

Clinical and Histopathological Pattern of Gastric Polyp - An Observational Study

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ABSTRACT:

Background: Gastric polyps are common incidental findings during upper gastrointestinal endoscopy, with variable histological types, clinical features, and malignant potential. Their patterns may be influenced by *H. pylori* infection, PPI use, and regional factors. Due to limited evidence from Bangladesh, this study assessed the clinical and histopathological patterns of gastric polyps and their relevant clinicopathological associations. **Methods:** This hospital-based observational study was conducted at the Department of Gastroenterology and Hepatology, BSMMU, Dhaka, from July to December 2024. Sixty consecutive adults with histopathologically confirmed gastric polyps detected during upper gastrointestinal endoscopy were enrolled. Demographic, clinical, and endoscopic characteristics were recorded. Polyps were biopsied or resected and examined histopathologically after H&E staining. Data were analyzed using SPSS version 25.0, with appropriate statistical tests and a significance level of $p < 0.05$. Ethical approval and written informed consent were obtained. **Results:** Among 60 patients, the mean age was 53.8 ± 12.4 years, with males predominating (63.3%). Epigastric pain/dyspepsia was the most common symptom (68.3%). The antrum was the most frequent polyp location (45.0%), and most lesions were solitary (76.7%) and sessile (58.3%). Hyperplastic polyps were the predominant histological type (43.3%), followed by fundic gland polyps (25.0%) and adenomas (18.3%). Adenomas were significantly more common in patients aged ≥ 50 years and in larger polyps (≥ 20 mm) ($p = 0.031$ and $p = 0.018$, respectively). Histopathological subtype also showed a significant association with anatomical location ($p = 0.027$). **Conclusion:** Hyperplastic polyps predominated, with significant associations between histological type, age, polyp size, and location, emphasizing the importance of histopathological evaluation.

Keywords: Gastric polyp, Histopathological pattern, Clinical pattern, Hyperplastic polyp,

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INTRODUCTION:

A gastric polyp is a mucosal growth extending into the gastrointestinal cavity, occasionally with a stem. Certain polyps have the ability to become malignant, and gastric cancer continues to be a leading cause of death related to cancer, frequently identified at a later stage [1]. As upper gastrointestinal endoscopy becomes more common, gastric polyps are being identified more often, typically by chance. They appear in about 1–6% of upper GI endoscopies, with prevalence differing by population, area, endoscopic technique, and PPI usage [2,3]. The prevalence and distribution of gastric polyp subtypes differ among populations

because of geographic factors, *H. pylori* infection, PPI usage, dietary habits, environmental influences, as well as endoscopic and histopathological factors [2,4]. Gastric polyps can develop in various parts of the stomach and originate from different types of tissues. The primary types of epithelia include hyperplastic, adenomatous, and fundic gland polyps, which can be either sporadic or linked to genetic syndromes. Their progression is associated with elements like *H. pylori* infection and the use of proton pump inhibitors, along with differing probabilities of cancerous transformation [5,6]. Clinical characteristics differ

according to histological subtype. Fundic gland polyps are typically small, numerous, and sessile lesions found in the fundus and body, often discovered by chance. Hyperplastic polyps are often solitary, either sessile or pedunculated growths, and are typically found in the antrum. Gastric adenomas are typically solitary, flat or sessile growths, usually located in the antrum [7,8].

Malignant transformation differs by histological type, presenting a low risk in hyperplastic polyps (~2%) and a greater risk in adenomas (up to 30%). Histological analysis is critical since the visible appearance may not accurately represent the underlying pathology [9]. The management of gastric polyps includes detection, characterization, biopsy or removal, assessment of the adjacent gastric mucosa, and suitable monitoring. Thorough evaluation aids in identifying and addressing pre-neoplastic and neoplastic lesions promptly [10,11].

Globally, studies have shown that gastric polyps vary in clinical distribution and histopathological features according to subtype. Fundic gland, hyperplastic, and adenomatous polyps differ in anatomical distribution, morphology, associated inflammatory changes, and dysplastic potential, emphasizing the importance of histopathological examination for accurate classification and appropriate risk assessment [12,13]. In Bangladesh, studies have reported variable gastric lesions on endoscopy, with histopathological examination providing important confirmation of the diagnosis. Gastric polyps showed differences in type and anatomical distribution, highlighting the need for correlation between endoscopic appearance and histopathological findings for accurate diagnosis and classification [14,15].

In Bangladesh, there is scarce evidence regarding the clinical, endoscopic, and histopathological characteristics of gastric polyps, especially concerning their subtype distribution and clinicopathological relationships. This study sought to assess the clinical and histopathological characteristics of gastric polyps and examine their correlation with notable clinicopathological features in patients undergoing upper gastrointestinal endoscopy.

METHODOLOGY:

This hospital-based observational study was conducted in the Department of Gastroenterology and Hepatology, Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka, Bangladesh, over a six-month period from July 2024 to December 2024. The study was designed to investigate the clinical presentation, endoscopic characteristics, and histopathological spectrum of gastric polyps among adult patients undergoing upper gastrointestinal endoscopy.

Adult patients aged 18 years or older who were diagnosed with one or more gastric polyps during upper gastrointestinal endoscopy were considered eligible for inclusion. All detected polyps were removed either by endoscopic biopsy or polypectomy and submitted for histopathological examination. Only patients with histopathologically confirmed gastric polyps who provided written informed consent were included in the study. Patients younger than 18 years, those with previously diagnosed gastric malignancy, recurrent gastric polyps following prior endoscopic or surgical treatment, incomplete clinical or histopathological records, or those unwilling to participate were excluded from the study.

A total of 60 consecutive patients with histopathologically confirmed gastric polyps were enrolled using a consecutive sampling technique during the study period. After obtaining written informed consent, demographic information, including age, sex, residence, and body mass index (BMI), was recorded using a pretested structured data collection form. Clinical information regarding presenting symptoms, smoking status, comorbidities, and family history of gastric cancer was also collected through patient interviews and review of hospital medical records.

Upper gastrointestinal endoscopy was performed by experienced gastroenterologists using standard video endoscopes under routine institutional protocols. The anatomical location of each gastric polyp (cardia, fundus, body, antrum, or pylorus), number of polyps, gross morphology (sessile, pedunculated, or flat), and maximum polyp size were documented during the procedure. Biopsy specimens or resected polyps were immediately fixed in 10% neutral buffered formalin, routinely processed, embedded in paraffin, sectioned at 3–5 μm , and stained with hematoxylin and eosin (H&E). Histopathological examination was performed by experienced consultant pathologists. Polyps were classified as hyperplastic polyps, fundic gland polyps, gastric adenomas, inflammatory fibroid polyps, or hamartomatous polyps according to established histopathological criteria. Gastric adenomas were further categorized as low-grade or high-grade dysplasia based on the degree of epithelial atypia.

Data were entered, checked for completeness, and analyzed using the Statistical Package for the Social Sciences (SPSS) version 25.0 (IBM Corp., Armonk, NY, USA). Continuous variables were expressed as mean $\pm$ standard deviation (SD), whereas categorical variables were presented as frequencies and percentages. Associations between histopathological types and selected clinicodemographic and endoscopic characteristics were assessed using the Chi-square test or Fisher's exact test, as appropriate. A two-tailed p -value of <0.05 was considered statistically significant.

Ethical approval was obtained from the Institutional Review Board (IRB)/Ethical Review Committee of Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka, Bangladesh, before the commencement of the study. Written informed consent was obtained from all participants prior to enrollment. The confidentiality and anonymity of participant information were strictly maintained throughout the study, and the research was conducted in accordance with the ethical principles of the Declaration of Helsinki.

RESULTS

Table 1 shows total of 60 adult patients with histopathologically confirmed gastric polyps were included in the study. The sociodemographic characteristics and comorbidities of the study participants. The mean age of the participants was 53.8 ± 12.4 years (range: 24–78 years). The highest proportion of patients (30.0%) belonged to the 50–59 years age group. Males accounted for 63.3% of the study population, resulting in a male-to-female ratio of 1.7:1. More than half of the participants (56.7%) resided in urban areas, while 43.3% were overweight and 23.3% were obese. The most common comorbidities were hypertension (38.3%), current/former smoking (35.0%), and diabetes mellitus (30.0%). A family history of gastric cancer was documented in 6.7% of the patients.

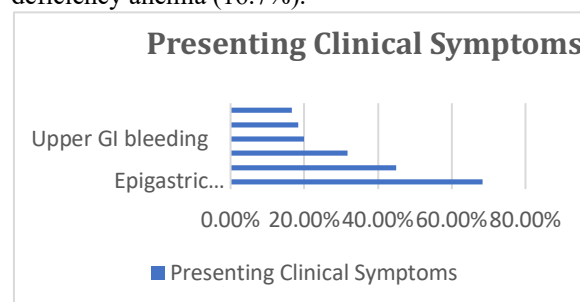
Table 1. Sociodemographic and Clinical Characteristics of the Patients (N = 60)

Variable	Frequency (n)	Percentage (%)
Age group (years)		
18–39	10	16.7
40–49	14	23.3
50–59	18	30.0
60–69	12	20.0
≥70	6	10.0
Mean ± SD	53.8 ± 12.4	-
Range	24–78	-
Sex		
Male	38	63.3
Female	22	36.7
Residence		
Urban	34	56.7
Rural	26	43.3
BMI (kg/m²)		
Normal	20	33.3
Overweight	26	43.3
Obese	14	23.3
Comorbidities*		
Hypertension	23	38.3
Diabetes mellitus	18	30.0

Current/former smoker	21	35.0
Family history of gastric cancer	4	6.7

*Multiple responses were allowed; therefore, percentages do not total 100%

Figure I show epigastric pain or dyspepsia was the most common presenting complaint, reported by 41 (68.3%) patients, followed by heartburn (45.0%), nausea or vomiting (31.7%), upper gastrointestinal bleeding (20.0%), early satiety (18.3%), and iron deficiency anemia (16.7%).



Multiple responses were allowed; therefore, percentages do not total 100%

Figure I: Distribution of Presenting Clinical Symptoms Among Patients with Gastric Polyps (N = 60)

Table 2 presents the gastric antrum (45.0%) was the most common site of gastric polyps, followed by the gastric body (25.0%), fundus (15.0%), cardia (8.3%), and pylorus (6.7%). Most patients (76.7%) had a solitary polyp, whereas 23.3% had multiple lesions. Sessile morphology (58.3%) predominated over pedunculated morphology (36.7%). The mean polyp size was 11.4 ± 5.8 mm, and 16.7% of polyps measured 20 mm or larger.

Table 2. Endoscopic Characteristics of Gastric Polyps (N = 60)

Variable	Frequency (n)	Percentage (%)
Location		
Cardia	5	8.3
Fundus	9	15.0
Body	15	25.0
Antrum	27	45.0
Pylorus	4	6.7
Number of polyps		
Single	46	76.7
Multiple	14	23.3
Morphology		
Sessile	35	58.3
Pedunculated	22	36.7
Flat	3	5.0

Largest polyp size		
<10 mm	27	45.0
10–19 mm	23	38.3
≥20 mm	10	16.7
Mean size ± SD	11.4 ± 5.8 mm	-

Table 3 shows hyperplastic polyps (43.3%) were the most common histopathological subtype, followed by fundic gland polyps (25.0%), gastric adenomas (18.3%), inflammatory fibroid polyps (8.3%), and hamartomatous polyps (5.0%).

Table 3. Histopathological Spectrum of Gastric Polyps (N = 60)

Histopathological diagnosis	Frequency (n)	Percentage (%)
Hyperplastic polyp	26	43.3
Fundic gland polyp	15	25.0
Gastric adenoma	11	18.3
Inflammatory fibroid polyp	5	8.3
Hamartomatous polyp	3	5.0
Total	60	100.0

Table 4 shows the association between histopathological type and selected clinicodemographic characteristics is presented in Table 4. Gastric adenomas were significantly more frequent among patients aged 50 years or older than among younger individuals (25.0% vs. 8.3%, $p = 0.031$). In addition, adenomas were more commonly observed in polyps measuring ≥20 mm, whereas hyperplastic and fundic gland polyps predominated among lesions measuring <10 mm ($p = 0.018$). No statistically significant association was observed between histopathological type and sex ($p = 0.462$).

Table 4. Association of Histopathological Type with Selected Clinicodemographic Characteristics (N = 60)

Variable	Hyperplastic Polyp (n=26), n (%)	Fundic Gland Polyp (n=15), n (%)	Gastric Adenoma (n=11), n (%)	Other Polyps* (n=8), n (%)	p-value
Age group					0.031
<50 years (n=24)	12 (50.0)	8 (33.3)	2 (8.3)	2 (8.3)	

≥50 years (n=36)	14 (38.9)	7 (19.4)	9 (25.0)	6 (16.7)	
Sex					0.462
Male (n=38)	15 (39.5)	8 (21.1)	9 (23.7)	6 (15.8)	
Female (n=22)	11 (50.0)	7 (31.8)	2 (9.1)	2 (9.1)	
Largest polyp size					0.018
<10 mm (n=27)	15 (55.6)	9 (33.3)	1 (3.7)	2 (7.4)	
10–19 mm (n=23)	9 (39.1)	5 (21.7)	6 (26.1)	3 (13.1)	
≥20 mm (n=10)	2 (20.0)	1 (10.0)	4 (40.0)	3 (30.0)	

*Other polyps include inflammatory fibroid and hamartomatous polyps.

Chi-square test.

Table 5 shows the relationship between the anatomical location of gastric polyps and their histopathological diagnosis. Hyperplastic polyps were predominantly located in the gastric antrum (65.4%), whereas fundic gland polyps occurred mainly in the body and fundus (73.3%). Gastric adenomas were distributed primarily in the antrum (45.5%) and body/fundus (36.4%). The distribution of histopathological subtypes according to anatomical location was statistically significant ($p = 0.027$).

Table 5. Association Between Gastric Polyp Location and Histopathological Type (N = 60)

Histopathological Type	Antrum (n=27), n (%)	Body/Fundus (n=24), n (%)	Cardia/Pylorus (n=9), n (%)	Total	p-value
Hyperplastic polyp	17 (65.4)	7 (26.9)	2 (7.7)	26	0.027
Fundic gland polyp	3 (20.0)	11 (73.3)	1 (6.7)	15	

Gastric adenoma	5 (45.5)	4 (36.4)	2 (18.2)	11
Other polyps*	2 (25.0)	2 (25.0)	4 (50.0)	8

*Other polyps include inflammatory fibroid and hamartomatous polyps.

Chi-square test.

DISCUSSION:

In this study, gastric polyps were more prevalent in adults aged middle-aged and older, with an average age of 53.8 ± 12.4 years and a male majority. Obesity/overweight was prevalent, with hypertension, smoking, and diabetes being the primary comorbid conditions. These results align well with recent studies indicating that gastric polyps are often identified in older individuals during endoscopic procedures, with hyperplastic and fundic gland polyps being the prevalent varieties. Smoking, obesity, H. pylori infection, advanced age, male gender, and family history are identified factors linked to gastric cancer development. Therefore, thorough endoscopic and histopathological examination is crucial for accurate risk assessment [16,17].

In our study, the predominant issue reported was epigastric pain or dyspepsia, succeeded by heartburn, nausea/vomiting, and bleeding in the upper gastrointestinal tract. These results align with gastric hyperplastic polyps, which can manifest through nonspecific dyspeptic symptoms or gastrointestinal bleeding. Iron deficiency anemia (16.7%) could indicate ongoing hidden blood loss due to gastric polyps. Consequently, ongoing upper gastrointestinal symptoms require endoscopic assessment and histopathological verification [1].

In the current research, the antrum emerged as the most prevalent location for gastric polyps, succeeded by the body, with the majority of lesions being solitary and sessile. The average polyp size was 11.4 ± 5.8 mm, with 16.7% measuring ≥ 20 mm. These results align with those of an earlier decade-long study, which noted differences in polyp location, morphology, and size based on histological type. The prevalence of solitary, small, and fixed lesions highlight the significance of thorough endoscopic examination and histopathological analysis [18].

Hyperplastic polyps represented the most prevalent histopathological type, succeeded by fundic gland polyps and gastric adenomas. This result aligns with earlier research indicating that gastric polyps exhibit a varied histopathological spectrum, with hyperplastic and fundic gland polyps being prevalent types. The existence of adenomas holds clinical significance due to their potential for malignancy, underscoring the necessity for histopathological assessment [19].

In this study, the histopathological type showed a significant relationship with both age and polyp size, with gastric adenomas occurring more frequently in individuals aged ≥ 50 years and in larger polyps, whereas hyperplastic and fundic gland polyps were more prevalent in smaller lesions. These results align with earlier research indicating that advancing age and larger polyp size correlate with higher neoplastic potential, emphasizing the necessity for thorough endoscopic and histopathological assessment [16,17,19].

In this study, the histopathological type showed a significant relationship with the anatomical location. Hyperplastic polyps primarily appeared in the antrum, while fundic gland polyps were mainly found in the body/fundus. Gastric adenomas were primarily found in the antrum and body/fundus. These results align with an earlier study from Bangladesh, which noted differences in gastric polyp types based on anatomical sites, with hyperplastic polyps frequently affecting the antrum. This site-specific distribution underscores the necessity of factoring in anatomical location during endoscopic examination and histopathological analysis of gastric polyps [14].

In general, gastric polyps exhibited unique clinicopathological characteristics, emphasizing the significance of endoscopic assessment and histopathological analysis for precise diagnosis and risk evaluation.

CONCLUSION

Hyperplastic polyps were the most common histopathological type of gastric polyp, followed by fundic gland polyps and gastric adenomas. Gastric polyps predominantly affected middle-aged and older adults, with dyspepsia being the most common presenting symptom and the antrum the most frequent site of occurrence. Histopathological type was significantly associated with patient age, polyp size, and anatomical location. Routine endoscopic biopsy or polypectomy with histopathological examination remains essential for accurate diagnosis and appropriate management of gastric polyps.

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