Histopathological Pattern Of Gastric Polyps: An Observational Study

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KEYWORDS

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ABSTRACT:

Gastric polyps are heterogeneous lesions arising from the stomach lining, often detected incidentally during endoscopy. Their histological diversity spans benign hyperplastic polyps to premalignant adenomas, underscoring the need for accurate diagnosis and management. This cross-sectional study investigates the histopathological patterns of gastric polyps in Bangladeshi patients, shedding light on their prevalence, demographic variations, and possible etiological factors. The study, conducted from January 2024 to December 2024 at the Central Police Hospital in Dhaka and various private hospital settings, analysed 98 cases of gastric polyps detected through endoscopy. Detailed demographic, clinical, and histopathological data were collected and categorized following WHO guidelines. Hyperplastic polyps were the most common subtype (50.0%), with a higher prevalence in males and a peak occurrence in the 50–60 age group. Fundic gland polyps (31.63%) showed a marked female predominance, predominantly affecting younger patients aged 30–40 years. Adenomatous polyps (4.08%), known for their malignant potential, were exclusively found in patients over 50 years. Rare histological types, including hamartomatous polyps was also observed. The findings reveal significant gender and age-related disparities in the distribution of gastric polyps. Hyperplastic polyps, linked to chronic inflammation and Helicobacter pylori infection, highlight the importance of addressing H. pylori prevalence in Bangladesh. The female bias in fundic gland polyps suggests potential associations with proton pump inhibitor use. This study enriches the understanding of gastric polyps in the Bangladeshi population and emphasizes the need for localized research to explore socio-environmental and dietary influences. By providing insights into the histological spectrum and clinical relevance of gastric polyps, the research aims to enhance diagnostic and therapeutic strategies, ultimately contributing to improved gastrointestinal health outcomes in Bangladesh.

INTRODUCTION

Gastric polyps are a heterogeneous group of lesions that develop on the inner lining of the stomach and are often discovered incidentally during upper gastrointestinal endoscopy. These polyps can range from

benign hyperplastic lesions to precancerous adenomas and even malignant neoplasms [1]. Understanding the histological patterns of these polyps is essential for accurate diagnosis, effective management, and better patient outcomes. In recent years, the increasing accessibility of endoscopic procedures has led to a rise in the detection rates of gastric polyps globally, including in developing countries like Bangladesh [2].

The stomach plays a crucial role in the digestive process, and any abnormal growth within its lining can disrupt its function. Gastric polyps are often asymptomatic but can present with nonspecific symptoms such as abdominal pain, nausea, vomiting, and gastrointestinal bleeding. The clinical significance of these polyps varies, as some types, like hyperplastic polyps, are generally benign, while others, like adenomas, carry a potential risk for malignant transformation [3]. Furthermore, the prevalence and distribution of different types of gastric polyps can vary significantly based on demographic, geographic, and environmental factors [4].

Bangladesh, with its unique socio-economic and healthcare dynamics, provides a distinctive landscape for studying gastric polyps. The country faces a high burden of gastrointestinal diseases due to factors such as poor dietary habits, widespread *Helicobacter pylori* infection, and limited access to healthcare services [5]. *Helicobacter pylori*, a bacterium strongly associated with chronic gastritis and peptic ulcer disease, is also implicated in the pathogenesis of certain types of gastric polyps, such as hyperplastic polyps and adenomas [6]. However, there is limited data on the histological patterns and prevalence of gastric polyps in the Bangladeshi population [1].

Histopathological examination remains the gold standard for the diagnosis and classification of gastric polyps. It provides valuable insights into the morphological and cellular characteristics of these lesions, aiding in determining their benign or malignant nature [3]. Such information is critical for tailoring patient management strategies, including the decision for endoscopic removal, surveillance, or further therapeutic interventions [7].

Globally, several studies have highlighted the histological diversity of gastric polyps and their potential implications. For instance, research from Western countries often shows a higher prevalence of fundic gland polyps due to the widespread use of proton pump inhibitors. In contrast, studies from Asian countries, where *Helicobacter pylori* infection is more common, frequently report a predominance of hyperplastic polyps. However, data specific to Bangladesh remain scarce, underscoring the need for localized studies to better understand the histopathological patterns of gastric polyps in this population [4].

This study aims to fill the knowledge gap by investigating the histological patterns of gastric polyps among Bangladeshi patients. By examining the distribution, types, and clinical correlations of these lesions, the research seeks to provide valuable insights into their prevalence and characteristics in the Bangladeshi context. Additionally, the study aims to explore the possible etiological factors, including *Helicobacter pylori* infection, dietary habits, and socio-demographic variables, which may influence the development and histological diversity of gastric polyps [5].

This research is anticipated to contribute significantly to the existing body of knowledge regarding gastric polyps in Bangladesh. By offering a comprehensive histopathological analysis, the study aims to aid clinicians and healthcare providers in developing better diagnostic and management strategies for patients presenting with gastric polyps. Furthermore, the findings may pave the way for future studies and public health initiatives aimed at reducing the burden of gastrointestinal diseases in the Bangladeshi population.

METHODOLOGY

Study Design and Setting: This study employed a cross-sectional descriptive design to investigate the histopathological patterns of gastric polyps in Bangladeshi patients. The research was conducted from January 2024 to December 2024 in both the Department of Gastroenterology and Hepatology at Central

Police Hospital (CPH), Dhaka, and in private hospital settings. These facilities were selected due to their accessibility to a diverse patient population and availability of advanced diagnostic and therapeutic services, including upper gastrointestinal endoscopy and histopathological analysis.

Study Population: The study included patients who underwent upper gastrointestinal endoscopy at the hospital and were found to have gastric polyps. These patients were referred for further histopathological examination of the identified lesions. The inclusion criteria for the study were patients of any gender and age group presenting with gastric polyps detected during endoscopy, who provided consent to participate in the study and undergo histopathological evaluation of the lesions. The exclusion criteria included patients with incomplete medical records or insufficient biopsy samples, those who refused consent for participation, and cases where gastric tumours presented as polypoid lesions secondary to advanced malignancy.

Sample Size: A total of 98 patients met the inclusion criteria during the study period. The sample size was deemed adequate for descriptive and exploratory analyses of the histopathological patterns of gastric polyps in this population.

Ethical Considerations: Ethical approval was obtained from the institutional review board of Central Police Hospital, Dhaka. Written informed consent was secured from all participants after explaining the purpose, procedures, and potential benefits of the study. All patient data were anonymized to maintain confidentiality.

Data Collection: Detailed demographic and clinical information, including age and gender, were collected from patient medical records and interviews. Upper gastrointestinal endoscopy was performed by experienced gastroenterologists using a standard video endoscope, during which gastric polyps were identified, and their size, location, and morphological appearance were documented. Biopsy specimens were collected from the polypoid lesions using appropriate biopsy forceps under direct visualization. All biopsy specimens were fixed in 10% formalin and processed at the hospital's pathology department using standard histological techniques, including paraffin embedding, sectioning, and hematoxylin and eosin (H&E) staining. Additional diagnostic techniques such as periodic acid-Schiff (PAS) staining or immunohistochemistry were employed when necessary. The histological classification of gastric polyps followed World Health Organization (WHO) guidelines, categorizing them into hyperplastic polyps, fundic gland polyps, adenomatous polyps, inflammatory polyps, and other rare types, such as hamartomatous polyps or neoplastic lesions.

Data Analysis: Collected data were entered into a Microsoft Excel spreadsheet and analysed using SPSS (version 27). Descriptive statistics were used to summarize the demographic characteristics of the study population. The distribution and prevalence of histological subtypes of gastric polyps were presented as percentages and frequencies. Relationships between demographic characteristics (e.g., Age, Gender) and histological findings were assessed using chi-square tests or Fisher's exact tests as appropriate. Statistical significance was set at $p < 0.05$.

Limitations and Strengths of the Study: This study has some inherent limitations, including its cross-sectional design, which restricts the ability to infer causal relationships, and the sample size of 98 patients, which, while adequate for descriptive purposes, may limit the generalizability of the findings to the broader Bangladeshi population. Additionally, potential biases may arise from the selection of patients presenting to a limited number of hospitals. Despite these limitations, the study provides valuable insights into the histopathological spectrum of gastric polyps among Bangladeshi patients, a topic currently underrepresented in the literature. The findings are expected to aid clinicians in the diagnosis and management of gastric polyps and serve as a foundation for future research in this field.

RESULTS

The study analysed the histopathological patterns of gastric polyps among 98 patients, comprising 38 males and 60 females. Hyperplastic polyps emerged as the most frequent histological type, accounting for 50.0% of cases, with a higher prevalence in males (60.53%) than females (43.3%). Fundic gland

polyps were the second most common type, representing 31.63% of cases and showing a marked predominance in females (40.0%) compared to males (18.42%). Adenomatous polyps accounted for 4.08% of cases, distributed nearly equally between males (5.26%) and females (3.33%). Inflammatory polyps were observed in 12.24% of cases, with a slight male predominance (13.16% in males vs. 11.67% in females). Rare histological types, including hamartomatous polyps, and tubular adenomatous polyps, each constituted 1.02% of the study population.

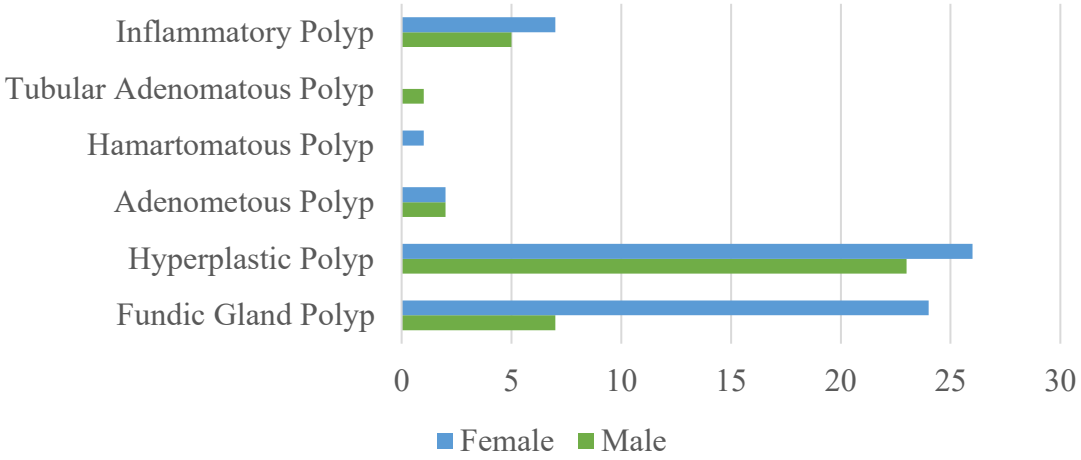

Figure 1: Gender wise Distribution of Gastric Polyp among Study Population

Age-wise distribution revealed that hyperplastic polyps were prevalent across all age groups, with the highest frequency observed in patients aged 50–60 years (30.6%). Fundic gland polyps were most commonly found in the 30–40 age group (29.0%), while adenomatous polyps were exclusively identified in patients aged over 50 years. Additionally, rare histological types such as hamartomatous polyps were found in patients aged above 60 years and the 30–40 age group, respectively. Overall, the findings highlight the predominance of hyperplastic and fundic gland polyps in this Bangladeshi population, with notable variations in histopathological patterns based on gender and age (Table 01).

Table 01: Age wise Distribution of Gastric Polyp among Study Population

	Age Category				
Histopathological Findings	**<30 years**	**30-40 years**	**40-50 years**	**50-60 years**	**>60 years**
Fundic Gland Polyp	2 (6.5)	9 (29.0)	8 (25.8)	8 (25.8)	4 (12.9)
Hyperplastic Polyp	3 (6.1)	10 (20.4)	14 (28.6)	15 (30.6)	7 (14.3)
Adenomatous Polyp	0 (0.0)	0 (0.0)	0 (0.0)	2 (50.0)	2 (50.0)
Hamartomatous Polyp	0 (0.0)	0 90.0)	0 (0.0)	0 (0.0)	1 (100.0)
Tubular Adenomatous Polyp	0 (0.0)	0 90.0)	1 (100.0)	0 (0.0)	0 (0.0)
Inflammatory Polyp	1 (8.3)	4 (33.3)	3 (25.0)	3 (25.0)	1 (8.3)

Discussion

The current study provides valuable insights into the histopathological patterns of gastric polyps among Bangladeshi patients, shedding light on gender and age-related variations. This analysis, conducted on 98 patients, reflects significant epidemiological and histopathological findings that align with, and in some cases diverge from, global trends.

Hyperplastic Polyps

Hyperplastic polyps were the most common histological subtype, comprising 50.0% of cases, with a notable male predominance (60.53% vs. 43.3% in females). These findings are consistent with previous studies indicating that hyperplastic polyps are the most frequent type of gastric polyp worldwide, often linked to chronic inflammation or Helicobacter pylori infection [8]. However, the higher male prevalence observed in our study contrasts with some reports suggesting a female predilection [9]. The

age distribution showed a peak incidence in the 50–60 years group, reinforcing earlier findings that these polyps are more common in middle-aged and older populations [10].

Fundic Gland Polyps

Fundic gland polyps accounted for 31.63% of cases, predominantly observed in females (40.0% vs. 18.42% in males). This gender disparity is consistent with the literature, where fundic gland polyps are frequently associated with long-term proton pump inhibitor (PPI) use, which is reportedly more prevalent among females [11]. The higher prevalence in the 30–40 age group aligns with studies suggesting that fundic gland polyps can occur in younger populations, particularly in the context of familial adenomatous polyposis (FAP) or sporadic cases [12]. The low prevalence in males may warrant further exploration to assess underlying factors such as PPI usage patterns or genetic predisposition.

Adenomatous Polyps

Adenomatous polyps constituted 4.08% of cases, with a near-equal distribution between genders (5.26% in males vs. 3.33% in females). This aligns with global data, which highlights adenomatous polyps as a less common but clinically significant subtype due to their potential for malignant transformation [6]. The exclusive occurrence in patients over 50 years in our cohort is consistent with previous findings suggesting that age is a critical risk factor for adenomatous polyp development and progression to gastric cancer [13].

Inflammatory Polyps

Inflammatory polyps, observed in 12.24% of cases, exhibited a slight male predominance (13.16% vs. 11.67% in females). This is comparable to the findings of Szeto et al. (2018), who reported a similar gender distribution [14]. These polyps are often associated with underlying gastritis or reflux conditions, emphasizing the need for comprehensive endoscopic and histopathological evaluation in symptomatic patients.

Rare Histological Types

The study identified several rare histological types, including hamartomatous polyps, and tubular adenomatous polyps, each constituting 1.02% of the study population. The occurrence of hamartomatous polyps in patients over 60 years aligns with the literature suggesting an association with Peutz-Jeghers syndrome in older age groups [15]. Pancreatic heterotopia in the 30–40 age group, though rare, has been reported sporadically in case studies [16].

Gender and Age Disparities

The gender and age-based variations observed in this study underscore the importance of demographic factors in the prevalence and histological subtypes of gastric polyps. Hyperplastic polyps' male predominance contrasts with the female bias in fundic gland polyps, possibly reflecting differences in hormonal influences, lifestyle, or medication usage. Age-specific patterns, such as the prevalence of hyperplastic polyps in older individuals and fundic gland polyps in younger age groups, align with established global trends [8, 12].

CONCLUSION

This study highlights the predominance of hyperplastic and fundic gland polyps among Bangladeshi patients, with distinct variations in prevalence based on gender and age. These findings contribute to the growing body of evidence on gastric polyp epidemiology and underscore the need for region-specific studies to understand underlying etiological and risk factors. Future research could explore the role of H. pylori infection, genetic predisposition, and environmental influences in shaping these patterns.

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