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# Analysis of endoscopic and histopathological features of gastric polyps

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## Abstract

**Objective:** Gastric polyps are sessile or pedunculated lesions that originate from the gastric epithelium or submucosa and protrude towards the lumen, with a rate of 2-6%. There is a risk of malignant transformation in gastric polyps. In our study, we aimed to evaluate the characteristics of gastric polyps in our region.

**Materials and methods:** The study was carried out with the retrospective evaluation of esophagogastroduodenoscopy performed in the Gastroenterology clinic of our hospital between July 2020 and June 2022.

**Results:** Esophagogastroduodenoscopy was performed in a total of 2669 patients, and 182 polyps detected in 96 patients were examined. Thirty-six (37.5%) of the patients were male, 60 (62.5%) were female, and the median age was 59 (22-88). Sixty-two (34%) of the polyps were in the antrum, 109 (59.9%) were in the corpus, and 11 (6.1%) were in the fundus. Histopathologically, 151 (83%) polyps were hyperplastic polyps, 4 (2.2%) adenomas, 24 (13.2%) fundic gland polyps, and 3(1.6%) neuroendocrine tumors. There was no statistical relationship between gender and intestinal metaplasia, atrophy and hp positivity. There was also no statistical relationship between hp positivity and intestinal metaplasia.

**Conclusions:** The frequency, anatomical locations and histopathological types of gastric polyps may vary according to the geographical region where the study is performed. In our study, polyps were most common in the corpus and most of them were hyperplastic. Unlike colorectal hyperplastic polyps, gastric hyperplastic polyps have the potential to become malignant. It would be appropriate to remove all gastric polyps and examine them histopathologically.

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## Introduction

Gastric polyps are sessile or pedunculated lesions originating from the gastric epithelium or submucosa and protruding into the lumen. Although their frequency has increased due to the increase in endoscopic examinations, they have been reported to be 2-6% (1-4). They are usually asymptomatic and may rarely cause bleeding, obstruction, anemia and abdominal pain (5-7). Therefore, they are often detected incidentally during endoscopic examinations performed for other reasons. However, they may be symptomatic depending on the size and location of the polyps (8). In symptomatic patients, symptoms occur according to the location of the polyp and these symptoms are mostly nonspecific. Sometimes iron deficiency anemia may occur as a result of recurrent occult bleeding due to erosion or ulceration of the polyp surface (9).

The most common types of epithelial polyps in the stomach are hyperplastic polyps, fundic gland polyps and adenomatous polyps. In contrast to colonic hyperplastic polyps, gastric hyperplastic polyps have neoplastic potential even at sizes smaller than 10 mm. Gastric polyp subtypes usually have similar endoscopic features and can be differentiated only by histologic examination (10,11).

In this study, we aimed to evaluate the demographic data, localization and histopathologic features of gastric polyps in patients in whom gastric polyps were found on endoscopy.

## Materials and methods

Our study was performed by retrospective evaluation of upper gastrointestinal tract endoscopies performed in the Gastroenterology endoscopy unit of our hospital between July 2020 and June 2022. In our study, the principles of the Declaration of Helsinki were followed and ethics committee approval was obtained.

After fasting for 6-8 hours, informed consent was obtained from the patients by reading the procedure information form, and it was performed with a Fujifilm EG-760R gastroscope (Fujifilm Medical Systems Inc., Tokyo, Japan) under sedation with midazolam and propofol. Biopsies were taken from the mucosa according to the Sydney protocol. The detected polyps were excised with forceps, snare or endoscopic mucosal resection and sent to the pathology laboratory in formal solution.

Demographic characteristics of the patients were determined from the hospital data recording system. According to gastroscopy reports, the localization of the polyps was divided into fundus, corpus and antrum, and then the number of polyps, polyp sizes and polyp histopathology were recorded in the registration form.

## Statistical analysis

The statistical analyses were performed using SPSS 22.0 for Windows program (IBM Corp. Armonk, NY, USA) program. While categorical data were expressed in frequency and percentage, quantitative data were expressed as mean and standard deviation. In the comparison of categorical data, chi-square test was used and the independent t-test and Mann-Whitney U test were used for comparison of quantitative data. P value <0,05 was accepted as significant

## Results

We retrospectively reviewed 2669 esophagogastroduodenoscopy(EGD) procedures and analyzed 182 polyps detected in 96 (3.6%) patients. Of the patients, 36 (37.5%) were male and 60 (62.5%) were female, with a median age of 59 years (22-88). Of the patients, 44 (45.8%) were positive for *Helicobacter pylori* (Hp), 26 (27.1%) had intestinal metaplasia and 4 (4.2%) had atrophic gastritis (Table.1).

Of the polyps, 62 (34%) were located in the antrum, 109 (59.9%) in the corpus, and 11 (6.1%) in the fundus. Median number of polyps was 1 (1-10). There was

**Table 1: Gastric mucosa biopsy results**

	N (%)
<i>Helicobacter pylori</i>	44 (45.8%)
Intestinal metaplasia	26 (27.1%)
Atrophic gastritis	4 (4.2%)

no correlation between age and number of polyps ( $p>0.05$ ). The majority of polyps ( $n=116$ , 63.7%) were smaller than 5 mm and the median polyp diameter was 3.5 (2-20) mm. There was no statistically significant relationship between age and polyp size ( $p>0.05$ ).

When we examined the histopathology of the polyps, 151 (83%) were hyperplastic polyps, 24 (13.2%) were fundic gland polyps (FGP), 4 (2.2%) were adenomatous polyps and 3 (1.6%) were neuroendocrine tumors. Of the hyperplastic polyps, 59 were localized in the antrum and 92 in the corpus. There was no statistically significant relationship between Hp positivity and hyperplastic polyps ( $p=0.097$ ). Of the fundic gland polyps, 13 were located in the corpus and 11 in the fundus. There was no statistically significant relationship between FGP and Hp positivity ( $p=0.15$ ). While 3 adenomatous polyps were localized in the antrum and 1 in the corpus, all neuroendocrine tumors were in the corpus (Table.2). None of the polyps had dysplasia or carcinoma.

**Table 2:** Histopathological types and localizations of polyps

	Antrum	Corpus	Fundus	Total
Hyperplastic	59	92	-	151
Adenomatous	3	1	-	4
Fundic gland polyps	-	13	11	24
Neuroendocrine tumor	-	3	-	3
Total	62	109	11	182

110 (60.4%) polyps were excised by biopsy forceps, 64 (35.2%) by snare and 8 (4.4%) by endoscopic mucosal resection. None of the patients developed bleeding, perforation or electrocautery syndrome.

### Discussion

In our study, we found that gastric polyps were mostly localized in the corpus, the incidence increased with age and the most common histological type was hyperplastic polyp.

The rate of detection of gastric polyps varies according to the geography of the study (1-4). Carmack et al. screened more than 121,000 esophagogastroduodenoscopy (EGD) and found the prevalence of gastric polyps to be 6,35% (1). García-Alonso et al. reported this rate as 4.2% in 6,307 EGD procedures (2) and Roseau et al. reported it as 1.3% in 13,000 EGD procedures (12). In studies conducted in our country, Gencosmanoglu et al. reported a rate of 3.4%, Olmez et al. 0.34%, and Vatansever et al. 2.22% (13-15). The prevalence of gastric polyps was 3.6% in our study and was compatible with the literature.

Gastric polyps are found more frequently in middle age. Gender distribution varies from study to study. Morais et al. reported that the median age of the patients was 64 years and 58.8% were male (16), while Molaei et al. reported that the median age was 49 years and 73% were male (17). Fann et al. reported that the median age of the patients was 54.7 years and 63% were female (18), and Gencosmanoglu et al. reported that the median age was 51 years and 58% were female (13). In our study, 62.5% of the patients with polyps were female and 37.5% were male and the median age was 59 years, which was compatible with the literature. We did not find any statistical correlation between age and number and size of polyps ( $p>0.05$ ). Olmez et al. similarly reported that there was no relationship between age and polyp number and size (14).

Most gastric polyps are smaller than 1 cm and most of these are smaller than 5 mm (13,14,17). Melton et al. reported that most of the gastric polyps were smaller than 1 cm and about 50% of them were 5 mm or less (19). In accordance with the literature, we found most of the polyps (63.7%) to be less than 5 mm in size.

The most common polyp type is hyperplastic polyps and these polyps occur secondary to long-term inflammation. Their incidence increases with age, but there is no correlation between gender and incidence (6,7,10,20). In contrast to colorectal hyperplastic polyps, gastric polyps have a slight malignant potential and especially the presence of a focus of intestinal metaplasia or dysplasia within the polyp increases the risk of malignancy (11,21). Demiryilmaz et al. found that 80.7% of the polyps were hyperplastic polyps (22), Morais et al. found 71.3% (16) and Karaman et al. found 69% (23). In our study, 83% of the polyps were hyperplastic polyps and this rate was slightly higher than the literature. While 5 (3.3%) of the polyps we detected had intestinal metaplasia foci, none of them had dysplasia.

In the literature, it has been reported that hyperplastic polyps are associated with Hp infection and are found more frequently in patients with Hp infection, and hyperplastic polyps regress after Hp treatment (1,6,7). Contrary to the literature, we did not find a statistically significant relationship between hyperplastic polyps and Hp in our study ( $p=0.097$ ).

Fundic gland polyps are usually multiple, small, transparent and sessile, located in the fundus and body (16). They are almost always observed in normal gastric mucosa. They are observed more frequently in western countries where Hp infection is less common and proton pump inhibitors are frequently and long-term used (24,25). The risk of FGP increases approximately 4-fold with approximately 5 years of PPI use. They are mostly benign but may sometimes accompany familial adenomatous polyposis (FAP) syndrome. These patients should be screened for FAP, especially if they are located in the distal part of the

stomach, at younger ages (under 40 years of age), and if more than 20 polyps are detected (26,27). In a study conducted in our country, 36650 EGD procedures were screened and the FGP rate was reported as 8.3% (15). In another study, 11598 EGD procedures were evaluated and 10% of polyps were found to be FGP (23). In a large study conducted in the USA, 77% of the polyps were found to be FGP. This rate was quite high compared to the literature. The authors associated this high rate with long-term PPI use and low frequency of Hp infection (1). In our study, the FGP rate was 13.2%, which was slightly higher than the literature reported in our country.

Adenomatous polyps account for 6-10% of gastric polyps and have a higher risk of malignancy compared to the other two polyp types (28,29). They are often single and large, and may be sessile or pedunculated. They may be tubular, villous and tubulovillous, but the majority (90%) are tubular (6,7). The malignancy risk of adenomatous polyps is 6.8-55.3% (30). In a study, 11% of the polyps developed more advanced histopathologic findings such as dysplasia or carcinoma in situ in repeated endoscopic follow-ups performed within 48 months (31). Therefore, excision of these polyps is necessary (32). In our study, adenomatous polyps were found in 4 (2.2%) patients. None of them had dysplasia or carcinoma in situ.

Gastric neuroendocrine tumors are smooth-surfaced, broad-based sessile lesions originating from enterochromaffin-like cells and frequently observed in the corpus. While the detection rate has been reported to be 0.6-2% in foreign studies (33,34,35,36), it has been reported to be 0.5-9% in Turkish studies (9,13,14,37). In our series, neuroendocrine tumors were found in 3 (1.6%) patients and all of them were localized in the corpus. Our results were consistent with the literature.

The experience gained from the management of colonic polyps contributes greatly to the management of resection of gastric polyps. However, other factors also influence the decision making for endoscopic resection of gastric polyps. For example, for difficult areas such as the cardia and fundus where the endoscope must be used in retroflexion, excision with forceps may be preferred over excision with a snare. Therefore, forceps may be preferred more in gastric polyps compared to colon polyps. (38,39). In our study, most of the polypectomies (60.4%) were performed with forceps and 35.2% were performed with snare in accordance with the literature. Complications such as bleeding, perforation and electrocautery syndrome did not occur in any of the polypectomies performed with snare.

## Conclusions

The frequency, anatomical locations and histopathologic types of polyps vary according to the geographical region where the study was performed. Unlike colorectal hyperplastic polyps, gastric hyperplastic polyps have a risk of malignancy. Therefore, endoscopic removal and histopathologic examination of all gastric polyps would be appropriate whenever possible.

## Conflict of interest

The authors report no conflict of interest.

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## Ethical approval:

This study was approved by the Ethics Committee of Bilecik Şeyh Edebali University Medical School.

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## Contributions

Research concept and design: **EA, MA**  
 Data analysis and interpretation: **EA, MA**  
 Collection and/or assembly of data: **EA, MA**  
 Writing the article: **EA, MA**  
 Critical revision of the article: **EA, MA**  
 Final approval of the article: **EA, MA**

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