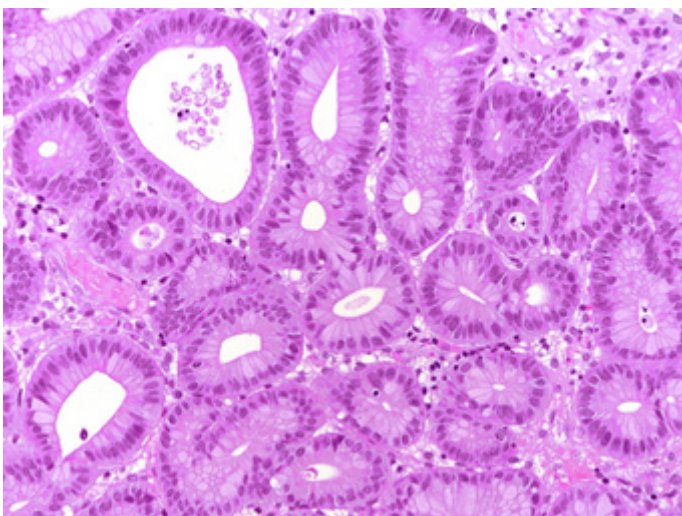
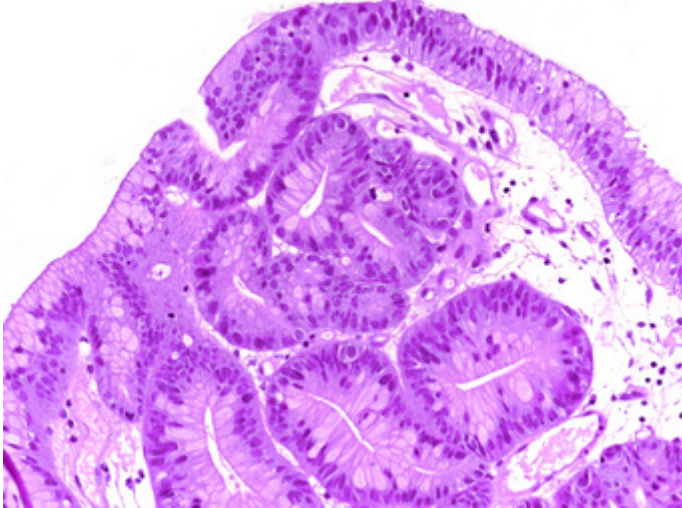
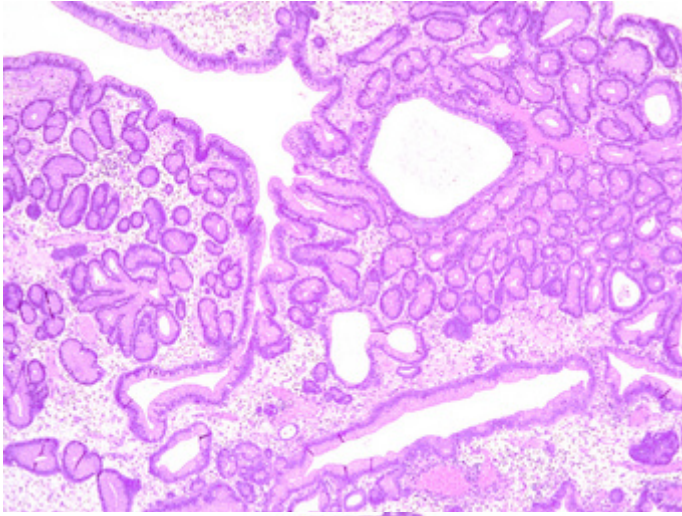
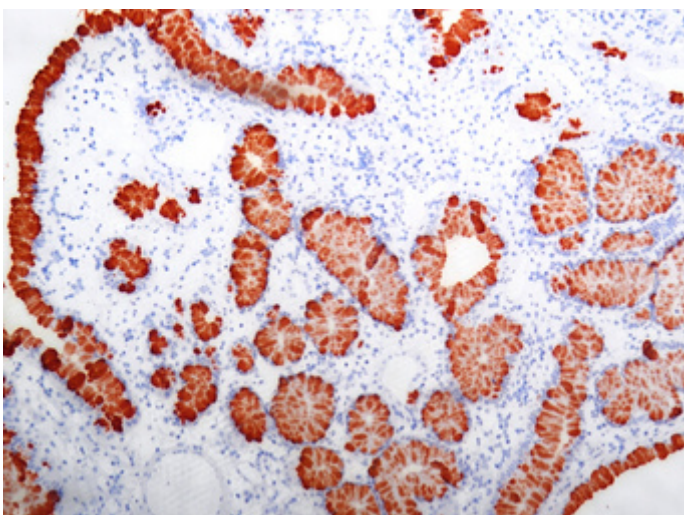
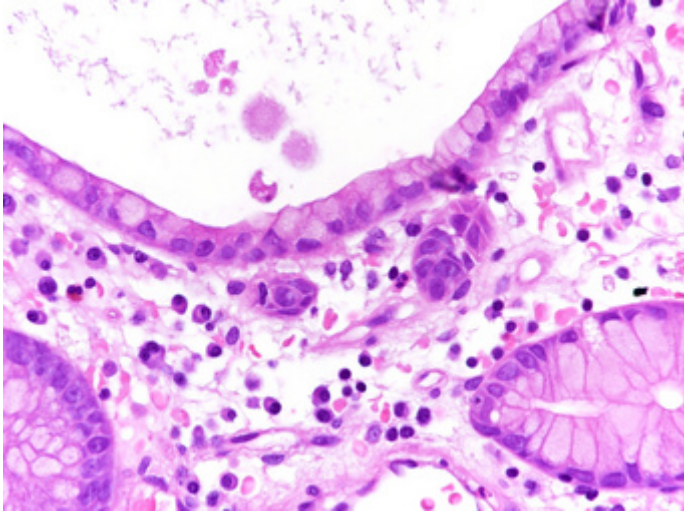
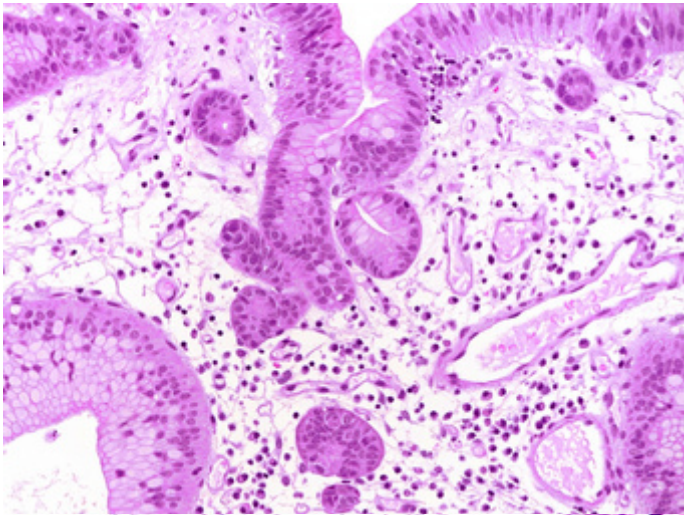
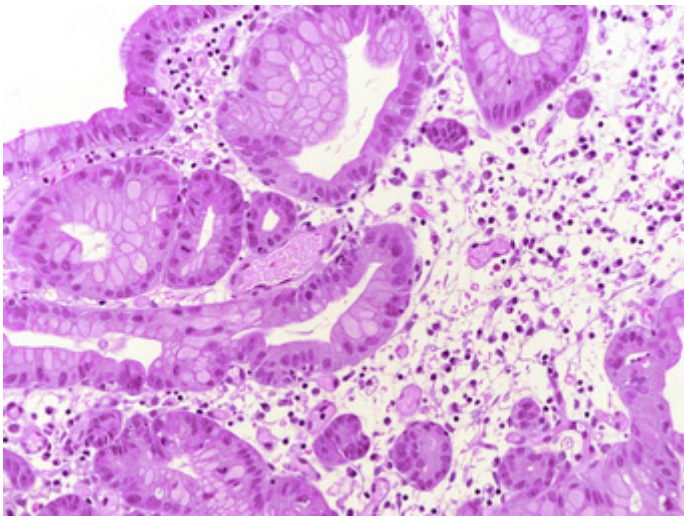


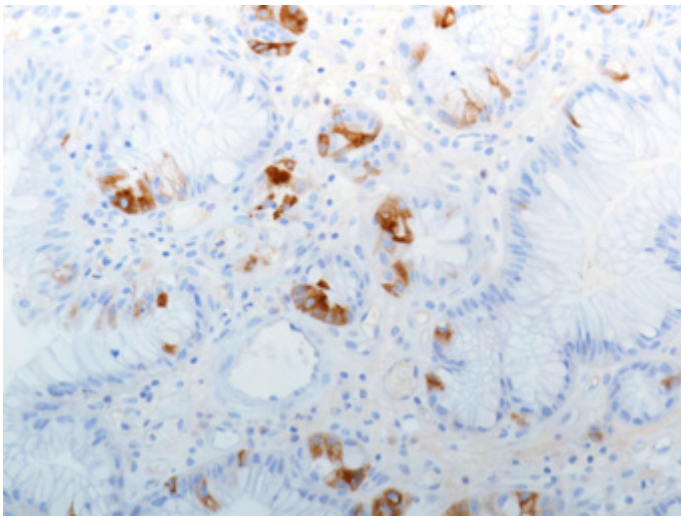
April 2018

Gastric polypectomy specimen of a 54-year-old male undergoing endoscopy for dyspeptic symptoms.

What is your diagnosis?







Diagnosis:

Well-differentiated intra-mucosal adenocarcinoma, arising in a hyperplastic polyp with high-grade foveolar-type dysplasia.

Comment:

A 54-year-old male patient underwent endoscopic investigation of his upper gastrointestinal tract. Endoscopy showed a pedunculated polyp in the corpus (12 mm in largest diameter), which was removed by snare and submitted for pathological analysis.

The polyp was composed of architecturally distorted foveolar epithelium with elongated and cystically dilated glands that were embedded within an oedematous stroma containing a mixed inflammatory infiltrate. Parts of the glandular epithelium revealed enlarged, oval, nuclei with vesicular chromatin, moderate pleomorphism and prominent nucleoli. We also observed focal loss of nuclear polarity. These changes were associated with a complex gland architecture, including atypical gland branching with lateral expansion, cribriforming and budding. Apoptotic cells and small clusters of cells as well as necrotic debris were focally present in glandular lumina (Panels A to F).

Immunohistochemistry was performed and demonstrated diffuse staining for the superficial gastric mucin MUC5AC (Panel G), proving the foveolar nature of the lesion. Only a minority of cells were positive for the deep gastric mucin MUC6 (Panel H). MUC2 and CDX2 were negative, and a final diagnosis of hyperplastic polyp with high-grade foveolar-type dysplasia (and transition into mucosal adenocarcinoma; compare below) was made.

Hyperplastic polyps are considered a common, often incidental finding in the stomach. They are usually found in a background of chronic gastritis, which is often of autoimmune type. Dysplasia can be observed in up to 20% of cases and is related to polyp size. Carcinoma is uncommon and believed to develop from dysplastic epithelium. Cancers are found predominately in patients older than 50 years.

Facing the morphology depicted above, pyloric gland adenoma appears to be the most important differential diagnosis. While hyperplastic polyps are characterized by irregular and architecturally distorted foveolar epithelium with cystically dilated glands, an oedematous stroma as well as surface erosions with consequent inflammation, pyloric gland adenomas typically show tightly packed tubules of cuboidal to columnar cells with a mucinous, pale eosinophilic cytoplasm, resembling the cells of pyloric glands. However, morphology may overlap, and in such a positive staining for MUC5AC and negative staining for MUC6 support a diagnosis of hyperplastic polyp whereas strong and diffuse positivity for MUC6 (alone or in conjunction with MUC5AC) support the diagnosis of pyloric gland adenoma.

It should be noted that despite the foveolar phenotype of the epithelium, and similarly to the rest of the stomach, dysplasia found in hyperplastic polyps can also be of the intestinal type, characterized by hyperchromatic, elongated and pseudostratified nuclei with increased architecture complexity, which is positive for MUC2 and/or CDX2 on the immunohistochemical level. Mixed types between foveolar and intestinal dysplasia have been described. The recognition of foveolar type dysplasia is often challenging. The presence of cuboidal or tall columnar cells with eosinophilic to amphiphilic cytoplasm, ovoid nuclei with prominent nucleoli and variable pleomorphism renders a diagnostic clue. Atypical gland branching with lateral expansion, fusion of glands, cribiforming and back-to-back crowding, budding, as well as luminal apoptotic debris indicate transition into carcinoma.

For further reading:

- › Park DY, Srivastava A, Kim GH, Mino-Kenudson M, Deshpande V, Zukerberg LR, Song GA, Lauwers GY. Adenomatous and foveolar gastric dysplasia: distinct patterns of mucin expression and background intestinal metaplasia. *Am J Surg Pathol*. 2008 Apr;32(4):524-33.
- › Carmack SW, Genta RM, Graham DY, Lauwers GY. Management of gastric polyps: a pathology-based guide for gastroenterologists. *Nat Rev Gastroenterol Hepatol*. 2009 Jun;6(6):331-41.
- › Ushiku T, Arnason T, Ban S, Hishima T, Shimizu M, Fukayama M, Lauwers GY. Very well-differentiated gastric carcinoma of intestinal type: analysis of diagnostic criteria. *Mod Pathol*. 2013 Dec;26(12):1620-31.
- › Huang Q, Zou X. Clinicopathology of Early Gastric Carcinoma: An Update for Pathologists and Gastroenterologists. *Gastrointest Tumors*. 2017 Mar;3(3-4):115-124.

Presented by:

Daniel PINTO, Lisbon, Portugal and Marion POLLHEIMER and Cord LANGNER, Graz, Austria.