

Gastric polypoid lesions: analysis of histopathologic features of 107 endoscopic polypectomy specimens

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ABSTRACT

Aim: The aim of this study was to present the demographic and clinical characteristics of patients with gastric polypoid lesions and to study the histopathologic features of these lesions.

Background: The frequency of gastric polyps is gradually increasing due to the widespread use of endoscopic examinations.

Patients and methods: Clinical and endoscopic features of 100 gastric polyposis patients (with 107 polypectomy specimens) were retrospectively studied. All the specimens were histologically re-evaluated by two pathologists.

Results: 107 specimens of gastric polypoid lesions were identified in 100 patients. There were 73 men and 27 women with a median age of 49 years. The most frequent presenting symptom was dyspepsia (76%). The most common location was antrum followed by the cardia. The frequencies of hyperplastic polyps, fundic gland and adenomatous polyps were 69.2 %, 6.6 %, and 4.7 % respectively. We also detected an inflammatory fibroid polyp, a carcinoid tumor and a case of leiomyoma in polypoid lesions. In 16.8% of cases histologic evaluation revealed only foveolar hyperplasia, intestinal metaplasia or edematous mucosa. Mild dysplastic changes were observed within three hyperplastic polyps and high grade dysplasia in two adenomas.

Conclusion: Hyperplastic polyps are the most frequently identified gastric polyps in our population. These polyps may contain foci of dysplasia. Presence of these changes as well as other unusual tumors with polypoid appearance can only be confirmed by histological examination. Therefore, endoscopic polypectomy is a safe procedure for both the diagnosis and treatment of gastric polypoid lesions.

Keywords: Endoscopy, gastric polyp, histology, polypectomy.

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INTRODUCTION

Endoscopically, gastric polyps are defined as discrete projections above the adjacent mucosal surface. In autopsy series, the prevalence of gastric polyps is 0.12%-0.8% (1). However, due to widespread utilization of flexible endoscopy, the frequency of gastric polyps is increasing (2). Gastrointestinal polyps are by definition lesions elevated above the surrounding mucosa. In the stomach, they are found in 2-3% of all

gastroscopic examinations (3). Usually, they are between 1 cm and 2 cm in diameter. In most cases, polyps are incidental findings during routine endoscopy, because they only rarely produce symptoms, such as gastrointestinal bleeding with or without anemia or delayed gastric emptying (4).

Endoscopic appearance of some polyps may be diagnostic, but histological confirmation is necessary. They are typically found incidentally when upper gastrointestinal endoscopy is performed for an unrelated indication (5). They may be associated with other conditions, such as

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chronic atrophic gastritis and pernicious anemia and patients who develop symptoms may present with upper gastrointestinal bleeding (typically occult) or obstruction (6). Furthermore, their discovery can be important since many polyps have malignant potential. Histological classification of gastric epithelial polyps can be challenging. The most important point in classification is to determine whether the polyp is dysplastic or non-neoplastic. In this study pathological and clinical features of patients with gastric polypoid lesions are presented.

PATIENTS and METHODS

We analyzed the endoscopy records of 100 patients who had undergone endoscopic polypectomy or biopsy sampling of gastric polyps from January 2004 to December 2006 at Taleghani Hospital. All of endoscopies had been performed under sedation and topical 10% lidocaine. The clinical data, size, location and macroscopic features of polyps had been recorded. Besides, one or more samples had been taken from adjacent mucosa for histologic evaluation and determination of *H.pylori* colonization (Giemsa staining) of which 107 specimens were available at the time of this study. Original pathology reports were reviewed and two experienced pathologists re-evaluated all the tissue samples to confirm the histopathologic subclassification of gastric polypoid lesions.

RESULTS

All of the lesions were removed by polypectomy except one of them that was biopsied because of ill-defined borders. The age of patients ranged from 27 to 68 years (median=49). There were 73 men and 27 women with male predominance (M / F = 2.7).

The most frequent symptom was dyspepsia (76%). Epigastric pain alone or with dyspepsia

was the chief complaint of 24% of patients. In a minority of patients other symptoms such as GI bleeding (3%), dysphagia (2%), anemia (1%) and weight loss (1%) were dominant.

Table 1. Size and shape of polypoid lesions

	Frequency (%)
Size	
<5mm	57 (53.3)
5-10mm	36 (33.6)
10-20mm	13 (12.2)
20-30mm	1 (0.9)
Shape	
Pedunculated	6 (5.6)
Sessile	101 (94.4)

Most of polypoid lesions measured less than 1cm (87%). All polyps were sessile except six that were pedunculated (Table 1). Most of polypoid lesions were located in the antrum followed by cardia, corpus, and fundus (Table 2).

Table 2. Frequency of different types of polypoid lesions according to location

	Cardia	Fundus	Body	Antrum	total
Hyperplastic polyp	24	11	3	36	74
Fundic gland polyp	-	7	-	-	7
Adenomatous polyp	2	-	-	3	5
Inflammatory fibroid polyp	-	-	-	1	1
Carcinoid tumor	-	-	1	-	1
Leiomyoma	-	1	-	-	1
Foveolar hyperplasia	-	-	3	7	10
Intestinal metaplasia	-	-	1	4	5
Mucosal edema	-	-	-	3	3
Total	26	19	8	54	107

Histologically, the most frequent type polyp was hyperplastic polyp followed by fundic gland and adenomatous types (Table 2) We also detected carcinoid tumor inflammatory fibroid tumor and leiomyoma, each in one specimen. In some lesions with polypoid features in gastroscopy, the only microscopic abnormality was foveolar hyperplasia (9.3%) or intestinal metaplasia (4.7%), and in 2.8% only edema of the lamina propria was detected. Of 74 hyperplastic polyps, intestinal metaplasia was seen in four, and small foci of

Table 3. Histopathologic features of surrounding gastric mucosa according to type of polypoid lesion

	Chronic gastritis	H.pylori colonization	Intestinal metaplasia
Hyperplastic polyp	71	62	7
Fundic gland polyp	3	3	0
Adenomatous polyp	5	2	5
Inflammatory fibroid polyp	1	1	0
Carcinoid tumor	1	0	0
Leiomyoma	1	0	0
Foveolar hyperplasia	10	6	0
Intestinal metaplasia	5	0	0
Mucosal edema	1	1	0
Total	98	75	12

dysplastic changes in three cases. Evaluation of the surrounding gastric mucosa revealed that 98 patients had chronic gastritis of which 75 were associated with H pylori infection, and 12 had intestinal metaplasia. Normal gastric mucosa was found in only two cases. (Table 3)

Leiomyoma was diagnosed in an 82 years old woman with anemia and anorexia. This polypoid lesion was located in the fundus and had a smooth surface. Immunohistochemistry was negative for CD117 (c-kit) and CD34, but positive for smooth muscle actin and desmin. A case of carcinoid tumor, presented as multiple polypoid lesions of the body region, was seen in a 30 years old diabetic woman. Symptoms of carcinoid syndrome were absent. The tumor cells were strongly immunoreactive for chromogranin and synaptophysin. Inflammatory fibroid polyp was seen in a 40 years old woman with dyspepsia. The polypoid lesion had a diameter of about 1 cm and located in the antrum.

DISCUSSION

One hundred and seven specimens of the total of 2682 upper GI endoscopic biopsies taken in our institution were from gastric polypoid lesions (3.9%), which is comparable to the frequencies reported in previous studies (7,8). The largest endoscopy series of gastric polyps evaluated

almost 13,000 adults over a four-year period and found an overall incidence of 1.2 percent (1).

Malignant potential of polypoid lesions is a matter of concern. It depends on the type of polyp and the clinical setting. Treatment in most instances is simple excision; however, many endoscopists first take forceps biopsies from gastric polypoid lesions and after definite histopathological diagnosis perform polypectomy (9). Some authors have reported hyperplastic and adenomatous polyps and some others hyperplastic and fundic gland polyps as the most frequently encountered subtypes of gastric polyps (10,11,12).

Hyperplastic polyps account for approximately 75% of gastric polyps (13) and are believed to develop as a consequence of mucosal response to tissue injury and inflammation. These lesions were previously considered completely benign but according to recent evidence they have a small but well-defined malignant potential (14,15). The reported frequency of dysplastic foci within them show a wide range (0.5-7.1%) (4). Since hyperplastic polyps are usually associated with chronic gastritis, particularly autoimmune gastritis and H.pylori gastritis, patients with hyperplastic polyp have an increased risk of adenocarcinoma elsewhere in the stomach (16,17). In our series, the frequency of hyperplastic polyps was 69.2% and chronic gastritis of surrounding mucosa and H.pylori colonization is demonstrated in (79%) and (70%) of the specimens. Foci of adenomatous change were seen in three of the hyperplastic

polyps (4%). These results support the suggestion of removing polypoid lesions instead of just taking biopsies.

Fundic gland polyps were the second most common type (6.6%) of gastric polypoid lesions in our study. The frequency is reported to be around 14 to 17% in different series (18,19,20). Although they are said to be not associated with any type of inflammatory or atrophic underlying mucosal pathology, we found chronic gastritis with H.pylori colonization in surrounding mucosa of 43% of these polyps. Some studies do indicate association between use of proton pump inhibitors and fundic gland polyps (21). They are divided into two different forms: sporadic and in association with FAP or attenuated FAP. They are usually asymptomatic and discovered incidentally at endoscopy. While sporadic fundic gland polyps are benign lesions with virtually no neoplastic potential, there are reports of dysplasia developing in fundic gland polyps associated with FAP and attenuated FAP syndromes (22,23).

The next most prevalent polypoid lesion was adenomatous polyp. All five cases we encountered were low-grade intestinal-type. Gastric adenomas, similar to hyperplastic polyps, typically occur in the background of chronic gastritis (24,25). They account for 6 to 10% of gastric polyps; however, the incidence may slightly increase in patients with FAP. The malignant potential of an adenoma correlates with the increase of size, villous contour and higher grade of dysplasia; but gastric adenomas have a higher incidence of malignant transformation than adenomatous polyps in colon (26). The risk of gastric cancer in other parts of gastric mucosa in patients with adenoma varies between 8% and 59% (27). We found 5 (4.7%) adenomatous polyps in our series, all of which had occurred in the background of chronic gastritis with intestinal metaplasia.

In 16.8% of our specimens, microscopic examination revealed abnormalities other than features of true polyps. The most frequent of these

histological changes was foveolar hyperplasia. There is still a debate on whether polypoid foveolar hyperplasia is a precursor of hyperplastic polyps (4, 28). It often develops at the mucosal edges of surface erosions, ulcers, carcinomas, or adjacent to gastrojejunostomy stomas or may be associated with the use of nonsteroidal anti-inflammatory drugs (NSAIDs), bile reflux, or the use of alcohol (13). Chronic gastritis with intestinal metaplasia was sole histological abnormality in 4.7% and edema of lamina propria in one of the cases in our series.

One of our cases (a 40 year old woman) was reported to have inflammatory fibroid polyps in the antral region of stomach. These polyps are mesenchymal proliferations composed of a mixture of stromal spindle cells, small blood vessels, and inflammatory cells. They are typically small, well circumscribed, submucosally based, and sessile lesions that may show ulceration of the overlying mucosa. In the stomach, they most commonly arise from the antrum, immediately proximal to or overlying the pyloric sphincter (13).

True leiomyomas (which are c-kit negative) are exceedingly rare in the stomach, and as in our case, they may present as polypoid masses. One was located in the fundus and had a diameter of about 15mm. True leiomyomas are usually asymptomatic and are found incidentally at endoscopy, surgery or autopsy (4) and can be observed in 0.9% of gastric resection specimens. In a recent study, 11 similar lesions (with an average tumor size of 36 mm) were reported in the cardia (29).

One of the polypoid lesions in our series had typical histological features of carcinoid tumor and was immunoreactive to neuroendocrine markers. Neuroendocrine tumors of the stomach that may grow as mass lesions or polyps are multifocal in 10% of cases. The surrounding mucosa often shows atrophic gastritis with patchy intestinal metaplasia. They also may arise in the

antrum or the body mucosa, depending on the cell line of the origin. They are rarely associated with the carcinoid syndrome (30). In different studies of gastric polypoid lesions, other entities such as mucosal pseudolipomatosis, pancreatic heterotopias and Brunner's gland heterotopias have been rarely encountered (31,32).

Muehldorfer et al. (33) have found that 2.7% discrepancy exists between forceps biopsy and complete polypectomy, the most common reason being failure of biopsy to reveal foci of carcinoma in hyperplastic polyps. They recommend complete removal by an experienced endoscopist of all epithelial gastric polyps larger than 5 mm after thorough individualized risk-benefit analysis (31). The results of our study also emphasize the importance of complete removal of gastric polyps by complete polypectomy. Presence of dysplastic foci (4% of cases in our study), carcinomatous changes in some hyperplastic polyps, failure to differentiate the hyperplastic polyps from adenomas in endoscopy and presentation of other tumors such as carcinoid and polypoid masses, can be mentioned as the main reason for choosing polypectomy over forceps biopsy.

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