

## Clinicopathological Study of Gastrointestinal Tract Neoplasms.

Dr. Kalpana Bothale<sup>1</sup>, Dr. Sagar Yelne<sup>2</sup>, Dr. Sadhana Mahore<sup>3</sup>, Dr. Akanksha Bothale<sup>4</sup>, Dr. Vidula Gowardhan<sup>5</sup>, Dr. Trupti Dongre<sup>6</sup>

1 Associate Professor, 2 Incharge Dr Lal Pathlabs, 3 Professor, 4 Senior Resident, 5 Lecturer, 6 Lecturer.

1,3,5,6 Department of Pathology, NKP Salve Institute of Medical Sciences and Research centre, Nagpur-440025

2 Dr. Lal Pathlabs, Nagpur, 4 Care hospital, Banjara Hills, Hyderabad.

\*Corresponding Author: Dr. Kalpana Bothale

**Abstract:-** Gastrointestinal tract include spectrum of various histopathologic types of primary neoplasms of Oesophagus, Stomach, Small intestine, Colorectum and anal canal. Gastric cancer remains one of the most common cancer in Asia. Gastrointestinal tract (GIT) malignancies are one of the leading cause of death due to cancer in the world. Colorectal malignancies are 3rd most common variety of malignant tumors causing death which without doubt presents the test challenge to oncologist. Gastric cancer are the 3rd most common cancer in India and 2nd leading site of cancer occurrence worldwide.

Gastrointestinal tract tumors are mostly diagnosed in advanced stage. The incidence, clinical appearance and the behaviour of different types of gastrointestinal tract tumor is extremely variable. It is generally difficult to diagnose the nature of gastrointestinal tract tumors preoperatively just by clinical examination and even on exploration. Hence one has to depend on microscopic appearance of tumor for further management of gastrointestinal tract neoplasms.

This study is aimed at detecting incidence of various types of gastrointestinal tract neoplasms, their classification and differentiate benign from malignant neoplasms, also to correlate histopathologic type, grade and clinical stage of disease wherever necessary. Association of various dietary habits and lifestyle factors in gastrointestinal neoplasms were also analysed in this study.

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### I Introduction

Gastrointestinal tract tumors are mostly diagnosed in advanced stage. Colorectal malignancies are 3rd most common variety of malignant tumors causing death which without doubt presents the test challenge to oncologist. Gastric cancer are the 3rd most common cancer in India and 2nd leading site of cancer occurrence worldwide.<sup>2</sup>

The incidence, clinical appearance and the behaviour of different types of gastrointestinal tract tumor is extremely variable. It is generally difficult to diagnose the nature of gastrointestinal tract tumors preoperatively just by clinical examination and even on exploration. Hence one has to depend on microscopic appearance of tumor for further management of gastrointestinal tract neoplasms. This study is aimed at detecting incidence of various types of gastrointestinal tract neoplasms, their classification and differentiate benign from malignant neoplasms, also to correlate histopathologic type, grade and clinical stage of disease wherever necessary. To find out the spectrum of various histopathologic types of primary neoplasms of different parts of gastrointestinal tract (Oesophagus, Stomach, Small intestine, Colorectum & Anal canal), this study was undertaken. Aim of the study-

- 1) To classify gastrointestinal tract tumors..
- 2) To study age incidence, sex distribution and dietary factors of various gastrointestinal tract tumours.
- 3) To correlate various histopathological types of gastrointestinal tract neoplasms & their clinical presentation.

### II Material And Methods

**Study Design:** Hospital based cross sectional study.

**Study Location:** This was hospital based study done in the Department of pathology, NKP Salve Institute of medical Sciences and Research centre.

**Study Duration:** July 2009 to June 2012.

**Sample size:** 104 cases.

A total of 104 cases of various gastrointestinal tract tumours were received. 77 of those were oesophagectomy, gastrectomy, hemicolectomy, abdominal perineal resection surgical specimen while 27 were

biopsies. Relevant clinical data like history including dietary history, clinical symptoms, examination findings, investigation reports were collected from wards, or obtained from the requisition form sent along with the specimens and record section of the institute.

**Inclusion criteria:** - All patients of all age groups attending surgery out patient department. & diagnosed with gastrointestinal tract neoplasm.

**Exclusion criteria :-** Patients having liver & biliary tract neoplasms were excluded from the study.

**Collection of specimen :-** The specimen were received in 10% formalin & thorough gross examination was done. Gross examination was done according to grossing techniques mentioned in Ackerman's surgical pathology, tenth edition.

Type of resection (total or subtotal), length of specimen, tumour characteristics, size (including thickness), extent around bowel, type of growth (infiltrating, polypoidal, ulcerative, proliferative), presence of necrosis or hemorrhage, extent through wall, serosal involvement, satellite nodules, invasion of adjacent organs. (estimate of number of lymph nodes, size of largest node) were noted. Sections were taken from tumour including tumour border & adjacent mucosa, nonneoplastic mucosa, proximal & distal margin of resection. The specimen were subjected to tissue processing on automated tissue processor. Paraffin blocks were prepared, cut & stained with routine hematoxylin & eosin stain. Special stains for e.g. Periodic Acid Schiff (PAS) stain were done wherever necessary. Immunohistochemistry was done for rare cases like gastrointestinal stromal tumours (GIST) & lymphomas.

### III Result And Observations

All the observations were recorded as per the proforma. Histopathologic diagnosis was given according to WHO classification & cases were classified. Grading & staging was done and findings were tabulated.

Out of 104 cases oesophageal & colorectal tumours formed main bulk with 45 & 40 cases respectively (Table1). Gastric neoplasms were less with only 13 cases followed by small intestine (4 cases) & anal canal (2cases). In oesophagus more than 50% cases occurred in middle part, antropyloric region was most common site in stomach while in large intestine, rectum was most common (Table 1). Clinical symptoms were also studied according to location of lesions. (Table2) 51 to 60 years was most common age group in which oesophageal and intestinal tumours occurred. Gastric tumours occurred decade earlier. Except colorectal tumours slight male preponderance was seen in rest of the gastrointestinal tract. Dietary habits were also studied in different sites of tumours (Table3). Oesophageal neoplasms presented earlier than gastric & intestinal neoplasms. Tobacco smoking, use of betelnut was frequently seen with oesophageal tumours and alcohol consumption was seen in 23% patients. (Table4). Ulceroproliferative lesion was most common in oesophagus and large intestine. In gastric region infiltrating type of growth was most common. (Table5).

**Table 1: Distribution of cases according to location.**

Site	Sub site	Frequency	Percent %
Oesophagus (45)	Upper	6	5.77
	Middle	24	23.08
	Lower	15	14.42
Stomach (13)	Cardia	1	0.96
	Body	4	3.85
	Antrum	2	1.92
	Pylorus	6	5.77
Small Intestine (4)	Duodenum	2	1.92
	Jejunum	0	0
	Ileum	2	1.92
Large Intestine (40)	Caecum	3	2.88
	Ascending Colon	7	6.73
	Transverse Colon	0	0
	Descending Colon	6	5.77
	Sigmoid Colon	4	3.85
	Rectum	20	19.23
Anal canal (2)	Anal Canal	2	1.92
<b>Total</b>		<b>104</b>	<b>100</b>

**Table 2: Distribution of cases according to location and clinical symptoms**

Site	Sub site	Clinical symptoms													
		Dysphagia	Haematemesis	Malena	Altered Bowel Habits	Bleeding per rectum	Pain in abdomen	Lump in abdomen	Anorexia	Wt. Loss	Retrosternal pain	Regurgitation	Vomiting	Tenesmus	Abdominal distension
Oesophagus	Upper	5	0	1	0	0	1	1	5	6	1	0	0	0	
	Middle	24	0	0	0	0	0	0	23	23	3	9	0	0	
	Lower	15	0	0	0	0	0	0	14	14	5	4	0	0	
Stomach	Cardia	0	0	0	0	0	1	1	1	0	0	0	0	0	
	Body	0	1	0	1	1	3	3	4	3	0	0	0	0	
	Antrum	0	1	0	0	0	2	2	0	0	0	0	0	0	
	Pylorus	0	0	0	0	0	6	6	4	5	0	0	2	0	
Small intestine	Duodenum	0	1	0	0	0	2	2	0	1	0	0	0	0	
	Jejunum	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Ileum	0	0	0	0	0	2	2	2	1	0	0	0	0	
Large intestine	Caecum	0	0	0	2	0	1	3	3	3	0	0	0	0	
	Ascending colon	0	0	0	6	4	1	2	7	7	0	0	0	0	
	Transverse colon	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Descending Colon	0	0	0	5	1	4	1	6	3	0	0	0	0	
	Sigmoid colon	0	0	0	4	1	1	2	4	4	0	0	0	0	
	Rectum	0	0	0	17	4	9	6	19	19	0	0	0	1	
Ca Anal canal	Anal canal	0	0	0		2			2	2	0	0	0	0	
<b>Total</b>		<b>44</b>	<b>3</b>	<b>1</b>	<b>35</b>	<b>13</b>	<b>33</b>	<b>31</b>	<b>96</b>	<b>91</b>	<b>9</b>	<b>13</b>	<b>2</b>	<b>1</b>	<b>0</b>

**Table 3: distribution of cases according to site and type of diet.**

Site	Sub site	Dietary habits				
		Mixed diet	Vegetable diet	Green leafy & Fruits	Smoked food	Spices (chili pepper)
Oesophagus	Upper	13	2	3	3	14
	Middle	19	5	4	5	22
	Lower	5	1	2	1	5
Stomach	Cardia	1	0	1	0	1
	Body	3	1	2	1	3
	Antrum	2	0	1	1	2
	Pylorus	5	1	3	2	6
Small intestine	Duodenum	2	0	0	0	2
	Jejunum	0	0	0	0	0
	Ileum	1	1	1	1	1
Large intestine	Caecum	3	0	1	1	2
	Ascending colon	7	0	2	3	6
	Transverse colon	0	0	0	0	0
	Descending Colon	4	2	2	1	4
	Sigmoid colon	4	0	1	1	4
	Rectum	17	3	2	4	19
Anal canal	Anal canal	2	0	0	0	2
<b>Total</b>		<b>88</b>	<b>16</b>	<b>25</b>	<b>24</b>	<b>93</b>

**Table 4: Distribution of cases according to site and lifestyle factors**

Site	Sub site	Habits		
		Smoking	Alcohol	Betel nut
Oesophagus	Upper Oesophagus	1	0	1
	Middle Oesophagus	8	4	5
	Lower Oesophagus	5	3	0
Stomach	Cardia	1	1	0
	Body	0	0	1
	Antrum	0	0	0
	Pylorus	4	3	1
Small intestine	Duodenum	0	1	0
	Jejunum	0	0	0
	Ileum	0	0	0
Large intestine	Caecum	2	0	1
	Ascending colon	3	3	0

	Transverse colon	0	0	0
	Descending Colon	1	3	0
	Sigmoid colon	0	1	2
	Rectum	4	4	3
Anal canal	Anal canal	1	1	0

**Table 5: Distribution of cases according to site and gross pattern**

Site	Histopathological diagnosis						Total
	Adenoma	Adeno ca	Squamous cell ca	GIST	Lymphoma	Carcinoid	
Oesophagus	0	6	38	1	0	0	45
Stomach	0	11	0	1	0	1	13
Small intestine	0	2	0	0	2	0	4
Large intestine	3	36	0	1	0	0	40
Anal canal	0	0	2	0	0	0	2

**Table 6: Distribution of cases according to site and histopathological diagnosis**

Site	Histopathological diagnosis						Total
	Adenoma	Adeno ca	Squamous cell ca	GIST	Lymphoma	Carcinoid	
Oesophagus	0	6	38	1	0	0	45
Stomach	0	11	0	1	0	1	13
Small intestine	0	2	0	0	2	0	4
Large intestine	3	36	0	1	0	0	40
Anal canal	0	0	2	0	0	0	2

**Table 7: Distribution of casess according to site and grading**

Site	Grading			Total
	Well	Moderate	Poor	
Oesophagus	17	26	2	45
Stomach	1	7	5	13
Small intestine	0	1	3	4
Large intestine	18	18	4	40
Anal canal	1	1	0	2

#### IV Discussion

Gastrointestinal tract (GIT) cancers are one of the leading cancers in India. Present study is an analysis of Gastrointestinal tract neoplasms. In this study 104 Gastrointestinal tract neoplasms were studied in five major groups of oesophageal, gastric, small intestine, large intestine & anal canal.

**Table 8: Comparison of incidence of oesophageal neoplasms in various studies**

Author	% Incidence of oesophageal neoplasms
Assem et al <sup>3</sup>	22.6 %
Jamal et al <sup>4</sup>	5.18.1 %
Weiderpass et al <sup>5</sup>	16.5 %
Kalyani <sup>6</sup>	27.7 %
Present Study	43.2 %

**Table 9: Comparison of incidence of colorectal tumours in various studies**

Author	% Incidence
Assem et al <sup>3</sup>	45.23 %
Jamal et al <sup>4</sup>	37.1 %
Waiderpass et al <sup>5</sup>	28.5 %
Kalyani <sup>6</sup>	11.5 %
Present Study	38.46 %

Various studies conducted in India & abroad had different outcomes. Yeole et al<sup>7</sup> found oesophageal cancer to be most common among various cancer registries in India. R Kalyani et al<sup>6</sup> found most common site as stomach followed by oesophagus. Jamal et al<sup>4</sup> stated that colorectal tumours were most common followed by stomach & oesophagus. In our study we found Oesophageal cancer to be most common neoplasm constituting 43.27%. Morphologically the commonest gross lesion of the tumor was ulceroproliferative (18), Infiltrating (5) & polypoidal (4). Khan et al<sup>8</sup>, Kuwano et al<sup>9</sup> got similar findings in their studies.

Gastrointestinal tract neoplasms are common in elderly population & peak age reported is 6th & 7th decades with 80% of cases above 40 years. We found that the peak age was 5th & 6th decade. Our findings seem comparable with studies conducted by Jamal et al<sup>4</sup>. However most of the other studies found peak age of incidence in 6th & 7th decades.<sup>38,49,51</sup> In India male to female ratio was found to be 1:0.66<sup>6,7,10</sup>. However we found M:F ratio 1:0.92 with slight male preponderance. Dietary factors have been thought to account for about 30% of cancers in western countries<sup>11</sup>. Making diet second only to tobacco as a preventable cause of cancer. The contribution of diet to cancer risk in developing countries has been considered to be lower perhaps around 20%.

Weiderpass E et al<sup>5</sup> analysed time trends in socioeconomic differences in incidence rates of cancers of gastrointestinal tract in Finland. The incidence rates in the population were increasing for colon cancer & for oesophageal adenocarcinomas while decreasing for oesophageal squamous cell carcinoma & stomach. Oesophageal squamous cell carcinoma & cancers of stomach, cardia were more common among persons belonging to lower social classes. Higher social classes had increased incidences of small intestine & colon cancer.

Diet is by far the most important factor identified in the etiology of colorectal cancer. Diet rich in calories, animal fat, red meat & poor in vegetables & fruits is associated with increased risk of colorectal cancer.<sup>12,13</sup>

In developed countries the main risk factors for oesophageal cancer are alcohol & tobacco & upto 75% of these cancers are attributable to these two lifestyle factors.<sup>14</sup> Around 60% of cancers of oesophagus are thought to be due to micronutrient deficiencies related to restricted diet that is low in fruits & vegetables & animal products.<sup>15</sup>

In our study eighty eight (84.6%) patients consumed mixed diet (non-vegetarian) & the rest were vegetarians. The non vegetarians took meat, fish approximately once in a week. Only 24 % patients in the study group frequently & regularly consumed green leafy vegetables and fruits. (Table 3). Squamous Cell Carcinoma was most common type in oesophagus. In gastric region adenocarcinoma and its subtypes like tubular, papillary, signet ring, mucin secreting formed main bulk of the tumours. Similar pattern is seen in colorectal tumours. In gastrointestinal tract mostly malignant neoplasms were of moderately differentiated grade. Most of oesophageal & many colorectal tumours presented in stage II (II A & II B) while substantial number of colorectal & gastric tumours were seen in stage III.

## **V Conclusion-**

A total of 104 cases of various gastrointestinal tract neoplasms were studied.

Largest number of cases were that of oesophageal tumours followed by large intestine, gastric, small intestine & anal canal. In the present study wide spectrum of gastrointestinal tract neoplasms, common & rare were observed. In gastrointestinal tract, oesophageal neoplasms were most common followed by colorectal neoplasm. Incidence of gastric neoplasms appear to be decreased.

Middle oesophagus, antropyloric region & rectum were most common sites for tumour occurrence in oesophagus, stomach & intestine respectively.

Most of the patients who presented with gastrointestinal tract neoplasms were on mixed diet (non vegetarian), spicy (chili) food while few were taking green leafy vegetables and fruits. Tobacco smoking, use of betelnut was frequently seen with oesophageal tumours.

Ulceroproliferative lesion was most common in oesophagus and large intestine. Infiltrative type was common in 51– 60 years was most common age group for oesophageal and intestinal tumors. Gastric tumours occurred decade earlier. Clinically oesophageal neoplasms presented earlier than gastric & intestinal neoplasms. Oesophageal tumours predominantly presented with dysphagia, anorexia, weight loss. Lump in abdomen, pain in abdomen were common in stomach while altered bowel habits and weight loss were seen in intestine. gastric region.



Figure1 Gross photograph of oesophageal tumour with polypoidal growth.

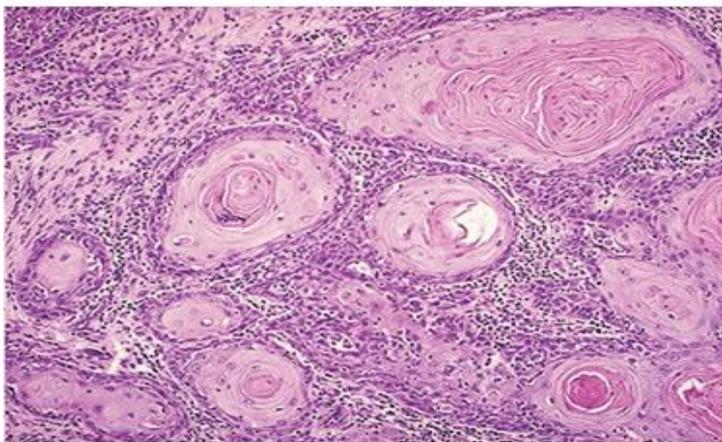
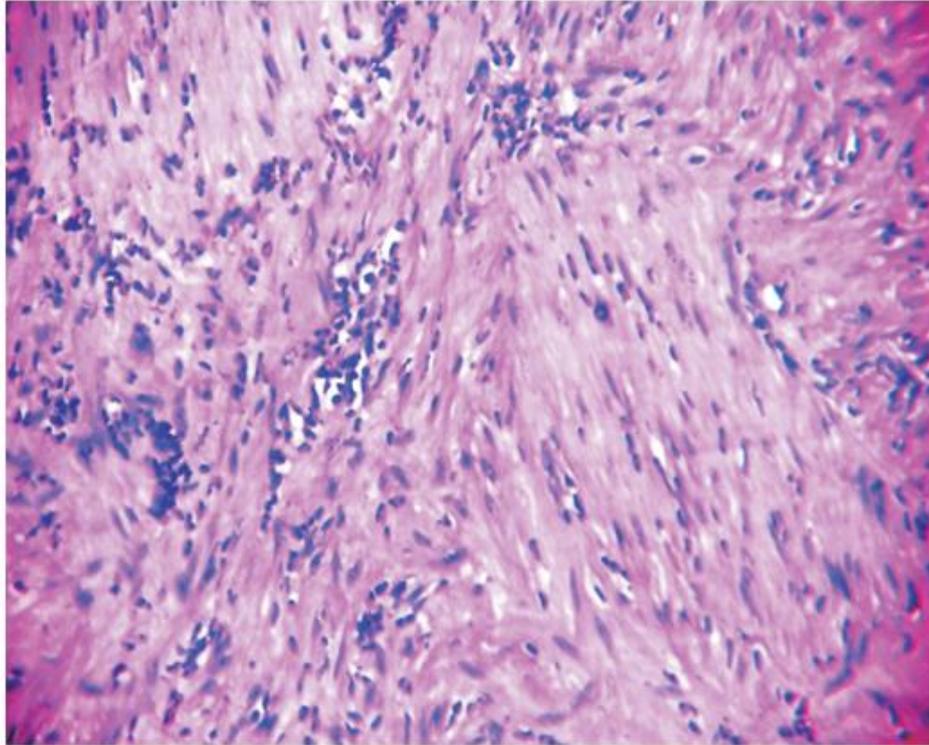


Figure2-Photomicrograph of oesophageal tumor showing well differentiated Squamous Cell Carcinoma with keratin pearls (H&E x100)



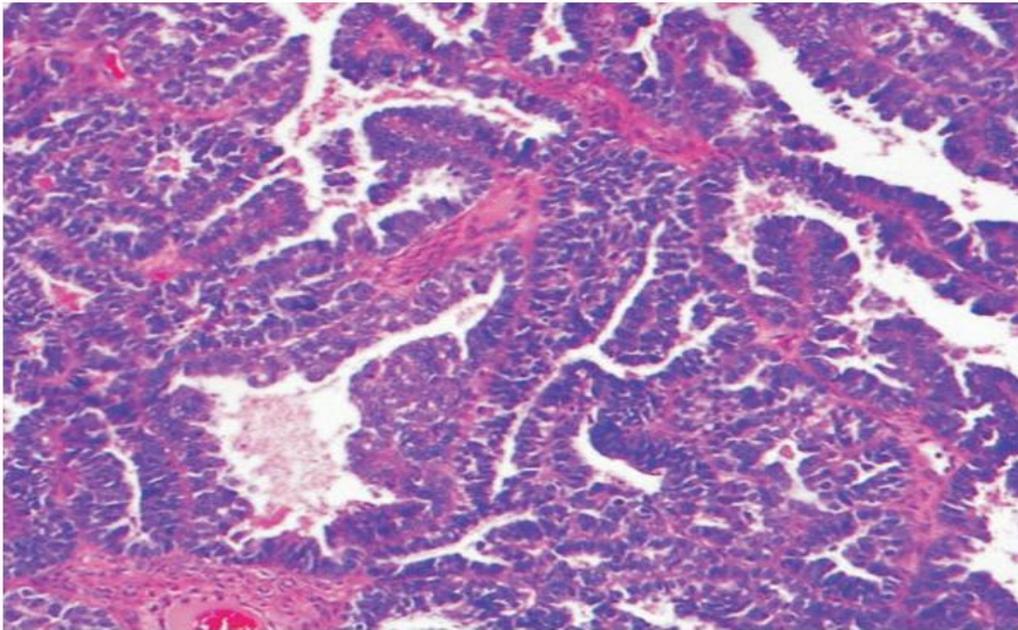
Figure3- Gross photograph showing encapsulated mass from oesophagus (GIST)



**Figure4** Photomicrograph showing low grade GIST(H&E100X) On IHC it showed CD 117 positivity



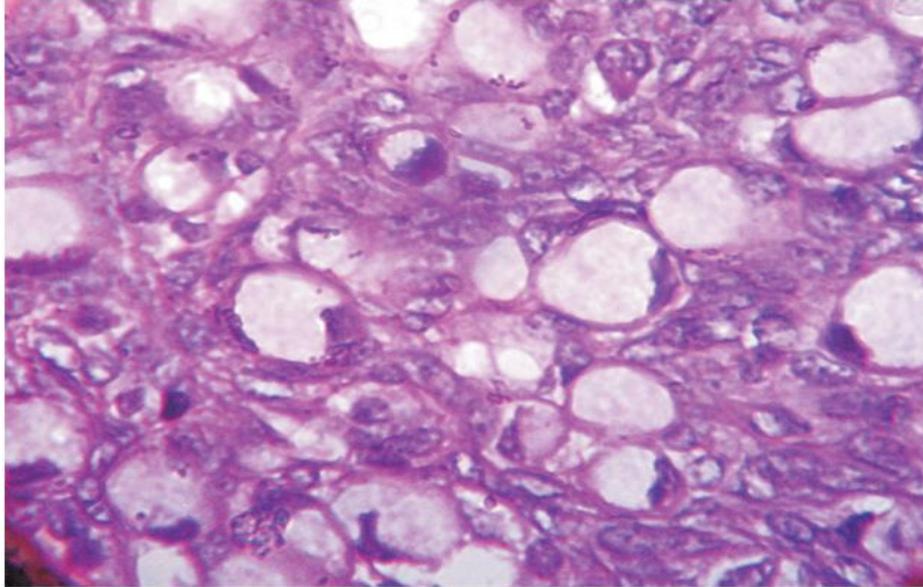
**Figure5-** Gross photograph of gastric tumor showing ulceroproliferative growth



**Figure 6** Photomicrograph of gastric tumour showing papillary adenocarcinoma H&E 10X



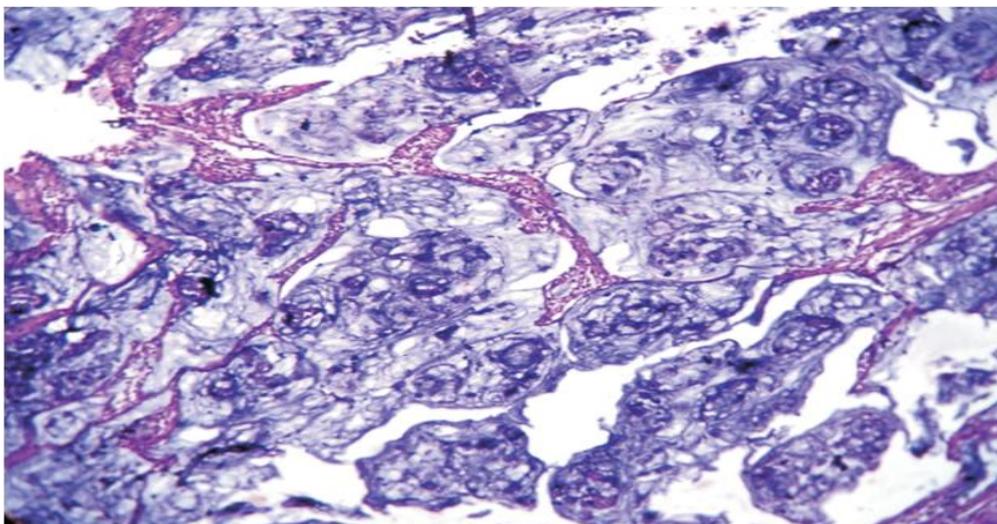
**Figure 7** Gross photograph of gastric tumour showing ulceroinfiltrative growth.



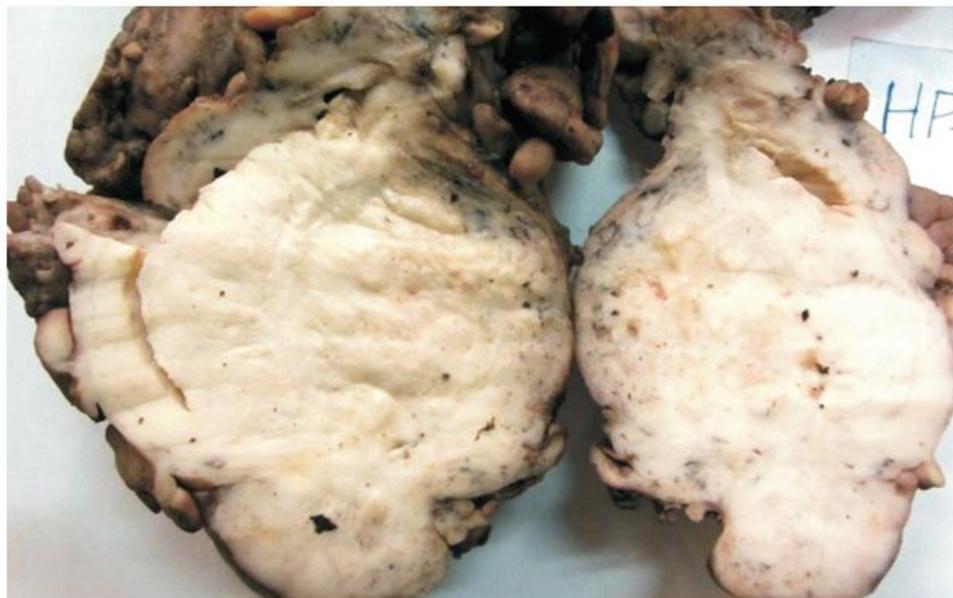
**Figure 8** Photomicrograph of gastric tumor showing signet ring cell adenocarcinoma (H&E stain, x400).



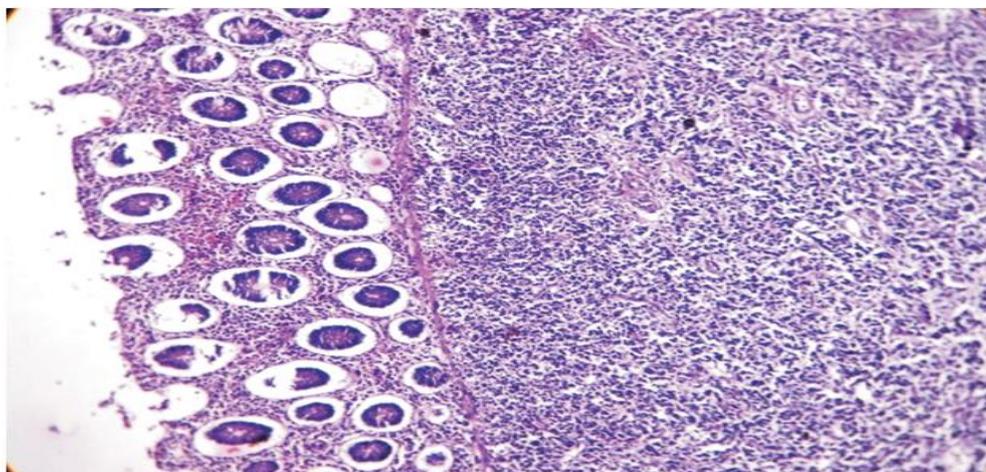
**Figure 9** Gross photograph of large intestine showing Polypoidal growth of mucin secreting adenocarcinoma



**Figure 10** Photomicrograph showing mucin secreting adenocarcinoma H&E 10 0X.



**Figure11-Gross photograph of lymphoma showing solidfish-flesh appearance**



**Figure12- Photomicrograph showing submucosal growth, diffuse arrangement of cells in diffuse large B cell lymphoma (H&E 40X)**

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