

## A Retrospective Analysis of Esophagogastroduodenoscopies: A Single Center Experience

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### Abstract

**Goals:** To present retrospective data on esophagogastroduodenoscopy (EGD) findings of patients who were admitted to a training and research hospital due to upper gastrointestinal system problems.

**Background:** EGD is an interventional method used for diagnosing diseases of the esophagus, stomach, and duodenum. EGD is essential in the diagnosis of various benign and malign upper gastrointestinal diseases, as well as for therapy or disease follow-up.

**Study:** This study evaluated retrospective data of 5014 patients with upper gastrointestinal problems who were admitted to General Surgery and Family Medicine Departments and Emergency Service of Taksim Training and Research Hospital and were referred for EGD in the Endoscopy Department between the years 2002 and 2009.

**Results:** Among 5014 patients, EGD could be performed in 4950 (2820 females) with a mean age of  $47.7 \pm 16.2$  years (range, 31.5-63.9 years). The number of patients undergoing EGD was higher in 2007 and 2008 than the other years. The most common diagnosis was gastric diseases (92.1%). Only 3.3% of all patients had normal EGD findings. Gastritis, hiatal insufficiency, and duodenitis were the most common diseases in the study population (84.3%, 24.4%, and 10.6% respectively). Esophageal, gastric, and duodenal diseases were most commonly observed in the years 2007 and 2008 in the whole study population.

**Conclusion:** Our study revealed that gastric diseases were the most commonly observed diseases in the patients undergoing EGD. Endoscopy is a safe and reliable procedure that is essential for the diagnosis, treatment and follow-up of upper gastrointestinal diseases.

**Keywords:** Esophagogastroduodenoscopy; Endoscopy; Gastritis; Duodenitis; Hiatal insufficiency

### Introduction

Gastrointestinal system (GIS) diseases are one of the most common healthcare issues worldwide [1-4]. Currently, endoscopy is most commonly used for visualization of the interior surfaces of the GIS [5]. The continuous development of gastrointestinal endoscopic devices in response to the requirement for more detailed images has recently resulted in the advancement of previous devices with limited capacity to flexible, physician friendly and computerized equipment [6].

Today, esophagogastroduodenoscopy (EGD) is the standardized endoscopic imaging method employed for diagnosis of the diseases of the esophagus, stomach, and duodenum in daily medical practice. In addition to its routine use for the diagnosis of various benign and malignant upper gastrointestinal diseases, GIS endoscopy in some special occasions may also be required for the treatment and follow-up of some certain diseases (Table 1).

Although upper GIS endoscopy is a useful tool for diagnosis, therapy, and follow-up, there are some limiting conditions for its use.

Besides, endoscopic interventions are also associated with some adverse effects, such as perforation, hemorrhage, cardiac arrhythmias, aspiration, and even Mallory-Weiss tears [7].

The use of sedatives and topical anesthetics may also lead to cardiac and respiratory complications as well as adverse drug interactions especially in patients with underlying cardiorespiratory diseases [8]. On the other hand, the safety of diagnostic EGD is much higher than that of therapeutic EGD, as the overall incidence of all complications in EGD is estimated as 0.1% [9,10].

The aim of the present study was to present retrospective data on EGD findings of patients who were admitted to a training and research hospital due to upper GIS problems.

### Materials and Methods

The present study analyzed the retrospective data from 2002 through 2009 of 5014 patients with upper gastrointestinal problems. The patients were admitted to the General Surgery and Family Medicine Departments and Emergency Service of Taksim Training and Research Hospital and were referred for EGD in the Endoscopy Department. The frequency and distribution of upper gastrointestinal

findings were evaluated. Written informed consents of the patients were obtained. Descriptive statistics were expressed as mean, standard deviation, minimum and maximum for numerical variables and as number and percentage for categorical variables, where appropriate.

Diagnostic indications	Therapeutic indications	Follow-up indications
Follow-up and therapy of dyspeptic disease	GIS bleeding secondary to/as a result of ulcer	Familial adenomatous polyposis syndromes
Anorexia	GIS bleeding secondary to cancer	Barrett's esophagus
Gastrointestinal symptoms in patients $\geq$ 45 years old	GIS bleeding secondary to vascular abnormalities	Premalignant conditions
Dysphagia/odynophagia	Gastrointestinal varices	
Esophageal reflux	Removal of polypoid lesions	
Idiopathic vomiting	Dilatations of lesions that cause stenosis	
	Neoplasms that lead to stenosis	

**Table 1:** Endoscopic applications in the upper gastrointestinal system. [GIS: Gastrointestinal system].

## Results

Among 5014 patients, EGD could be performed in 4950 with a mean age of  $47.7 \pm 16.2$  years (range, 31.5-63.9 years). Sixty-four patients were excluded from the study since EGD could not be performed due to various patient-related conditions. Of 4950 patients, 2130 were male with a mean age of  $48.8 \pm 16.62$  years and 2820 were female with a mean age of  $49.9 \pm 15.82$  years. Data revealed that the number of patients undergoing EGD was higher in 2007 and 2008 than the other years (Table 2).

Years	Gender n (%)		Total n (%)
	Female	Male	
2002	258 (65.2)	138 (34.8)	396 (8.0)
2003	224 (62.7)	133 (37.3)	357 (7.2)
2004	110 (57.3)	82 (42.7)	192 (3.9)
2005	32 (51.6)	30 (48.4)	62 (1.4)
2006	351 (53.1)	310 (46.9)	661 (13.4)
2007	958 (56.1)	750 (43.9)	1708 (34.5)
2008	883 (56.5)	679 (43.5)	1562 (31.6)
2009	4 (33.3)	8 (66.7)	12 (0.2)
Total	2820 (57.0)	2130 (43.0)	4950 (100.0)

**Table 2:** Distribution of patients according to years.

The most common diagnosis was gastric diseases, followed by esophageal diseases and duodenal diseases in the whole study population (Table 3). Only 3.3% of all patients had normal EGD findings (Table 4). The distribution of gastric, esophageal, and

EGD Findings	Gender n (%)		All patients n (%)	
	Female	Male	With gastric diseases n=4557	In the study n=4950
Gastritis	2415 (57.8)	1760 (42.2)	4175 (91.6)	4175 (84.3)

duodenal findings in the study population and according to gender are presented in Table 5.

Gastritis, hiatal insufficiency, and duodenitis were the most common diseases in the patients with gastric, esophageal, and duodenal findings, respectively, as well as within the study population. The distributions of esophageal, gastric, and duodenal diseases according to years and gender are summarized in Table 6. Esophageal, gastric, and duodenal diseases were most commonly observed in the years 2007 and 2008 in the whole study population.

GI Disorders	Gender n (%)		Total n (%)
	Female	Male	
Esophageal diseases	770 (48.6)	813 (51.4)	1583 (32.0)
Gastric diseases	2590 (56.8)	1967 (43.2)	4557 (92.1)
Duodenal diseases	434 (47.5)	480 (52.5)	914 (18.5)

**Table 3:** Distribution of diagnosis in the study population and according to gender.

EGD Findings	Gender n (%)		Total n (%)
	Female	Male	
Normal	109 (66.5)	55 (33.5)	164 (3.3)
Pathologic	2711 (56.6)	2075 (43.4)	4786 (96.7)
Total	2820 (57.0)	2130 (43.0)	4950 (100.0)

**Table 4:** Distribution of esophagogastroduodenoscopy findings in the study population and according to gender. [EGD: Esophagogastroduodenoscopy].

Cancer	116 (47.5)	128 (52.5)	244 (5.4)	244 (4.9)
Ulcer	251 (46.1)	293 (53.9)	544 (11.9)	544 (11)
Bleeding	2 (16.7)	10 (83.3)	12 (0.3)	12 (0.2)
Other gastric diseases	139 (47.3)	155 (52.7)	294 (6.5)	294 (5.9)
<b>Esophageal</b>	<b>Female</b>	<b>Male</b>	<b>With esophageal diseases n=1583</b>	<b>In the study n=4950</b>
Hiatal insufficiency	595 (49.3)	612 (50.7)	1207 (76.2%)	1207 (24.4)
Esophageal ulcer	7 (41.2)	10 (58.8)	17 (1.1%)	17 (0.3)
Esophagitis	336 (46.7)	384 (53.3)	720 (45.5%)	720 (14.5)
Esophageal varices	13 (31.0)	29 (69.0)	42 (2.7%)	42 (0.8)
Esophageal tumors	17 (44.7)	21 (55.3)	38 (2.4%)	38 (0.8)
Barrett's esophagus	18 (39.1)	28 (60.9)	46 (2.9%)	46 (0.9)
Other esophageal diseases	20 (48.8)	21 (51.2)	41 (2.6%)	41 (0.8)
<b>Duodenal</b>	<b>Female</b>	<b>Male</b>	<b>With duodenal diseases n=914</b>	<b>In the study population n=4950</b>
Duodenitis	255 (48.6)	270 (51.4)	525 (57.4)	525 (10.6)
Active duodenal ulcer	114 (39.3)	176 (60.7)	290 (31.7)	290 (5.9)
Duodenal malformations	6 (35.3)	11 (64.7)	17 (1.9)	17 (0.3)
Tumor	11 (73.3)	4 (26.7)	15 (1.6)	15 (0.3)
Duodenogastric reflux	67 (58.8)	47 (41.2)	114 (12.5)	114 (2.3)
Other duodenal diseases	5 (23.8)	16 (76.2)	21 (2.3)	21 (0.4)

**Table 5:** Distribution of gastric, esophageal, and duodenal findings in the study population and according to gender. [EGD: Esophagogastroduodenoscopy].

Diseases	Years	Gender n (%)		Total within disease n (%)
		Female	Male	
Esophageal Diseases n=1583	2002	24 (63.2)	14 (36.8)	38 (2.4)
	2003	32 (64.0)	18 (36.0)	50 (3.2)
	2004	17 (50.0)	17 (50.0)	34 (2.1)
	2005	2 (50.0)	2 (50.0)	4 (0.3)
	2006	118 (44.5)	147 (55.5)	265 (16.7)
	2007	296 (47.2)	331 (52.8)	627 (39.6)
	2008	281 (50.1)	280 (49.9)	561 (35.4)
	2009	0 (0.0)	4 (100.0)	4 (0.3)
Gastric Diseases n=4557	2002	237 (64.9)	128 (35.1)	365 (8.0)
	2003	204 (62.8)	121 (37.2)	325 (7.1)
	2004	100 (57.1)	75 (42.9)	175 (3.8)
	2005	29 (51.8)	27 (48.2)	56 (1.2)

	2006	333 (54.1)	282 (45.9)	615 (13.5)
	2007	882 (55.8)	700 (44.2)	1582 (34.7)
	2008	801 (56.1)	628 (43.9)	1429 (31.4)
	2009	4 (40.0)	6 (60.0)	10 (0.2)
Duodenal Diseases n=914	2002	27 (58.7)	19 (41.3)	46 (5.0)
	2003	35 (59.3)	24 (40.7)	59 (6.5)
	2004	14 (45.2)	17 (54.8)	31 (3.4)
	2005	2 (50.0)	2 (50.0)	4 (0.4)
	2006	80 (44.4)	100 (55.6)	180 (19.7)
	2007	151 (44.0)	192 (56.0)	343 (37.5)
	2008	123 (49.8)	124(50.2)	247 (27.0)
	2009	2 (50.0)	2 (50.0)	4 (0.4)

**Table 6:** Distributions of esophageal, gastric, and duodenal diseases according to years and gender.

## Discussion

In addition to being one of the most common healthcare issues worldwide, diseases of the GIS are continuously increasing and thereby GIS endoscopy has become one of the most common endoscopic procedures recently. The present study aimed to present retrospective data on EGD findings of patients with upper GIS problems.

Previous reports have been suggested that esophageal, gastric, and duodenal pathologies are remarkably frequent. In a study from Sudan, the incidences of the diseases of esophagus, stomach, and duodenum were reported as 24%, 10%, and 14%, respectively [11]. In the present study, at least one pathology was identified in EGD examination of 4950 patients and the rates of esophageal, gastric, and duodenal diseases were 32%, 92.1%, and 18.5%, respectively. Similarly, gastric diseases have been reported as the most frequent gastrointestinal diseases in Ghana [12]. On the other hand, a study from China, in which data from patients were recorded between 2000 and 2011, reported that the frequency of Barrett's esophagus was 1.0% [13]. However, our study, which comprised patient data from 2002 to 2009, found the frequency of Barrett's esophagus to be 0.9%.

Upper gastrointestinal endoscopy carries a risk of perforation in approximately 0.03% [14]. Bacteremia is a rare complication of endoscopy and it is even less common in upper endoscopy [15]. The total risk for all complications is 1 in 5000 patients [9]. One earlier report from 1974, which included EGD data of 211410 patients, indicated that the rate for all complications was 0.13% and mortality rate was 0.004% [16]. The decrease in the complication rates might mainly be due to the improvements in imaging techniques and software and to the development of the equipment.

Surgical treatment is a common treatment of choice for esophageal cancers despite high perioperative mortality and morbidity rates [17,18]. However, endoscopic resection is a safe and effective option for the treatment of superficial esophageal cancers without any lymph node metastasis [19]. Moreover, endoscopy is also beneficial in staging of malignancies and in decision of treatment protocols [20].

In the present study, there were 38 patients with esophageal tumors (2.4% within all patients with any esophageal finding and 0.8% within all patients), 244 patients with gastric tumors (5.4% within all patients with any gastric finding and 4.9% within all patients), and 15 patients with duodenal tumors (1.6% within all patients with any duodenal finding and 0.3% within all patients). Therefore, this study revealed that approximately 6% of all endoscopic examinations were performed in malignancies with different stages, which highlighted the importance of the diagnostic use of endoscopy.

In conclusion, when complication results are evaluated, it should be taken into account that long follow-up has not been performed since the study was retrospectively separated from the endoscopy unit of the patient. Later complications could not be documented. Endoscopy is a safe and reliable procedure that is essential for the diagnosis, treatment, and follow-up of upper gastrointestinal diseases.

## References

1. Williams JG, Roberts SE, Cheung WY (2007) Gastroenterology services in the UK. The burden of disease, and the organisation and delivery of services for gastrointestinal and liver disorders: A review of the evidence. *Gut* 56: 1-113.
2. Merletti F, Galassi C, Spadea T (2011) The socioeconomic determinants of cancer. *Environ Health* 10: S7.
3. Kim EY, Choi IJ, Kwon KA (2014) Highlights from the 50<sup>th</sup> seminar of the Korean Society of Gastrointestinal Endoscopy. *Clin Endosc* 47: 285-294.
4. Kwon KA, Choi IJ, Kim EY (2013) Highlights of the 48<sup>th</sup> seminar of Korean Society of Gastrointestinal Endoscopy. *Clin Endosc* 46: 203-211.
5. Choi KS, Suh M (2014) Screening for gastric cancer: The usefulness of endoscopy. *Clin Endosc* 47: 490-496.
6. Kwon RS, Adler DG (2009) High-resolution and high-magnification endoscopes. *Gastrointest Endosc* 69: 399-407.
7. Ginzburg L, Greenwald D, Cohen J (2007) Complications of endoscopy. *Gastrointest Endosc Clin N Am* 17: 405-432.
8. Green J (2006) Guidelines on complications of gastrointestinal endoscopy. British Society of Gastroenterology Web site.

9. Wolfsen HC, Hemminger LL, Achem SR (2004) Complications of endoscopy of the upper gastrointestinal tract: A single-center experience. *Mayo Clin Proc* 79: 1264-1267.
10. Kavic SM, Basson MD (2001) Complications of endoscopy. *Am J Surg* 181: 319-332.
11. Fedail SS, Araba BM, Homeida MM (1983) Upper gastrointestinal fiberoptic endoscopy experience in the Sudan. Analysis of 2500 endoscopies. *Lancet* 2: 897-899.
12. Gyedu A, Yorke J (2014) Upper gastrointestinal endoscopy in the patient population of Kumasi, Ghana: Indications and findings. *Pan Afr Med J* 18: 327.
13. Dong Y, Qi B, Feng XY (2013) Meta-analysis of Barrett's esophagus in China. *World J Gastroenterol* 19: 8770-8779.
14. Eisen GM, Baron TH, Dominitz JA (2002) Complications of upper GI endoscopy. *Gastrointest Endosc* 55: 784-793.
15. Nelson DB (2003) Infectious disease complications of GI endoscopy: Part I, endogenous infections. *Gastrointest Endosc* 57: 546-556.
16. Silvis SE, Nebel O, Rogers G (1976) Endoscopic complications. Results of the 1974 American Society for Gastrointestinal Endoscopy Survey. *JAMA* 235: 928-930.
17. Stein HJ, Feith M, Bruecher BL (2005) Early esophageal cancer: Pattern of lymphatic spread and prognostic factors for long-term survival after surgical resection. *Ann Surg* 242: 566-573.
18. Westerterp M, Koppert LB, Buskens CJ (2005) Outcome of surgical treatment for early adenocarcinoma of the esophagus or gastro-esophageal junction. *Virchows Arch* 446: 497-504.
19. Shimada H, Nabeya Y, Matsubara H (2006) Prediction of lymph node status in patients with superficial esophageal carcinoma: analysis of 160 surgically resected cancers. *Am J Surg* 191: 250-254.
20. Lachter J, Bishara N, Rahimi E (2008) EUS clarifies the natural history and ideal management of GISTs. *Hepatogastroenterology* 55: 1653-1656.