International Journal for Multidisciplinary Research (IJFMR)
E-ISSN: 2582-2160 ● Website: www.ijfmr.com ● Email: editor@ijfmr.com

A Spectrum of Colonic Lesions in A Study Done at A Tertiary Care Hospital, Telangana.

Dr. Ravula Harshavardhini[1], Dr. Gurrala Dayanand[2], Dr. Byram Bheeshma[3], Dr. Odapally Shravan Kuma[4]

[1]Postgraduate, Department of Pathology, RVM Institute of Medical Sciences & Research Centre, Mulugu, Siddipet, Telangana, India.
[2] Assistant Professor, Department of General Medicine, RVM Institute of Medical Sciences & Research Centre, Mulugu, Siddipet, Telangana, India.
[3]Professor & HOD, Department of Pathology, RVM Institute of Medical Sciences & Research Centre, Mulugu, Siddipet, Telangana, India.
[4]Professor & Dean, Department of Pathology, RVM Institute of Medical Sciences & Research Centre, Mulugu, Siddipet, Telangana, India.

Abstract:
Background: The colon is the source for wide range of lesions, which are routinely encountered. Recently, our department has been receiving colon biopsy and colectomy specimens. The morphologies of these lesions are highly diverse. Histopathological examination has been used for diagnosing these lesions as well as differentiating between benign and malignant lesions.
Aim: The aim of our study was to analyse the occurrence of colon lesions in a retrospective study of cases recorded over a period of 1 year from 2023–2024, highlighting the age, sex and variations in the morphological patterns of these lesions.
Methods: Colonoscopic biopsies and colectomy specimens obtained at the Department of Pathology, RVM Institute of Medical Sciences and Research Centre, Siddipet, were subjected to histopathological examination. The specimens were fixed in 10% neutral buffered formalin, processed and embedded, after which, the sections were cut and stained with haematoxylin and eosin. special stains and IHC were performed whenever needed.
Results: The total number of specimens was 82, with a male to female ratio of 1.4:1. The most common benign lesion was nonspecific colitis, whereas the most common malignant lesion was adenocarcinoma colon. Additionally, there was an instance of metastatic spread from cervical carcinoma to the colon.
Conclusion: Histopathology is the gold standard for diagnosing of various lesions. Immunohistochemistry is an important tool for confirming of diagnostic dilemmas.
Keywords: colon, colectomy, IHC, benign, malignant

INTRODUCTION:

Colonic lesions usually present with wide morphological diversity. The colon is the site of divergent lesions which include inflammatory, idiopathic, infectious and neoplastic diseases [1]. The most common sites are the rectum (27%), sigmoid colon (20%), followed by cecum (14%), ascending colon (8%), transverse colon (5%) and all other sites accounting (2%-3%) [2]. The age range for patients with both benign and malignant lesions was between the 5th and 6th decades. Colonoscopic biopsy is an important

tool in the diagnosis of large bowel diseases. Thus, colonoscopy is considered the gold standard for cancer surveillance [3]. Colon cancer ranks 3rd most prevalent cancer in both men and women worldwide [4]. In India, colon cancer ranks 4th among males and 5th among females [5]. Non-specific colitis is most frequently associated with benign lesions, while colon adenocarcinoma is the most common malignant lesion.

MATERIALS AND METHODS:

a) Aims and objectives

- The age, sex and site distribution of the colonic lesions were analyzed.
- To study the diversity of morphological patterns

This was a retrospective study of 1 year from June 2023 to June 2024.

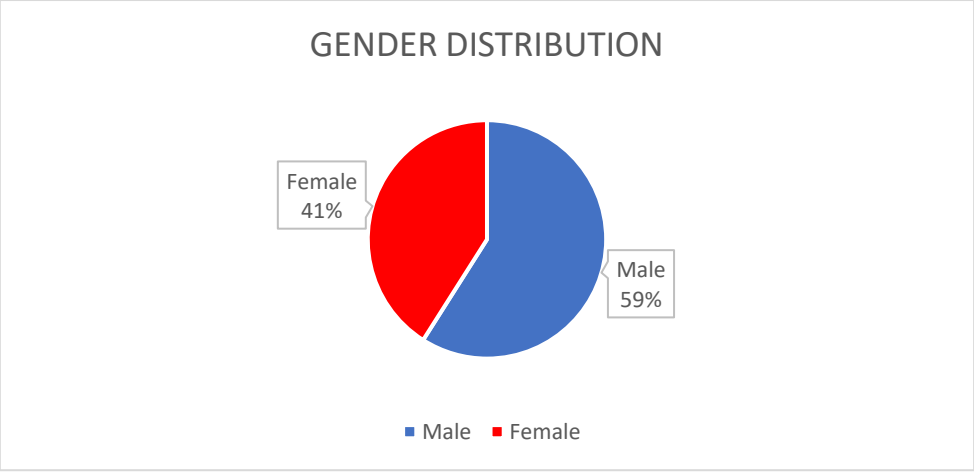
b) Study site: RVMIMS & RC (Mulugu Mandal, Siddipet District, Telangana, India).

Colonoscopy- guided biopsies and surgically resected colectomy specimens were sent for HPE to the Department of Pathology. Patient clinical data were retrieved from the case record form. The gross features of the specimens were assessed. The tissue was processed by routine paraffin embedding techniques (Leica automated tissue processor). Sections were subjected to H&E staining, special staining and IHC were performed wherever necessary.

OBSERVATIONS:

The total number of specimens was 82; 48 were male and 34 were female, yielding 59% males and 41% females, with an M:F ratio of 1.4:1.

Figure :1: Gender distribution



Age distribution:

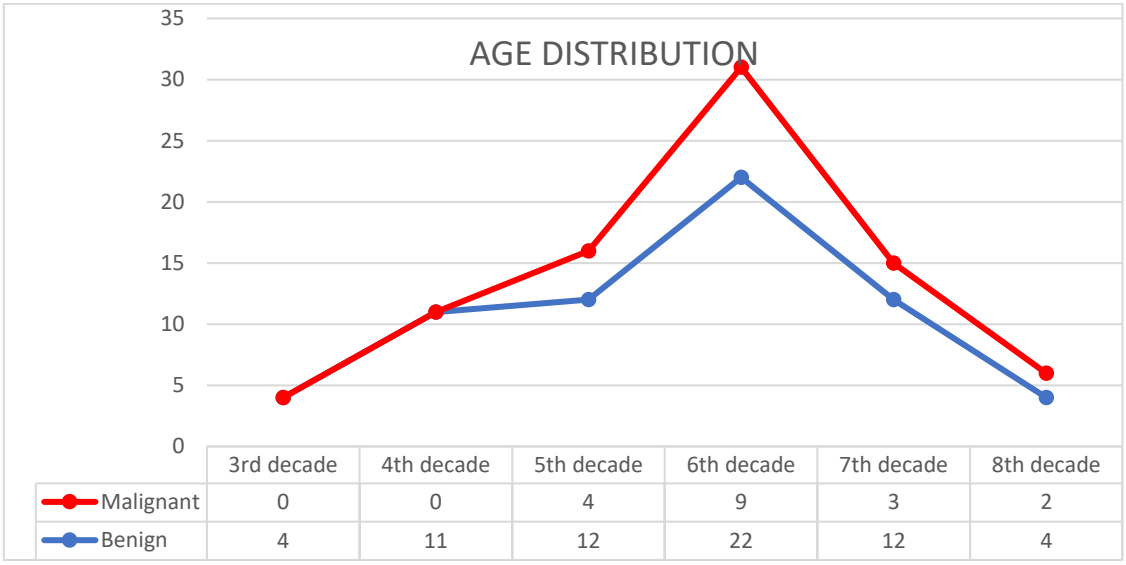
In the 3rd and 8th decades, the study was conducted, and in the 5th and 6th decades, there was a greater incidence of both benign and malignant patients.

Table 1 – Age wise distribution of benign and malignant patients

Age wise distribution of both benign and malignant cases		
AGE	**BENIGN**	**MALIGNANT**
3rd decade (21-30)	4	0
4th decade (31-40)	11	0

5th decade (41-50)	**12**	**4**
6th decade (51-60)	**22**	**9**
7th decade (61-70)	12	3
8th decade (71-80)	4	2

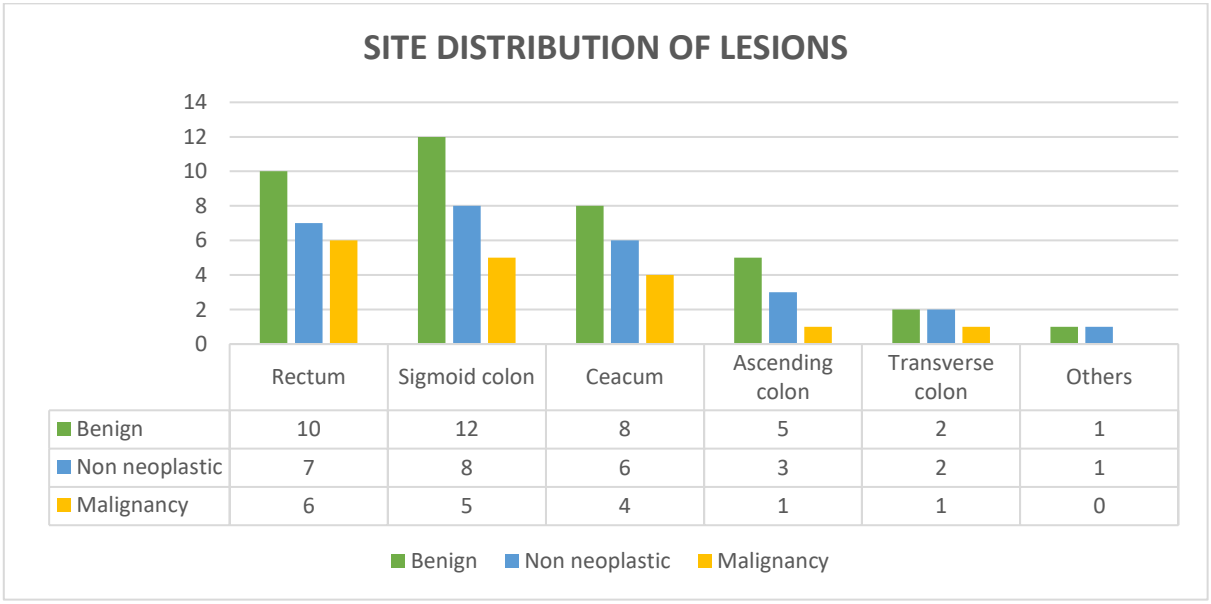
Figure :2: Age distribution



Site distribution:

When site distribution was studied, the most common site for benign lesions and nonneoplastic lesions was the sigmoid colon, and malignancies were observed in the rectum.

Figure :3: SITE DISTRIBUTION

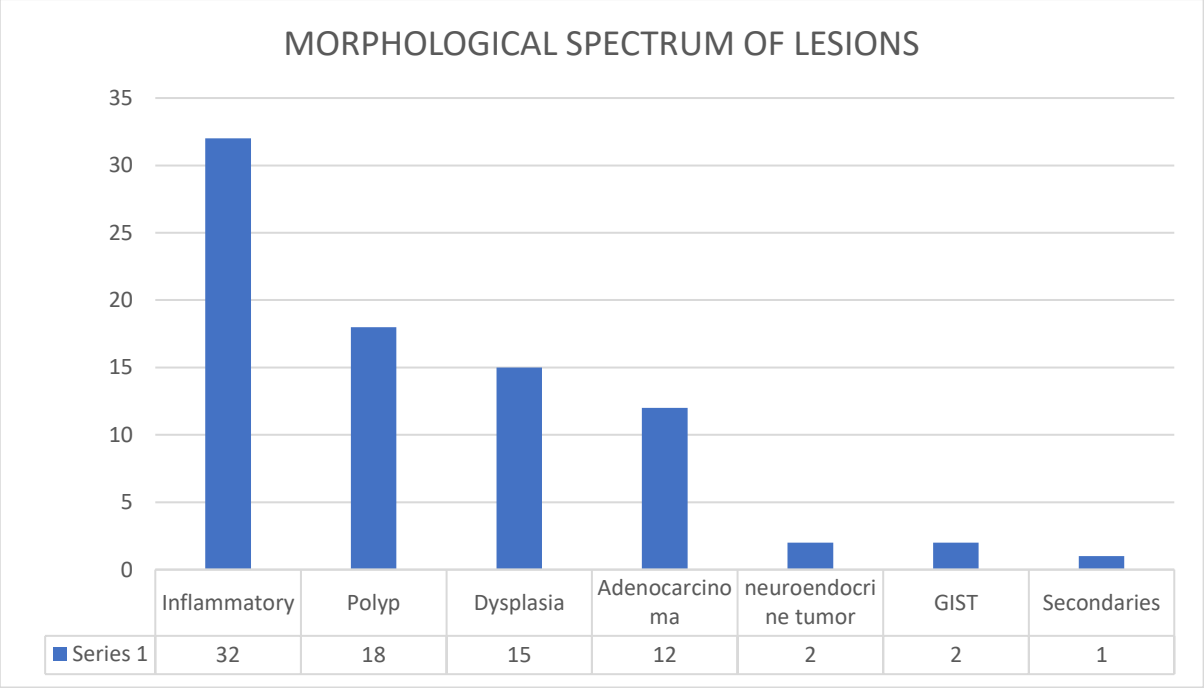


Morphological spectrum of lesions:

Out of the total 82 patients,

The majority of cases are inflammatory lesions, followed by polyps, and dysplasia.
Among malignancies, adenocarcinoma is the most common, followed by neuroendocrine and gastrointestinal stromal tumours.
In our study, there was one case of secondary metastasis to the colon, primarily to the cervix.

Figure :4: MORPHOLOGICAL SPECTRUM OF LESIONS



Histopathological images of lesions:

A) Inflammatory lesions

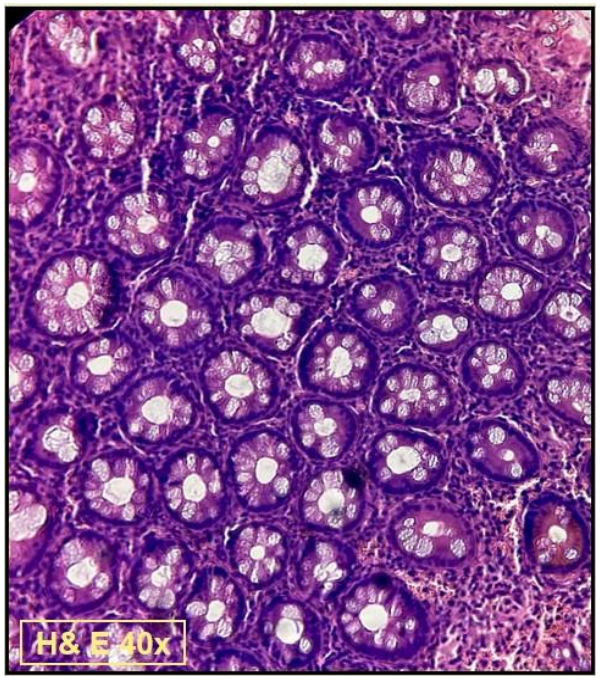


Figure :5: H&E staining of a 40x -Inflammatory lesion, H&E staining showing inflammation in the lamina propria

B) Colonic polyp

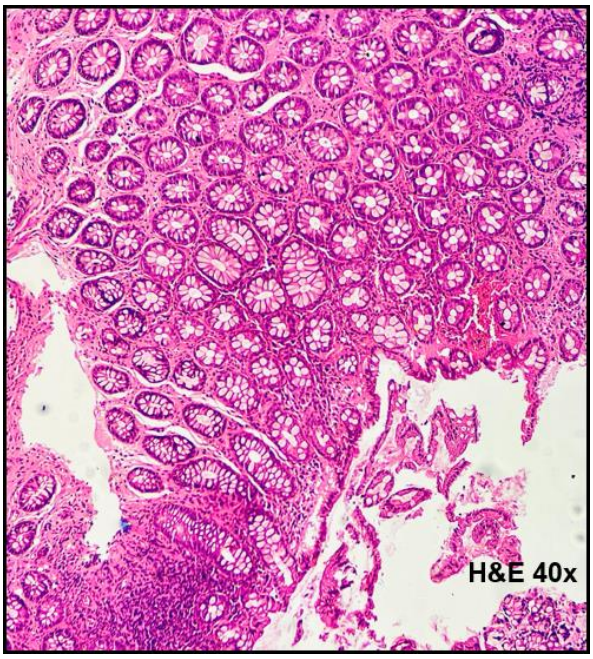


Figure:6: H&E staining of a 40x -Goblet cell rich hyperplastic polyp showing prominent goblet cells

C) Dysplasia

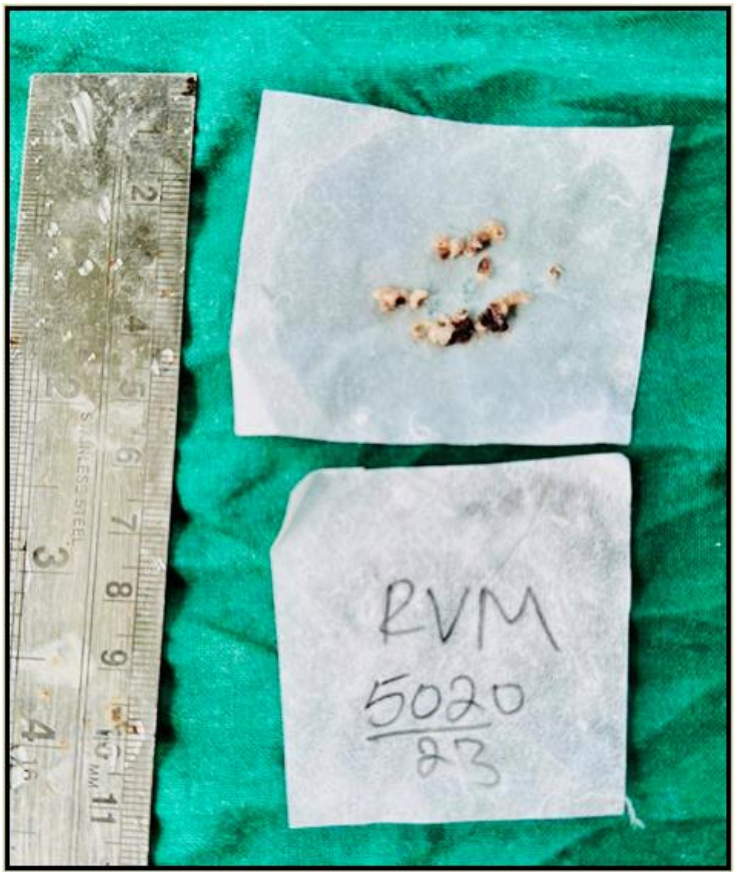


Figure:7: Colonic biopsy

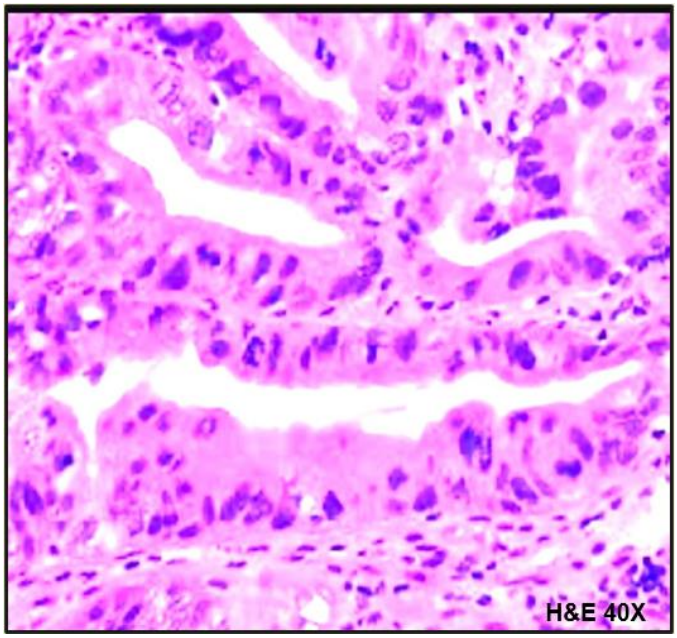


Figure:8: H&E staining at 40x high grade dysplasia, showing complex architecture with loss of nuclear polarity, nuclear pleomorphism and prominent nucleoli.

D) Adenocarcinoma colon

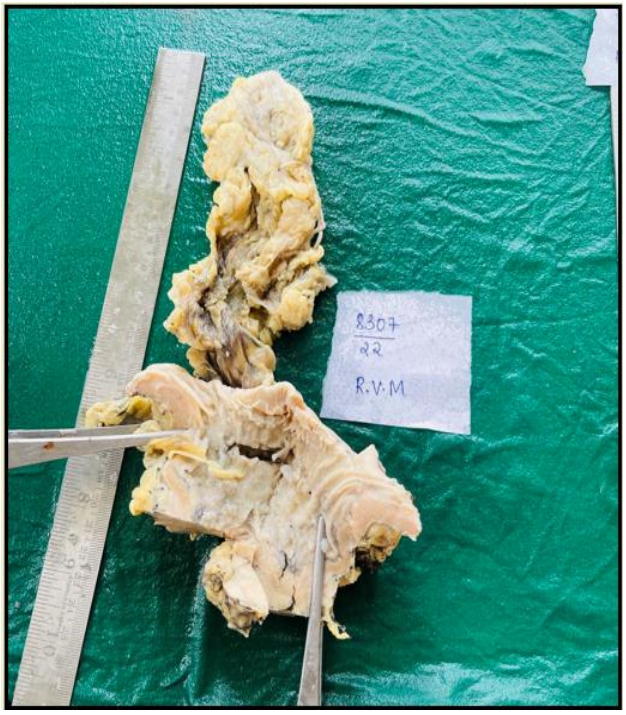


Figure:9: Gross colectomy specimen showing loss of rugae in the lumen with gray white growth over the luminal surface

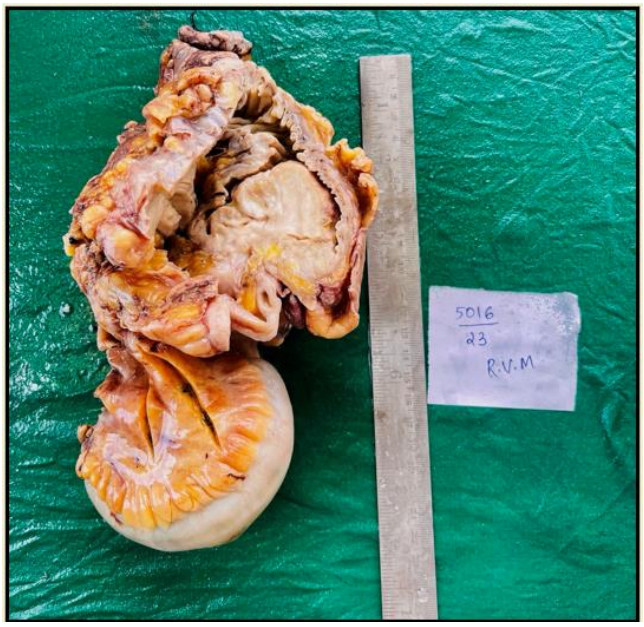


Figure:10: Gross colon resection showing a single, polypoidal mass.

Microscopy images of adenocarcinoma colon

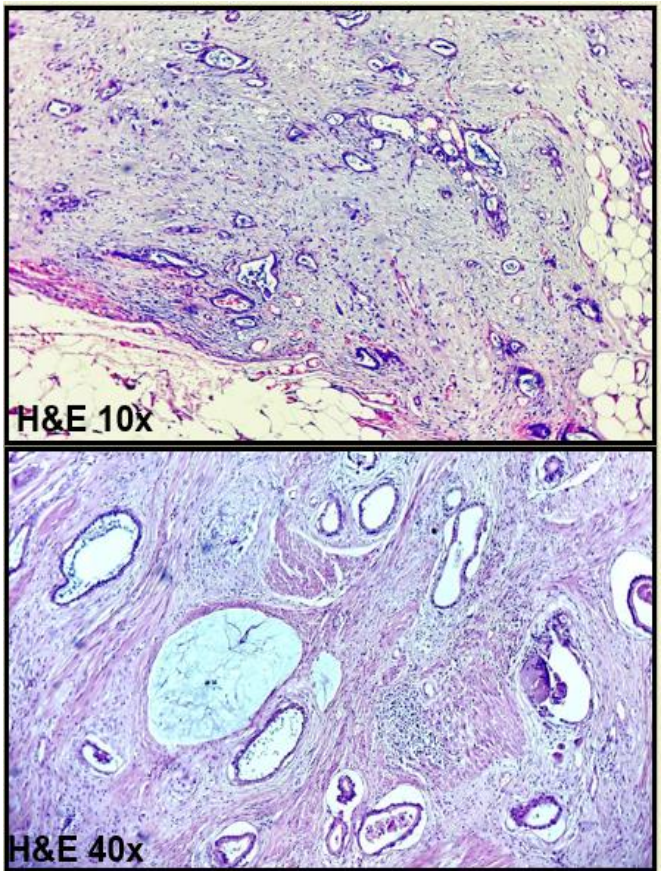


Figure:11: H&E staining at 10x and 40x showing colon adenocarcinoma with mucin pools

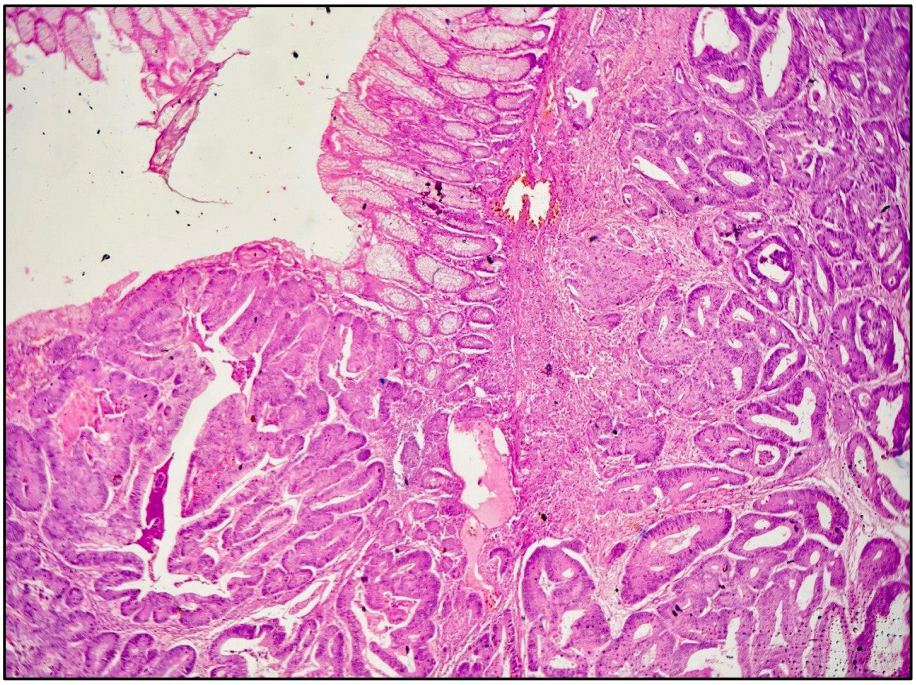


Figure:12: H&E staining of moderately differentiated adenocarcinoma colon at 40x.

PAS staining: is usually performed for mucinous adenocarcinoma, which is most the common type. PAS was used to stain for mucin positive.

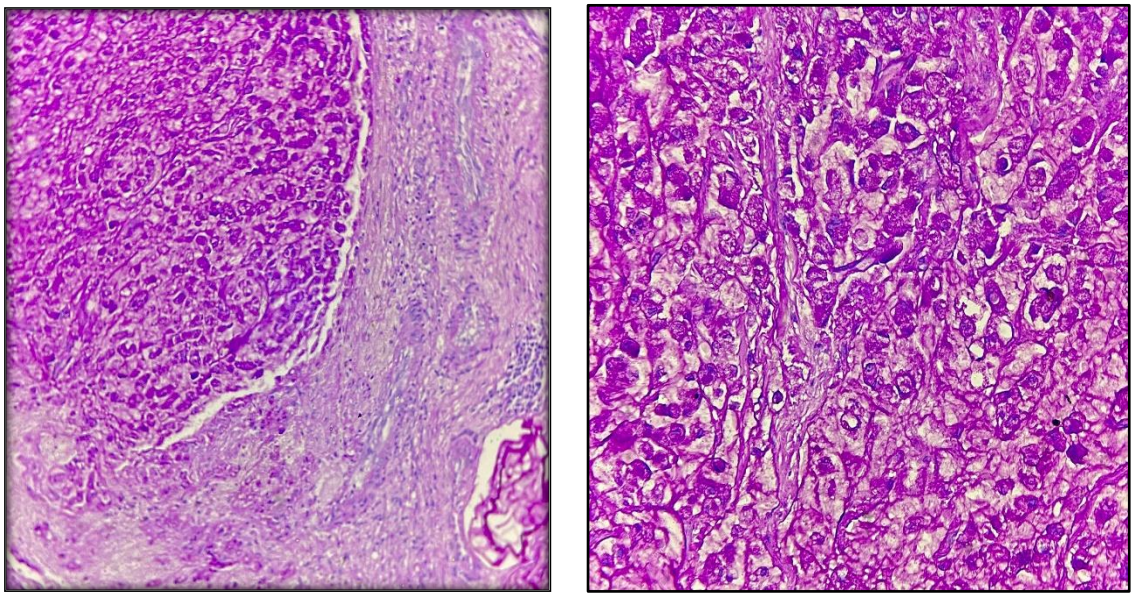


Figure:13: PAS staining at 20x and 40x: Positive -mucinous adenocarcinoma.

E) Neuroendocrine type

a) Gross

Figure:14: Grossly appearing as tan yellow to pale yellow in colour – Doughnut shaped lesions.

b) Microscopic features:

Monotonic regular cells with round/ oval nuclei and salt and pepper chromatin moderate eosinophilic cytoplasm.

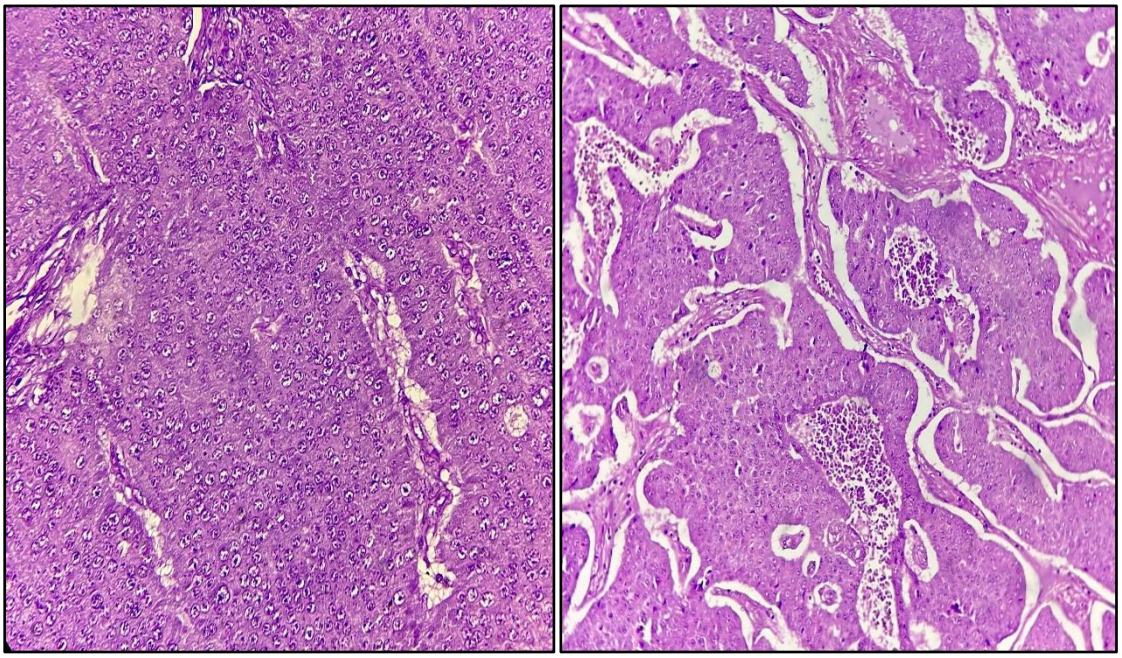


Figure:15: H&E at 20x – Monotonic regular cells in nests and trabecular pattern. 40x shows homogenous cells with oval nuclei and salt and pepper chromatin.

c) Immunohistochemical staining:

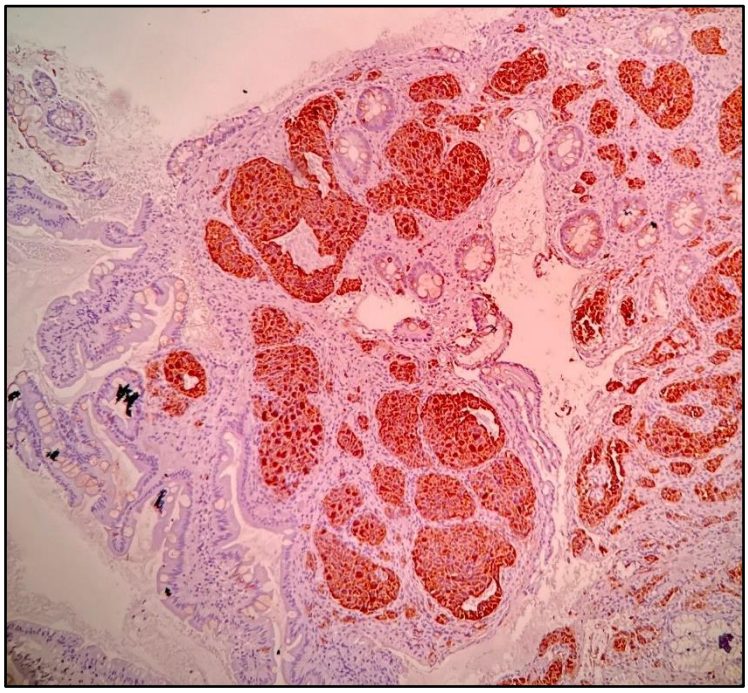
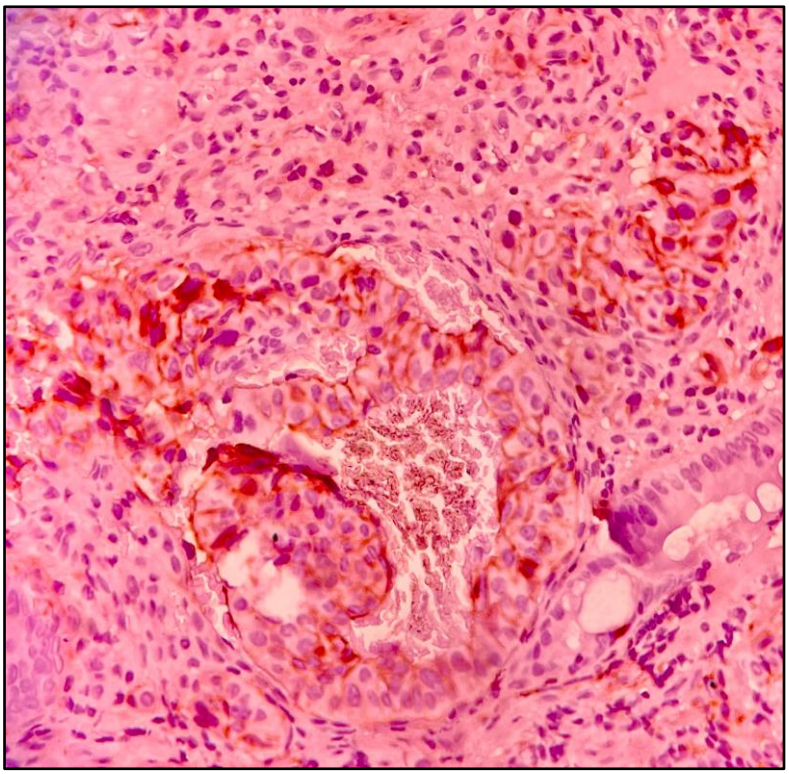
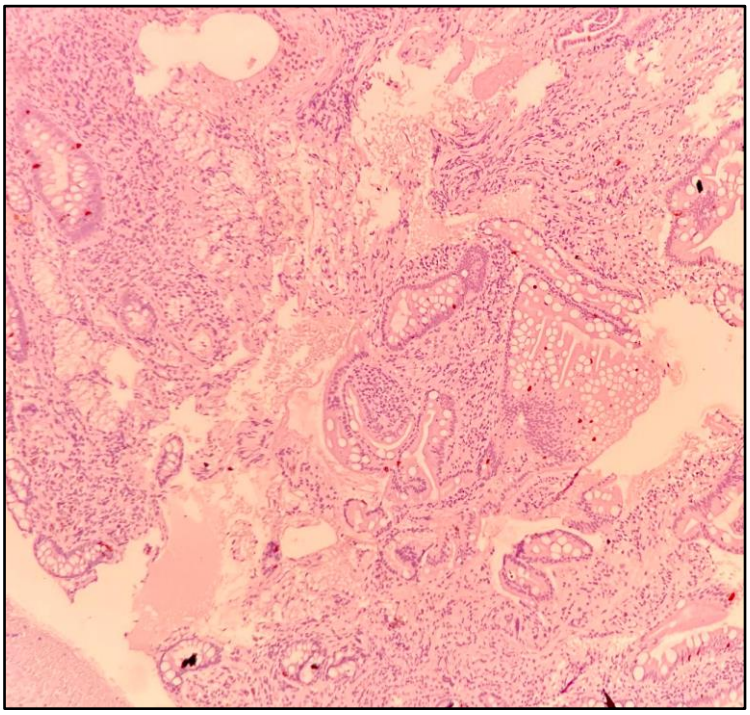


Figure:16:
(a) Synaptophysin: At 10x -Tumour cells showing diffuse positivity



(b) CD56: At 20x– Tumour cells showing diffuse positivity



(c) Chromogranin – negative

F) Gastrointestinal stromal type

a) Gross

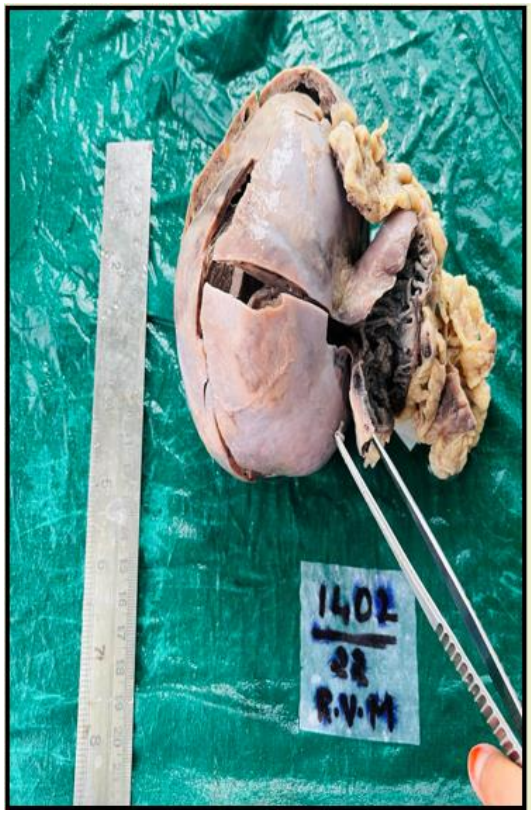


Figure:18: Grossly large bulky,intramural mass,tannish brown in colour

b) Microscopy

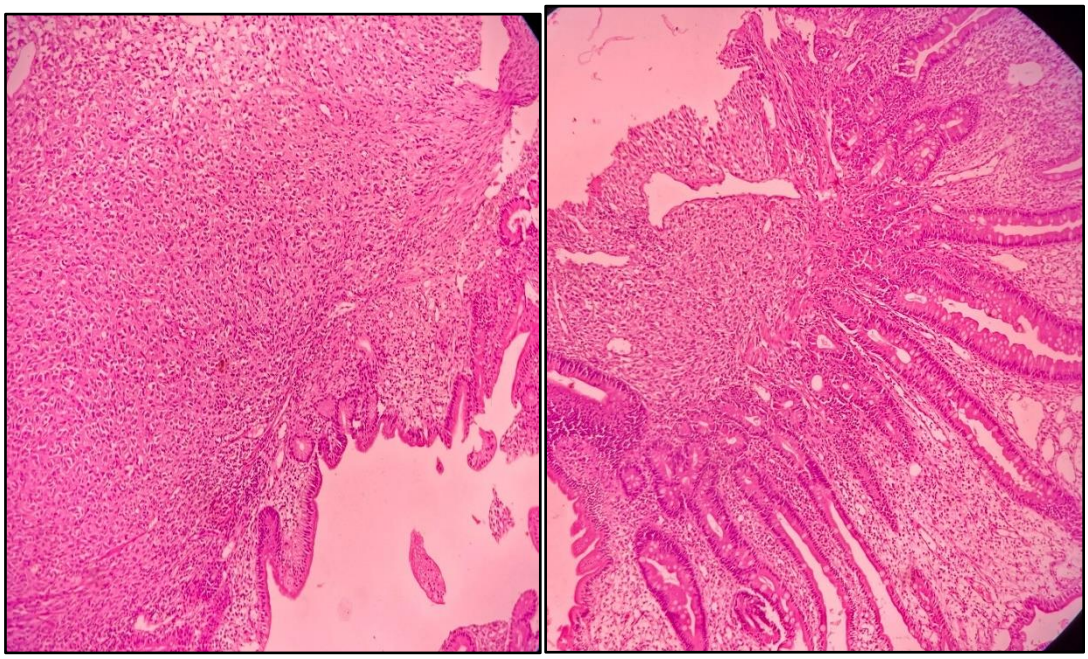


Figure:19: H&E stained images at 10x and 40x showing spindled cells with eosinophilic cytoplasm with variably edematous stroma

c) Immunohistochemical staining:

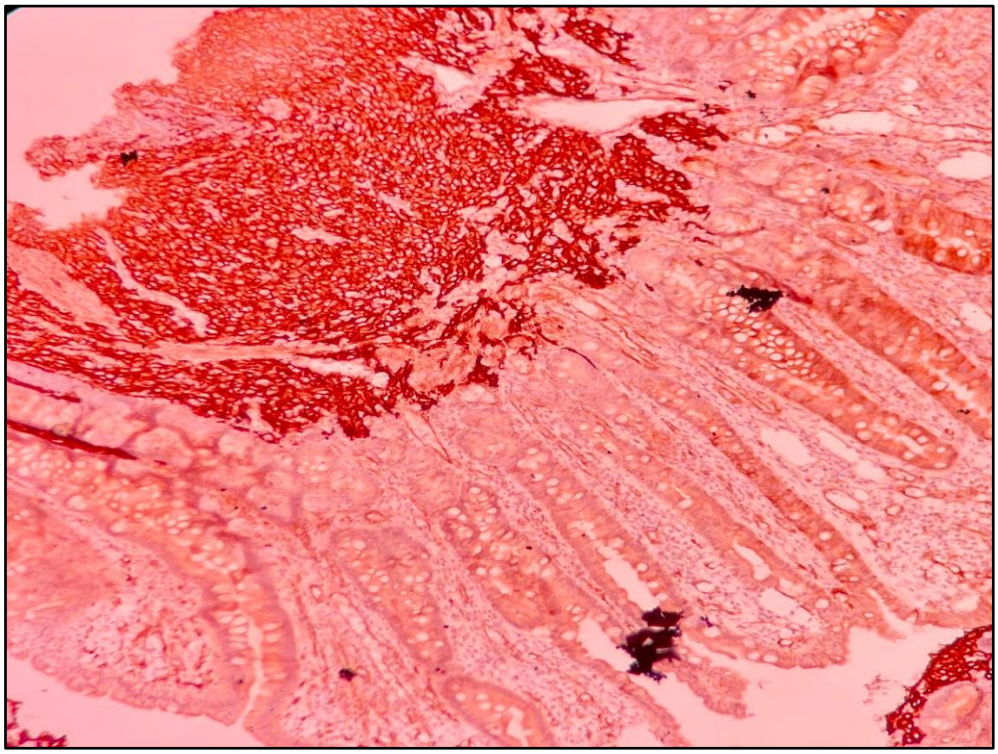


Figure:20: DOG 1 , IHC 20x – Positivity in tumour cells

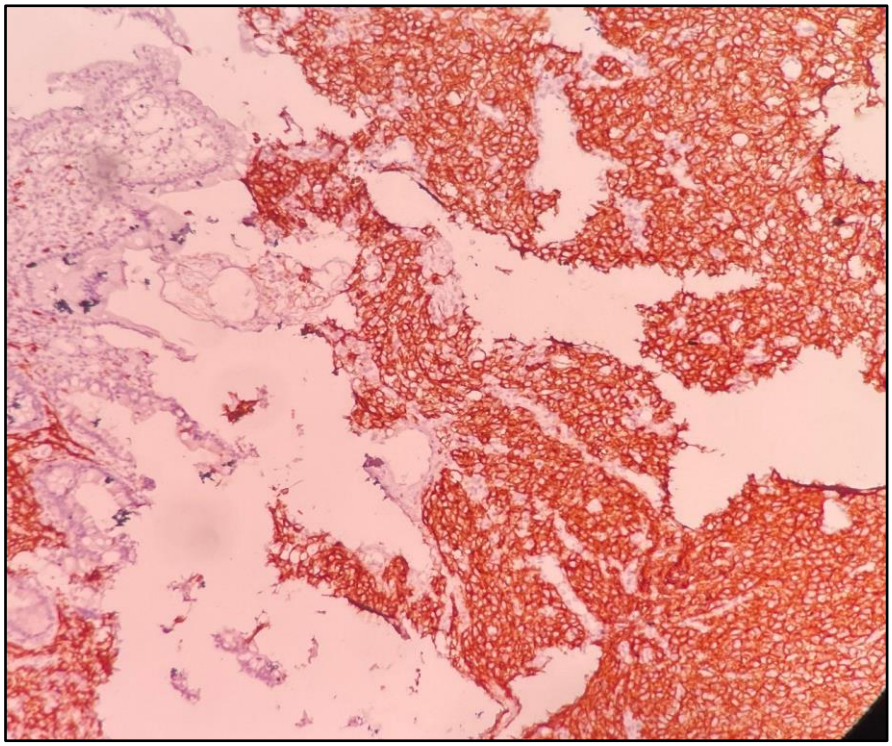


Figure:21: CD117 – Positive in tumour cells

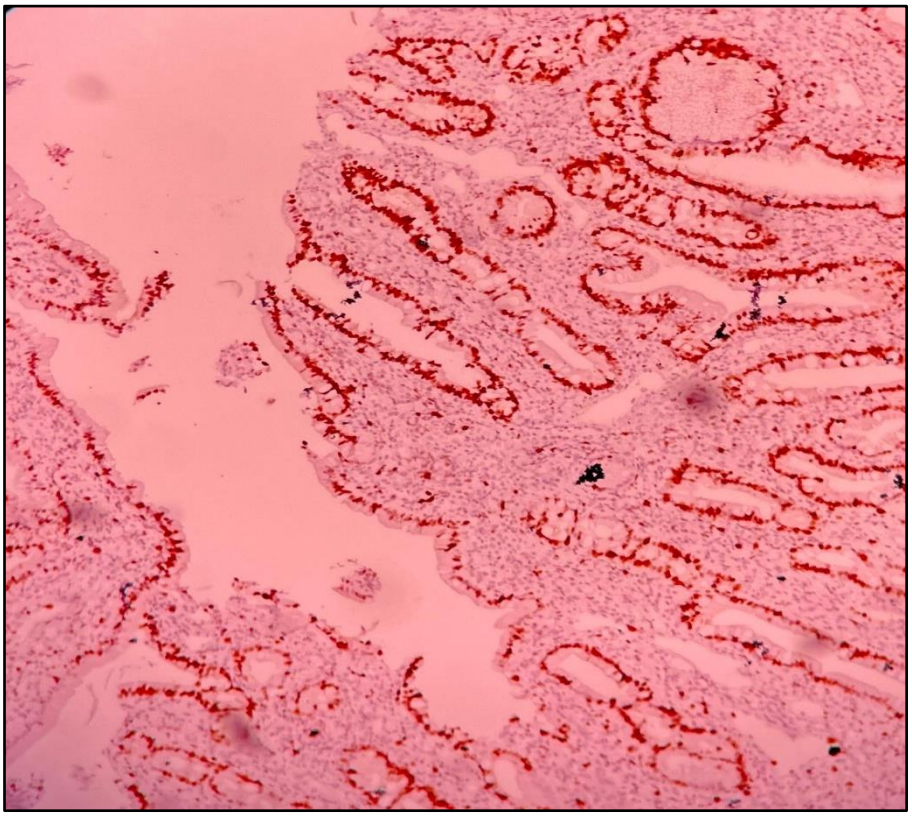


Figure:22: CDX2 – Negative

G) Secondaries

There was one secondary metastatic carcinoma in our study, in which the primary tumour was cervical carcinoma

(a) Gross

Figure:23: Colectomy specimen showing transmural thickening of the wall along with focal gray brown- cauliflower like growth.

(b) Microscopy

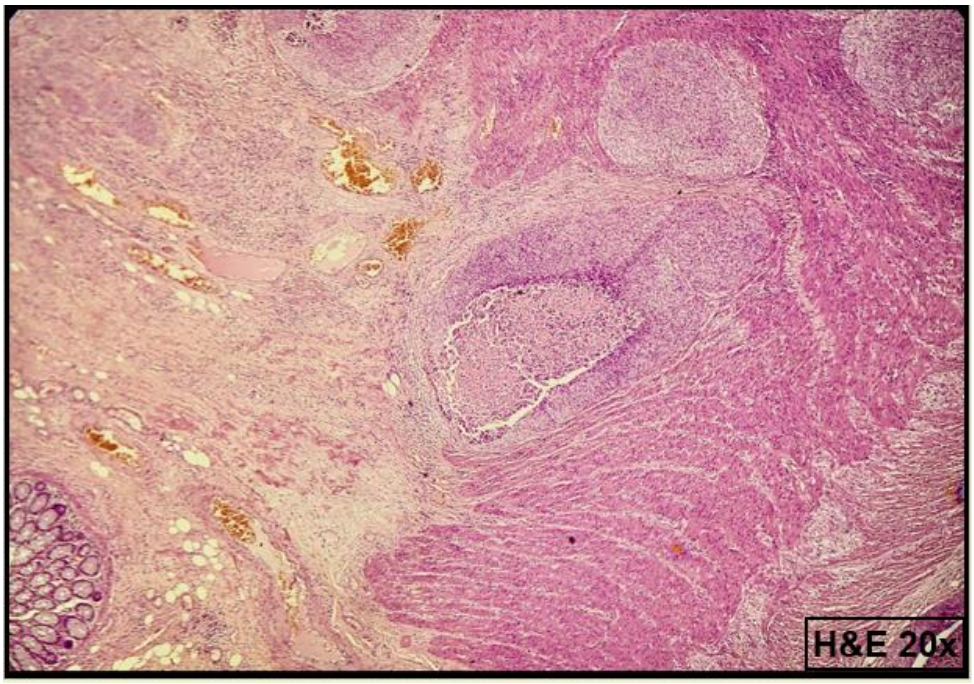


Figure:24: H&E staining at 20x showing squamous nests and adjacent intestinal glands

DISCUSSION:

Of the 82 specimens

- 38 were benign, 27 were non neoplastic and 17 were malignant
- Table 2- Cumulative comparison of the current study with other included studies.

Variables	Present study	Konishi F et. Al[6]	Dr Ambreen Beigh et.al[7]	Abdulkader Albasri et.al[8]
Age	3rd to 8th decade	2nd to 9th decade	1st to 8th decade	2nd to 9th decade
M:F ratio	1.4:1	Upto 50 years age - 1:1 From 6th decade – 1.5:1	1.7:1	1.6:1
Most common sites for malignancies	Rectum	Sigmoid colon	Rectum	Sigmoid colon
Total malignancies	82	675	284	324

- Our study revealed male preponderance of 1.4:1, which is concordant with finfings of other similar studies konishi f et. al reported a male preponderance of 1:1 at 50 years of age, and in the 6th decade, a male preponderance of 1.5:1 was observed, Dr Ambreen Beigh et.al reported a male preponderance of 1.7:1 and Abdulkader Albasri et al. reported a male preponderance of 1.6:1.
- Our study revealed the rectum as the most common site for malignant lesions which was similar to the findings of Dr Ambreen Beigh et.al study, whereas other similar studies such as Konishi F et. al and Abdulkader Albasri et.al compared the sigmoid colon.

Morphological distribution of cases:

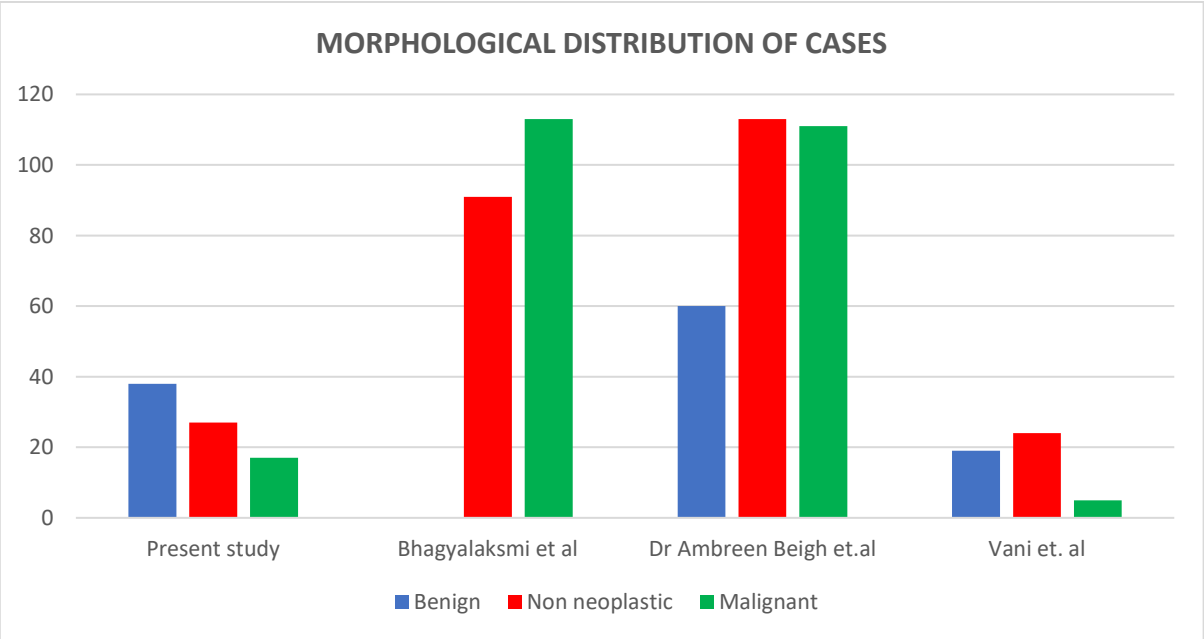


Figure:25: Morphological distribution of patients.

The present study showed that benign lesions were more common than nonneoplastic lesions, followed by malignant lesions. This finding is in line with previous studies such as that of vani et al. who reported more malignant cases than non neoplastic and benign lesions.

Another similar study Dr Ambreen Beigh et al showed similar results to those of comparison of vani et al, who reported fewer benign lesions, than our study. However, there was greater variation in the incidence of nonneoplastic lesions than in the incidence of malignant lesions which is similar to the findings of our study but viceversa compared with findings of vani et al's study.

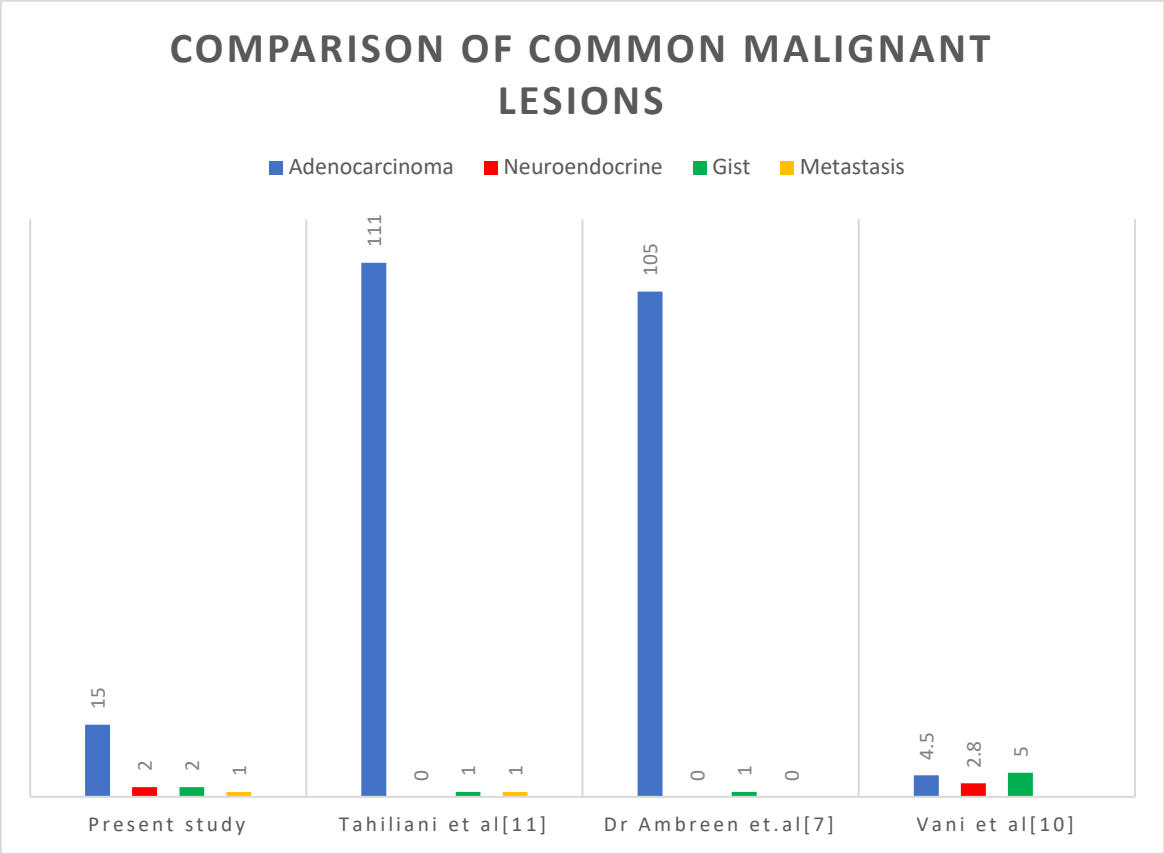


Figure :26: Comparison of common malignant lesions

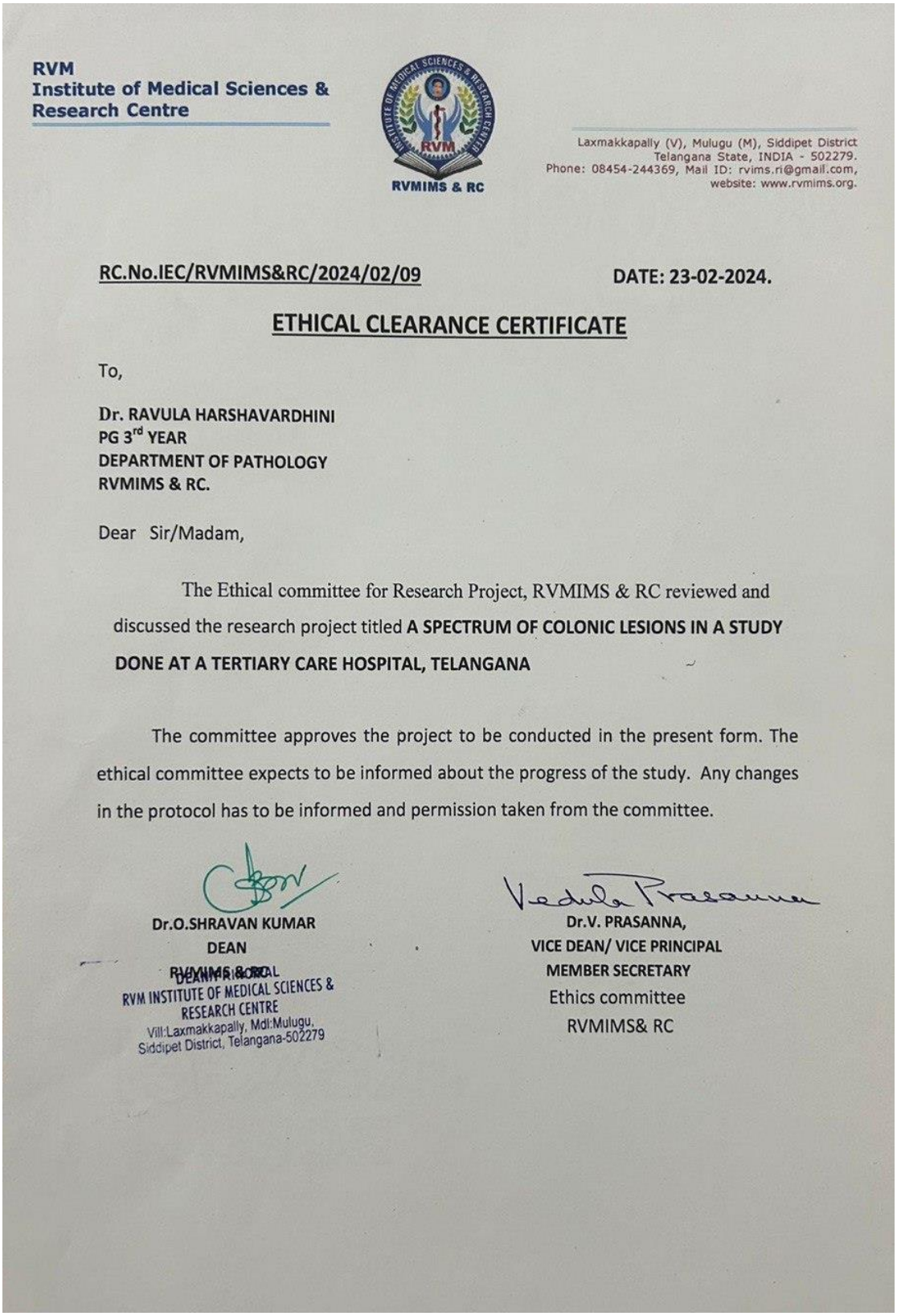
When we compared malignant lesions in our study with those in similar other studies, all the other studies and our study revealed showed adenocarcinoma as the most common type of malignancy in the colon, followed by gastrointestinal stromal tumours and neuroendocrine tumours.

CONCLUSION:

- In our study, colonic lesions were observed more often in males, than in females. The average age of patients with both benign and malignant lesions – was 52.3.
- Peaks were observed for both benign and malignant lesions in the 6th decade.
- Lesions most commonly occurred in rectum followed by the rectosigmoid junction and all other sites.
- Nonspecific colitis was the most common benign lesion, and adenocarcinoma of the colon was the most common malignant lesion.
- Histopathology is the gold standard for the diagnosis of various lesions.
- Immunohistochemistry is an important tool for confirmatory diagnosis.

Declarations:

- **Ethics approval and consent to participate:**



RVM
Institute of Medical Sciences &
Research Centre

RVMIMS & RC

Laxmakkapally (V), Mulugu (M), Siddipet District
Telangana State, INDIA - 502279.
Phone: 08454-244369, Mail ID: rvims.ri@gmail.com,
website: www.rvmims.org.

RC.No.IEC/RVMIMS&RC/2024/02/09 DATE: 23-02-2024.

ETHICAL CLEARANCE CERTIFICATE

To,

Dr. RAVULA HARSHAVARDHINI
PG 3rd YEAR
DEPARTMENT OF PATHOLOGY
RVMIMS & RC.

Dear Sir/Madam,

The Ethical committee for Research Project, RVMIMS & RC reviewed and discussed the research project titled **A SPECTRUM OF COLONIC LESIONS IN A STUDY DONE AT A TERTIARY CARE HOSPITAL, TELANGANA**

The committee approves the project to be conducted in the present form. The ethical committee expects to be informed about the progress of the study. Any changes in the protocol has to be informed and permission taken from the committee.

Dr.O.SHRAVAN KUMAR
DEAN
RVMIMS & RC
DEAN PRINCIPAL
RVM INSTITUTE OF MEDICAL SCIENCES & RESEARCH CENTRE
Vill:Laxmakkapally, Mdl:Mulugu,
Siddipet District, Telangana-502279

Dr.V. PRASANNA,
VICE DEAN/ VICE PRINCIPAL
MEMBER SECRETARY
Ethics committee
RVMIMS& RC

Competing interests:
The authors declare that they have no competing interests.

Authors contribution:
RH collected the data and has written the base draft. GD helped in our study by providing the cases for analysis and helped in research. BB & OS performed the histopathological examination of the tissues and were a major contributor in writing the manuscript. BB had a major role in histopathological reporting and has done proof reading of the manuscript and the editing. OS has participated in histopathological reporting and has proof read the manuscript.
All authors read and approved the final manuscript.

Financial sponsorship and funding: Nil.

Availability of data and materials:
All data generated or analysed during this study are included in this published article

Acknowledgements:
We authors would like to extend our heartfelt gratitude to Dr. Kiran for his support IHC reporting and guidance for the research. We thank Dr. G. Santhoshi for her guidance.
We extend our gratitude to the departments of General medicine, Gastroenterology and General surgery for their contribution of cases.
We acknowledge the support of RVM Institute of Medical Sciences and Research Center, for providing access to resources, facilities, and a conducive research environment.

References:
1. Geetha c, pavani m, prabhala s, deshpande a, histomorphological spectrum of colonic biopsies: a two year study. indian j pathol oncol 2018;5(2):242-248
2. Thrumurthy s g, thrumurthy s s d, gilbert c e, ross p, haji a. colorectal adenocarcinoma: risks, prevention and diagnosis bmj 2016; 354 :i3590 doi:10.1136/bmj.i3590 https://doi.org/10.1136/bmj.i3590
3. Beck D. E. (2010). Bowel preparation for colonoscopy. *Clinics in colon and rectal surgery*, *23*(1), 10–13. https://doi.org/10.1055/s-0030-1247851
4. Ferlay, J., Colombet, M., Soerjomataram, I., Parkin, D. M., Piñeros, M., Znaor, A., & Bray, F. (2021). Cancer statistics for the year 2020: An overview. *International journal of cancer*, 10.1002/ijc.33588. Advance online publication. https://doi.org/10.1002/ijc.33588
5. Mathur, P., Sathishkumar, K., Chaturvedi, M., Das, P., Sudarshan, K. L., Santhappan, S., Nallasamy, V., John, A., Narasimhan, S., Roselind, F. S., & ICMR-NCDIR-NCRP Investigator Group (2020). Cancer Statistics, 2020: Report From National Cancer Registry Programme, India. *JCO global oncology*, *6*, 1063–1075. https://doi.org/10.1200/GO.20.00122
6. Konishi, F., & Morson, B. C. (1982). Pathology of colorectal adenomas: a colonoscopic survey. *Journal of clinical pathology*, *35*(8), 830–841. https://doi.org/10.1136/jcp.35.8.830
7. Sheikh, B.A., Ambreen, B., Summyia, F., Ruby, R., Farzaana, M., & Sheikh, J. (2017). Spectrum of Colorectal Lesions on Colonoscopic Biopsies; a Histopathological Study in a Tertiary Care Hospital.

International Journal Of Medical Science And Clinical Invention.

8. Albasri, A., Yosef, H., Hussainy, A. S., Sultan, S. A., & Alhujaily, A. (2014). Histopathological features of colorectal cancer in Al-Madinah region of Saudi Arabia: 8 years experience. *Asian Pacific journal of cancer prevention : APJCP*, *15*(7), 3133–3137. https://doi.org/10.7314/apjcp.2014.15.7.3133
9. Bhagyalakshmi, A., Venkatalakshmi, A., Praveen, L., & Sunilkumar, K.B. (2016). Clinico-pathological study of colonoscopic biopsies in patients with chronic diarrhea. *International Journal of Research in Medical Sciences, 4*, 2738-2744.
10. Vani b, cheruku s. spectrum of histopathological study of colonoscopic biopsies in a tertiary care hospital. journal of medical science and clinical research: jmscr .2019 ;07 (11):517-523 https://dx.doi.org/10.18535/jmscr/v7i11.91
11. Tahiliani, henisha t.; purohit, asha p.; desai, shashank c.; jarwani, puja bhavesh. retrospective analysis of histopathological spectrum of premalignant and malignant colorectal lesions. cancer research, statistics, and treatment 4(3):p 472-478, jul–sep 2021. | doi: 10.4103/crst.crst_87_21 https://doi.org/10.3389/fmed.2022.1072109
12. B.venkata rajeswari, y. sudhasree, y. subramanyam. histopathological study of colorectal biopsies at tertiary care centre. international journal of pharmaceutical and clinical research 2022; 14(7); 810-813 https://dx.doi.org/10.18535/jmscr/v8i1.60
13. Vidya, K., & ShivarudrappaA, S. (2015). The Spectrum of colonic lesions; A Clinico-pathological study of colonic biopsies. *Indian Journal of Pathology and Oncology, 2*, 189-209.
14. Dos Santos, C. E. O., Pereira-Lima, J. C., & Onófrio, F. Q. (2016). Large Colorectal Lesions: Evaluation and Management. *GE Portuguese journal of gastroenterology*, *23*(4), 197–207. https://doi.org/10.1016/j.jpge.2016.01.001
15. Rani, Ekta. (2021). A Histopathological Spectrum of Gastrointestinal Tract Lesions in a Tertiary Care Centre in South Western Part of India: An Epidemiological Study.