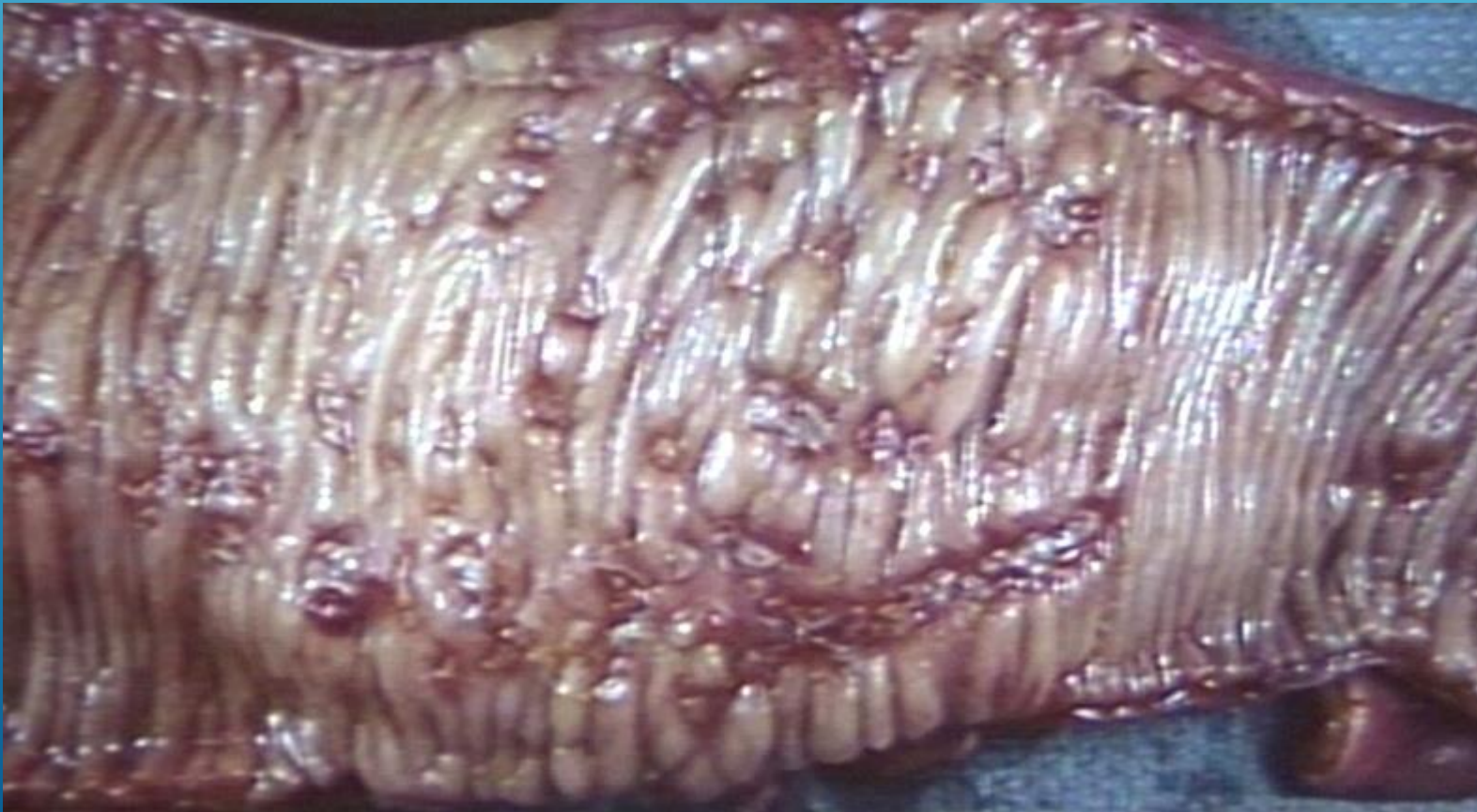
Moos V, Schneider T. Changing paradigms in Whipple's disease and infection with *Tropheryma whippelii*. European journal of clinical microbiology & infectious diseases. 2011 Oct 1;30(10):1151-8.

https://www.researchgate.net/publication/50990532_Changing_paradigms_in_Whipple%27s_disease_and_infection_with_Tropheryma_whippelii/figures?lo=1

CROHN DISEASE

Is an idiopathic, chronic, relapsing ulcerative inflammatory disease of gastrointestinal tract that most often affects the terminal ileum. The colon may be affected, either in association with small bowel disease or as an isolated finding (Crohn's colitis).

Crohn disease shows discontinuous segments of disease with large and small ulcers separated by normal (noncongested) mucosa. The earliest gross manifestations of Crohn's disease are aphthoid ulcers.



These consist of small mucosal erosions 1 to 2 mm in diameter with a hemorrhagic edge and gray-white base. Commonly they are located on top of lymphoid follicles.

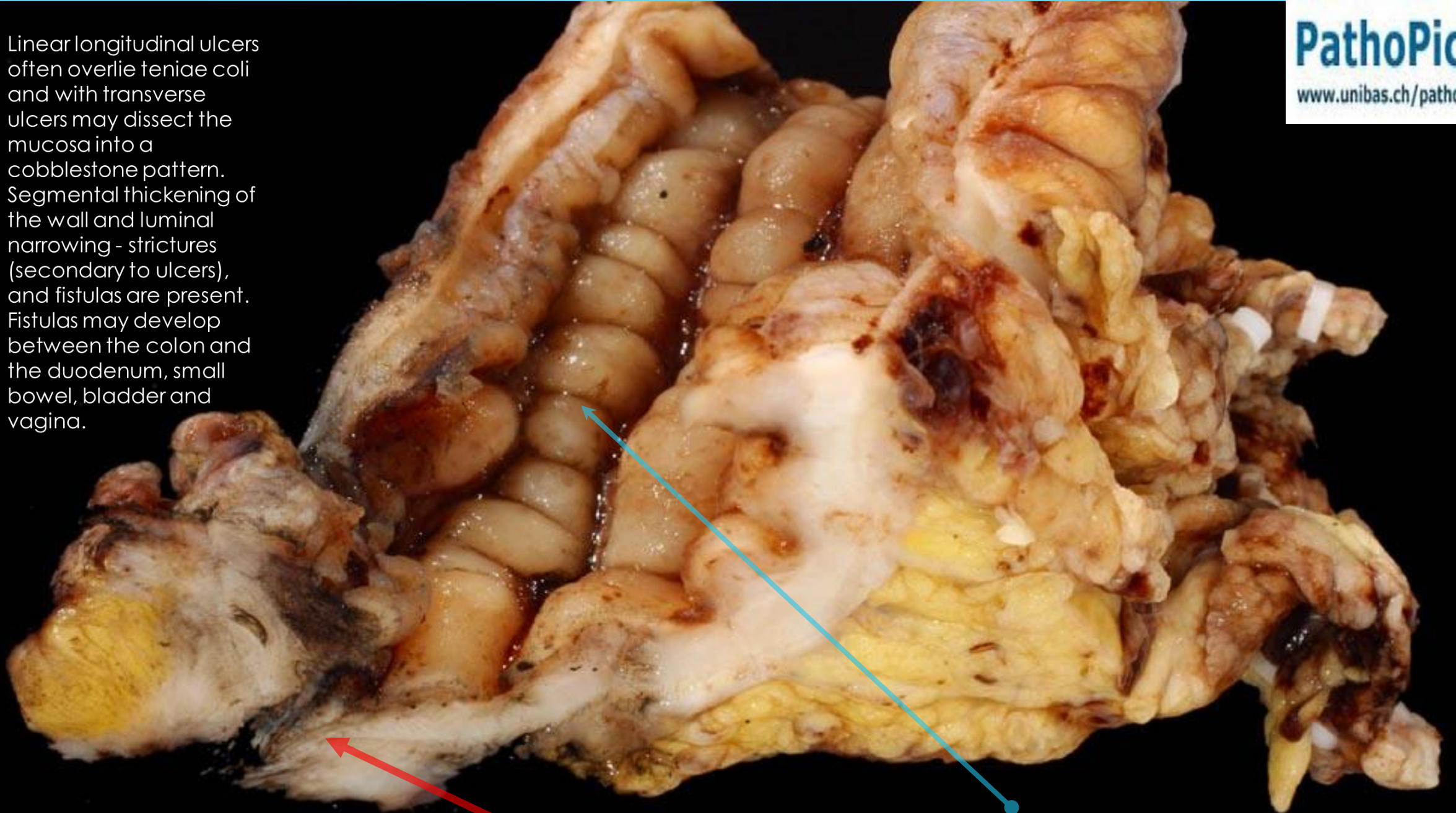
As the disease progresses, the aphthoid ulcers enlarge to form discrete, or confluent, serpiginous, or linear fissuring ulcers.



GROSS: GASTROINTESTINAL:
Small intestine: Crohn
Disease: Gross natural color
close-up of bowel segment
with well shown linear ulcer

Linear longitudinal ulcers often overlie teniae coli and with transverse ulcers may dissect the mucosa into a cobblestone pattern. Segmental thickening of the wall and luminal narrowing - strictures (secondary to ulcers), and fistulas are present. Fistulas may develop between the colon and the duodenum, small bowel, bladder and vagina.

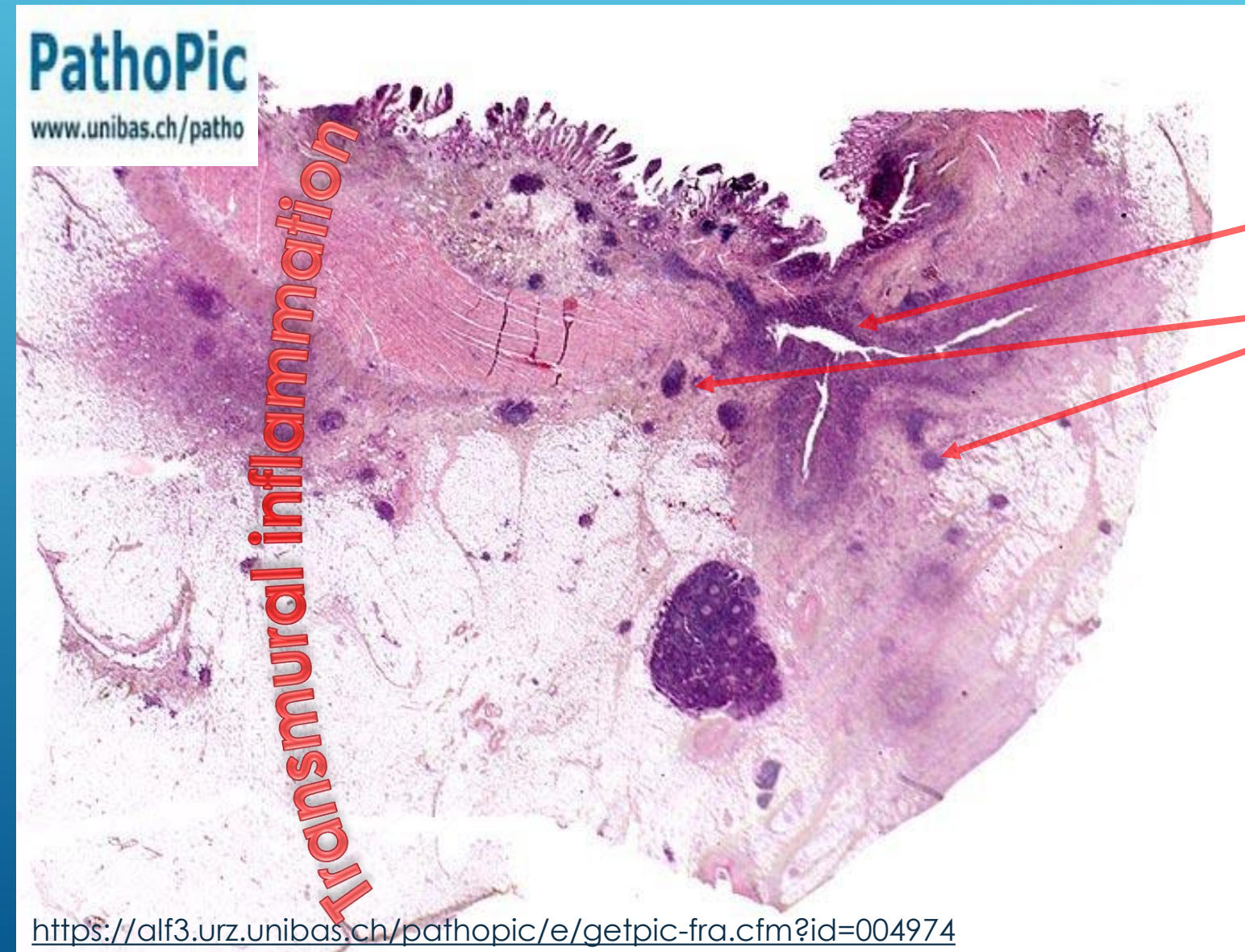
Linear longitudinal ulcers often overlie teniae coli and with transverse ulcers may dissect the mucosa into a cobblestone pattern. Segmental thickening of the wall and luminal narrowing - strictures (secondary to ulcers), and fistulas are present. Fistulas may develop between the colon and the duodenum, small bowel, bladder and vagina.



Fibrosis colonic wall with transmurular fistula. Cobblestone pattern of the mucosa due to ulcers and fissures.

1cm

Microscopically, transmural inflammation consisting of lymphoid follicles and non-necrotizing granulomas is seen beneath and around chronic fissuring ulcers. Non-necrotizing granulomas, formed by epithelioid cells, giant multinucleated cells and many lymphocytes may be found in any layer of the bowel wall, but are not mandatory for a positive diagnosis.

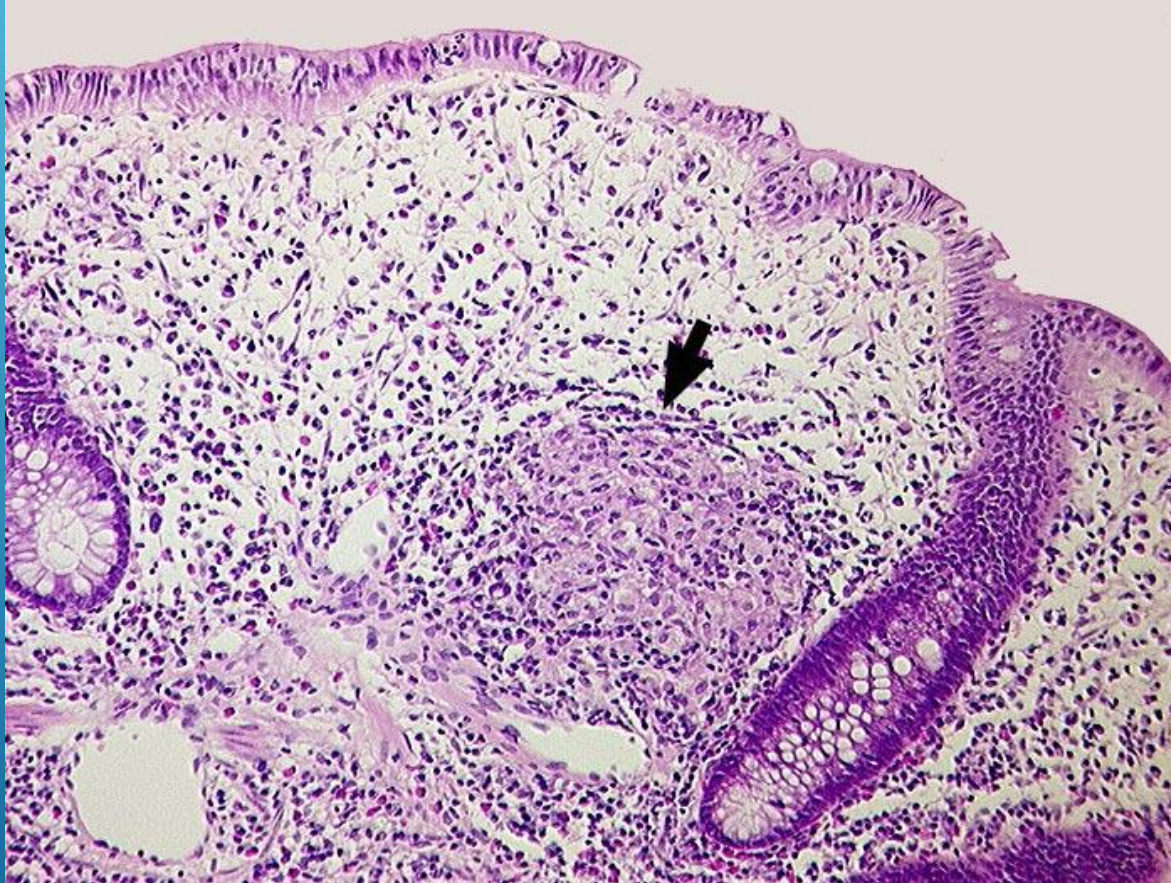


Fissure ulcers

Lymphoid follicles

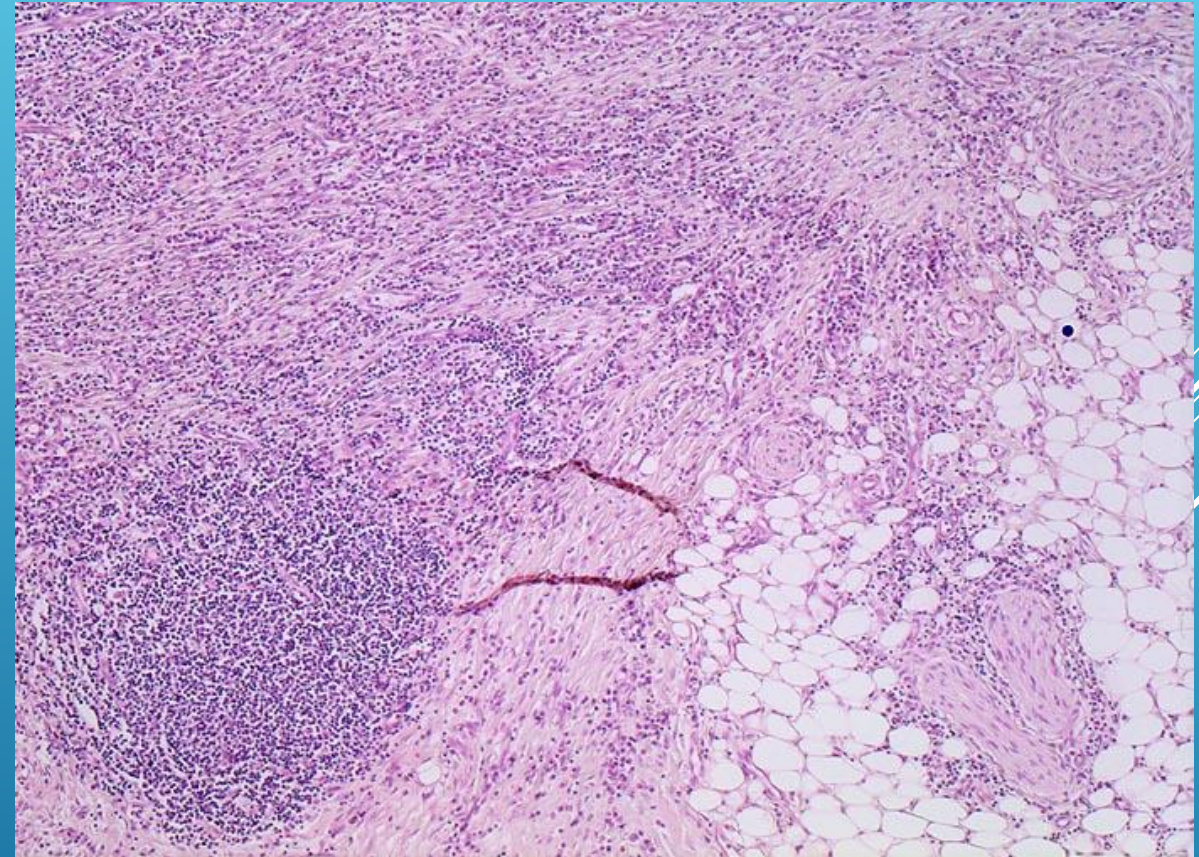
Complications of Crohn's disease are intestinal obstruction, fistulas, perforation and adenocarcinoma.

Crohn disease – non-necrotizing granuloma
(arrow)



<http://alf3.urz.unibas.ch/pathopic/e/getpic-fra.cfm?id=663>

Crohn disease - transmural inflammation
consisting of diffuse and nodular aggregates
of lymphocytes as lymphoid follicles



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ULCERATIVE COLITIS

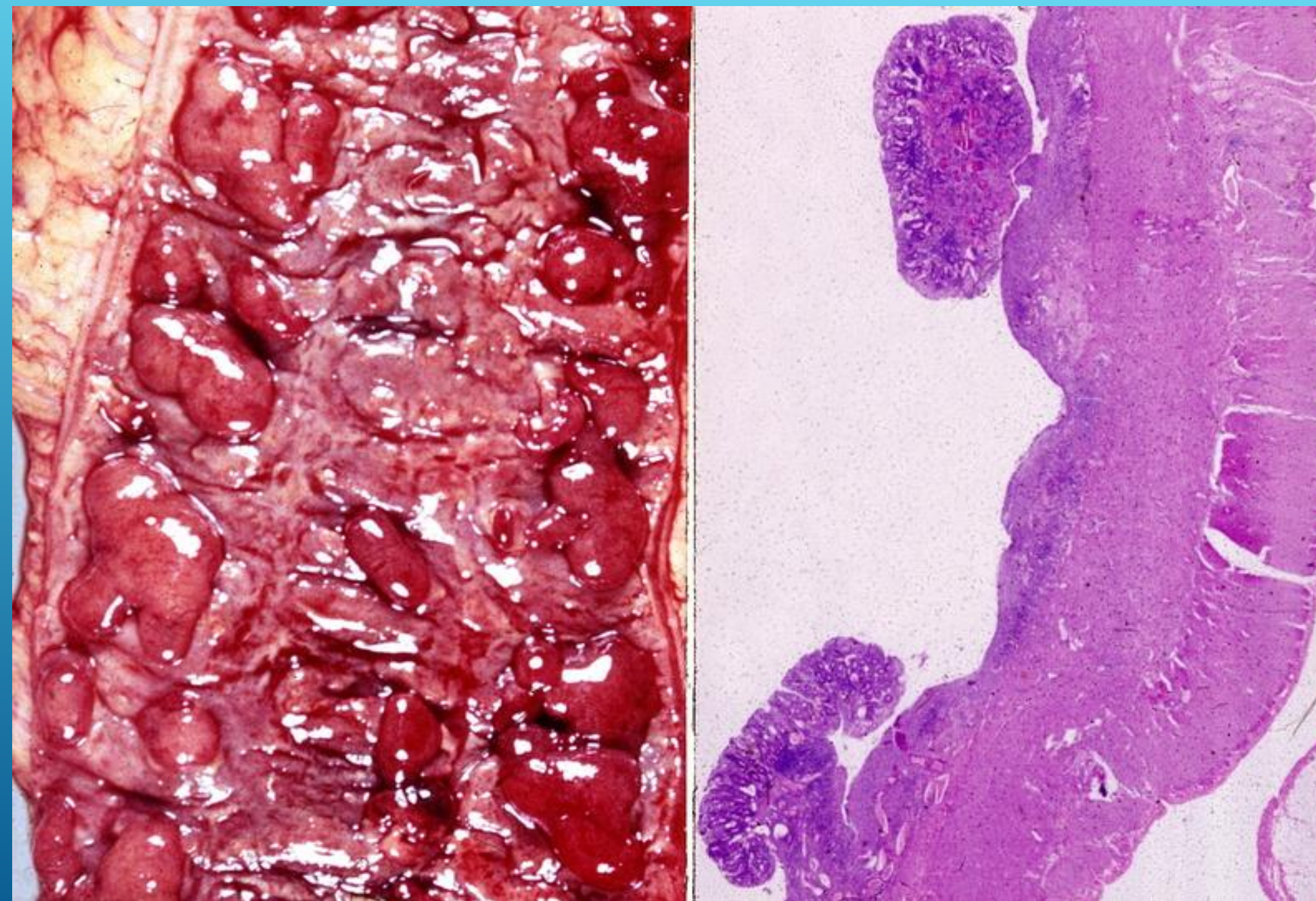
Is a chronic idiopathic inflammation of the rectal and colonic mucosa that affects a variable length of the large bowel in continuity from the anus.

The pathogenesis of ulcerative colitis is unknown. It seems likely that for the development of the disease, there must be a provoking agent in the bowel lumen (infective or chemical), with an inappropriate host immune response that perpetuates the inflammatory reaction.



The gross, microscopic, and clinical features vary considerably with the degree and duration of disease activity. Endoscopic and gross features of active disease are mucosal hyperemia, friability, granularity, ulcers, and erosions with blood in the lumen.





Inflammatory polyps are found endoscopically in about 20% of cases. They occur after episodes of severe disease, in which ulcers undermine the mucosa. These ulcers coalesce to form irregular shallow ulcerated areas that surround islands of intact mucosa. When epithelium regenerates over the floors of the ulcers the islands remain elevated and become inflammatory polyps ("pseudopolyps").

Histologic examination in an active phase reveals a diffuse increase in inflammatory cells within the lamina propria, including plasma cells, eosinophils, lymphocytes, macrophages, and neutrophils. The capillaries are congested and dilated. The crypts show evidence of regeneration: branching, shortening, irregularity, dilatation, and villiform change. Neutrophils infiltrate the surface and crypt epithelium and accumulate in crypt lumens to form abscesses.



<https://alf3.urz.unibas.ch/pathopic/e/getpic-fra.cfm?id=005079>

Cryptitis with neutrophils infiltrating the crypt epithelium.



<https://alf3.urz.unibas.ch/pathopic/e/getpic-fra.cfm?id=005080>

BENIGN TUMORS OF SMALL INTESTINE

Adenomas, leiomyomas and lipomas (the most common). As in other portions of gastrointestinal tract, neurogenic tumors, fibromas, angiomas and hamartomas may be encountered.

Adenomas - can be tubular or villous or a mixture of these types (as in the colon). The villous adenoma is rare, usually occurring in the ileum.

Although most adenomas remain benign, some, especially the villous type, undergo malignant transformation. Benign adenomas are ordinarily asymptomatic, but bleeding and intussusception are occasional complications.

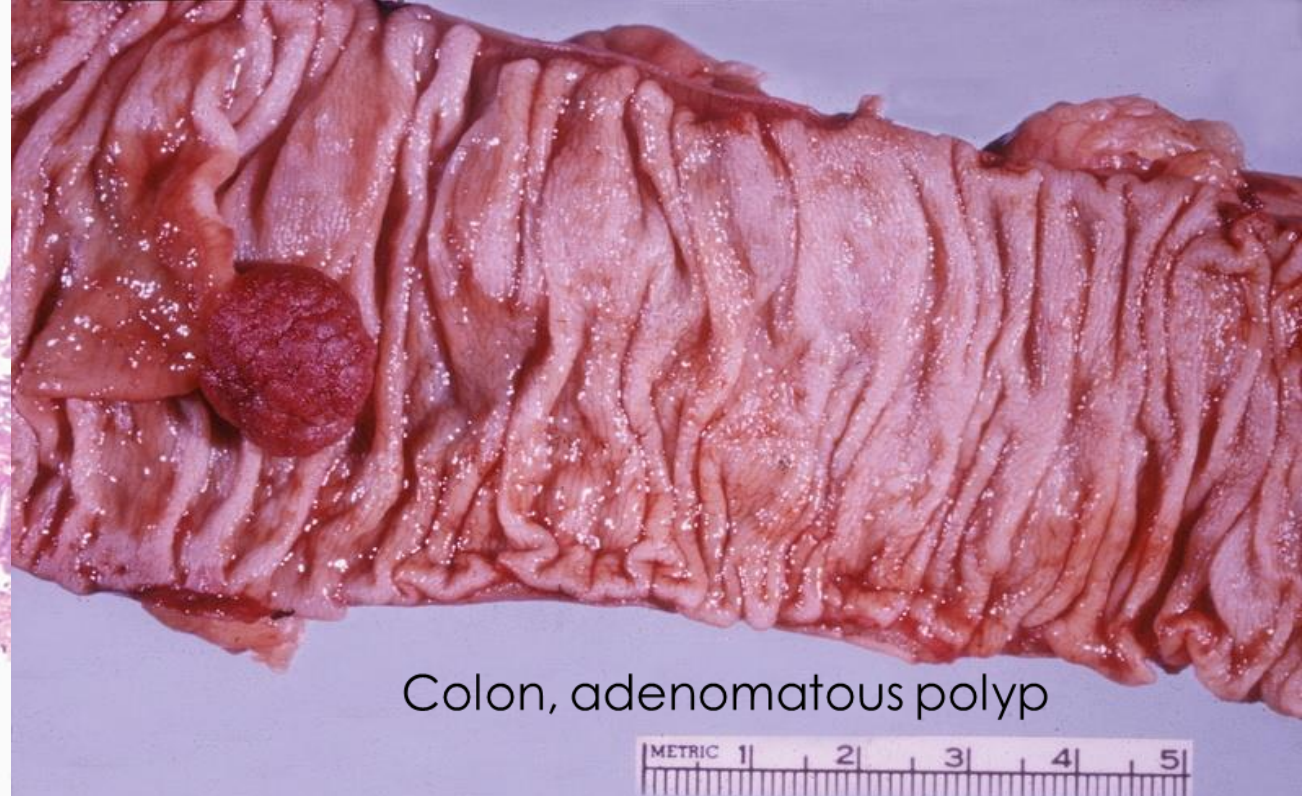
PEDUNCULATED POLYP





Colon, adenomatous polyp

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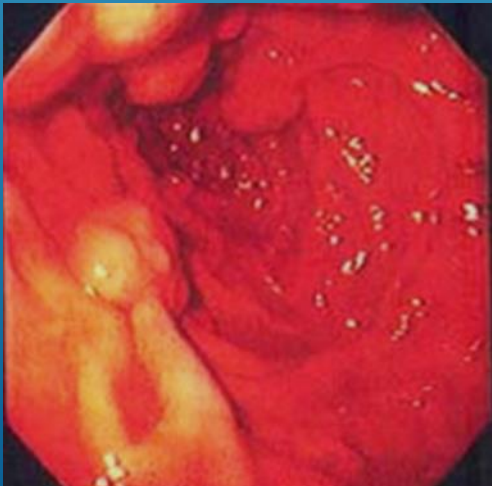


Colon, adenomatous polyp

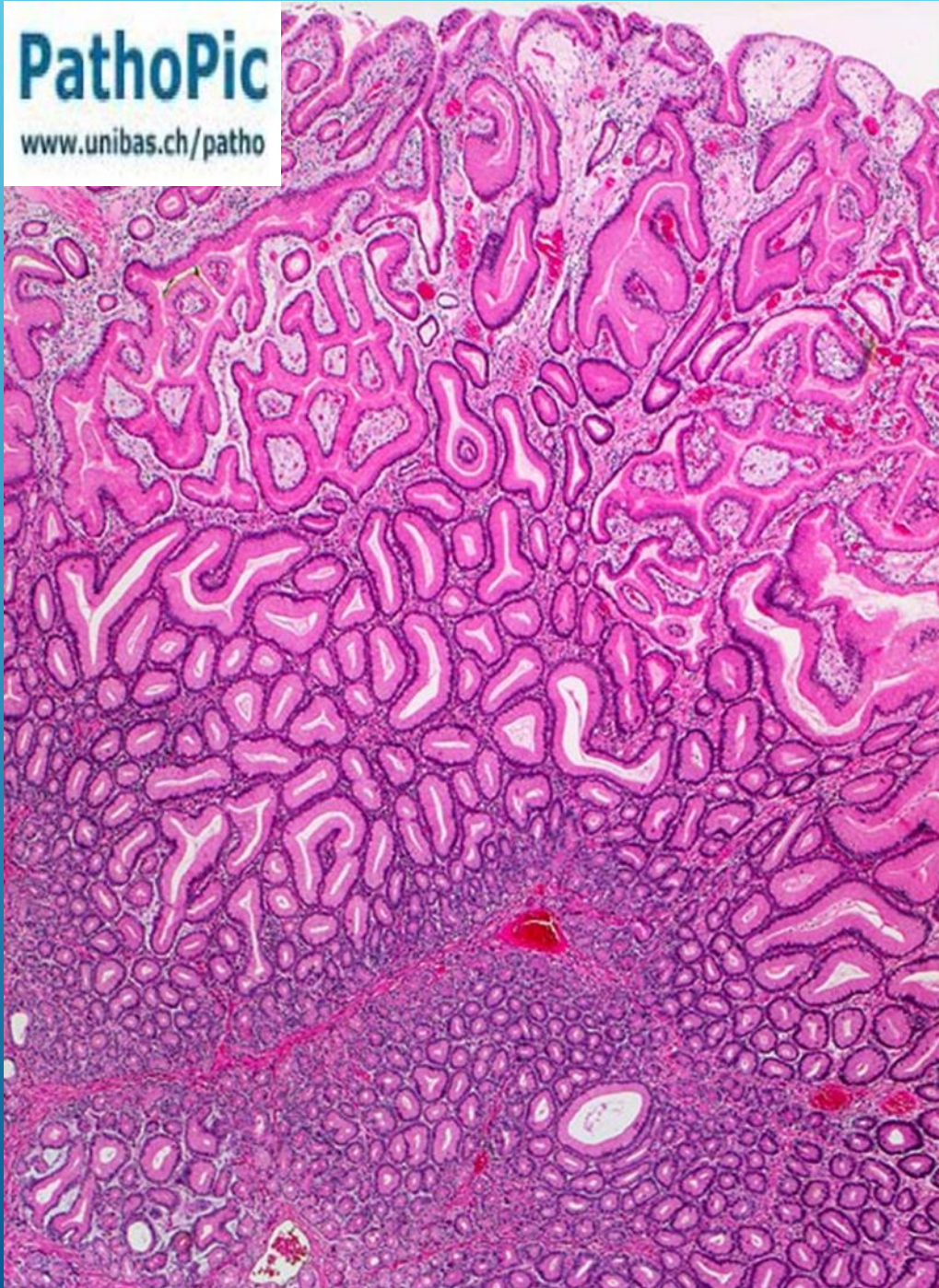
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Peutz-Jeghers syndrome

Is an autosomal dominant hereditary disorder characterized by intestinal polyps and mucocutaneous melanin pigmentation



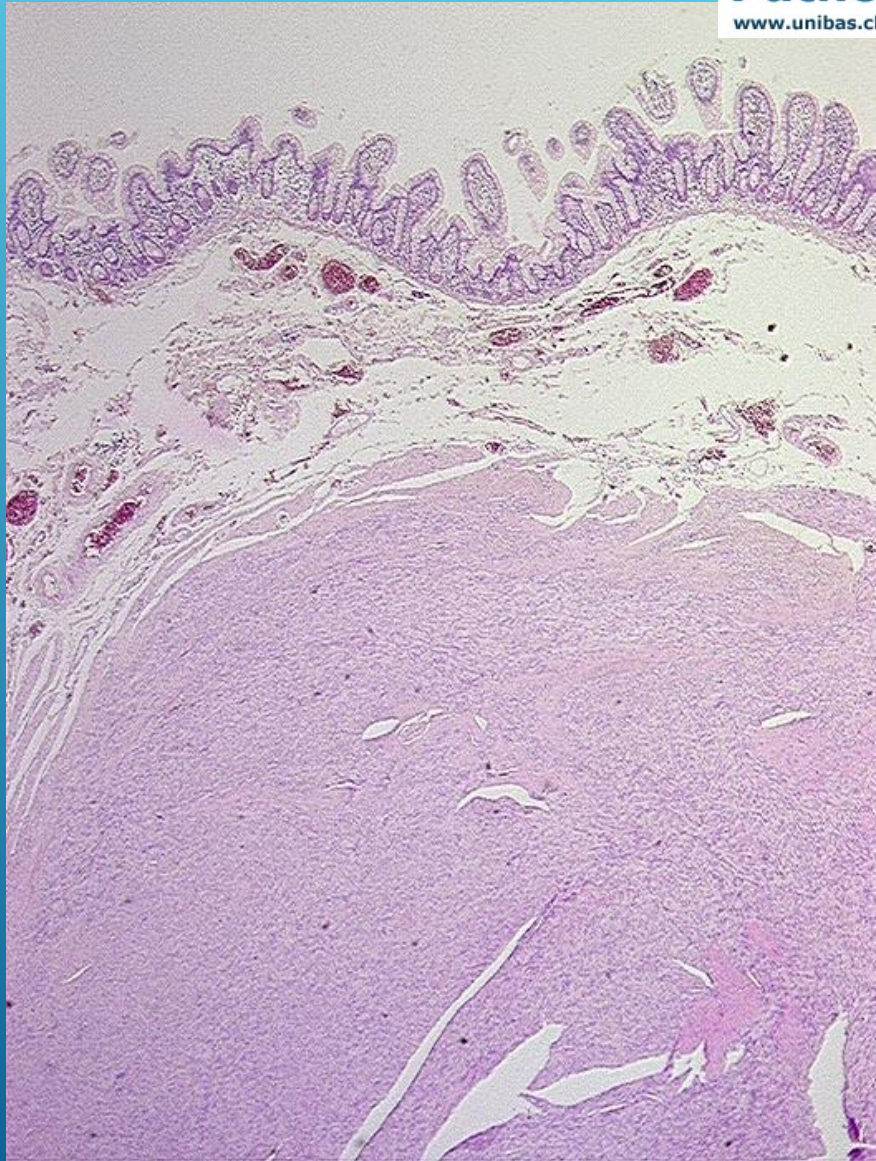
The polyps occur most commonly in the proximal regions of the small intestine, but are sometimes seen in the stomach and in the colon, too. The polyps are not true neoplasms, but rather hamartomas.



Histologically, a branching network of smooth muscle fibers continuous with the muscularis mucosa supports the glandular epithelium of the polyp.

Peutz-Jeghers polyps are generally considered benign; however, 2% to 3% of patients develop adenocarcinoma.

Branching network of smooth muscle fibers continuous with the muscularis mucosa supports the glandular epithelium of the polyp



Small intestine - leiomyoma



Lipomas are fatty tumors that occur throughout the length of the small intestine, but are most common in the distal ileum. These submucosal tumors may become large and produce intestinal obstruction. The overlying mucosa may become ulcerated and may bleed.



MALIGNANT TUMORS OF SMALL INTESTINE

Adenocarcinomas constitute half of all malignant small bowel tumors. The large majority of adenocarcinomas are located in the duodenum and jejunum.

Patients with Crohn disease are known to be at significantly increased risk, perhaps as high as 100 folds compared with a patient without such illness.

It may be polypoid or ulcerative or annular and stenosing. In addition to cause intestinal obstruction directly, a polypoid tumor may be the lead point of an intussusception. Microscopically, adenocarcinomas, which originate from the epithelium of the crypts rather than the villi, resemble colon cancer.



Primary lymphoma

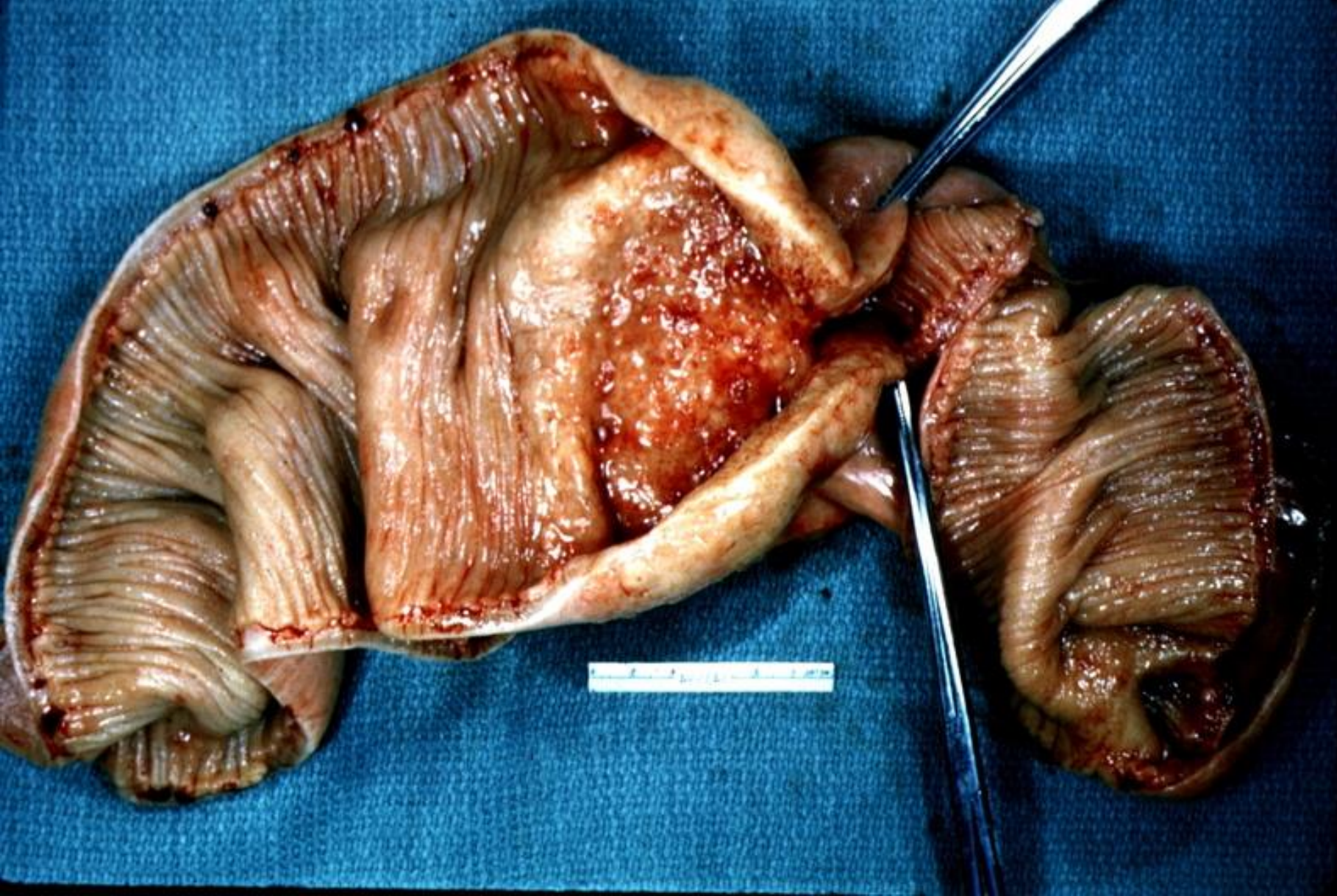
Originates in nodules of lymphoid tissue within the bowel wall and represents the second most common malignant tumor of the small intestine. It accounts for about 15% of small bowel cancers.

Mediterranean type lymphoma. It typically occurs in poor countries in young men of low socioeconomic status.

The lymphoma typically presents as a diffuse infiltration of the mucosa and submucosa by plasmacytoid lymphocytes. Lymphomatous infiltration of the mucosa leads to mucosal atrophy and severe malabsorption.

Western type lymphoma. It affects adults older than 40 years of age and children younger than 10 years old. It is most common in the ileum where it presents as: fungating mass, an elevated ulcerated lesion, a diffuse segmental thickening of the bowel wall or as plaque-like mucosal nodules.





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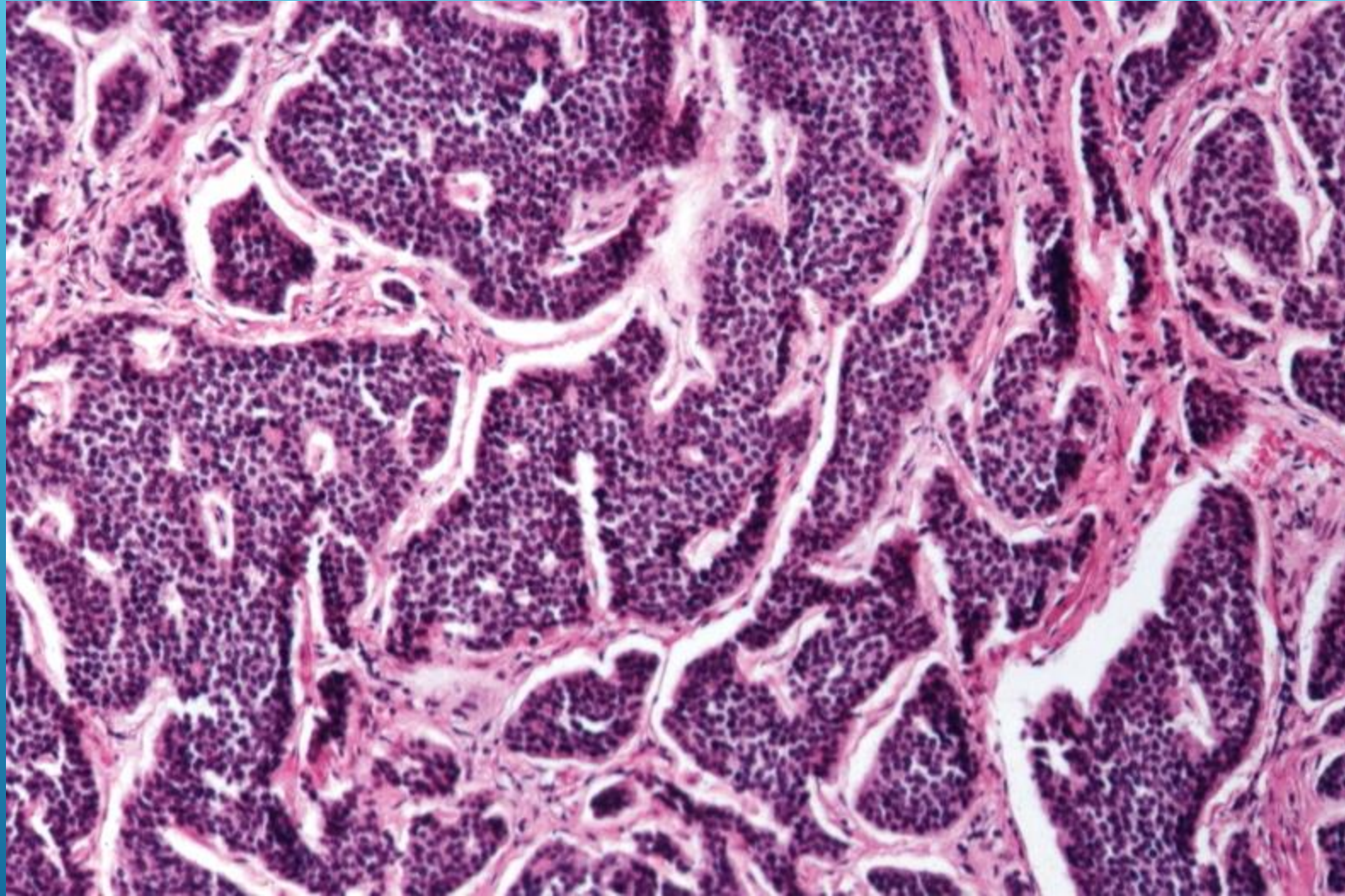
Carcinoid tumor

It arises from cells of the neuroendocrine system of the gut, at the base of the mucosal crypts. These cells are included in the amine precursor uptake and decarboxylation (APUD) system. The most commonly secreted hormone is serotonin. It represents less than 1% of all gastrointestinal tumors and 20% of all malignant tumors

Macroscopically, the small tumors present as submucosal nodules covered by intact mucosa. Large tumors may grow in a polypoid, intramural or annular pattern and often undergo secondary ulceration. The cut surface is firm and white to yellow.



Microscopically, the neoplasms appear as nests, cords and rosettes of uniform, round cells.



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BENIGN TUMORS OF LARGE INTESTINE

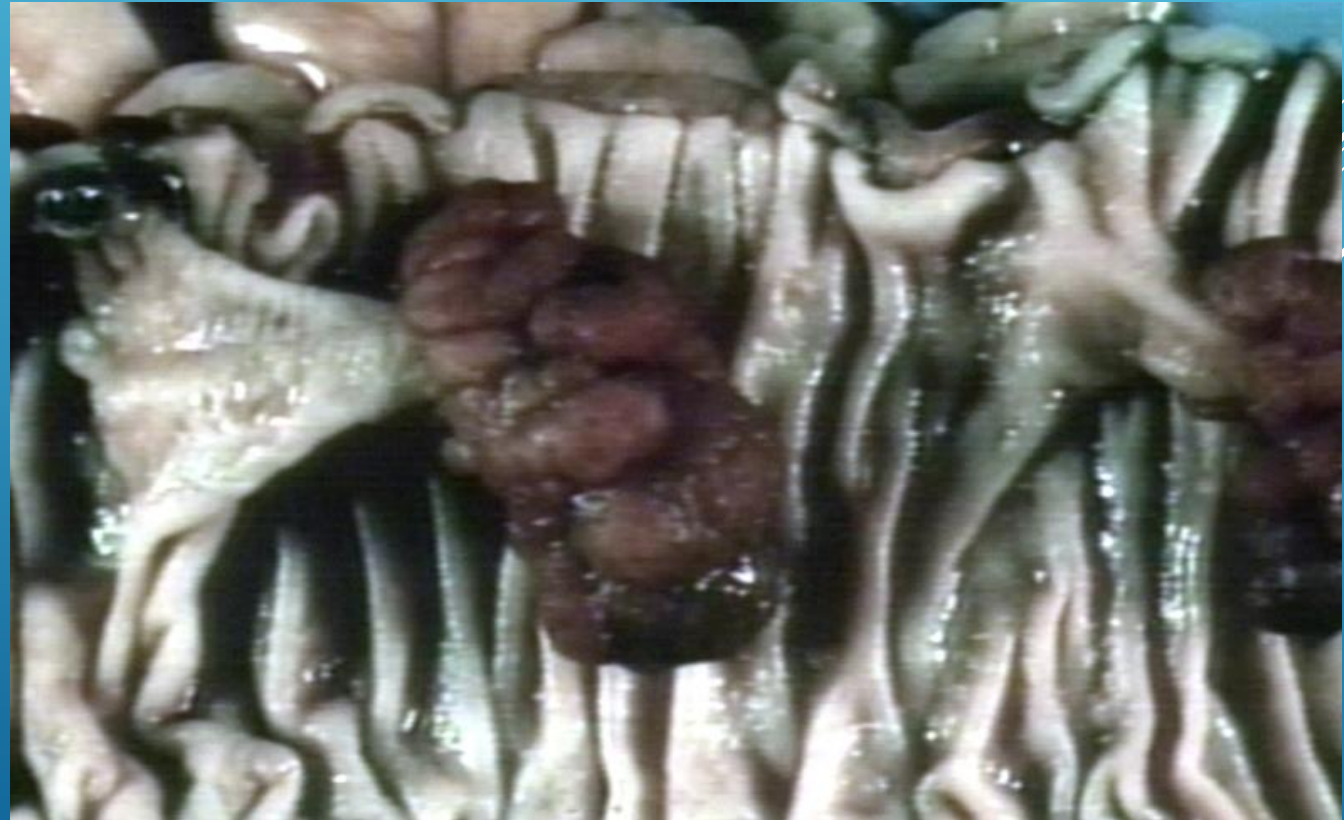
Polyps of the colon. A gastrointestinal polyp is defined as a mass that protrudes into the lumen of the gut. Polyps are subdivided according to their attachment to the bowel wall (sessile or pedunculated), their histologic appearance (non-neoplastic or adenomatous) and to their malignant transformation potential. Colonic polyps are classified broadly as neoplastic (or adenomatous) and non-neoplastic.

COLON: POLYP, INFLAMMATORY, COLON

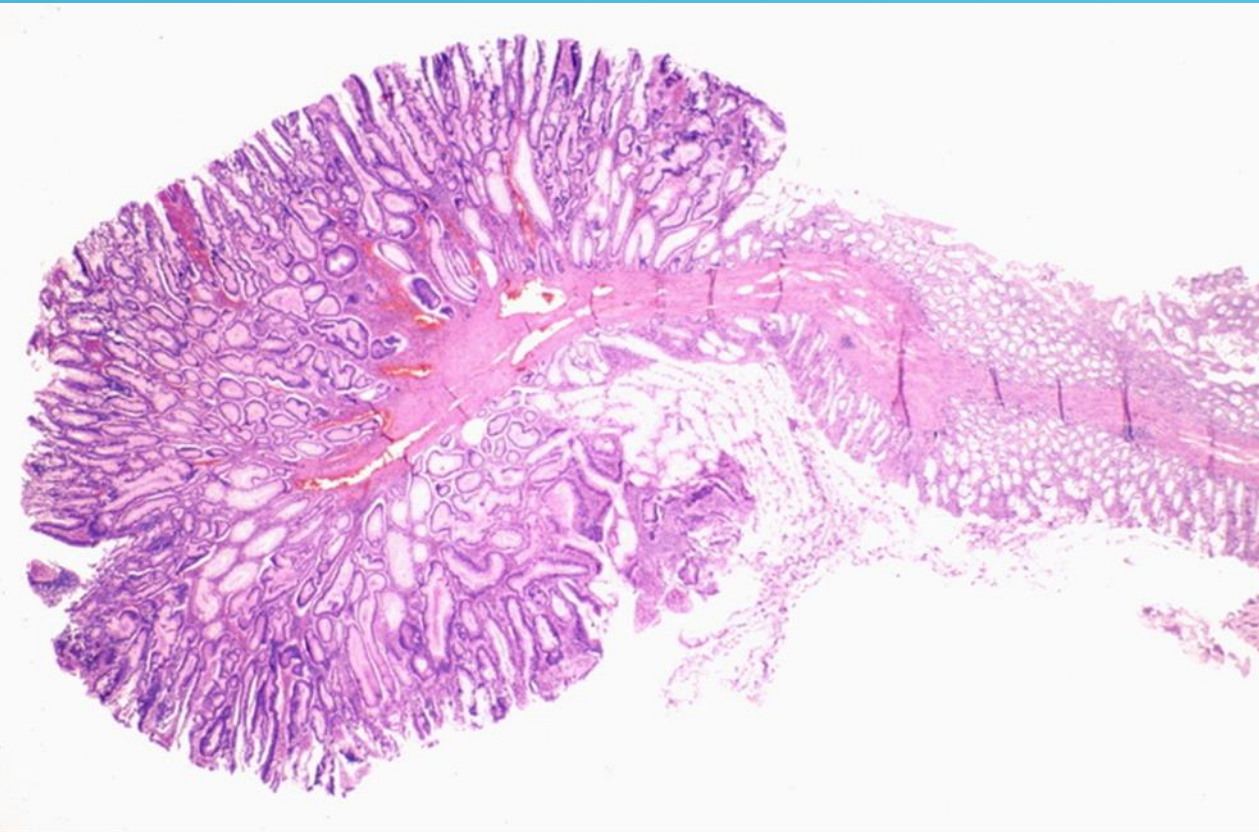


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PEDUNCULATED POLYP



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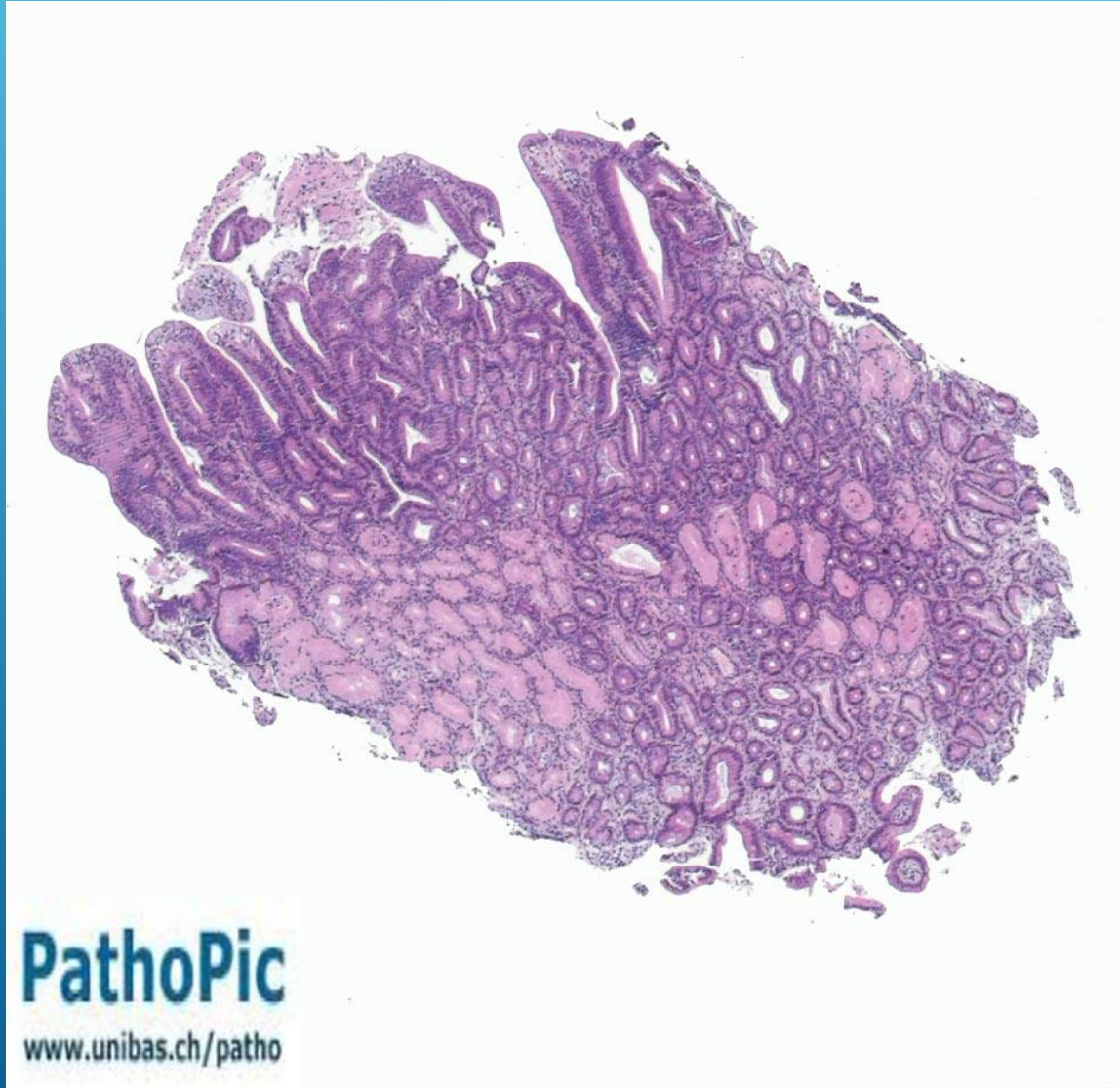
Adenomatous / neoplastic polyps arise from the colon mucosal epithelium. They are composed of crypt cells that have migrated to the surface and have accumulated beyond the needs for replacement of the cells sloughed into the lumen.

The macroscopic appearance of an adenoma varies from a barely visible nodule or small pedunculated mass to a large, sessile, villous adenoma.



Colon, adenomatous polyp

Tubular adenomas constitute two thirds of benign large bowel adenomas. There are typically smooth-surfaced spheres, usually less than 2 cm in diameter, which are attached to the mucosa by a stalk. Microscopically, they exhibit closely packed epithelial tubules, which are embedded in a fibrovascular stroma.



Tubular adenoma of the duodenum with low grade dysplasia

Villous adenomas are found predominantly in the rectosigmoidian region. They are typically large, broad-based, elevated lesions that grossly display a shaggy, cauliflower-like surface. More than half of them are larger than 2 cm in diameter and on occasion they reach a size of 10 to 15 cm across. Microscopically, they are composed of thin, finger-like processes that superficially resemble the villi of the small intestine. They are lined externally by epithelial cells and are supported by a core of fibrovascular connective tissue corresponding to the normal lamina propria.

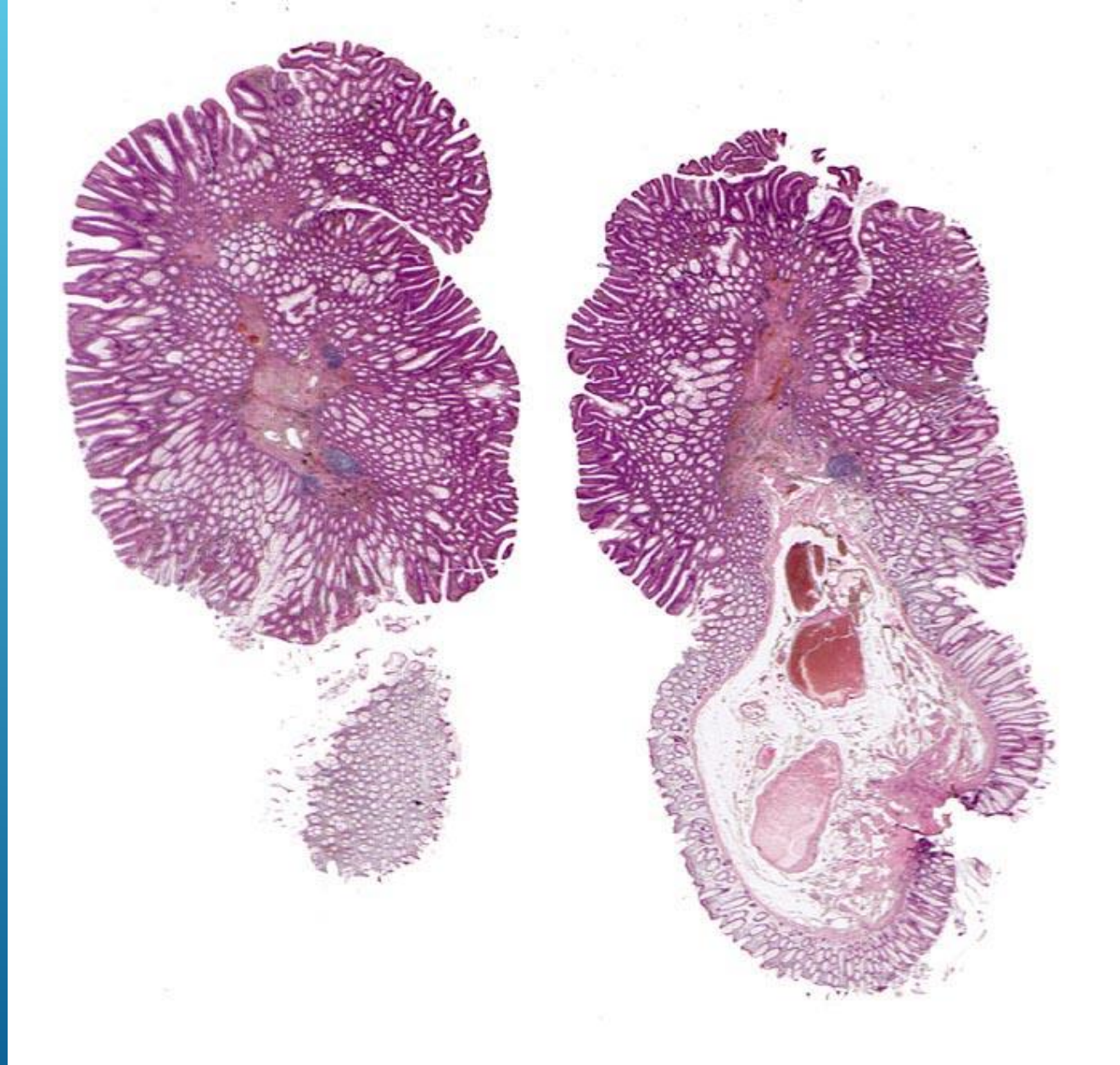
Colon: Villous Adenoma



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Tubulovillous adenomas tend to be intermediate in distribution and size between the tubular and villous forms, one fourth to one third being larger than 2 cm across.

Tubulovillous adenoma



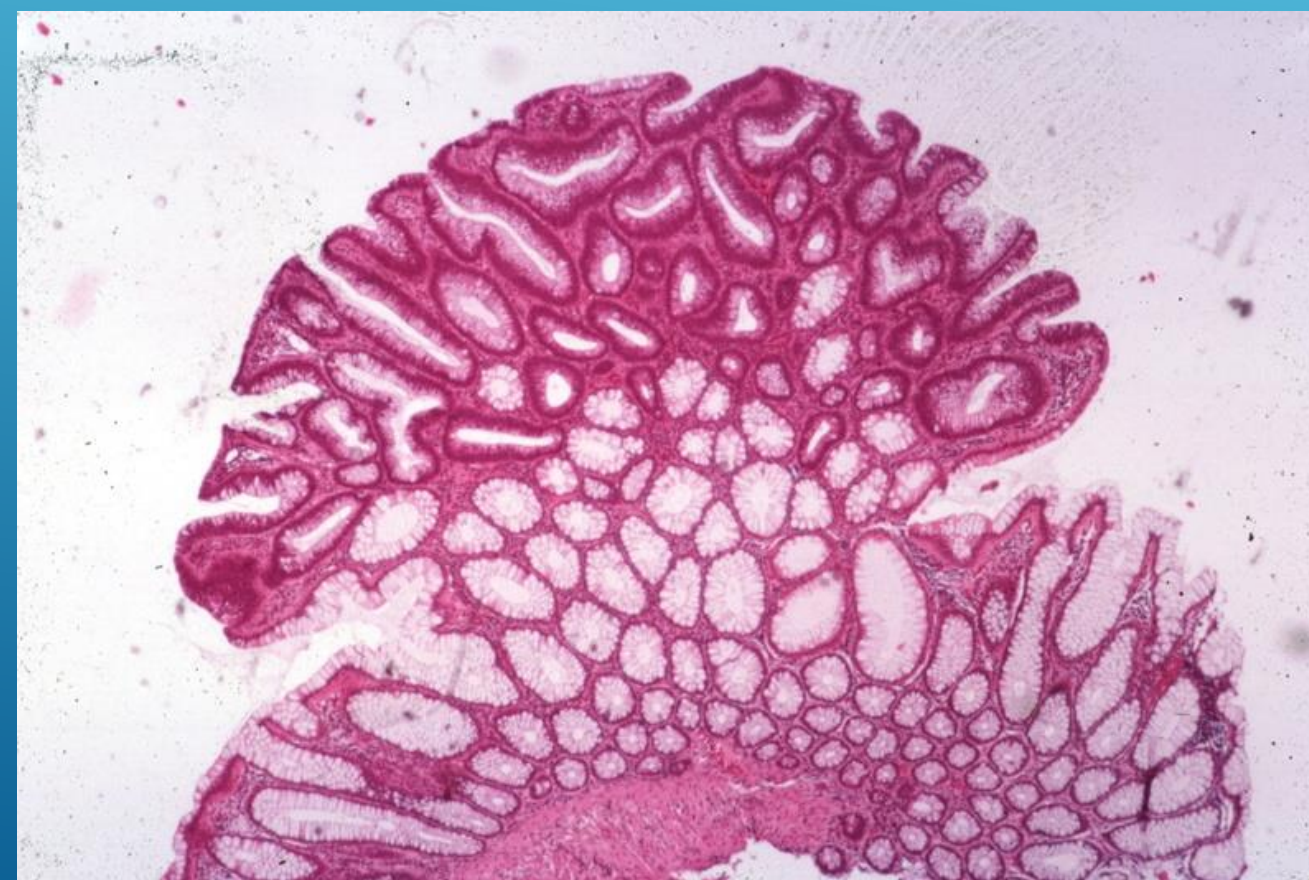
Familial adenomatous polyposis (FAP)

Is inherited as an autosomal dominant trait and is characterized by the progressive development of innumerable adenomatous polyps of the colon, particularly in the rectosigmoidian region. Although a few polyps are usually present by 10 years of age, the mean age for the occurrence of symptoms is 36 years, by which time cancer is already present in more than a half of the patients.

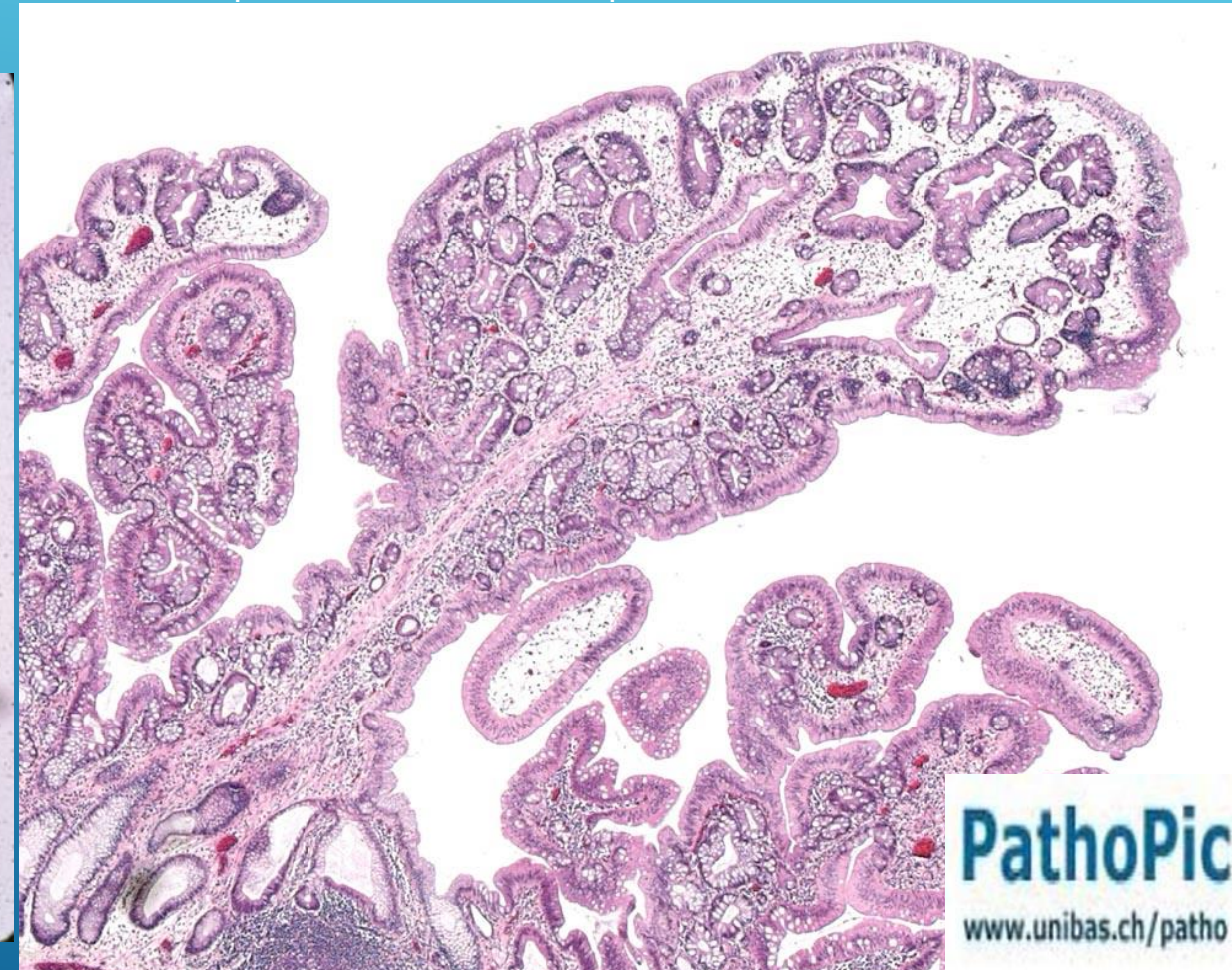


The non-neoplastic polyps are entirely different entities from one another and are grouped together only for their gross appearance as raised lesions of the colonic mucosa:

Hyperplastic polyps (metaplastic polyps) are small, sessile mucosal excrescences that display exaggerated crypt architecture. They are the most common polypoid lesions of the colon and are particularly frequent in the rectum. They are small, sessile raised mucosal nodules which are up to 0,5 cm in diameter. Histologically, the crypts are elongated and may exhibit cystic dilatation. The epithelium is composed of well-differentiated goblet cells and absorptive cells.

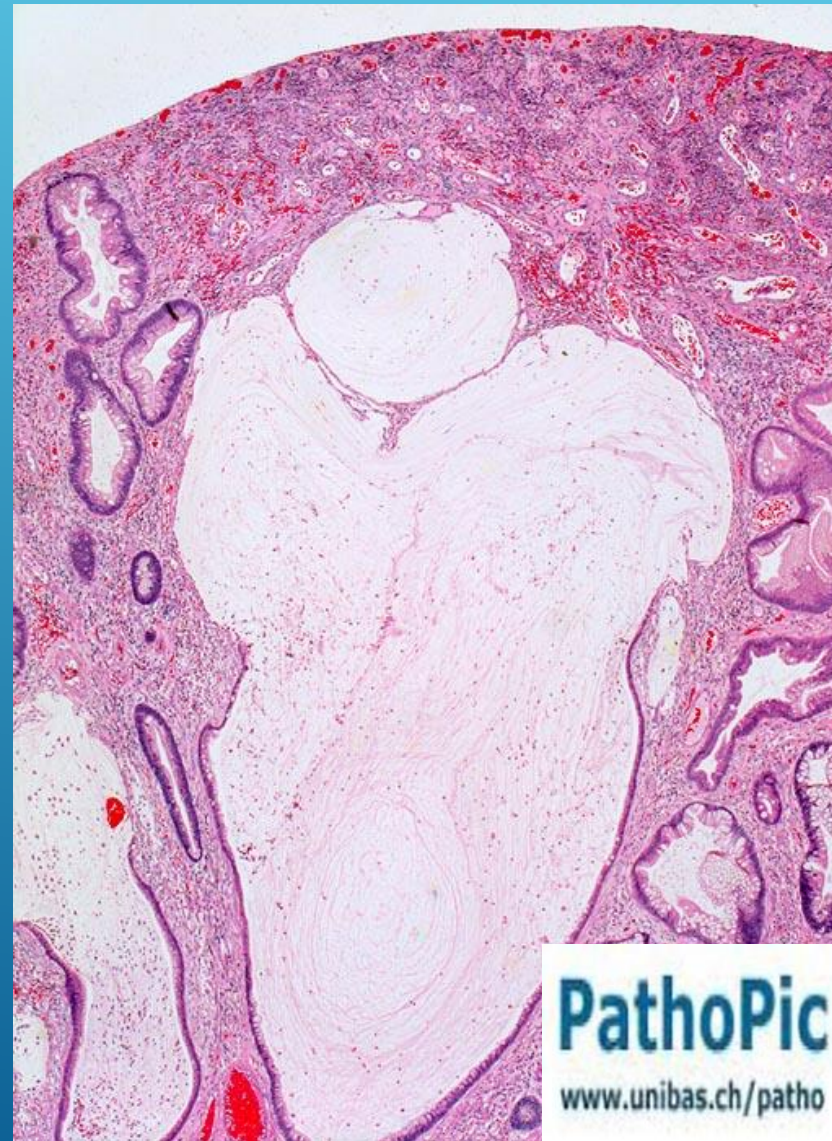


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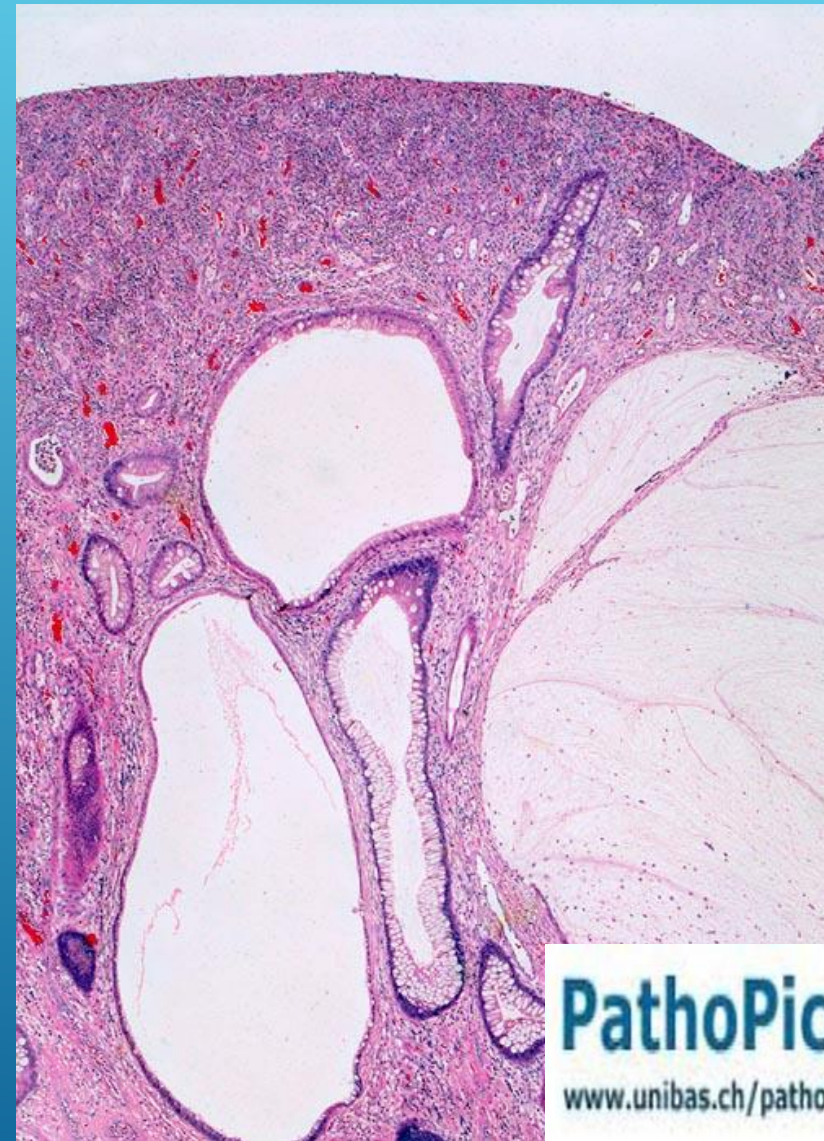


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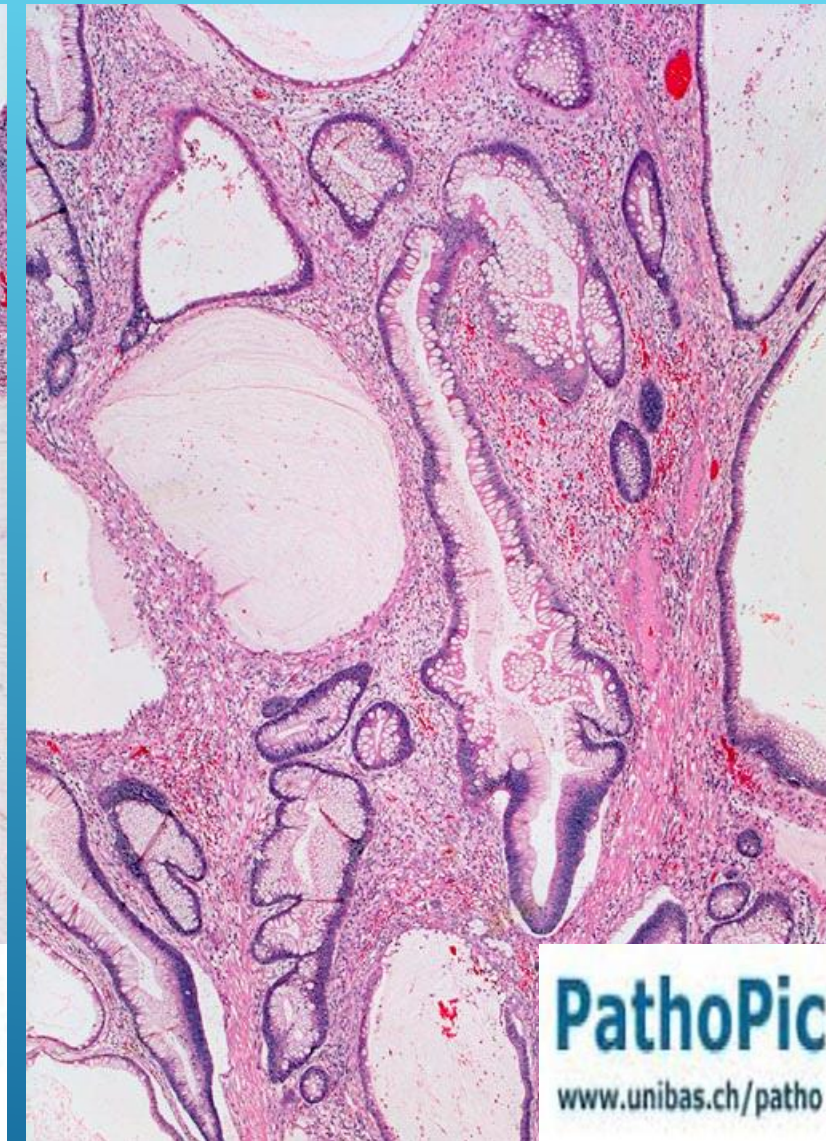
Juvenile polyps (retention polyps) may be single or multiple and occur most commonly in the rectum. Most polyps are pedunculated lesions, with a smooth, rounded surface. Histologically, dilated and cystic epithelial tubules are embedded in a fibrovascular lamina propria.



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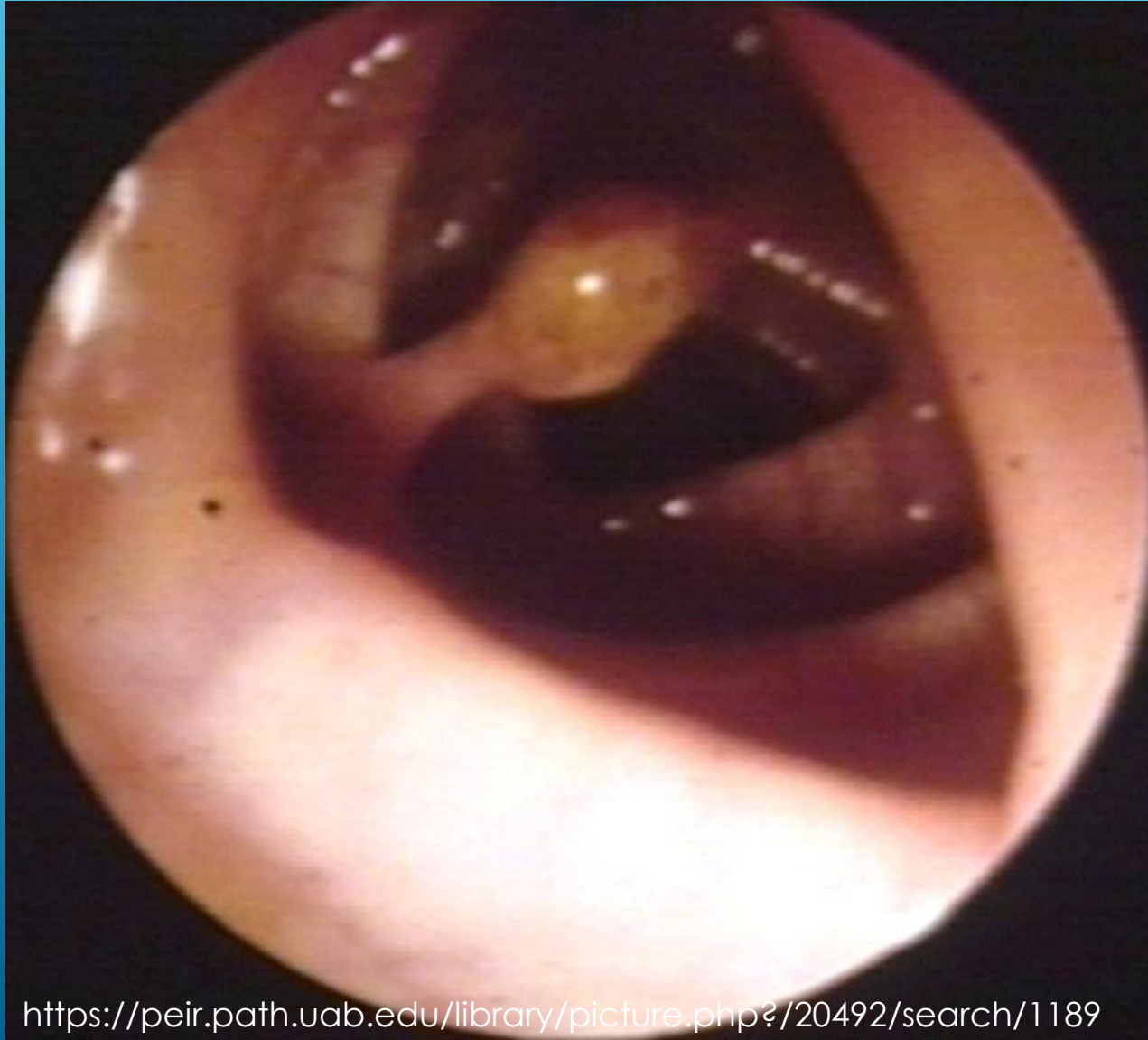


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Inflammatory polyps / pseudopolyps are rather elevated masses of chronically inflamed and regenerating epithelium over ulcerations caused by an inflammatory disease of the colon. Such polyps are commonly found in association with ulcerative colitis and Crohn disease. Microscopically, are composed of distorted and inflamed mucosal glands. When the surface of the polyp is ulcerated, granulation tissue may be prominent.



POLYP, INFLAMMATORY, COLON

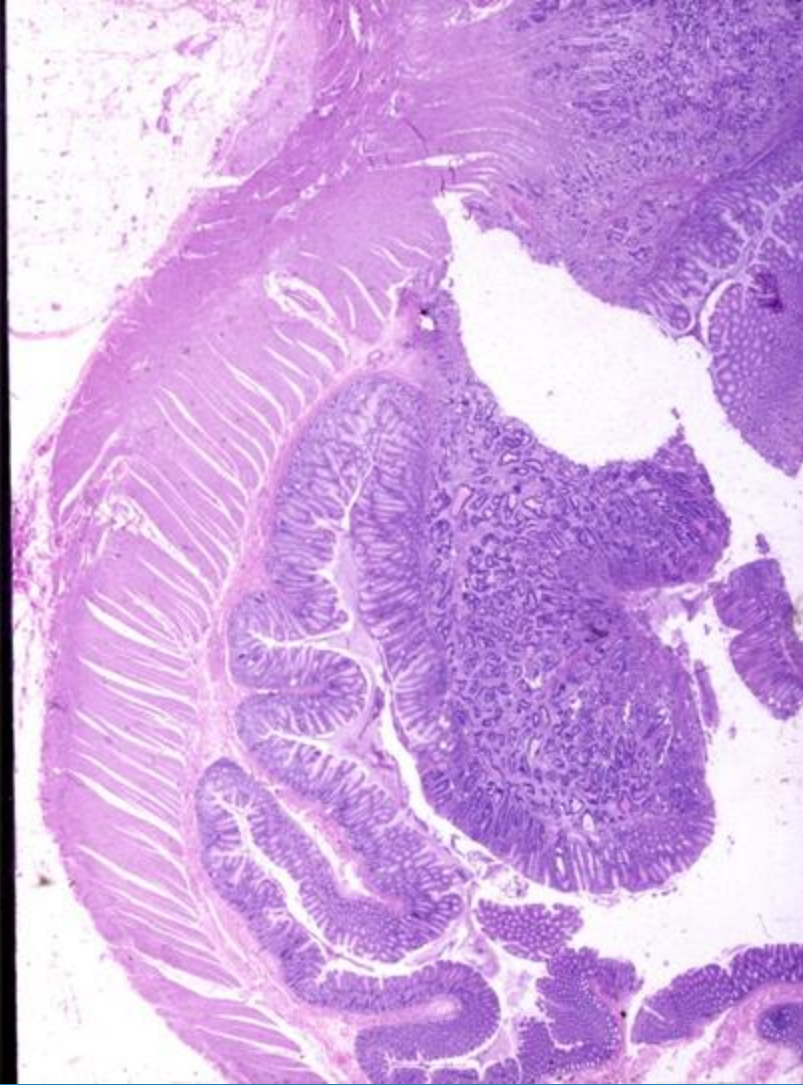
MALIGNANT TUMORS OF LARGE INTESTINE

The colorectal cancer is second in incidence only to carcinoma of the lung in men and is third after breast and lung cancer in women.

The gross appearance of colorectal cancer is similar of adenocarcinomas elsewhere in the gastrointestinal tract. They may be polypoid, ulcerating or infiltrative, in the last case customarily annular and constrictive. Polypoid cancers are most common on the right side of the colon, particularly in the cecum. Annular constricting tumors occur most often in the distal portions of the colon. Ulceration of the tumors, irrespective of the growth pattern, is usual.



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Colon, adenocarcinoma

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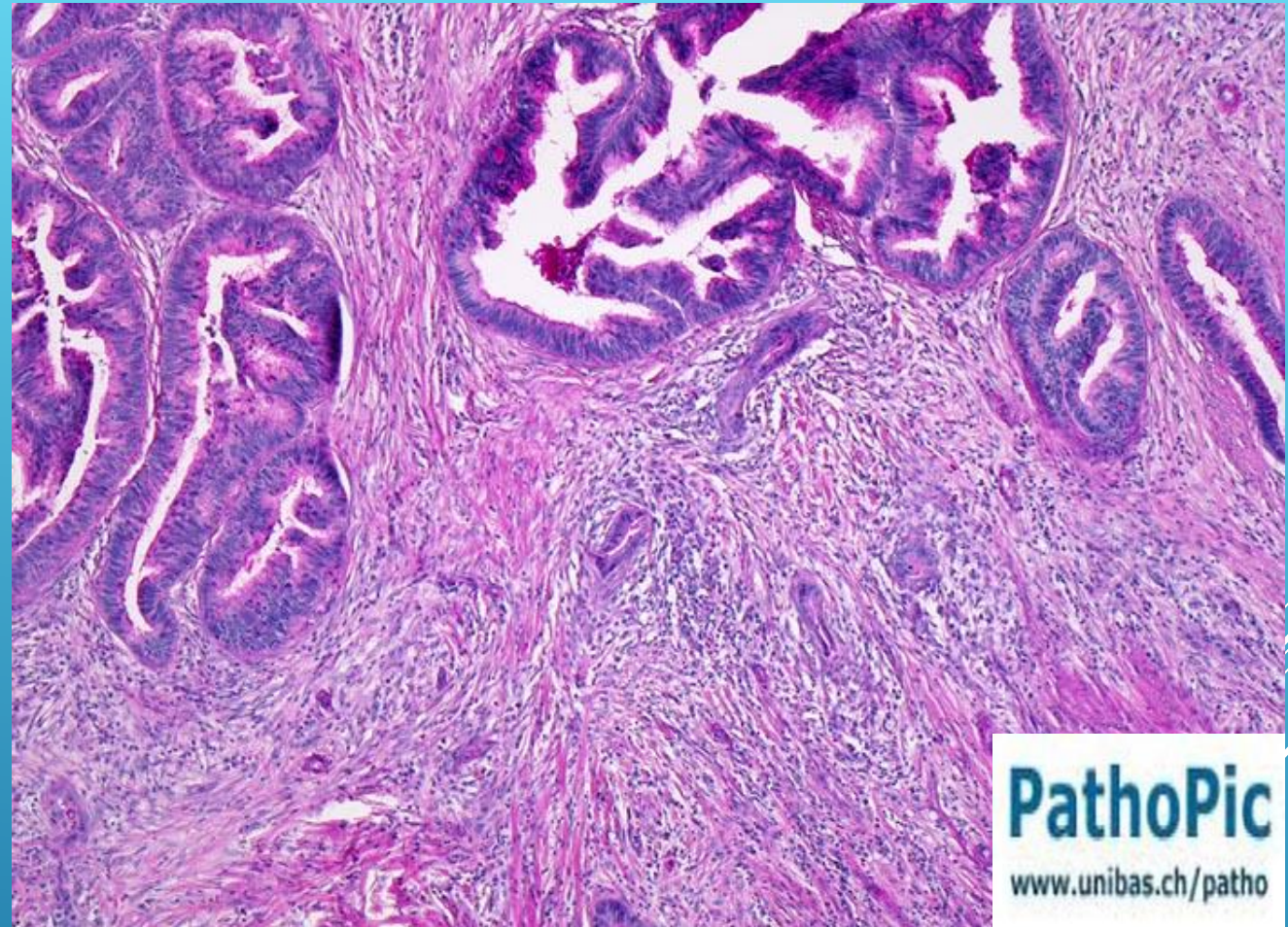
Adenocarcinoma – ulcerative - cecum

<https://peir.path.uab.edu/library/picture.php?/3060/search/1198>



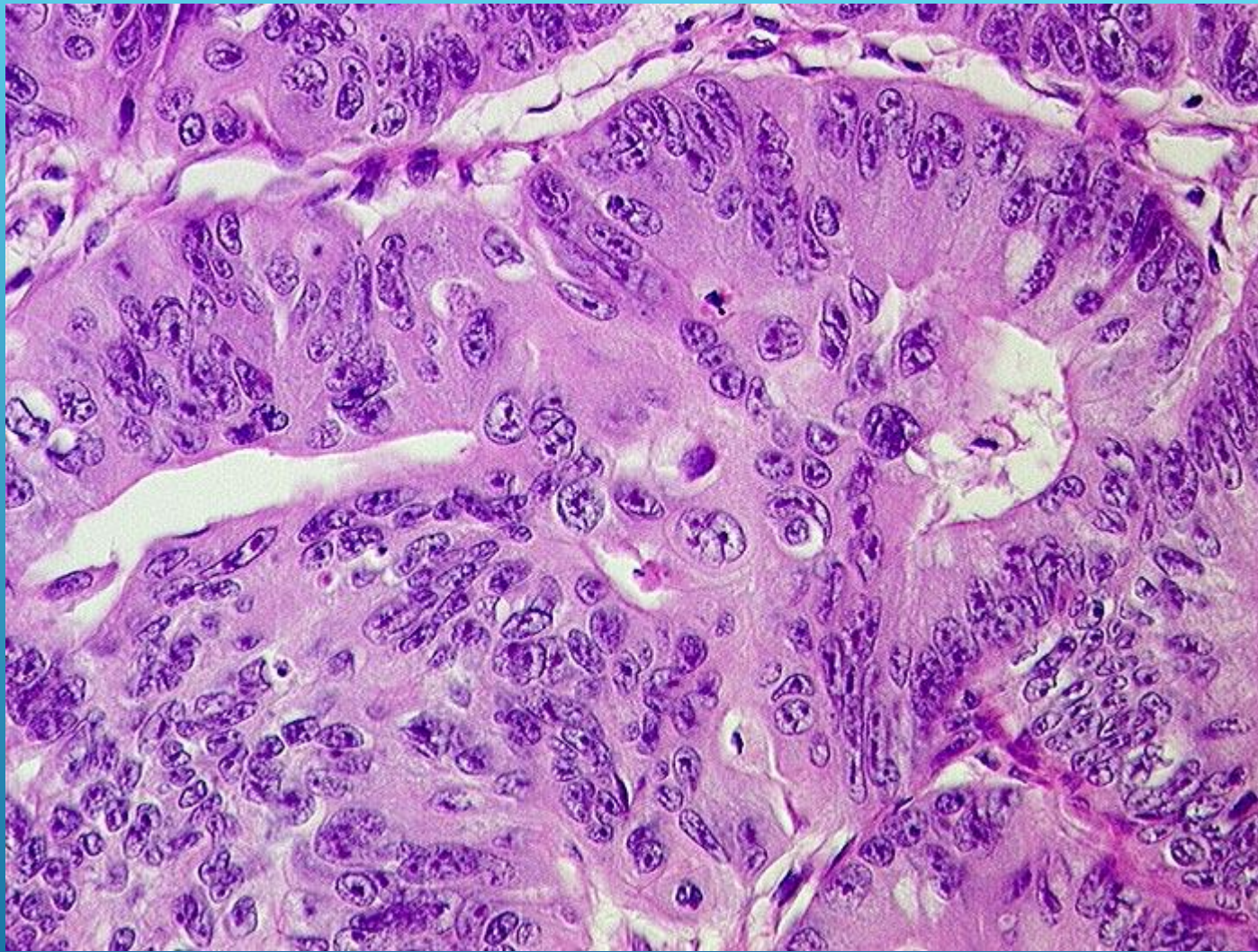
Partially exophytic tumor infiltrating roughly three quarters of the rectal circumference. The tumor infiltrates the muscularis propria and is about to infiltrate the perirectal fat.

The vast majority of colorectal cancers are adenocarcinomas, which are microscopically similar to their counterparts in other portions of the gastrointestinal tract. Most are well differentiated and secrete small amounts of mucin. 10 – 15% secrete considerable quantities of mucin in which case they are classed as mucinous adenocarcinomas. The degree of differentiation influences the prognosis, the better differentiated tumors being associated with a more favorable outlook.



Moderately differentiated adenocarcinoma

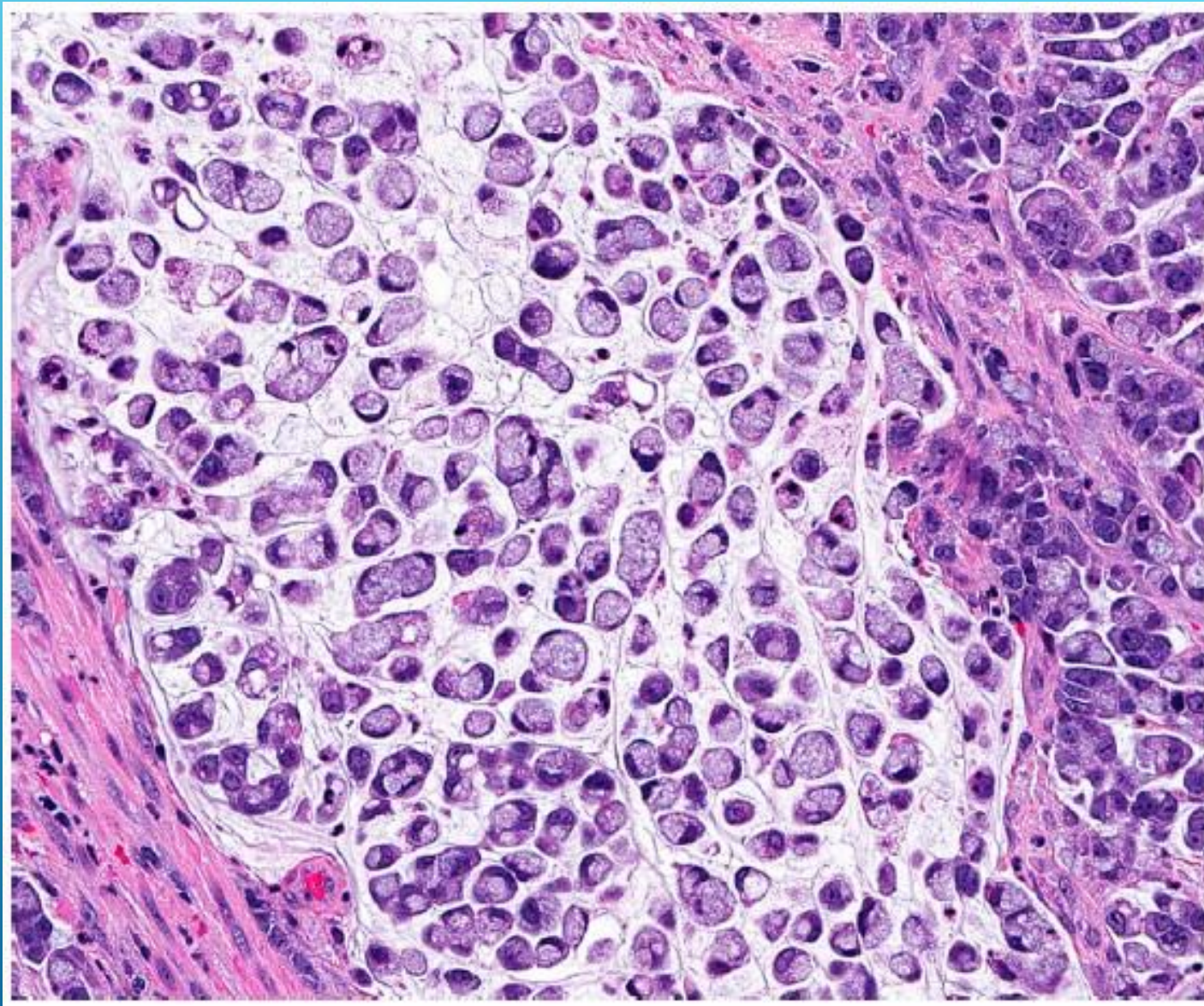
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Moderately differentiated adenocarcinoma

In its initial stages colorectal cancer is clinically silent. As the tumor grows, the most common sign is occult intestinal bleeding when the tumor is in the proximal portions of the colon, or bright red blood when the lesion is in the rectum. Cancers of the left side of the colon often constrict the lumen producing obstructive symptoms. Occasionally, colon cancer perforates early. It may produce enterocutaneous and rectovaginal fistulas. Intraabdominal spread may cause small intestinal obstruction and ascites.

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The degree of differentiation influences the prognosis, the better differentiated tumors being associated with a more favorable outlook. Occasionally, the predominant mucus-producing cell is of the "signet ring" variety in which case the cancer is associated with a particularly poor prognosis.

Signet ring cell carcinoma (original magnification $\times 400$)

Fleming M, Ravula S, Tatishchev SF, Wang HL. Colorectal carcinoma: Pathologic aspects. Journal of gastrointestinal oncology. 2012 Sep;3(3):153.