

ORIGINAL RESEARCH ARTICLE

Histopathological Study of Gastrointestinal Lesions: Two Year Study**Nikita A. Machhi¹, Deepa P. Jethwani², Gauravi A. Dhruva³, Vaidya Tejas H.⁴**¹Assistant Professor, Department of Pathology, GMERS Medical College and Hospital, Junagadh, Gujarat, India.²Associate professor, Department of Pathology, P.D.U. Government Medical College and Hospital, Rajkot, India.³Professor and Head, Department of Pathology, P.D.U. Government Medical College and Hospital, Rajkot, India.⁴Senior Resident Doctor, Department of Pathology, GMERS Medical College and Hospital, Junagadh, Gujarat, India.

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Abstract

Background: Gastrointestinal tract lesions are the most common pathology seen in routine clinical practice. These are broadly classified under two headings: 1) Non neoplastic lesions and 2) Neoplastic lesions which includes both Benign and Malignant lesions. Adenocarcinomas are common all over the gastrointestinal tract. **Aims And Objectives:** To study the prevalence, frequency, histopathological appearance of the gastrointestinal lesions and compare it with other studies. **Material And Methodology:** The present study was undertaken in the department of Pathology, P.D.U. Medical College, Rajkot during the period of 2 years, from July 2019 to June 2021. All the 732 specimens were fixed in 10% formalin overnight, processed, blocks were made and sectioning was done and stained with Harris haematoxylin and Eosin stain. **Result:** Total 732 cases were studied; of which 662 (90.44%) were inflammatory, 11 (1.50%) were benign and 59 (8.06%) were malignant. Most common anatomical site of distribution was appendix. There was male predominance with Male to Female Ratio 1.8:1. Most common age of presentation was 3rd decade. **Conclusion:** Gastrointestinal lesions showed wide variation with characteristic histopathological features. The definitive diagnosis rests on histopathological confirmation and is one of the bases for planning proper treatment. Early diagnosis and treatment are beneficial for better management and is imperative in providing better quality of life to the patient.

Key words: Histopathology, Gastrointestinal tract, Inflammatory, Benign, Malignant.

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Introduction

Gastrointestinal tract lesions are the most common pathology seen in routine clinical practice. It can affect upper gastrointestinal tract which includes oesophagus, stomach and first part of small intestine (duodenum) and lower gastrointestinal tract which includes small intestine, large intestine up to anal canal. These are broadly classified under two headings: 1) Non neoplastic lesions and 2) Neoplastic lesions which includes both Benign and Malignant lesions.

Of these lesions, non neoplastic lesions include Gastric ulcer, acute and chronic inflammation, tubercular inflammation, traumatic lesions, haemorrhoids, etc.

Benign lesions include submucosal lipoma, mucocele, etc. and malignant lesions include epithelial neoplasms (adenocarcinoma), stromal neoplasms, metastatic carcinoma, etc.

Adenocarcinomas are common all over the gastrointestinal tract.

The present study has been undertaken to determine the relative frequency of various histopathological type along with correlation of the occurrence, incidence and demographic data of gastrointestinal tract lesions with other available studies. Histopathological types and knowledge about their prognosis aid the clinicians in effective management of the patients.

Aims And Objectives

To study the prevalence of different gastrointestinal lesions.

To find out frequency of inflammatory, benign and malignant gastrointestinal lesions.

To study the histopathological (Macroscopic and Microscopic) appearance of gastrointestinal lesions and to compare gastrointestinal lesions in relation to age, gender, site distribution and etiological factors.

Material and Methods

The present study was undertaken in the Department of Pathology, P.D.U. Medical College, Rajkot during the period of 2 years, from July 2019 to June 2021.

Histopathological study was carried out on biopsy and surgical specimens received from Department of Surgery, P.D.U. Medical College, Rajkot.

Received biopsy and surgical specimens have been fixed in 10% formalin and passed through the steps of dehydration, clearing and impregnation and embedding in paraffin, finally block preparation, cutting and section stained with Harris haematoxylin and Eosin stain.

Observation and Results

Present study showed following results in Histopathological Study of Gastrointestinal Tract Lesions of 732 cases.

Anatomical Site wise Distribution of Gastrointestinal Tract Lesions

Gastrointestinal tract lesions showed wide variation in anatomical site distribution. It showed highest number of lesions in Appendix with 441 cases while least number in Oesophagus with 12 cases.

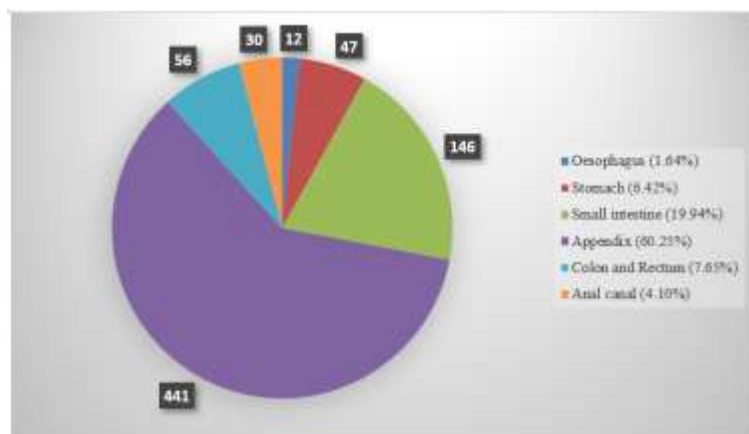


Chart 1: Site wise distribution of Gastrointestinal Tract Lesions

Age and Site wise Distribution of Gastrointestinal Tract Lesions

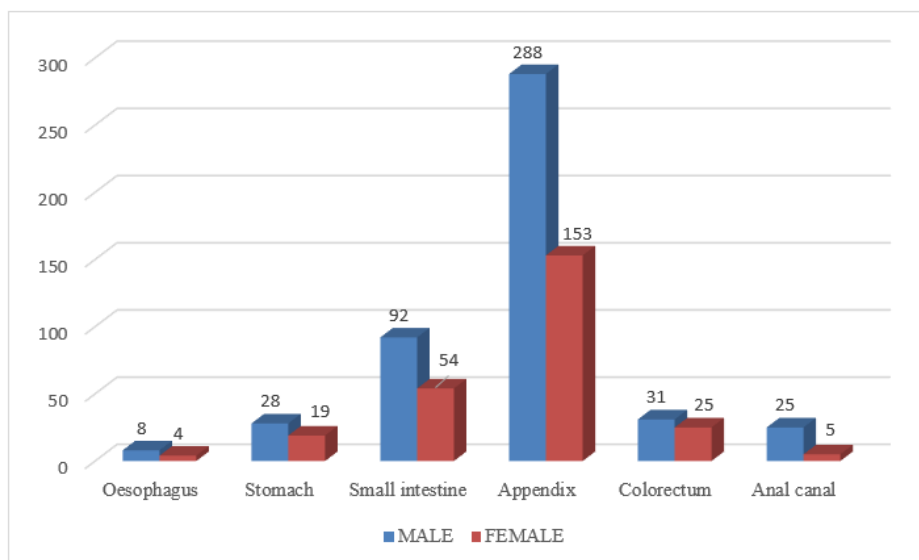
There was a wide variation with peak incidence in 3rd decade of life.

Table 1: Age and Site wise Distribution of Gastrointestinal Tract Lesions

AGE (YEAR)	Oesophagus	Stomach	Small intestine	Appendix	Colon and Rectum	Anal canal	Total
0-10	0	1	20	18	12	0	51
10-20	0	11	9	126	3	3	152
21-30	0	2	22	140	1	9	174
31-40	2	3	14	82	6	9	116
41-50	1	13	25	39	6	8	92
51-60	3	6	21	21	8	1	60
61-70	3	8	23	13	15	0	62
71-80	3	3	10	0	4	0	20
81-90	0	0	2	2	1	0	5
Total	12	47	146	441	56	30	732

Gender and Site wise Distribution of Gastrointestinal Tract Lesions

There was male predominance with Male to Female Ratio 1.8:1.

**Chart 2: Gender and Site wise Distribution of Gastrointestinal Tract Lesions****Histopathological type and Site wise Distribution of Gastrointestinal Tract Lesions**

Non neoplastic lesions (90.57%) were more common than neoplastic lesions, and in neoplastic lesions, malignant (8.06%) were more common.

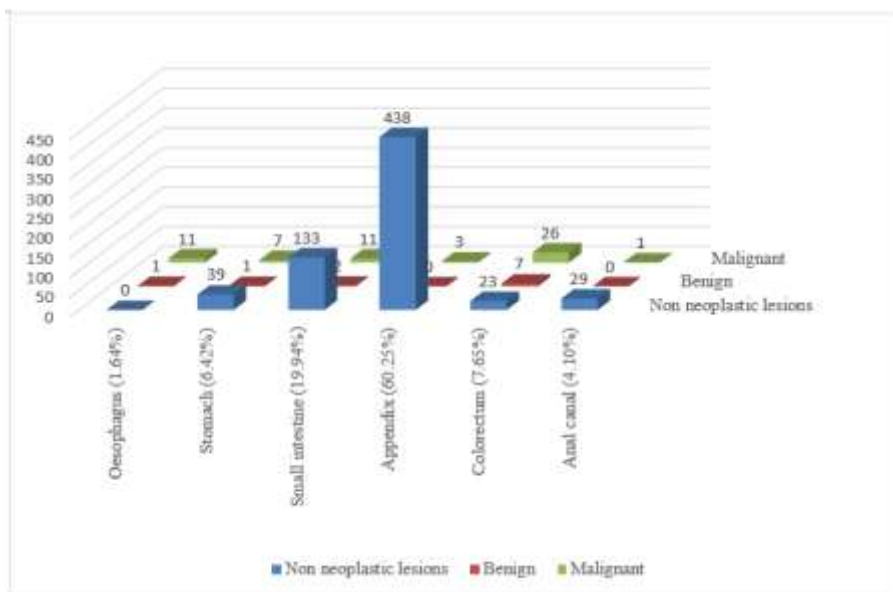


Chart 3: Histopathological type and Site wise Distribution of Gastrointestinal Tract Lesions

Histopathological Type of Oesophageal Lesions:

Out of 12 cases there were 10 cases of Squamous Cell Carcinoma.

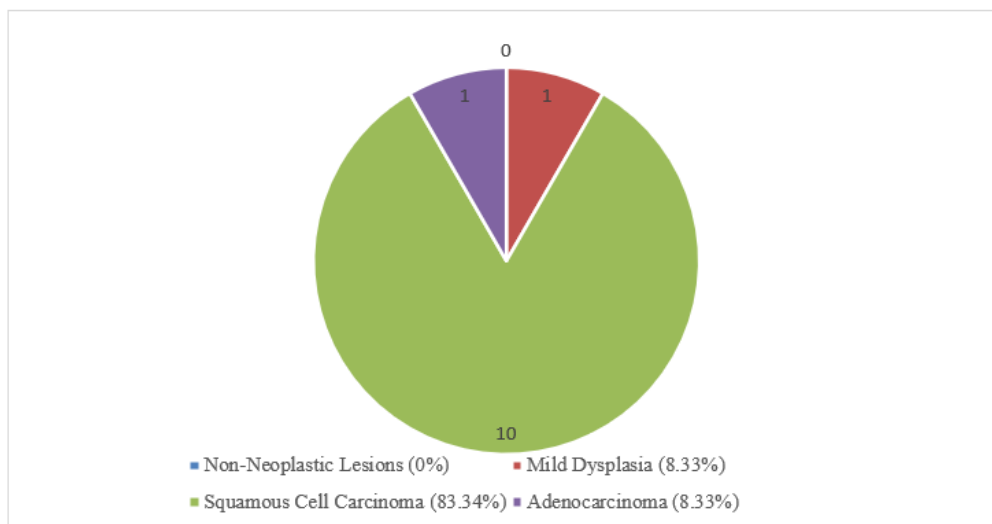


Chart 4: Histopathological Type of Esophageal Lesions

Histopathological Type of Gastric Lesions:

Non neoplastic lesions were common over neoplastic lesions. Adenocarcinoma (21.27%) was common malignancy followed by Signet Ring Cell Carcinoma (2.13%). In benign tumour, only one case of Benign spindle cell neoplasm – Schwannoma (2.13%) was present.

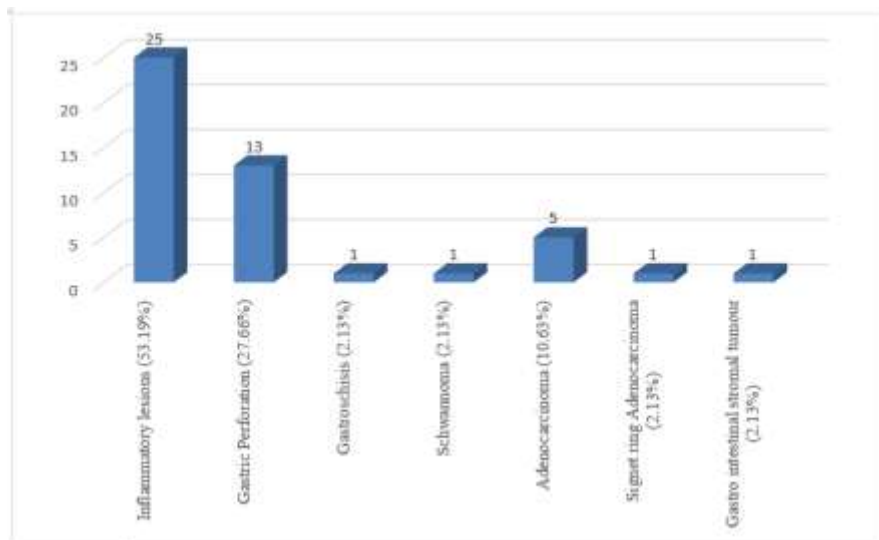


Chart 5: Histopathological types of gastric lesions

Histopathological type of Small Intestinal Lesions:

In Non neoplastic lesions, Koch’s Inflammation 19.57% was common. In neoplastic lesions, Adenocarcinoma 4.35% was common.

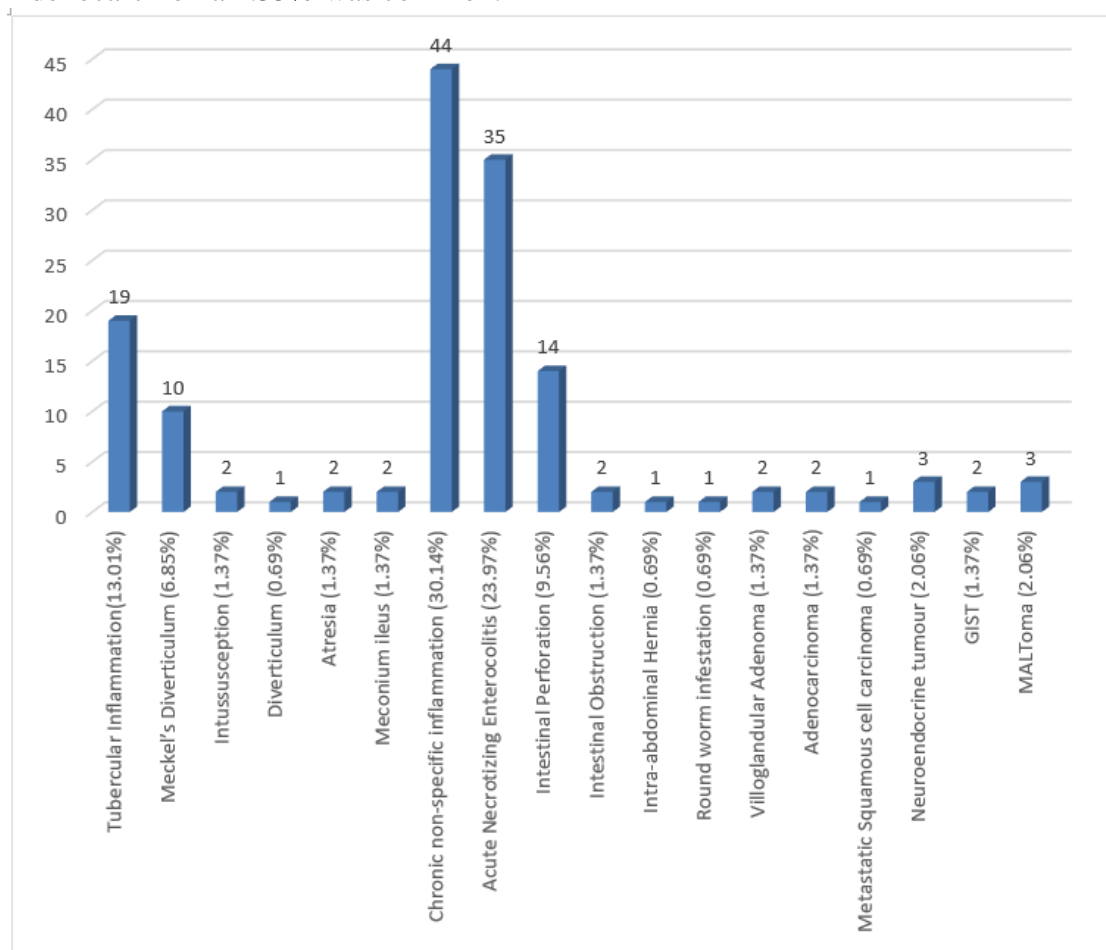


Chart 6: Histopathological Type of Small Intestinal Lesions

Histopathological Type of Appendicular Lesions:

In appendicular lesions, Acute Appendicitis was common – 271 cases (61.44%), followed by chronic appendicitis – 164 cases (37.19%), enterobius vermicularis infestation – 3 cases (0.68%) and one case (0.23%) each of adenocarcinoma, mucinous adenocarcinoma and neuroendocrine tumour.

Histopathological Type of Colorectal Lesions:

In colorectal lesions, adenocarcinoma was common – 25 cases (44.64%), followed by 6 cases (10.71%) each of Hirschsprung's disease, Acute Necrotising & Haemorrhagic Colitis and polyp, 5 cases (8.93%) of chronic nonspecific inflammation, 3 cases (5.36%) of ulcerative colitis, 2 cases (3.57%) of volvulus and 1 case (1.79%) each of Mucinous Adenocarcinoma, submucosal lipoma and amoebic colitis.

Histopathological Type of Anal Lesions:

In anal lesions, anal fistula was common – 15 cases (50%) followed by pilonidal sinus – 10 cases (33.34%), haemorrhoids – 3 cases (10%) and 1 case (3.33%) each of anal fissure and malignant melanoma.

Discussion**Comparison According to Type of Lesions**

Gastrointestinal tract lesions were broadly classified in Non neoplastic and Neoplastic lesions. In Present Study of Rajkot 2019-2021, occurrence of Non neoplastic lesions was more over Neoplastic lesions, out of total 732 lesions, 663 (90.57%) were Non neoplastic and 69 (9.43%) were Neoplastic. The similar result was found in the study of Rajesh Y. *et al.*, 2016 (Dhule), Neha Mukesh Goel *et al.*, 2019 (Ratnagiri), J O Uchendu *et al.*, 2020 (Nigeria) and Patel V *et al.*, 2018 (Gandhinagar).

Table 2: Comparison According to Type of Lesions

Authors	Non neoplastic Lesions	Neoplastic Lesions	Total
	No. (%)	No. (%)	No. (%)
Rajesh Y. <i>et al.</i> , 2016(Dhule)	735 (93.27%)	53 (6.73%)	788 (100%)
Neha Mukesh Goel <i>et al.</i> , 2019(Ratnagiri)	98 (77.17%)	29 (22.83%)	127 (100%)
J O Uchendu <i>et al.</i> , 2020(Nigeria)	452 (79.30%)	118 (20.70%)	570 (100%)
Patel V <i>et al.</i> , 2018(Gandhinagar)	953 (98.24%)	16 (1.65%)	969 (100%)
Present Study, 2019-2021(Rajkot)	663 (90.57%)	69 (9.43%)	732 (100%)

Comparison of Gastrointestinal Lesions according to Age group

There was wide variation in age with high incidence in 3rd decade in Present Study, 2019-2021(Rajkot). Similarly, in study of Neha Mukesh Goel *et al.*, 2019(Ratnagiri) and Shah N. *et al.*, 2017 (Ahmedabad).

Table 3: Comparison of Gastrointestinal lesions according to Age group

Authors	Age group (years) with high incidence	Percentage
Neha Mukesh Goel <i>et al.</i> , 2019(Ratnagiri)	21-30	18.6%
Shah N. <i>et al.</i> , 2017 (Ahmedabad)	21-30	18%
Present Study, 2019-2021 (Rajkot)	21-30	23.9%

Comparison of Gender Distribution of Gastrointestinal Lesions

In Present Study, 2019-2021(Rajkot) we observed there was male predominance with Male to Female ratio 1.8:1 out of 732 cases. Similarly, male predominance was there in different study of Patel V *et al.*, 2018(Gandhinagar), Shah N.*et al.*, 2017(Ahmedabad), M. Lavanya *et al.*,2010(Karnataka), Twinkle C. *et al.*, 2018(Rajkot) and Prabhakar *et al.*,1981(Amritsar).

Comparison of Lesions of Oesophagus

In the present study of 2019-2021(Rajkot) all cases were neoplastic lesions. Out of 12 cases, 10 cases (83.34%) of Squamous Cell Carcinoma, one case (3.33%) of Adenocarcinoma and one case (3.33%) of Dysplasia which was similar with study of Islam *et al.*,2014(Bangladesh), Twinkle C *et al.*, 2018(Rajkot), Rashmi *et al.*,2013(Karnataka) and Chhanda *et al.*,2016(Kolkata).

Comparison of Lesions of Stomach

Adenocarcinoma was the most common malignancy in the stomach with 5 cases 62.5% in the present study of 2019-2021(Rajkot). It showed 1 cases of Signet ring cell carcinoma, one case of Malignant GIST and only one case of Schwannoma out of total 8 cases. Adenocarcinoma was the most common malignancy and it was compared with studies of Aparajita *et al.*,2016(Odisha), Rashmi *et al.*,2013(Karnataka), and Sfoorti *et al.*,2013(Rajkot).

Table 4: Comparison of Neoplasm of Stomach

Authors	Aparajita <i>et al.</i> , 2016 (Odisha)		Rashmi <i>et al.</i> , 2013 (Karnataka)		Sfoorti <i>et al.</i> , 2013 (Rajkot)		Present study, 2019-2021 (Rajkot)	
	No.	%	No.	%	No.	%	No.	%
Adenocarcinoma	25	71.42	15	55.55	06	75	05	62.5
Signet Ring Cell Carcinoma	06	17.14	04	14.81	-	-	01	12.5
GIST	-	-	-	-	01	12.5	01	12.5
MALToma	-	-	-	-	01	12.5	-	-
Benign	04	11.42	08	29.62	-	-	01	12.5
Total	35	100	27	100	08	100	08	100

Comparison of Lesions of Small Intestine

The neoplastic lesions in the Present Study of 2019-2021(Rajkot) were Adenocarcinoma, GIST and Benign lesions–Villoglandular adenoma with 02 cases each and Neuroendocrine tumour and MALToma were 3 cases each with one case of Metastatic Squamous cell carcinoma out of total 13 cases.

Neuroendocrine tumour and MALToma were most common malignancy in the small intestine in present study in contrast to the different studies like Nanavati *et al.*, 2010 (Ahmedabad) and Guru *et al.*,2017(Karnataka). However, in the study of Chhanda *et*

al.,2016(Kolkata), most common malignant lesion was MALToMa followed by Adenocarcinoma.

Table 5: Comparison of histopathological type of Neoplasm of Small Intestine

Authors	Nanavati <i>et al.</i> , 2010 (Ahmedabad)		Chhanda <i>et al.</i> , 2016 (Kolkata)		Guru <i>et al.</i> , 2017 (Karnataka)		Present study, 2019-2021 (Rajkot)	
	No.	%	No.	%	No.	%	No.	%
Adenocarcinoma	02	50	08	36.36	29	54.71	02	15.38
GIST	01	25	03	13.63	04	7.55	02	15.38
Neuroendocrine tumour	-	-	-	-	06	11.33	03	23.08
MALToMa	01	25	10	45.45	01	1.88	03	23.08
Others	-	-	-	-	05	9.43	01	7.70
Benign	-	-	01	4.56	08	15.10	02	15.38
Total	04	100	22	100	53	100	13	100

Comparison of Lesions of Appendix

In the present study of 2019-2021(Rajkot), of Appendicular lesions, most common was Appendicitis 438 cases-99.31% followed by 1 case of Neuroendocrine tumour, Adenocarcinoma and Mucinous Adenocarcinoma each. It was compared with the study of Twinkle C *et al.*, 2018(Rajkot) and Hanish *et al.*,2015(Karnataka).

Comparison of Lesions of Colorectum

In the present study of 2019-2021(Rajkot), in Nonneoplastic lesions there were maximum cases of Hirschsprung's Disease 8 cases, Chronic Nonspecific Inflammation 5 cases, 3 cases of Ulcerative Colitis, 3 cases of Acute Necrotising Colitis, 2 cases of Volvulus, 1 case of imperforated anus and 1 case of amoebic colitis out of total 23 cases compared with Twinkle C *et al.*, 2018(Rajkot).

In studies of Ritesh *et al.*,2015(Karnataka) and Bilal A. *et al.*,2017(Srinagar) most common non neoplasm was Chronic Nonspecific Inflammation in both of them.

Table 6: Comparison of Histopathological type of Non neoplasm of Large Intestine

Authors		Hirschsprung's Disease	Ulcerative Colitis	Chronic Non-specific Inflammation	Acute Necrotising Colitis	Volvulus	Others	Total
Twinkle C <i>et al.</i> , 2018(Rajkot)	No.	06	03	05	03	03	06	26
	%	23.07	11.53	19.23	11.54	11.53	23.07	100
Ritesh <i>et al.</i> , 2015(Karnataka)	No.	03	03	16	14	-	02	38
	%	7.89	7.89	42.10	36.84	-	5.26	100
Bilal A. <i>et al.</i> , 2017(Srinagar)	No.	02	15	21	19	-	56	113
	%	1.7	13.27	18.58	16.81	-	43.37	100
Present Study, 2019-2021 (Rajkot)	No.	08	03	05	03	02	02	23
	%	34.78	13.04	21.74	13.04	8.70	8.70	100

Comparison of Lesions of Anal Canal

In the present study of 2019-2021(Rajkot) most common Non neoplasm was Anal Fistula-15 cases followed by 10 cases of pilonidal sinus, 3 cases of haemorrhoids and 1 case of anal fissure out of total 30 cases. Most common non neoplastic lesion was Anal Fistula in study of Ritesh *et al.*,2015(Karnataka) and Twinkle C *et al.*, 2018(Rajkot).

Conclusion

Gastrointestinal Lesions showed wide variation with characteristic histopathological features. The definitive diagnosis rests on histopathological confirmation and is one of the bases for planning proper treatment. Early Diagnosis and treatment are beneficial for better management and is imperative in providing better quality of life to the patient. An analysis of Gastrointestinal Lesions of 732 cases with reference to parameters like, age, gender, anatomical site and histopathological type was presented. Overall, Occurrence of Non neoplastic lesions were more in comparison to Neoplastic tumours.

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