

Gastric polyps

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Abstract

Frequently encountered in pathology practice, gastric polyps are defined as luminal projections above the plane of the adjacent mucosa. These can be non-neoplastic, neoplastic or hamartomatous and syndromic. The classification of gastric polyps has important clinical implications and provides targeted clues towards discovering abnormalities in the remaining gastric mucosa or even elsewhere in the body in syndromic cases. The primary goal in the classification of gastric polyps is to exclude dysplasia and malignancy. Due to the tendency of some gastric polyps to arise in a background of inflammatory or atrophic gastritis or in association with polyposis syndromes, the second major diagnostic goal is to evaluate the surrounding flat mucosa. Numerous types of gastric polyps have been extensively described in the literature. The aim of this article is to review the most commonly encountered polyps in routine practice as well as a few special types of polyps and to describe their histologic features and their clinical implications.

Keywords gastric polyps; pathology; review

Introduction

Gastric polyps are usually discovered incidentally during routine endoscopy. Large polyps can occasionally present with haemorrhage, anaemia, or gastric outlet obstruction.¹ The endoscopic appearance of gastric polyps varies, causing difficulty in characterizing them by endoscopy alone. Therefore, histologic examination remains essential in classifying the gastric polyps. Though challenging, the histological classification of gastric polyps is distinctively clinically relevant. In evaluating gastric polyp biopsies, the main goal of pathologists is to identify whether a polyp is dysplastic or not, while remaining aware of the prognostic implications of each subtype of polyp. Many subtypes of gastric polyps arise in a background of chronic gastritis (*Helicobacter pylori* or autoimmune-driven) or in association with a polyposis syndrome. Therefore, classifying polyps provides helpful clues regarding the aetiology of the polyp as well as any possible abnormalities in the background flat mucosa.² The following discussion is focused on the histological and clinical implications of non-neoplastic, neoplastic and hamartomatous/syndromic gastric polyps.

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Non-neoplastic

Hyperplastic polyp

Hyperplastic polyps are the second most commonly encountered form of gastric polyps after fundic gland polyps.¹ These polyps can arise anywhere in the stomach with slight predominance in antrum and present with varying sizes, ranging from a few millimeters to a few centimeters. Hyperplastic polyps are histologically characterized by foveolar hyperplasia, including dilated and elongated pits within a loose, oedematous, and inflamed lamina propria (Figure 1). The surface can be eroded or ulcerated causing marked reactive epithelial changes mimicking dysplasia. True dysplasia in hyperplastic polyps is rare, present in only 1.5%–3% of all cases.^{3,4} The presence of intraepithelial neutrophils, prominent nucleoli and adjacent erosion/ulcers serve as helpful clues to reactive changes. Unlike the colonic counterpart of these polyps, which arise in an unremarkable background mucosa, gastric hyperplastic polyps tend to arise in response to a variety of mucosal injuries and abnormalities. They are strongly associated with chronic gastritis driven by *H. pylori* and chemical or autoimmune gastritis. Although considered a non-neoplastic process, due to the background mucosal abnormalities, patients with hyperplastic polyps are at increased risk of adenocarcinoma arising in the surrounding tissue.^{5,6} In cases in which *H. pylori* gastritis is present in the background, eradication of *H. pylori* may result in regression of most hyperplastic polyps.⁷ Additionally, the diagnosis of autoimmune gastritis in the background is particularly important due to the clinical consequences. Patients with autoimmune gastritis are at increased risk of well differentiated neuroendocrine (carcinoid) tumors (WDNETs), which are discussed in detail below. The behaviour, prognosis and management of WDNETs that arise in the background of autoimmune gastritis differ from those of the sporadic counterpart neuroendocrine tumours that arise in normal gastric mucosa. The former are often smaller, multiple and carry negligible risk of metastasis.^{8,9} These scenarios highlight the importance and necessity of evaluation of the state of the background flat mucosa for accurate classification and proper treatment of gastric polyps. In the absence of such biopsies, a good practice underscores the association of hyperplastic polyps with potential background inflammatory gastritis and the importance of assessment of nonpolypoid mucosa.

Inflammatory fibroid polyp

Inflammatory fibroid polyps (IFPs), also known as Vaněk polyps, are rare forms of polyps found in the gastric pylorus or distal antrum. In 1949, Vaněk described these lesions as submucosal granulomas with eosinophilic infiltration.¹⁰ Inflammatory fibroid polyps are typically solitary, small and sessile. Histologically, IFPs present as unique lesions centered in the submucosa and are composed of spindle and stellate stromal cells, thin-walled blood vessels admixed with predominantly eosinophilic inflammatory cells (Figure 2). The spindle cells demonstrate immunoreactivity for CD34, but not for CD117/KIT or DOG1. Although IFPs were once thought to be reactive lesions, multiple studies have found an activating mutation in the platelet-derived growth factor receptor alpha (*PDGFRA*) gene supporting IFPs' neoplastic origin.^{11,12} Though neoplastic, IFPs are benign. As such, no

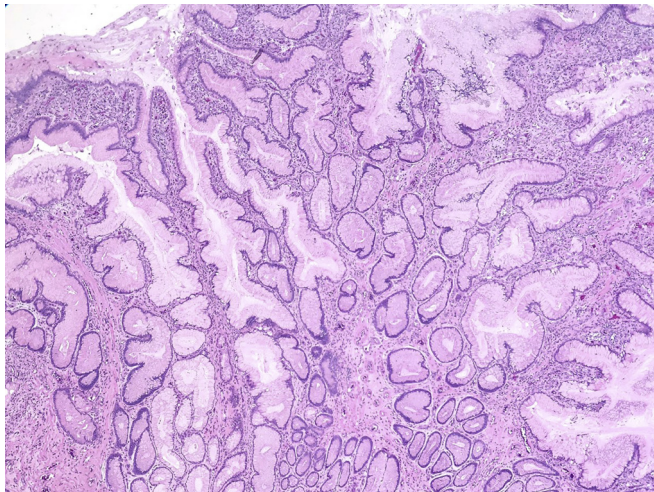


Figure 1 Gastric hyperplastic polyp is characterized by elongated, dilated foveolae and inflamed stroma.

endoscopic surveillance is required after the histological diagnosis is confirmed.¹

Xanthoma

Xanthomas are small plaque or nodules (sized <3 mm) in gastric mucosa, which typically occur in multiples and are located along the lesser curvature and pyloric region. An association between xanthoma and chronic gastritis has been reported by some authors.^{4,13,14} Histologically, these polyps are composed of collections of lipid laden macrophages in the lamina propria (Figure 3). Gastric xanthomas are not correlated with hypercholesterolaemia and are of little clinical significance by themselves. The differential diagnosis includes *mycobacterium avium* complex gastritis, signet ring cell carcinoma and metastatic renal cell carcinoma.¹⁵ When in doubt about the diagnosis, it is prudent to perform both CD68 and keratin staining in such lesions in order to confirm their histiocytic origin and exclude the possibility of carcinoma.⁹

Heterotopia

Pancreatic heterotopia is most commonly observed in the oesophagus, stomach, duodenum and jejunum. Usually located in the submucosa, the heterotopic tissue contains varying combinations of pancreatic acinar cells, ducts and islet cells (Figure 4). While pancreatic heterotopia is usually of little clinical significance, occasionally it presents as a mass in gastric antrum and leads to gastric outlet obstruction.¹⁶ Similarly, Brunner gland heterotopia can sometimes present as a polyp in prepyloric antrum and cause gastric outlet obstruction.¹⁷

Neoplastic polyps

Fundic gland polyp

Fundic gland polyps (FGPs) are the most commonly encountered form of gastric polyps. As the name implies, these are typically restricted to the fundus and body of the stomach. FGPs can be observed sporadically, in association with familial adenomatous polyposis (FAP), or as part of a familial condition confined to the stomach without polyposis coli.^{18–20} Endoscopically, these are small and sessile polyps with smooth and glassy surfaces,

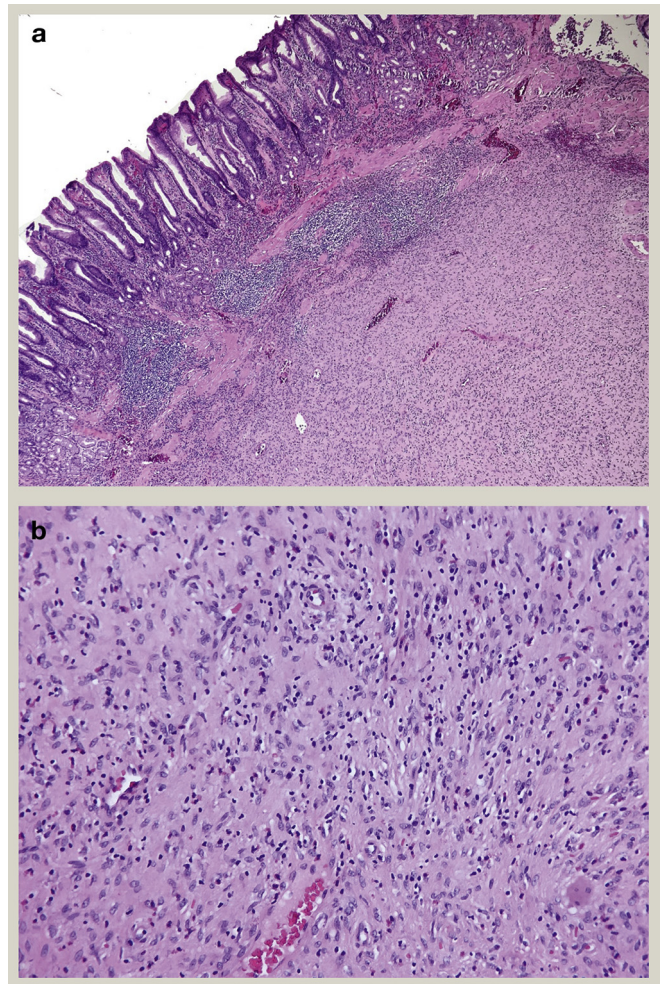


Figure 2 Inflammatory fibroid polyp (a) low magnification showing the submucosal location (b) at higher magnification, the polyp is composed of spindle and stellate stromal cells, thin-walled blood vessels admixed with predominantly eosinophilic inflammatory cells.

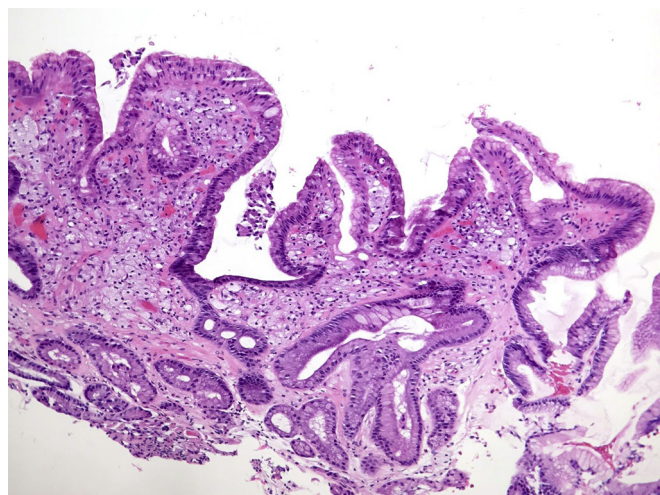


Figure 3 Gastric xanthoma is composed of collections of lipid laden macrophages in the lamina propria.

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