Original Article

Cukurova Anestezi ve Cerrahi Bilimler Dergisi

Prevalence and Characteristics of Gastric Polyps: A Retrospective Analysis of Their Association with Anemia, Helicobacter pylori, and Colonic Neoplasia

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Abstract

Background: Gastric polyps are increasingly identified during upper gastrointestinal (GI) endoscopy, yet their clinical significance varies by histological subtype. The potential associations between polyp characteristics and Helicobacter pylori infection, iron deficiency anemia (IDA), and synchronous colonic polyps warrant further investigation. **Aim:** This study aims to evaluate the prevalence and histopathologic subtypes of gastric polyps and analyze their associations with IDA, H. pylori infection, and synchronous colonic polyps. **Methods:** This retrospective study included 182 patients with histopathologically confirmed gastric polyps diagnosed between February 2022 and December 2024. Demographic, clinical, and laboratory data—including hemoglobin, ferritin, and H. pylori status—were retrieved from electronic medical records. Polyp type, size, location, and colonoscopic findings were analyzed. Statistical associations were assessed using chi-square or Fisher's exact tests. **Results:** Hyperplastic polyps were the most frequent subtype (56.6%), followed by fundic gland polyps (17.0%), chronic gastritis-associated lesions (11.0%), and others, including adenomas (15.4%). The antrum was the most common site (42.9%). Helicobacter pylori was detected in 64.9% of patients. Hyperplastic polyps were significantly more frequent in H. pylori-positive individuals ($p < 0.001$), whereas fundic gland polyps were more common in H. pylori-negative patients ($p < 0.001$). Anemia was present in 37.9% of cases and was significantly associated with hyperplastic polyps ($p = 0.038$). Synchronous colonic polyps were identified in 26.9% of patients; however, the association with gastric polyp subtype did not reach statistical significance ($p = 0.100$). **Conclusion:** This study offers a multidimensional assessment of gastric polyps by integrating histological, microbiological, hematological, and colonoscopic data. The findings highlight a significant link between hyperplastic polyps, H. pylori infection, and anemia, underscoring the importance of individualized evaluation. A considerable rate of synchronous colonic polyps supports consideration of bidirectional endoscopy in selected patients, particularly those with anemia or advanced age.

Keywords: Gastric polyps; Helicobacter pylori; iron deficiency anemia; colonic polyps

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1. Introduction

Gastric polyps are increasingly recognized during upper gastrointestinal (GI) endoscopy, with a reported prevalence ranging from 0.5% to 6.35%, largely depending on the population studied and the indication for endoscopy[1,2]. Although most gastric polyps are benign and asymptomatic, certain types—such as hyperplastic, adenomatous, and fundic gland polyps—pose varying degrees of risk for dysplasia and malignant transformation[3]. In particular, hyperplastic polyps may be associated with chronic inflammation and Helicobacter pylori (H. pylori) infection, whereas adenomatous polyps are considered premalignant lesions that warrant surveillance or resection[4].

The clinical significance of gastric polyps extends beyond their local effects. Larger polyps, especially those >1 cm, and rare subtypes such as inverted hyperplastic polyps, have been implicated in chronic blood loss and iron deficiency anemia (IDA) due to occult gastrointestinal bleeding[5,6]. Moreover, emerging evidence suggests a potential correlation between gastric and colonic neoplasia, especially in patients with gastric adenomas or advanced histologic features[7,8]. The coexistence of upper and lower GI tract lesions has gained renewed attention in the context of shared risk factors, such as age, chronic mucosal inflammation, H. pylori infection, and aspirin or anticoagulant use[9,10].

Despite these associations, few studies have systematically examined the interplay between gastric polyp characteristics (type, size, and location), iron deficiency anemia (IDA), H. pylori, and the presence of synchronous colorectal polyps within a single patient population.

In particular, data integrating all three variables—H. pylori status, anemia, and synchronous colonic polyps—in a retrospective cohort are limited. This study aims to address that gap by offering a multidimensional assessment that reflects real-world clinical practice. Given the rising detection of gastric polyps and the evolving role of bidirectional endoscopy, such an integrated approach may hold diagnostic and prognostic relevance.

2. Methods

2.1.Study Design and Setting

This study was designed as a cross-sectional retrospective analysis and was conducted in the Endoscopy Unit of Osmaniye Training and Research Hospital, affiliated with the T.C. Ministry of Health. The data encompass procedures performed between February 1, 2022, and December 31, 2024. All gastrointestinal (GI) endoscopic procedures were conducted by gastroenterologists or general surgeons with formal endoscopy training.

2.2.Study Population

A total of 9,654 patients who underwent 9,824 upper GI endoscopic procedures during the study period were evaluated. Inclusion criteria were as follows: age ≥18 years, having undergone upper GI endoscopy for any clinical indication, and availability of histopathologic assessment for detected polyps. Exclusion criteria were: (1) previously diagnosed gastric polyps, (2) technical inability to perform biopsy or polypectomy, and (3) absence from follow-up.

2.3.Data Collection

Demographic characteristics (age, sex), endoscopic indications, and laboratory values including hemoglobin (Hb), ferritin, and mean corpuscular volume (MCV) were obtained from electronic medical records. Anemia was defined as Hb <12 g/dL in women and <13 g/dL in men. The presence of Helicobacter pylori was determined through histopathologic evaluation of gastric biopsies. Colonoscopy reports were also reviewed to identify the presence of synchronous colonic polyps.

2.4.Histopathologic Classification and Localization

Gastric polyps were histologically classified into hyperplastic polyps, fundic gland polyps, chronic gastritis-associated lesions, and others (including adenomas and inflammatory polyps). Polyp location was documented as cardia, fundus, corpus, antrum, or multiple combinations thereof.

2.5.Ethical Approval

This study was approved by the Osmaniye Korkut Ata University Clinical Research Ethics Committee under decision number 6/4, dated July 2, 2025. As the study was retrospective and involved anonymized data, informed consent was waived in accordance with national regulations. The study was conducted in full compliance with the ethical principles outlined in the Declaration of Helsinki (revised 2013).

2.6.Statistical Analysis

Descriptive statistics were expressed as mean ± standard deviation (SD) or median (minimum–maximum) depending on distribution. Categorical variables were reported as counts and percentages. Associations among variables (e.g., polyp type, anemia, H. pylori positivity, fecal occult blood test results, and the presence of colonic polyps) were evaluated using Pearson's chi-square test or Fisher's exact test, as appropriate. A p-value <0.05 was considered statistically significant. All analyses were performed using SPSS software version 29.0 (IBM Corp., Armonk, NY, USA).

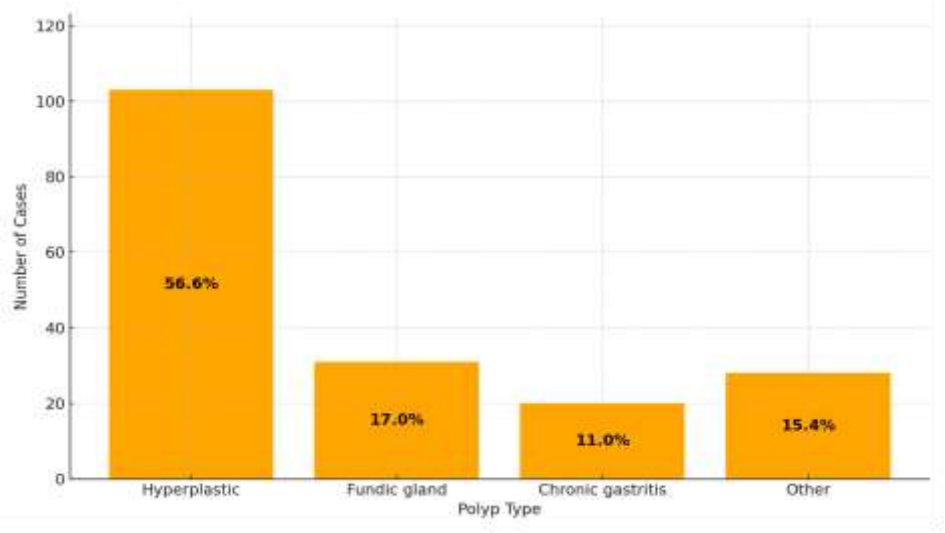

Figure 1. Distribution of gastric polyp types. The most common subtype was hyperplastic polyps, followed by fundic gland polyps, chronic gastritis-associated lesions, and others.

3. Results

A total of 182 patients with histopathologically confirmed gastric polyps were included in the study. The mean age was 62 years (range: 19–89), and 66.5% (n=121) of the patients were female, while 33.5% (n=61) were male. The most common indications for upper gastrointestinal endoscopy were dyspepsia (32.4%) and constipation (28.6%), followed by abdominal pain (11.5%) and various other non-specific complaints. Laboratory data showed a mean hemoglobin level of 12.04 g/dL, and ferritin levels ranged from 3.2 to 640 ng/mL. Anemia—defined as hemoglobin <12 g/dL in women and <13 g/dL in men—was observed in 69 patients (37.9%).

Table 1. Demographic characteristics and polyp types

	n (%)	Mean ± SD	Median (Min–Max)
Age (years)			62 (19–89)
Gender			
Female	121 (66.5%)		
Male	61 (33.5%)		
Indication for Endoscopy			
Dyspepsia	59 (32.4%)		
Abdominal pain	21 (11.5%)		
Dysphagia	6 (3.3%)		
Other	23 (12.6%)		
Constipation	52 (28.6%)		
Gastrointestinal bleeding	6 (3.3%)		
Weight loss	7 (3.8%)		
Screening	8 (4.4%)		
Laboratory Parameters			
Hemoglobin (g/dL)		12.04 ± 1.8	
MCV		80 ± 7.2	
Ferritin			20 (3.2–640)
Polyp diameter (mm)			5 (1–40)
Polyp Type			
Chronic Gastritis	20 (11.0%)		
Hyperplastic Polyp	103 (56.6%)		
Fundic Gland Polyp	31 (17.0%)		
Other	28 (15.4%)		

Histopathological analysis revealed that hyperplastic polyps were the most common histologic subtype, observed in 56.6% of patients (n=103). Fundic gland polyps accounted for 17.0% (n=31), chronic gastritis-associated lesions for 11.0% (n=20), and other polyp types—including adenomatous, hamartomatous, and inflammatory—made up 15.4% (n=28) of the cases. These distributions are summarized in Table 1 and visualized in Figure 1.

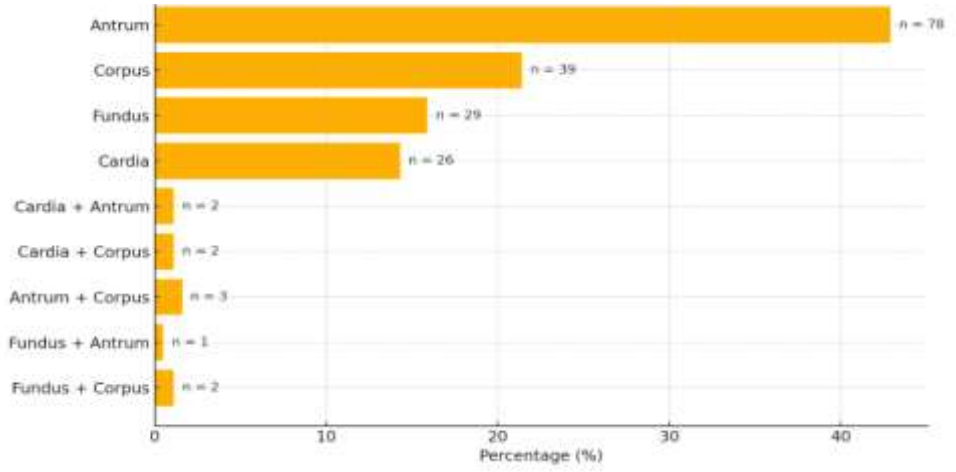

Figure 2. Anatomical distribution of gastric polyps. Polyps were most frequently located in the antrum, with lesser involvement of the corpus, fundus, and cardia.

Anatomically, polyps were most frequently located in the antrum (42.9%), followed by the corpus (21.4%), fundus (15.9%), and cardia (14.3%). Multifocal and overlapping localizations, including combinations such as fundus + corpus or corpus + antrum, accounted for approximately 5.5% of cases. The anatomical distribution of gastric polyps is illustrated in Figure 2.

Among the 148 patients with known Helicobacter pylori status, 96 (64.9%) tested positive. A statistically significant association was observed between H. pylori infection and polyp type: hyperplastic polyps were more prevalent in H. pylori-positive individuals ($p < 0.001$), while fundic gland polyps were more common in H. pylori-negative patients ($p < 0.001$). No significant association was found between H. pylori status and other polyp types (Table 2).

Table 2. Relationship between polyp types and H. pylori

Polyp types n (%)[a]	H. pylori negative n=52	H. pylori positive n=96	p value
Chronic Gastritis	9 (17.3)	11 (11.5)	0.320[b]
Hyperplastic Polyp	16 (30.8)	59 (61.5)	<0.001[b]
Fundic Gland Polyp	21 (40.4)	7 (7.3)	<0.001[b]
Other	6 (11.5)	19 (19.8)	0.201[b]

[a] Column percentage. [b] Pearson chi-square test.

Table 3. Relationship between polyp types and anemia

Polyp types n (%)[a]	Anemia negative n=110	Anemia positive n=69	p value
Chronic Gastritis	13 (68.4)	6 (31.6)	0.509[b]
Hyperplastic Polyp	56 (54.9)	46 (45.1)	0.038[b]
Fundic Gland Polyp	21 (67.7)	10 (32.3)	0.429[b]
Other	20 (74.1)	7 (25.9)	0.144[b]

The hemoglobin threshold was set at 12 for women and 13 for men. [a] Column percentage. [b] Pearson chi-square test.

Anemia was significantly more prevalent among patients with hyperplastic polyps ($p = 0.038$). No statistically significant association was found between anemia and other polyp subtypes (Table 3).

In a subset of 33 patients with available fecal occult blood test (FOBT) results, hyperplastic polyps were more frequently observed in FOBT-positive individuals, although the association was not statistically significant ($p = 0.064$). Notably, chronic gastritis-type polyps were significantly more common in FOBT-positive patients ($p < 0.001$) (Table 4).

The use of antithrombotic medications—including aspirin, clopidogrel, dual antiplatelet therapy, and direct oral anticoagulants (DOACs)—was not significantly associated with anemia in this cohort (Table 5).

Table 4. Relationship between polyp types and FOBT

Polyp types n (%)[a]	FOBT negative n=21	FOBT positive n=12	p value
Chronic Gastritis	–	6 (50)	<0.001[b]
Hyperplastic Polyp	14 (66.7)	4 (33.3)	0.064[c]
Fundic Gland Polyp	2 (9.5)	1 (8.3)	1.000[b]
Other	5 (23.8)	1 (8.3)	0.379[b]

[a] Column percentage. [b] Fisher's exact test. [c] Pearson chi-square test.

Table 5. Relationship between antithrombotic agents and anemia

Use of antithrombotic agents n (%)[a]	Anemia negative n=110	Anemia positive n=69	p value
Acetylsalicylic acid	26 (23.6)	12 (17.4)	0.529[b]
Clopidogrel	3 (2.7)	4 (5.8)	
Dual Antiplatelet Treatment	2 (1.8)	3 (4.3)	
Direct Oral Anticoagulants	1 (0.9)	1 (1.4)	
None	78 (70.9)	49 (71.0)	

[a] Column percentage. [b] Fisher–Freeman–Halton Exact test.

Colonoscopy data were available for 152 patients, of whom 41 (26.9%) were found to have colonic polyps. While hyperplastic gastric polyps appeared more frequently in this group, the association was not statistically significant (p = 0.100) (Table 6).

Table 6. Relationship between gastric polyp types and colonic polyps

Polyp types n (%)[a]	Colonic polyp negative n=111	Colonic polyp positive n=41	p value
Chronic Gastritis	16 (14.4)	4 (9.8)	0.451[b]
Hyperplastic Polyp	51 (45.9)	25 (61.0)	0.100[b]
Fundic Gland Polyp	24 (21.6)	6 (14.6)	0.337[b]
Other	20 (18.0)	6 (14.6)	0.623[b]

[a] Column percentage. [b] Pearson chi-square test.

In a subgroup of 95 patients without concurrent colonic lesions who underwent gastric polypectomy, no significant differences in post-procedural anemia status were observed among the various polyp types (Table 7).

Table 7. Post-polypectomy anemia in patients with gastric polyps and no additional colonic pathology

Polyp types n (%)[a]	No anemia after the procedure (n=58)	Anemia present after the procedure (n=37)
Chronic Gastritis	9 (15.5)	5 (13.5)
Hyperplastic Polyp	24 (41.4)	20 (54.1)
Fundic Gland Polyp	11 (19.0)	7 (18.9)
Other	14 (24.1)	5 (13.5)

[a] Column percentage. [b] Pearson chi-square test. p values: Chronic Gastritis 0.788; Hyperplastic Polyp 0.227; Fundic Gland Polyp 0.995; Other 0.294.

4. Discussion

In this retrospective analysis, hyperplastic polyps were identified as the most prevalent histological subtype, accounting for over half of all detected gastric polyps. This finding aligns with previous studies that reported hyperplastic polyps as the dominant type, particularly in populations with high

In this retrospective analysis, hyperplastic polyps were identified as the most prevalent histological subtype, accounting for over half of all detected gastric polyps. This finding aligns with previous studies that reported hyperplastic polyps as the dominant type, particularly in populations with high *Helicobacter pylori* prevalence[1]. Our data further support the established association between *H. pylori* infection and hyperplastic polyps, confirming that eradication therapy may play a role in reducing their occurrence and recurrence rates[1]. In contrast, fundic gland polyps were more commonly observed among *H. pylori*-negative patients, consistent with prior literature suggesting a relationship with

chronic proton pump inhibitor (PPI) use[10]. A detailed evaluation of PPI exposure was not possible because reliable information regarding treatment duration and cumulative dosage was not consistently available in the retrospective records. Therefore, the observed distribution of fundic gland polyps should be interpreted with caution.

The association between hyperplastic polyps and anemia observed in our cohort underscores the clinical relevance of even histologically benign lesions. Several studies have highlighted that larger hyperplastic polyps, particularly those exceeding 1 cm, may cause occult gastrointestinal bleeding, thereby contributing to iron deficiency anemia[2,3]. Our findings are consistent with these observations, as hyperplastic polyps were significantly associated with anemia, while other polyp subtypes demonstrated no such relationship. Furthermore, the increased frequency of anemia among patients with fecal occult blood test positivity supports the hypothesis that chronic blood loss may occur in a subset of patients harboring hyperplastic lesions[4].

Although adenomatous polyps were infrequently encountered in this study, their clinical significance should not be underestimated. Adenomas carry a risk of malignant transformation, and previous reports have demonstrated their potential to coexist with advanced neoplasia elsewhere in the gastrointestinal tract[11,13,14]. Accordingly, patients diagnosed with gastric adenomas warrant close surveillance and comprehensive endoscopic evaluation, including colonoscopy.

The potential association between gastric and colonic polyps observed in our study, although not statistically significant, is noteworthy. Approximately one-quarter of patients undergoing colonoscopy were found to have synchronous colonic polyps, with hyperplastic gastric polyps being the most common gastric subtype in this group. Prior literature has reported a similar coexistence, particularly in patients with adenomatous polyps[4,6]. Although our data did not demonstrate a statistically significant relationship, the trend highlights the importance of considering colonoscopy in patients with gastric polyps, especially when additional risk factors such as advanced age, anemia, or family history of colorectal neoplasia are present.

Age has long been recognized as a factor in gastric polyp development. In support of this, several studies suggest that aging-related changes in gastrointestinal mucosa, inflammation, and immune response may predispose to both gastric and colonic lesions[5–9]. Our cohort, with a mean age of 62 years, reflects this demographic trend. Furthermore, the predominance of female patients aligns with previous findings, particularly in relation to fundic gland polyps[15].

Interestingly, no significant association was found between antithrombotic use and anemia in our study. This contrasts with prior reports indicating that aspirin and anticoagulant use may exacerbate bleeding risk in the setting of gastric mucosal lesions[2]. This discrepancy may be attributable to limitations in sample size or the retrospective design of the study.

Taken together, these results emphasize the need for a tailored diagnostic and management strategy for gastric polyps. While fundic gland polyps are typically benign and associated with PPI use[10,15], hyperplastic polyps require a more cautious evaluation due to their association with *H. pylori*, chronic inflammation, anemia, and potential for neoplastic transformation[1–3,11,13,14]. Furthermore, the possible link between gastric and colonic neoplasia underscores the value of a bidirectional endoscopic strategy in selected patients[4,6].

Importantly, our study contributes to the literature by simultaneously analyzing histopathological subtypes of gastric polyps, iron deficiency anemia, and synchronous colonic neoplasia within a single cohort. This triangulated approach—rarely performed in similar-sized retrospective studies—may offer practical insights for patient selection in

bidirectional endoscopy. It may also serve as a hypothesis-generating foundation for future prospective, multicenter trials evaluating risk-based endoscopic strategies.

The retrospective nature of this study introduces several limitations, including potential selection bias and incomplete information regarding PPI exposure, treatment duration, and detailed size-based analyses of gastric polyps. Furthermore, as colonoscopy was performed according to clinical indications rather than systematically in all patients, the evaluation of synchronous colonic polyps may have been subject to selection bias, which should be considered when interpreting the observed associations.

5. Conclusion

Hyperplastic polyps warrant careful clinical evaluation due to their association with mucosal inflammation and anemia. The relatively high frequency of synchronous colonic polyps observed in our cohort may support consideration of colonoscopic evaluation in selected patients. Further prospective studies are needed to confirm these findings and refine surveillance strategies.

genAI: No artificial intelligence-based tools or generative AI technologies were used in this study. The entire content of the manuscript was originally prepared, reviewed, and approved by all authors.

Statement of Ethics: This study was approved by the Osmaniye Korkut Ata University Clinical Research Ethics Committee under decision number 6/4, dated July 2, 2025. As the study was retrospective and involved anonymized data, informed consent was waived in accordance with national regulations. The study was con-ducted in full compliance with the ethical principles outlined in the Declaration of Helsinki (revised 2013).

Data Availability: The datasets used and/or analyzed during the current study are available from the corresponding author upon reasonable request.

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Conflict of Interest: The authors declare no conflict of interest.

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