

## Histopathologic Types of Gastrointestinal Tract Polypoidal Lesions in a Tertiary care Centre

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## ABSTRACT

### Introduction

Gastrointestinal tract polyps lesions are commonly encountered lesions in histopathological examination. It is necessary to examine these polyps and to determine its nature for the management of patient.

### Methods

A descriptive cross-sectional study was done in the Pathology Department of Kathmandu Medical College from January 2023 to July 2023 after obtaining ethical clearance. The study included all gastrointestinal tract polyps or polypoidal lesions identified endoscopically or colonoscopically, biopsied, and received for histopathological analysis.

### Results

Among 96 polyps examined, 58 (60.4%) were seen in males and 38 (39.6%) were seen in female. The age of the patients ranged from 15 to 89 years, with a mean age of 45 years. Most of the polypoidal lesions were less than 1 cm in size (76 cases, 79.1%). Colon (54 cases, 56.2%) was the most common site followed by the stomach (22 cases, 23.0%). Of the polypoidal lesions, 66(68.8%) were non-neoplastic polyps, while 30(31.2%) were neoplastic. Tubular adenoma with low-grade dysplasia was the most common polyp identified in the colon (17 cases, 17.8%). Hyperplastic polyps were the most common type overall (19 cases, 19.8%), stomach being the most frequent site (13 cases, 13.6%).

### Conclusion

A wide range of histological types of polypoidal lesions were found in the gastrointestinal tract. The most frequent occurrence was in the colon, and the majority were non-neoplastic in nature.

### Keywords

*Adenomatous polyp; gastrointestinal tract; hyperplastic polyp; polypoidal lesion*

## INTRODUCTION

Polypoidal lesions in gastrointestinal tracts are nodules or mass raised above the level of surrounding mucosa and protrudes into the lumen. These lesions may arise as a result of hyperplasia, inflammation, ectopia and neoplasia.<sup>1</sup> The most common location of polypoidal lesions are in colorectal region however they may occur anywhere in gastrointestinal tract.<sup>2</sup>

With advances in endoscopic procedures, gastrointestinal tract polypoidal lesions are commonly encountered in histopathological practice.<sup>3</sup> As there is possible risk of malignant transformation in some of the polypoidal lesion, histopathological examination and the diagnosis is the key concern for the proper management of the patient.<sup>2</sup>

Most important, 80-90% of colorectal carcinoma originates on the background of polyp which undergo dysplasia, adenocarcinoma in situ and adenocarcinoma sequence.<sup>4</sup> Hence, this study aims to evaluate the prevalence and histopathological nature of polypoidal lesion in gastrointestinal tract.

## METHODS

This was a descriptive cross-sectional study conducted among patients visiting Kathmandu Medical College Public Limited, Sinamangal, Nepal between January 2023 to July 2023.

Ethical approval was taken from the Institutional Review Committee of Kathmandu Medical College (Reference number: 04122022/05). Informed written consent was taken for the study. All gastrointestinal tract polyps or polypoidal lesions identified endoscopically as well as colonoscopically which were biopsied and received at Pathology department for histopathological study were included in this study.

Relevant findings was obtained from requisition form provided with the specimens such as age, sex, gross features like size of polyp and location of polyp. The specimens received in department of pathology were fixed in 10% formalin, grossed and processed as per standard protocol. The sections were cut on 5  $\mu$  and stained with hematoxylin and eosin stain (H&E stain). Histopathological examination was done.

**Table 1.** Gender-wise distribution of patient with gastrointestinal tract polypoidal lesion

| Gender | Number (%) |
|--------|------------|
| Male   | 58 (60.4)  |
| Female | 38 (39.6)  |

## RESULTS

Among 96 polyps examined during the study period, 58 (60.4%) were seen in males and 38 (39.6%) were seen in females with a male to female ratio of 1.5:1 (Table 1).

The age ranged from 15 to 89 years, with a mean age of 45 years. The size of the polypoidal lesion was <1 cm in 76 cases (79.1%), 1-1.9 cm in 16 cases (16.7%) and  $\geq$  2 cm in 4 cases (4.2%). The most common site was colon (n=54; 56.2%) followed by stomach (n=22; 23%) (Table 2).

Out of total 96, 66 (68.8%) were non neoplastic polyp whereas 30 (31.2%) were neoplastic polyp. Tubular adenoma with low grade dysplasia was the most common neoplastic polyp identified at colon (n=17, 17.8%) whereas hyperplastic polyp was most common non neoplastic polyp (n=19, 19.8%) (Table 3) and the common site was at stomach (n=13, 13.6%) (Table 4).

## DISCUSSION

Polyps in the GI tract exhibit a variety of histological types, each with distinct clinical presentations and varying potential for malignant transformation. Additionally, most polyps cannot be accurately differentiated based on gross examination alone, and the potential for malignant transformation in epithelial polyps cannot be determined solely by gross appearance. Therefore, it is both mandatory and essential that polyps be removed and subjected to histopathological examination to ensure an accurate diagnosis and appropriate management.<sup>5</sup>

In current study, GI polyps are more common in males (60.4%) compared to female (39.6%) which is consistent with the study done by Sherpa et al.<sup>2</sup> Similar to the studies done by Patil et al and Mirzaie et al, our study showed the commonest site of polyp was at colon (56.25%) followed by stomach (22.91%).<sup>3,6</sup> In the present study, the age of participants varied from 15 to 89 years. This range is comparable to the findings of Mirzaie et al.<sup>6</sup>, who reported an age range of 16 to 81 years.

**Table 2.** Site-wise distribution of patient with gastrointestinal tract polypoidal lesion

| Site                        | Number (%) |
|-----------------------------|------------|
| Colon                       | 54 (56.2)  |
| Stomach                     | 22 (23.0)  |
| Duodenum                    | 10 (10.4)  |
| Anal canal                  | 4 (4.2)    |
| Ileum                       | 3 (3.1)    |
| Oesophagus                  | 2 (2.1)    |
| Gastro-oesophageal junction | 1 (1.0)    |
| Total                       | 96 (100)   |

**Table 3.** *Histopathologic type of polypoidal lesions*

| Types of polypoidal lesion                 | Number (%) |
|--|------------|
| Non neoplastic                             | 66 (68.8)  |
| Hyperplastic polyp                         | 19 (19.8)  |
| Inflammatory polyp                         | 16 (16.7)  |
| Mucosal polyp                              | 8 (8.3)    |
| Brunner gland hyperplasia                  | 6 (6.2)    |
| Fundic gland polyp                         | 5(5.2)     |
| Juvenile polyp                             | 4(4.2)     |
| Fibroepithelial polyp                      | 4 (4.2)    |
| Squamous papilloma                         | 2 (2.1)    |
| Peutz-jeghers polyp                        | 2 (2.1)    |
| Neoplastic                                 | 30 (31.2)  |
| Tubular adenoma with low grade dysplasia   | 17 (17.8)  |
| Tubular adenoma with high grade dysplasia  | 3 (3.1)    |
| Adenocarcinoma                             | 3 (3.1)    |
| Adenomatous polyp with low grade dysplasia | 2 (2.1)    |
| Neuroendocrine tumor                       | 2 (2.1)    |
| Villous adenoma with low grade dysplasia   | 1 (1.0)    |
| GIST                                       | 1 (1.0)    |
| Sessile serrated lesion                    | 1 (1.0)    |
| Total                                      | 96 (100)   |

**Table 4.** *Site-wise distribution of Gastrointestinal tract polypoidal lesion*

| Site                        | Diagnosis                                  | Number (%) |
|-----------------------------|--|------------|
| Oesophagus                  | Squamous papilloma                         | 2 (2.1)    |
| Gastro-oesophageal junction | Inflammatory polyp                         | 1 (1.0)    |
| Stomach                     | Hyperplastic polyp                         | 13 (13.6)  |
|                             | Fundic gland polyp                         | 5 (5.2)    |
|                             | Adenomatous polyp with low grade dysplasia | 2 (2.1)    |
|                             | GIST                                       | 1 (1.0)    |
|                             | Neuroendocrine tumor                       | 1 (1.0)    |
| Duodenum                    | Brunner gland hyperplasia                  | 6 (6.2)    |
|                             | Inflammatory polyp                         | 4 (4.2)    |
| Ileum                       | Inflammatory polyp                         | 2 (2.1)    |
|                             | Peutz-jeghers polyp                        | 1 (1.0)    |
| Colon                       | Tubular adenoma with low grade dysplasia   | 17 (17.8)  |
|                             | Inflammatory polyp                         | 9 (9.4)    |
|                             | Mucosal polyp                              | 8 (8.3)    |
|                             | Hyperplastic polyp                         | 6 (6.2)    |
|                             | Juvenile polyp                             | 4 (4.2)    |
|                             | Tubular adenoma with high grade dysplasia  | 3 (3.1)    |
|                             | Adenocarcinoma                             | 3 (3.1)    |
|                             | Villous adenoma with low grade dysplasia   | 1 (1.0)    |
|                             | Neuroendocrine tumor                       | 1 (1.0)    |
|                             | Sessile serrated lesion                    | 1 (1.0)    |
|                             | Peutz-jeghers polyp                        | 1 (1.0)    |
| Anal canal                  | Fibroepithelial polyp                      | 4 (4.1)    |
| Total                       |  | 96 (100)   |



The mean age of patients in our study was 45 years, which slightly differs from the mean age of 58.4 years observed by Mirzaie et al.<sup>6</sup> In this study, the size of the polypoidal lesions was less than 1 cm in 76 cases (79.1%), between 1-1.9 cm in 16 cases (16.7%) and  $\geq 2$  cm in 4 cases (4.2%). Sherpa et al and Chitturi et al. also found that most of the polyps in their study were less than 1 cm.<sup>2,7</sup>

The colon was the most common site of involvement, observed in 54 cases (56.2%), followed by stomach, which had 22 cases (23.0%). This result aligns with the studies conducted by Sherpa et al and Patil et al, which also indicate that colonic polyps are the most frequently encountered gastrointestinal polyps.<sup>2,3</sup> The majority of the polypoidal lesions in our study (66 cases, 68.8%) were non-neoplastic. This finding is consistent with a study conducted by Sherpa et al. and Mirzaie et al.<sup>2,6</sup>

This study showed tubular adenoma with low grade dysplasia as a commonest neoplastic polyp (17.8%). Similar results were observed regarding colonic polyp in a study done by Patil et al, Gurung et al and Khodadoostan et al.<sup>3,8,9</sup> High-grade dysplasia was noted in three cases (3.1%) and villous adenoma with low grade dysplasia was noted in 1 case (1.0%). This finding is consistent with many studies that have shown a predominance of the tubular adenoma with low grade dysplasia.<sup>6,8</sup> Invasive adenocarcinoma in adenomatous polyps has been reported to range from 2.8% to 5.6% in the various literature.<sup>3,10</sup> In this study, we also found 3 cases (3.1%) of adenocarcinoma arising in the background of adenomatous polyps.

Hyperplastic polyps (19.8%) were the most common non-neoplastic polyps encountered in our study, followed by inflammatory polyps (16.7%). This finding is in concordance with studies conducted by Sherpa et al. and Sharma et al.<sup>2,11</sup> However, the study done by Patil et al and Khajuria et al show different results from ours. They found juvenile polyp as a commonest non neoplastic polyp in their study.<sup>3,10</sup> The difference in result was probably because their study had predominance of pediatric group.

Our study showed hyperplastic polyp as a commonest polyp (13.6%) in the stomach which coincides with the various studies done by Bulur et al, Mirzaie et al and Gurung et al.<sup>1,6,8</sup> Diagnosis of hyperplastic polyp is important as these polyps are associated with *Helicobacter pylori* gastritis and because of reported frequency of dysplastic foci in hyperplastic polyp is 4%-22%.<sup>12-14</sup> However in contrary to our study, the study done by Carmack et al found fundic gland polyp as a commonest polyp (77%).<sup>15</sup> This could be due to fact that the histopathological types of polyp vary according to geographic region. In the geographic region where *Helicobacter pylori* infection are common,

hyperplastic polyps are more predominant whereas incidence of fundic gland polyps are reported low.<sup>13</sup>

Brunner's gland hyperplasia in the duodenum is a most common polypoidal lesion observed in our study which is comparable to the study done by Bulur et al.<sup>1</sup> Brunner's gland hyperplasia are classified as benign non-neoplastic polyp however they should be diagnosed and treated because they may have clinical symptoms like GI bleeding and obstruction.<sup>16</sup>

## CONCLUSION

A spectrum of histological types of polypoidal lesions are found in the gastrointestinal tract, with the most frequent occurrence in the colon, and the majority are non-neoplastic in nature. Hyperplastic polyps and tubular adenoma with low grade dysplasia were the most common non-neoplastic and neoplastic polyps, respectively.

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## CONFLICT OF INTEREST

The author(s) declare that they do not have any conflicts of interest with respect to the research, authorship, and/or publication of this article.

## AUTHOR CONTRIBUTIONS

Study concept and design: SC; Data collection: SC, SH and SP; Analysis and interpretation of data: SC; All authors read and approved the final manuscript.

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