ISSN: 2581 – 3633
PubMed - National Library of Medicine - ID: 101745081

International Journal of Medical Science and Advanced Clinical Research (IJMACR)

Available Online at:www.ijmacr.com

Volume – 9, Issue – 1, February - 2026, Page No.: 209 – 215

The Rugged Journey of Microscopy to The Lower Gastrointestinal Tract

[1]Dr Neivizonuo Rio, [2]Dr. Geetha J P

Corresponding Author: Dr Neivizonuo Rio

How to citation this article: Dr Neivizonuo Rio, Dr. Geetha J P, "The Rugged Journey of Microscopy to The Lower Gastrointestinal Tract", IJMACR- February - 2026, Volume – 9, Issue - 1, P. No. 209 – 215.

Type of Publication: Original Research Article

Conflicts of Interest: Nil

Abstract

Introduction: The gastrointestinal tract (GIT) is an important location for an extensive range of lesions, including both neoplastic and non- neoplastic lesions. Globally, 15-25% of all cancers are GIT cancers. Determining the local extent of diseases, managing the patient, and assessing the prognosis depend on the pathological analysis of specimens, especially the resected specimens.

Aim & Objective: To study the histopathological spectrum of lesions in the resected lower GIT specimens.

Methods: A retrospective study was conducted on 325 cases in the Pathology Department, Sri Siddhartha Medical College and Hospital for a period of 2.5 years. All resected specimens of lower GIT lesions (from the insertion of ligament of Treitz to the anal canal) were considered and categorized as Neoplastic and Non-neoplastic. These cases were correlated with clinical diagnosis wherever available, then the spectrum of diseases were studied.

Results: Out of 325 cases, neoplastic lesions constituted 6.2% (n=20) and non-neoplastic lesions constituted 93.8% (n=305). In neoplastic lesions, malignant lesions constituted 90% (n=18), out of which 77.8% (n=14) constituted of colon carcinoma, rectal carcinoma- 16.7% (n=03), jejunal neuroendocrine tumour- 5.6% (n=1). Benign lesions constituted 10% of neoplastic lesions (n=02), out of which 50% (n=1)-GIST and 50% (n=1)-jejunal lipoma. Out of 305 non-neoplastic lesions, appendicitis-93% (n=286), ileal lesions (inflammatory and ischaemic)-3.6% (n=11), colonic lesions (inflammatory and granulomatous)- 1.6% (n=5) and jejunal lesions (heterotopia) 0.7% (n=2).

Conclusion: Histopathological Examination of specimens remain the gold standard in the diagnosis of unknown cause and also help in the management and the prognosis of the patient.

Keywords: Lower GIT lesions, neoplastic, non-neoplastic, resected specimens.

Introduction

The lower GIT is divided into upper and lower GIT by using the insertion of ligament of Treitz as the landmark

which is attached to the duodeno jejunal flexure.[1] The gastro-intestinal tract (GIT) harbors both non-neoplastic lesions (infectious or inflammatory) neoplastic lesions (benign or malignant).[2] Lower GIT lesions represent a significant global health burden. Colorectal cancer, for instance, ranks among the top three most commonly diagnosed cancers worldwide and is a leading cause of cancer-related mortality, particularly in developed nations.[3] In contrast, non-neoplastic lesions such as inflammatory bowel disease (IBD), which includes Crohn's disease and ulcerative colitis, are chronic conditions that significantly affect patient quality of life and have potential for malignant transformation over time.[4] Infectious colitis and other reactive conditions also contribute to morbidity, especially in resource-limited settings, where diagnostic differentiation is critical to avoid mismanagement.[5] The diversity in presentation of lower GIT lesions—ranging from subtle mucosal changes to overt mass lesions—necessitates histological examination to determine the exact nature and etiology. Histopathology not only confirms clinical suspicions but also plays a pivotal role in sub classifying lesions, grading malignancies, and guiding treatment protocols.[6] Accurate staging and grading of the malignant lesion can be determined by careful histological inspection of the surrounding tissues, lymph nodes, and margins of the removed specimen.[1] The histopathological spectrum of lower GIT lesions varies by geographic region, dietary habits, environmental exposures, genetic predispositions, and healthcare access. In developing countries, infectious and inflammatory conditions may predominate, whereas in developed countries, neoplastic lesions, particularly adenomas and adenocarcinomas, are more frequently encountered.[7]

Need For Study

This study aims to explore and categorize the histopathological spectrum of lower GIT lesions encountered in a tertiary care setting, with a focus on their incidence, age and sex distribution, clinical correlation, and diagnostic features. The findings of this study are intended to enhance the understanding of the disease patterns and contribute to improved diagnostic accuracy and patient outcomes.

Aim & Objectives

Aim: To evaluate the histopathological spectrum of resected lower GIT lesions.

Objectives:

1. To evaluate the histopathological spectrum of resected lower GIT lesions in relation with age, gender and site.
2. To assess the diagnosis with clinicopathological parameters (age, sex & site of tumor).

Materials and Methods

A cross- sectional study of 325 cases as conducted for 1 year and 6 months in a tertiary care centre.

Sampling Method:

- Resected lower GI specimens (from jejunum to anal canal) received were processed and examined histopathologically after staining with H&E.
- The diagnosis and staging of tumours were done according to CAP Protocol.

Inclusion criteria: All resected lower GIT specimens.

Exclusion criteria: Biopsy specimens

Results

Received total of 325 lower GIT resected specimens. The lesions were divided into Non-neoplastic and Neoplastic (Benign and Malignant) lesions. Out of 325 cases, neoplastic lesions constituted 6.4% (n=21) and non-neoplastic lesions constituted 93.5% (n=304). Non-

Neoplastic --inflammatory lesions was found to be the predominant lesion constituting 95.7 % with the age group of 20-30 years being the most affected age group.

Most common malignant neoplastic lesion was found to be Adenocarcinoma, with colon being the most commonly affected site and 6th to 7th decades of life being the most affected age groups.

Table 1: Types of lesion in the present study: Non-neoplastic lesions constituted the majority of cases (n=304).

TYPES OF LESION	NON-NEOPLASTIC LESIONS	NEOPLASTIC LESIONS	
		BENIGN	MALIGNANT
NO. OF CASES (Total=325)	304	02	19

Table 2: Age (in years) distribution of malignant lesions: malignant lesions were predominant in the 6th and 7th decade.

AGE	41-50	51-60	61-70	71-80	81-90
NO. OF CASES (Total= 19)	3	6	6	3	1

Table 3: Sex distribution of Lower GIT Lesions: Both non-neoplastic and neoplastic lesions showed male preponderance.

Site	Non neoplastic		Neoplastic		Total (n=325)
	Male	Female	Male	Female	
Jejunum	01	01	01	01	04
Ileum	06	06	01	00	13
Appendix	181	104	01	00	286
Colon	03	02	07	07	19
Rectum	00	00	02	01	03
	Total (non-neoplastic) =304		Total (neoplastic)= 21		325

Table 4: Distribution of Non- Neoplastic Lower GIT lesions: Most common site for Nonneoplastic lesion was seen in the appendix, followed by ileum.

Site	No. of cases	Total
1. Jejunum - Ulcerative Colitis - Meckel's Diverticulum with gastric heterotopia	 01 01	 02
2. Ileum - Intussusception - Ischemic Enteritis - Tuberculosis - Chronic Granulomatous Enteritis	 01 08 02 01	 12
3. Colon - Tuberculosis - Granulomatous Colitis - Chronic Non- specific Colitis - Ischemic Colitis	 01 02 01 01	 05
4. Appendicitis (Acute and chronic)	285	285
		304

Table 5: Distribution of Neoplastic Lower GIT Lesions: most common site for malignant lesion was seen in the colon with adenocarcinoma being the most common tumor.

Site	Neoplastic Lesions		Total
	Benign Lesions	Malignant Lesions	
Jejunum	Lipoma (n=1)	Neuroendocrine Tumor (NET) (n=01)	02
Ileum	Benign GIST (Gastrointestinal Stromal Tumor) (n=1)	-	01
Colon	-	Mucinous Adenocarcinoma (n=03) Adenocarcinoma (11)	14
Rectum	-	Adenocarcinoma (n=03)	03
Appendix	-	Carcinoid tumor	01
			21

Pictography:

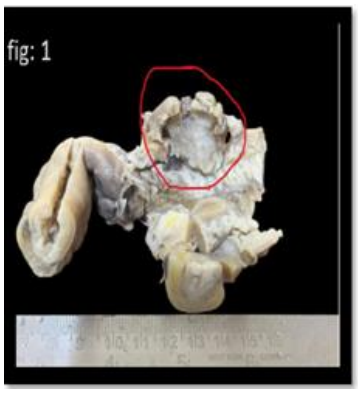
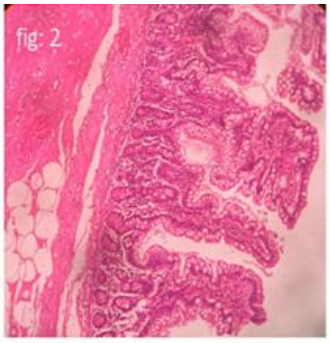


Figure 1: Gross picture of duodenal meckels divericulum



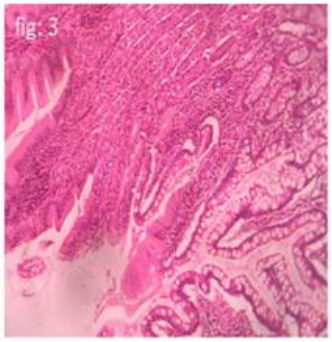
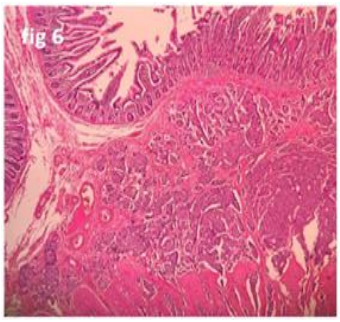


Figure 2 & 3: 10x microscopy of duodenal meckels diverticulum with gastric heterotopia

Figure 4 & 5: Gross picture of NET jejunum.



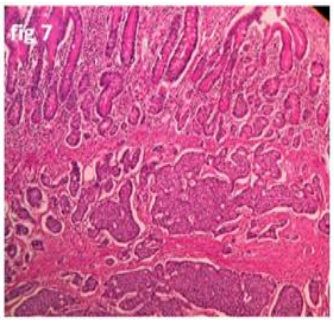


Figure 6 & 7: 10x Microscopy of NET

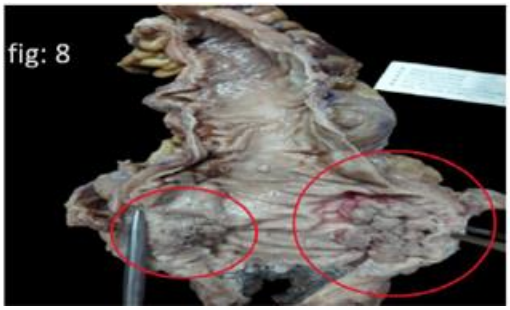


Figure 8: Gross picture of Ca Colon

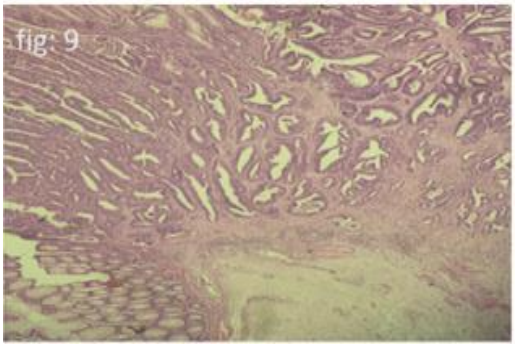


Figure 9: 10x Microscopy of well-differentiated adenocarcinoma

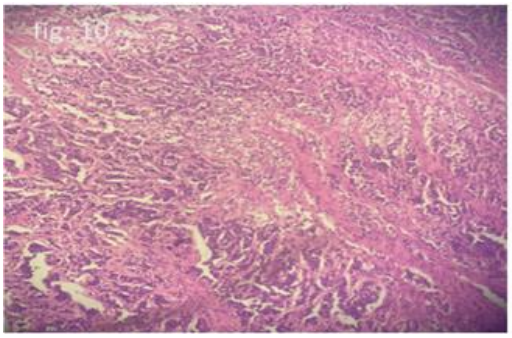


Figure 10: 10x Microscopy of poorly-differentiated adenocarcinoma

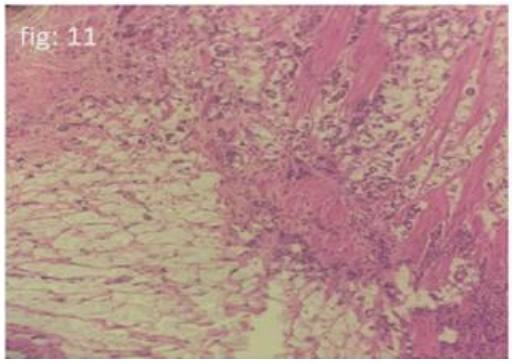
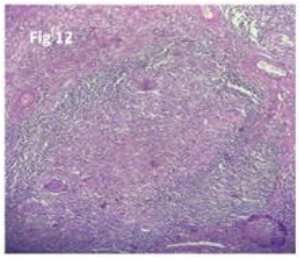
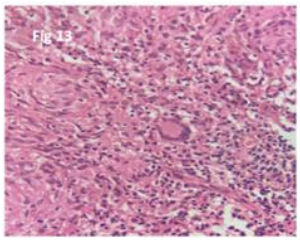


Figure 11: 10x Microscopy of mucinous adenocarcinoma





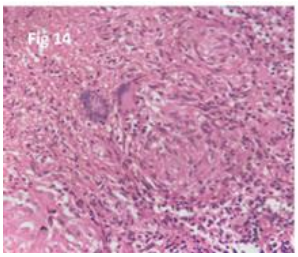


Figure 12, 13 & 14: Shows well-formed granuloma comprised of epithelioid cells, Langhans giant cells and lymphocytes

Discussion

The present study was conducted on resected lower GIT specimens which was received in the Department of histopathology. The resected specimens comprised of Jejunum, Ileum, Appendix, Colon and Rectum. The specimens were categorized into Neoplastic ad Non-Neoplastic Lesions. Comparison studies were done based on Type of lesion, Sex preponderance, most commonly affected Age and Site.

Table 6: Comparative study of type of lesion:

Lesions	Patel V et al [1]	Present study
Non-neoplastic	572 (95.3%)	304 (93.5%)
Neoplastic	28 (4.6%)	21 (6.4%)
Total	600	325

In the present study, 93.5% cases out of 325 cases were found to be Non-Neoplastic lesions and 21 cases (6.4%) were neoplastic. In a comparative study by Patel V et al1, non- neoplastic lesions were also found to be the more common type of lesion with 95.3% of non-neoplastic lesions and 4.6 % of neoplastic lesion.

Table 7: Comparative study based on most common age affected:

Lesions	Rajesh Y et al[9]	Present study
Non-Neoplastic	20-30 years (35.0%)	20-30 years (30%)
Neoplastic	50-60 years (34.6%)	61-70 years (33.3%)

- In the present study, non- neoplastic lesions were found to be more in the age group of 20-30 years which is in concordance with a study conducted by Rajesh et al [9].
- Neoplastic lesions were more commonly found in 61-70 years of age in this study which was in concordance with a study by Priyanka et al[10] where 61-70 years of age group was the most common age group affected by neoplastic lesions, while in a comparative study by Rajesh Y et al[9] , 50-60 years was the predominant age group affected by neoplastic lesions.

Table 8: Comparison study based on sex:

Lesions		Patel V et al [1]	Rajesh Y et al[9]	Present study
Non-neoplastic	Male	-	1.70:1	1.69:1
	Female			
Neoplastic	Male	1.78:1	1.15:1	1.33:1
	Female			

- Male preponderance of both neoplastic and non-neoplastic lesions were noted which is in concordance with the comparison studies.

Table 9: Comparison study based on most common type of lesion:

Lesions	Present study	Rajesh Y et al[9]	Patel V et al [1]
Non-Neoplastic	Appendicitis (93.7%)	88.5%	-
Neoplastic	Adenocarcinoma of colon (66.6%)	-	46.4%

Conclusion

- Because the radiological and clinical characteristics of lower gastrointestinal tract lesions are non-specific in a variety of disorders, morphological

identification is the most helpful in determining the type of lesion.

- When the condition is detected early on, the treatment can be more targeted.
- The current study emphasizes the importance of histopathology in identifying intestinal lesions and assisting clinicians in selecting the best course of action that will prevent complications and increase patient survival rate.
- The clinicopathological association between these abnormalities will be extremely beneficial for early diagnosis, treatment planning, and prognosis.

References

1. P Vibhaben, D G Anjali. Histopathological Study of Lower Gastrointestinal Tract Lesions. Trop J pathol microbiol. 2021;7(4):194-200..
2. M Meenakshi, V Viddadi, P Anuradha, AM Anita. Histopathological Spectrum of Intestinal Lesions. Journal of diagnostic pathology and oncology 2018; 3(4):330-334.
3. Sung H, Ferlay J, Siegel RL, Laversanne M, Soerjomataram I, Jemal A, Bray F. Global Cancer Statistics 2020: GLOBOCAN Estimates of Incidence and Mortality Worldwide for 36 Cancers in 185 Countries. CA Cancer J Clin. 2021 May;71(3):209- 249. doi: 10.3322/caac.21660. Epub 2021 Feb 4. PMID: 33538338.
4. Torres J, Mehandru S, Colombel JF, Peyrin-Biroulet L. Crohn's disease. Lancet. 2017 Apr 29;389(10080):1741-1755. doi: 10.1016/S0140-6736(16)31711-1. Epub 2016 Dec 1. PMID: 27914655.
5. Kotila, T. R., & Omoniyi-Esan, G. O. (2009).Histopathological pattern of colorectal diseases in a Nigerian tertiary hospital.Nigerian Quarterly Journal of Hospital Medicine, 19(4), 246-249.
6. Nagtegaal ID, Odze RD, Klimstra D, Paradis V, Rugge M, Schirmacher P, Washington KM, Carneiro F, Cree IA; WHO Classification of Tumours Editorial Board. The 2019 WHO classification of tumours of the digestive system. Histopathology. 2020 Jan;76(2):182-188. doi: 10.1111/his.13975. Epub 2019 Nov 13. PMID: 31433515; PMCID: PMC7003895.
7. Patil, S. A., & Nikumbh, D. B. (2013).Histopathological spectrum of lower gastrointestinal tract lesions: A 5-year study in a tertiary care hospital. Journal of Clinical and Diagnostic Research, 7(9), 1731-1735.
8. Y Rajesh, Thakur, B Dhiraj, Nikumbh, Y Sunil, Swami. Clinico Histopathological Overview of GIT lesions in a Rural Hospital. Indian journal of pathology and oncology. 2016;3(2):305-314
9. M Surekha, M Sreenivasulu. A Retrospective Study of Histomorphological Spectrum of Intestinal Lesions at a Tertiary Care Center. 2024; 15(1):683-692.
10. S Mrinalini, K Santosh Upadhaya, K Neeta, S Amrita, R Prasun. Histopathological Distribution of the Gastrointestinal Tract Lesions. BJHS 2021;6(2): 1529-1534.
11. Nwafor, C Chukwuemeka, et al. Histopathological Spectrum of Gastrointestinal Lesions seen in University of Uyo teaching hospital, South–south nigeria. Annals of tropical pathology 10(1):27-33.
12. GK Parvathidevi, H Chaithra , HV Sriharsha. Histopathological Spectrum of Gastrointestinal lesions - in a tertiary care centre. IP archives of

cytology and histopathology research. 2024;9(1):17-22.

13. ID Nagtegaal , RD Odze, D Klimstra , V Paradis, M Rugge, P Schirmacher, et al. The 2019 WHO classification of tumours of the digestive system. 2020;76(2):182-188.
14. S Sindhu, S Pallav, G Shivani. Histopathological Spectrum of Lower GIT lesions – an experience n tertiary care centre. International journal of scientific research. 2019.8(9): 39-41.
15. Sharma, Priyanka, M Dekaa. A study of Neoplastic lesions of colorectum in a tertiary hospital. IJSS. 2015 3(8): 88-91.