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## Original Research Article

## Histopathological study of endoscopic biopsies of large intestine

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## ABSTRACT

**Background:** The large intestine is a site of a variety of diseases. The lesions tend to occur affecting different age groups ranging from early childhood to late adulthood. Patients may present with very vague clinical symptoms ranging from abdominal pain, loose stools, vomiting, diarrhoea, bleeding per rectum, and change in bowel habit. Patients presenting with repeated symptoms related to lower intestinal pathology are advised to undergo colonoscopic examination.

**Aim and Objective:** To study clinico-pathological correlation of endoscopic biopsies of large intestine and to study spectrum of large intestinal lesions.

**Materials and Methods:** The study was conducted at a tertiary care hospital from August 2018 to July 2020. All endoscopic biopsy samples were included in this study. All endoscopic biopsies were performed by high definition colonoscope. Clinical and endoscopic correlation with histopathological diagnosis was performed and results were generated.

**Results:** Total 133 cases were included in this study, out of 133 patients 86 were males and 47 were females. Patients showed wide age range from 11 years to 80 years. There were 25 patients each in age group of 31-40 years and 61-70 years. The most common presenting complaint was loose stools in 66 cases. The most common endoscopic finding was erythema in 82 cases. Out of 133 cases, 105 cases were non neoplastic, 08 cases were benign neoplastic and 20 cases were malignant neoplastic on histopathology.

**Conclusion:** Colonoscopy is very high yielding and safe procedure to perform. Colonoscopic biopsies are proven to be of great importance. Clinical, endoscopic and histopathological correlation is always advisable in large intestinal pathology for early diagnosis and treatment.

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## 1. Introduction

The lesions of large intestine are grouped as:- Non-neoplastic lesion, Benign neoplasms and Malignant neoplasms. These diseases are responsible for both morbidity and mortality in a large number of cases.<sup>1</sup> A few indications for endoscopy are gastrointestinal hemorrhage, unexplained changes in bowel habits and suspicion of malignancy. A positive fecal occult blood test is always an indication for colonoscopy.

Endoscopy is a procedure in which the GI tract is viewed through a lighted, flexible tube with camera at the end (endoscope). Small samples of the tissue can also be collected and sent for testing. It provides visual diagnosis and grants opportunity for biopsy or removal of suspected colorectal lesions. The fiber optic endoscope allows examination of whole of the large intestine and has been responsible for early detection of several neoplastic and non-neoplastic conditions of large intestine.<sup>2</sup> Most of the lesions present vaguely which prevents their early diagnosis and treatment. Late diagnosis may lead to many grave complications. Early diagnosis by histopathology and

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its clinical correlation helps the clinician to implement appropriate treatment and thereby proves beneficial to the patient.

Interpretation of endoscopic biopsies forms a routine part of histopathology work at any multispeciality hospital. Intestinal endoscopic biopsies are of paramount importance for diagnosis, monitoring and dysplasia surveillance in patients with intestinal biopsies.<sup>2</sup>

## 2. Material and Methods

A prospective observational study was conducted at tertiary care hospital from August 2018 to July 2020. Total 133 endoscopic biopsy samples were collected in 10% buffered formalin. Patients clinical details, endoscopic findings and histopathological diagnosis were analysed. Neonatal endoscopic biopsies from patients with Hirschsprung like symptoms were excluded.

Tissue processing was done as per standard protocol. Paraffin blocks were prepared measuring 4um in thickness. Slides were prepared and stained with Hematoxylin and Eosin. Clinico-pathological correlation was done. Endoscopic findings and histopathological findings were also compared.

## 3. Results

Out of 133 cases studied, 86 were males and 47 were females. Maximum clustering of cases were found in age group of 31-40 and 61-70 with 25 cases in each group. Patients presented with very wide range of symptoms like loose stools, abdominal pain, constipation, bleeding per rectum, vomiting and others. Other symptoms included weight loss, pleural effusion, ascites, and lymphadenopathy. Most common complaint was loose stools in 66 cases, followed by abdominal pain in 63 cases. While correlating with HPE diagnosis loose stools and bleeding per rectum showed statistical significance with p value of 0.001 and <0.001 respectively.

The endoscopic findings observed were edema, erosions and ulcers, erythema, ulceroproliferative growth, polypoidal growth and stricture. The most common endoscopic finding was erythema in 80 cases followed by ulcers and erosions in 72 cases, and edema in 67 cases. Edema and erythema both showed statistical significance when correlated with HPE diagnosis, obtained p value is 0.001 and <0.001 respectively. Maximum biopsies were obtained from sigmoid colon (55 cases) followed by ileocaecal valve (29 cases). On the basis of clinical categories, non-neoplastic cases were 106 and neoplastic cases were 27 cases while on the basis of endoscopic categories 100 cases of non-neoplastic and 33 cases of neoplastic were classified. Histopathological categorization was 105 non neoplastic, 08 benign neoplastic and 20 malignant neoplastic cases.

Out of non-neoplastic cases, maximum cases were of chronic non-specific colitis (56 cases) followed by ulcerative colitis (35 cases) (Table 1). In benign neoplastic condition, 05 cases of tubulovillous adenoma were reported (Table 2) and in malignant neoplastic condition, maximum cases (11 cases) were of moderately differentiated adenocarcinoma were reported. (Table 3)

**Table 1:** Distribution of non-neoplastic cases (N=105)

S. No	Non-neoplastic conditions	No. of cases
1	Chronic nonspecific colitis	56
2	Ulcerative colitis	35
3	Acute colitis	06
4	Granulomatous colitis (including CD)	06
5	Hyperplastic polyp	01
6	Solitary rectal ulcer	01
<b>Total</b>		105

**Table 2:** Distribution of cases of benign neoplastic lesions (N=08)

S. No	Benign neoplasms	No. of cases
1	Tubular adenoma	02
2	Tubulovillous adenoma	05
3	Villous adenoma	01
<b>Total</b>		08

**Table 3:** Distribution of cases of malignant neoplastic lesions (N=20)

S. No	Malignant neoplasms	No. of cases
1	Well differentiated adenocarcinoma	06
2	Moderately differentiated adenocarcinoma	11
3	Poorly differentiated adenocarcinoma	02
4	Adenosquamous carcinoma	01
<b>Total</b>		20

**Table 4:** Distribution of polypoidal growth lesions according to histopathological diagnosis (N=22)

S. No	HPE diagnosis of polypoidal lesions	No. of cases
1	Non neoplastic	06
2	Benign	06
3	Malignant	10
<b>Total</b>		22

Correlation between age, gender, endoscopic categories, clinical findings, endoscopic findings with histopathological diagnosis.

The Table 5 shows significant correlation of age, clinical symptoms like loose stools, bleeding per rectum

Table 5:

		HPE Diagnosis Category			Total	Chi-Square Value	p-value
		Benign	Malignant	Non Neoplastic			
Age wise distribution	11-20	0	0	10	10	27.09	0.007
	21-30	0	0	19	19		
	31-40	2	0	23	25		
	41-50	1	3	15	19		
	51-60	1	9	13	23		
	61-70	2	5	18	25		
	>70	2	3	7	12		
Sex	Male	5	11	70	86	1.01	0.601
	Female	3	9	35	47		
Endoscopic categories	Neoplastic	7	20	6	33	97.98	<0.001
	Non Neoplastic	1	0	99	100		
Abdominal Pain	Present	3	7	53	63	1.94	0.378
	Absent	5	13	52	70		
Loose stools	Present	2	3	61	66	14.54	0.001
	Absent	6	17	44	67		
Constipation	Present	0	3	5	8	3.66	0.16
	Absent	8	17	100	125		
Vomiting	Present	0	1	3	4	0.528	0.768
	Absent	8	19	102	129		
Bleeding per rectum	Present	2	12	19	33	15.81	<0.001
	Absent	6	8	86	100		
Edema	Present	3	3	61	67	13.04	0.001
	Absent	5	17	44	66		
Erythema	Present	2	2	76	80	36.66	<0.001
	Absent	6	18	29	53		
Erosion/ulcer	Present	6	6	60	72	6.47	0.39
	Absent	2	14	45	61		
Sigmoid colon	Present	4	8	43	55	0.269	0.874
	Absent	4	12	62	78		
Caecum	Present	3	0	22	25	6.78	0.034
	Absent	5	20	83	108		
Rectum	Present	0	5	20	25	2.36	0.307
	Absent	8	15	85	108		
Ileocecal Valve	Present	2	0	27	29	6.56	0.038
	Absent	6	20	78	104		

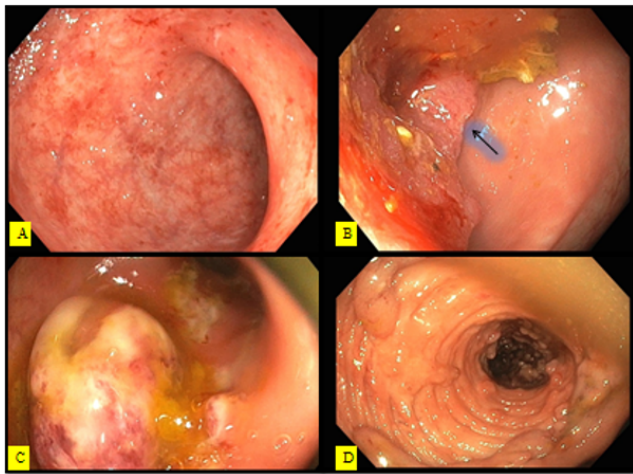
and endoscopic findings like erythema, edema with HPE diagnosis.

#### 4. Discussion

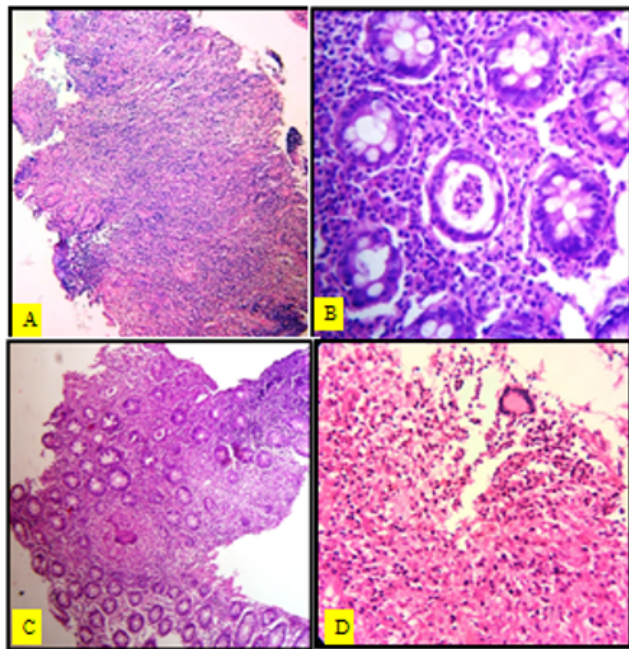
The word endoscopy is derived from the Greek word “endo” meaning “within” and “skopein,” means “to view or observe”, term coined by Desormeaux.<sup>3</sup> Endoscopy is a technique that allows inspection, manipulation, and treatment of internal organs using devices which enhance visualization from a distance of the targeted organs without the need of an incision.<sup>4</sup> To obtain best results from endoscopic biopsy, pathologists should know the exact biopsy site and detailed clinical history of patient. Histopathological examination always has been considered

a gold standard for diagnosis.<sup>5</sup> Newer endoscopic techniques are promising to provide targeted biopsies. Targeting appropriate site for biopsy is always important. Bleeding after taking first biopsy may hamper vision for performing next biopsies, so first 3 biopsies are considered high yielding from targeted site. Performing multiple biopsies may cause discomfort to patient during procedure with increased risk of bleeding and perforation. Performing targeted biopsy is recommended than performing random biopsy to increase diagnostic accuracy. On colonoscopic examination, findings like edema, erythema and erosions are found to be very subjective, which made comparison with other studies little difficult.<sup>6,7</sup>

There was highly significant correlation found between endoscopic categories and histopathological categories with



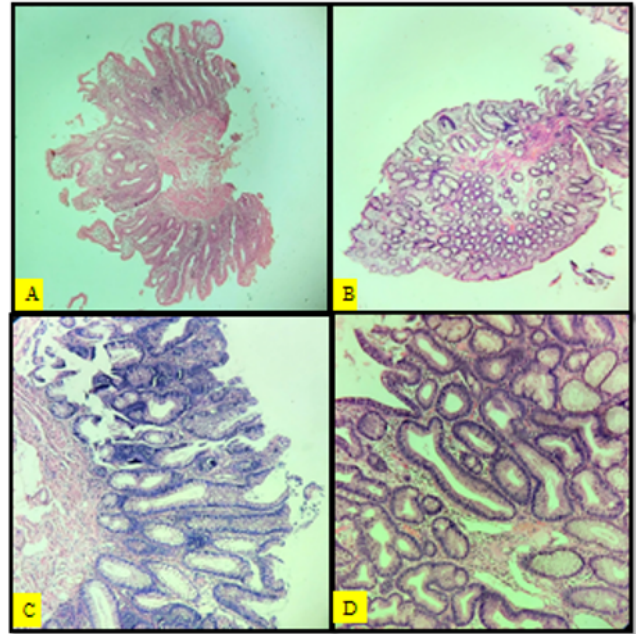
**Fig. 1:** Endoscopic images: **A:** Erythematous mucosa; **B:** Ulceroproliferative growth; **C:** Polypoidal growth; **D:** Multiple polyps in colon



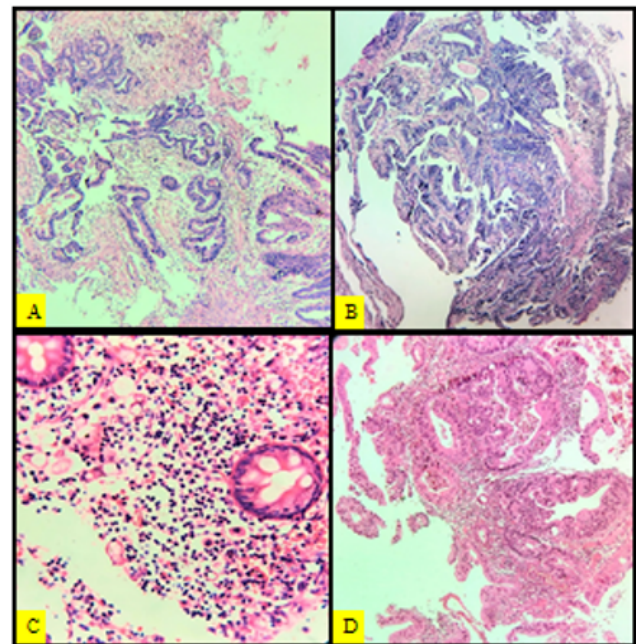
**Fig. 2:** **A:** Inflammatory bowel disease (H&E, 400x); **B:** Ulcerative colitis (H&E, 400x); **C:** Crohn disease (H&E, 400x); **D:** Granulomatous colitis (H&E, 400x)

p value of < 0.001. Because of the advances in the field of gastroenterology and skills of gastroenterologist, we didn't receive any inadequate biopsy. Biopsies were taken from representative area. Out of 22 polypoidal lesions noted found on endoscope, 06 were non neoplastic, 06 were benign and 10 were malignant.

Comparing the present study with other studies, male preponderance was also found in study done by Bhagyalaxmi et al.<sup>8</sup> Degaonkar et al.<sup>9</sup> study showed



**Fig. 3:** **A:** Tubulovillous adenoma (H&E, 400x); **B:** Tubular adenoma (H&E, 400x); **C:** Villous adenoma (H&E, 400x); **D:** Tubular adenoma with dysplasia (H&E, 400x)



**Fig. 4:** **A:** Well differentiated adenocarcinoma (H&E, 400x) **B:** Moderately differentiate adenocarcinoma (H&E, 400x); **C:** Poorly differentiated adenocarcinoma (H&E, 400E); **D:** Adenosquamous carcinoma (H&E, 400x)



maximum no of patients presented with pain in abdomen while in present study most common complaint was loose stool but vomiting was the least common symptom in both the studies. The most common endoscopic finding in this study was erosion while in Degaonkar et al.<sup>9</sup> study it was ulcerative growth, it may differ because of subjective judgment of gastroenterologist. Also, a wide range of HPE diagnosis were observed in non-neoplastic cases, as there is very broad spectrum of cases and no standard protocol is available to report. The most common non-neoplastic diagnosis was chronic nonspecific colitis which was similar finding when compared with the study of Bhagyalaxmi et al.<sup>8</sup> and Rangaswamy et al.<sup>10</sup> Qayyum et al. study<sup>11</sup> showed difference in reporting of non-neoplastic lesions because of lack of standard criteria to diagnose. Strong concordance is observed when benign neoplastic lesions were compared with study done by Randale A et al.<sup>12</sup> While comparing malignant neoplastic lesions with other studies, Umamo et al.<sup>13</sup> study showed maximum no of well differentiated adenocarcinoma cases while in this study it was moderately differentiated adenocarcinoma, which was similar finding when compared with Karve SH et al.<sup>14</sup> and Rangaswamy et al.<sup>10</sup> studies.

## 5. Conclusion

Colonoscopy is a very high yielding and safe procedure to perform. Using advanced technique of colonoscopy exact targeted site biopsies are achievable making procedure a success. Targeted biopsies are now advisable to perform as they are high yielding and also reduce discomfort to patient, risk of perforation and bleed. Both non-neoplastic and neoplastic cases were studied and correlation between clinical and histopathological finding, endoscopic and histopathological findings were studied which turn out to be of high significance.

Colonoscopic biopsies have proven to be of great importance in cases of IBD to monitor them for response to therapy and dysplasia, detection of any neoplastic lesion and are always gold standard for diagnosis. Clinical, endoscopic and histopathological correlation is always advisable in large intestinal pathology for early diagnosis and treatment.

## 6. Source of Funding

None.

## 7. Conflict of Interest

The authors declare that there is no conflict of interest.

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