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Histopathological Study of the Lesions of Upper Gastrointestinal Tract Endoscopic Biopsy Specimen in Adult Age Group in a Tertiary Care Hospital

Dr. Madhukar Gavit[1], Dr. Vikas Maindad[2], Dr. Vivek Kharolkar[3], Dr. Shirin Patil[4]

[1]MD Pathology, Senior Resident, Department of Pathology, HBT Trauma Centre, Jogeshwari East, Mumbai
Email: *drmadhukargavit[at]gmail.com*

[2]MD Pathology, Associate Professor, Department of Pathology, Grant Government Medical College and JJ Hospital, Mumbai.
Email: *drvikasmaindad[at]gmail.com*

[3]MD Pathology, Associate Professor, Department of Pathology, Grant Government Medical College and JJ Hospital, Mumbai.
Email: *kharolkarvivek[at]gmail.com*

[4]MD Pathology, Junior Resident, Department of Pathology, Grant Government Medical College and JJ Hospital, Mumbai.
Corresponding Author Email: *shirinpatil43[at]gmail.com*

Abstract: ***Introduction / Background: Upper gastrointestinal endoscopy along with biopsy plays an critical role in the early diagnosis of neoplasms and gives an opportunity for a broad range of treatment options with a potential for possible cure. Aim: To study the various non neoplastic and neoplastic upper gastrointestinal lesions and to corelate their histopathological findings with endoscopic findings along with age and sex distribution of these lesions. Method: This Prospective cross – sectional study was carried out in the Department of Pathology of a Tertiary Health Center and a Teaching Institute. Upper gastrointestinal tract endoscopic biopsy of 600 consecutive specimens received in the Department of Pathology were included in the study. Result: The majority of oesophageal lesions diagnosed were squamous cell carcinoma (34.32%). The most common gastro - oesophageal junction lesion found was Barretts's oesophagus (21.62%). The majority of gastric lesions were gastritis (40.11%). The most common duodenal lesion found was duodenitis (56.47%). Conclusion: Upper gastrointestinal endoscopy is relatively less invasive simple, safe and well tolerated procedure, cost effective and provides good diagnostic yield in confirming various upper gastrointestinal lesions.***

Keywords: upper gastrointestinal endoscopy, biopsy findings, neoplastic lesions, histopathological correlation, gastrointestinal tract diagnosis

1. Introduction

The upper gastrointestinal flexible fiber optic endoscope was first used in 1968 and has proved to be a major breakthrough in the diagnosis of gastrointestinal tract (GIT) lesions [8, 14]. There is a marked increase in diagnostic procedures involving visualization and biopsy of the upper and lower GI tract with introduction of flexible endoscopy. Diagnostic endoscopy is a safe, simple and well tolerated procedure [9]. The complication rate is about 1 in 1000. They include aspiration, causing aspiration pneumonia, bleeding perforation and cardiopulmonary problems [15 - 17]. Upper gastrointestinal endoscopy is performed to investigate symptoms such as weight loss, hematemesis, melaena, dyspepsia, heartburn, dysphagia, abdominal pain, or in the workup of patients with anemia. It is also done in asymptomatic patients as screening for neoplasia [10]. Upper GI endoscopy along with biopsy plays an critical role in the early diagnosis of GI neoplasms and gives an opportunity for a broad range of treatment options with a potential for possible cure. Knowledge of the gross appearance of lesions is mandatory to interdict biopsy decisions. Multiple biopsies of these lesions may be necessary to allow the pathologist to interpret the biopsy specimen, especially if a neoplasm may exist [18]. The other indications for upper GI tract endoscopic biopsy include evaluation of dyspepsia, odynophagia, GERD, Barrett's oesophagus, dysplasia, peptic ulcer disease and its complications, and oesophageal carcinoma [11]. Gastric mucosal lesions especially atrophy, intestinal metaplasia and dysplasia can be detected at an early stage by endoscopic screening so as to prevent progression of lesions to invasive cancer. The ideal number of biopsies to be taken will vary with the disease present [19]. Biopsy and histological examination provide an adjunct endoscopic assessment of the gastrointestinal tract and, in diseases such as cancer, coeliac disease and chronic inflammatory bowel disease. Histopathological diagnosis remains the gold standard. Histological assessment of biopsy material is a major part of the workload of a histopathology laboratory.

2. Methods

This prospective cross - sectional study was carried out in the Department of Pathology of a tertiary health center and a teaching institute. The study period was 15 months (July 2021 - September 2022). Upper gastrointestinal tract endoscopic biopsy of 600 consecutive specimens received in the department of pathology were included in the study. Endoscopies were performed using double channel FUJIFILM ELUXEO EI – 740D/S attached to SONY Television screen (monitor) and biopsies were taken with double bite biopsy forceps. All the biopsy samples were fixed in 10% buffered formalin, followed by conventional tissue processing, cut at 5 micron thick sections and stained with hematoxylin and eosin. Periodic Acid Schiff (PAS) stain and

Acid - Fast stains were performed wherever necessary. May Grunwald giemsa stain was used for H. Pylori.

3. Results

Site wise distribution of upper GI endoscopic biopsy show that out of total 600 samples were studied, highest number of biopsies were from gastric region (57.33%) followed by oesophagus (22.33%), duodenum (14.16%) and GEJ (6.16%).

Table 1: Site wise distribution of upper GI endoscopic biopsy

Site	Number	Percentage
Oesophagus	134	22.33
GEJ	37	6.16
Gastric	344	57.33
Duodenum	85	14.16
Total	**600**	**100**

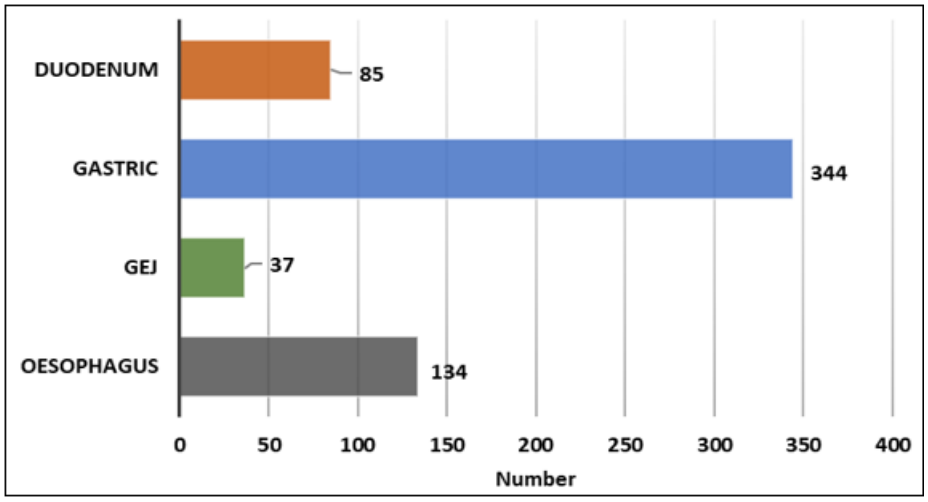


Figure 1: Site wise distribution of upper GI endoscopic biopsy

Distribution of upper GI endoscopic biopsy according to age and gender show that there were 393 male patients and 207 female patients making the male: female ratio of 1.89: 1. The highest number of biopsies were done in patients between 51 - 60 years of age group followed by 61 - 70 years and 41 - 50 years.

Table 2: Distribution of upper GI endoscopic biopsy according to age and gender

Age in years	Male N (%)	Female N (%)	Total N (%)
18 - 30	53 (13.48)	19 (9.17)	72 (12)
31 - 40	62 (15.77)	36 (17.39)	98 (16.33)
41 - 50	87 (22.13)	34 (16.42)	121 (20.16)
51 - 60	93 (23.66)	47 (22.70)	140 (23.33)
61 - 70	74 (18.82)	54 (26.08)	128 (21.33)
71 - 80	24 (6.10)	13 (6.28)	37 (6.16)
Total	**393 (100)**	**207 (100)**	**600 (100)**

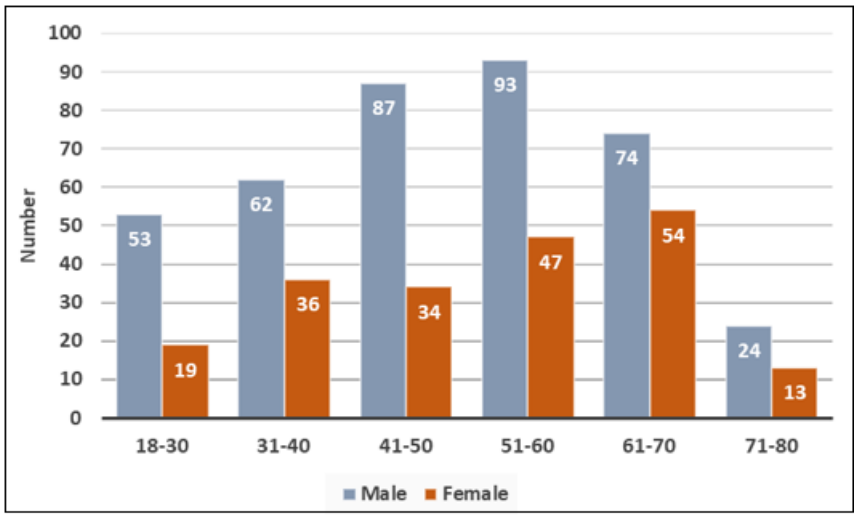


Figure 2: Distribution of upper GI endoscopic biopsy according to age and gender

Distribution of study subjects according to presenting clinical complaints show that majority of the patients complained of dyspepsia 468 (78%) whereas 403 (67.16%) had pain in abdomen, 154 (25.66%) had loss of weight, 106 (17.66%) had vomiting, 89 (14.83%) had dysphagia, 72 (12%) had loss of appetite, 21 (3.50%) had hematemesis, 16 (2.66%) had anemia, 5 (0.83%) had jaundice.

Table 3: Distribution of study subjects according to presenting clinical complaints

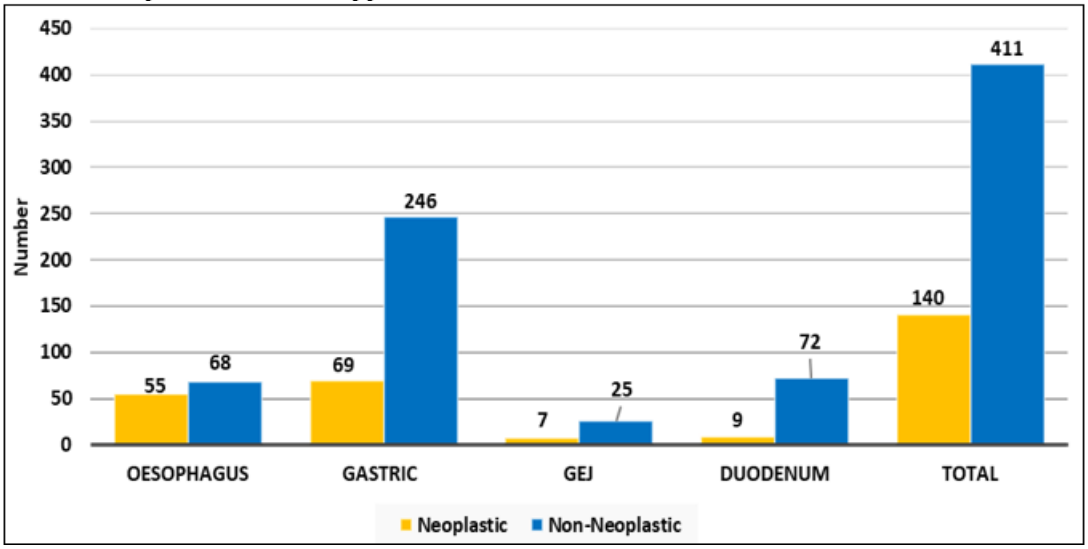
Clinical complaints	Number	Percentage
Dyspepsia	468	78.00
Pain in abdomen	403	67.16
Loss of weight	154	25.66
Vomiting	106	17.66
Dysphagia	89	14.83
Loss of appetite	72	12.00
Hematemasis	21	3.50
Anaemia	16	2.66
Jaundice	5	0.83

According to histopathological diagnosis, 140 (25.40%) were neoplastic and 411 (74.60%) were non neoplastic. Among oesophageal samples, 44.71% were neoplastic and 55.28% were non neoplastic. Among gastric samples, 21.90% were neoplastic and 78.09% were non neoplastic. Among GEJ samples 21.87% were neoplastic and 78.12% were non neoplastic. Among duodenal samples 11.11% were neoplastic and 88.89% were non neoplastic.

Table 4: Neoplastic and non neoplastic lesions in upper GI tract

	Oesophagus N (%)	Gastric N (%)	GEJ N (%)	Duodenum N (%)	Total N (%)
Neoplastic	55 (44.71)	69 (21.90)	7 (21.87)	9 (11.11)	140 (25.40)
Non - Neoplastic	68 (55.28)	246 (78.09)	25 (78.12)	72 (88.89)	411 (74.60)
Total	**123 (100)**	**315 (100)**	**29 (100)**	**81 (100)**	**551 (100)**

Neoplastic and non- neoplastic lesions in upper GI tract

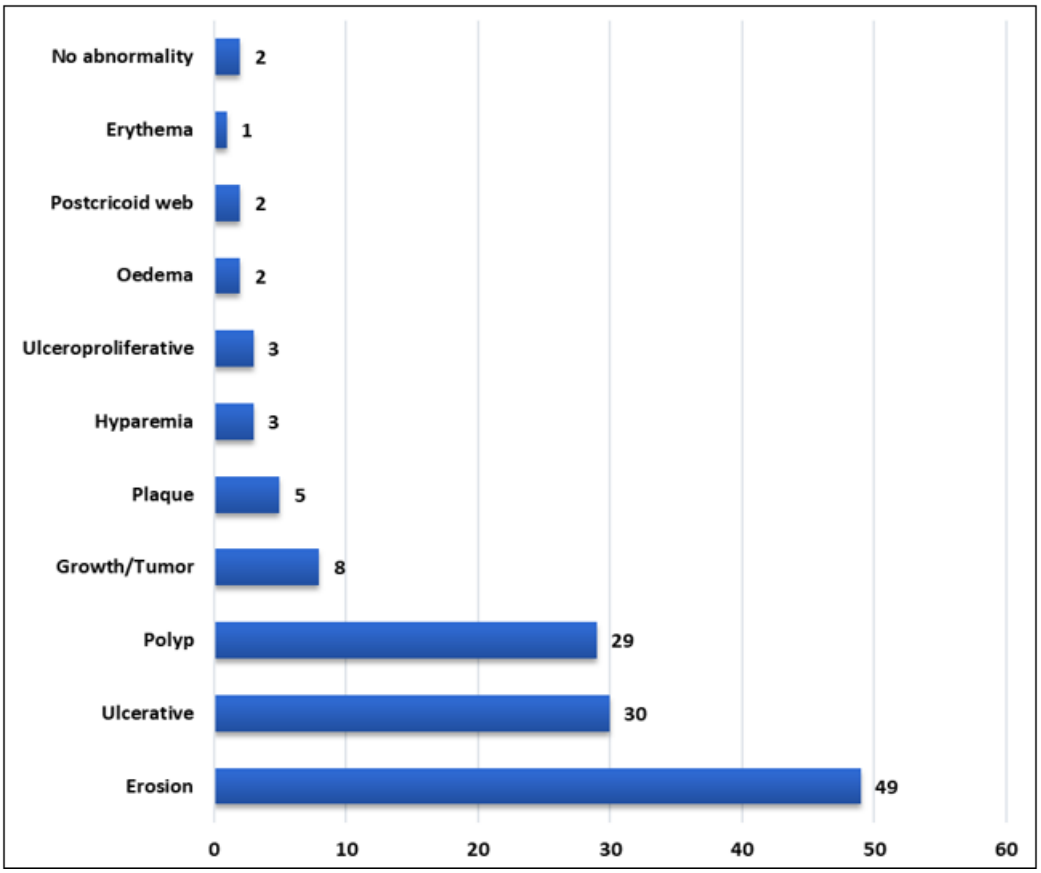


Endoscopic findings of oesophageal lesions show that majority 49 (36.56%) of the lesions were erosions, followed by ulcers in 30 (22.38%) and polyp in 29 (21.64%) of the samples. Incidence of other lesions was less which included growth in 8 (5.97%), plaque in 5 (3.73%), hyperemia and ulceroproliferative lesion in 3 (3.23%), oedema and postcricoid web in 2 (1.49%) and erythema in 1 (0.75%).2 (1.49%) samples show no abnormality on endoscopy.

Table 5: Endoscopic findings of oesophageal lesions

Endoscopic findings of oesophageal lesions	Number	Percentage
Erosion	49	36.56
Ulcerative	30	22.38
Polyp	29	21.64
Growth/Tumor	8	5.97
Plaque	5	3.73
Hyparemia	3	2.23
Ulceroproliferative	3	2.23
Oedema	2	1.14
Postcricoid web	2	1.49
Erythema	1	0.75
No abnormality	2	1.49

Endoscopic findings of oesophageal lesions

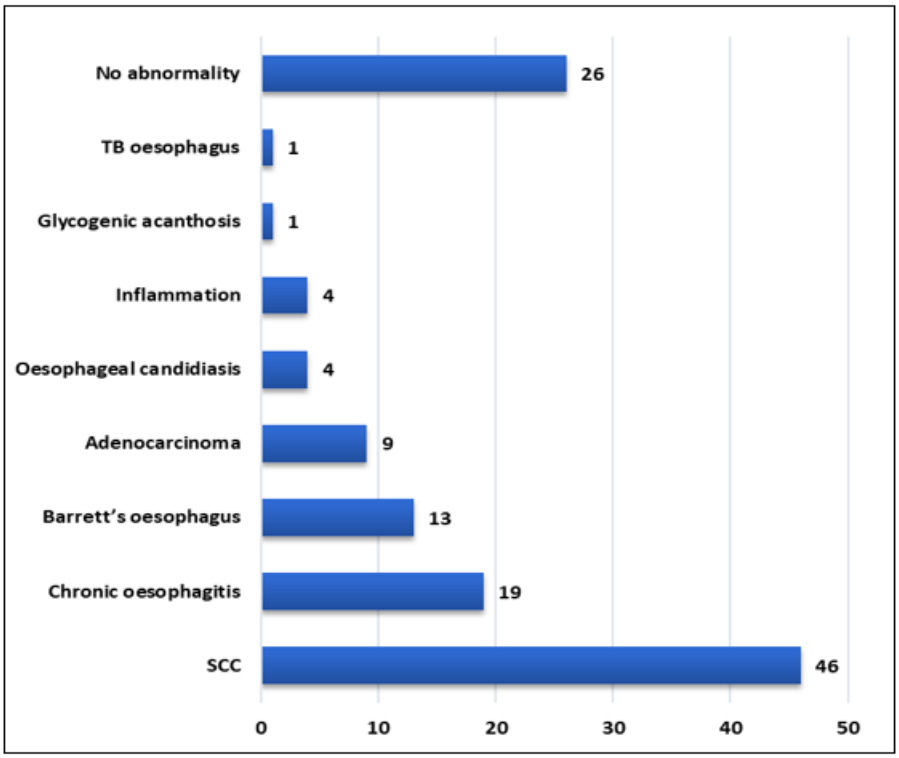


Histopathological diagnosis of oesophageal lesions revealed that out of 134 samples majority 46 (34.32%) were diagnosed as squamous cell carcinoma, followed by chronic oesophagitis in 19 (14.47%) and barrett's oesophagus in 13 (9.70%) of the samples. Others lesions were diagnosed as adenocarcinoma in 9 (6.71%), oesophageal candidiasis in 4 (2.98%), inflammation in 4 (2.98%), glycogenic acanthosis in 1 (0.70%), TB oesophagus in1 (0.70%).26 (19.40%) of the samples shows do not show any abnormality whereas 11 (8.20%) samples found to be inadequate.

Table 6: Histopathological diagnosis of Oesophageal lesions

Histopathological diagnosis of oesophageal lesions	Number	Percentage
SCC	46	34.32
Chronic oesophagitis	19	14.47
Barrett's oesophagus	13	9.70
Adenocarcinoma	9	6.71
Oesophageal candidiasis	4	2.98
Inflammation	4	2.98
Glycogenic acanthosis	1	0.74
TB oesophagus	1	0.74
No abnormality	26	19.40

Histopathological diagnosis of Oesophageal lesions



Out of 46 cases of squamous cell carcinoma 36 were males and 10 were females representing male predominance and majority were from 51 - 70 years of age group. Out of 19 cases of chronic oesophagitis 17 were males and only 2 were females representing male predominance and majority were from 18 - 30 years of age group.

Table 7: Age wise distribution of oesophageal lesions

Age in years	SCC	Chronic oesophagitis	Barrett's oesophagitis	Adenocarcinoma	Oesophageal candidiasis	Inflammation	Glycogenic acanthosis	TB oesophagus
18 - 30	1	8	0	2	3	2	0	0
31 - 40	4	2	2	2	0	1	0	1
41 - 50	8	4	2	0	1	1	1	0
51 - 60	13	1	2	2	0	0	0	0
61 - 70	13	3	6	3	0	0	0	0
71 - 80	7	1	1	0	0	0	0	0
Total	46	19	13	9	4	4	1	1

Table 8: Gender wise distribution of oesophageal lesions

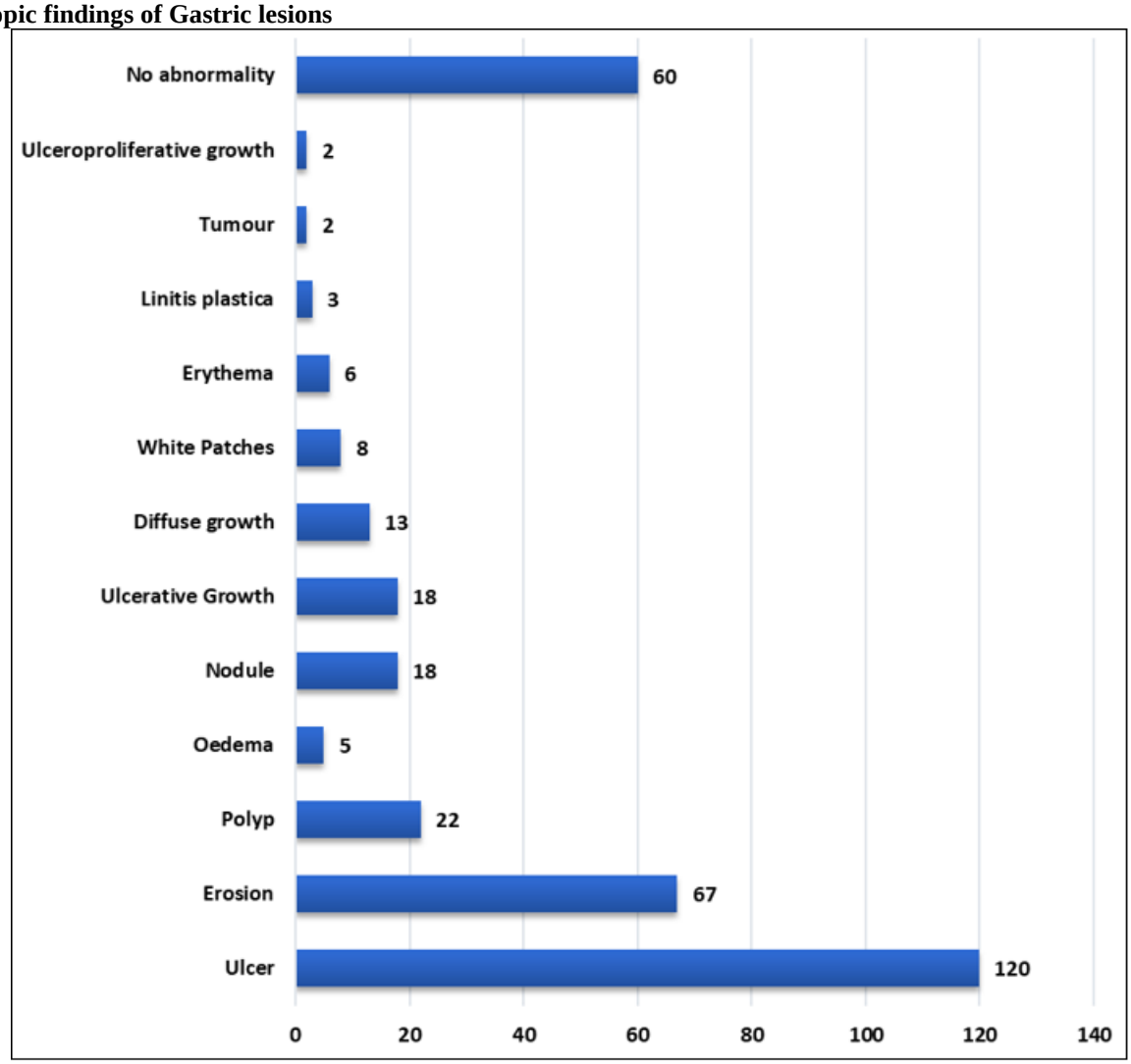
Gender	SCC	Chronic oesophagitis	Barrett's Oesophagus	Adenocarcinoma	Oesophageal candidiasis	Inflammation	Glycogenic acanthosis	TB oesophagus
M	36	17	4	2	1	4	1	0
F	10	2	9	7	3	0	0	1
Total	46	19	13	9	4	4	1	1

Endoscopic findings of gastric lesions show that majority 120 (34.88%) of the lesions were ulcers, followed by erosion in 67 (19.47%), polyp in 29 (6.39%), nodule in 18 (5.23%), ulcerative growth in 18 (5.23%) and diffuse growth in 13 (3.77%). Incidence of other lesions was less which included white patches in 8 (2.32%), oedema in 5 (1.45%), erythema in 6 (1.74%), linitis plastica in 3 (0.87%), tumor in 2 (0.59%), ulceroproliferative growth.60 (17.44 %) samples show no abnormality on endoscopy.

Table 9: Endoscopic findings of Gastric lesions

Endoscopic findings of Gastric lesions	Number	Percentage
Ulcer	120	34.88
Erosion	67	19.47
Polyp	22	6.39
Nodule	18	5.23
Ulcerative Growth	18	5.23
Diffuse growth	13	3.77
White Patches	8	2.32
Oedema	5	1.45
Erythema	6	1.74
Linitis plastica	3	0.87
Tumour	2	0.59
Ulceroproliferative growth	2	0.59
No abnormality	60	17.44

Endoscopic findings of Gastric lesions



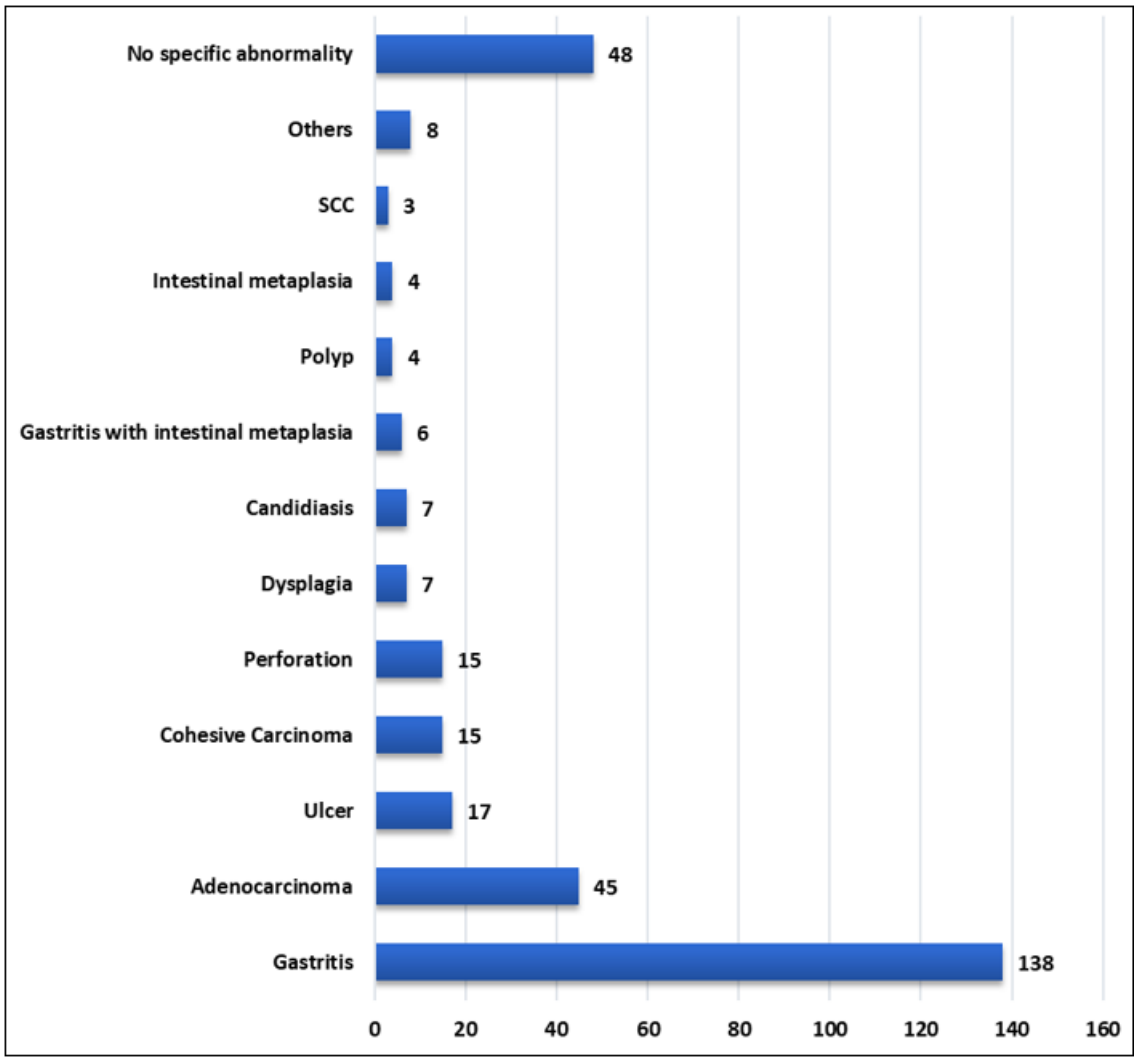
Histopathological diagnosis of Gastric lesions revealed that out of 344 samples majority 138 (40.11%) were diagnosed as gastritis, followed by adenocarcinoma in 45 (13.08%), ulcer in 17 (4.94%), cohesive carcinoma in 15 (4.96%) and perforation in 15 (4.96%) of the samples. Others lesions were diagnosed as dysplasia in 7 (2.03%), candidiasis in 7 (2.03%), gastritis with intestinal metaplasia in 6 (1.74%), polyp in 4 (1.16%), SCC in 3 (0.87%) and others.48 (13.95%) of the samples shows do not show any abnormality whereas 12 (3.48%) samples found to be inadequate and 15 (4.36%) needed to correlate clinically.

Table 10: Histopathological findings of Gastric lesions

Histopathological findings of Gastric lesions	Number	Percentage
Gastritis	138	40.11
Adenocarcinoma	45	13.08
Ulcer	17	4.94
Cohesive Carcinoma	15	4.36
Perforation	15	4.36
Dysplasia	7	2.03
Candidiasis	7	2.03
Gastritis with intestinal metaplasia	6	1.74
Polyp	4	1.16
Intestinal metaplasia	4	1.16
SCC	3	0.87
Others *	8	2.32
No specific abnormality	48	13.95

*Others include - TB, MALT lymphoma, Brunner's gland hematoma

Histopathological findings of Gastric lesions



Out of 138 cases of gastritis 77 were males and 61 were females showed male predominance and majority were from 41 - 60 years of age group. Out of 45 cases of adenocarcinoma 29 were males and 16 were females showed male predominance and majority were from 51 - 70 years of age group.

Table 11: Age wise distribution of Gastric lesions

Age in years	Gastritis	Adenocarcinoma	Ulcer	Cohesive Carcinoma	Perforation	Dysplasia	Candidiasis	Gastritis with intestinal metaplasia	Intestinal metaplasia	Polyp	SCC	Others
18- 30	16	0	1	0	3	0	0	0	0	1	0	0
31- 40	27	3	6	2	4	3	0	1	0	0	0	0
41- 50	37	7	4	0	3	2	1	1	0	2	1	2
51- 60	29	14	5	2	0	2	0	2	1	0	1	3
61- 70	21	18	1	11	3	0	2	2	3	1	1	3
71- 80	8	3	0	0	2	0	4	0	0	0	0	0
Total	138	45	17	15	15	7	7	6	4	4	3	8

Table 12: Gender wise distribution of Gastric lesions

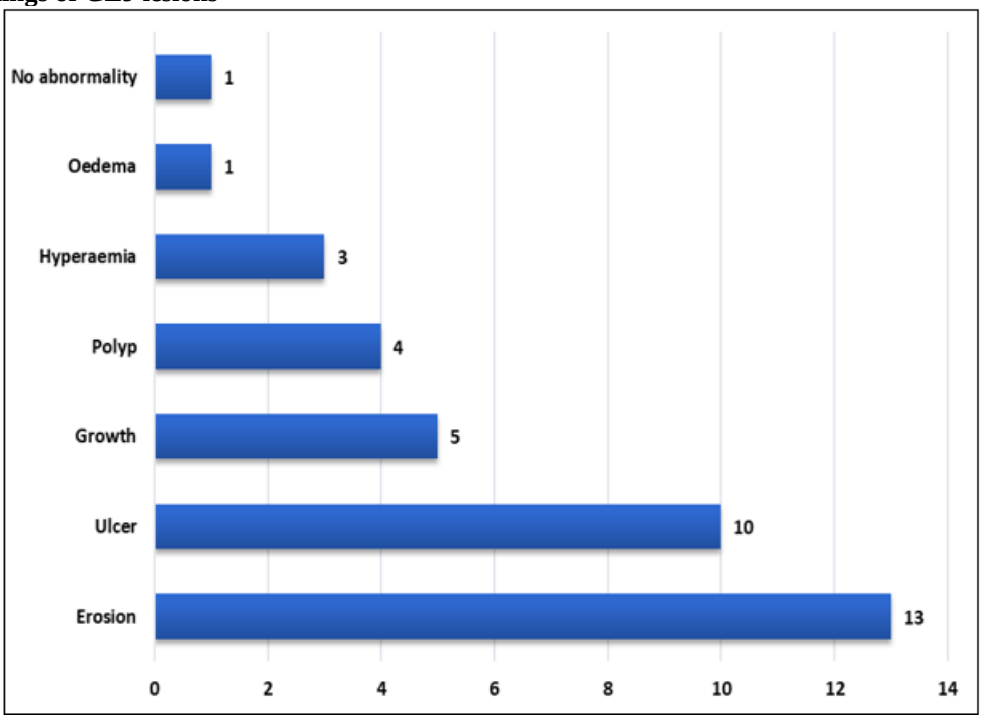
Gender	Gastritis	Adenocarcinoma	Ulcer	Cohesive Carcinoma	Perforation	Dysplasia	Candidiasis	Gastritis with intestinal metaplasia	Intestinal metaplasia	Polyp	SCC	Others
M	77	29	14	11	13	6	1	4	2	3	2	3
F	61	16	3	4	2	1	6	2	2	1	1	5
Total	138	45	17	15	15	7	7	6	4	4	3	8

Endoscopic findings of GEJ lesions show that majority 13 (35.13%) of the lesions were erosions, followed by ulcer 10 (27.02%). Incidence of other lesions was less which included growth in 5 (13.51%), polyp in 4 (10.81%), hyperemia in 3 (8.11%) and oedema in 1 (2.70%), only 1 sample show no abnormality on endoscopy.

Table 13: Endoscopic findings of GEJ lesions

Endoscopic findings of GEJ lesions	Number	Percentage
Erosion	13	35.13
Ulcer	10	27.02
Growth	5	13.51
Polyp	4	10.81
Hyperaemia	3	8.11
Oedema	1	2.70
No abnormality	1	2.70

Endoscopic findings of GEJ lesions

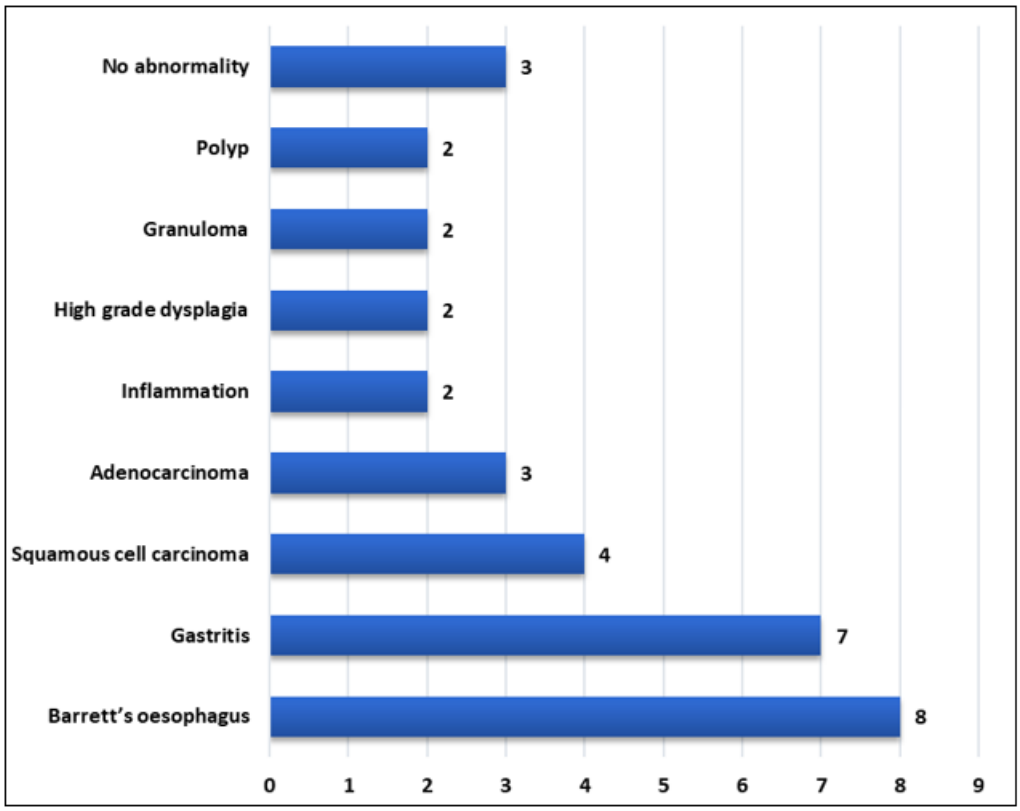


Histopathological diagnosis of GEJ lesions revealed that out of 37 samples majority 8 (21.62%) were barrett's oesophagus followed by gastritis in 7 (18.91%), squamous cell carcinoma in 4 (10.81%), adenocarcinoma in 3 (8.11%), inflammation in 2 (5.41%), high grade dysplagia in 2 (5.41%), granuloma in 2 (5.41%) and polyp in 2 (5.41%) of the samples.3 (8.11%) of the samples shows do not show any abnormality whereas 4 samples found to be inadequate.

Table 14: Histopathological diagnosis of GEJ lesions

Histopathological diagnosis of GEJ lesions	Number	Percentage
Barrett's oesophagus	8	21.62
Gastritis	7	18.91
Squamous cell carcinoma	4	10.81
Adenocarcinoma	3	8.11
Inflammation	2	5.41
High grade dysplasia	2	5.41
Granuloma	2	5.41
Polyp	2	5.41
No abnormality	3	8.11

Histopathological diagnosis of GEJ lesions



Age wise distribution of GEJ lesions show that Out of 8 cases of Barrett's oesophagus 5 were 51 - 60 years of age group. Among 8 cases of Barrett's oesophagus 7 were males and 1 was female.

Table 15: Age wise distribution of GEJ lesions

Age in years	Barrett's oesophagus	Gastritis	Squamous Cell carcinoma	Adenocarcinoma	Inflammation	High Grade Dysplagia	Granuloma	Polyp
18 - 30	0	0	0	0	2	0	0	0
31 - 40	1	0	0	1	0	0	0	0
41 - 50	1	1	0	1	0	0	0	0
51 - 60	5	1	0	0	0	1	1	1
61 - 70	1	3	2	0	0	1	1	1
71 - 80	0	2	2	1	0	0	0	0
Total	8	7	4	3	2	2	2	2

Table 16: Gender wise distribution of GEJ lesions

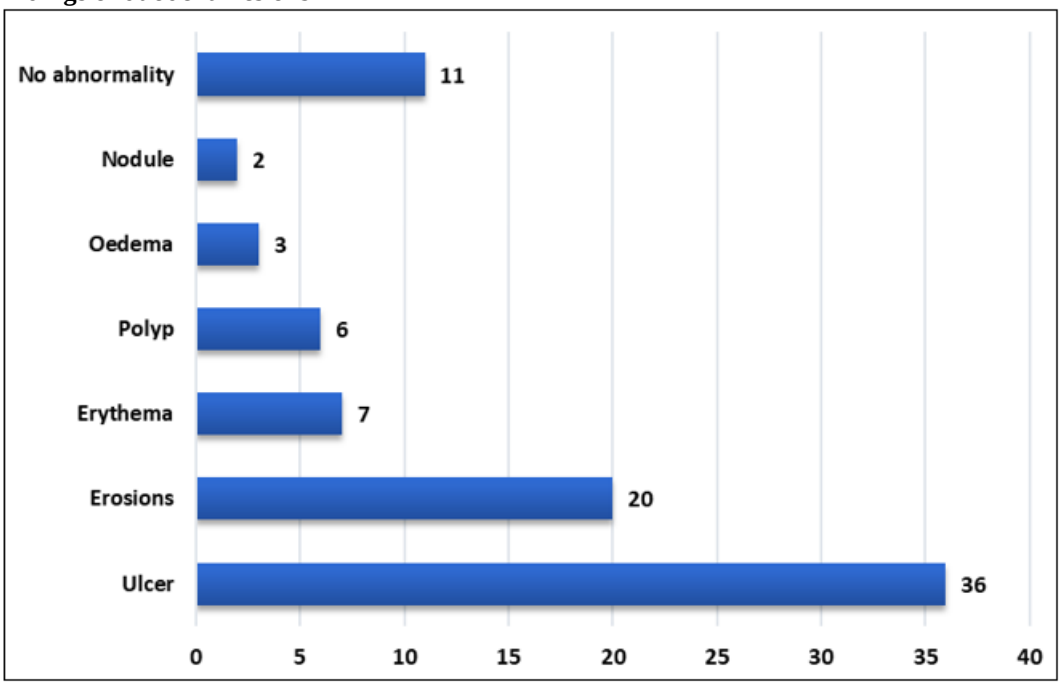
Gender	Barrett's oesophagus	Gastritis	Squamous Cell carcinoma	Adenocarcinoma	Inflammation	High Grade Dysplagia	Granuloma	Polyp
M	7	4	3	3	2	2	0	2
F	1	3	1	0	0	0	2	0
Total	8	7	4	3	2	2	2	2

Endoscopic findings of duodenal lesions show that majority 36 (42.35%) of the lesions were ulcers, followed by erosions in 20 (23.52%) of the samples. Incidence of other lesions was less which included erythema in 7 (8.23%), polyp in 6 (7.05%), oedema in 3 (3.52%) and nodule in 2 (2.35%).11 (12.94%) samples show no abnormality on endoscopy.

Table 17: Endoscopic findings of duodenal lesions

Endoscopic findings of duodenal lesions	Number	Percentage
Ulcer	36	42.35
Erosions	20	23.52
Erythema	7	8.23
Polyp	6	7.05
Oedema	3	3.52
Nodule	2	2.35
No abnormality	11	12.94

Endoscopic findings of duodenal lesions

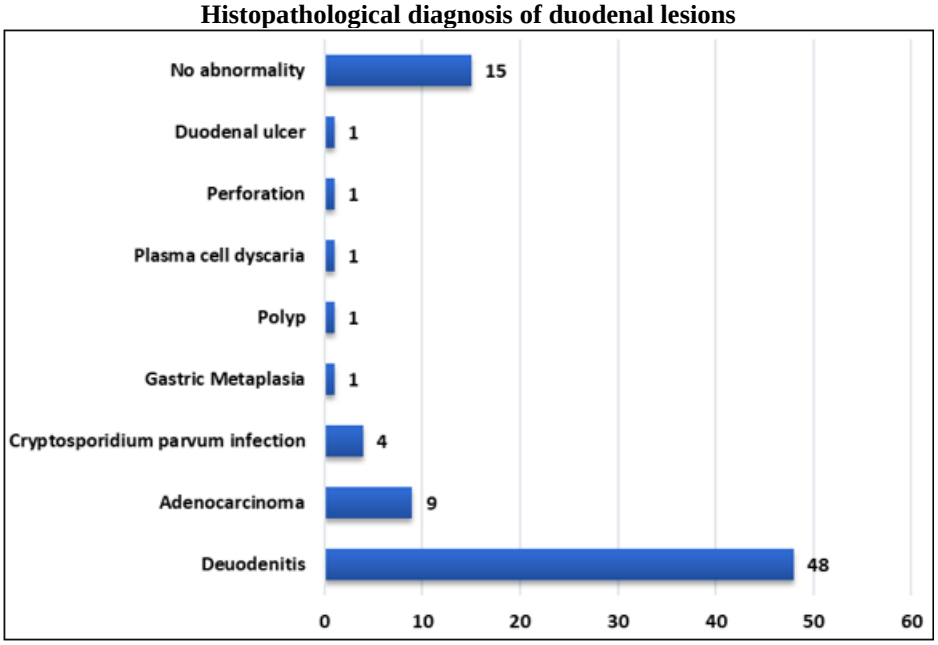


Histopathological diagnosis of duodenal lesions revealed that out of 85 samples majority 48 (46. %) were diagnosed as duodenitis, followed by adenocarcinoma in 9 (10.58%), cryptosporidium parvum infection in 4 (4.70%).1 case each of gastric metaplasia, plasma cell dyscaria, perforation and duodenal ulcer was also diagnosed.15 (12.94%) of the samples shows do not show any abnormality whereas 4 samples needed to correlate clinically.

Table 18: Histopathological diagnosis of duodenal lesions

Histopathological diagnosis of duodenal lesions	Number	Percentage
Duodenitis	48	56.47
Adenocarcinoma	9	10.58
Cryptosporidium parvum infection	4	4.70
Gastric Metaplasia	1	1.17
Polyp	1	1.17
Plasma cell dyscaria	1	1.17
Perforation	1	1.17
Duodenal ulcer	1	1.17
No abnormality	15	12.94

Histopathological diagnosis of duodenal lesions



Out of 48 cases of duodenitis 31 were males and 17 were females showed male predominance and majority were from 51 - 60 years of age group. Out of 9 cases of adenocarcinoma 7 were males and 2 were females showed male predominance and majority were from 61 - 70 years of age group.

Table 19: Age wise distribution of duodenal lesions

Age in years	Duodenitis	Adenocarcinoma	Cryptosporidium parvum Infection	Plasama Cell dyscaria	Polyp	Gastric Metaplasia	Perforation	Duodenal ulcer
18 - 30	8	2	0	0	0	1	1	0
31 - 40	2	0	0	0	0	0	0	1
41 - 50	12	1	1	0	0	0	0	0
51 - 60	21	1	1	0	1	0	0	0
61 - 70	5	5	1	1	0	0	0	0
71 - 80	0	0	1	0	0	0	0	0
Total	48	9	4	1	1	1	1	1

Table 18: Gender wise distribution of duodenal lesions

Gender	Duodenitis	Adenocarcinoma	Cryptosporidium parvum Infection	Plasama Cell dyscaria	Polyp	Gastric Metaplasia	Perforation	Duodenal ulcer
M	31	7	3	1	1	1	1	1
F	17	2	1	0	0	0	0	0
Total	**48**	**9**	**4**	**1**	**1**	**1**	**1**	**1**

4. Discussion

In the present study highest biopsies were from gastric region (57.33%) followed by oesophagus (22.33%), duodenum (14.16%) and GEJ (6.16%) which is similar to other studies

Table 21: Site wise distribution of upper GI endoscopic biopsy: Comparison with various studies

	Oesophagus	GEJ	Gastric	Duodenum
Jaynul Islam SM et al [12]	20%	-	66.36%	13.64%
Sandhya PG et al [13]	6.25%	-	84.85%	5.26%
Krishnappa R et al [4]	25%	-	68%	7%
Bhat N et al [1]	24%	11%	55%	10%
Present study	22.33%	6.16%	57.33%	14.16%

In the present study highest number of biopsies were from 51 - 70 years of age which is similar to studies done by Bhat N et al [1]and Qureshi et al [2]. Present study shows trends similar to other reported studies with male predominance.

Table 22: Age and gender distribution of upper GI endoscopic biopsy: Comparison with various studies

	Bhat N et Al [1]	Qureshi et Al [2]	Present study
Peak age group	61 - 80	50 - 60	51 - 70
Male: Female	1.5: 1	1.04: 1	1.9: 1

In the present study most common presenting complaint was dyspepsia followed by pain in abdomen, loss of weight, vomiting and dysphagia. In a study done by Shanmugasamy K et al [3] and Gumber R et al [5], dyspepsia and dysphagia were the most common.

Table 23: Presenting complaints in study subjects: Comparison with various studies

	Common Presenting complaints
Shanmugasamy K et al [3]	Dyspepsia - 39%, Pain in abdomen - 19%, Vomiting - 5.5%, Dysphagia - 31%
Gumber R et al [5]	Dysphagia - 28.3%, Dyspepsia - 21.4%, Pain in abdomen -
	12.6%, jaundice - 8.6 %,
Present study	Dyspepsia - 78%, Pain in abdomen - 67.16%, Loss of weight - 25.66%, Vomiting - 17.66%, Dysphagia - 14.83%

In the present study 74.60% of the lesions were non neoplastic and 25.40% of the lesions were neoplastic. Similar results were found in study done by Shanmugasamy K et al [3], whereas higher proportion of neoplastic lesions found in study by Bhat N et al [1] and Krishnappa R et al [4].

Table 24: Neoplastic and non - neoplastic lesions of Upper GI tract: Comparison with various studies. (Table 24)

	Neoplastic	Non - neoplastic
Krishnappa R et al [4]	44%	56%
Shanmugasamy K et al [3]	21%	79%
Bhat N et al [1]	46.50%	53.50%
Present study	25.40%	74.60%

Among oesophageal samples, 44.71% were neoplastic and 55.28% were non neoplastic. Among gastric samples, 21.90% were neoplastic and 78.09% were non neoplastic. Among GEJ samples 21.87% were neoplastic and 78.12% were non neoplastic. Among duodenal samples 25.40% were neoplastic and 74.60% were non neoplastic. Similar results were found in study done by Gumber R et al [5]. The study highlighted the need for more research in site wise distribution of neoplastic and non neoplastic lesion in the the upper gastrointestinal tract.

Table 25: Neoplastic and non - neoplastic lesions of various sites in Upper GI tract: Comparison with various studies

	Oesophagus	GEJ	Gastric	Duodenum
Gumber R et al [5]				
Neoplastic	68.9%	-	29.1%	22.2%
Non neoplastic	31.1%	-	70.9%	77.8%
Present study				
Neoplastic	**44.71%**	**21.90%**	**21.87%**	**25.40%**
Non neoplastic	**55.28%**	**78.09%**	**78.21%**	**74.60%**

In the present study the majority of the oesophageal lesions diagnosed were SCC (34.32%). In the studies done by Bhat N et al [1], Shanmugasamy K et al [3] and Somani N. S. et al [6], SCC was most common among all the oesophageal lesions similar to present study. Esophageal squamous cell carcinoma incidence varies upto 180 fold between and within countries, being more common in rural and low income populations. In the present study, Barrett's oesophagus constituted 9.70% which was significant finding. In studies done by Bhat N et al [1] and Somani N. S et al [6] it was observed in much less percentage. One case was also seen of gkycogenic acanthosis which was not seen in other previous studies which can be

alarming towards the increasing metabolic diseases and insulin resistance with lifestyle changes.

Table 26: Histopathological diagnosis of oesophageal lesion: Comparison with various studies (Table 26)

	Bhat N et al [1]	Shanmugasamy K et al [3]	Somani N. S et al [6]	Present study
SCC	72.91%	36.5%	48.17%	34.32%
Chronic oesophagitis	6.25%	27.5%	17.94%	14.47%
Barrett's oesophagus	4.16%	-	2.56%	9.70%
Adenocarcinoma	-	9%	10.25%	6.71%
Oesophageal candidiasis	-	18%	2.56%	2.98%
Inflammation	-	-	-	2.98%
Glycogenic acanthosis	-	-	-	0.74%
TB oesophagus	-	-	-	0.74%

In the present study the majority of gastric lesion were gastritis (40.11%). In studies done by Bhat N et al [1], Shanmugasamy K et al [3] and Somani N. S et al [6], gastritis was the most common lesion. The study also showed 3 cases of squamous cell carcinoma of stomach which is rare. It may be associated with with chronic irritation or pre - existing conditions like chronic gastritis. Thus, the increased incidence of gastritis can be correlated with the findings of squamous cell carcinoma of stomach. Also our study highlighted the increasing incidence of gastritis in females comprising 61 cases out of the total 137 cases of gastritis.

Table 27: Histopathological diagnosis of Gastric lesion: Comparison with various studies

	Bhat N et al [1]	Shanmugasamy K et al [3]	Somani N. S et al [6]	Present study
Gastritis	44%	67.50%	45.45%	40.11%
Adenocarcinoma	25.45%	16%	29.09%	13.08%
Ulcer	3.63%	9%	5.45%	4.94%
Cohesive Carcinoma	-	-	7.27%	4.36%
Perforation	-	-	-	4.36%
Dysphagia	-	-	7.27%	2.03%
Candidiasis	-		1.81%	2.03%
Gastritis with intestinal metaplasia	-	2.50%	-	1.74%
Polyp	-	2.50%	1.81%	1.16%
Intestinal metaplasia	-	-	-	1.16%
SCC	-	-	-	0.87%
Others	-	2.50	-	2.32%

In the present study a total of 37 cases of GEJ biopsy were studied. The most common GEJ lesion found was Barretts's oesophagus (21.62%), In a study done by Bhat N et al [1], adenocarcinoma was the most common lesion and in the study done by Shanmugasamy K et al [3], gastritis was the most common among all the GEJ lesions. The greatest clinical concern is that it confers an increased risk of esophageal adenocarcinoma. As Tuberculosis is a major concern in our country, all the biopsies should be thoroughly screened for any granulomas, which was highlighted in our study.

Table 28: Histopathological diagnosis of GEJ lesion: Comparison with various studies

	Bhat N et al [1]	Shanmugasamy K et al [3]	Present study
Barrett's oesophagus	13.63%	-	21.62%
Gastritis	-	80%	18.91%
Squamous cell carcinoma	-	-	10.81%
Adenocarcinoma	59.09%	20%	8.11%
Inflammation	-	-	5.41%
High grade dysplagia	4.54%	-	5.41%
Granuloma	-	-	5.41%
Polyp	18.18%	-	5.41%

In the present study the most common duodenal lesion found was duodenitis (56.47%). In studies done by Bhat N et al [1], Ganga H et al [7] duodenitis was the most common among all the duodenal lesions like in the present study. This may be due to the fact that duodenum has a rich rapidly regenerating epithelial lining which can be easily affected by any inflammatory insult. [20, 21] Also cryptosporidium parvum infection (4.70%) and plasma cell dyscrasia (1.17%) was seen, which was not observed in previous studies.

Cryptosporidium parvum infection is a water borne opportunistic infection that affects patients with immunosuppresion. The infection is more common in terminal ileum but here we can see it in duodenum also.

Plasma cell dyscrasias are a heterogenous group of diseases characterized by the expansion of the number of monoclonal bone marrow plasma cells. Gastrointestinal involvement is a rare occurrence seen.

Table 29: Histopathological diagnosis of duodenal lesion: Comparison with various studies

	Bhat N et al [1]	Ganga H et al [7]	Present study
Duodenitis	30%	52.9%	56.47%
Adenocarcinoma	10%	-	10.58%
Cryptosporidium parvum infection	-	-	4.70%
Gastric Metaplasia	-	8.8%	1.17%
Polyp	-	11.7%	1.17%
Plasma cell dyscrasia	-	-	1.17%
Perforation	-	-	1.17%
Duodenal ulcer	10%	-	1.17%

The study highlighted following

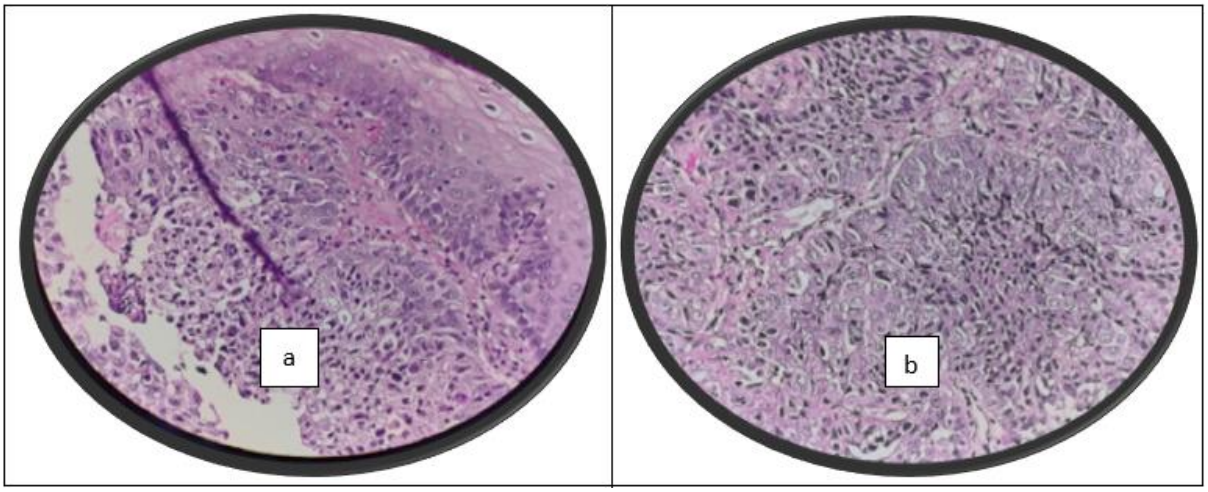


Figure (a, b): Oesophageal biopsy – Squamous cell carcinoma

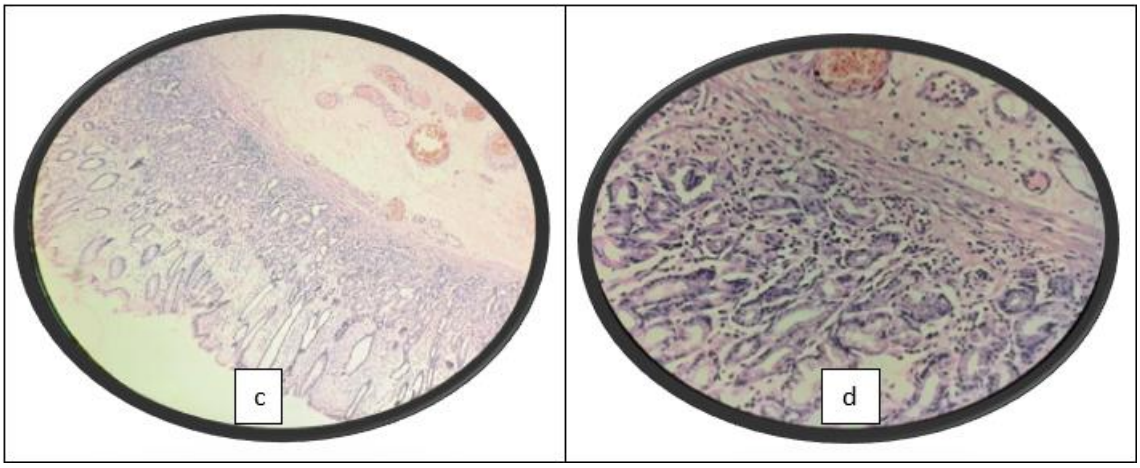


Figure (c, d): Gastric Biopsy – chronic non - specific gastritis

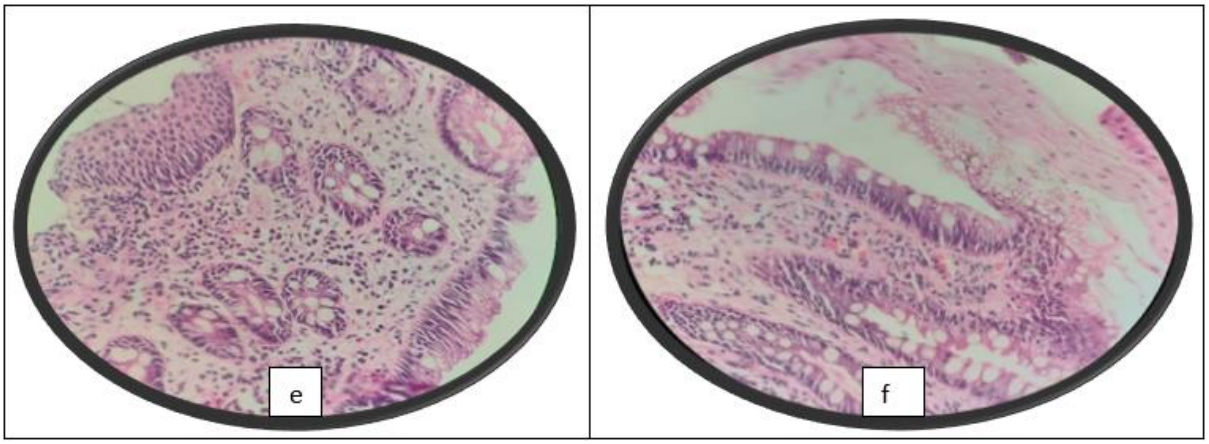


Figure (e, f): GEJ biopsy – Barrett's oesopahgus

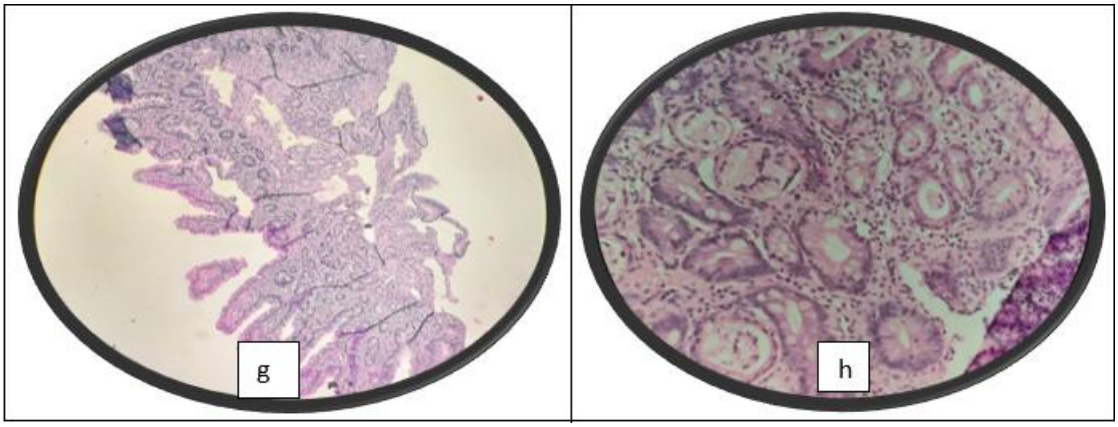


Figure (g, h): Duodenal biopsy – Chronic duodenitis

5. Conclusions

Upper GI endoscopy is relatively less invasive simple, safe and well tolerated procedure, cost effective and provides good diagnostic yield in confirming various upper GI lesions. In routine clinical practice, histology is the "gold standard" for the definitive diagnosis of various lesions. Biopsy provides an excellent opportunity for the clinician and histopathologist to correlate the clinical data, endoscopic findings and pathological lesions. The salient features of this study were –

1) The study highlighted the need for more research in site wise distribution of neoplastic and non neoplastic lesion in the the upper gastrointestinal tract.
2) One case was also seen of glycogenic acanthosis in the oesophagus which was not seen in other previous studies which can be alarming towards the increasing metabolic diseases and insulin resistance with lifestyle changes.
3) The study highlighted the increasing incidence of gastritis in females comprising 61 cases out of the total 137 cases of gastritis.
4) The study also showed 3 cases of squamous cell carcinoma of stomach which is rare. It may be associated with with chronic irritation or pre - existing conditions like chronic gastritis.
5) In the present study a total of 37 cases of GEJ biopsy were studied which lead to a comprehensive understanding of GE junction lesions.
6) Also cryptosporidium parvum infection (4.70%) and plasma cell dyscrasia (1.17%) were seen in the duodenum seen, which were not observed in previous studies, warranting for more research.

Thus, with environmental and lifestyle modifications and emergence of newer etiologoical factors, more investigative studies need to be done.

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