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Management of Gastric Polyps: An Endoscopy-Based Approach

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The endoscopic finding of a gastric polyp and the histopathologic report that follows may leave clinicians with questions that have not been addressed in formal guidelines: do all polyps need to be excised, or can they just be sampled for biopsy? If so, which ones and how many should be sampled? What follow-up evaluation is needed, if any? This review relies on the existing literature and our collective experience to provide practical answers to these questions. Fundic gland polyps, now the most frequent gastric polyps in Western countries because of widespread use of proton pump inhibitors, and hyperplastic polyps, the second most common polyps notable for their association with gastritis and their low but important potential for harboring dysplastic or neoplastic foci, are discussed in greater detail. Adenomas have had their name changed to *raised intraepithelial neoplasia* and are decreasing in parallel with *Helicobacter pylori* infection; however, they do retain their importance as harbingers of gastric cancer, particularly in East Asia. Gastrointestinal stromal tumors have low incidence and no known associations, but their malignant potential is high; early diagnosis and proper management are crucial. Although rare and benign, inflammatory fibroid polyps need to recognized, particularly by pathologists, to avoid misdiagnosis. Gastric neuroendocrine tumors (carcinoids) are important because of their association with either atrophic gastritis or the multiple endocrine neoplasia syndromes; those that do not arise in these backgrounds have high malignant potential and require aggressive management. The review concludes with some practical suggestions on how to approach gastric polyps detected at endoscopy.

Keywords: Gastric Polyps; Endoscopic Management.

A gastric polyp is an abnormal growth of tissue projecting from the gastric mucosal membrane. Encountering a polyp in the stomach prompts concerns regarding its histology, cause, natural history, and whether specific therapy is required. During the past few decades, North America and much of the world have experienced a marked decrease of *Helicobacter pylori*–related gastroduodenal diseases; during the same period, the use of proton pump inhibitors (PPIs) has become widespread. Furthermore, the indications for esophagogastroduodenoscopy (EGD) have undergone a shift, with a greater emphasis on the evaluation of gastroesophageal reflux disease and the prevention of esophageal adenocarcinoma related to Barrett's esophagus. As a result of these new paradigms, the findings encountered at EGD have changed substantially.

In North America and the industrialized West these changes have affected both the incidence and the types of gastric polyps. The overall incidence of polyps appears to have increased, as indicated by a higher prevalence in large series.[1] There also has been a shift in the relative proportion of the different types of polyps: the clinically inconsequential fundic gland polyps have become the dominant type, while growths traditionally associated with *H pylori* gastritis (eg, hyperplastic and adenomatous polyps) have become less common. In contrast, in East Asian, Latin American, and possibly African populations, where *H pylori* infection and chronic gastritis remain common, larger proportions of gastric polyps are related to the underlying inflammatory process and are either hyperplastic or neoplastic. Despite these geographic differences, the finding of gastric polyps, particularly when numerous, will make clinicians in all regions face similar quandaries: which polyps need to be excised? Which ones and how many should be sampled for histologic evaluation? Also, what follow-up evaluation is needed?

This review attempts to provide practical answers to these questions. Although it relies largely on prevalence data derived from North American and European populations, its recommendations regarding natural history, clinical approach, and follow-up evaluation are based on the natural history of each type of polyp, which is determined largely by its histology and the gastric mucosal background on which it arises. Such features are independent of prevalence and, therefore, have universal validity.

Polyps that reveal a malignancy upon histopathologic examination lose their polyp status, irrespective of their initial endoscopic appearance, and we have excluded them from this review. Furthermore, because it is impossible to be simultaneously practical and comprehensive, we also had to neglect lesions (eg, lipomas, heterotopias, and leiomyomas) because they are unlikely to cause clinical dilemmas.

Fundic Gland Polyps

Fundic gland polyps are the most common type of polyps detected at EGD in Western countries. In a large recent pathologic study, fundic gland polyps were diagnosed in approximately 6% of patients who had an EGD and represented 74% of all gastric polyps submitted for histopathologic evalu-

Abbreviations used in this paper: ECL, enterochromaffin-like; EGD, esophagogastroduodenoscopy; GIST, gastrointestinal stromal tumors; OLGA, Operative Link for Gastritis Assessment; PPI, proton pump inhibitor.

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ation.[1] Endoscopically, fundic gland polyps are usually multiple, small (<1 cm), and appear smooth, glassy, and sessile. By narrow band imaging they have a honeycomb appearance with dense vasculature, a nonspecific pattern that also can be seen in hyperplastic polyps.[2]

When first discovered, fundic gland polyps were believed to be hamartomatous.[3] However, their association with PPI use, confirmed in a number of studies, suggests that mechanisms related to the suppression of acid secretion by proton pump inhibition may be involved in their pathogenesis.[4,5]

Histopathologic Features and Diagnostic Criteria

Histologically, fundic gland polyps consist of one or more dilated oxyntic glands, lined by flattened parietal and mucous cells (Figure 1). Fundic gland polyps are among the most characteristic lesions of the stomach: the recognition of the dilated oxyntic glands with flattened parietal and mucous cells in slides stained with H&E is immediate and unequivocal (Figure 1*B* and *C*). One caveat is that when the surface of a polyp is eroded the regenerative appearance may be misinterpreted as dysplasia. True dysplasia, particularly high grade, is exceedingly rare and is virtually limited to fundic gland polyps found in patients with polyposis syndromes. No special stains or molecular studies are warranted.

Clinical Approach

The finding of multiple characteristic polyps in the oxyntic portion of the stomach in a patient taking PPIs is essentially diagnostic of fundic gland polyps. Generally, when first encountered, one or more representative polyps should undergo a biopsy examination to confirm the diagnosis. Large polyps (>1 cm in diameter) should be removed entirely to confirm the diagnosis because fundic gland polyps rarely exceed this size.[6] A biopsy specimen from the polyp in these cases is not adequate because if the polyp is not of the fundic gland type, biopsy sampling may not include crucial areas of possible dysplasia or neoplasia. In addition, a thorough visual inspection of the remaining polyps should be made; any lesion that appears significantly different from the others should be undergo a biopsy examination, or, if possible, be removed. Specifically, size larger than 1 cm, ulceration, and unusual location such as the antrum should prompt a more aggressive approach. When fundic gland polyps are found in a young patient, especially if numerous (eg, ≥20), the possibility of a polyposis syndrome should be considered. Individuals with familial polyposis syndromes typically are younger than the average patient with fundic gland polyps (mean age, 40 y),[7–9] and occasionally have polyps in the antrum.[10] When gastric polyps are associated with duodenal adenomas a familial polyposis syndrome strongly should be considered and colonoscopy should be recommended.

Fundic gland polyps rarely are found in stomachs affected by *H pylori* infection and, therefore, in the absence of a familial polyposis syndrome, concerns about gastric cancer are moot.[11] Nonetheless, when polyps are innumerable or large (>1 cm) there may be cause for concern regarding eventual outcome. Although no guidelines exist, we suggest that when either more than 20 polyps are present or their size is larger than 1 cm one should consider reducing or preferably stopping the medication to assess whether this will result in regression of the polyps.[12] If regression occurs, it is unknown whether PPIs can be reinstituted. Practically, if surgical therapy is not an option, one might consider a different PPI and at the minimally effective dose. Although there does not seem to be a correlation between

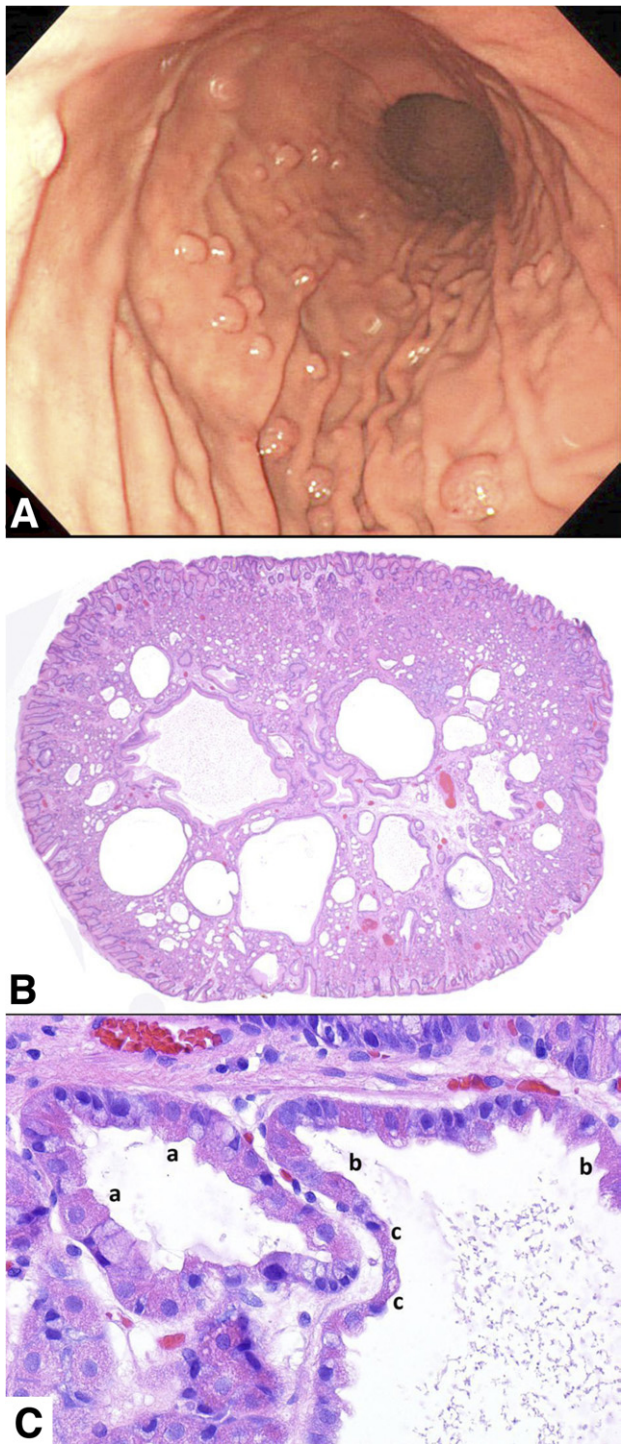

Figure 1. Fundic gland polyp. (*A*) Endoscopic view of multiple fundic gland polyps in the body of the stomach in a patient taking PPIs. (*B*) Low-power photomicrograph showing the characteristic dilatations of oxyntic glands. There is only minimal stroma, and the surface foveolar epithelium is either normal or focally flattened. (*C*) High-power photomicrograph showing a dilated oxyntic gland lined by cuboidal parietal cells (a); as the gland dilate more (*right*), both mucous and parietal cells progressively flatten (b and c).