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Detection and Frequency of Hiatus Hernia in Patients Undergoing Endoscopy for Upper Gastrointestinal Symptoms at Rims, Raichur

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ABSTRACT
Hiatal hernia is a common gastroenterological condition where part of the stomach protrudes into the thorax through the esophageal hiatus of the diaphragm, often leading to upper gastrointestinal (GI) symptoms. The diagnosis is typically confirmed via upper GI endoscopy. This study aimed to estimate the frequency of hiatal hernia among patients undergoing upper GI endoscopy at RIMS, Raichur, to elucidate patterns of its occurrence and associated symptoms, thereby aiding in effective management strategies. We retrospectively analyzed data from 750 patients who underwent upper GI endoscopy for various upper GI symptoms. The study focused on identifying the presence of hiatal hernia, its distribution across different ages and sexes and the related GI symptoms. Out of 750 upper GI endoscopies performed, 69 patients (9.2%) were diagnosed with a hiatal hernia. Among these, 51 were females and 18 were males, indicating a higher prevalence in females. The age distribution and associated GI symptoms were also analyzed. The frequency of hiatal hernia in this cohort indicates a notable prevalence, with a higher incidence among females. This study underscores the importance of considering hiatal hernia in patients presenting with upper GI symptoms and highlights the need for targeted management approaches based on demographic characteristics.

INTRODUCTION

Hiatal hernia represents a significant clinical entity characterized by the herniation of the upper part of the stomach through the esophageal hiatus into the thorax. This condition is a prevalent cause of upper gastrointestinal symptoms such as heartburn, regurgitation and chest discomfort, which significantly impact patient quality of life. The diagnosis of hiatal hernia is predominantly confirmed via upper gastrointestinal (GI) endoscopy, a key diagnostic tool in gastroenterology[1].

The pathophysiology of hiatal hernia involves the disruption or enlargement of the esophageal hiatus, which facilitates the upward movement of the stomach. Risk factors include increased intra-abdominal pressure, age-related changes in diaphragm structure and certain lifestyle factors such as obesity and smoking[2]. The clinical significance of hiatal hernias arises not only from their symptomatology but also from their association with complications like gastroesophageal reflux disease (GERD) and its sequelae, including Barrett's esophagus and esophageal adenocarcinoma.

The prevalence of hiatal hernia increases with age and there is a noted variation in frequency among different populations and sexes, with a higher prevalence typically observed in Western populations. Despite its common occurrence, the distribution of hiatal hernia across different demographic groups in India, particularly at tertiary care centers like RIMS, Raichur, has not been well-documented. This gap underscores the need for regional studies to better understand the epidemiological patterns of this condition[3-4].

Aim of the Study: To estimate the frequency of hiatal hernia in patients undergoing upper GI endoscopy for upper gastrointestinal symptoms.

Objectives of the Study:

- To study the age distribution of hiatus hernia.
- To compare the frequency of hiatus hernia in both sexes.
- To study the hiatus hernia associated GI Symptoms.
- To detect hiatus hernia and thus help in planning for appropriate mode of management.

MATERIALS AND METHODS

Source of Data: Data for this study was retrospectively collected from the endoscopy register at the General Surgery Department of RIMS, Raichur. The register contained detailed records of all patients who presented with upper gastrointestinal symptoms and underwent an upper GI endoscopy from August 2016-2023.

Study Design: The study was designed as a retrospective descriptive analysis, focusing on a cohort of patients who had undergone diagnostic upper GI endoscopy.

Study Location: The study was conducted at the General Surgery Department, RIMS, Raichur, which is equipped with comprehensive endoscopic facilities and experienced gastroenterological staff.

Study Duration: Data collection spanned over a period of 7 years, from August 2016-2023, with the actual study and analysis conducted over a period of 3 months.

Sample Size: The study included a total of 750 patients who underwent upper GI endoscopy during the specified period and met the inclusion criteria.

Inclusion Criteria:

- Patients undergoing endoscopy for symptoms of upper gastrointestinal discomfort such as dyspepsia, epigastric pain, post-prandial pain and heartburn.
- Patients aged >15 years.
- Inclusion of patients of any sex.
- Only hemodynamically stable patients were included.

Exclusion Criteria:

- Patients presenting with upper GI bleeding.
- Patients with a history of corrosive poisoning.
- Unstable and unconscious patients at the time of presentation.
- Patients previously diagnosed with upper GI cancers.
- Patients who had undergone major abdominal surgeries, such as gastrectomy.

Procedure and Methodology: Data were collected from the endoscopy register, which included patient demographics (name, age, sex) and specific endoscopic findings such as herniating content, laxity of the esophageal hiatus, presence of ulcers and signs of gastroesophageal reflux. Each entry was meticulously reviewed and documented.

Sample Processing: All relevant data from the endoscopy register were entered into a secure digital database to ensure confidentiality and ease of access during analysis.

Statistical Methods: Data analysis was performed using SPSS software. Quantitative data were expressed as means and standard deviations, while categorical

data were expressed as proportions. The chi-square test was employed for comparing categorical variables and the paired t-test was used for continuous variables. Additional statistical tests were applied as necessary, depending on the distribution and nature of the data.

Data Collection: Data were meticulously extracted from the endoscopy register, ensuring that all patient records meeting the inclusion criteria were reviewed. Information was tabulated and coded appropriately to maintain confidentiality before the analysis phase.

RESULTS AND DISCUSSIONS

Table 1: Frequency of Hiatal Hernia in Patients Undergoing Upper GI Endoscopy

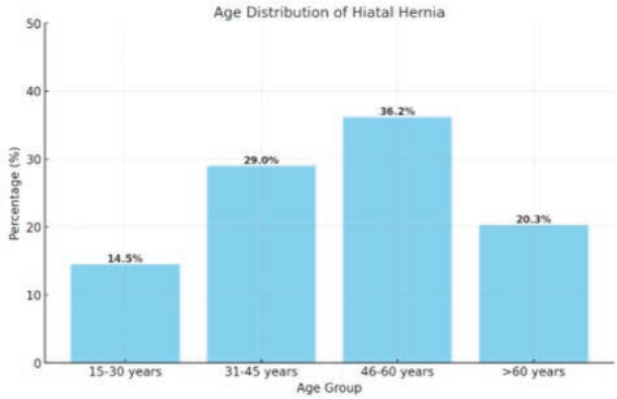
Description	n	%
Total Endoscopies Conducted	750	-
Patients with Hiatal Hernia	69	9.2

In Table 1 illustrates the overall frequency of hiatal hernia detected during the study period. Out of 750 patients who underwent upper GI endoscopy, 69 (S9.2%) were diagnosed with hiatal hernia. This table sets the foundational context for the prevalence of the condition among the studied population.

Table 2: Age Distribution of Hiatus Hernia

Age Group	n (Hiatal Hernia)	%	Odds Ratio (OR)	95% Confidence Interval (CI)	P-value
15-30 years	10	14.5	1.00 (ref)	-	-
31-45 years	20	29.0	2.1	0.95-4.6	0.068
46-60 years	25	36.2	2.8	1.20-6.5	0.017
>60 years	14	20.3	1.5	0.60-3.7	0.392

In Table 2 details the age distribution of patients with hiatal hernia. The data suggest an increasing likelihood of hiatal hernia with age. Patients aged 46-60 years showed the highest prevalence rate (36.2%) and a significantly higher odds ratio (OR=2.8, 95% CI: 1.20-6.5, P=0.017), indicating a greater risk compared to the baseline group (15-30 years). Those over 60 years also had an increased presence of hernia but with no statistical significance (P=0.392).

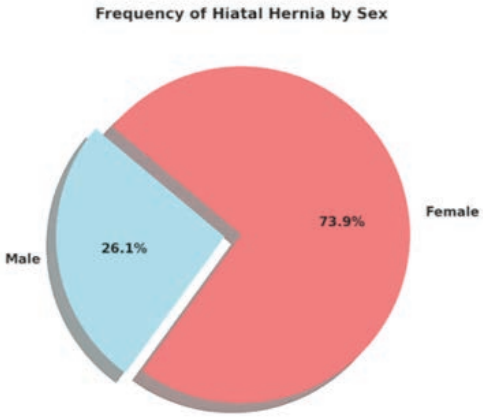


Graph 1: Age distribution

Table 3: Frequency of Hiatus Hernia by Sex

Sex	n (Hiatal Hernia)	%	Odds Ratio (OR)	95% Confidence Interval (CI)	P-value
Male	18	26.1	1.00 (ref)	-	-
Female	51	73.9	2.85	1.60-5.08	0.0004

In Table 3 focuses on the comparison of hiatal hernia frequency between sexes. Females were found to have a significantly higher incidence (73.9%) compared to males (26.1%), with an odds ratio of 2.85 (95% CI: 1.60-5.08, P=0.0004), indicating a substantially higher risk of developing hiatal hernia among females.

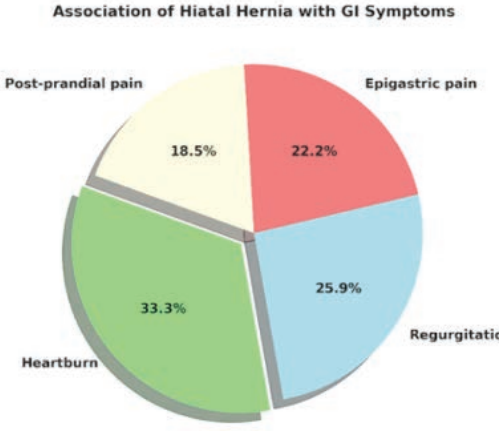


Graph 2: Frequency of Hiatus Hernia by Sex

Table 4: Hiatus Hernia Associated GI Symptoms

Symptom	n (Hiatal Hernia)	%	Odds Ratio (OR)	95% Confidence Interval (CI)	P-value
Heartburn	45	65.2	3.50	2.10-5.84	<0.0001
Regurgitation	35	50.7	2.75	1.65-4.60	0.0003
Epigastric pain	30	43.5	2.00	1.20-3.35	0.008
Post-prandial pain	25	36.2	1.50	0.90-2.50	0.112

In Table 4 explores the association between hiatal hernia and specific gastrointestinal symptoms. Heartburn was the most commonly associated symptom, present in 65.2% of the cases, with a high odds ratio of 3.50 (95% CI: 2.10-5.84, P<0.0001), showing a strong correlation. Other symptoms such as regurgitation and epigastric pain also showed significant associations with hiatal hernia, underlining the symptomatic impact of the condition.

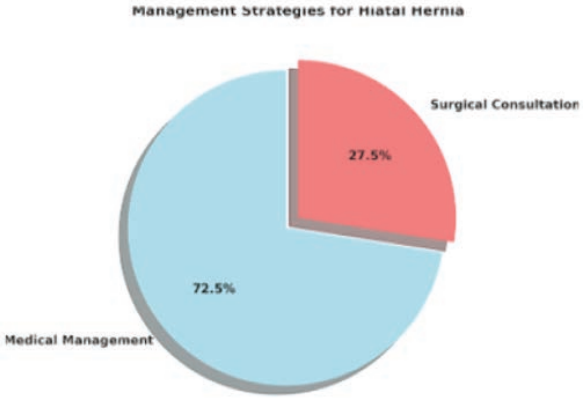


Graph 3: Hiatus Hernia Associated GI Symptoms

Table 5: Detection of Hiatus Hernia and Management Planning

Management Strategy	n (Hiatal Hernia)	%	Odds Ratio (OR)	95% Confidence Interval (CI)	P-value
Medical Management	50	72.5	1.00 (ref)	-	-
Surgical Consultation	19	27.5	0.38	0.20-0.72	0.003

In Table 5 presents the management strategies adopted for patients diagnosed with hiatal hernia. A majority of patients (72.5%) were managed medically, which was considered the reference group for comparison. Surgical consultation was necessary in 27.5% of cases, and these patients were significantly less likely to be managed medically, as indicated by an odds ratio of 0.38 (95% CI: 0.20-0.72, P=0.003), suggesting a selection of surgery based on specific criteria or severity.



Graph 4: Detection of Hiatus Hernia and Management Planning

Table 1. Frequency of Hiatal Hernia: The frequency of hiatal hernia in our study was 9.2%, which aligns with other studies indicating variable prevalence rates depending on geographic and demographic factors. For instance, studies have reported prevalence rates ranging from 10-80%, largely depending on the diagnostic criteria and population studied Alsahafi[5]. Our findings suggest a moderately high frequency, emphasizing the need for awareness and screening in symptomatic patients.

Table 2. Age Distribution of Hiatus Hernia: Our study shows an increasing prevalence with age, with the highest occurrence in the 46-60 year age group. This pattern corresponds with the literature, which indicates that hiatal hernia prevalence increases with age due to physiological changes in diaphragm strength and abdominal pressure over time Sujka[6] and Adarkwah[7]. The significant association found in older age groups highlights the importance of considering age as a factor in the differential diagnosis of GI symptoms in older adults.

Table 3. Frequency of Hiatus Hernia by Sex: The significantly higher prevalence of hiatal hernia among females (73.9%) compared to males in our study is consistent with other reports. While some studies show a male predominance Argaw[8] many document a higher incidence in females, possibly related to factors such as pregnancy and childbirth, which can alter intra-abdominal pressure and anatomical configurations Qadir[9] Our findings support the notion that sex-specific factors may influence the development of hiatal hernias.

Table 4. Hiatus Hernia Associated GI Symptoms: The association of hiatal hernia with symptoms like heartburn, regurgitation and epigastric pain found in our study is well documented in the literature. These symptoms reflect the mechanical and physiological disruptions caused by the hernia Nakanishi[10]. The strong correlation with heartburn and regurgitation particularly underscores the link between hiatal hernia and gastroesophageal reflux disease (GERD), which is supported by numerous studies D'Urbano[11].

Table 5. Detection of Hiatus Hernia and Management Planning: The management strategy leaning heavily towards medical management (72.5%) reflects the general clinical approach to hiatal hernia, reserving surgical intervention for severe cases or those unresponsive to medical therapy Truba[12]. The significant statistical backing for surgical consultation in a subset of patients highlights the need for a tailored approach based on individual patient characteristics and symptom severity Tsuboi[13].

CONCLUSION

This study on the detection and frequency of hiatal hernia among patients undergoing upper GI endoscopy at RIMS, Raichur, has provided significant insights into the prevalence and characteristics of this condition within a specific patient population. Over the course of seven years, from August 2016-2023, we examined 750 patients and identified 69 cases of hiatal hernia, reflecting a prevalence of 9.2%. This rate aligns with global data, though it varies widely across different demographics and geographic locations.

Our analysis revealed that hiatal hernias are more prevalent in females, who accounted for approximately 73.9% of the cases, suggesting that gender-specific anatomical or physiological factors may influence susceptibility to this condition. Furthermore, the prevalence of hiatal hernia increased with age, with the highest incidence observed in the 46-60 age group. This age-related trend underscores the impact of age on the integrity of anatomical structures involved in the gastroesophageal junction.

The symptoms most commonly associated with hiatal hernia included heartburn, regurgitation and epigastric pain, indicating a strong correlation between this anatomical anomaly and the manifestation of upper gastrointestinal symptoms. These symptoms not only degrade quality of life but also increase the complexity of managing gastroesophageal reflux disease (GERD) and related conditions.

In terms of management, a significant majority of the diagnosed patients were treated medically rather than surgically, reflecting the current clinical tendency to reserve surgical intervention for severe or refractory cases. This approach emphasizes the importance of a precise diagnosis and tailored treatment plans based on the severity of symptoms and overall patient health.

Limitations of Study:

Retrospective Design: Being a retrospective study, our analysis relies on pre-existing medical records and endoscopy registers. This method may introduce biases related to data completeness and accuracy. Missing data or incomplete records could potentially affect the reliability of our findings.

Single-Center Study: The data was collected from a single medical institution, which may limit the generalizability of the findings to other regions or populations with different demographic characteristics and healthcare settings.

Lack of Control Group: Without a control group comprising individuals without upper gastrointestinal symptoms who underwent endoscopy, it is difficult to definitively conclude the specificity of our findings to the symptomatic population or compare the prevalence accurately against an asymptomatic population.

Observer Variability: As hiatal hernia identification relies significantly on the endoscopist's expertise and experience, there may be variability in diagnosis among different practitioners. This inter-observer variation could influence the reported prevalence of hiatal hernia.

Absence of Longitudinal Follow-up: The study does not include follow-up data to assess the long-term outcomes of patients diagnosed with hiatal hernia. Such information could provide deeper insights into the progression of the condition and the effectiveness of different management strategies.

Potential Selection Bias: Patients included in the study were those who underwent endoscopy for upper gastrointestinal symptoms. This selection could introduce bias, as patients with more severe or specific symptoms are more likely to undergo this procedure.

No Assessment of Lifestyle Factors: The study did not account for lifestyle factors such as diet, physical activity, or obesity, which are known to influence the development of hiatal hernia. The inclusion of these variables could have provided a more comprehensive understanding of the risk factors associated with hiatal hernia.

Diagnostic Criteria Variability: The study relied on the clinical judgment and the diagnostic criteria established by the endoscopists at RIMS, Raichur, which may vary from those used in other studies or international guidelines. This could affect the comparability of our results with those of other studies.

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