



HISTOPATHOLOGICAL EVALUATION OF LOWER GASTROINTESTINAL TRACT ENDOSCOPIC BIOPSIES

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Conflicts of Interest: Nil

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Abstract:

Introduction: Lesions of the lower gastrointestinal (GI) tract account for a substantial source of morbidity and mortality worldwide. GIT endoscopy along with biopsy is an established procedure for investigating a wide range of gastrointestinal conditions. It is not only used to diagnose malignant and inflammatory lesions but is also used for monitoring the course, extent of the disease, response of the therapy and early detection of complications. Hence, endoscopy along with biopsy examination facilitates the diagnosis and early management.

Methodology: Patients with lower GI tract lesions were included in the study. Endoscopic biopsies were processed for tissue processing. Haematoxyline and Eosin stained sections were studied.

Observations: Of the 202 colonoscopic biopsies studied, sex ratio was 1.3:1. Study population comprises of cases ranging from 6 months up to 84 years. Diarrhoea of chronic duration was the predominant clinical presentation among 27% of cases. Ulcerated lesion was the commonest endoscopic finding seen among 33% cases. On endoscopic examination, 17% cases had proliferative growth, 14% cases had polypoidal growth and 06% cases showed stricture. Rectum was the commonest site of involvement seen among 38% cases. Non-neoplastic lesions were 119 (59%), benign were 16 (08%) and malignant were 67 (33%). Chronic nonspecific colitis was the predominant non-neoplastic lesion seen among 34% cases. Adenocarcinoma was the commonest malignant lesion contributing for 85% of malignant lesions of lower GIT.

Conclusion: Colonoscopy with biopsy examination is the gold standard tool for the diagnosis of lower GI lesions. It is simple, safe, and relatively less invasive with high accuracy.

Keywords: Endoscopy, Colonoscopy, Lower GIT, Colorectal cancer, Biopsy.

Introduction:

Lesions of the lower gastrointestinal (GI) tract account for a substantial source of morbidity and mortality worldwide. In most countries, GI diseases are a large burden on the health-care services, with GI pathology being a major workload of surgical pathology.^[1]

GIT endoscopy along with biopsy is an established procedure for investigating a wide range of gastrointestinal conditions especially inflammatory and malignant diseases. It is not only used to diagnose malignant and inflammatory lesions but is also used for monitoring the course, extent of the disease, response of the therapy and early detection of complications.^[2] Globally, colorectal cancer is the 4th most common cancer after breast, prostate, and lung cancer, with an incidence rate of 9.8% and estimated 1.24 million new cases diagnosed in 2008.^[3,4]

The incidence of colorectal cancer is said to be on the increase in developing countries.^[5] A good correlation in diagnosis can be achieved by complementing endoscopic findings with histology of biopsy specimens. The

gastrointestinal flexible fiber optic endoscope was first used in 1968 and proved to be a major breakthrough in the diagnosis of gastrointestinal lesions. Literature search showed that many studies have confirmed the strong relationship between colorectal polyps and colorectal cancer, and thus preexisting polyps are the major risk for the subsequent development of colorectal carcinoma.^[6] It is also evident from many studies that approximately 95% of all colorectal carcinomas are believed to arise from adenomas.^[7]

Colon and rectum often hosts premalignant lesions and relatively easily accessible organs. Therefore, CRC is an early detectable disease. Thus, colorectal cancer can be preventable if early interventions done by using screening methods. Hence, endoscopy along with biopsy examination facilitates the diagnosis and early management.^[8]

Aims and Objective:

1. To study the histomorphological pattern and frequencies of lesions reported in lower GI tract endoscopic biopsies.

2. To correlate endoscopic findings with histological findings.

Methodology:

The study was carried out over a period of 2 year in the department of pathology at Government Medical College Nanded, Southern Maharashtra. The patients with lower GI tract lesions were included in the study. Already diagnosed cases and cases with inadequate biopsies were excluded from study. Endoscopic biopsies were processed through various stages of tissue processing. 3 - 5 μ sections stained with Haematoxyline and Eosin were obtained and microscopic findings were noted.

Observations:

Total 205 colonoscopic biopsies were studied. Of these, non-neoplastic lesions 119 (58%) were predominate over

neoplastic lesions 83 (41%). And remaining 03 (01%) biopsies were reported as inadequate to opine and they were excluded from study. Thus, further results were subjected to 202 cases only.

During the present study, male preponderance was seen with male comprising of 117 (58%) cases while 85 (42%) were female. Sex ratio was found to be 1.3:1.

Study population comprises of cases ranging from 6 months up to 84 years. Majority of cases were found in 6 th and 7 th decade of life comprising of 37 (18%) cases each followed by 5 th decade 34 (17%) and 4 th decade of life 33 (16%) cases. Age and gender wise distribution of cases is shown in Table No.1.

Table 1: Age and gender wise distribution of cases (n = 202)

Age gr. in yrs	0-10		11-20		21-30		31-40		41-50		51-60		61-70		71-80		81-90		Total
Gender	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	
No. of Cases	4	3	7	2	12	9	25	8	15	19	23	14	27	10	12	10	2	0	202
Total	07		09		21		33		34		37		37		22		02		202

The clinical presentation of the study population was noted. It was found that diarrhoea of chronic duration was the sole presentation and found to be the predominant clinical presentation among 27% of cases. It was followed by bleeding PR (per rectum) was the second most common presentation found among 25% cases. Another group of 23% cases showed combination of clinical features like chronic diarrhoea and bleeding PR associated with pain in abdomen. 14% cases presented with features of constipation. Chronic diarrhoea and bleeding PR associated with loss of appetite and weight was seen among the 11% cases.

Endoscopic findings of the lower GIT was studied and discussed as nature of lesion. Ulcerated lesion was the commonest endoscopic finding seen among 33% cases. It was followed by erythematous lesions with small multiple ulcers seen among 30% cases. On endoscopic examination, 17% cases had proliferative growth, 14% cases had polypoidal growth and 06% cases showed stricture.

The site of involvement of lower GIT was analyzed. It showed that majority endoscopic biopsies were performed from rectum contributing for 38% cases. Least endoscopic biopsies were obtained from transverse colon contributing for 04% cases. The site of endoscopic biopsy from lower GIT is shown in Table No.2.

Table 2: Endoscopic site of biopsy of Lower GIT lesion (n=202)

Sr. No.	Site of lesion	Number of cases	Percentage (%)
01	Rectum	76	38
02	Sigmoid colon	42	21
03	Descending colon	27	13
04	Caecum	21	10
05	Ascending colon	11	06
06	Terminal illeum	09	04
07	Transverse colon	08	04
08	Anal canal	08	04
Total		202	100%

Of the study population, non-neoplastic lesions were predominating over neoplastic lesions. Among neoplastic lesions, malignant lesions were dominating. The distribution of cases according to the nature of lesion is shown in Table No 3.

Table 3: Distribution of cases as per nature of lesions (n=202)

Sr. No.	Lesion	Number of cases	Percentage (%)
01	Non-neoplastic	119	59
02	Benign	16	08
03	Malignant	67	33
Total		202	100

In our study, non-neoplastic lesions were predominant lesions comprising of 59 % cases. Among the non-neoplastic lesions, chronic nonspecific colitis was the predominant histological finding comprising of 34% cases

of non-neoplastic lesions. The number of cases according to specific non-neoplastic entity is shown in Table No. 4.

Table 4: Distribution of Non-neoplastic lesions (n=119)

Sr. No.	Histopathological diagnosis	Number of cases	Percentage (%)
01	Chronic Colitis	41	34
02	Ulcerative colitis	31	26
03	Tuberculosis	09	07
04	Inflammatory Polyp	05	04
05	Hyperplastic polyp	05	04
06	Acute Colitis	04	03
07	Amoebic colitis	04	03
08	Hirschprung's disease	04	03
09	Solitary Rectal Ulcer Syndrome	03	03
10	Crohn's colitis	03	03
11	Diverticular disease	03	03
12	Juvenile polyp	03	03
13	Hamartomatous polyp	01	01
14	Malabsorption syndrome	01	01
15	Lipomatous Polyp	01	01
16	Familial polyposis	01	01
Total		119	100

In the present study, non-neoplastic lesions were found in all the age group ranging from 6 months up to 80 years. Clustering of cases was found in the 4th and 5th decade of life. Of these non-neoplastic lesions, 66 (55%) were male and 53 (45%) were female with sex ratio 1.24:1.

In our study, 83 neoplastic lesions were observed. Of these, 16 were benign comprising of tubular adenoma 06 (38%) cases and 05 (31%) cases each of villous adenoma and tubulovillous adenoma. Among benign lesions, 12 were male and 04 were female with sex ratio was 3:1. Age wise distribution of benign lesion is shown in Table No. 5.

Table 5: Distribution of benign lesions according to age group (n=16)

Lesion	Age group in years							Total
	0 - 10	11- 20	21- 30	31- 40	41- 50	51- 60	61- 70	
Tubular adenoma	02	02	--	--	--	01	01	06
Villous adenoma	--	--	--	02	01	--	02	05
Tubulovillous adenoma	--	--	01	--	02	--	02	05

In the present study, we found 67 cases as malignant lesion. Among the malignant lesions, adenocarcinoma constitutes the predominant lesion constituting 57 (85%) cases. It was followed by 03 (4.5%) cases of mucin secreting signet ring adenocarcinoma and 03 (4.5%) cases of malignant melanoma. Other malignant lesions were 01 (1.5%) case each of squamous cell carcinoma, adenosquamous cell carcinoma, micropapillary and papillary adenocarcinoma. Among the malignant lesions,

39 were male and 28 were female with sex ratio was 1.39:1.

Of the 57 cases of adenocarcinoma of the lower GIT, well differentiated variant was the predominant lesion constituting 26 (45%) cases followed by 25 (44%) cases and 06 (11%) cases of poorly differentiated adenocarcinoma.

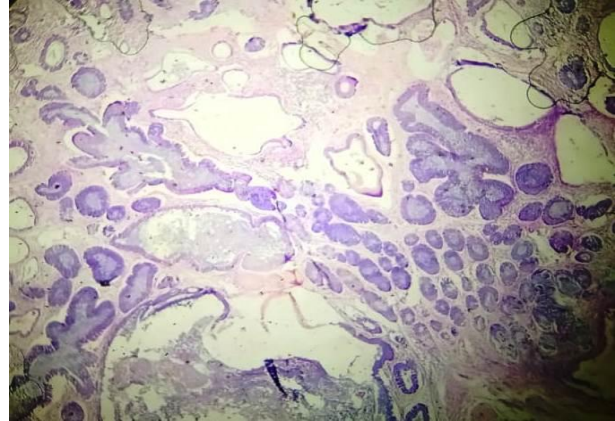


Figure 1: Juvenile Polyp. Shows edematous lamina propria with inflammatory cells and cystically dilated glands lined by cuboidal to columnar cells with reactive changes. [H&E, 10X]

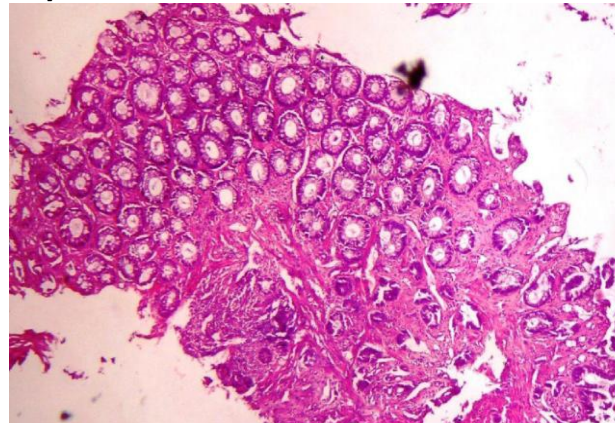


Figure 2: Solitary Rectal Polyp. Shows superficial ulceration with viliform mucosa. Crypt Hyperplasia with focal dilation. [H&E, 10X]

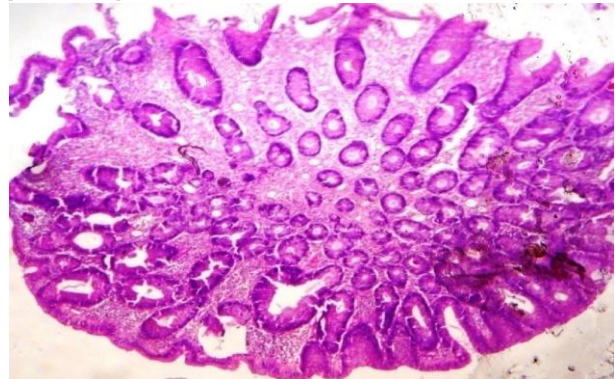


Figure 3: Hyperplastic polyp showing superficial serrated architecture with glandular hyperplasia without atypia. [H&E, 10X]

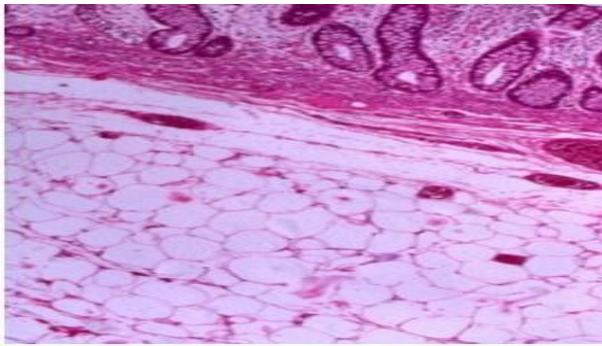


Figure 4: Submucosal Lipomatous polyp showing adipocytic polypoidal growth beneath the mucosa. [H&E, 10X]

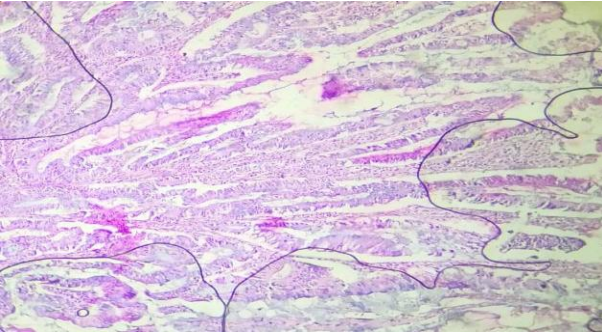


Figure 5: Villous adenoma shows Epithelial finger-like projections away from the muscularis mucosae formed by fibrovascular cores lined by dysplastic epithelium. [H&E,10X]

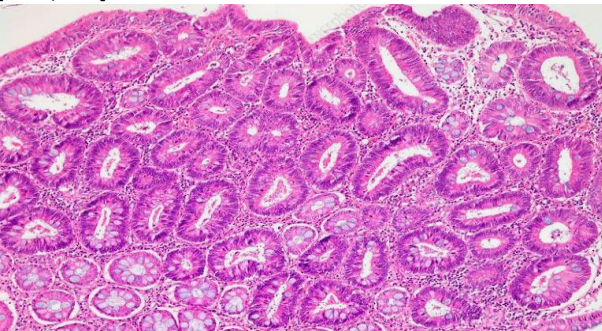


Figure 6: Tubular Adenoma shows Polypoid colonic mucosa covered with dysplastic epithelium comprised of hyperchromatic, elongated nuclei arranged in a pseudo stratified manner. [H&E10X]

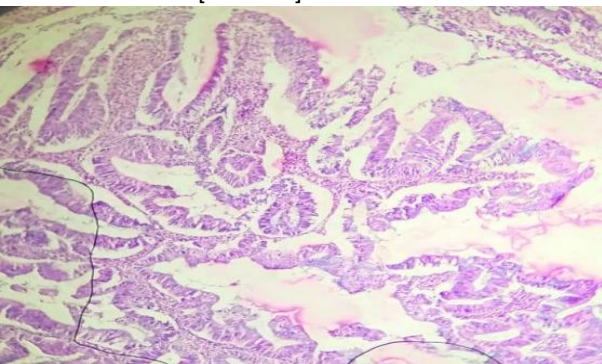


Figure 7: Papillary Adenocarcinoma shows tumor in glandular fashion with papillary fronding. [H&E,10X]

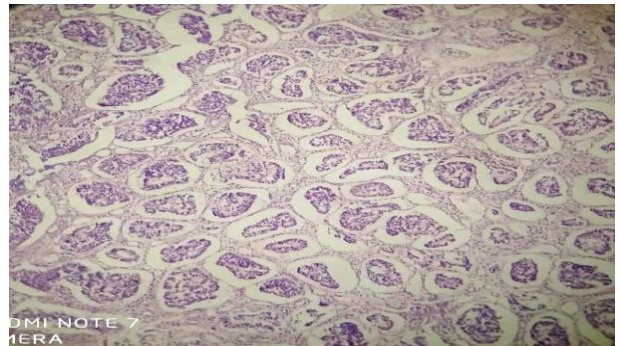


Figure 8: Micropapillary Adenocarcinoma shows tumor in small papillae with glandular pattern and compact arrangement. [H&E,10X]

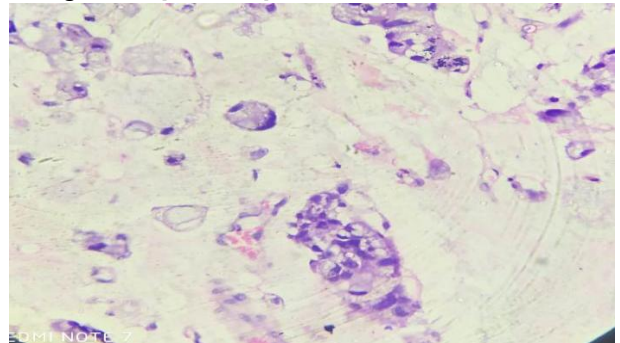


Figure 9: Signet Ring Cell Adenocarcinoma shows tumor in glandular fashion with Signet Ring cell with cytoplasmic mucin & eccentrically placed nuclei [H&E, 10X]

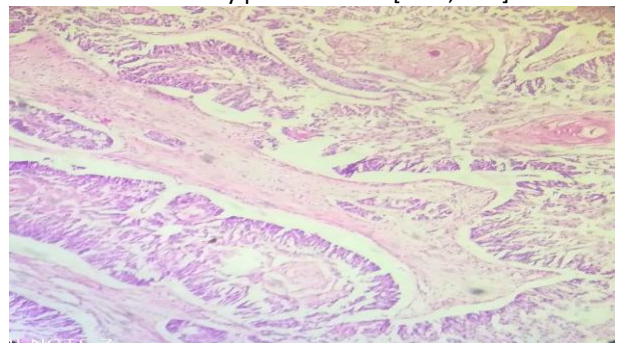


Figure 10: Adenosquamous Cell Carcinoma shows tumor in glandular fashion with Squamoid tumor with keratin pearl formation [H&E, 10X]

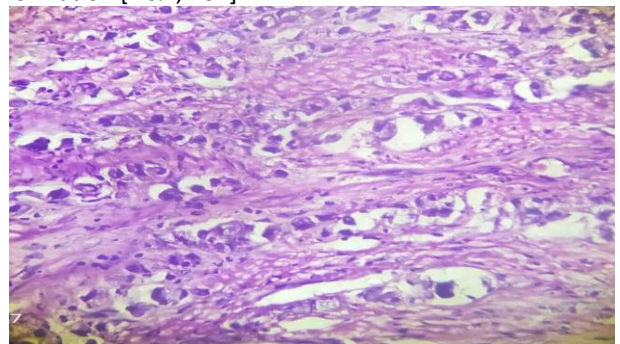


Figure 11: Poorly Differentiated Adenocarcinoma shows large round to oval tumor cells with focal glandular fashion. [H&E, 10X]

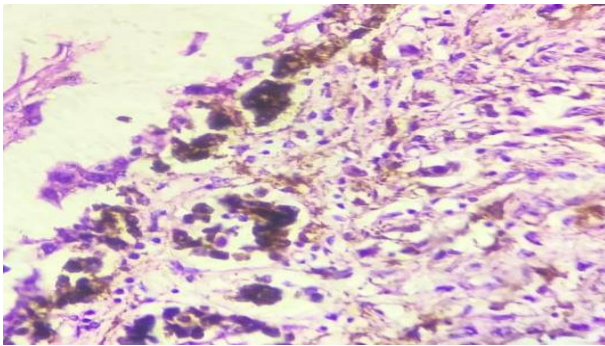


Figure 12: Malignant Melanoma shows large pleomorphic tumor cells with intra & extra cytoplasmic melanin pigment. [H&E, 10X]

Discussion:

Lower gastrointestinal endoscopy is the gold standard tool for the diagnosis and treatment of mucosal pathology. Using an endoscope, visualization of all aspects, taking the biopsy and removal of the lesion like polyp is possible.^[9] Guidelines are available formed by American Gastrointestinal Endoscopy Association (ASGE) and Gastrointestinal Endoscopy Eligibility European Panel (EPAGE) for the indications of endoscopic examination in the gastrointestinal tract diseases.^[10,11] In the recent era, the awareness about the cancer and prevention of cancer increases among the people. Thus, screening through the endoscopic examination for the gastrointestinal tract diseases becomes more popular.^[12]

In our study, total 202 colonoscopic biopsies were studied. Non-neoplastic lesions were commonest entity comprising of 59% cases followed by 33% cases as malignant and 08% cases as benign. In the present study, among non-neoplastic lesions chronic non specific colitis was the commonest lesion contributing for 34% cases. Yanik S. et al.^[13] in his study at Turkey found that colitis was the predominant lesion contributing for 63% cases of study population. In a study by Mohamed AR et al.^[14] in Saudi, they found that chronic nonspecific colitis was the second most common lesion constituting of 07% cases.

In our study, we found 26% cases of ulcerative colitis. These findings are comparable with the findings of Flick et al.^[15], who described 47 (28.1%) cases in his study of 167 cases. Dickinson et al.^[16] in their study of 74 cases described 11 (14.9%) cases of ulcerative colitis.

There is wide variation in the incidence of tuberculous colitis. We had 07% cases while Tendon and prakash et al.^[17] found 75% cases of tuberculous colitis and Mohamed AR et al.^[14] found only 0.60% cases of tuberculous colitis. It might be due to geographical variation, influence of local factors and endemicity of TB bacilli.

In the present study, crohn's disease accounts for 03% cases of study population while crohn's disease accounts

for 0.19% cases in the studies by Mohamed AR et al.^[14] and Al-Nakib B. et al.^[18]

We found 4% Hyperplastic polyp and 1% Lipomatous polyp. These findings are well correlated with findings of Yanik S. et al.^[13], where they found 2% Hyperplastic polyp and 0.74% submucosal Lipomatous polyp. Umana et al.^[19] in a study at Nigeria found 21% Hyperplastic polyp.

Amoebic colitis comprises of 2.5% cases in present study. However, cases of amoebic colitis was relatively low in the studies by Mohamed AR et al.^[14] (0.19%) and Abu Al-Saud.^[20] (0.14%).

Among the benign lesion in our study, 2.9% cases of study population were tubular adenoma, 2.4% cases each of villous adenoma and Tubulovillous adenoma. These findings are similar with findings of Umana et al.^[19] where they found tubular adenoma in 2.6%, villous adenoma in 0.5% and Tubulovillous adenoma in 3.1% cases of study population.

In the present study, among the malignant lesions adenocarcinoma of colon was the predominant lesion accounting for 85% cases of malignant lesions. Similar findings were observed by Abdulkareem et al.^[21] where adenocarcinoma of colon accounted for 87% of colorectal cancer. Ahmad et al.^[22] in Pakistan also found adenocarcinoma to be the predominant lesion in the lower GI tract.

Conclusion:

Endoscopy is a safe OPD based procedure and has a high diagnostic yield with less discomfort to the patient. The fiberoptic diagnostic GI endoscopy is relatively less invasive, simple, safe and well tolerated procedure, cost effective and provides good diagnostic yield in confirmation of various GI lesions. In routine clinical practice, histopathology is the "gold standard" for definitive diagnosis. Biopsy provides an excellent opportunity for the clinician and histopathologist to correlate the clinical data, endoscopic findings and pathological lesions. Diagnostic interpretation limitations are encountered at times due to tiny biopsy material, handling and processing artifacts. Multiple bits of endoscopic biopsies in abnormal looking mucosa are recommended to be obtained to establish a definite/conclusive diagnosis.

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