




Gastric polyps found at upper gastrointestinal endoscopy and its relation with proton pump inhibitor intake: A single-centre study

Madhusudan Saha¹, Md. Abdul Mumit Sarkar² , Sadhu Uttam Kumar³, Malay Kumar Sur Chowdhury⁴, Bimal Chandra Shil⁵

¹Professor, Department of Gastroenterology, Sylhet Women's Medical College, Sylhet

²Assistant Professor, Department of Gastroenterology, Rajshahi Medical College, Rajshahi

³Associate Professor, Department of Medicine, Sylhet MAG Osmani Medical College, Sylhet

⁴Associate Professor, Department of Gastroenterology, Sylhet MAG Osmani Medical College, Sylhet

⁵Professor, Department of Gastroenterology, Sir Salimullah Medical College and Mitford Hospital, Dhaka

Abstract: Background: This cross-sectional study was designed to see the frequency and associated factors of gastric polyps among patients undergoing endoscopic examination of the upper gastrointestinal tract. **Methods:** Consecutive patients who underwent endoscopic examination of upper GIT were included. Epidemiologic information, indication, history of proton pump inhibitor intake with duration, and endoscopic findings were recorded in a standard data sheet. SPSS version 20 was used for statistical analysis. Percentage, mean and SD were calculated for continuous data and the chi-square test was applied to see the relation of polyps with age, sex, duration, regularity, and dose of PPI use. **Results:** A total of 432 patients (Mean age 42.99±15.53) were included in this study. Of them, 198 (45.8%), 233 (53.93%), and 01 (0.23%) respectively were male, female, and third gender. 427 (98.9%) patients were taking PPI. A total of 109 (25.23%) patients had single or more polyps. of them, 90 (82.56%) patients had polyps limited within cardia and or fundus. Polyps were found more common among patients of age above 45 years (69; 63.30%), and females (70; 64.22%). The detection rate of gastric polyps increases with the duration of PPI intake of more than one year (102; 93.58%), regular intake (69; 63.30%), and twice daily doses (93; 85.32%) of PPI intake. **Conclusions:** Gastric polyps especially at fundus and cardia are common. Age, female sex, prolonged period, and regular and twice daily intake of PPI are found to be associated factors of gastric polyps.

Keywords: Gastric polyps; upper gastrointestinal endoscopy; PPI.

Original Researcher Article

*Correspondence:

Dr. Md. Abdul Mumit Sarkar

Assistant Professor, Department of Gastroenterology, Rajshahi Medical College, Rajshahi, Bangladesh

Email: mumitsarkar@gmail.com

ORCID ID: 0000-0002-0425-4919

How to cite this article:

Saha M, Sarkar MA, Kumar SU, Chowdhury MKS, Shil BC.; Gastric polyps found at upper gastrointestinal endoscopy and its relation with proton pump inhibitor intake: A single-centre study. *Taj* 2024;37 (1): 14-20.

Article history:

Received: December 12, 2023

Revised: January 17, 2024

Accepted: February 11, 2024

Published: February 15, 2024

Article at a glance:

Study Purpose: To see the frequency of detection of gastric and duodenal polyps, and associated factors of gastric polyps among patients undergoing endoscopic examination of the upper gastrointestinal tract.

Key findings: Gastric polyps especially at the fundus and cardia are common. Increasing age, female sex, and prolonged periods of PPI intake are found to be associated factors of gastric polyps.

Newer findings: Gastric polyps detection rate increases with the duration of PPI intake of more than one year. The detection rate of gastric polyps also increases with a regular and twice-daily intake of PPI.

Abbreviations: PPI; Proton Pump Inhibitor, FGP; Fundic Gland Polyp, HPP; Hyperplastic Polyp, GIT; Gastrointestinal Tract.



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INTRODUCTION

Gastric polyps are mostly asymptomatic and diagnosed incidentally during endoscopic examination.¹ The detection rate of gastric polyps

has increased in recent years because of the growing adoption of endoscopy in clinical practice.² Three most common types of gastric polyps are fundic gland polyps (FGP), hyperplastic

Peer Review Process: The Journal "The Journal of Teachers Association" abides by a double-blind peer review process such that the journal does not disclose the identity of the reviewer(s) to the author(s) and does not disclose the identity of the author(s) to the reviewer(s).

polyps (HPP), and adenomatous polyps. Among them, FGP is the commonest type of all benign polyps.³ FGP appears as sessile or pedunculated polyps and histologically shows cystic or microcystic dilatation of gastric glands.⁴ Since early 2000, a sharp increase in the incidence of FGP has been noticed in the USA with a relative prevalence of about 77% in one report.⁵

The etiology, risk factors, and underlying pathologies of gastric polyps are still unclear and inconsistent among the Asian population.^{6,7} Moreover study findings regarding gastric polyps from Western countries showed that the development of FGP is not associated with *H. pylori* infection, but associated with prolonged use of proton pump inhibitors (PPIs).^{4,8,9,10} Furthermore reports and older meta-analyses revealed that prolonged PPIs use for more than 12 months increases the chance of development of FGP.^{9,11} On the other hand reports showed no relation between the development of FGP and atrophic gastritis.^{12,14} Although declining, *H. pylori* infection is still high in Bangladesh.¹⁵⁻¹⁸ FGP and HPP can be detected with high accuracy based on endoscopic appearance.^{1,3} One report from Bangladesh found the incidence of gastric polyps was 1.83% with 47.0% distributed at the body and about 75.0% were hyperplastic polyps.¹⁹ With this background, this prospective cross-sectional study was designed to see the frequency of detection of gastric and duodenal polyps, their distribution, and their relation with the use of PPI among patients undergoing endoscopic examination for various indications

MATERIALS AND METHODS

This cross-sectional study was conducted in Popular Medical Centre, New Medical Road,

Sylhet from September 15, 2020, to December 15, 2020. Consecutive patients who underwent endoscopic examination of the upper gastrointestinal tract for variable indications were included. Informed consent was taken from patients desiring to be enrolled in this study. Their epidemiological information, history of comorbidities, personal habits, history of intake of PPI, and other drugs with duration were recorded in a predesigned data sheet. The upper gastrointestinal endoscopy was performed by senior gastroenterologists using an upper GI endoscope Olympus CV170 without the use of sedation and anticholinergic. Endoscopic findings were recorded in the datasheet. Data were analyzed using the SPSS 20 version. Mean, and percentages were calculated for continuous data, and the chi-square test was applied to see the relation between categorical data. P-value < 0.05 was taken as significant.

RESULTS

Consecutive 451 patients were initially included in this study. 19 patients were excluded as the examination was incomplete. Baseline characteristics of the study population are demonstrated in Table-1. of 432 patients 198 (45.8%), 233 (53.93%), and 01 (0.23%) were male, female, and third gender. Age of the participant varied from 15 years to 90 years (mean age 42.99±15.53). Most of them (Table-1) were housewives (213; 49.3%) followed by farmers (66; 15.3%), businessmen (57;13.2%), and students (33; 7.6%). In this series 427 (98.9 %) were respectively taking PPI (218; 50.5% and 209; 48.4% were taking PPI regularly and intermittently) while 5 (1.1%) never took PPI.

Table 1: Baseline characteristics of the study population

	Number(n) Percentage (%)		Number(n) Percentage (%)	
Total patients	432			
Age	Range 15 to 90 years	Mean 42.9907 SD 15.53	Personal information	
Sex			Smoker	68 15.7
Male	198	45.8	Ex-smoker	65 15.0
Female	233	53.9%	Betelnut -tobacco chewer	228 52.8
			Ex- Betelnut -tobacco chewer	03 0.70

Other	01	0.2%	NSAID taking regularly	20	4.60
Occupation			Taking on-demand NSAIDs	157	36.3
Student	33	7.6	Taking Ecospirin	13	3.00
Business	57	13.2	IHD	10	2.3
Housewife	213	49.8	Hypertension	4	0.9
Unemployed	5	1.2	DM	1	0.2
Farmer	66	15.3	Others	14	3.2
Service	16	3.7	PPI intake		
Day labour	3	0.7	Never took	5	1.10
Teacher	9	2.1	Taking PPI	427	98.9
Driver	7	1.6	Once daily	94	21.76
Mason	5	1.2	Taking PPI regularly	218	50.5
Abroad	4	0.9	Taking PPI intermittently	209	48.4
			twice daily	333	77.08

Common indications of endoscopic examination in this series were abdominal pain 163(37.7%), vomiting 69 (16.0%) fullness of abdomen 61 (14.1%), chest pain 45 (10.4%) Globus 38(8.8%), dysphagia 36 ((8.3%) burning abdomen 31 (7.2%) and heartburn 28 (6.3%). While common endoscopic findings (Table-3) were non-erosive antral gastritis 149 (34.5%), normal 111 (25.7%)

erosive antral gastritis 57 (13.2%), gastritis 37(8.6%) active duodenal ulcers disease 29 (6.7%) and Barrett's oesophagus 26 (6.0%). In this group, polyps were found in 109 (25.23%) patients during endoscopic examination of the upper gastrointestinal tract. Among them, 90(82.56%) had polyps either at the cardia or fundus or a combination of both sites (Table-2).

Table 2: Distribution of gastric polyps

	Number	Percentage
Total patients having polyps	109	25.23%
Polyps at cardia only	27	24.77
Polyps at fundus only	12	11.01
Polyps at both cardia & fundus	51	46.79
Cardia, fundus & body	1	0.92
Body only	6	5.50
Body and antrum	1	0.92
Antrum	5	4.58
Duodenum	3	2.75
Cardia, body & duodenum	1	0.92
Cardia and body	1	0.92
Fundus and body	1	0.92
Single polyp at cardia	12	11.00
Single polyp at fundus	18	16.51
Single polyp at body	6	5.50
Single polyp at antrum	6	5.50
Single polyp at duodenum	3	2.75
Multiple polyp at cardia	30	27.52
Multiple polyp at Fundus	47	43.11
Multiple polyp at body	5	4.58
Multiple polyp at antrum	0	0.00
Multiple polyp at duodenum	1	0.92

Table-3 shows the risk factors for gastric polyp development. Polyps were more common among females 70(64.22%) vs males 38 (34.74%) and the difference was significant (P=0.008) (Table 3). 84 (77.06%) and 67 (61.47%) patients were smokers and betel leaves-nut and tobacco chewers respectively. All the patients with polyp were

taking PPI either regularly 69 (63.30%) or intermittently 40 (36.7%) with significant difference (P=0.005). Of all patients with polyps, 93 (85.32% and 16 (14.68%) were taking PPI twice and once daily respectively and the difference was significant (P=0.042).

Table 3: Univariate analysis of risk factors of gastric polyp development

		Polyp present 109 (%)	Polyp absent 323 (%)	P value
Age group	Up to 30 y (119)	15 (12.60)	104 (87.40)	0.000
	31-45 years (129)	25 (19.38)	104 (81.42)	
	46-60 years (127)	40 (31.50)	87 (68.5)	
	>60 years (57)	29 (50.88)	28 (49.12)	
Sex	Male (198)	38 (19.19)	160 (80.81)	0.008
	Female (233)	70 (30.04)	163 (69.96)	
	Other (1)	1 (100.0)	0 (00.00)	
Smoking	Smoker (68)	9 (13.23)	59 (86.77)	0.0039
	Ex-smoker (65)	16 (24.61)	49 (75.39)	
	Non-smoker (299)	84 (28.09)	215 (71.91)	
Betel nut chewing	Yes (228)	67 (29.82)	161 (69.18)	0.078
	Ex-user (3)	0 (00.00)	3 (100.00)	
PPI intake	No (201)	42 (20.89)	159 (79.11)	0.232
	Yes (427)	109 (25.53)	318 (74.47)	
Frequency of PPI intake	No (5)	0	5 (100.00)	0.005
	Regularly (218)	69 (31.65)	149 (68.35)	
PPI Dose	Intermittent (209)	40 (19.14)	169 (80.86)	0.042
	Not taking (5)	0	5 (100.00)	
	Once daily (94)	16 (17.02)	78 (82.98)	
	Twice daily (333)	93 (29.93)	240 (70.07).	
Duration of PPI intake	Not taking (5)	0	5 (100.00)	0.001
	Up to 1 y 83	7 (8.43)	76 (91.57)	
	>1 – 3 y 107	27 (25.23)	80 (74.77)	
	>3-5 y 82	21 (25.61)	61 (74.39)	
	>5- 10 y 98	30 (30.61)	68 (69.39)	
	>10 y 57	24 (43.10)	33 (56.90)	

In this series presence of polyps significantly increases with the age of patients (p=0.031) and duration of PPI intake (p=0.000). The

presence of polyps at the fundus also significantly differs with duration of PPI intake (P=0.016) (Table-4).

Table 4: Relation of fundic polyp and duration of PPI intake

	Duration	Polyp at fundus		P Value
		Absent	Present	
PPI intake	Not taking (5)	5	0	0.016
	Up to 1 y (83)	80 (96.38)	3 (3.62)	
	>1 – 3 y (107)	91 (85.05)	16 (14.95)	
	>3-5 y 82	70 (85.36)	12 (14.64)	
	>5- 10 y 98	80 (81.63)	18 (18.37)	
	>10 y 57	41 (71.92)	16 (28.08)	

DISCUSSION

In our study, the prevalence of gastric polyp was 25.3% which is relatively higher than another previous report from Bangladesh¹⁹ and also higher than that of the USA⁵, China^{6, 20}, and India²¹. On the other hand, lower prevalence of gastric polyps was reported in Taiwan² and Japan¹. These differences may be due to demographic, genetic, and socioeconomic differences among the study population. The study design may also influence this finding. The incidence of polyp detection increases with increased age in the current study which is consistent with the report from Taiwan² and Germany²². In addition, the incidence of polyp detection was higher among females than males in our study which is consistent with a report from India²³. Furthermore, polyp incidence was significantly higher among nonsmokers which is contrary to a report from Taiwan². The relatively small sample size and overall lower number of smokers in our study might influence this result.

In this group, gastric polyp is significantly higher among patients taking PPI for prolonged periods, and also taking it regularly and twice daily. It is also seen that the incidence of polyp detection at cardia and or fundus is significantly higher among patients taking PPI for a prolonged period. Similar results were also reported in other studies showing that prolonged use of PPI increases the risk of gastric polyp formation, especially FGP²⁴⁻²⁶.

The study has some limitations. Biopsies were not taken from polyps and patients were not evaluated for H. pylori status. Our study place is a diagnostic center where patients were referred from various consultants and hospitals for investigations only. So, tracing patients for more investigations is more or less impossible. In

addition, it was not possible to make patients wait for 14 days without PPI before endoscopic examination and evaluation for H. pylori status. Another aspect is that several reports showed no relation between FGP with H. pylori infection^{4,8,9,10} and or environmental factors.¹⁰

CONCLUSION

Gastric polyps are common findings during upper gastrointestinal endoscopy. Older age, female sex, prolonged period, and regular and twice daily intake of PPI are found to be associated factors with gastric polyps. Further, a well-designed study with a large sample size may be conducted to detect the nature of malignant potential and risk factors of gastric polyps.

Acknowledgements

We thank our colleagues at Rajshahi Medical College, Bangladesh for their essential support and assistance with data collection.

Declaration

Funding: This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Conflict of Interest: The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Ethical approval: Approval was taken from local authority before starting the study.

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