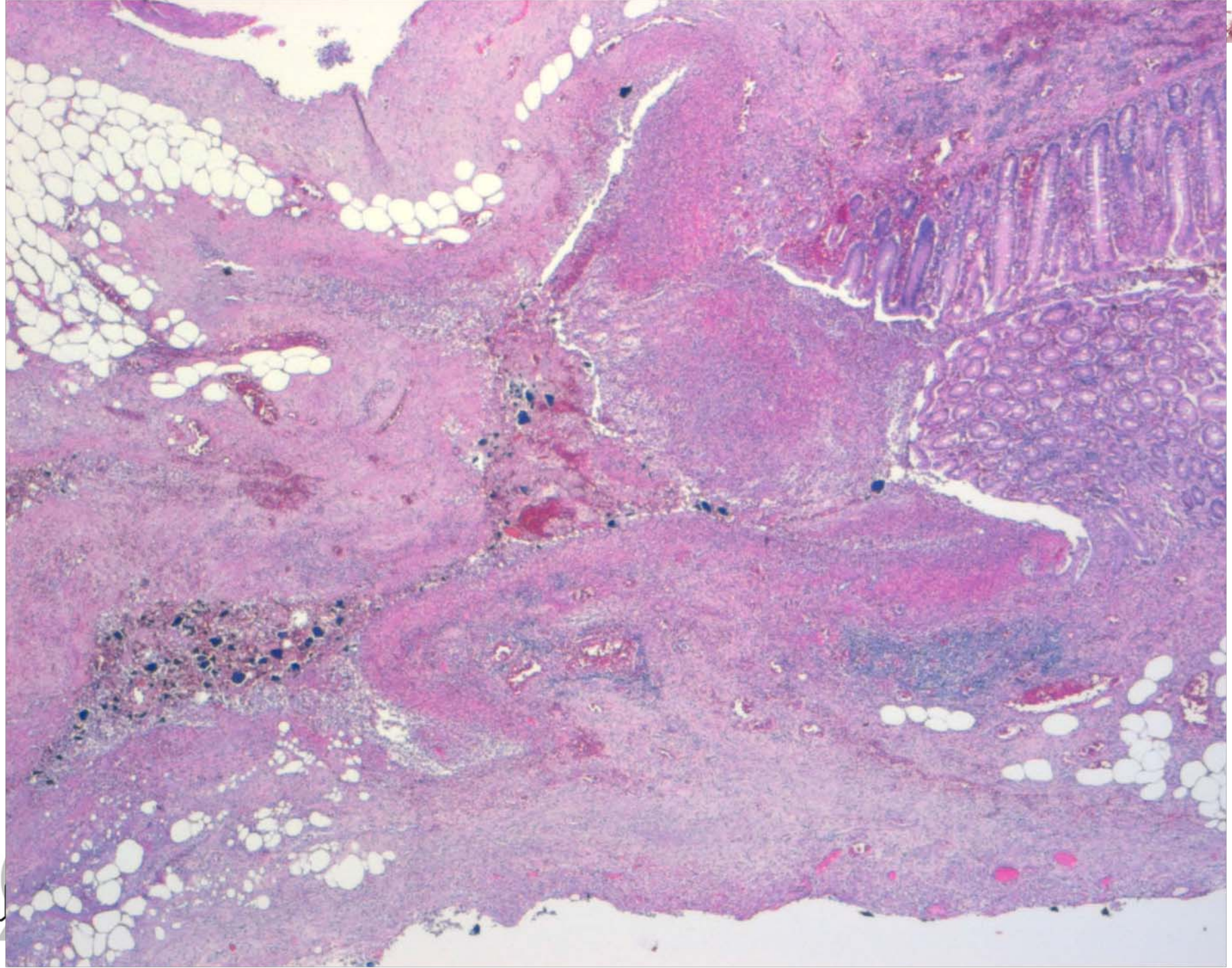
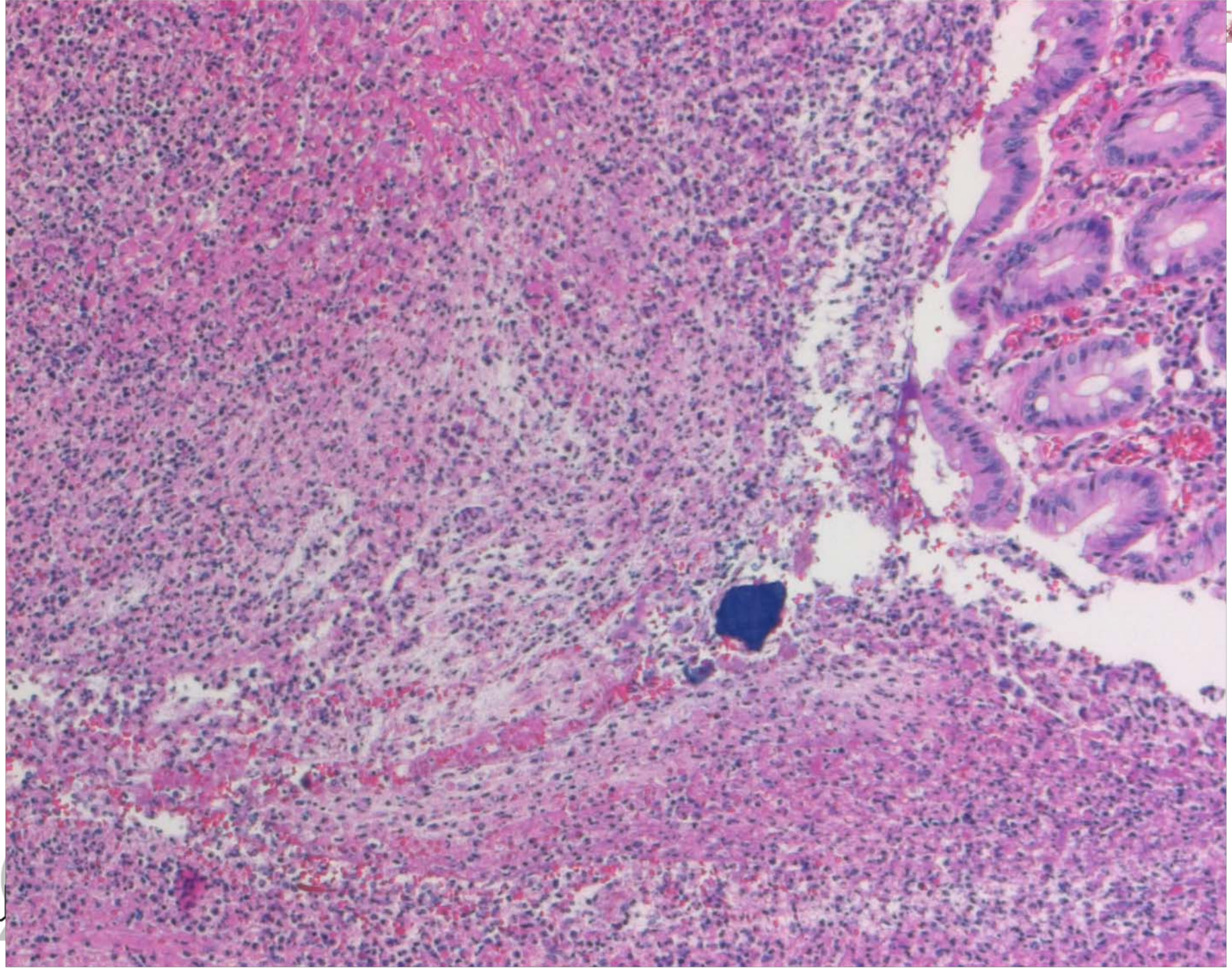
Case 9

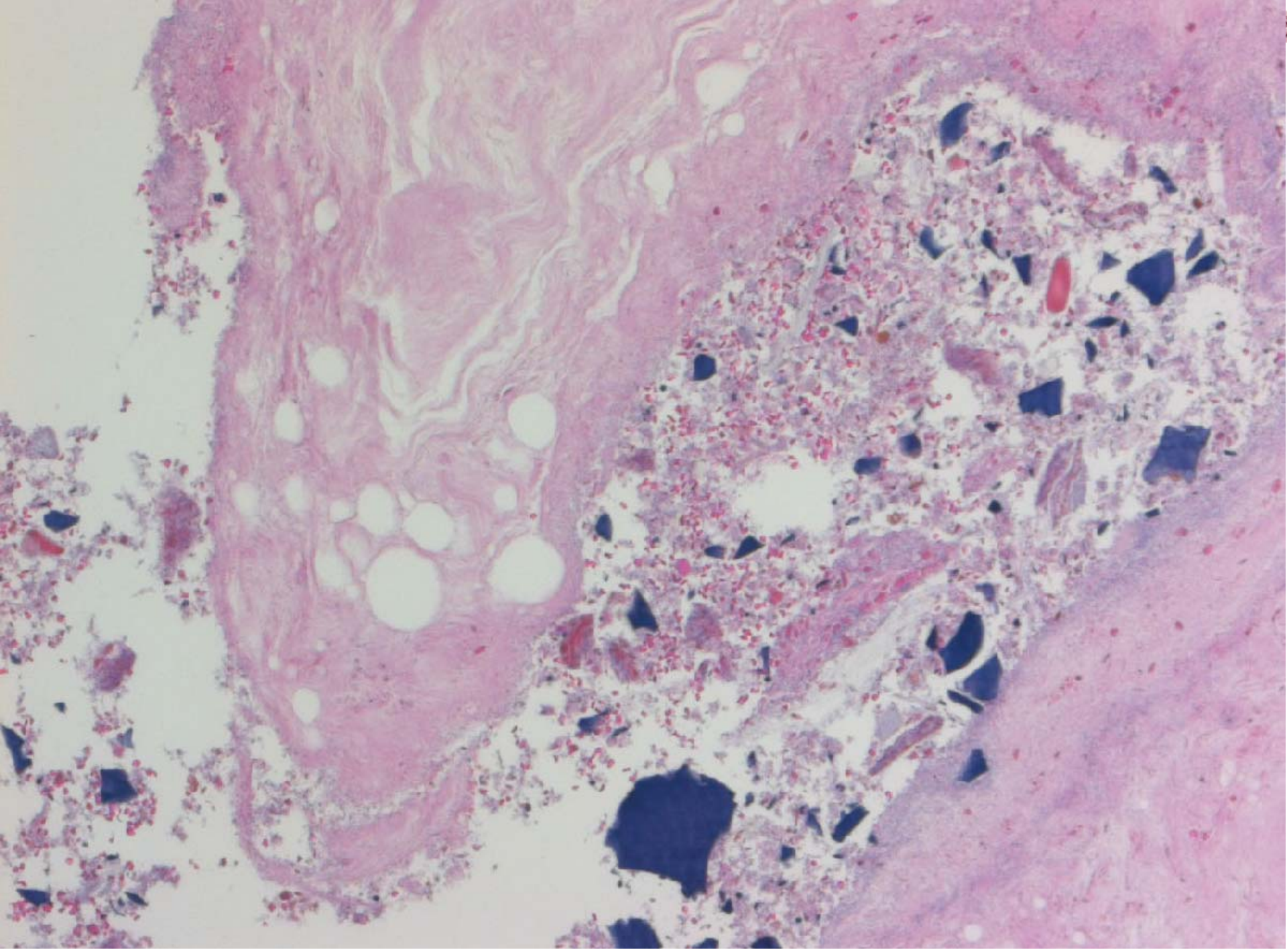
- 58 year old male. Operation for acute perforating appendicitis
- History of alcoholism, epilepsy, aspiration pneumonia
- On anti-epileptics

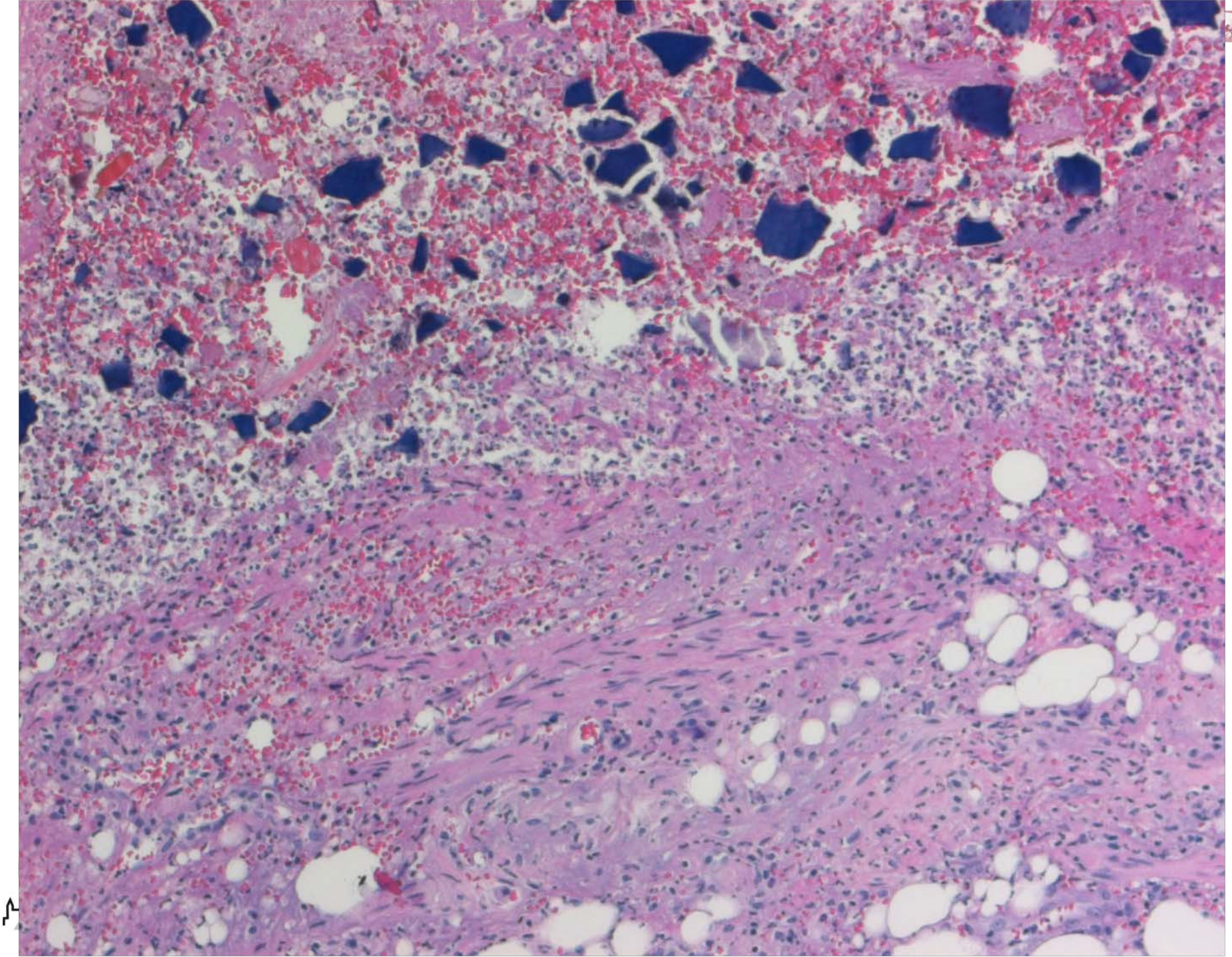
Case 9

- Perforated appendicectomy specimen





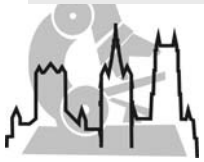




What’s your diagnosis?

Diagnosis

- Mucosal ulcerations, perforation
- (Pseudo)membranes and transmural necrosis (ischaemic lesions but no vascular disease!)
- Diagnostic crystals! What?

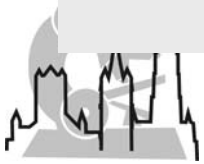


Sodium Polystyrene Sulfonate (Kayexalate) induced G-I tract necrosis

- Specific morphologic features of kayexalate!
  - Rhomboid, triangular, non-polarizable crystals
  - Basophilic crystals form mosaic pattern
  - Adherent to surface epithelium or within sloughed inflammatory exudates
  - Red with PAS and acid fast stain

Kayexalate

- Cation exchanging resin, given to patients with hyperkalaemia, acts in large intestine by binding and excreting sodium ions for potassium
- Administered topically with sorbitol, an osmotic laxative

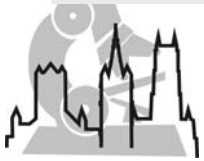


Kayexalate

- Orally administered kayexalate releases sodium ions in the stomach, binds hydrogen ions, exchanges hydrogen for potassium in small and large intestine

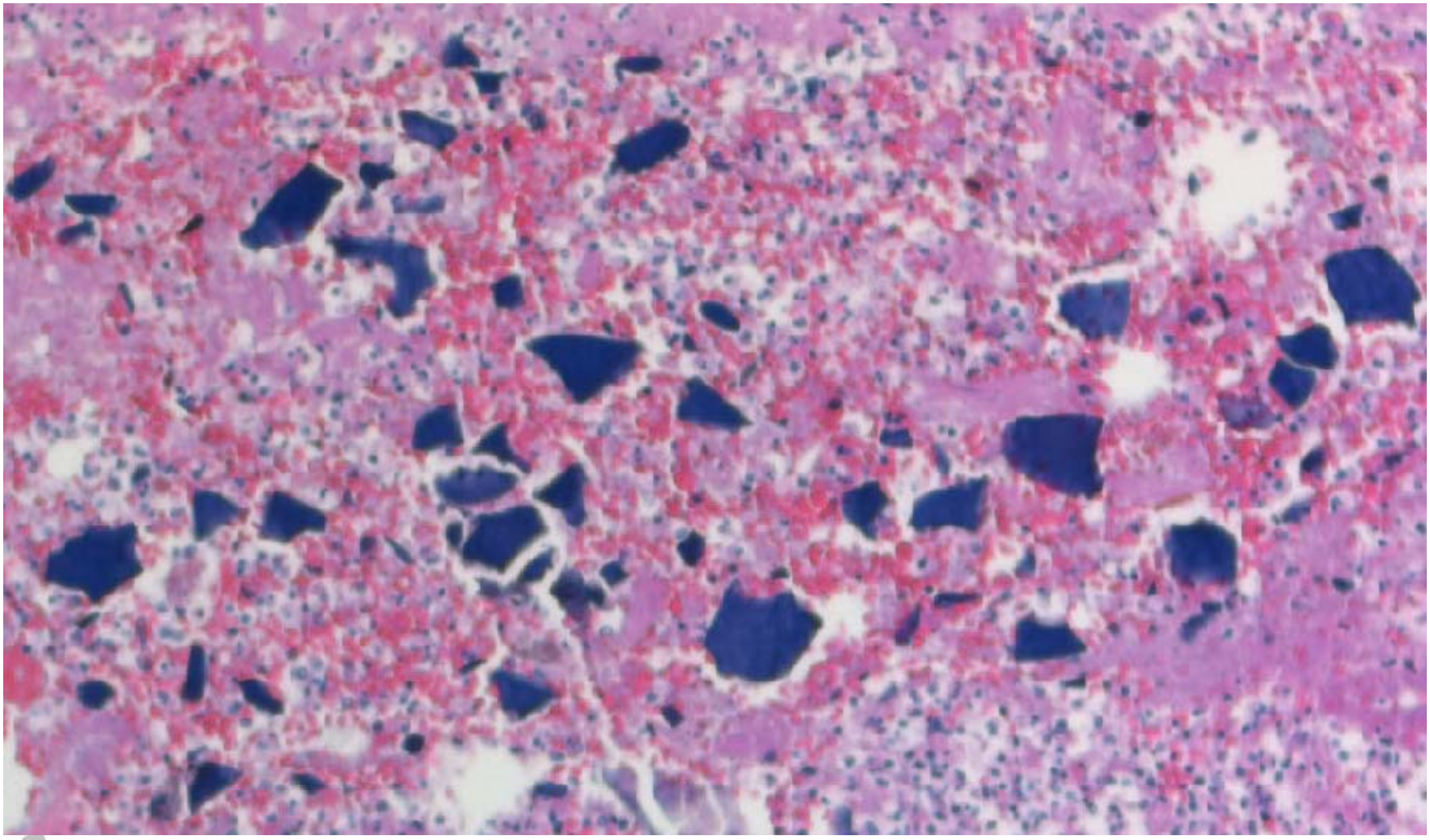
Pathogenesis

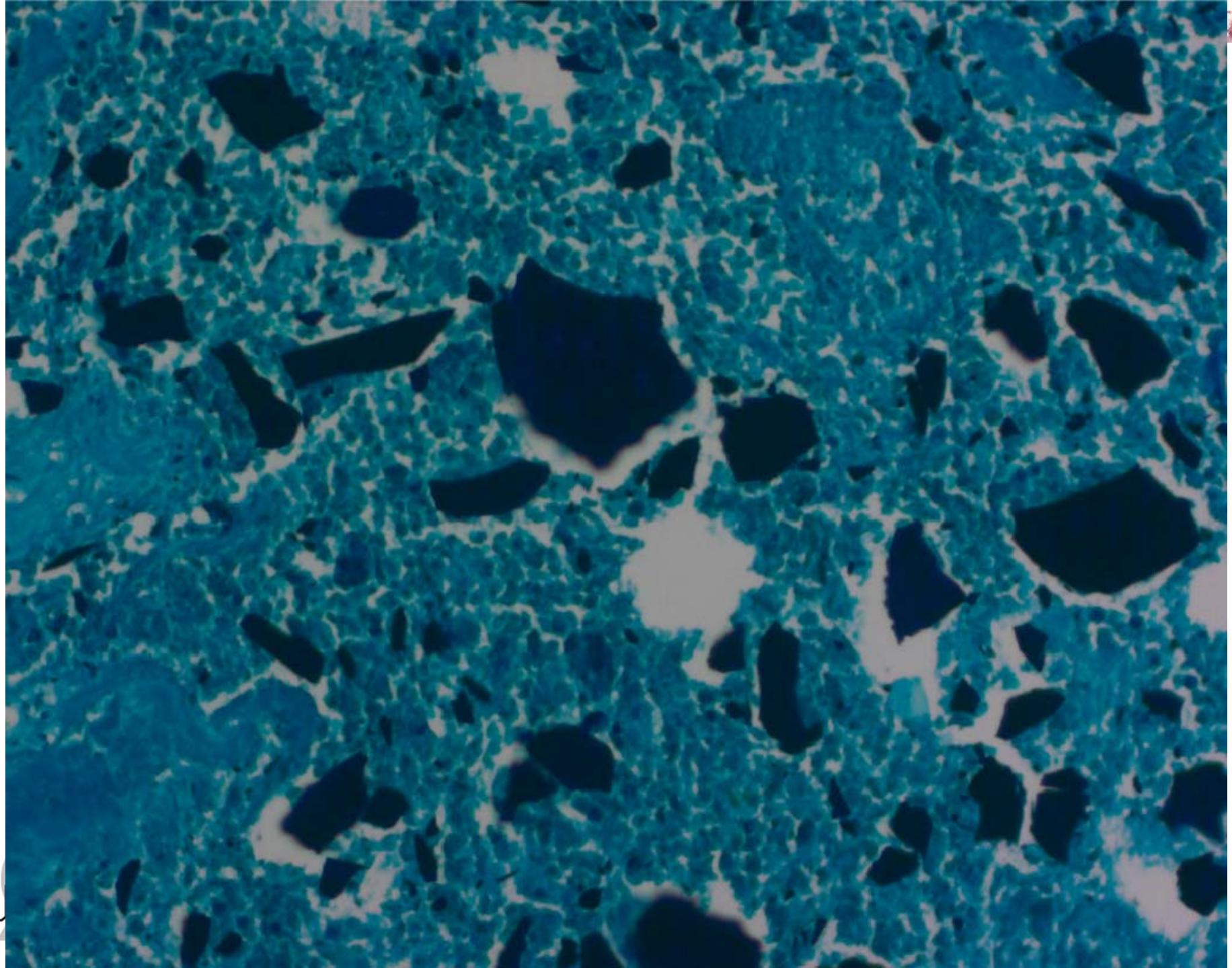
- Sorbitol induces ischaemic necrosis
- Uraemic patients are most susceptible to the vascular shunting induced by the osmotic load and vascular instability
- Hyperosmotic load may directly damage mucosa, cause vasospasm of intestinal vasculature, exacerbate inflammation through elevated prostaglandin levels

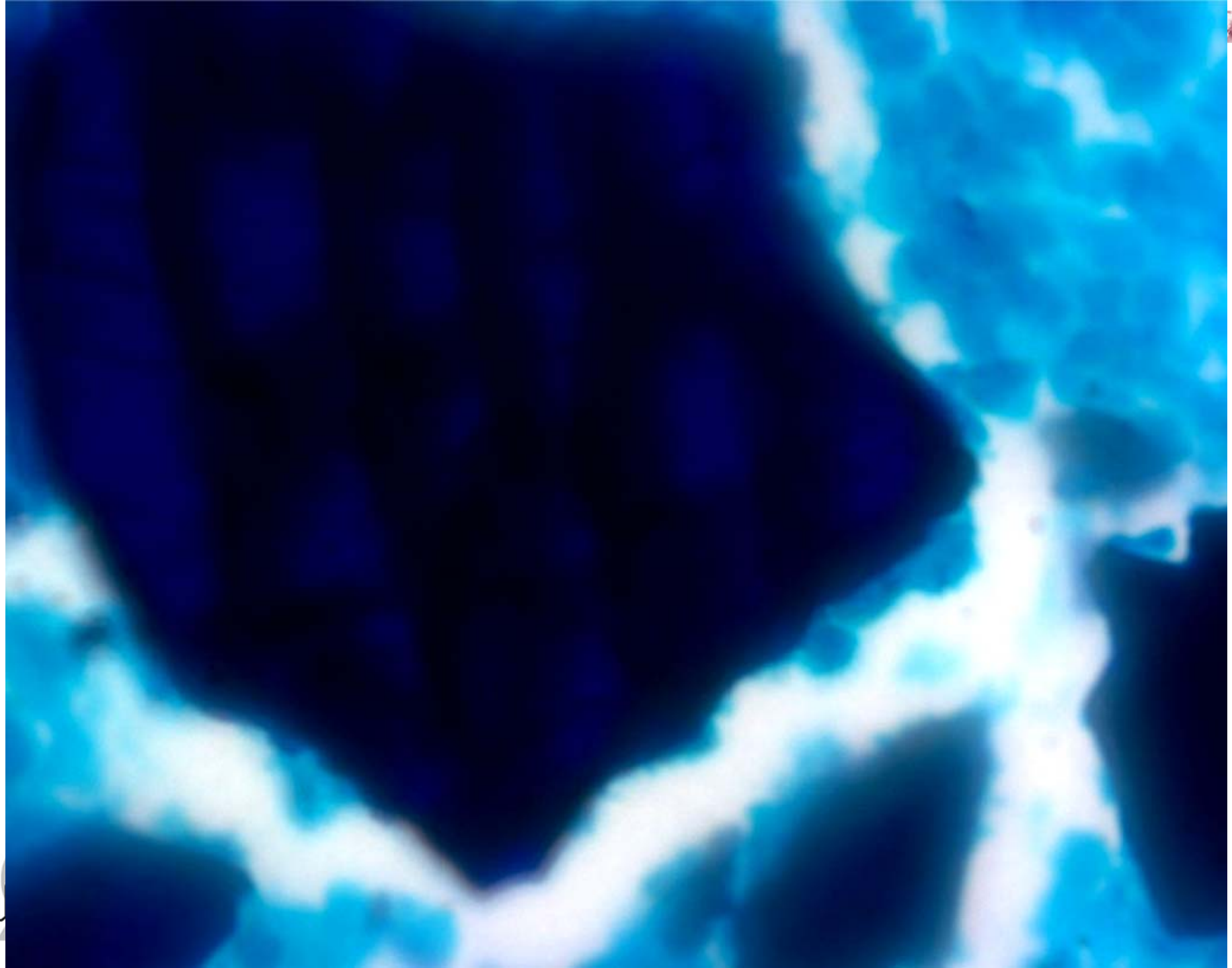


Sodium Polystyrene Sulfonate (Kayexalate) induced necrosis

- Differential diagnosis
  - **Cholestyramine**,
    - bile acid binding resin sometimes used in treatment of *C. difficile* colitis,
    - **lack mosaic pattern** and **pink** stain on acid fast stain







Kayexalate induced pathology in G-I tract

- Ulcers and erosions in oesophagus, stomach, small intestine (seem to be reversible, no serious sequelae)
- Ischaemic colitis
- Perforating appendicitis
- Enema more hazardous than oral preparations

References

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- Abraham et al. Am J Surg Pathol 25: 637-44; 2001
- Kelsey P, Chen S, Lauwers G. N Engl J Med 349: 2147-55; 2003
- Parfitt JR, Driman DK. Hum Pathol 38: 527-36; 2007