Gastric polyps and dysplasia

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Abstract

Gastric polyps are not uncommonly encountered at endoscopy and their discovery will normally precipitate a biopsy to determine the nature of the lesion. The foundation for arriving at the correct diagnosis is to be aware of the entities that exist and to this end we offer a classification based on histogenesis to aid the diagnostic endeavour. The vast majority of polyps encountered are epithelial in origin and so this review will focus mainly on epithelial polyps. Like elsewhere in the gastrointestinal tract, epithelial polyps can be associated with dysplasia which can be challenging to diagnose and grade. Dysplasia in the upper gastrointestinal tract has undergone recent reclassification and so we provide update and discussion on this neoplastic process as it applies to the stomach.

Keywords adenoma; dysplasia; fundic gland polyp; hyperplastic polyp; neuroendocrine tumour; polyp; stomach

Introduction

The term gastric polyp usually refers to any lesion which projects above the mucosal plane into the lumen of the stomach. Polyps are identified during 2–6% of upper GI endoscopies, mainly as incidental findings.[1–5] Although there may be some endoscopic clues as to the subtype, histological examination is necessary to evaluate the wide and varied differential diagnosis.

This review aims to offer the reader a succinct and practical classification system for diagnosing gastric polyps. A detailed description of all gastric polyps is however beyond the scope of this article and in this respect the reader is referred to a number of excellent texts.[5,6] Instead, we will focus the discussion on the more common entities, particularly epithelial polyps, and those for which new morphological data as emerged in recent years. Dysplasia can also occur as a polypoid lesion and will also be discussed herein.

Classification of gastric polyps

In the simplest classification, gastric polyps can be divided into neoplastic and non-neoplastic categories. Although simple at first glance, this scheme still requires further subclassification to allow consideration of all entities. We feel that a more practical classification relies on the pathologist recognizing and assigning the histogenesis of the polyp in the first instance, which can be followed by assessment for neoplastic potential. This classification is summarized in Table 1.

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Epithelial polyps

Epithelial polyps represent the most prevalent type of gastric polyps. These can be further subdivided into non-neoplastic and neoplastic polyps, the latter of which includes adenomas that by definition exhibit dysplasia. Fundic gland polyps have traditionally been regarded as hamartomatous lesions but increasing evidence suggests that these may be neoplastic. Consideration should also be given to adenocarcinoma and metastatic tumours, both of which can present as a polyp endoscopically.

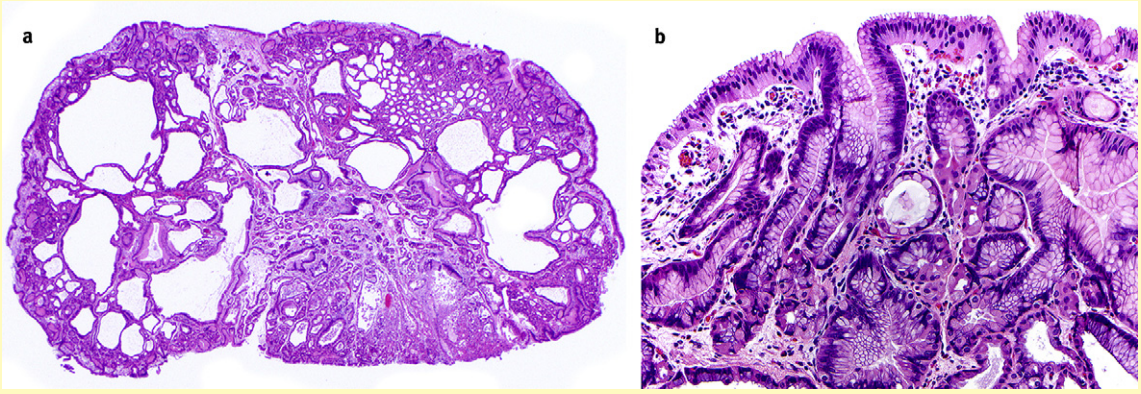
Fundic gland polyps

FGPs are now recognized as the most common type of gastric polyp, accounting for 77% of all polyps in a recent large study with an overall prevalence in the general population of 3–11%.[5] They occur either sporadically or in the setting of Familial Adenomatous

Histogenetic classification of gastric polyps

Cell of origin	Entity
Epithelial	Fundic gland polyp
	Hyperplastic polyp
	Adenoma including pyloric gland adenoma
	Neuroendocrine tumour
	Polyp cancer
	Metastatic carcinoma
Mesenchymal	Inflammatory fibroid polyp
	Gastrointestinal stromal tumour
	Inflammatory myofibroblastic tumour
	Smooth muscle tumours
	Glomus tumour
	Neural tumours
	Schwannoma
	Ganglioneuroma
	Granular cell tumour
	Adipocytic tumours
	Vascular tumours
Lymphoid/inflammatory	Polypoid gastritis
	Lymphoid hyperplasia
	Lymphoma
Miscellaneous	Xanthoma
	Pancreatic heterotopia
	Brunner gland adenoma
	Granuloma
	Amyloid
	Histiocytosis X
	Non-epithelial metastatic tumour e.g. malignant melanoma

Table 1



a Typical fundic gland polyp at low power showing numerous cystically-dilated oxyntic glands with overlying foveolar-type epithelium. **b** Surface of fundic gland polyp lined by bland foveolar epithelium.

Figure 1

Polyposis (FAP). Sporadic FGPs are much more common, and their increased prevalence probably relates to their putative association with proton pump inhibitors. There has been some debate whether or not there is a negative association with *Helicobacter pylori* infection.[7] Most patients with FGPs are asymptomatic although non-specific gastrointestinal symptoms may occur in association with larger lesions. Endoscopically, FGPs appear as smooth, translucent, circumscribed mucosal elevations located in the body-fundic oxyntic mucosa. They can be single but are more commonly multiple (<10), and most measure less than 5 mm. Histology shows one or more cystically dilated fundic-type glands lined by flattened parietal cells with a degree of architectural distortion. The surface comprises foveolar-type epithelium which may appear atrophic (Figure 1). Assessment of the surrounding oxyntic glands may show parietal cell hyperplasia, hypertrophy and vacuolation which imparts a somewhat serrated appearance, all features which are suggestive of PPI drug use.[8] In the setting of PPI therapy, one may also see ECL cell hyperplasia; antral tissue sampled may show evidence of G cell hyperplasia. The finding of multiple FGPs (>10) in a young person should prompt both the pathologist and clinician to consider the possibility of FAP. In this scenario, follow-up with colonoscopy or flexible sigmoidoscopy may have some merit.[9]

FGPs were previously considered hamartomatous lesions but the association of genetic alterations in both sporadic and FAP-associated polyps suggests that both may be neoplasms. Mutations in the *APC — β-catenin* pathway have been encountered in both types of FGP however, in FAP, the polyps are more frequently demonstrate *adenomatous polyposis coli* (APC) gene (90%) mutations, compared to *β-catenin* mutations (10%).[10] The converse is true in sporadic FGPs, which more often harbour activating mutations in the *β-catenin* gene.[11]

Dysplasia is rare in sporadic FGPs but is encountered in a significant number of FAP-associated polyps. Interestingly, sporadic FGPs found to harbour dysplastic foci are more frequently associated with *APC* gene mutations, suggesting that this subgroup is phenotypically akin to FAP-associated FGPs (Figure 2).[12]

Regression of FGPs has been noted to occur despite evidence accruing that these are neoplastic. If clinically appropriate, such as in the setting of large sporadic polyps, PPI therapy may be discontinued. Some studies have suggested however, that PPI therapy may be protective against dysplasia in FAP-associated FGPs.[2,13] The risk of dysplasia in sporadic polyps is very low and although polypectomy is not necessary, biopsy is useful in order to exclude dysplasia; endoscopic surveillance is not recommended.[2,9] Follow-up guidelines for patients with FAP are not well established but in this setting, annual screening and surveillance is probably advisable as their risk of dysplasia is greater.

Hyperplastic polyps and variants

Hyperplastic polyps comprise approximately 17% of all gastric polyps, although a wide variation has been reported.[2,5,6,14] This variation likely reflects prescribing practices for proton pump inhibitors, surgical practice and the prevalence of *Helicobacter* infection.

Hyperplastic polyps occur against a background of chronic gastritis and it is considered that these lesions develop as the result of an exaggerated mucosal response to injury.[15] An association with *H. pylori* infection has been reported but hyperplastic polyps can also be associated with autoimmune gastritis and bile reflux.[9] Solid organ transplant has also been reported as a risk factor.[16,17]

Hyperplastic polyps are typically observed in the antrum and are often multiple. Less often they are noted in the cardia, where there is an association with reflux disease. Multiple hyperplastic polyps can be found in patients with Menetrier's disease. Macroscopically, they are smooth, dome-shaped and usually measure between 0.5 and 1.5 cm but may exceed 2 cm. Larger lesions are prone to surface erosion which can result in chronic blood loss and possibly iron-deficiency anaemia. Gastric outlet obstruction is a rare complication of large hyperplastic polyps.[18–20]

Histologically, hyperplastic polyps comprise variably elongated, distorted and branching foveolae lying within an oedematous and inflamed stroma (Figure 3). The foveolae are lined by a single layer of foveolar-type epithelium. Pyloric-type glands and foci of intestinal metaplasia may be seen but in general the gastric