

# Pattern of Lower Gastrointestinal Diseases on Colonoscopy and Histopathological Examination in a Tertiary Care Center of Nepal

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## ABSTRACT

**Introduction:** Many patients visiting the medicine outpatient department (OPD) and gastroenterology OPD have lower gastrointestinal (GI) symptoms and substantial would require to undergo colonoscopy. Colonoscopy is an effective endoscopic procedure to evaluate the entire colon from rectum to terminal ileum and perform some known therapeutic procedures. The aim of our study was to see the pattern of lower GI diseases in patients by colonoscopy and histopathological examination.

**Methods:** This was a retrospective observational study conducted at Shree Birendra Hospital, Kathmandu, Nepal, after taking ethical approval from the Institutional Review Committee. Collective data of patients who underwent colonoscopy from October 2017 to September 2020 was evaluated from the endoscopy records. Analysis was done in the form of proportions and percentages and presented in tables and figures.

**Results:** A total of 232 patients were evaluated. The most common indication was chronic abdominal pain 188 (81.03%) followed by per rectal bleeding 14 (6.03%) and chronic constipation 14 (6.03%). Colonoscopy showed normal findings in 182 (78.44%), colitis in 14 (6.03%), hemorrhoids and proctitis in 10 (4.31%) each, polyps in eight (3.44%), and malignancy in six (2.58%). Malignancy was proven in all six suspected patients by histopathological examination.

**Conclusions:** Colonoscopy is an effective diagnostic modality for GI symptoms. Histopathological examination of the colonic biopsy showed a wide spectrum of common lower GI pathology from non-specific inflammation to malignancy with minimal complications. This shows colonoscopy as a safe and effective diagnostic modality for patients with lower gastrointestinal symptoms.

**Key Words:** bleeding per rectum; carcinoma; colonoscopy; perforation; polypectomy

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## INTRODUCTION

Lower gastrointestinal symptoms are common complaints among patients visiting the medicine outpatient department (OPD) and gastroenterology OPD. Some of the GI symptoms are straight forward and the diagnosis would be clear with clinical symptoms and signs alone. However, for some lower gastrointestinal (GI) symptoms, some would require to undergo colonoscopy for diagnostic evaluation.

Colonoscopy is an effective endoscopic procedure to evaluate the entire colon from rectum to terminal ileum and perform some known therapeutic procedures. In this procedure, the visual examination of the large bowel is done with the help of a flexible tube attached to a fibre-optic camera, passed via the anus of examining patients after adequate preparation. The procedure helps to detect gastrointestinal abnormalities like polyp, malignant mass, ulceration, tuberculosis, inflammatory bowel disease, obscure gastrointestinal bleed etc.<sup>1</sup> Biopsy can be performed in suspected cases to confirm the diagnosis by histopathological examination (HPE), which can diagnose diseases like inflammatory bowel diseases, adenocarcinoma as well as polyps.<sup>2,3</sup> Besides diagnostic use, the procedure also helps in therapeutics such as polypectomy, electrocautery of bleeding vessels, radiofrequency ablation (RFA) therapy to treat radiation proctitis in some oncological patients.<sup>4,5</sup>

We have been conducting colonoscopy in our institution regularly for various indications like evaluation of pain abdomen, bleeding per rectum, melena, change in bowel habits, chronic diarrhea, anemia, weight loss and suspicion of malignancy. Hence, this retrospective study was done to determine the pattern of lower gastrointestinal tract diseases found on colonoscopy procedures in patients visiting Shree Birendra Hospital, Chhauni, Kathmandu, Nepal.

## METHODS

A retrospective study was performed at Shree Birendra Hospital, Chhauni, Kathmandu, Nepal after taking ethical approval from the Institutional Review Committee of Nepalese Army Institute of Health Sciences (NAIHS). Ours is a tertiary referral center located in Chhauni, Kathmandu and funded by the Nepal Army, which serves the serving personnel, ex-personnel, and their family members. Patients who had undergone colonoscopic examination for three years duration from October

2017 to September 2020 after being evaluated in the Department of Medicine, Shree Birendra Hospital were included in the study. Patients above the age group of 10 years were enrolled. Poor bowel preparation cases, those who could not tolerate the procedure due to pain, seropositive cases, and pregnant ladies were excluded from the study. Data regarding age, sex, procedure indication, extent reached, colonoscopy findings and histopathology were retrieved from the endoscopy register and recorded in structured proforma followed by interpretation of the results. The statistical package for social sciences (SPSS) version 21 was used for data analysis. The analysis was done in the form of percentages and proportions and presented in tables and figures.

## RESULTS

A total of 232 patients were analyzed. The patient's ages ranged from 15 to 90 years, with the maximum number of patients in the age group 40 to 49 years, followed by 30 to 39 years (Figure 1). There were 133 (57.32%) male patients and 99 (42.67%) female patients, with the male to female ratio being 1.34:1.

The most common indication of colonoscopy was chronic pain abdomen, seen in 188 (81.03%) patients, followed by chronic constipation and per rectal bleeding in 14 patients each (Table 1).

The extent of colonoscopy was up to caecum in 90% of cases. In the remaining 10% of cases, the colonoscopy extent was up to ascending colon. 99% of the patients tolerated the procedure without sedation; 1% required minimal sedation. The colonoscopy finding was normal in 182 (78.44%) patients and abnormal in 50 (21.55%) patients, with the most common abnormal findings suggestive of colitis in 14 (6.03%) patients, followed by hemorrhoids and proctitis (Table 2).

The histopathological diagnosis was given in 30 biopsied samples in which non-neoplastic lesions comprised 22 (73.33%) cases and neoplastic lesions comprised eight (26.67%) cases. The neoplastic lesions included six (20%) cases of adenocarcinoma and two (6.66%) cases of adenomatous polyps (Table 3).

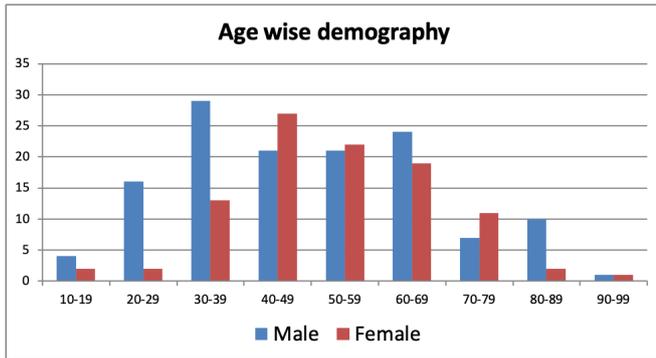


Figure 1. Age and sex distribution of patients

Table 1. Indications of colonoscopy

Symptoms	Male n (%)	Female n (%)	Total n (%)
Chronic pain abdomen	106 (79.69%)	82 (82.82%)	188 (81.03%)
Chronic constipation	5 (3.75%)	9 (9.09%)	14 (6.03%)
Per rectal bleed	8 (6.01%)	6 (6.06%)	14 (6.03%)
Chronic diarrhea	3 (2.25%)	2 (2.02%)	5 (2.15%)
Irritable bowel syndrome	5 (3.75%)	-	5 (2.15%)
Loose stools	4 (3.01%)	-	4 (1.72%)
Abdominal distension	2 (1.50%)	-	2 (0.86%)
Total	133 (100%)	99 (100%)	232 (100%)

Table 2. Colonoscopy findings

Findings	n (%)
Colitis	14 (6.03%)
Hemorrhoids	10 (4.31%)
Proctitis	10 (4.31%)
Polyps	8 (3.44%)
Malignancy	6 (2.58%)
Anal fissure	1 (0.43%)
Solitary rectal ulcer	1 (0.43%)
Normal study	182 (78.44%)
Total	232 (100%)

Table 3. Histopathological reports

Histopathological diagnosis	Male (%)	Female (%)	Total (%)
Ulcerative colitis with activity	4 (13.33%)	2 (6.66%)	6 (20%)
Adenocarcinoma*	4 (13.33%)	2 (6.66%)	6 (20%)

Adenomatous polyp*	1 (3.33%)	1 (3.33%)	2 (6.66%)
Non-neoplastic polyp	6 (20%)	-	6 (20%)
Nonspecific colitis	3 (10%)	1 (3.33%)	4 (13.33%)
Chronic nonspecific proctitis	2 (6.66%)	1 (3.33%)	3 (10%)
Acute infective colitis	2 (6.66%)	-	2 (6.66%)
Chronic lymphocytic colitis	1 (3.33%)	-	1 (3.33%)
Total	23 (76.66%)	7 (23.33%)	30 (100%)

\* Neoplastic lesions

Malignancies suspected in six (20%) cases proved to be adenocarcinoma histopathologically. The sites of adenocarcinoma were rectum in three cases, sigmoid colon in two cases, and transverse colon in one. Well-differentiated adenocarcinoma was found in four males and moderately differentiated features were present in two females. All cases of adenocarcinoma were diagnosed in patients aged above 50 years.

There were eight (26.66%) cases of polyps, of which six (75%) cases were non-neoplastic and two (25%) were adenomatous polyps. Adenomatous polyps were located at the rectum and sigmoid colon, whereas non-neoplastic polyps were present in the transverse and descending colon. The non-neoplastic polyps showed features of retention polyps in four cases and inflammatory polyps in two cases. Different types of colitis confirmed through histopathology were ulcerative colitis with activity followed by non-specific colitis, chronic non-specific proctitis, acute infective colitis, and chronic lymphocytic colitis.

## DISCUSSION

Colonoscopy is an effective and established procedure for the workup of lower gastrointestinal symptoms like bleeding per rectum, chronic abdominal pain, diarrhea, constipation, abdominal distension and anemia.<sup>6,7</sup> Evaluation of the lower gastrointestinal tract via colonoscopy followed by its histopathological examination is still the gold standard modality to reduce the morbidity and mortality associated with lower bowel diseases like ulcerative colitis and colorectal carcinoma.<sup>8,9</sup>

In our study, the chief indication for colonoscopy was chronic abdominal pain which constituted 81.03% of the total cases. This differs from the most common indication found in other studies like study by Siddique et al. (20.5%) and study by Dinesh et al. (24.8%), which was per rectal bleeding in both studies.<sup>10,11</sup> The increased use in chronic abdominal pain might be due to the increased procedure-seeking behavior in the patients, which is aided by the fact that our hospital is a tertiary care center that provides free health services. Cecal intubation  $\geq$  90%, one of the quality indicators of colonoscopy, is met by our study.<sup>12</sup> It is also greater than in the study by Dinesh et al. (72.4%).<sup>11</sup>

The findings of colonoscopy as adenocarcinoma in our study (2.58%) were less than in the study by Dinesh et al. (7.06%) and Padma et al. (6.68%).<sup>11,13</sup> The difference may be due to different clinical presentations and indication of colonoscopy in our study. Most of the patients in our study had chronic abdominal pain (81.03%) as an indication compared to chronic constipation (6.03%) and rectal bleeding (6.03%). Dinesh et al. reported per rectal bleeding (24.8%) as a major indication, followed by altered bowel habits (15%) and anemia (14.82%), while Padma et al. had bleeding per rectum (22.78%) as most common indication along with constipation (12.6%) and anemia (5.04%).<sup>11,13</sup> The symptomatic association of clinical features like per rectal bleeding, altered bowel habits and anemia with colorectal carcinoma, which were not a major indication in our study, might explain the lower findings of colorectal carcinoma.

In our study, all lesions (100%) suspected to be malignant by colonoscopy were confirmed to be adenocarcinoma, in contrast to a study by Padma et al. in which (85.24%) were confirmed histopathologically.<sup>13</sup> This difference can be attributed to the smaller sample size of suspected lesions in our study. The findings of well-differentiated adenocarcinoma (13.33%) and moderately differentiated adenocarcinoma (6.6%) were similar to those observed by Padma et al., with 18.24% well-differentiated adenocarcinoma and 11.67% moderately differentiated adenocarcinoma.<sup>13</sup>

HPE showed more non-neoplastic lesions (73.4%) than neoplastic lesions (26.6%) in our study, which is similar to findings in the study by Rajbhandari et al. done in the Kavre district of Nepal in which non-neoplastic lesions were seen in 73.9% and neoplastic lesions in 26.1%.<sup>14</sup> This is congruent with studies like Chandrakumari et al. and Padma et al., which showed a greater number

of non-neoplastic lesions (60.8% and 51.84% respectively) than neoplastic lesions (39.2% and 48.16% respectively).<sup>13,15</sup>

We detected a total of 3.44% polyp cases in our study, which is lower than the normal polyp detection rate found in other studies like Padma et al. (8.65%) and Dinesh et al. (14.4%).<sup>11,13</sup> The neoplastic polyps (6.66%) and non-neoplastic polyps (20%) on our HPE were similar to the HPE study done by Rajbhandari et al., which showed neoplastic polyps in 6.34% and non-neoplastic polyps in 16.67% of biopsy samples.<sup>14</sup>

Ulcerative colitis seen in 20% of HPE in our study was greater than in the study by Chandrakumari et al. (15.2%) and Bashir et al. (11.8%).<sup>15,16</sup> Chronic non-specific colitis, which may represent early stages of inflammatory bowel diseases, was seen in 13.33% of patients, which is lower than seen in studies by Padma et al. (19.7%) and Bashir et al. (38.3%).<sup>13,14,16</sup>

In our study, one patient had sigmoid perforation, which was immediately managed by the surgical team. The patient was an elderly female; increasing age and female sex are both known to increase the risk of perforation along with the presence of inflammatory bowel disease and procedures like biopsy and polypectomy.<sup>12,17</sup> Although the risk of perforation when performed by a gastroenterologist is very low ( $< 1$  in 1000), multiple risk factors might lead to this potentially fatal complication of perforation.<sup>12,18</sup> Hence, it should only be used in the presence of a definite indication.

Though a number of common lower GI pathologies were identified, the normal colonoscopic finding (78.44%) was significantly higher than in other studies by Dinesh et al. (25.68%) and Padma et al. (47.65%).<sup>11,13</sup> This highlights the need to efficiently select and stratify the patient population in the future who will benefit the most from the procedure and will aid in the diagnosis and treatment. It is necessary to revise the indications for colonoscopy to provide better care, increase diagnostic yield, and reduce unnecessary intervention burden to the gastroenterologists, technicians, and patients. The retrospective nature and the paucity of data prevented us from correlating the colonoscopic findings directly with the symptoms done in study like Lasson et al. This could have further aided us in the future, prioritizing the patients more in need of the procedure.<sup>7</sup> Due to the retrospective nature of

the study and the unavailability of adequate data, we could not correlate the symptoms and indications with the colonoscopic findings in our study. Our study should be corroborated further with future prospective, larger and multicentric studies so that the findings could be generalized to the Nepalese population.

## CONCLUSIONS

This retrospective study helped us to know the pattern of lower gastrointestinal diseases through the aid of

colonoscopy and HPE of biopsy in patients of Shree Birendra Hospital. Our study showed common lower GI pathologies like polyps, hemorrhoids, malignancies, and colitis, along with normal colonoscopic findings in a number of patients. It is also a safe procedure with minimal complications. Case selection and stratification of patients based on the need can further increase the diagnostic yield. Overall, colonoscopy and HPE of biopsy are safe and effective procedures for workup and diagnosis in patients presenting with lower GI symptoms.

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**Conflict of Interest:** None declared

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