The Spectrum of colonic lesions: A Clinico-pathological study of colonic biopsies

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ABSTRACT

Background: *The colon is a seat for various diseases which include both non neoplastic and neoplastic conditions, with some of the inflammatory diseases being premalignant. The endoscopic evaluation of the large bowel has helped in not only direct visualisation of these lesions but also in taking a biopsy for histopathological diagnosis which also helps in the further assessment and treatment of the patient. Colonoscopy is also considered gold standard for cancer surveillance, which is the third prevalent cancer in men and women[23]Thus colonoscopic biopsy is an important tool in the diagnosis of large bowel diseases.*

Objectives: *To study the spectrum of lesions of colon in conjunction with clinical data and to evaluate the histomorphology of colonoscopic biopsies.*

Materials and methods: *All colonoscopic biopsies received in Department of Pathology, of a tertiary health care centre during a three year study period ,i.e from August 2012 to August 2014, were subjected to histopathological study and data analysed.*

Results: *A total of 159 colonoscopic biopsies were studied. Out of them, 68 (42.8%) were non neoplastic, 23 (14.4%) were benign lesions and 68 (42.8%) were malignant lesions. Among the 68 Non neoplastic lesions, 32 cases were non-specific colitis, 11 cases ulcerative colitis, 5 cases juvenile polyps, 5 cases hyperplastic polyps, 4 cases SRUS, 3 cases granulomatous inflammation,3 cases retention polyp, 2 cases Crohn's disease and one case each of acute inflammation, inflammatory polyp and endometriosis. Out of the 23 benign cases, 18were tubular adenomas (78.3%); 3 were villous adenomas (13%); 1 case of tubulovillous adenoma (4.3%) and 1 case of Benign spindle cell lesion (4.3%).Out of 68 malignant lesions, 24 cases(35.3%) were Well differentiated Adenocarcinoma, 25 cases (36.8%) were Moderately differentiated Adenocarcinoma, 9 cases (13.2%) were Poorly differentiated, 8 cases (11.8%) were Mucin secreting Adenocarcinoma and 2 cases(2.9%) were Signet ring cell carcinoma.*

Conclusion: *Colonoscopy is a simple and a safe procedure, helps in not only assessing the lesions clinically but also helps in confirming histopathologicaly through guided biopsy. Colonoscopic biopsies also play a key role not only in diagnosis, but also in follow up and treatment, of Inflammatory bowel disease and malignancies. The incidence of colorectal carcinoma is increasing at the rate of 2%.It is also the gold standard for cancer surveillance.*

Keywords: *Colonoscopy, Colitis, Colorectal carcinoma, IBD, Adenoma*

INTRODUCTION

A variety of inflammatory and neoplastic disorders affect the lower gastrointestinal tract, with differing clinical outcomes and management. These conditions encompass a spectrum of acute and chronic conditions.[1,2] The development of flexible endoscopes has led to the increase in the examination and mucosal biopsy evaluation of all portions of large intestine and rectum. The power of colonoscopy lies in its simultaneous ability to visually inspect the entire length of the colon, including the distal ileum, the collection of sample tissue for histology and therapeutic intervention by applying hemostasis, removal of polyps, dilatation of strictures and decompression of the obstructed bowel.

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Biopsies are sought for specific diagnosis, for determining the extent of the disease and its response to therapy and for detecting complications. Colonoscopy has been available since the early 1970's and has become critical to the diagnosis and management of colorectal disorders.[5] Mucosal biopsies have been shown to be the most accurate indicator of the extent of involvement of the colon in Inflammatory bowel disease, which help in determining rational therapeutic strategies in affected patients.[6] During the past decade, great emphasis has been placed on the use of colonoscopy for early detection and removal of adenomatous polyps to reduce incidence and mortality of Colorectal carcinomas.[7]

Another rapidly evolving technique is the Virtual colonoscopy, in which data from computed tomography are used to generate both two-dimensional and three-dimensional displays of the colon and rectum. Vining introduced virtual

colonoscopy in 1994 to maintain the desirable features of colonoscopy of ease of lesion detection while avoiding the undesirable features of colonoscopy of test invasiveness, patient discomfort, need for sedation, analgesia and test risks.[4] This minimally invasive method for the examination of the whole colon, also called CTcolonography, could provide an attractive alternative for use in widespread screening, since it requires no intravenous administration of sedatives, analgesia, or recovery time. This technique provides a secondary benefit of revealing diseases or abnormalities outside the colon, but no biopsies can be taken for histopathological confirmation of the findings. Hence colonoscopy plays a key role in the diagnosis and treatment, especially in inflammatory bowel disease and malignancies. Endoscopic localization of disease not only aids in determining prognosis and appropriateness of medical therapies but also aids in decision making in those undergoing surgical therapy.

Epidemiological studies have demonstrated an increased risk of colorectal cancer in patients with both Ulcerative colitis and Crohn's disease. Colonoscopy is currently considered to be gold standard for cancer surveillance.[3] Hence, it will be useful to study and categorize different gastrointestinal lesions depending on their histopathological appearances. Colonoscopic biopsy provides the first source of tissue for most cases of colorectal carcinoma.

This study was undertaken to highlight the utility of colonoscopic biopsies in diagnosis of conditions affecting the lower gastrointestinal tract ranging from inflammatory to neoplastic, along with simultaneous evaluation of clinical data.

AIMS AND OBJECTIVES

To study the clinical profile and histopathology of various lesions in colonoscopic biopsy.

MATERIALS AND METHODS

The present study was undertaken in the Department of Pathology of a tertiary health care centre over a three year duration i.e from August 2012 to August 2014. One hundred and fifty nine biopsies from patients attending the Gastroenterology OPD, who presented with lower gastrointestinal tract symptoms, were studied. Clinical details along with a detailed description of the colonoscopic findings were obtained. Apparent pathology was noted during the colonoscopic procedure and biopsies taken from the representative areas as per discretion of the gastroenterologist. An attempt was made by the clinician to give a colonoscopic diagnosis in all the cases.

Inclusion criteria: All the colonoscopic biopsies taken from terminal ileum to rectum, received in the Department of Pathology.

Exclusion criteria: Poorly fixed/unfixed specimens. All colonoscopic biopsy specimens were collected in 10% neutral buffered formalin processed and embedded with the mucosal surface being uppermost. 4µ thick serial sections were prepared and stained with H&E. Detailed study of the sections was done under light microscope and diagnosis rendered accordingly.

STATISTICAL ANALYSIS

Statistical analysis was carried out using Graph Pad software, 2x2 contingency tables and Chi-square test with Yates correction was used to calculate "p" value to arrive at statistical significance. "P" value of <0.05 was considered statistically significant.

RESULTS AND OBSERVATIONS

During the study period, one hundred and fifty nine colonoscopic biopsy specimens were examined histologically with assessment of clinical data.

Table1: Age distribution of all cases

Age group years	0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90
Number of cases	4	6	29	33	32	24	25	5	1
Percentage	2.5	3.8	18.2	20.8	20.1	15.1	15.7	3.1	0.6

As shown in the above table, the age range was observed to be wide, from youngest aged 3 years to oldest aged 87 years. Clustering of cases was seen between 21 to 70 years of age group, with maximum number of cases seen in the (31-40) years age group, having 33 cases. Least number of cases was seen in the (81-90) years age group, having only one case. There were 102 male patients (64.2%) and 57 female patients (35.8%).

Table2: Clinical profile of cases

Clinical Features	**Number**	**Percentage**
Bleeding PR	49	30.8%
Constipation	55	34.6%
Bleeding PR Weakness	24	15.1%
Diarrhea + Pain abdomen + weakness	13	8.2%
Diarrhea	18	11.3%

In the present study, the most common clinical feature with which the patients presented was found to be Constipation in 55 cases (34.6%), followed closely by Bleeding per rectum in 49 cases (30.8%). Bleeding PR was associated with weakness in 24 (15.1%) cases. Patients with only diarrhea were 18(11.3%) as shown in Table no2.

Table 3: Distribution of colonoscopic lesions

Diagnosis	Number of cases	Percentage
Non neoplastic	68	42.8%
Neoplastic (benign)	23	14.4%
Neoplastic (malignant)	68	42.8%
Total	**159**	**100%**

Table4: Distribution of Non-neoplastic lesions

Non-neoplastic lesions	Number (Percentage)
Ulcerative colitis	11 (16.2%)
Non-specific colitis	32 (47.1%)
Crohn's disease	2 (2.9%)
SRUS	4 (5.8%)
Granulomatous Inflammation	3 (4.4%)
Acute inflammation	1 (1.5%)
Hyperplastic polyp	5 (7.3%)
Inflammatory polyp	1 (1.5%)
Juvenile polyp	5 (7.3%)
Retention polyp	3(4.4%)
Endometriosis	1(1.5%)

In the present study of "159" colonoscopic biopsies, "68" cases were diagnosed as non neoplastic lesions, out of which 32(47.1%) cases of Non-specific colitis, 11(16.2%) cases of ulcerative colitis, 5(7.3%) cases of juvenile polyps, 5(7.3%) cases of hyperplastic polyps, 4(5.8%) cases of SRUS, 3(4.4%) cases of Granulomatous inflammation,3(4.4%) cases of Retention polyp, 2(2.9%) cases of Crohn's disease and one case (1.5%,1.5%) each of Acute inflammation, Inflammatory polyp and Endometriosis.

Microscopic features of non-neoplastic lesions

In the present study, 68 cases were non-neoplastic lesions. 32 cases were of non-specific colitis (chronic), characterized by well-preserved architecture of mucosal glands, normal goblet cells and a predominantly lymphoplasmacytic infiltrate in the lamina propria with occasional neutrophils and eosinophils.

One case of acute colitis was observed, characterized by neutrophilic infiltrate in the lamina propria. No crypt abscess or decrease in goblet cells was observed.3 cases of Granulomatous inflammation were observed characterized by ill-defined granulomas and lymphocytic infiltrate in the lamina propria. But no necrosis was noted. One case was confirmed as Tuberculosis by AFB stain, showing a few acid fast bacilli.11 cases of Ulcerative colitis were noted, out of which two showed dysplasia. Nine cases showed changes of "active phase", which showed distortion of mucosal lining, increase in number of neutrophils, lymphocytes and plasma cells in the lamina propria, crypt abscesses, decrease in the number of goblet cells. Other two cases were in "Quiscent phase".2 cases of Crohn's colitis were observed, and characterized by small, multiple granulomas and lymphocytic infiltrate in the mucosa and submucosa. 5 cases of Juvenile polyps were noted characterized by a polypoid structure lined by columnar cells. The stroma showed plenty of dilated glandular structures with luminal secretions, as well as smaller tubular glands with infiltration by lymphocytes, plasma cells and eosinophils. 5 cases of hyperplastic polyps were detected, which showed superficial elongated crypts with upper parts of the crypts having luminal epithelial infoldings and normal

crypts at the base. 4 cases of Solitary Rectal Ulcer Syndrome, showing ulceration with obliteration of lamina propria by fibroblastic and fibromuscular tissue seen as a prominent feature. There was decrease to absence of plasma cells and lymphocytes. 3 cases of Retention polyp, showing colonic glands many of which were cystically dilated and occasional luminal infolding of epithelium. Glands contained mucin. One case of Inflammatory polyp showing inflamed lamina propria and distorted colonic epithelium was seen. One case of Endometriosis showing endometrial gland and stroma in a hemorrhagic background seen.

Table5: Age Distribution in Non-neoplastic cases

Diagnosis	0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90
Non specific colitis	0	2	12	7	6	2	3	0	0
Ulcerative colitis	0	2	2	2	3	0	1	1	0
Crohn's disease	0	0	1	1	0	0	0	0	0
Acute colitis	0	0	0	0	0	0	1	0	0
Granulomatous inflammation	0	0	0	2	1	0	0	0	0
Juvenile polyp	4	0	1	0	0	0	0	0	0
Hyperplastic polyp	0	0	1	1	0	2	1	0	0
Inflammatory polyp	0	0	0	0	1	0	0	0	0
Retention polyp	0	0	3	0	0	0	0	0	0
SRUS	0	0	1	3	0	0	0	0	0
Endometriosis	0	0	1	0	0	0	0	0	0
Total	4	4	22	16	11	4	6	1	0

As seen in Table No.5, in the present study, lesions were seen between ages of 3 years to 70 years. Maximum clustering of cases were observed in the age groups (21-30) and (31-40) years. Non-neoplastic lesions were encountered in 47 males (69.1%) and 21 females (30.9%)., a male preponderance was noted.

Table6: Distribution of Neoplastic (benign lesions)

Neoplastic (benign)	Number
Tubular Adenoma	18
Villous Adenoma	3
Tubulovillous Adenoma	1
Benign spindle cell lesion	1

As shown in Table No.6, out of the 23 benign cases, 18 were tubular adenomas (78.3%); 3 were villous adenomas (13%); 1 case each of Tubulovillous adenoma (4.3%) and Benign spindle cell lesion (4.3%).

Table7: Age Distribution in Benign Neoplastic lesions

Age group	(11-20)	(21-30)	(31-40)	(41-50)	(51-60)	(61-70)	(71-80)
Tubular Adenoma	1	1	1	4	6	3	2
Villous Adenoma	0	0	0	2	0	1	0
Tubulo-villous Adenoma	0	0	0	0	0	1	0
Benign spindle cell lesion	0	0	1	0	0	0	0
Total	**1**	**1**	**2**	**6**	**6**	**5**	**2**

In the present study most of the lesions were seen in the age groups (41-50) and (51-60) years, each comprising 6 cases. 5 cases in (61-70) years age group. 2 cases each in (31-40) & (71-80) years age group respectively and 1 case each in (11-20) & (21-30) years age group respectively, as shown in Table No.7.

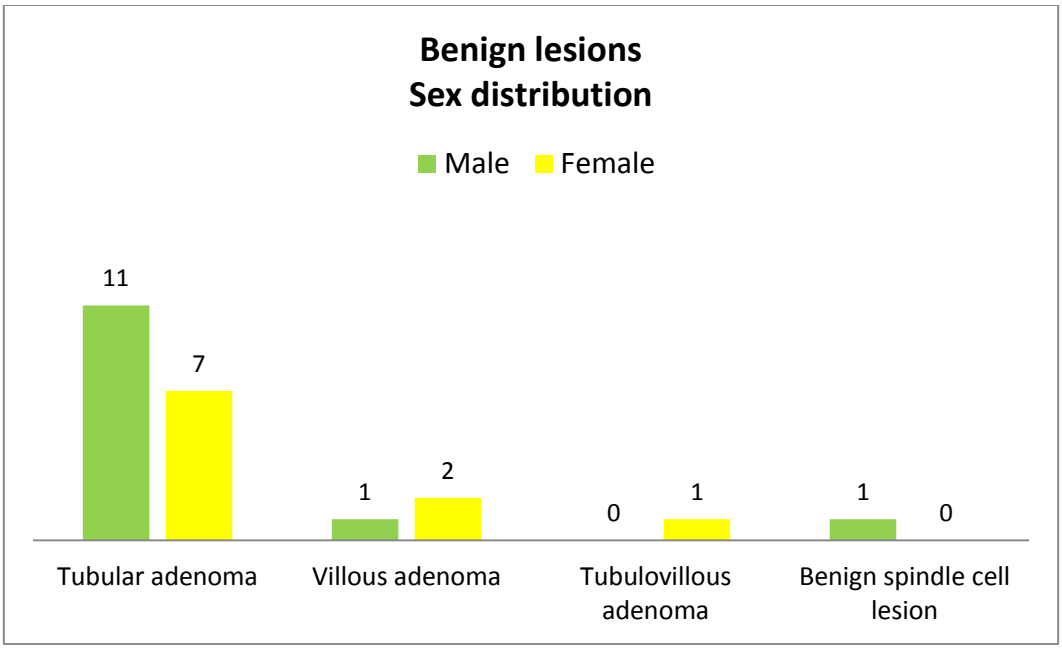

Fig. 1: showing sex distribution of benign lesions. Majority of the patients affected were males.

Microscopic features of Benign Neoplastic lesions: 18 cases were diagnosed as Tubular Adenoma characterized by increased number of glands and cells per unit area. Cells are crowded with hyperchromatic nuclei, increased mitoses and dysplastic changes ranging from low grade to high grade. 3 cases of Villous adenoma were observed which were characterized by finger like or leaf like villous processes of lamina propria covered by dysplastic epithelium. 1 case of Tubulovillous Adenoma was noted which had features of both tubular and villous adenoma. 1 case of Benign spindle cell lesion was diagnosed which showed a circumscribed lesion made up of fascicles of spindle cells.

Table8: Distribution of Malignant lesions

Malignant lesion	**Number**
Well Differentiated Adenocarcinoma	24
Moderately Differentiated Adenocarcinoma	25
Poorly Differentiated Adenocarcinoma	9
Mucin Secreting Adenocarcinoma	8
Signet ring cell Carcinoma	2

As shown in Table No.8, in the present study, out of 68 malignant lesions, 24 cases(35.3%) were Well differentiated Adenocarcinomas, 25 cases (36.8%) were Moderately differentiated Adenocarcinomas, 9 cases (13.2%) were Poorly differentiated, 8 cases (11.8%) were Mucin secreting Adenocarcinomas and 2 cases(2.9%) were Signet ring cell carcinomas.

Well differentiated adenocarcinomas, characterized by malignant glands infiltrating submucosa. The tumor cells were arranged in glandular pattern, some showing papillary configuration and lined by tall columnar cells with hyperchromatic nuclei, showing nuclear stratification and mitoses. 25 cases were of moderately differentiated adenocarcinomas and these showed malignant glands with irregular outlines. There was loss of nuclear polarity and variation in nuclear size and shape.9 cases were of poorly differentiated adenocarcinomas and they displayed highly irregular and ill formed tubular structures. The tumor cells were seen in groups and cords and showed pleomorphism, hyperchromatic nuclei with prominent nucleoli and scanty cytoplasm. 8 cases were diagnosed as mucin secreting with tumor cells floating in large extracellular mucin lakes which comprised 50% of tumor mass. 2 cases were of Signet ring cell carcinoma which showed tumor cells with intracellular mucin , with nucleus pushed to the periphery and signet ring component comprising >50% of tumor cells with little glandular formation.

Table9: Age Distribution in Malignant lesions

Age group	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90
Well differentiated adenocarcinoma	1	3	7	2	6	5	0	0
Moderately differentiated adeno-carcinoma	0	1	6	6	4	6	1	1
Poorly differentiated adenocarcinoma	0	1	0	3	2	2	1	0
Mucin secreting adenocarcinoma	0	1	2	3	1	1	0	0
Signet ring cell Carcinoma	0	0	0	1	1	0	0	0
Total	1	6	15	15	14	14	2	1

As shown in Table No.9, malignant lesions were seen in a wide age range of 11 to 90 years. Maximum clustering of cases were noted between 31-50 years age group, showing a trend of occurrence in younger age group in recent years.

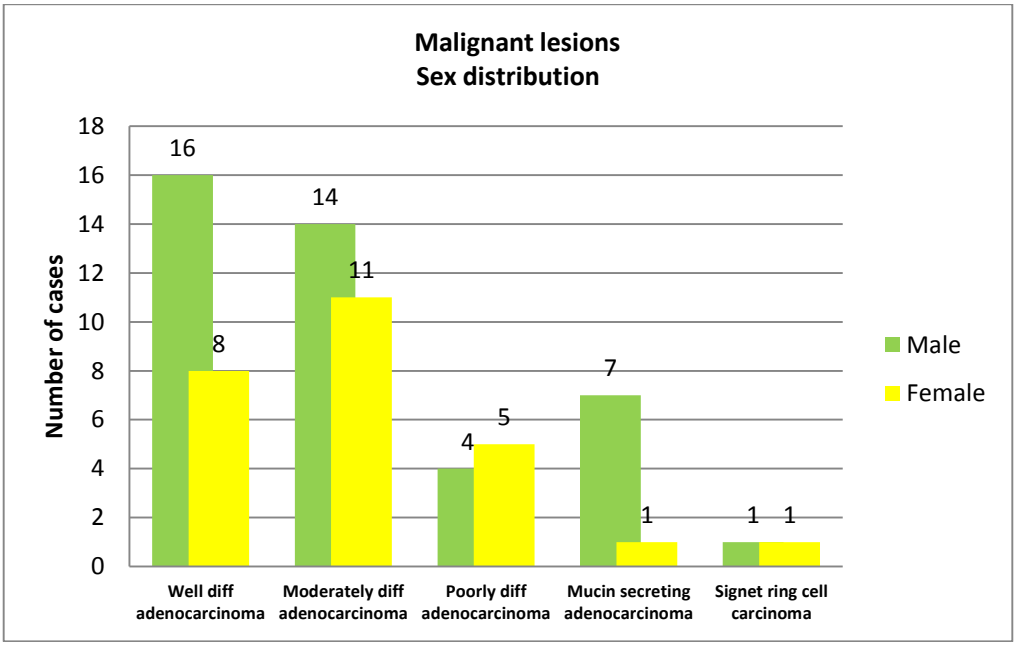

Fig. 2: In the present study, majority affected were males (61.8%) and remaining were females (38.2%)

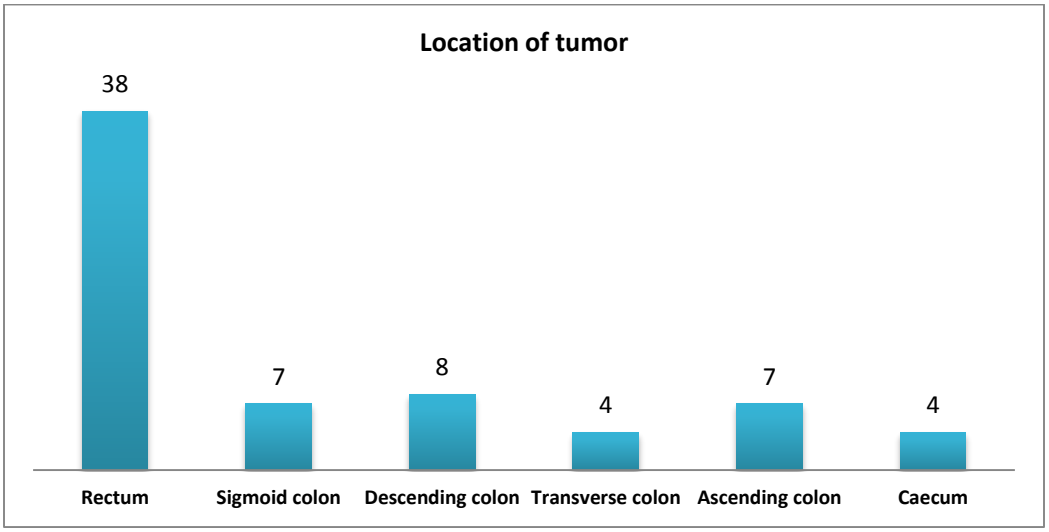

Fig.3

As shown in Figure No.3, the most common site of occurrence of malignant tumors was found to be Rectum, 38 cases (55.9%), followed by Descending colon 8 cases (11.8%) and 7 cases each in Sigmoid and Ascending colon (10.3%).

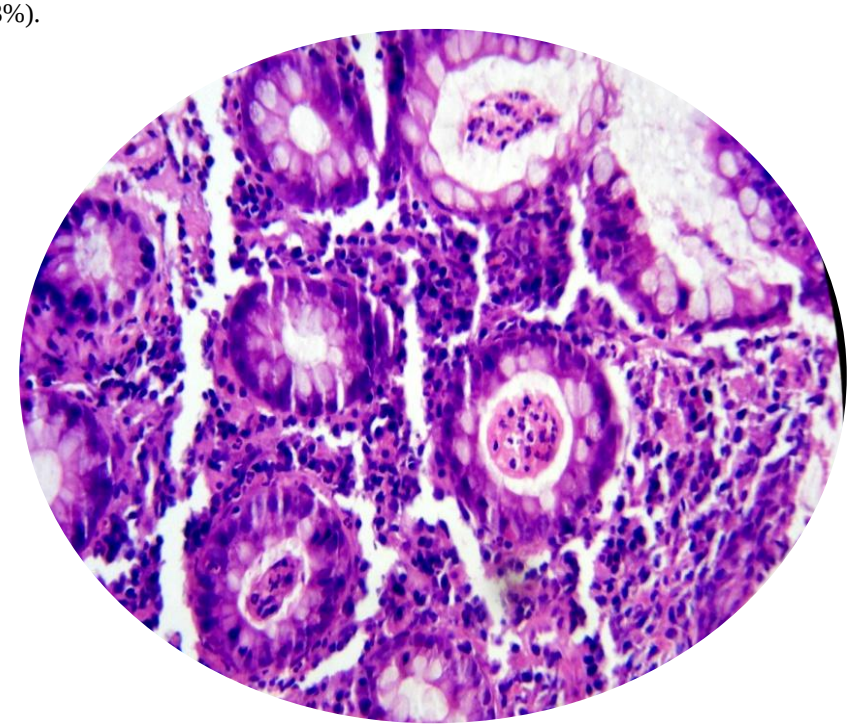

Fig. 4: Ulcerative colitis, Active phase showing crypt abscess and cryptitis (H&E 400x)

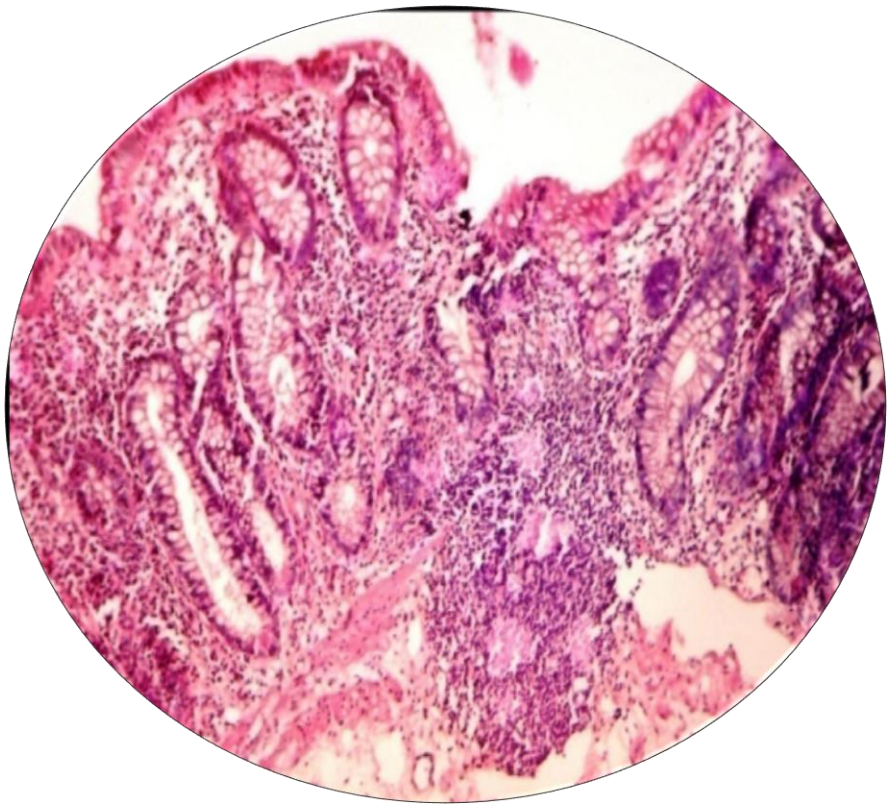

Fig. 5: Ulcerative colitis in Quiescent phase showing mucosal atrophy, loss of parallelism (H&E 100x)

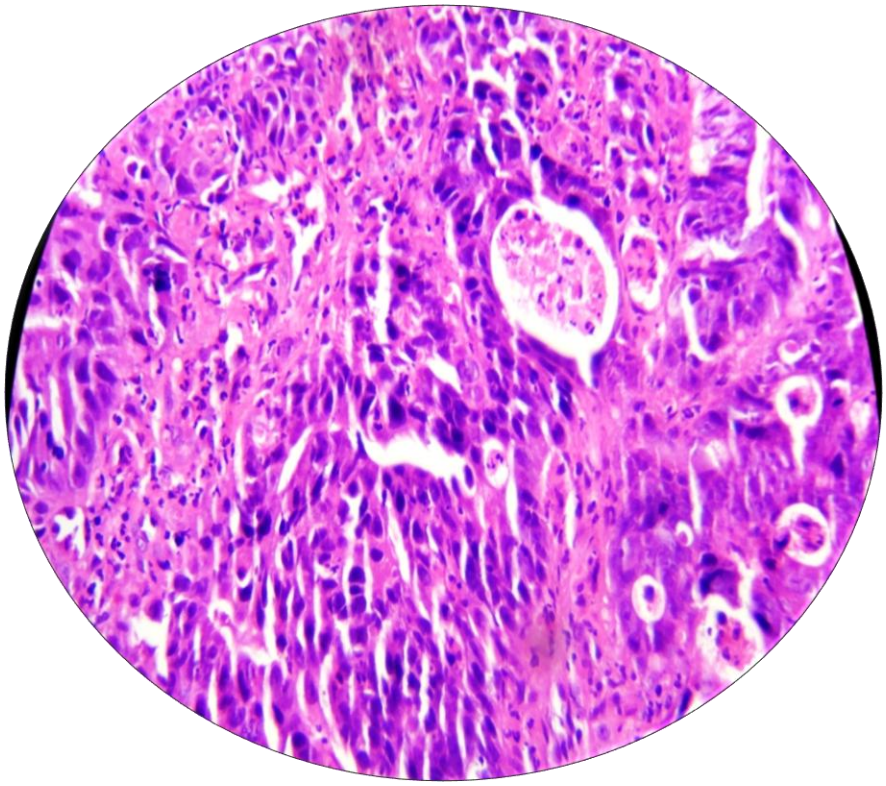

Fig. 6: Ulcerative colitis, showing dysplasia (H&E 400x)

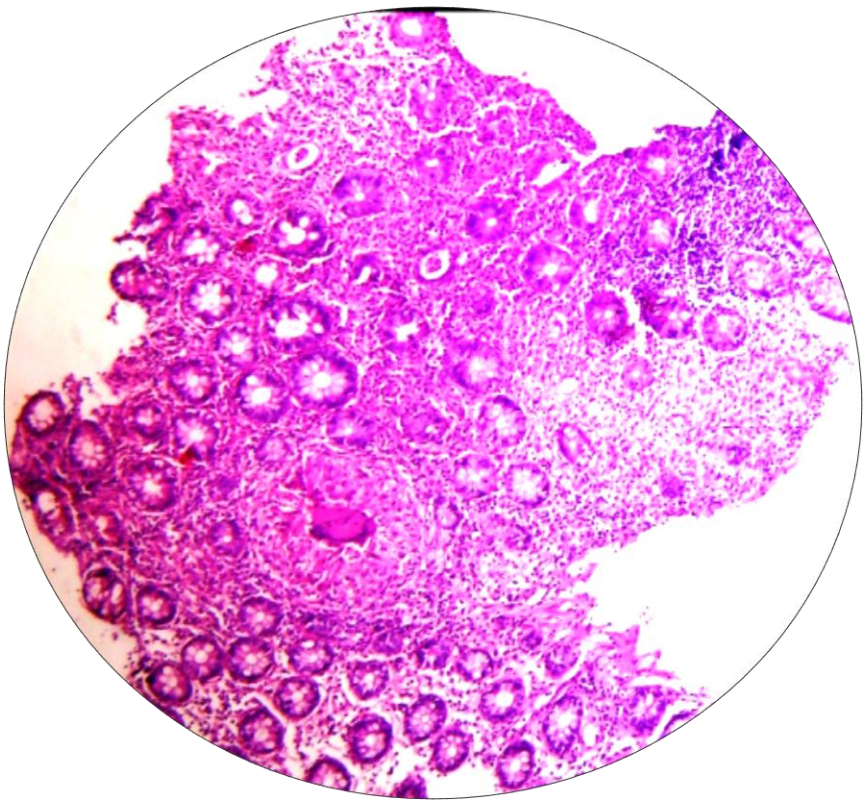

Fig. 7: Crohn's colitis, showing granuloma in submucosa, cryptitis and crypt abscess (H&E 40x)

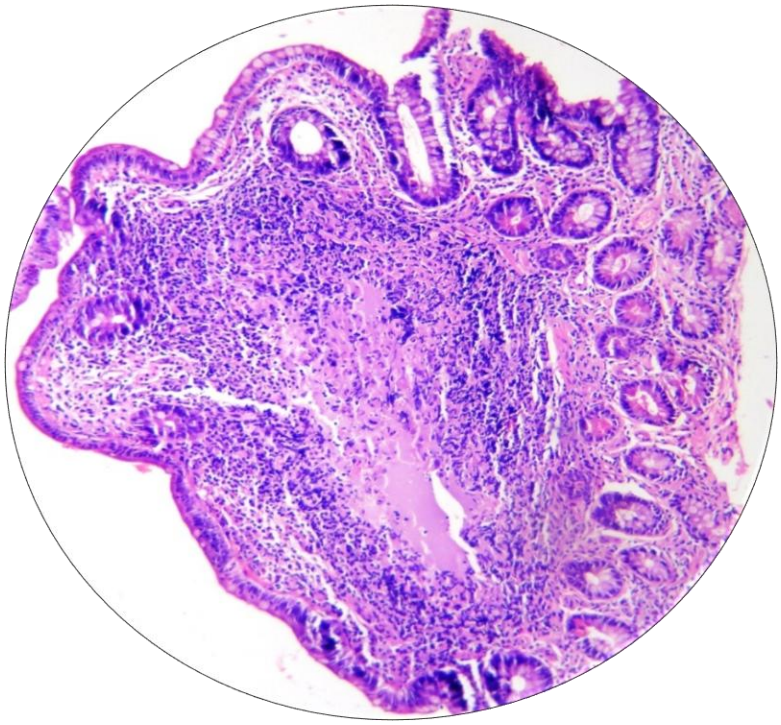

Fig. 8: Granulomatous inflammation showing ill-defined granuloma in the submucosa (H&E 40x)

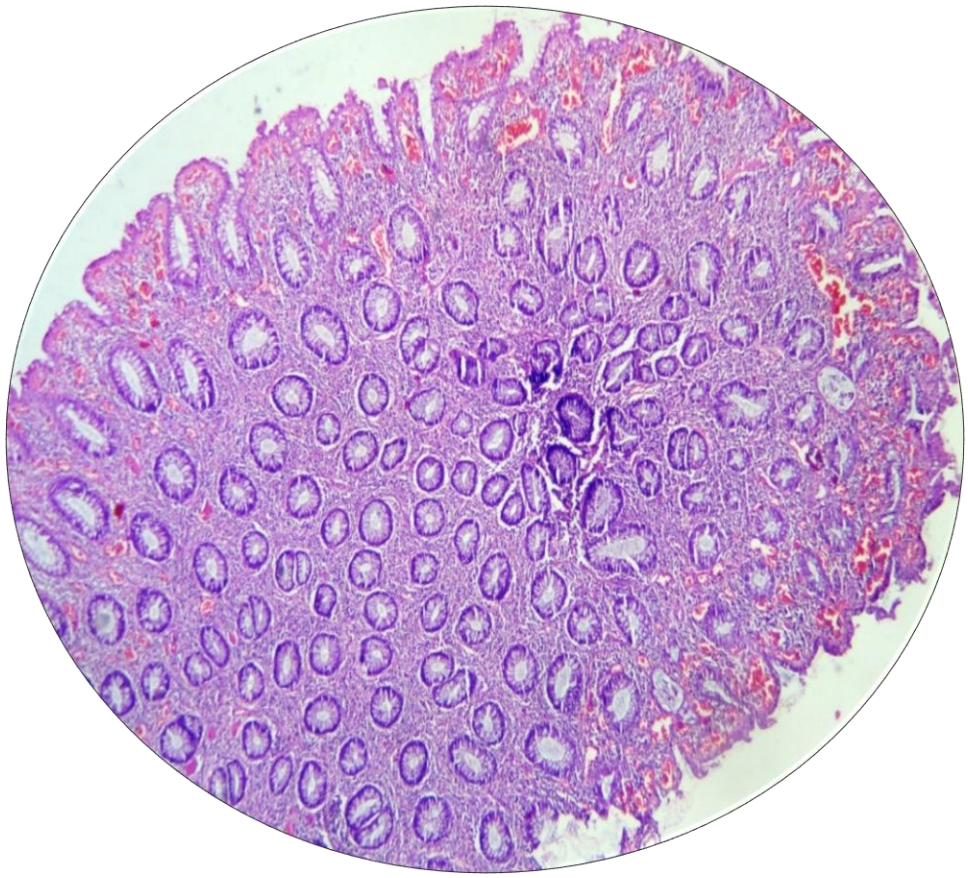

Fig. 9: Hyperplastic polyp (H&E 40x)

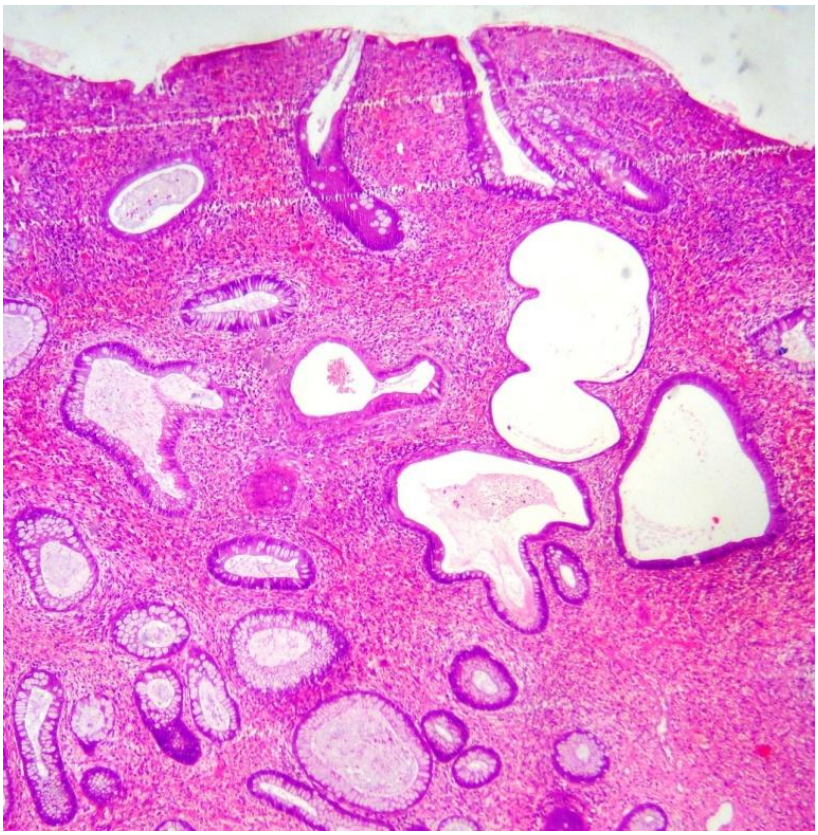

Fig. 10: Juvenile polyp(H&E 40x)

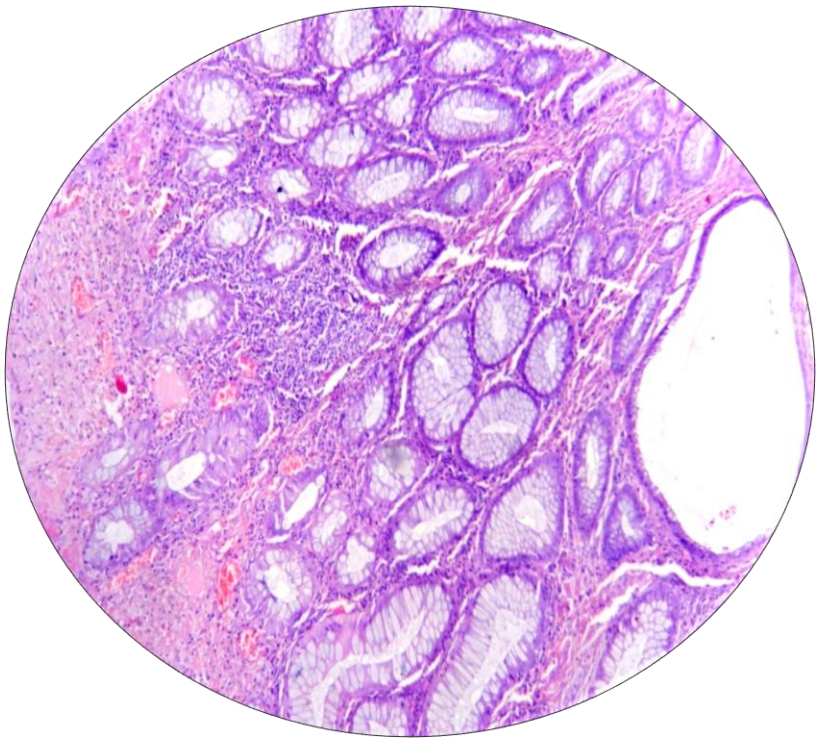

Fig. 11: Retention polyp (H&E 100x)

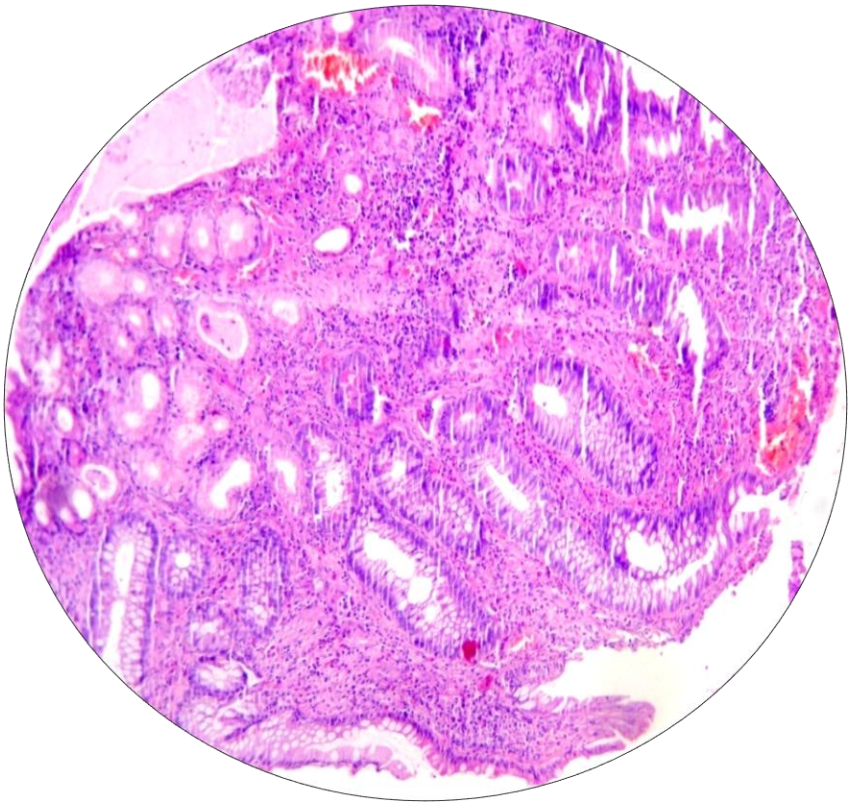

Fig. 12: Solitary Rectal ulcer, showing splaying of muscle fibers (H&E 40x)

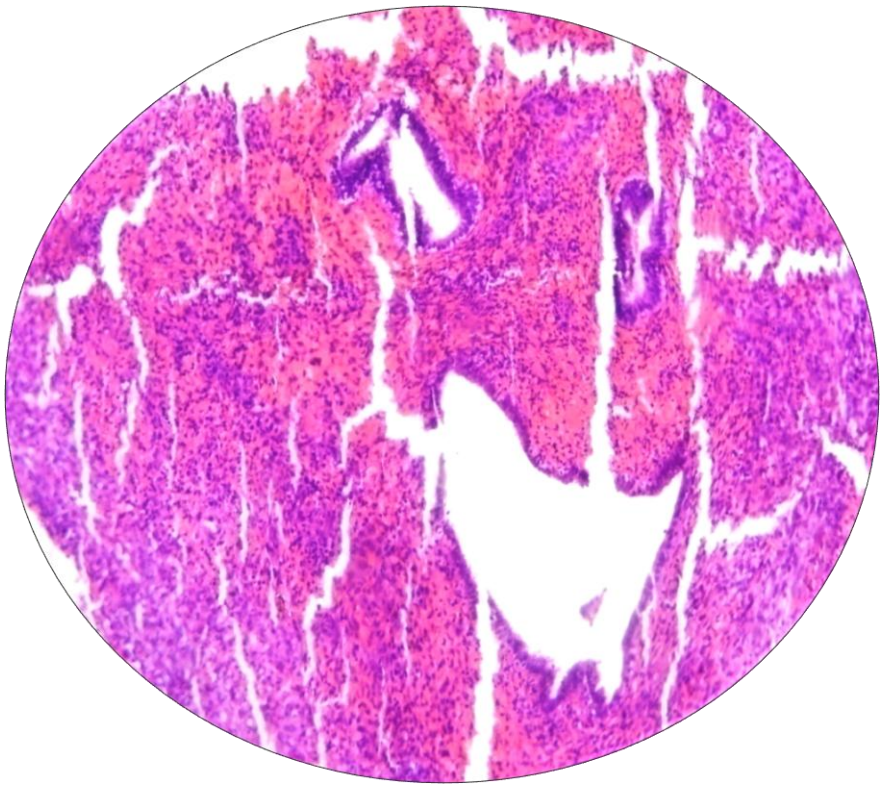

Fig. 13: Endometriosis (H&E 100x)

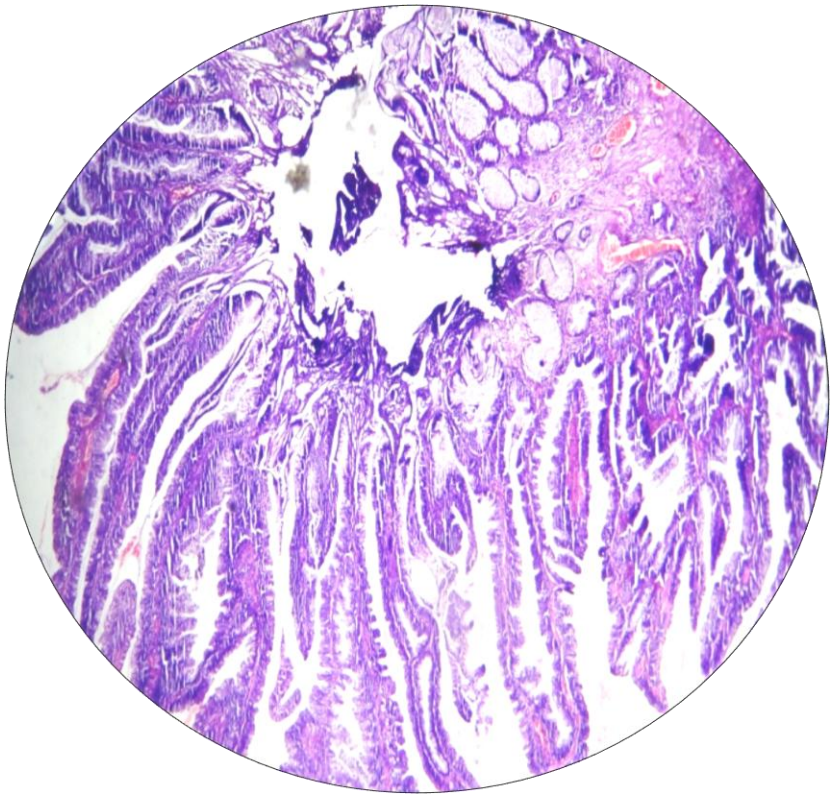

Fig. 14: Villous Adenoma (H&E 40x)

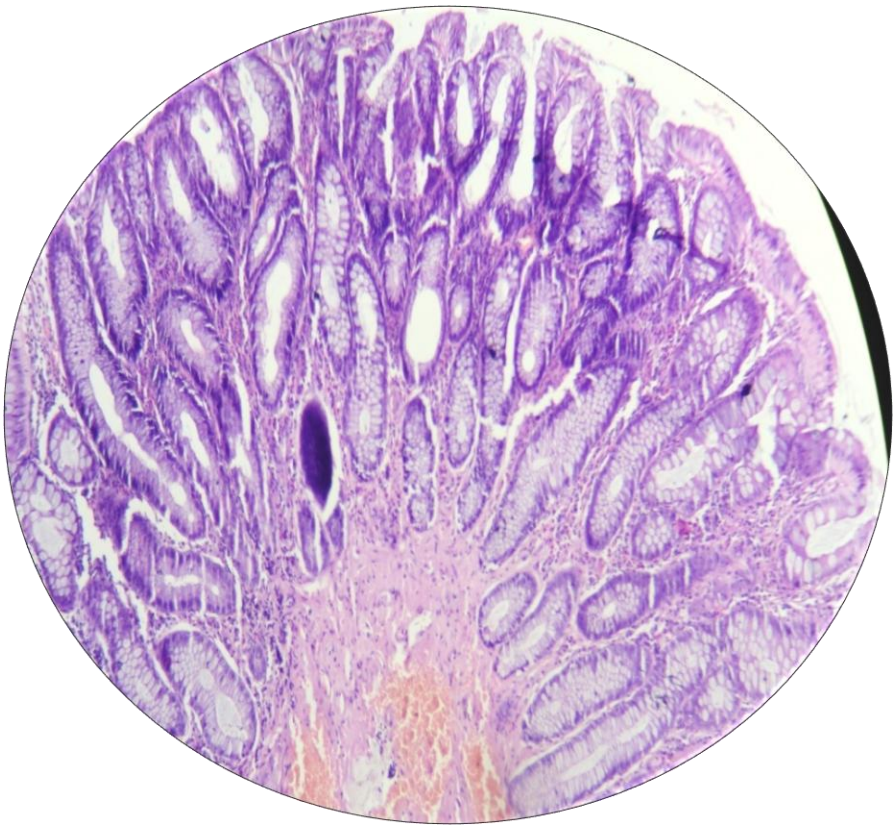

Fig. 15: Tubular Adenoma(H&E 40x)

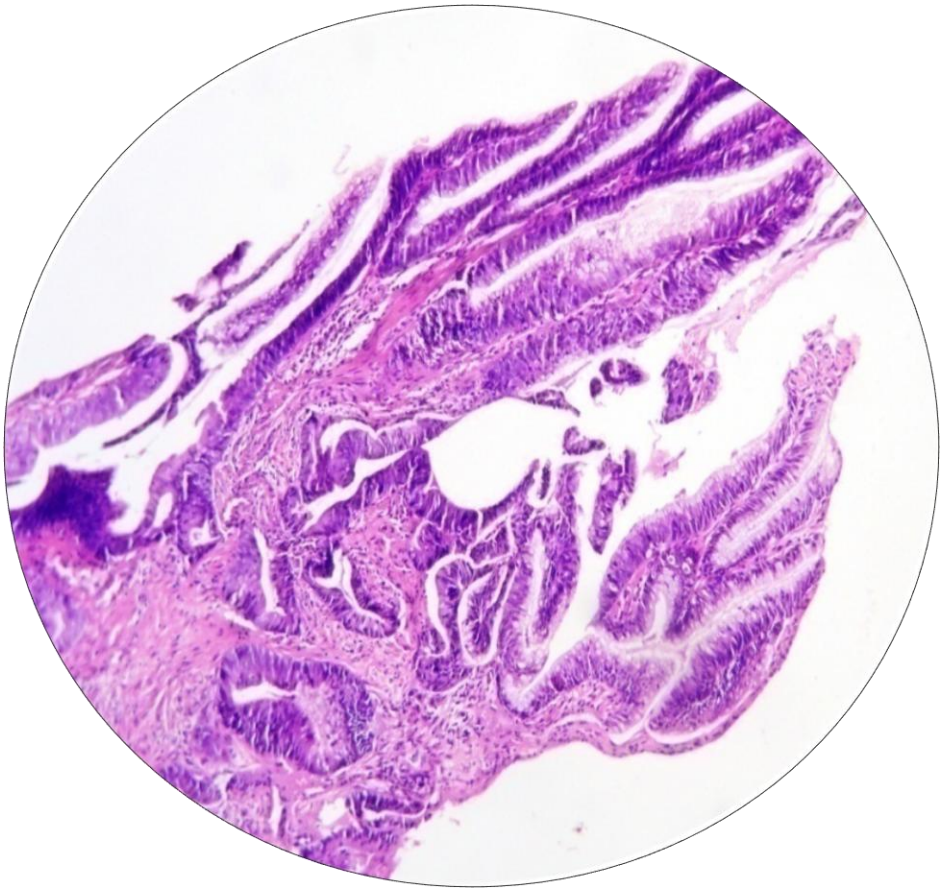

Fig. 16: Tubulovillous Adenoma (H&E 40x)

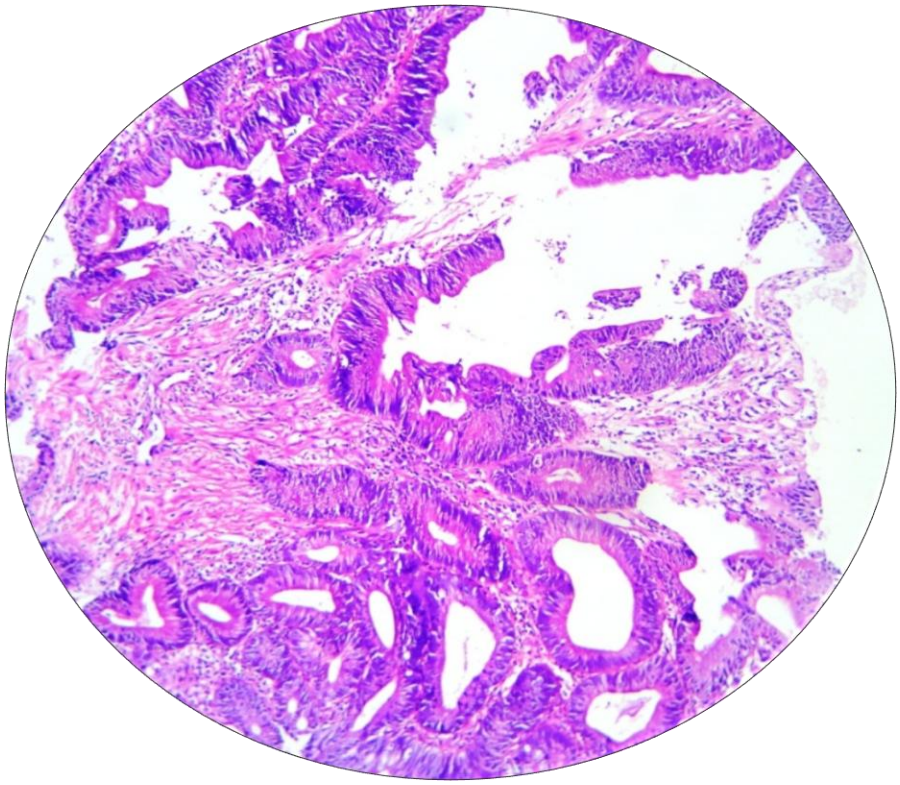

Fig. 17: Well differentiated Adenocarcinoma (H&E 40x)

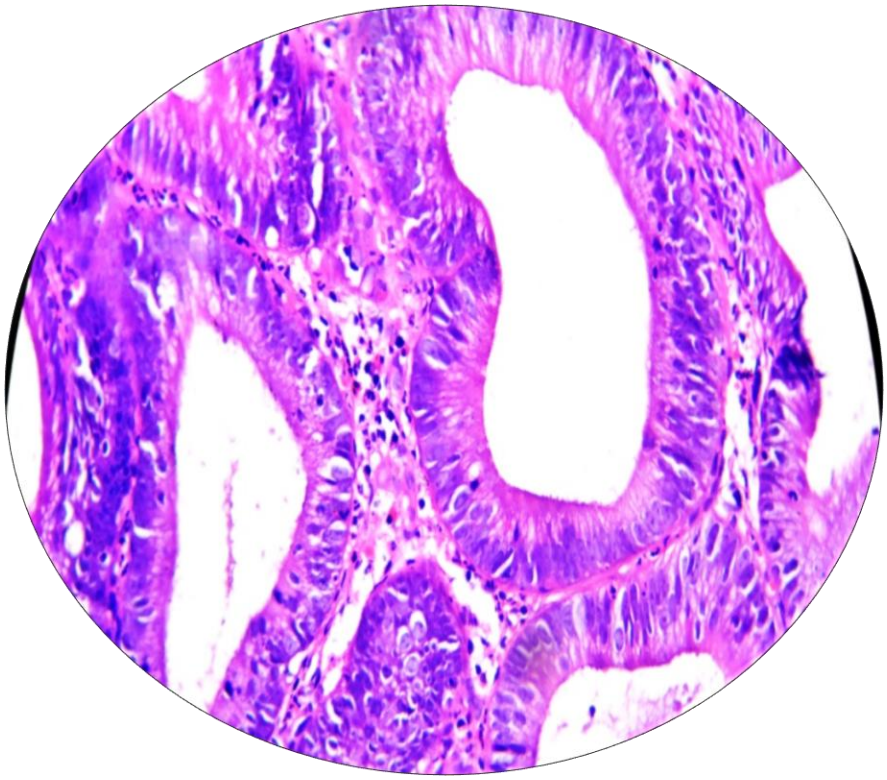

Fig. 18: Well differentiated Adenocarcinoma (H&E 400x)

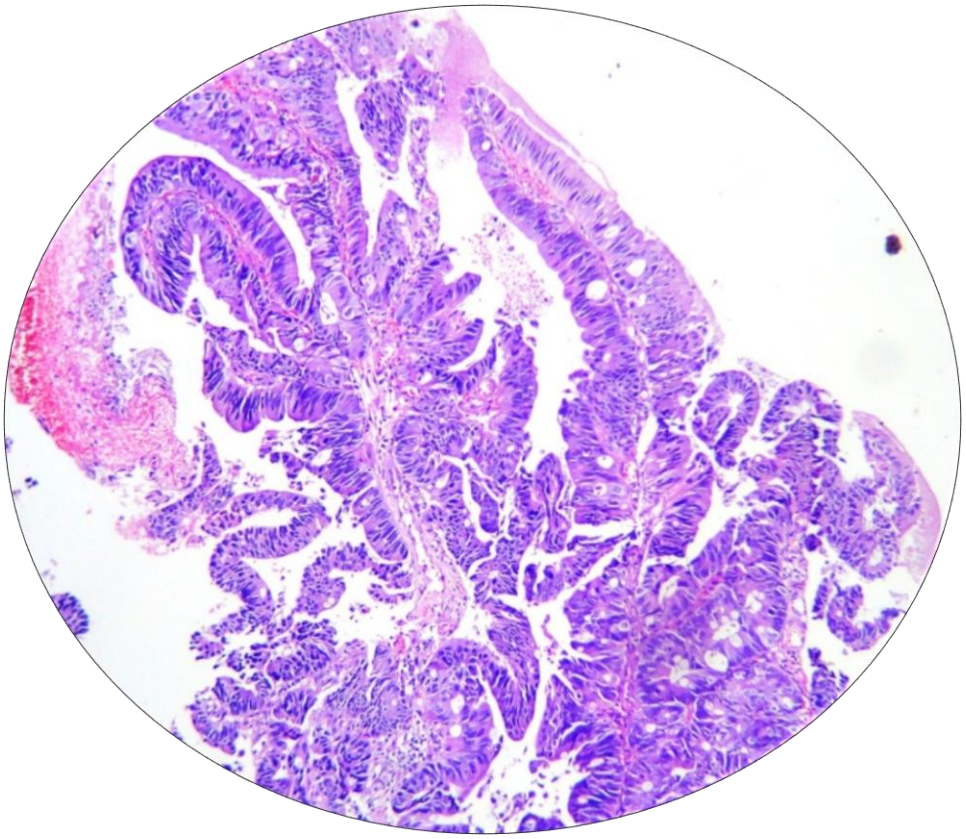

Fig. 19: Well differentiated Papillary Adenocarcinoma(H&E 100x)

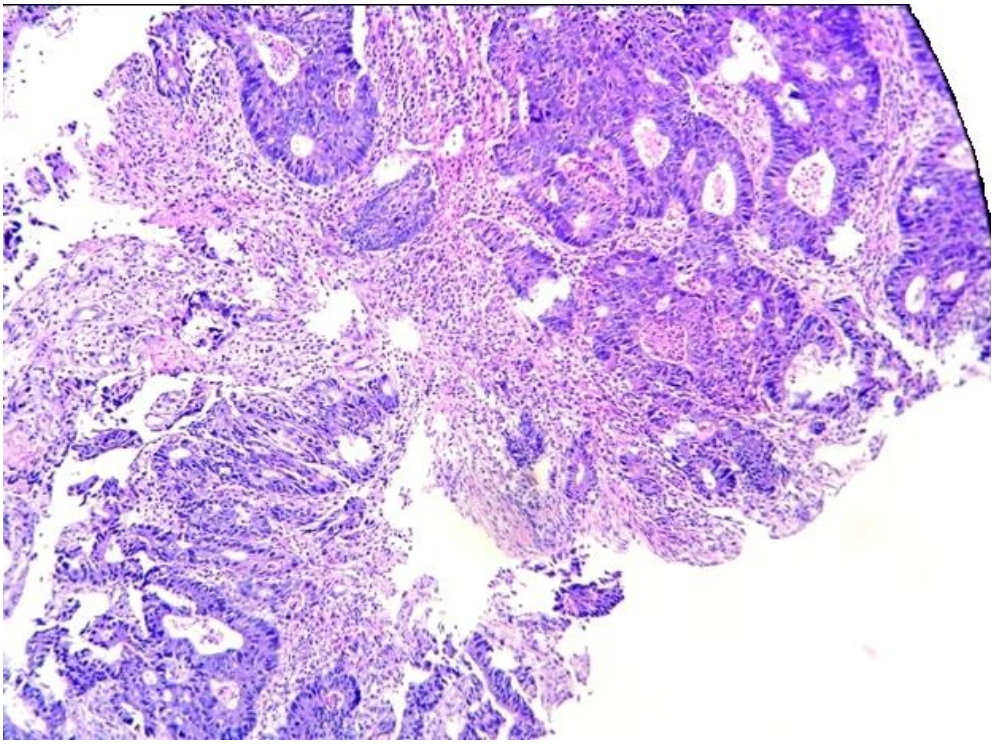

Fig. 20: Moderately differentiated Adenocarcinoma (H&E 40x)

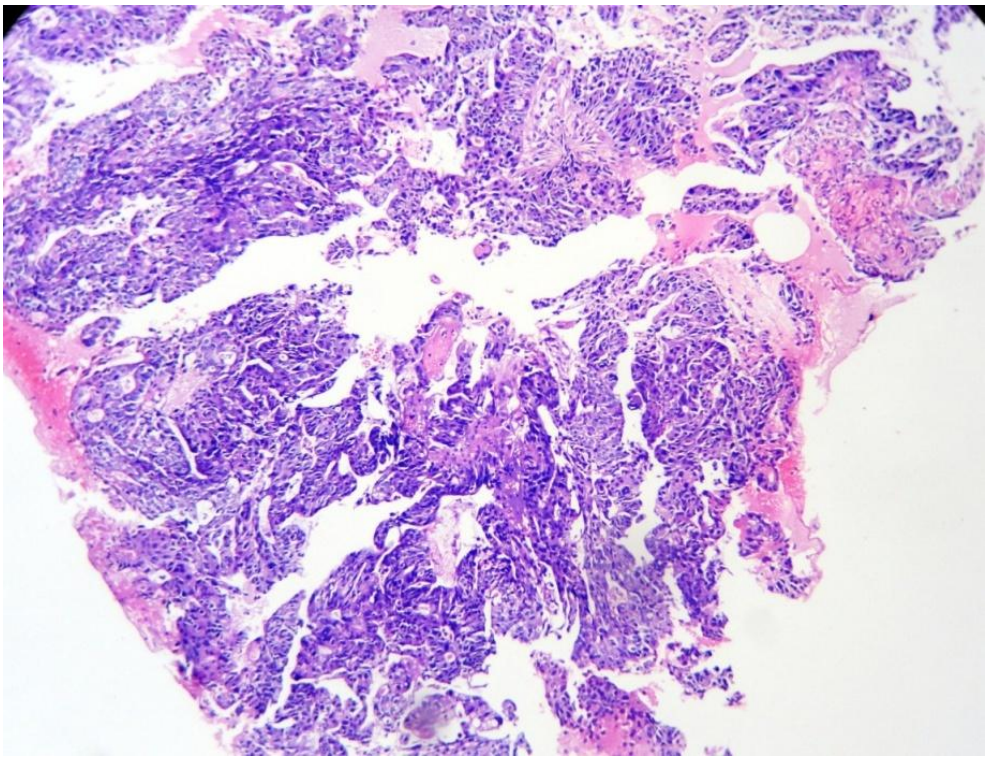

Fig. 21: Poorly differentiated Adenocarcinoma (H&E 40x)

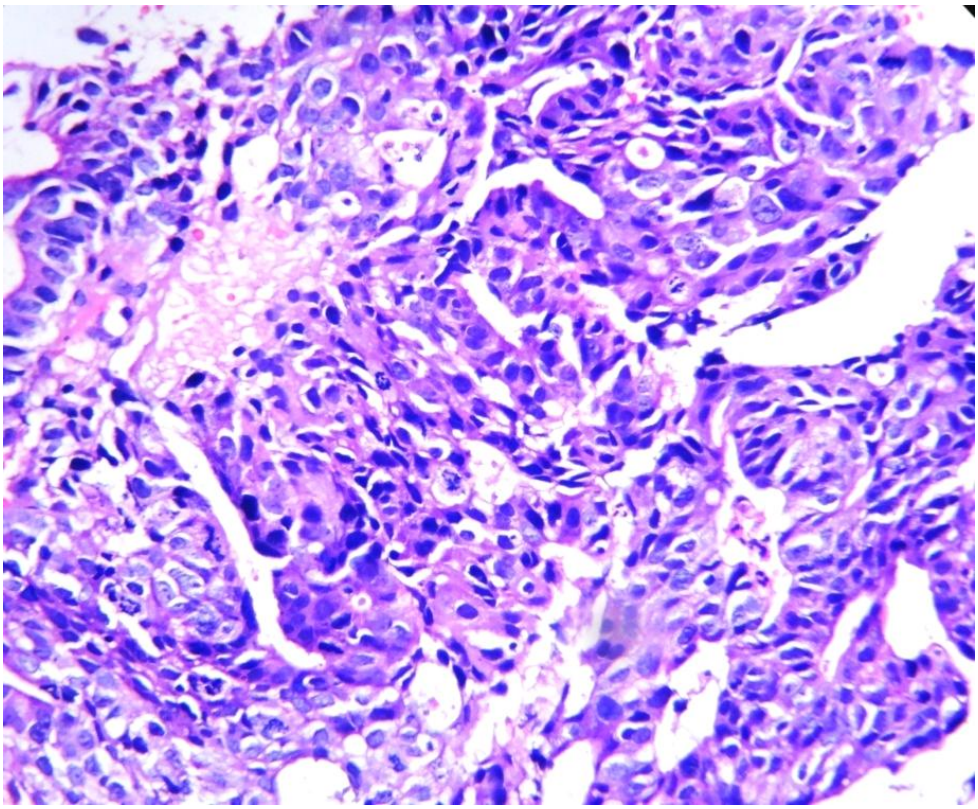

Fig. 22: Poorly differentiated Adenocarcinoma (H&E 400x)

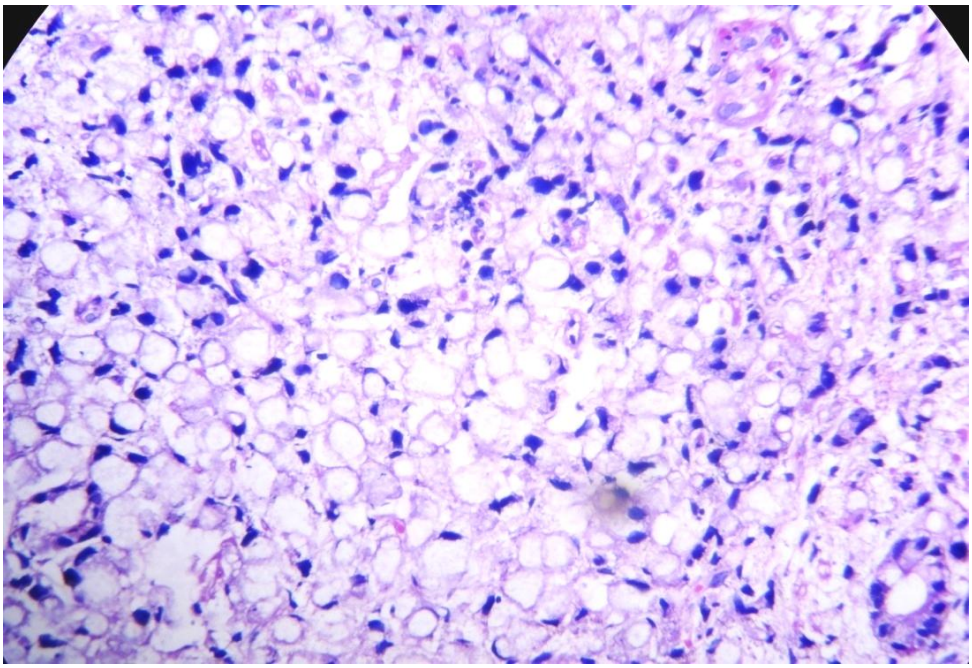

Fig. 23: Signet ring cell carcinoma(H&E 100x)

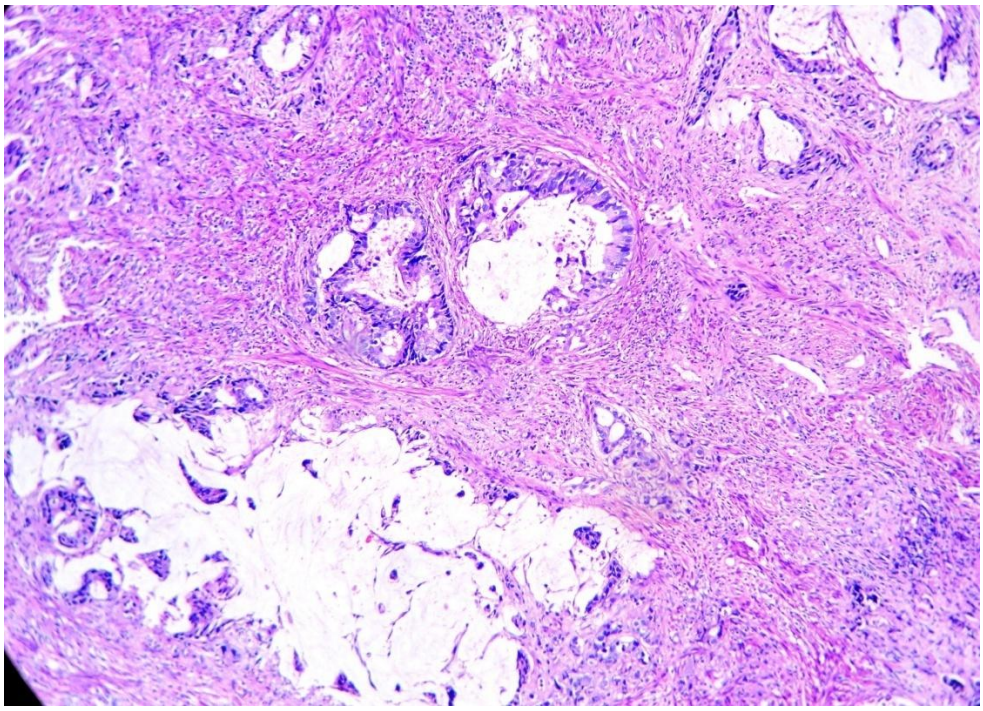

Fig. 24: Mucinous Adenocarcinoma (H&E 100x)

DISCUSSION

The spectrum of colonic lesions span from infectious, idiopathic, inflammatory diseases, polyps, motility disorders and colorectal tumors. All these lesions often require colonoscopic biopsies for their conclusive diagnosis.[9]

In the present study, 159 colonoscopic biopsies were received, in the period between August 2012 and August 2014. Of these 102(64.15%) were males and 57(35.84%) were females, with a male to female ratio of 1.8:1. The most common clinical presentation of patients in this study was Constipation (34.6%), closely followed by Bleeding per rectum (30.8%) and Diarrhea constituting 11.3% of cases. In the present study, age range was observed to be wide, from 3 years to 87 years of age.

Table No.10 Showing age distribution in comparison to other study

Age	Hassan Abdulla et al [10]	Present study
(0-10)	6	4
(11-20)	28	6
(21-30)	81	29
(31-40)	77	33
(41-50)	45	32
(51-60)	65	24
(61-70)	30	25
(71-80)	0	5
(81-90)	-	1
Total	**332**	**159**

Clustering of cases was seen between 21 to 70 years of age group, with maximum cases seen in (31-40) – 20.8% and (41-50) – 20.1%. This finding corresponds with study series of Hassan Abdulla Al-aquili[10] which showed clustering of cases between 21-60 years, with maximum cases in (21-30) -24.4% and (31-40) – 23.2%. Of the 159 cases, 68 (42.8%) were non-neoplastic, 23(14.4%) were benign neoplastic and 68 (42.8%) were malignant neoplastic cases. This finding corresponds to the study series of R.Teague et al[8], Sidney J et al[11]and Rajbhandari M et al[9]where in the non-neoplastic lesions were maximum in occurrence. But, in the present study, equal incidence of non-neoplastic and malignant neoplastic lesions was seen, due to the fact that VIMS&RC is an Oncology referral center.

Table11: Showing distribution of all lesions in comparison with other studies

Study	No.of cases	Non neoplastic	Benign Neoplastic	Malignant Neoplastic
R.H.Teague et al[8]	57	25(43.9%)	15(26.3%)	17(29.8%)
Sidney J. et al [11]	212	130 (61.3%)	42(19.8%)	40(18.9%)
Rajbhandari M et al[9]	126	93 (73.8%)	8 (6.3%)	25 (19.8%)
Present study	**159**	**68 (42.8%)**	**23 (14.4%)**	**68 (42.8%)**

Non-neoplastic lesions:

In the present study of "159" colonoscopic biopsies, "68" cases were diagnosed as non-neoplastic lesions, out of which 32 cases of Non-specific colitis, 11 cases of ulcerative colitis, 5 cases of juvenile polyps, 5 cases of hyperplastic polyps, 4 cases of SRUS, 3 cases of Granulomatous inflammation, 3 cases of Retention polyp, 2 cases of Crohn's disease and one case each of Acute inflammation, Inflammatory polyp and Endometriosis.

Table12: Comparison of non-neoplastic lesions to other similar study

Study	No. of cases	Nonspecific colitis	Granulomatous lesion	Ulcerative colitis	Polyps	Others
Rajbhandari M et al[13]	93	35(27.7%)	14(11.1%)	4(3.2%)	21(16.7%)	19(15.1%)
Present study	68	32(47.1%)	3(4.4%)	11(16.2%)	14(20.6%)	8(11.8%)

As shown in the above table, similar findings were encountered with study of Rajbhandari et al[13] where in non specific colitis constituted maximum number of cases.

Dysplasia in Ulcerative colitis and Crohn's disease:

Colorectal cancer (CRC) is among the most feared long-term complications of ulcerative colitis (UC). Although association between UC & CRC is well established, documentation of an association between CRC and Crohn's has only recently been appreciated.[15]

Colectomy versus continued surveillance in patients with long standing UC is a challenging decision. A precursor to cancer, the finding of dysplasia upon biopsy of the colon in patients is a significant predictor not only of coexistant cancer but also of their risk of subsequent development of colorectal cancer. With this attendant risk, it is generally accepted that when high grade dysplasia (HGD) is found on biopsy, colectomy should be performed.[16] Wool rich and colleagues[17], showed that LGD, like HGD, is predictive of future carcinoma: of the patients studied, 18% of those with LGD progressed to carcinoma within an average of 6.3 years. Bernstein & associates[18] found that 16%-29% of patients with untreated LGD progressed to a dysplasia-associated lesion or mass (DALM), HGD or cancer. In LGD, nuclei are enlarged, hyperchromatic and limited to basal half or two-thirds of the cells. In HGD, nuclear changes are more severe and the nuclei extend into the upper third of the cells.[19] Therefore, it is important to document presence of dysplasia in UC&CD, which will determine the course of treatment in these patients.

In the present study, two cases of UC were showing dysplasia, one LGD and the other HGD. These patients require follow up and different modality of treatment.

Polyps (non neoplastic)

There were 14 cases of colonoscopically removed polyps in the present study. 5 cases of Juvenile polyps(35.7%), 5 cases of Hyperplastic polyps (35.7%), 3 cases of Retention polyps (21.4%) and 1 case of Inflammatory polyp (7.1%).

Table13: Comparison of Non neoplastic polyps with other study

Study	Juvenile polyp	Hyperplastic polyp	Retention polyp	Inflammatory Polyp	Hamartomatous polyp	Total
Hassan et al [10]	21 (67.7%)	6(19.3%)	-	-	4(13%)	31
Present study	5 (35.7%)	5 (35.7%)	3 (21.4%)	1 (7.1%)	-	14

The present study was compared with the study series of Hassan Abdulla Al-aquli et al [10]. As observed, Juvenile polyps and hyperplastic polyps were the most common non neoplastic polyps occurring in the study.

Neoplastic lesions (Benign):

Screening for Colorectal Cancer (CRC) in asymptomatic patients can reduce the incidence and mortality of CRC. Adenomatous polyps are the most common neoplasms found during CRC screening. There is evidence that detection and removal of the cancer precursor lesions may prevent and reduce mortality.[12]There is new evidence that some patients may develop cancer within 3-5 years of colonoscopy and polypectomy – so-called Interval cancers.[12]

In 2006, the United States Multi-Society Task Force (MSTF) on CRC issued a guideline on polypectomy surveillance. The surveillance scheme identified 2 major risk groups based on the likelihood of developing advanced neoplasia during surveillance: (1) low-risk adenomas (LRAs), defined as 1-2 tubular adenomas <10 mm & (2) high-risk adenomas (HRAs), defined as adenomas with villous histology, high grade dysplasia (HGD), ≥ 10 mm in size or three or more adenomas.[13]

More recently, the British Society of Gastroenterology updated their 2002 surveillance guideline in 2010. Their risk stratification differs from the US guideline, dividing patients into 3 groups: low risk (1-2 adenomas <10 mm), intermediate risk (3-4 small adenomas or one ≥ 10 mm) & high risk (>5 small adenomas or ≥ 3 with at least one ≥10 mm). They recommend that the high-risk group undergo surveillance at one year, because of concerns about missed lesions at baseline.[14]

Guidelines given by MSTF [12] :(Table No.14)

Baseline colonoscopy: most advanced finding(s)	Recommended surveillance interval (*y*)	Quality of evidence supporting the recommendation
No polyps	10	Moderate
Small (<10 mm) hyperplastic polyps in rectum or sigmoid	10	Moderate
1–2 small (<10 mm) tubular adenomas	5–10	Moderate
3–10 tubular adenomas	3	Moderate
>10 adenomas	<3	Moderate
One or more tubular adenomas ≥10 mm	3	High
One or more villous adenomas	3	Moderate
Adenoma with HGD	3	Moderate
Serrated lesions		
Sessile serrated polyp(s) <10 mm with no dysplasia	5	Low
Sessile serrated polyp(s) ≥10 mm	3	Low
OR		
Sessile serrated polyp with dysplasia		
OR		
Traditional serrated adenoma		
Serrated polyposis syndrome[a]	1	Moderate

In the present study, there were totally 23 neoplastic benign cases, out of which 18 were tubular adenomas (78.3%), 3 were villous adenomas (13%), 1 case of Tubulovillous adenoma (4.3%) and 1 case of Benign spindle cell lesion (4.3%). It is important to diagnose these adenomatous polyps, as they are at higher risk of developing carcinoma and patients have to be screened according to the guidelines.

Malignant lesions:

Colorectal cancer is the third prevalent cancer in men and women. Although distributed worldwide, incidence is higher in industrialized and western countries.[1]Adenocarcinoma is the commonest malignant tumor of the colon and rectum. The rising trend in incidence and mortality from colorectal cancer is more striking in affluent than in poorer societies and differs substantially among ethnic groups. Although, changes in lifestyle and dietary habits are believed to be the reasons underlying the increase, the interaction between these factors and genetic characteristics might also have a pivotal role.[20] Colorectal cancer is generally a disease affecting individuals, 50 years of age or older. In recent years, we have observed an increased incidence of colorectal cancers in younger age group.[20]

In the present study of 68 malignant lesions, clustering of cases is observed between 31-70 years of age. Maximum number of cases are observed in (31-50) years age group, showing a shift in trend of occurrence of colorectal carcinoma in younger age group. Mean age of presentation was 49.4 years. Majority of the malignant cases were males 41(61.8%) and the rest were females 26(38.2%). The most common site of occurrence of the malignant tumors was Rectum. All these findings are in accordance with the study series of Sudarshan et al [20] and Laishram RS et al[21].

Table15: Comparison of age and sex distribution of malignant lesions with other studies

Study	No.of cases	Mean age	No.of male patients	Most common location of tumor
Sudarshan et al[20]	233	43 years	134 (57.5%)	Rectum -192(82.4%)
Laishram RS et al [21]	54	47.5 years	29 (53.7%)	Rectum- 29 (53.7%)
Present study	159	49.4 years	41(61.8%)	Rectum- 38 (55.9%)

Histological grade of tumor: In the present study, out of 68 malignant lesions, 24 cases(35.3%) were Well differentiated Adenocarcinomas, 25 cases (36.8%)were Moderately differentiated Adenocarcinomas, 9 cases (13.2%) were Poorly differentiated, 8 cases (11.8%) were Mucin secreting Adenocarcinomas and 2 cases(2.9%) were Signet ring cell carcinomas. The most common histological grade in the present study was Moderately differentiated Adenocarcinoma.

Table14: Showing comparison of Histological grade of malignant lesions with other similar studies

Study	No. of cases	Well differentiated	Moderately Differentiated	Poorly Differentiated	Mucin secreting	Signet ring cell carcinoma
Laishram RS et al [21]	54	17 (31.48%)	20 (37.04%)	17 (31.48%)	-	-
Shyamal Kumar et al [22]	180	51(28.3%)	49 (27.2%)	20 (11.1%)	32 (17.8%)	28 (15.6%)
Present study	68	24 (35.3%)	25(36.8%)	9(13.2%)	8 (11.8%)	2(2.9%)

The present study is in accordance with the study series of Laishram RS et al[21] and Shyamal Kumar et al[22] , wherein the most common histological grades were Well differentiated and Moderately differentiated.

CONCLUSIONS

The colon is affected by a spectrum of conditions which span from infectious, idiopathic, inflammatory diseases, polyps, motility disorders and colorectal tumors. This wide range of non neoplastic and neoplastic conditions was also encountered in our study. The development of flexible endoscopes has led to the increase in the examination and mucosal biopsy evaluation of all portions of large intestine and rectum. The age distribution of patients who underwent the colonoscopic biopsy ranged from 3 years to 87 years, proving that it is a safe and tolerable procedure. A comprehensive histopatho-logical study of colonoscopic biopsy specimens should be done in constant correlation with clinical and colonoscopy features. In the present study, histopathological diagnosis correlated well with the colonoscopy diagnosis offered.

Colonoscopy, as we know, also plays a key role in diagnosis, follow up and treatment, especially in cases of Inflammatory bowel disease and malignancies. In the present study we found 2 cases of Ulcerative colitis with dysplasia, hence giving a fore warning of a chance of development of malignancy. Colonoscopy also permits therapeutic removal of polyps. Biopsy helps in the diagnosis of various familial polyposis and adenomatous polyps, which have a malignant potential. Colonoscopy is currently considered to be gold standard for cancer surveillance and can detect advanced colonic neoplasms in asymptomatic individuals.

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