

Uncommon or poorly recognized vascular lesion

Digestive Pathology Meeting 2024
Dr N. Blétard

Uncommon or poorly recognized vascular lesion

- Haemangioma
- Angiodysplasia and Arteriovenous Malformation (AVM)
- Gastric Antral Vascular Ectasia (GAVE)
- Dieulafoy Lesion
- Primary Intestinal Lymphangiectasia (PIL)
- Lymphangioma
- Systemic Disorders With Vasculitis : Behçet Disease, Polyarteritis nodosa, IgA-associated vasculitis, ANCA-vasculitis, Buerger disease, ...
- Idiopathic Vasculitis : IMHNV, EP

HAEMANGIOMA

TERMINOLOGY

Angioma: capillary haemangioma: cavernous haemangioma: venous malformation: arteriovenous malformation: venous or vascular ectasia: haemangiolymphangioma: infantile haemangioma; infantile haemangioendothelioma; juvenile capillary haemangioma; hepatic small vessel neoplasm.

Subtype : Dieulafoy lesion; gastric antral vascular ectasia (GAVE); angiodysplasia; anastomosing haemangioma

The multitude of names for gastrointestinal haemangiomas reflects the morphological heterogeneity of overlapping entities

- ***Haemangiomas comprise proliferations of lymphatics, capillaries, or veins within the mucosa or submucosa.***
- ***There are often dilated vessels that can form irregular cavities, sometimes with thrombosis.***
- ***Reactive congestion of normal mucosal capillaries away from the lesion is typical***

Associated syndromes : Maffucci syndrome. Klippel–Trénaunay syndrome, congenital blue rubber bleb naevus syndrome, and hereditary haemorrhagic telangiectasia)

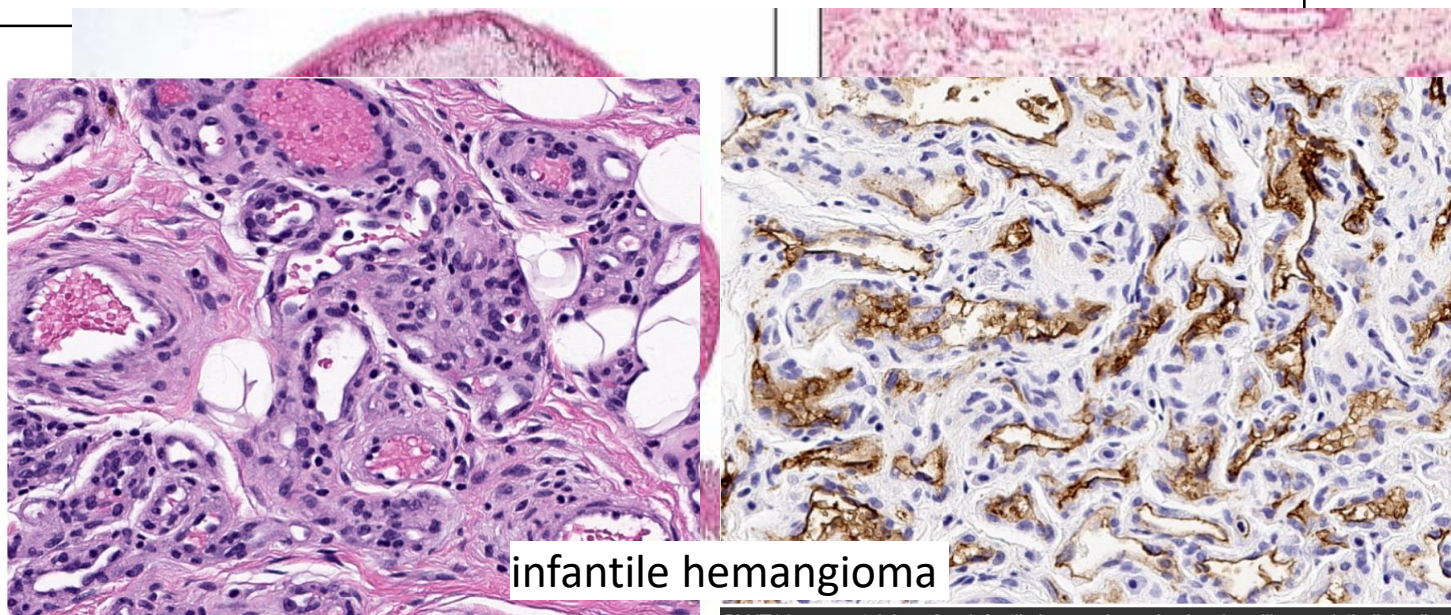
→ Multiple lesions (GI, skin, liver)

HAEMANGIOMA

1. CAPILLARY HEMANGIOMA

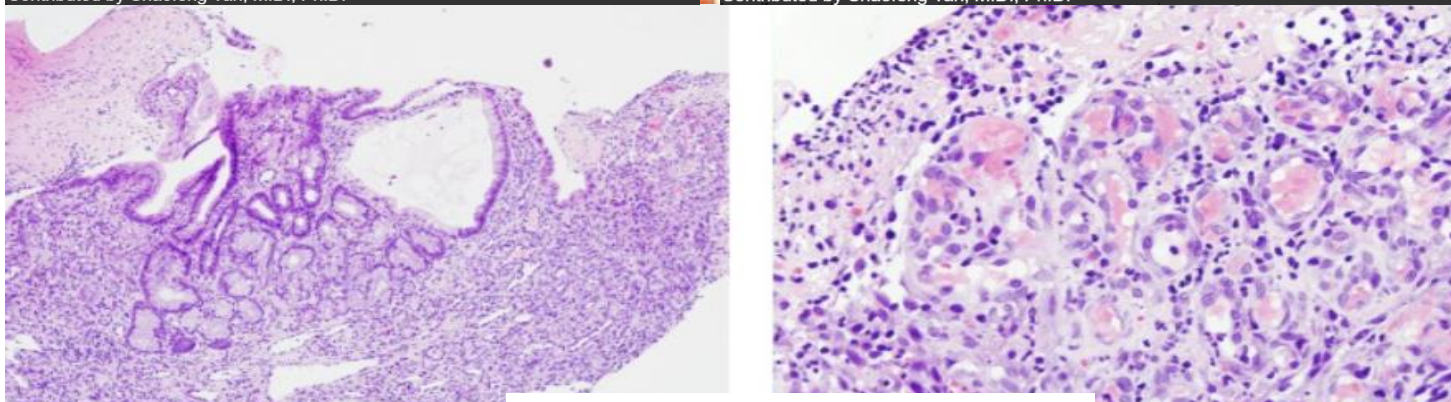
- Usually solitary, at any age
- Skin (“strawberry” birthmark) > GI
- Smooth, blue, polypoid mass (2 mm to 11 cm)
- In mucosa or submucosa
- Small intestine is most common site
- Localized tuft of small, closely packed capillaries
- Separated by loose stroma and inflammatory cells

DD: Lobular capillary hemangioma, infantile hemangioma (Glut1+)



Histology of an infantile hemangioma. Capillary endothelial cells show bland cytology. Contributed by Shaofeng Yan, M.D., Ph.D.

GLUT1 immunostaining of an infantile hemangioma. Lesional capillary endothelial cells show strong membranous staining for GLUT1. Contributed by Shaofeng Yan, M.D., Ph.D.



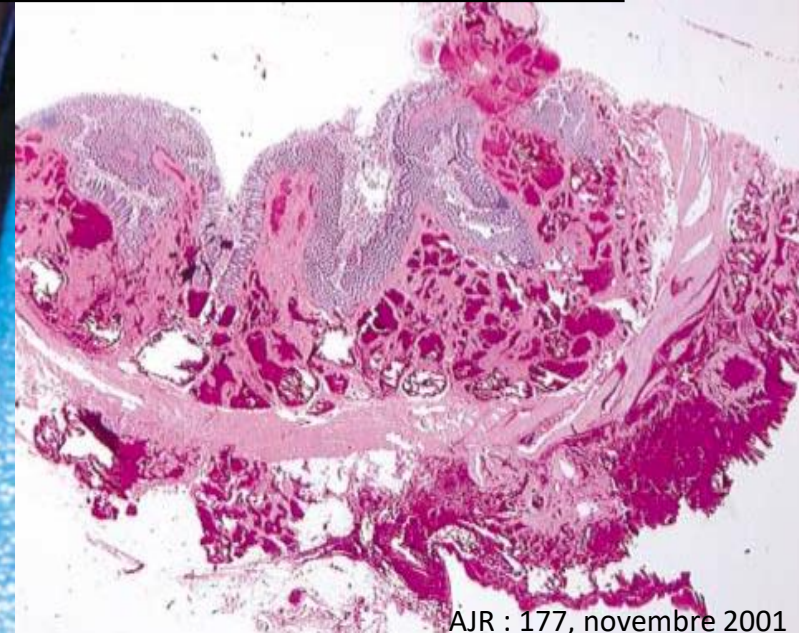
Case Rep Gastrointest Med. 2016;

Lobular capillary hemangioma

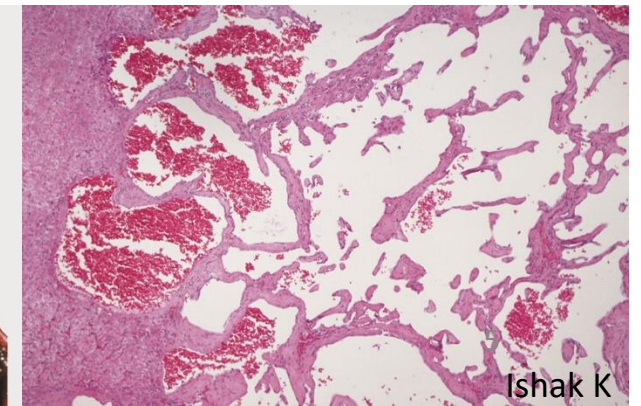
HAEMANGIOMA

2. CAVERNOUS HEMANGIOMA

- Proliferations of blood-filled vascular channels of varying sizes, lined by single layers of flattened endothelial cells and separated by fibrous septa of varying thickness.
- Located in submucosa but can extend to the rest of the wall of the small intestine or colon
- Polypoid or expansile (up to 30 cm), Blue-soft,
- Liver, spleen, GI



AJR : 177, novembre 2001

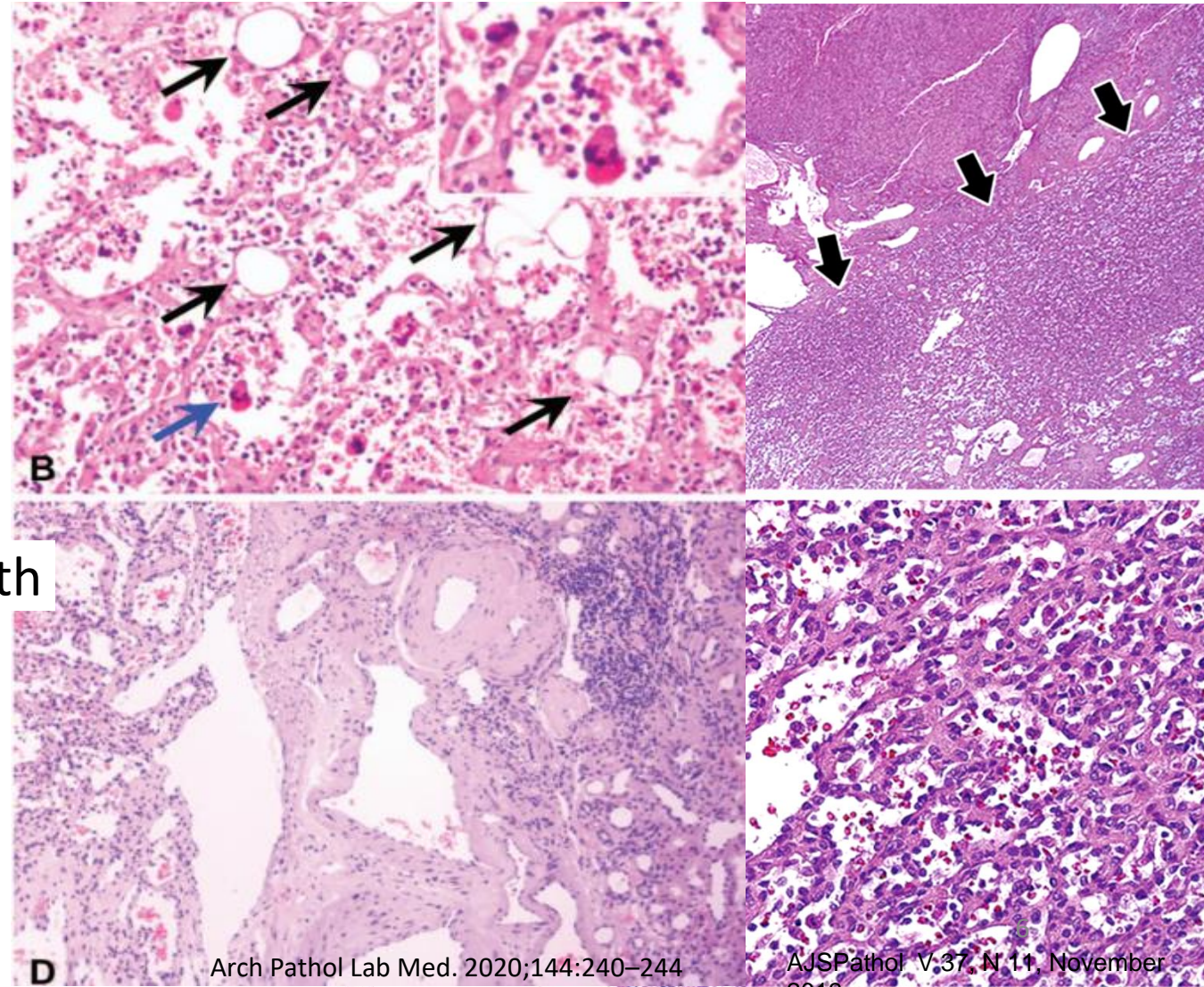


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HAEMANGIOMA

3. ANASTOMOSING HEMANGIOMA

- Benign vascular neoplasm histologically simulating angiosarcoma
- Genitourinary tract > liver and GI
- Adult, 2mm to 6cm
- Grossly **well** demarcated
- Anastomosed small capillary-like vessels with mild endothelial atypia, Hobnail endothelial cells
- **No** mitotic figures or necrosis
- Vascular thrombi, extramedullary hematopoiesis
- **Area of conventional cavernous**



ANGIODYSPLASIA AND ARTERIOVENOUS MALFORMATION OF INTESTINES

TERMINOLOGY

- 1. Angiodysplasia:** Acquired, degenerative lesion of previously normal mucosal and submucosal vessels
 - Due to intermittent partial obstruction of small veins that drain the colonic mucosa and submucosa as they course through the muscularis propria.
 - Most common in right colon
 - Most common cause of lower gastrointestinal bleeding in **elderly** patients, dialysis-dependent renal failure.
- 2. Arteriovenous malformation:** Direct communication between arteries and veins → blood Pressure in Vein → “arterialization”
 - May occur anywhere in gastrointestinal tract (< rectosigmoid, ileum)
 - Single or multiple (Multiple lesions in hereditary hemorrhagic telangiectasia (Osler-Weber-Rendu syndrome))
 - Develops during embryologic or fetal life and is typically **present at birth**, lower gastrointestinal bleeding occurs at **any age**

→ Embolization or surgical resection of actively bleeding lesions

ANGIODYSPLASIA

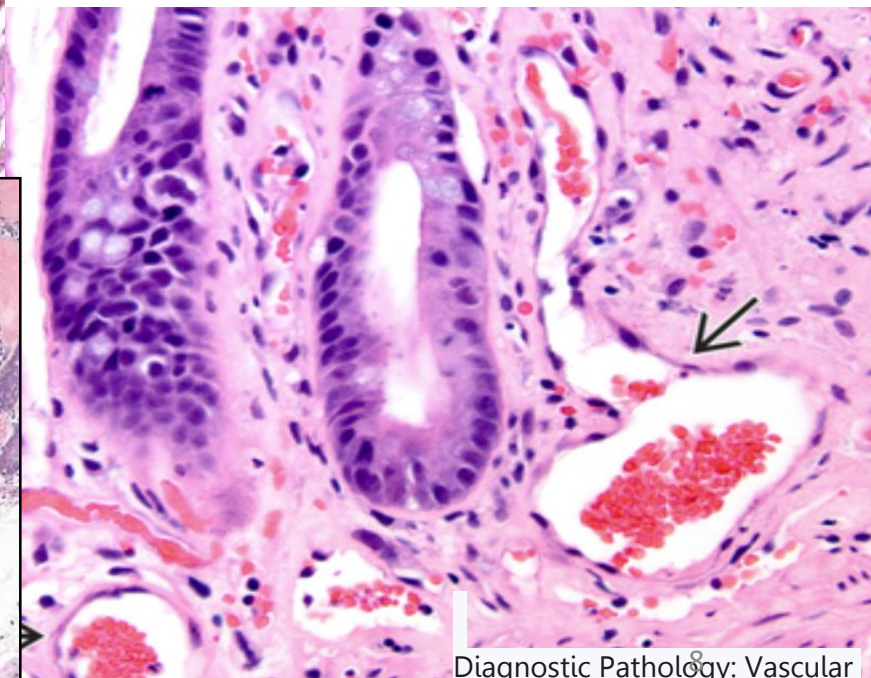
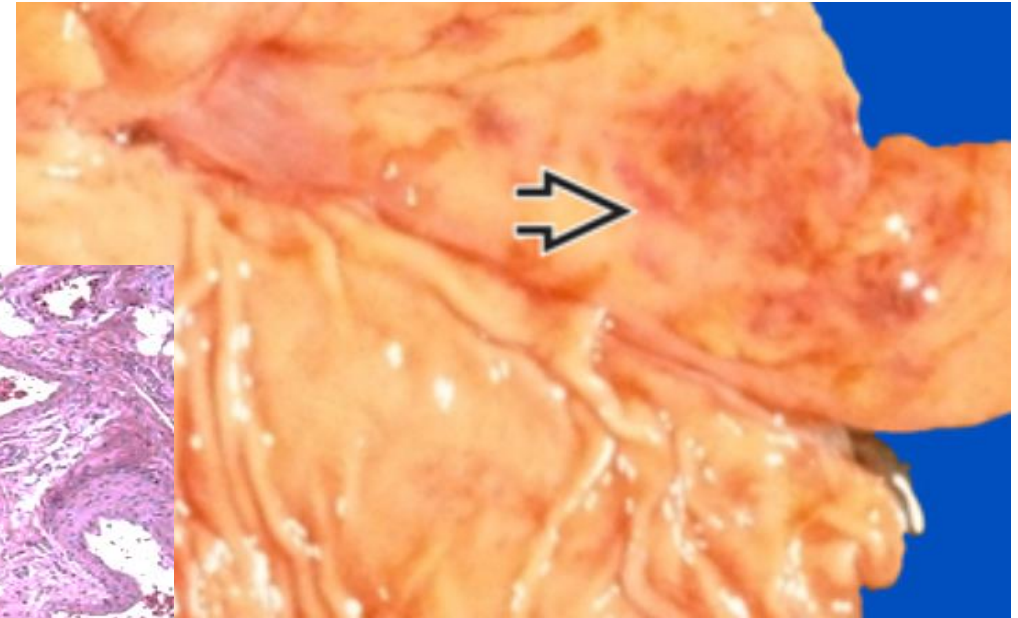
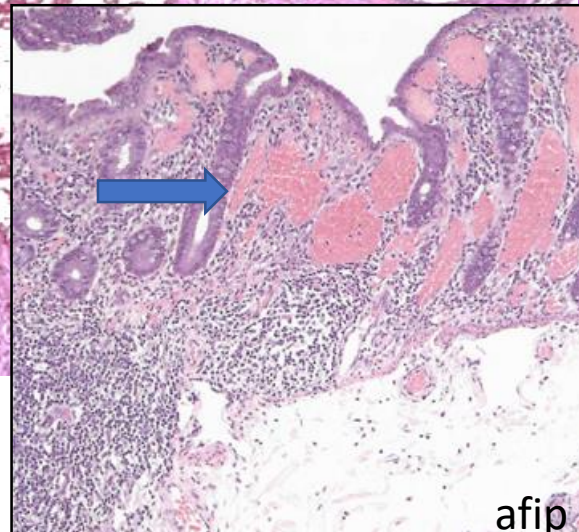
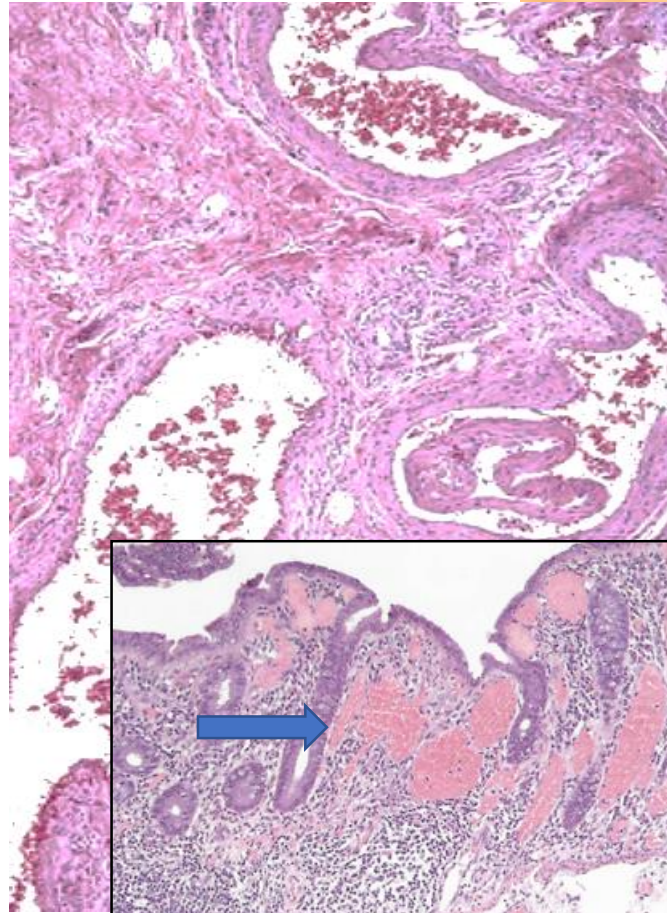
ENDOSCOPIC FINDINGS

- Relatively small (1-5 mm) erythematous lesions
- Flat or slightly elevated, discrete, red, fan-shaped area
- Ectatic vessels display reticular or honeycomb pattern on mucosal surface

HISTOLOGIC FEATURES

- Centered in submucosa
- Cluster of dilated, tortuous veins and venules in submucosa
- Dilated capillaries in overlying mucosa (high venous pressure leads to ectasias affecting mucosal capillaries)

DD: telangiectasia



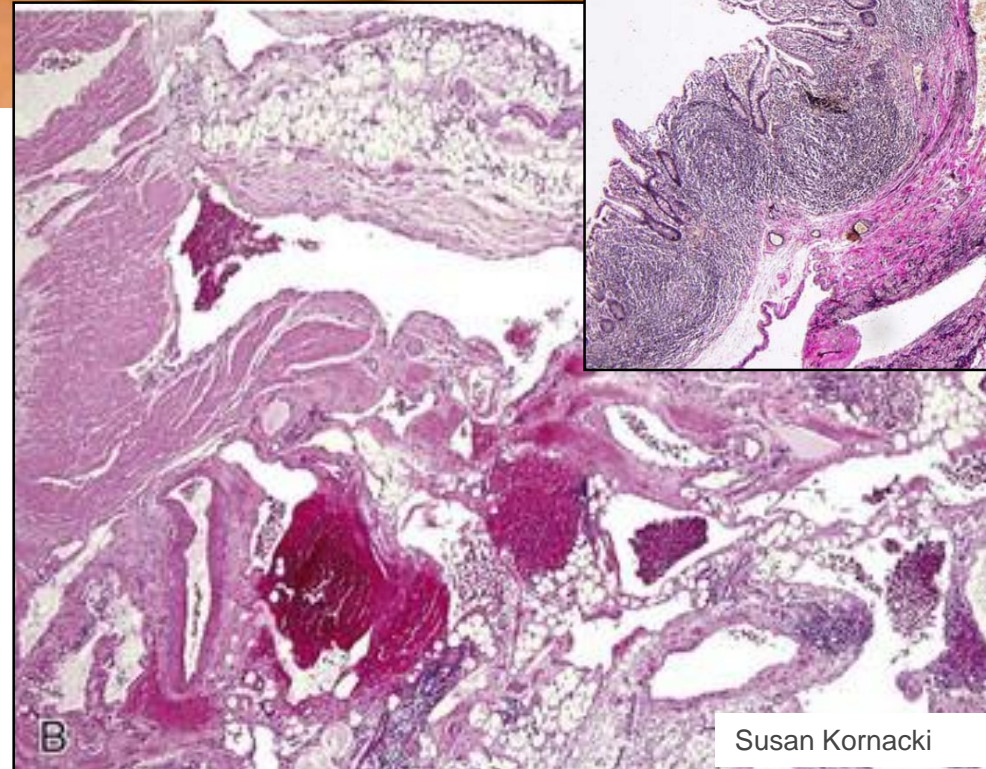
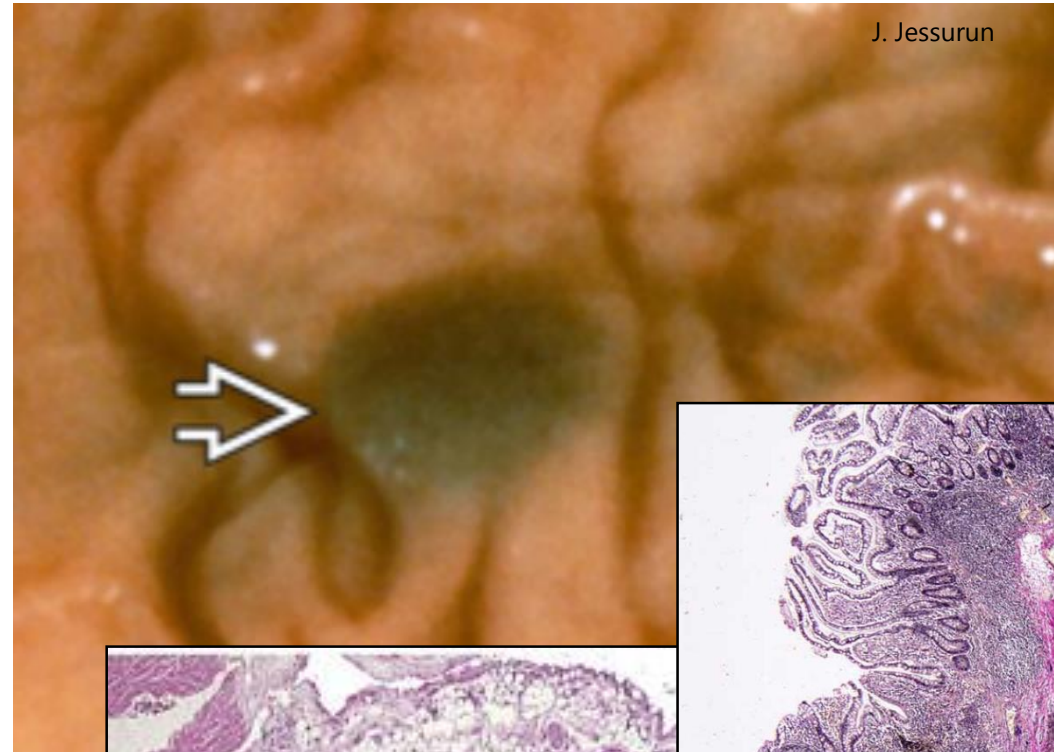
ARTERIOVENOUS MALFORMATION

ENDOSCOPIC FINDINGS

- Tend to be large (1-6 cm)
- Purple, raised or polypoid lesions
- Blanch with pressure and immediately refill
- Bleed with minimal trauma

HISTOLOGIC FEATURES

- Epicenter in subserosa or submucosa
- Mass of tortuous, variably dilated arteries and veins (with fibrosis and inflammation)
- Veins have abnormally thickened, muscular walls due to high pressure



GASTRIC ANTRAL VASCULAR ECTASIA (GAVE), “watermelon stomach”

TERMINOLOGY

- Vascular lesion involving gastric antrum
- Gastric antral mucosa with fibromuscular hyperplasia of the lamina propria, fibrin thrombi, hyalinosis, capillary ectasia, and reactive foveolar epithelial changes

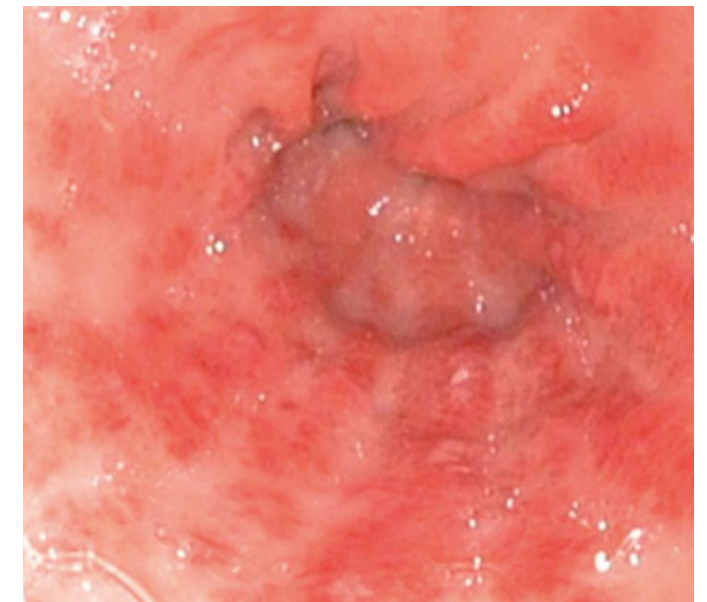
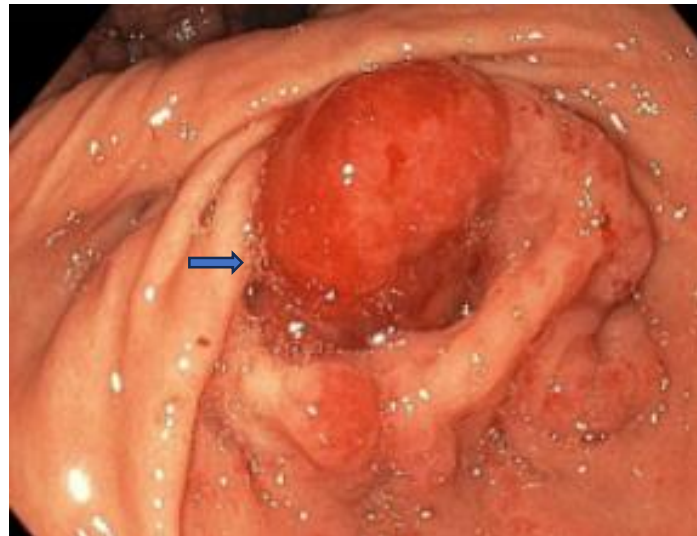
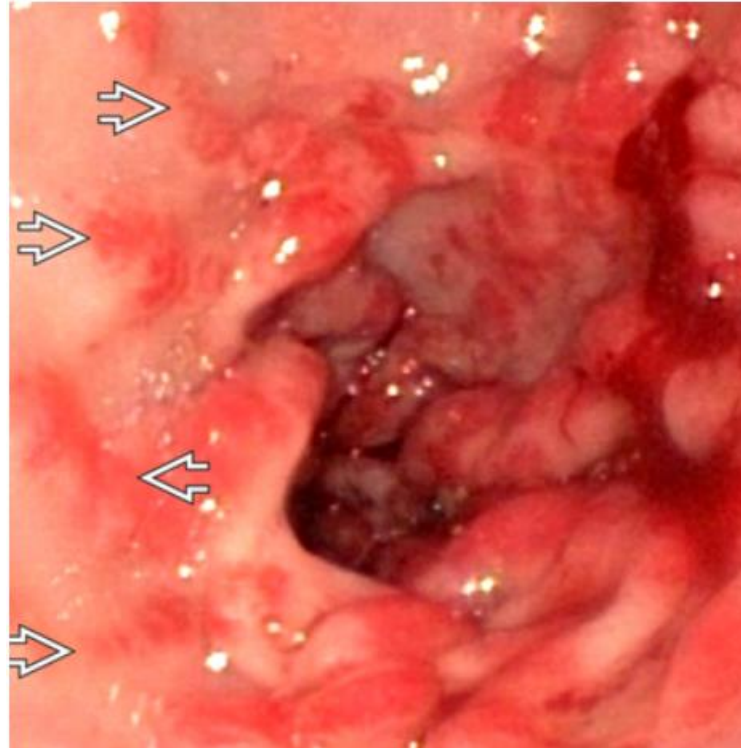
PRESENTATION

- Typically in elderly patients (> 70% of cases occur in women older than age 65)
- Associated with gastric atrophy, autoimmune and connective tissue disorders
- If Associated with portal hypertension and cirrhosis (corpus and antrum)
- Occult bleeding or melena is presenting sign in up to 90% of cases
- Hematemesis occurs in 60% of patients
- Chronic blood loss causes iron-deficiency anemia

GASTRIC ANTRAL VASCULAR ECTASIA (GAVE), “watermelon stomach”

ENDOSCOPIC FINDINGS

- Longitudinal mucosal folds that contain visible ectatic vessels that converge concentrically from proximal antrum into pylorus
 - Red raised mucosal stripes resemble stripes of a watermelon
 - Raised mucosal elevations may simulate polypoid lesion
- The antrum may be diffusely involved by mucosal red spots.
- Various degrees of bleeding and clotting may be seen on mucosal surface



Joel K Greenson,
David Stockman

Robert D. Odze
GIE, VOLUME 87, ISSUE 2, P612-613

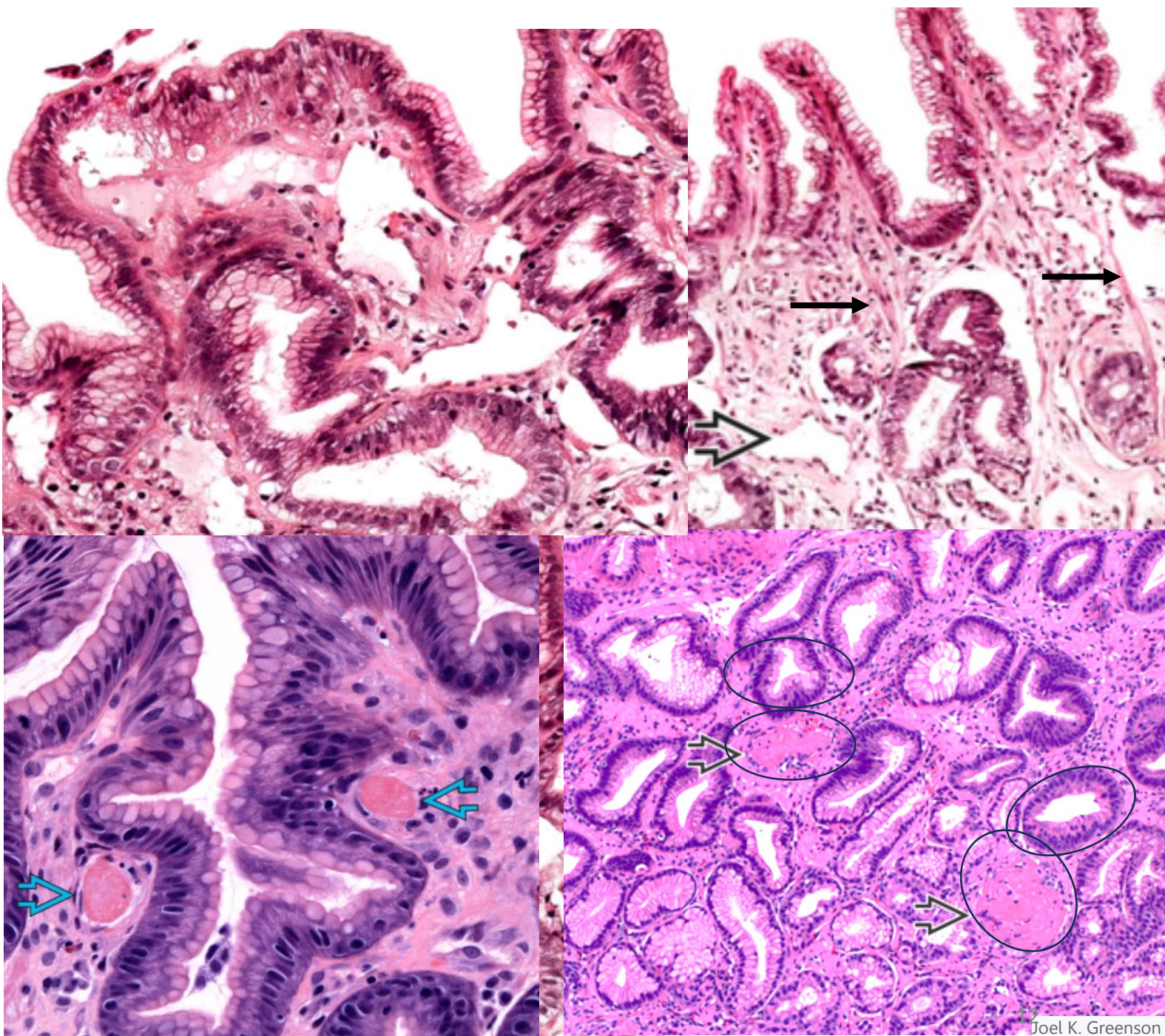
GASTRIC ANTRAL VASCULAR ECTASIA (GAVE), “watermelon stomach”

HISTOLOGIC FEATURES

- Histologic features resemble reactive (chemical) gastropathy

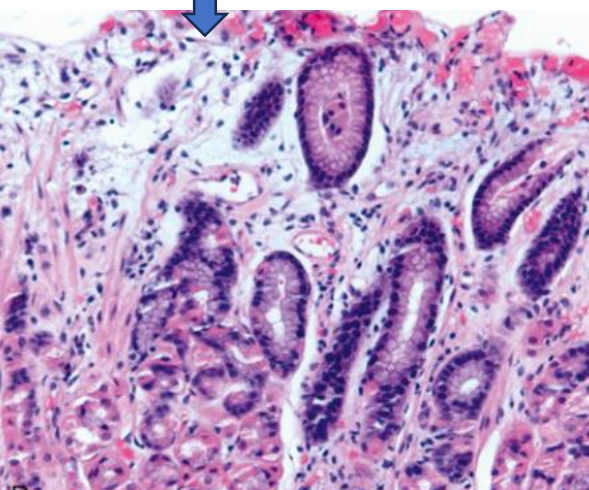
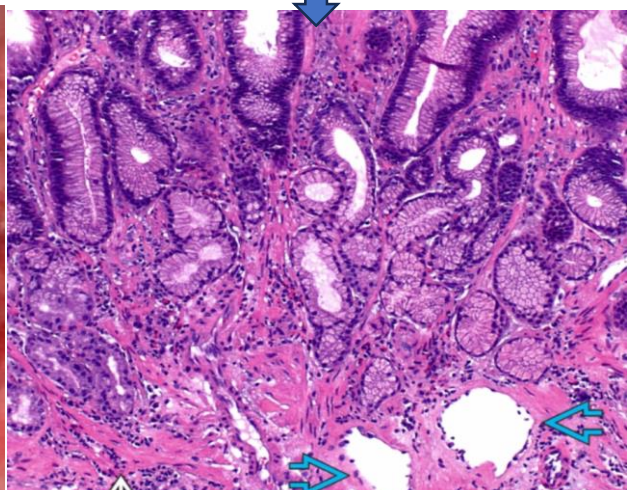
Elongated foveolar epithelium with hyperplasia and mucin depletion and degenerative changes

- Lamina propria with smooth muscle proliferation and fibers oriented perpendicular to mucosal surface with mild fibrosis
- Oedema may be prominent
- Devoid of inflammation
- Mucosal capillaries show dilation and congestion
- Dilated lumen approximates diameter of antral mucosal glands
- Fibrin thrombi (~ 50%)



Feature	Gastric Antral Vascular Ectasia (GAVE)	Portal Hypertensive Gastropathy (PHG)
Sex/age	F > M; typically elderly	Mildly more common in males/any age
Location	Antrum	Fundus/body
Endoscopy	"Watermelon" stomach	Snakeskin or mosaic appearance
Histology	Reactive gastropathy-like mucosal changes with fibrin thrombi in 50%	Submucosal &/or mucosal vascular ectasia
Treatment	Band ligation, radiofrequency ablation, surgery	β -blockers; transjugular intrahepatic portosystemic shunt (TIPS)

PHG May coexist with GAVE in some patients



Joel K Greenson,
David Stockman
Robert D. Odze

DIEULAFOY LESION

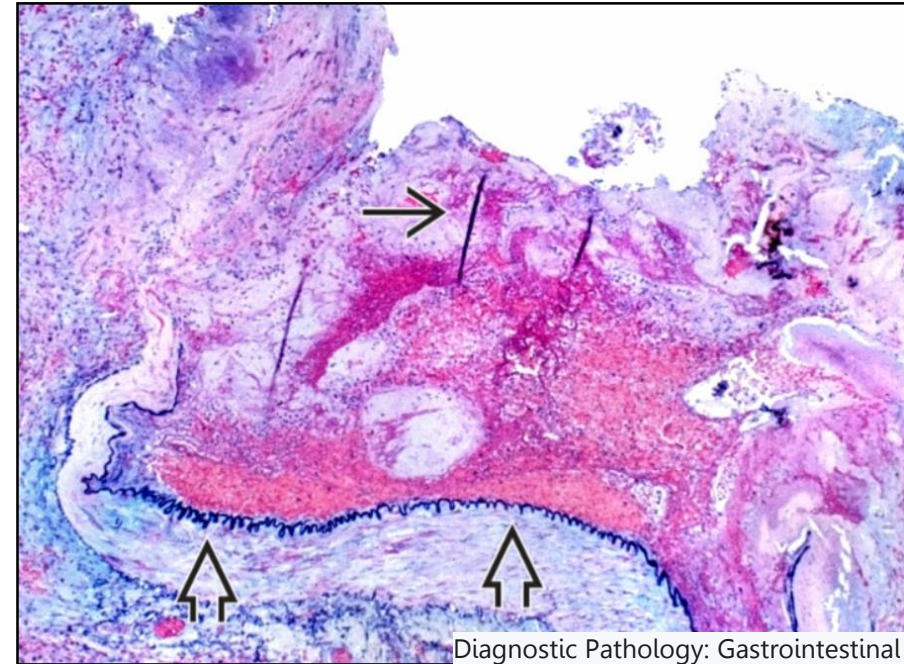
TERMINOLOGY

Abnormally large, tortuous, submucosal artery (1-5mm)
Thin, overlying mucosa leads to defect (erosion or ulcer)
→ Vessel rupture with hemorrhage and thrombus

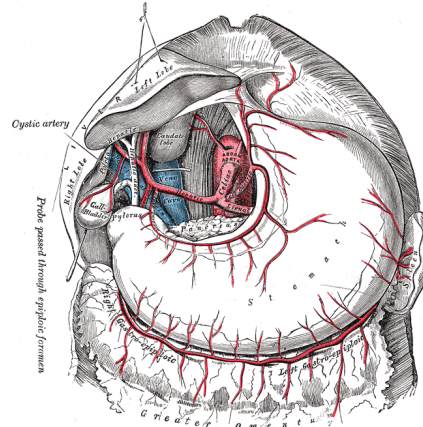
Synonyms: Exulceratio simplex, cirroid aneurysm

CLINICAL ISSUES

- 1-6% of upper GI tract bleeds
- Older patients (median age: 50s); M:F = 2:1
- *Comorbidities: Cardiovascular disease, hypertension, chronic kidney disease, liver failure, diabetes*
- *Concurrent drugs: Aspirin/NSAIDs, anticoagulation, alcohol*



DIEULAFOY LESION

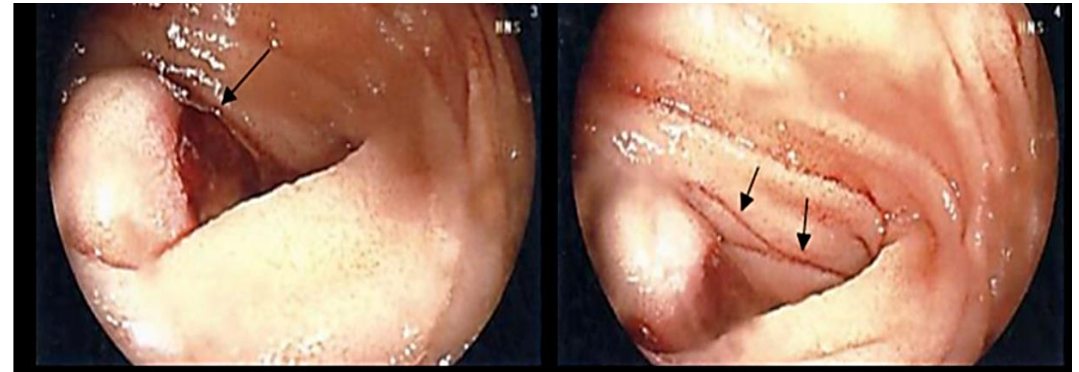


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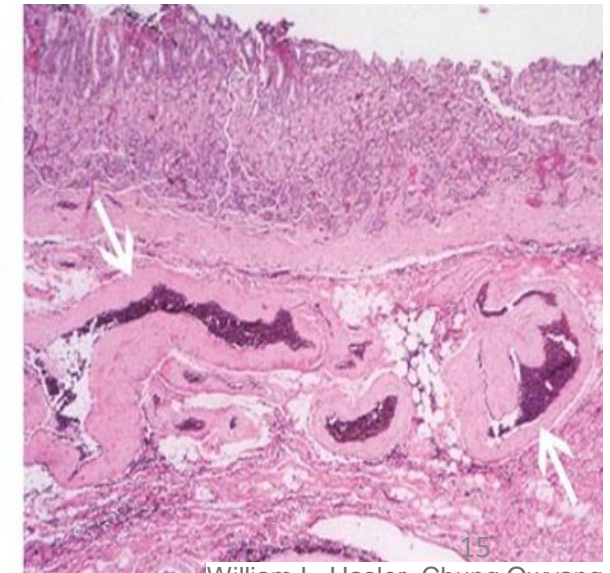
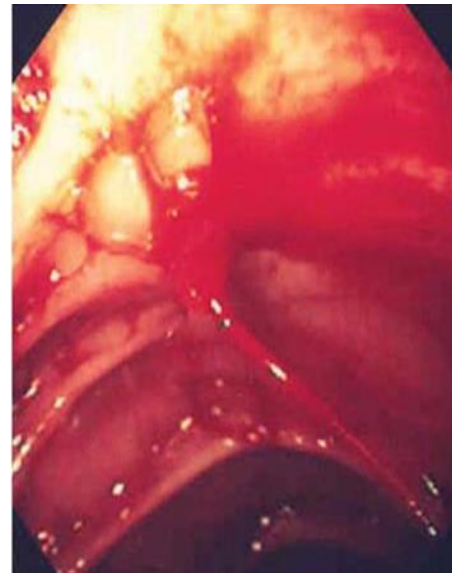
- 70-80% lesions are gastric: Proximal stomach (fundus); lesser curvature
- 20-30% lesions are extragastric : Duodenum (15%), colon/rectum (5%), prior surgical anastomosis (5%), esophagus (1%), jejunum (1%)

HISTOLOGY consists of a large-caliber muscular artery with a tortuous course through the submucosa focally extending to the mucosa and into the gastric lumen

- The large-caliber vessel may show partial disruption with the overlying mucosa showing erosion, hemorrhage, and blood clots; however, the vessel lacks arteriosclerosis, calcification, aneurysmal dilatation, or vasculitis
- The surrounding gastric mucosa is essentially normal



Am J Case Rep, 2022; 23



PRIMARY INTESTINAL LYMPHANGIECTASIA (PIL)

Waldmann disease

ETIOLOGY : Unknown

GENETICS

VEGFRC, VEGFR3, PROX1, FOXC2, and SOX18 genes are involved in lymphangiogenesis

Associated syndromes: Hereditary lymphedema/Milroy disease, Aplasia cutis congenita with lymphangiectasia, Klippel-Trenaunay syndrome, Hennekam lymphangiectasia/lymphedema syndrome, Neurofibromatosis type 1, Turner syndrome, Noonan syndrome

PRESENTATION

PIL is rare, Usually diagnosed in children < **3 years of age**

Most commonly occurs in **small intestine**

Focal-Diffuse

Malabsorption, protein-losing enteropathy resulting in secondary immunodeficiency, hypoproteinemia (hypogammaglobulinemia, ...), Fat-soluble vitamin deficiencies, Serous effusion, Growth retardation,....

PRIMARY LYMPHANGIECTASIA (PIL)

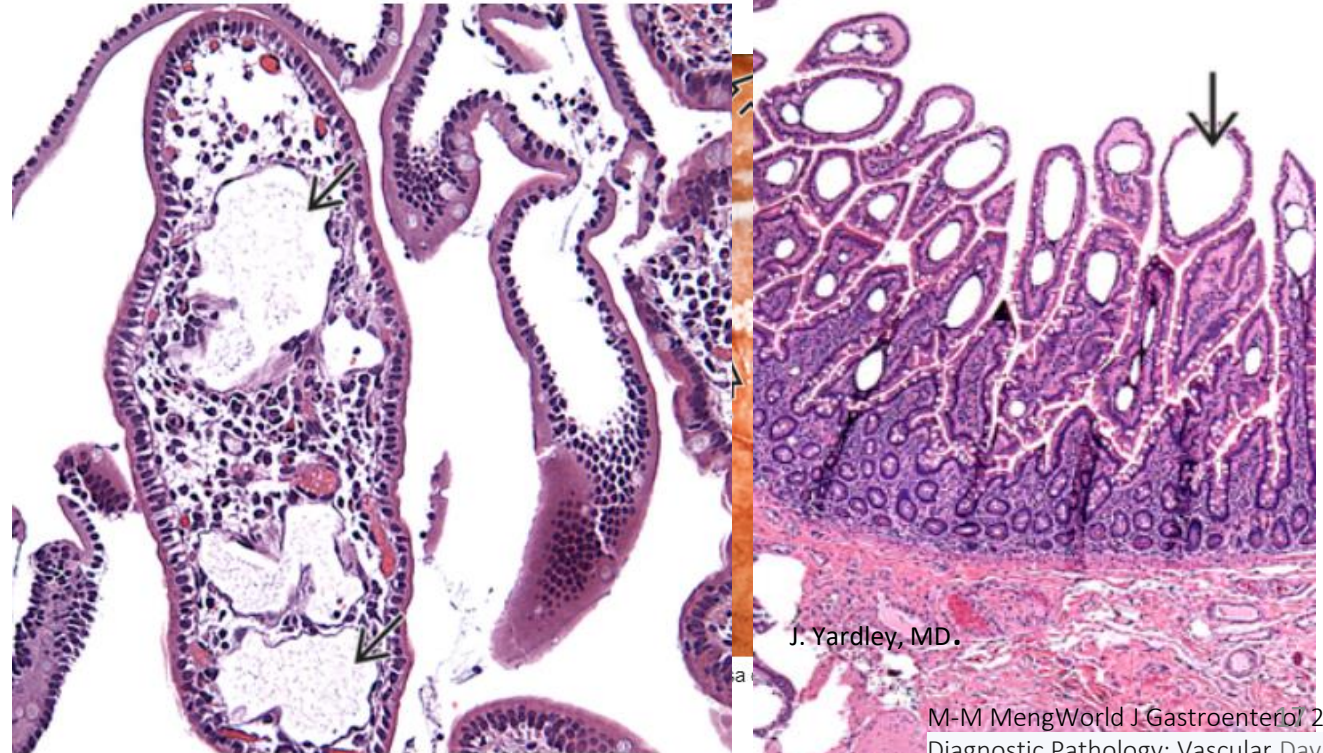
ENDOSCOPIC FINDINGS

- **Submucosal** elevations showing swollen opaque villi and white nodules
- Dilatation of intestinal lacteals
- \pm chylous distension of subserosal intestinal and mesenteric lymphatics
- Biopsy of affected area is necessary for diagnosis



HISTOLOGIC FEATURES

- Diffuse dilation of lacteals within small bowel mucosa
- \pm mild to moderate blunting of villi
- \pm foamy macrophages
- Variably sized, thin-walled spaces lined by flat endothelial cells within mucosa, submucosa, &/or serosa
- **PIL and lymphangioma are microscopically identical**



J. Yardley, MD.

LYMPHANGIOMA

Most (90-95%) occur in skin and head and neck

All sites in the GI tract , mesentery and retroperitoneum
(in the small intestine>large intestine>oesophagus), spleen

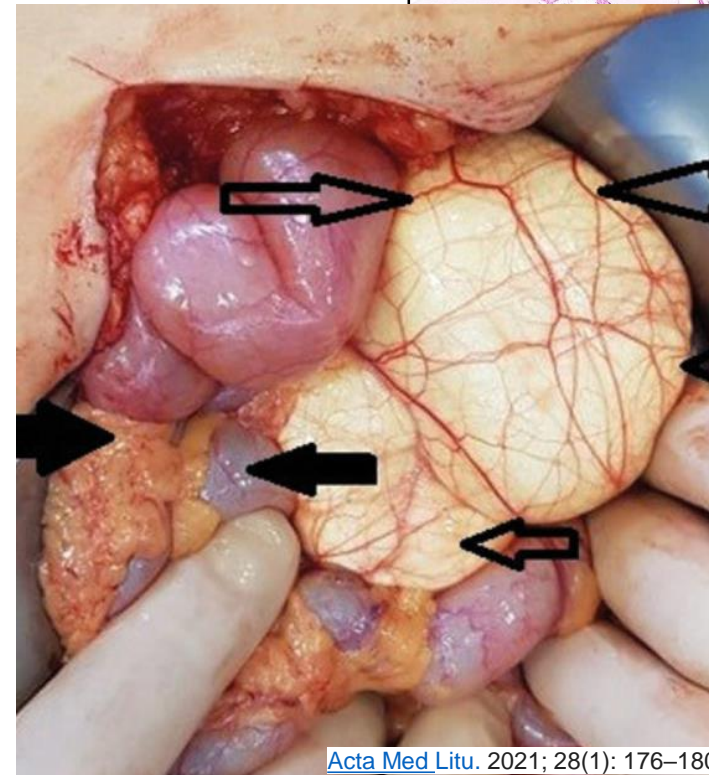
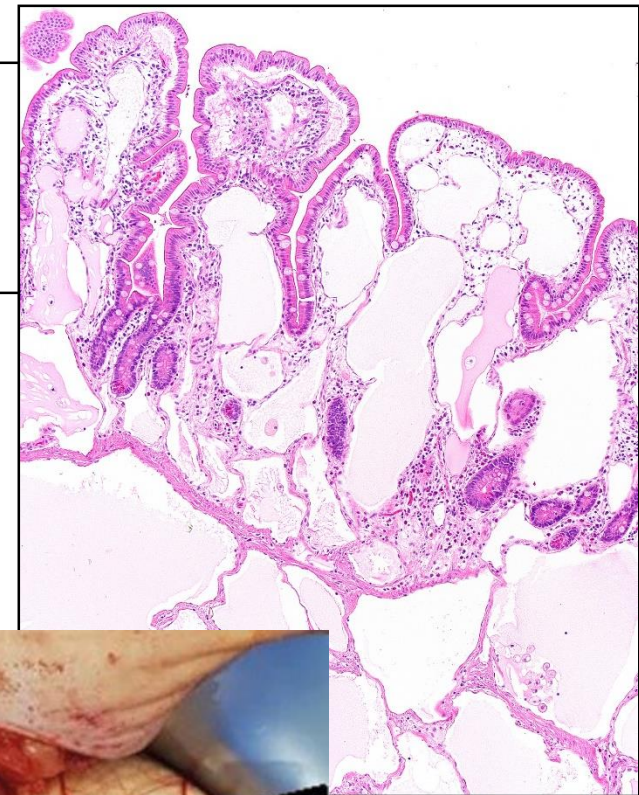
Children and young adults > adults

Associated syndromes (Turner), trisomies (13,18, 21)

CLINICAL FEATURES: anaemia from bleeding,
intussusception, volvulus,

- Mucosal nodules to pedunculated polyps (white or yellow mucosal lesions, <2cm) or large mass lesions (> 2cm : transmural, mesenteric fat)

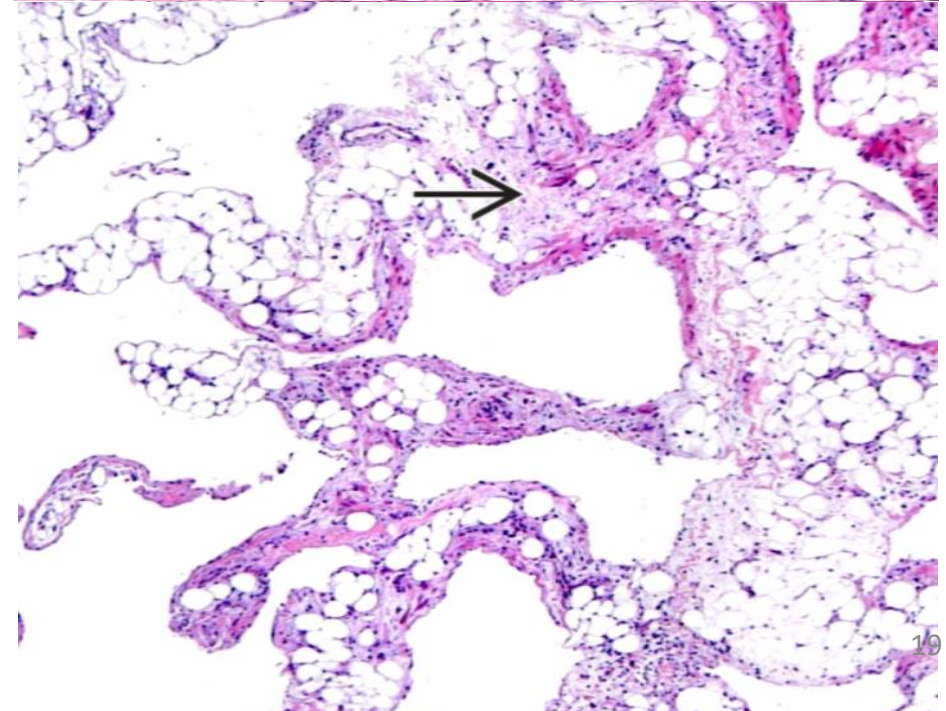
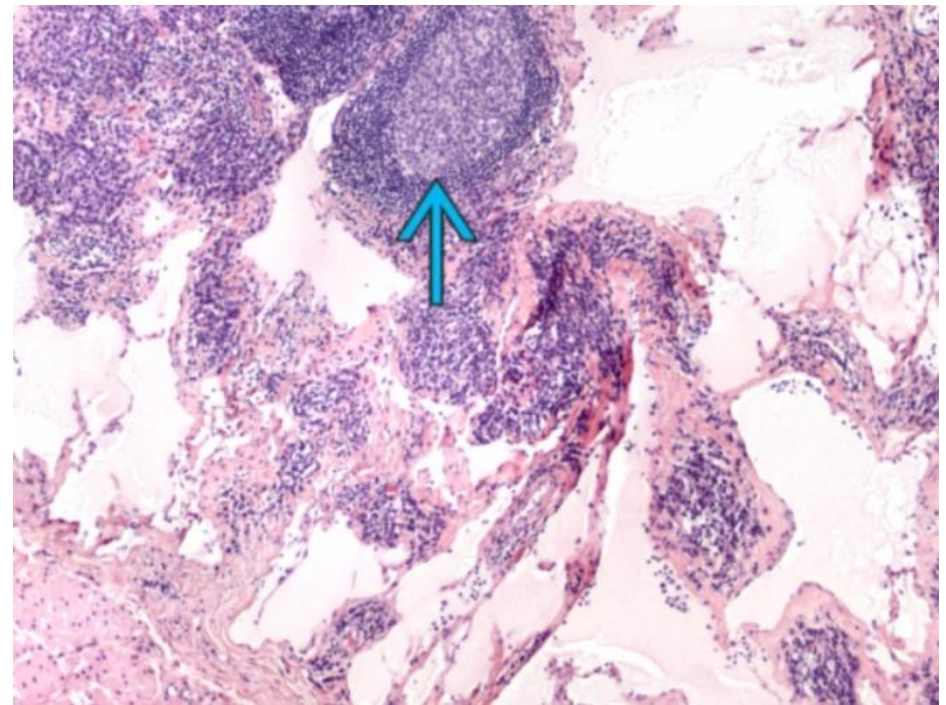
- Benign tumours that typically do not recur (Excellent prognosis but recurs if incompletely resected) >< diffuse lymphangiomatosis with visceral involvement can be fatal



LYMPHANGIOMA

HISTOPATHOLOGY

- Dilated cystic spaces lined by a single simple layer of lymphatic endothelial cells without cytological atypia (D2-40+, CD31-, CD34+/-, Glut-1 -, calretinin -).
- Layer of smooth muscle (SMA+).
- * The lymphatic spaces contain eosinophilic proteinaceous material, lymphocytes, and scattered erythrocytes.
- * The lumina show several papillary projections with slightly fibrinous cores lined by small, hyperchromatic endothelial cells.
- * Lymphoid aggregates, granulation tissue, or xanthogranulomatous inflammation, calcifications, and cellular reactive myofibroblastic proliferations can obscure the underlying lymphatic abnormality.



BEHÇET DISEASE

PRESENTATION : unknown etiology (HLA-B51), Young adults (2nd-4th decades), ♂=♀, Asia (Turkey, Israel, Saudi Arabia, Iran, China, Korea, Japan)

MACROSCOPIC : 2 forms of intestinal involvement (+/- 25% , *ileocecal region* is most common site, sometimes diffuse form)

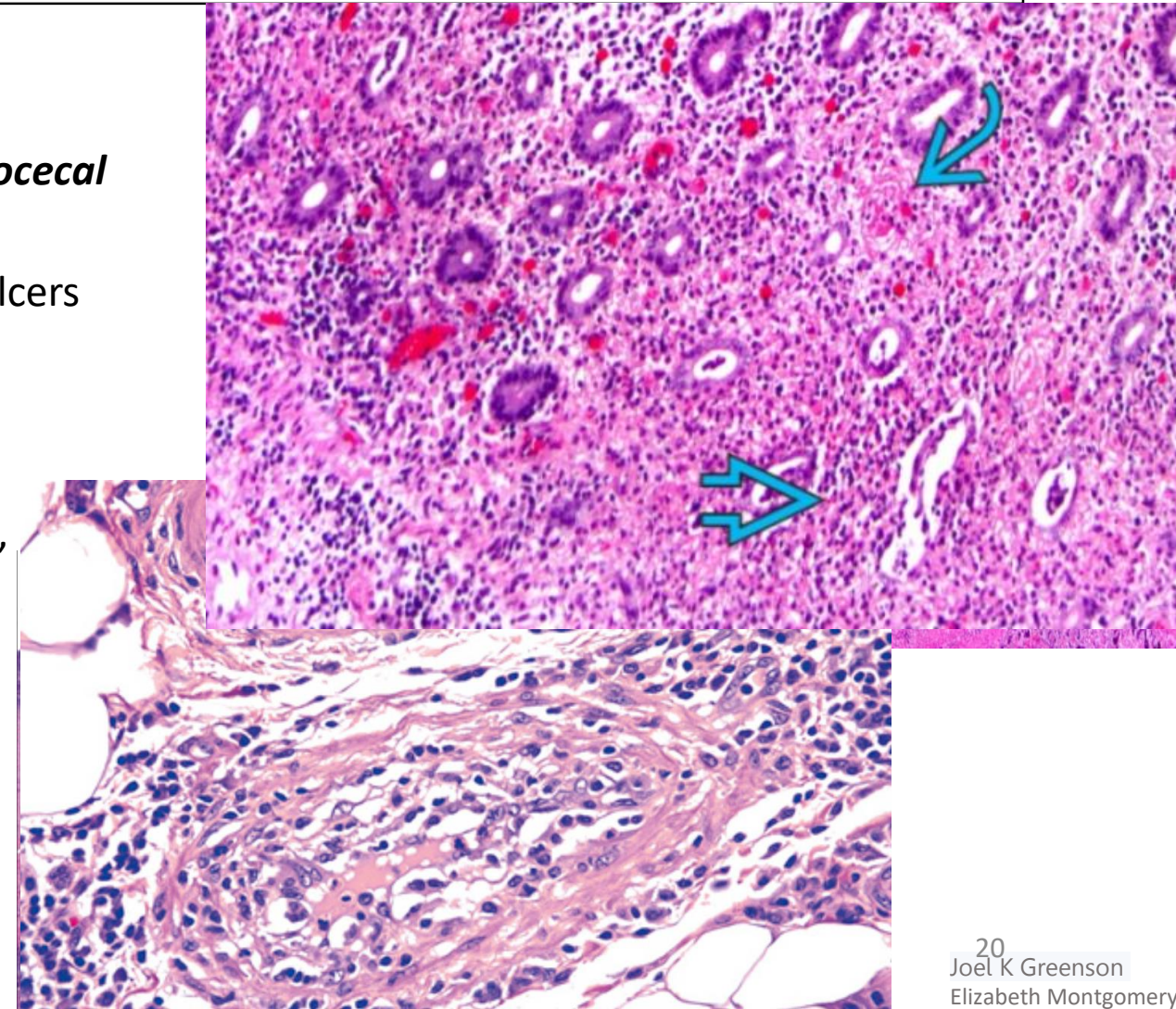
- **Small vessel** disease that leads to mucosal inflammation and ulcers (aphthous ulceration, Deep Penetrating Ulcer)

- **Large vessel** disease is less common and leads to ischemia and infarction

• Most patients have oral and genital ulcers, retinitis and uveitis, erythema nodosum and other skin disorders, and arthritis.

MICROSCOPIC :

- **Vasculitis** (lymphoplasmacytic or leukocytoclastic type)
- **Fibrin thrombi** in small vessels
- Mild **ischemic changes or cryptitis (IBD-like)**, mural fibrosis
- Mucosal ulcers **often overlie lymphoid aggregates**



IDIOPATHIC MYOINTIMAL HYPERPLASIA OF MESENTERIC VEINS (IMHMV)

PRESENTATION

- **Young** to middle-aged men
- Abdominal pain, diarrhea or constipation, and rectal bleeding.
- **Left colon only**
- **CT:** showing contiguous concentric thickening of the distal descending colon to the rectum with stranding of the adjacent colonic fat.

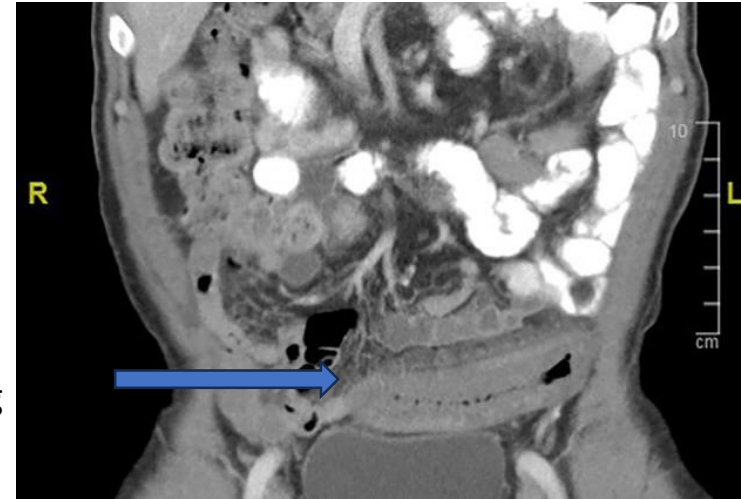
ETIOLOGY : possibly secondary to arteriovenous fistula

ENDOSCOPIC FINDINGS

- Mucosal erythema, ulceration, friability, granularity, and cobblestoning often result in a presumptive endoscopic diagnosis of inflammatory bowel disease

→ Bx: \emptyset MICI **but** mild ischemic changes

→ Resection of the affected segment of bowel is curative. Disease recurrence has not been reported.



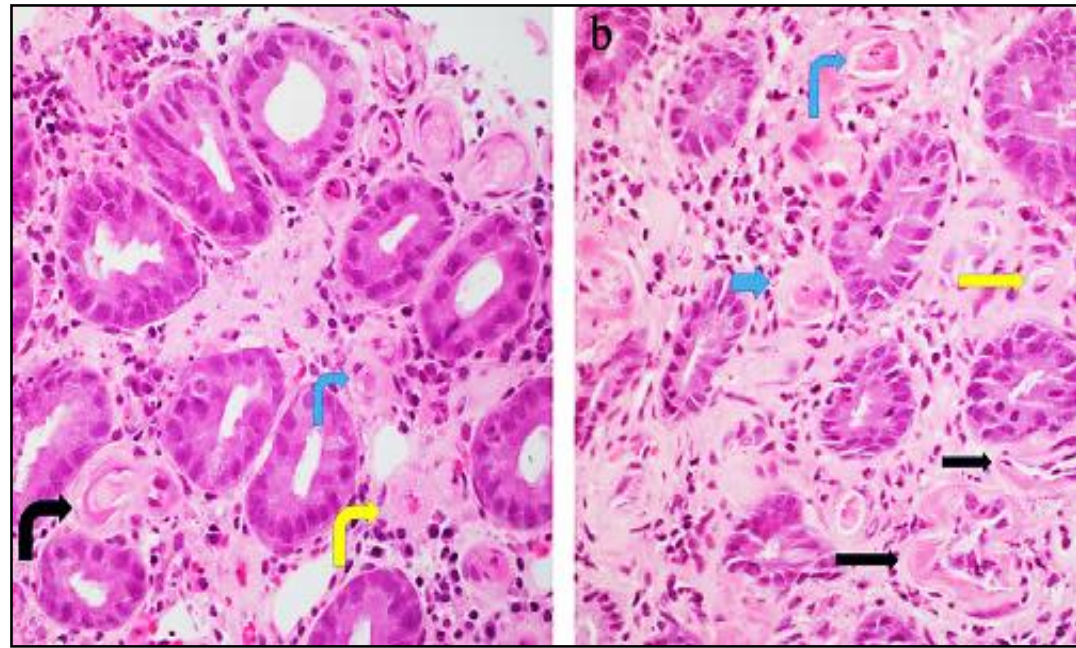
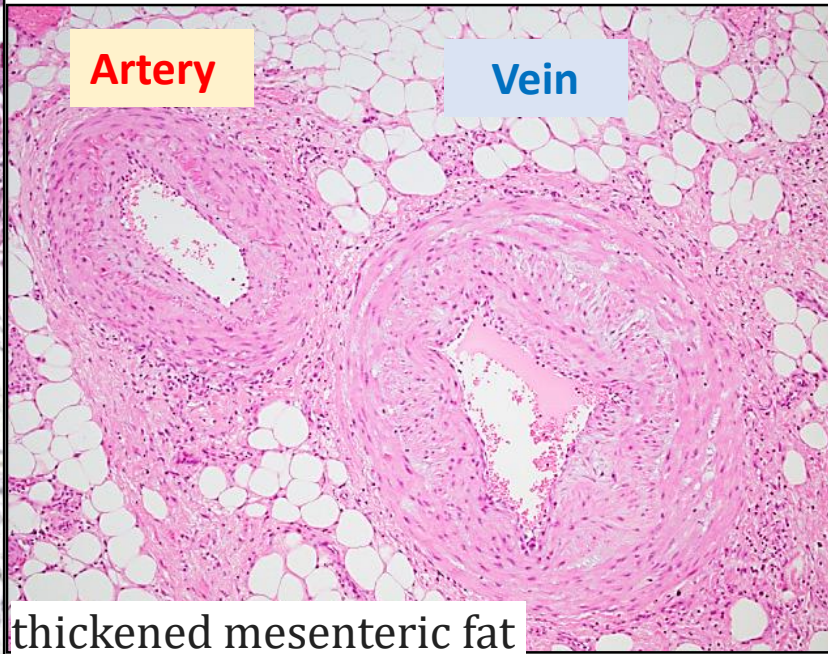
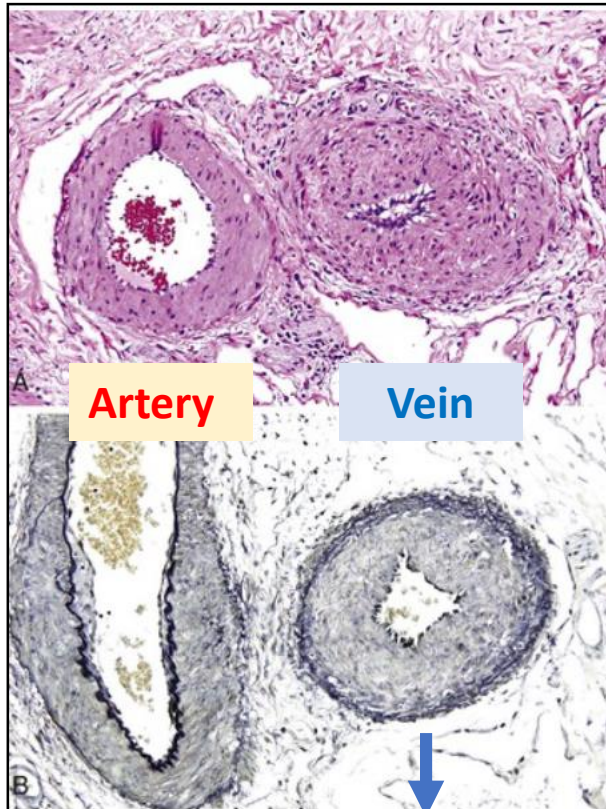
HISTOLOGY

Ulceration of the bowel wall, including submucosa and **Area with Crypt atrophy, regeneration and mucosal hemorrhage, with mild ischemic changes**

- **Concentric proliferation of smooth muscle cells in the intima of small (lamina, submucosa) to medium-sized (adventitia, mesenter) veins** → **Stenosis** of the mural and extra-mural veins **WITHOUT** inflammatory infiltrate
- **Thick-walled capillaries**/Subendothelial deposits of **fibrin/Fibrin thrombi** in small vessels



Watch the V. in mesenteric/mesorectum fat and search for small V. in the mucosa



Vein in IMHVMV : Van Gieson stain = absence of an arterial internal elastic lamina.

ENTEROCOLIC (LYMPHOCYTIC, GRANULOMATOUS, OR NECROTIZING) PHLEBITIS

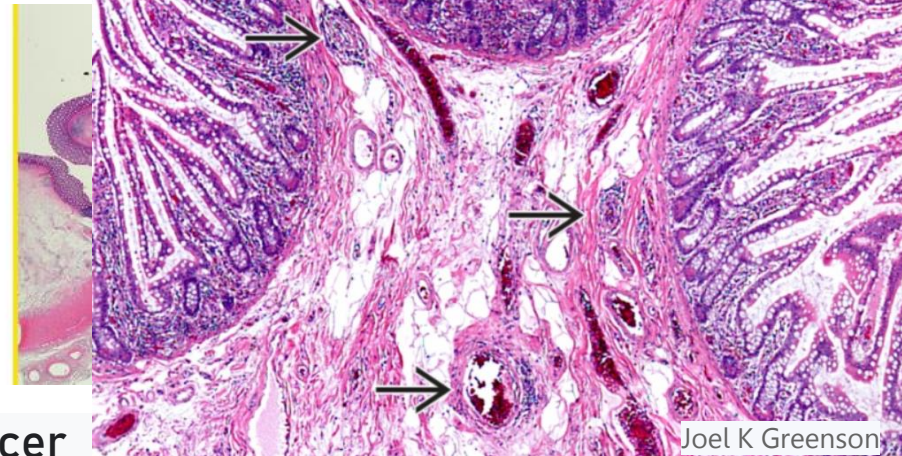
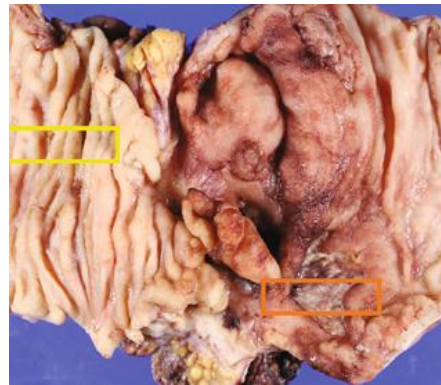
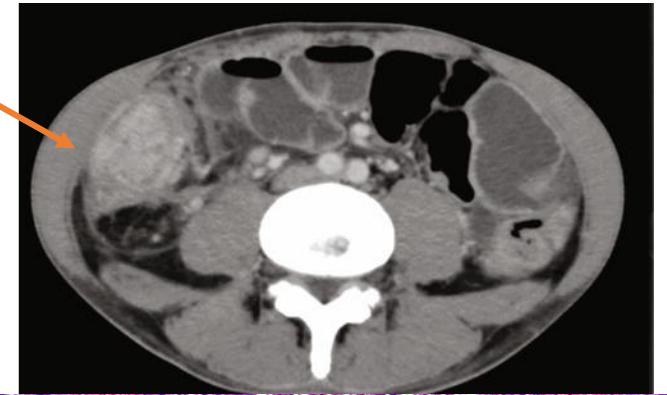
PRESENTATION

- Middle-aged to **elderly** patients
- Abdominal pain caused by **ischemia** of the right colon or terminal ileum, right-sided abdominal mass caused by caecal edema or intussusception, diarrhea and hematochezia
- Typically in the **ileocaecal region**
- Associated with drugs Lutamide (anti-androgens) hydroxyethylrutoside (>> chronic venous insufficiency)
- No pathognomonic features are present on ultrasound or CT imaging (mass, stenosis, IBD-like...)

Mesenteric inflammatory veno-occlusive disease (MIVOD) : old term

→ Resection of the affected segment of bowel is curative.

Disease recurrence has not been reported.



Watch the V. away from ulcer

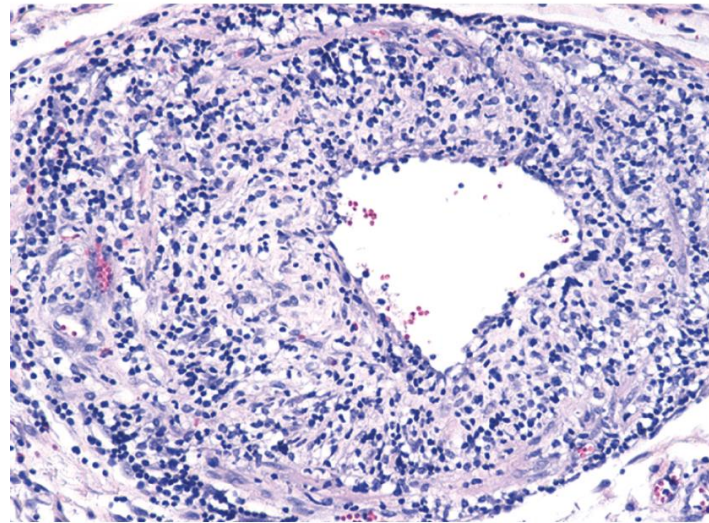
ENTEROCOLIC PHLEBITIS

HISTOLOGY

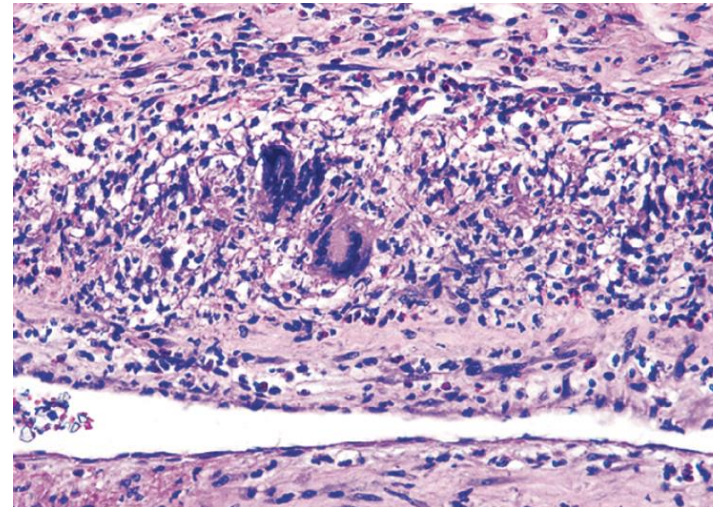
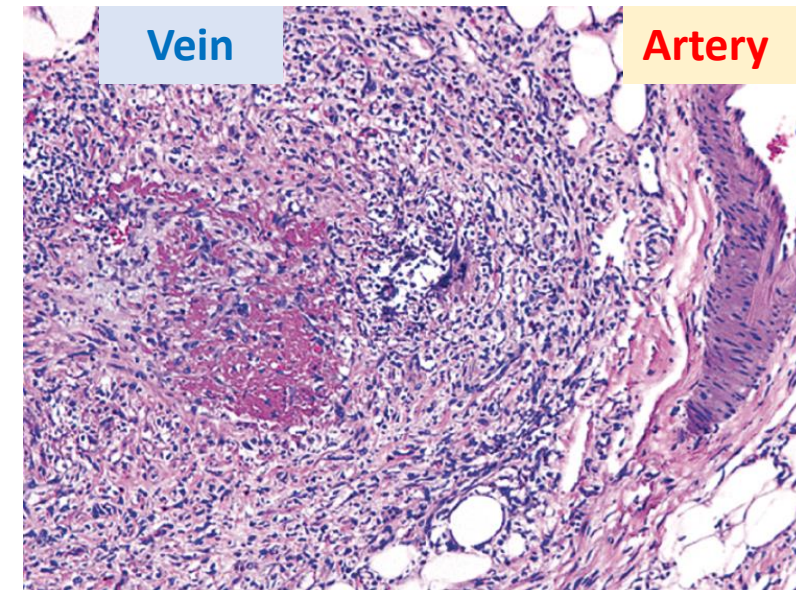
Lymphocytic phlebitis

- Diffuse infiltrate of small lymphocytes within the walls of intramural veins
- veins and venules of all sizes
- Dense perivenular cuffs
- **Granulomatous phlebitis**
- **Necrotizing phlebitis** (fibrinoid necrosis of the vessel walls, PN)
- **Foci of IMHMOV**

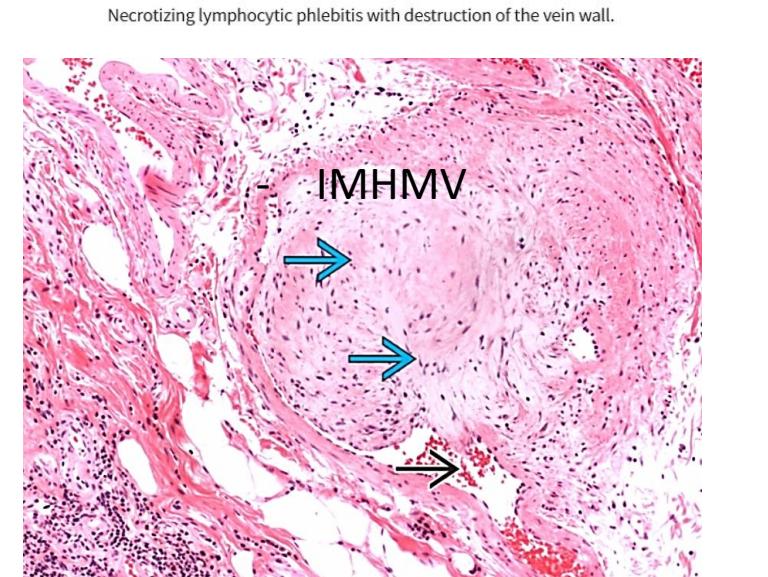
∅ MICI **but** mild ischemic changes



The infiltrate extends through all layers of the vein wall and also forms a perivascular cuff.



Granulomatous phlebitis.



Necrotizing lymphocytic phlebitis with destruction of the vein wall.

- Take more samples
- Remember to take samples outside the ulcers and in the peripheral fat and look at the vessels.
- Describe lesions and correlate with clinicians
- Describe congestive lesions in the mucosa. They may indicate the presence of a lesion close to or in the submucosa (another lesion: vascular lesion, tumors, stenosis, etc.).
- One pathology can mimic another

Thank you

