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Incidence of Hiatal Hernia in Patients with Gastroesophageal RefluxDisease (GERD)

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Abstract

INTRODUCTION

Gastroesophageal reflux disease (GERD) is caused by the interaction between the esophageal epithelium and acidic stomach contents, which dramatically impacts the patient's quality of life. A hiatal hernia is a contributing reason to reflux. A hiatus hernia is a medical disorder characterized by the protrusion of abdominal cavity tissues, often the stomach, through the oesophageal hiatus into the mediastinum. A hiatal hernia is a common detectable abnormality during upper gastrointestinal endoscopy. The sliding hiatal hernia, usually known as Type I hiatal hernia, constitutes around 95% of all hiatal hernias, whereas the remaining 5% are classified as paraesophageal hiatal hernias.

Aim and Objectives:

The objective of the research was to determine the prevalence of hiatal hernia (HH) in individuals diagnosed with Gastroesophageal reflux disease (GERD), establish a comparison between the acid reflux pattern in patients with and without HH, and investigate the correlation between erosive gastroesophageal reflux (GER) and HH.

Materials and Methods:

We analyzed a cohort of 64 individuals (30 male, 34 female) diagnosed with GERD. The patients who first reported upper gastrointestinal symptoms and subsequently underwent upper gastrointestinal endoscopy at SCB MCH, Cuttack. The time frame spanning from April 2022 until July 2023. This study investigated the occurrence rate of hiatal hernia (HH) in patients with gastroesophageal reflux disease (GERD), the acid reflux pattern, and the correlation between body mass index and erosive esophagitis with HH.

RESULTS:

Among the 64 patients including 30 men (46.875%) and 34 females (53.125%) who had upper gastrointestinal symptoms, 11 patients (17.19%) were diagnosed with hiatus hernia. Among the 11 instances described, 9 patients (81.81%) were diagnosed with sliding type hiatus hernia, whereas 2 patients (18.18%) had rolling type. The statistical mean age of the patients was 44.0 ± 9.6 years. The hernia size was seen to be small in 6 instances (54.54%), medium in 3 cases (27.27%), and big in 2 cases (18.18%). No substantial disparity in body mass indices was seen between individuals diagnosed with HH and GERD. Highly significant correlations were seen between HH and GERD ($P \leq 0.05$).

Conclusion:

there is a strong correlation of 17.19% between hiatal hernia and GERD. Early detection and prompt treatment or surgical intervention decrease the negative health outcomes linked to hiatus hernia and acid reflux. Therefore, it is recommended that all patients who have ongoing upper gastrointestinal symptoms should get upper GI endoscopy and have it handled appropriately.

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Keywords: Hiatal hernia (HH), Gastroesophageal reflux disease (GERD), Upper gastrointestinal endoscopy.

INTRODUCTION

A hiatal hernia is a pathological medical disorder characterized by the protrusion of the upper portion of the stomach or another internal organ through the hiatus of the diaphragm. Insufficient integrity of this barrier allows stomach contents to reflux into the esophagus, making it the primary factor contributing to GERD (Gastroesophageal Reflux Disease) [1]. The prevalence of hiatal hernia (HH) is very high among the general population. Hiatal hernias may be either congenital or acquired disease. An elevated incidence is seen among the elderly population. The prevailing belief is that muscle age-related weakening accompanied by a decline in flexibility and elasticity increases the likelihood of developing a hiatal hernia. During swallowing, this may result in the top section of the stomach failing to revert back to its original place below the diaphragm. Additional predisposing variables have been discovered, including increased intraabdominal pressure. Common causes of this condition include obesity, pregnancy, persistent constipation, and chronic obstructive pulmonary disease (COPD). Potential factors contributing to the formation of a hiatal hernia include trauma, age, prior surgical procedures, and genetic predisposition.[2]

The prevalence of hiatal hernias rises with advancing age. At least 55%-60% of persons aged 50 and beyond suffer from a hiatal hernia. Only around 9% of individuals have symptoms, and the severity of these symptoms is determined by the specific kind and competence of the lower esophageal sphincter. The overwhelming majority of these hernias are classified as type I sliding hiatal hernias. Type II paraesophageal hernias account for about 5% of hiatal hernias, in which the lower esophageal sphincter (LES) remains immobile, but the stomach extends beyond the diaphragm. One possible explanation for the higher occurrence in women is the elevated intraabdominal pressure experienced during pregnancy. Although uncommon in rural Africa and South Asia, hiatal hernias are more prevalent in Western Europe and North America. [3].

In recent decades, our knowledge of the correlation between hiatal hernia and gastroesophageal reflux disease (GERD) has progressed, moving from one extreme to the other. Initially, it was believed that the existence of a hiatal hernia, a structural anomaly, was an essential factor in the development of gastroesophageal reflux disease (GERD) ever since Allison first highlighted its connection in 1951[1,4].

Empirical evidence suggests a correlation between the occurrence of symptomatic instances of hiatal hernia and the diagnosis of gastroesophageal reflux disease (GERD), two closely related disorders.

Gastroesophageal reflux is the primary and distinctive presentation of hiatal hernia, characterized by regurgitation and heartburn. Less frequent symptoms include dysphagia, epigastric or chest discomfort, and even chronic iron deficiency anaemia [5]. Hernias of significant size may manifest with dysphagia, early satiety, or regurgitation [6]. Historically, hiatal hernias were often categorized as either sliding or paraesophageal. At present, hiatal hernias are classified into four anatomical kinds.

A type I or sliding hernia is characterised by the symmetrical upward movement of the stomach through the diaphragmatic crus. Hiatal hernias of type I constitute about 90% of all occurrences and are renowned for their frequent correlation with gastroesophageal reflux disease (GERD) [7]. Furthermore, they are linked to more advanced levels of esophagitis and Barrett's esophagus [8].

Type II hernias, also known as pure paraesophageal hernias (PEH), occur when a section of the stomach fundus protrudes through the diaphragmatic hiatus next to the esophagus, while the

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gastroesophageal junction remains in its usual anatomical location.
• Type III hernias are a hybrid of types I and II, characterized by the herniation of both the fundus and the gastroesophageal junction via the hiatus. The fundus is located above to the gastroesophageal junction.
• Type IV hernias are characterized by the protrusion of a structure other than the stomach through the thoracic cavity, such as the small intestine, colon, omentum, peritoneum, or spleen.
Types II-IV are scientifically known as paraesophageal hernias (PEH). Their primary clinical significance lies in their capacity to cause ischemia, obstruction, or volvulus [10]. Anatomical categorization of hiatal hernia is essential, particularly for determining the treatment strategy, as the surgical methods for sliding and paraesophageal hernias vary significantly on indications [11].
Clinical manifestations of hiatal hernia: The majority of individuals do not have any symptoms of hiatal hernias. However, among the group of those who do, the prevailing symptoms are associated with persistent acid reflux, often known as gastroesophageal reflux disease (GERD). These encompass [12]:
1. Cardiac infarction. Dyspnea, particularly occurring after meals.
2. Chest discomfort from noncardiac sources. Symptomatic chest discomfort that resembles angina but is not diagnosed as such.
3. Gastrointestinal disorder. Postprandial satiety accompanied by a sensation of searing belly discomfort.
4. Regurgitation and burping refer to the regurgitation of food, gas, and acid down the throat.
5. Dysphagia or a palpable mass in the throat after swallowing.
Experiencing pharyngitis and pharyngeal dysfunction caused by acid-induced irritation.
Other potential indicators of a hiatal hernia may include: 1. Nausea, caused by stomach compression or excessive acid flow, or both.
2. Dyspnea, indicative of pulmonary compression caused by your hernia.
3. Experience pressure or discomfort in the upper abdomen or lower chest.
Regarding the diagnosis of esophageal hiatal hernia, the Society of American Gastrointestinal and Endoscopic Surgeons recommends doing only tests that would directly affect the therapeutic treatment of the patient. Diagnosing a hiatal hernia may be difficult since the structure of the esophagogastric junction undergoes noticeable changes with deglutition, breathing, and movement.
An detailed medical history and physical examination are essential, since they may uncover latent symptoms that were previously unnoticed.
The diagnosis of hiatal hernia may be established by radiographic, endoscopic, and Manometric evaluation. While both approaches are effective in detecting and identifying big hiatal hernias, diagnosing tiny hiatal hernias (less than 2 cm) might be problematic due to the limitations of each modality (see table-1 and Figures 1 & 2).

Table 1: Current diagnostic methods for hiatal hernia [13]

Diagnostic technique	Evaluation	Warnings
Barium swallow X-ray	size, location of hernia, motility dysfunc- tion, stenosis, stricture related to GERD, short esophagus diagnosis	contraindicated in pregnancy, barium or iodine hypersensitivity, exposure to radiation
Endoscopy	analysis of esophageal mucosa, erosive esophagitis, Barrett's esophagus, malig- nancy, Cameron's ulcers, swallowing diffi-	air insufflation of the stomach may exaggerate hernia size, difficulty to assess massive hernias accurately

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	culty	
Manometry	integrity of esophageal peristaltis, motilitydisorders, achalasia	difficulty in placing Manometry cath-eter
pH testing	quantitative analysis of reflux episodes	-
CT	gastric volvulus, perforation, pneumoperi-toneum, pneumomediastinum	unable to exactly define the configu- ration of the hernia, exposure to radi-ation

It was reported that, for a preoperative evaluation of a patient, barium swallow X-ray, upper endoscopy and Manometry are essential [1,13,14]. Moreover, others considered that, in order to have a reliable exclusion of hiatalhernia prior to treatment, all three investigations must be performed [15,16].

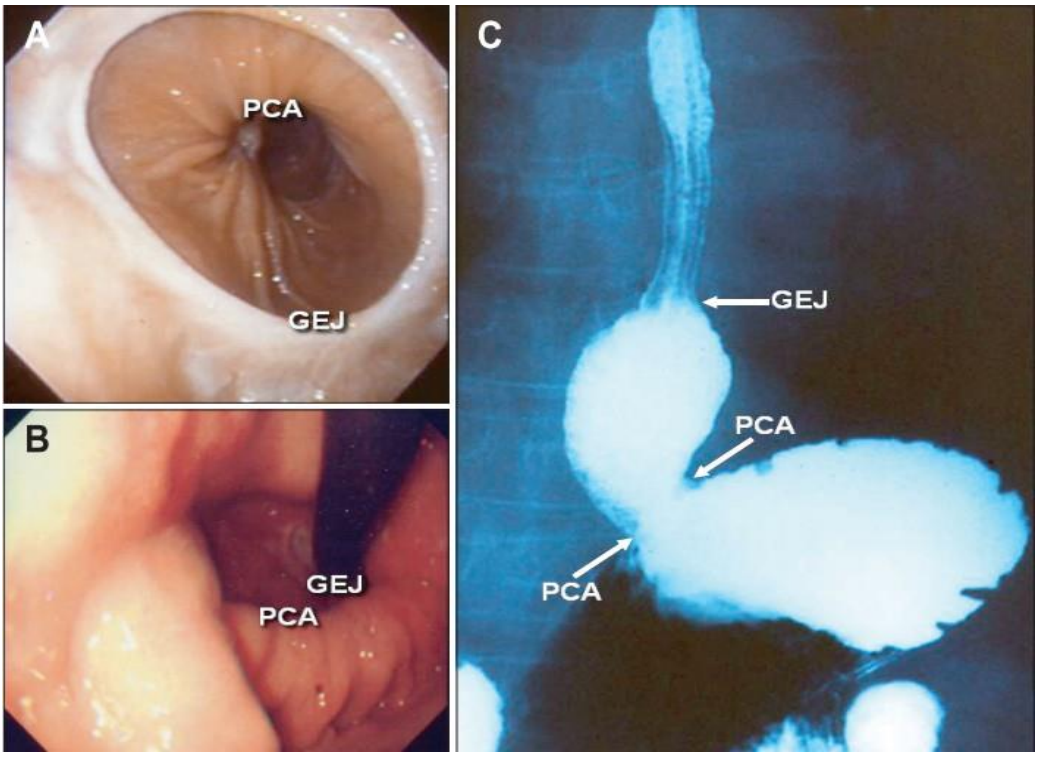

Figure-1: Endoscopic and radiologic findings of a sliding type hiatal hernia:[15]

Study of the endoscopic and radiologic characteristics of a sliding type hiatal hernia. A hiatal hernia is a segment of the stomach located between the gastroesophageal junction (B ring) and the diaphragmatic depression created by pinchcock action (PCA). A hiatal hernia of significant size may be readily seen whether viewed from a forward or retroflexed perspective during an upper gastrointestinal endoscopy (A, B) or by barium swallows (C). The presence of a hiatal hernia may contribute to the establishment of both acid reflux and a persistent variant of acid reflux known as gastroesophageal reflux disease (GERD). The results of endoscopic and radiographic investigations indicate that between 10% and 70% of individuals with reflux illness

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had a hiatal hernia. In contrast, the occurrence of hiatus hernia in control people was notably lower in each research. Nevertheless, the involvement of hiatal hernia in the development of symptomatic reflux is not fully established [15]. A recent study indicates that hiatal hernia may result in heightened esophageal acid exposure via both increased vulnerability to reflux and prolonged acid clearance. An increased frequency of reflux episodes may arise due to a heightened vulnerability to reflux caused by strain and the resulting reduced pressure at the esophagogastric junction (EGJ) [16].

Moreover, a hiatal hernia prolongs the process of esophageal acid clearance, particularly when individuals are in a recumbent position, therefore increasing esophageal acid exposure [9]. A crucial aspect overlooked in the previous explanation of the involvement of hiatus hernia in the development of gastroesophageal reflux disease (GERD) is the connection between hiatus hernia and temporary relaxation of the lower esophageal sphincter (tLESR). A multitude of manometric investigations provide convincing evidence that tLESR often serves as the primary mechanism of reflux [10].

The central focus of much study since the 1950s has been the anatomy and physiology of the GEJ in relation to the development and progression of GERD.

The conceptual framework of the two-sphincter hypothesis:

The "Two-Sphincter Hypothesis" is a theoretical framework that integrates the anatomical and physiological aspects of the gastroesophageal junction (GEJ) to establish the barrier against reflux. The reflux barrier consists of four primary components: the lower esophageal sphincter (LES), the crural diaphragm, the angle of His, and the phrenoesophageal membrane (Figure 1). These components work together to provide a barrier against reflux. The constituents may be classified into two main groups: the internal sphincter, which comprises the lower esophageal sphincter (LES) and the angle of His, and the extrinsic sphincter, which includes the crural diaphragm and phrenoesophageal ligament.

Functionally, the inherent components of the sphincter contribute to the barrier against reflux while the sphincter is at rest. Conversely, the external components actively contribute to the barrier function during breathing and during variations in posture and intra-abdominal pressure [17].

The objective of this study was to investigate the impact of hiatal hernia on susceptibility to gastroesophageal reflux in patients with gastroesophageal reflux disease (GERD), ii) calculate the prevalence of hiatal hernia in patients with GERD, iii) compare the acid reflux pattern in patients with and without HH, iv) explore the correlation between erosive gastroesophageal reflux (GER) and HH.

Table 2: The GERD questionnaire respondents enter the frequency scores after reflecting on theirsymptoms over the previous week/daily.

Question	Frequency score (points) for symptom			
	Absent	>2/ Week	≤2/ Week	Daily
1. How often did you have a burning feeling behind your breastbone (heartburn)?	0	1	2	3
2. How often did you have stomach contents (liquidor food) moving upwards to your throat or mouth (re-gurgitation)?	0	1	2	3

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3. How often did you have a pain in the centre of the upper stomach?	3	2	1	0
4. How often did you have nausea?	3	2	1	0
5. How often did you have difficulty getting a goodnight's sleep because of your heartburn and/or regur-gitation?	0	1	2	3

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6.How often did you take additional medication for your heartburn and ⁄or regurgitation, other than whatthe physician told you to take? (such as Tums, Ro-laids, Maalox?)	0	1	2	3
Dysphagia	0	1	2	3
Hoarseness	3	2	1	0
Sore throat	0	1	2	3
Bloating	0	1	2	3
Belching	0	1	2	3
Vomiting	3	2	1	0
Heartburn	0	1	2	3
Regurgitation	0	1	2	3
Epigastric pain	0	1	2	3
Sedentary lifestyle	N0	yes	-	-
Insomnia	No	yes	-	-
Alcohol	0	1	2	3
Smoking	0	1	2	3
Tobacco	0	1	2	3
Co Morbidity				
Type2 Diabetes	No=0	Yes=1	-	-
Cardiovascular Diseases	No=0	Yes=1	-	-

The data which form the basis for the GerdQ were collected in a large international study (DIAMOND, studycode D9914C00002)[2].

Identification of short segment hiatal hernias by endoscopic examination, using lower esophageal capillary patterns as reference points. Identification of the gastroesophageal junction by endoscopic means may be challenging, particularly in individuals with short segment hiatal hernias (HHs). By utilizing the distal edge of longitudinally arranged subepithelial capillaries, known as the palisade zone (PZ), as a reference point for the gastroesophageal junction, it is possible to categorize patterns based on the connections between the distal end of the PZ and the squamocolumnar junction (SCJ) as well as the diaphragmatic indentation (pinchcock action, PCA). (A) The PCA is located lateral to the other two markers that are positioned at the same elevation. The SCJ is located above the distal end of the PZ, which is then above the PCA. The HH is the region located between the distal edge of the pharyngeal zone (PZ) and the palpable ductus arteriosus (PCA), whereas the columnar-lined esophagus (CLE) is situated between the superior cervical junction (SCJ) and the distal edge of the PZ.

Inclusion criteria

Patients aged 18 years and older, with a stable general condition, who presented with dyspepsia, dysphagia, chest burn, nausea, vomiting, acid regurgitation, excessive belching, bloating

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sensation, epigastric pain, and hematemesis. These patients could be either outpatients, inpatients, or referred from other hospitals.

Exclusion criteria

Paediatric patients under 18 years old, patients with significant upper gastrointestinal bleeding, corrosive poisoning, unconscious or unstable patients, patients previously diagnosed with upper gastrointestinal malignancy, and anaemia-related conditions. Chronic illness and those with deliberate weight reduction. The Body Mass Index (BMI) was evaluated by dividing the weight of the donor (in kilogrammes) by their height (in square meters) to determine the relationship between BMI and GERD and HH outcomes.

Statistical analysis:

The whole dataset was analysed using SPSS v26.0 software developed by SPSS Inc., based in Chicago, IL, USA. Incidence and proportions were provided for age categories, gender, biochemical factors, and surgical procedure type. The connection between postoperative development of incisional hernia and sutures among two groups was quantified using chi square analysis. An independent sample t test was used to compare the average age and duration of hospitalization in both groups. P values less than 0.05 were deemed statistically significant.

RESULTS

Among the 64 patients, 30 were men (46.875%) and 34 were females (53.125%) who complained of GERD. Based on a thorough history, clinical examination, and upper GI endoscopy, the following findings were obtained:

Within the group of 64 patients, 11 individuals (17. 19%) received a diagnosis of hiatus hernia. The average age of all the patients who had upper GI endoscopy was 44.0 6 ±9.6, and the mean age of those diagnosed with hiatus hernia was 57 years. Of the 11 patients diagnosed with hiatus hernia, 7 (63.63%) were female and 4 (36.36%) were male. Of the 11 documented instances, 9 Among the patients, 81.81% were diagnosed with sliding type hiatus hernia, whereas 2 patients (18.18%) had rolling type. Furthermore, the study revealed that the Hernia was of small size in 6 instances (54.54%), medium size in 3 cases (27.27%), and big size in 2 cases (18.18%) with 100% reflux. Highly significant correlations were seen between HH and GERD ($P \leq 0.05$). Furthermore, there is a positive correlation between the size of the hernia and the occurrence of GERD [$P \leq 0.05$]. Furthermore, the link between HHs and post-OAGB GERD became more significant as the hernia size rose. There existed no Profound disparity in body mass indices among individuals diagnosed with HH and GERD. Within the sample of 11 patients diagnosed with hiatus hernia, the predominant upper gastrointestinal symptom mentioned by the patients was dyspepsia or upper abdominal discomfort, occuring in 81-90 percent of cases. Furthermore, individuals with hiatus hernia had additional symptoms such as excessive belching (63-67%), vomiting (35-42%), and reduced appetite (23-28%).

Table 2: Demographic and anthropometric characteristics of patients with HH and GERD

Variables	GERD		Haital Hernia (HH)	
	Male	Female	male	female
Age (y)				
18-30	2	4	0	1
30-50	10	10	1	2
50-70	14	16	2	4
70-100	4	4	1	0
BMI (Kg/m^2)				
18 -24.9	5	3	0	1
25-29.9	8	6	1	1

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30-34.9	14	16	2	4
≥35	10	9	1	1
Symptoms				
dyspepsia	80%	78%	82%	81%
Upper abdominal pain	72%	73%	89%	90%
belching,	65%	62%	67%	63%
vomiting	45%	40%	35%	42%
Decreased appetite	25%	21%	23%	28%
Types of Haital Hernia				
Sliding	-	-	3	6
Rolling/para-esophageal	-	-	1	1

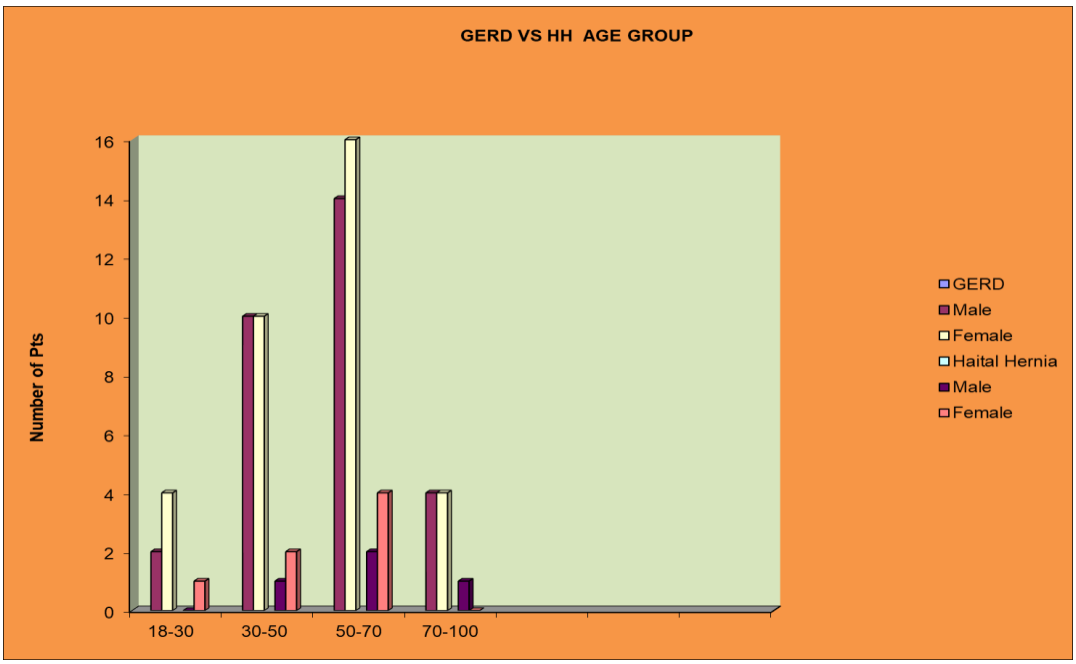

Figure 3: GERD Vs HH with Age Groups

50-70 years age groups were more susceptible against GERD and SCB; females were more prone in both (P≤0.05).

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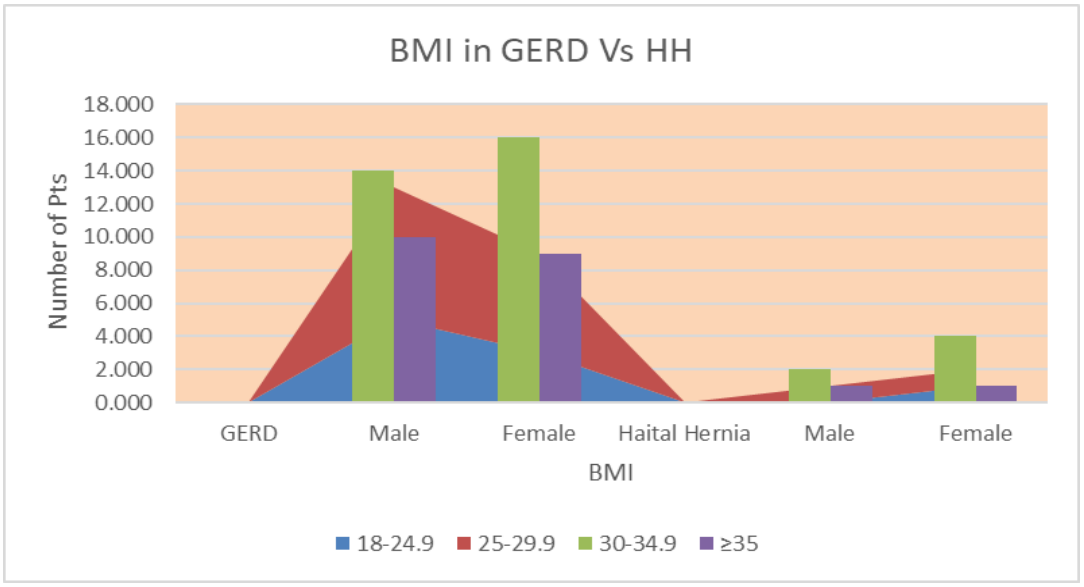

Figure 4: BMI kg/m^2 in GERD Vs HH

BMI -30-34.9 kg/m^2 group was more susceptible against GERD and SCB; females were more prone in both(P≤0.05).

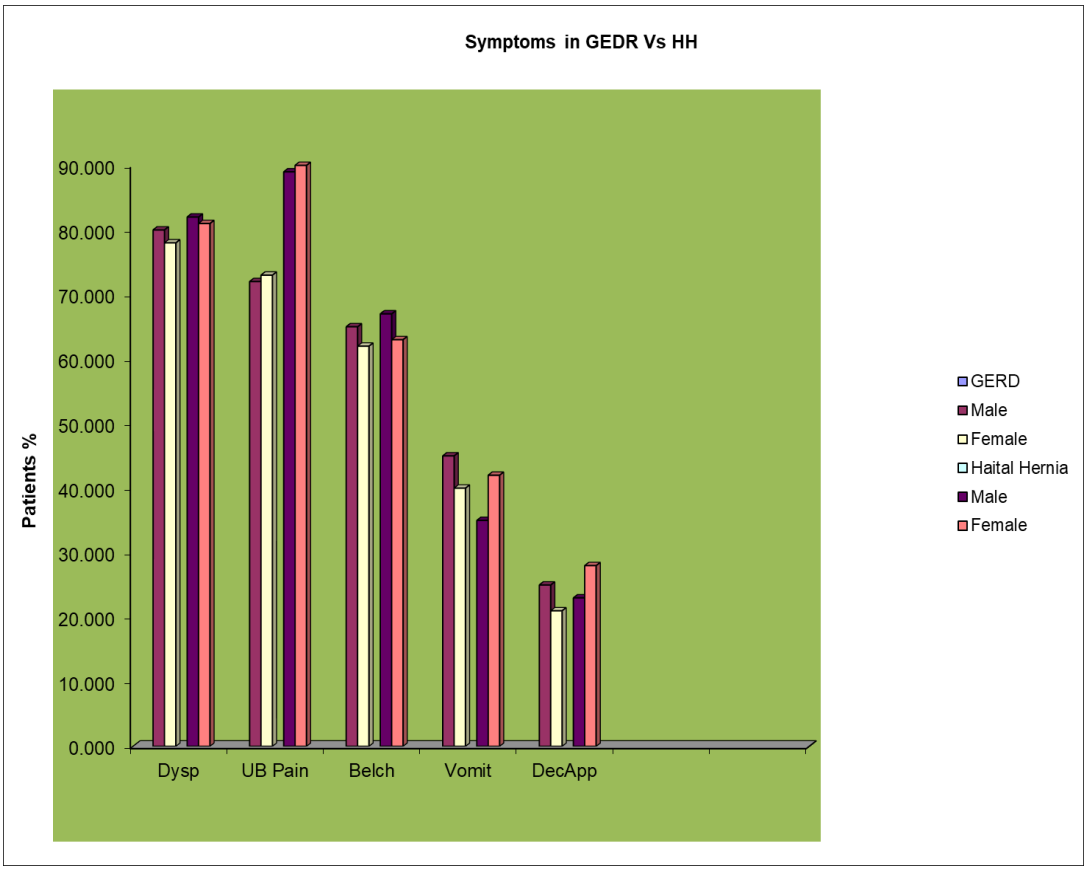

Figure 5: Symptoms in GERD and HH patients

Dyspepsia & upper Abdominal Pain were more in HH as Compared to GEDR (P≤0.05).

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Out of 64 GERD patients, Twenty (31.25%)participants consumed alcohol, 33 (51.56%) had type 2 diabetes, and 28 (43.75.2%) were smokers orex-smokers before the surgery. Smoking and alcoholconsumption before OAGB as well as type 2 diabetes and BMI before and after the surgery werenot related to GERD.

DISCUSSION

Role of Hiatal Hernia in Gastroesophageal Retinopathy Pathogenesis: By many causes, the formation of a hiatal hernia may result in gastroesophageal reflux disease (GERD). Considerable focus has been directed into the esophagogastric high-pressure zone (HPZ) as a means of preventing reflux from the high-pressure conditions of the stomach to the lower pressure conditions of the esophagus. The HPZ comprises both physiological components, including the lower esophageal sphincter (LES), and anatomical components, including the crural diaphragm (CD) and flap valve unit. Both the intrinsic tone and contractility of the lower esophageal sphincter (LES) and the presence or absence of a hiatal hernia, which changes the alignment of the LES with the common duct (CD) and impacts the shape of the gastroesophageal flap valve formed by the angle of His, are the primary factors that determine the competence of the high-pressure zone (HPZ). An HPZ may be detected at the electrogenetic junction during manometric evaluation. The hypoventricular zone (HPKZ) lacks specific anatomical features, but usually has an inherent tone from lung epithelial smooth muscle fibers (LES) and a phasic extrinsic component from skeletal muscle contributions of the cardiac disc (CD). The existence of a hiatal hernia modifies the anatomical connection between the circumflex disc (CD) and the lower esophageal sphincter (LES), which has a detrimental effect on the functioning of the reflux barrier. Research has shown that three elements of the lower esophageal sphincter (LES) have a role in its effectiveness in preventing reflux: pressure (most accurately assessed at end-expiration), total length, and the length exposed to the positive pressure environment of the abdomen[18, 19].

During times of heightened abdominal pressure, the length of the intra-abdominal sphincter helps to avoid reflux. Failure to counterbalance the external pressure on the stomach with an equivalent pressure on the lower esophageal sphincter (LES) may lead to reflux of gastric contents. The presence of a hiatal hernia results in the reduction of intra-abdominal sphincter length. Through the use of HRM, this study evaluated the influence of the CD on the HPZ[11]. In healthy people, the pressures exerted by the CF during inspiration are directly applied to the LES, resulting in substantial enhancement in respiratory function. For individuals with a little amount of cephalad displacement of the external genitourinary joint (EGJ), there is noticeable separation of the cingulate disc (CD) from the lower esophageal sphincter (LES), but it is not enough to be considered a sliding hiatal hernia. If the EGJ is further displaced laterally, it results in a visible hiatal hernia. Using a combined barostat and manometric catheter, this group measured the cross-sectional area (CSA) and distensibility of the external gastrointestinal junction (EGJ) in normal participants, patients with gastroesophageal reflux disease (GERD), and those with GERD and a hiatal hernia.

The baseline mean lower esophageal susceptibility (LES) pressure was markedly reduced in individuals with a hiatal hernia in comparison to others. The application of pressure with a barostat resulted in a notably higher rise in CSA in individuals with a hiatal hernia compared to both normal patients and those with GERD but no hiatal hernia. A research has highlighted the significance of the physiological flap valve formed by the angle of His as a protective barrier against gastroesophageal reflux (21). The correlation between esophageal acid exposure and the endoscopic appearance of the flap valve emphasizes the significance of geometry at the esophageal-gastric junction (EGJ) in preventing gastroesophageal reflux disease (GERD) [22].

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A hiatal hernia reconfigures the anatomical angles between the esophagus and stomach fundus in this area, resulting in reduced effectiveness of the flap valve. Furthermore, stomach distension impairs the flap valve by reducing the length of the lower esophageal sphincter (LES) and reducing the sharpness of the angle of His, therefore resulting in sphincter dysfunction. Therefore, the reduction in length of the lower esophageal sphincter (LES) inside the abdomen, the decrease in the crural contribution to the hemodynamic pressure zone (HPZ), and the absence of the flap valve are all suggested processes by which a hiatal hernia leads to gastroesophageal reflux disease (GERD) [23].

The hiatal hernia is a frequently occurring condition associated with the development of gastroesophageal reflux disease (GERD), which is the most common foregut ailment in the Western hemisphere. It is characterized by the migration of the stomach through the esophageal hiatus into the mediastinum. Epidemiological research indicate that over 7% of persons in the United States have daily heartburn, almost 20% report symptoms on a weekly basis, and up to one-third encounter at least one episode each month [1,2]. Furthermore, the results of the current investigation corroborated the aforementioned fact. The formation of a hiatal hernia is troublesome not only because of the symptoms and consequences that may occur as a result of the hernia itself, but also because of those that originate from gastroesophageal reflux disease (GERD). Reports indicate that 19% to 70% of individuals experiencing symptoms of gastroesophageal reflux disease (GERD) had a hiatal hernia, while the control participants had a prevalence of 13% to 59%. Furthermore, at least half of the patients diagnosed with a hiatal hernia also had esophagitis, and the overwhelming majority (84%) of patients with esophagitis also had a simultaneous hiatal hernia [20]. Approximately 17.19% of patients in the current research were diagnosed with HH in GERD, which was consistent with the findings of the previous study.

Type I hiatal hernias and their correlation with gastroesophageal reflux disease (GERD) vary significantly in reported prevalence, with estimates ranging from 10% to 80% of the adult population in North America [9]. Our analysis revealed that among the 11 instances, 9 patients (81.81%) had sliding type hiatus hernias, whereas 2 patients (18.18%) had rolling type. Furthermore, the results of the current investigation corroborated with the Observation.

The existence and dimensions of a hiatal hernia were a significant risk factor for the occurrence and intensity of endoscopic lesions in individuals diagnosed with gastroesophageal reflux disease (GERD). The analysis revealed that the Hernia was small in 6 instances (54.54%), medium in 3 cases (27.27%), and big in 2 cases (18.18%). Furthermore, a large size HH resulted in a 100% reflux. Furthermore, it has been proposed that a hiatal hernia might result in heightened exposure to acid in the esophagus, whether by increasing the vulnerability to reflux or by extending the acid clearance process. Incidence and intensity of endoscopic lesions in gastroesophageal reflux disease (GERD) are directly associated with the overall exposure to acid in the esophagus [21]. The findings of our study provide data that reinforces the clinical importance of an endoscopically identified hiatal hernia and indicates a stronger correlation between hiatal hernia and GERD. Empirical investigations using endoscopic and radiographic techniques have shown that hiatus hernia is present in 60-90 percent of patients with reflux illness. In contrast, hiatus hernia was observed considerably less often (13-40 percent) in control individuals who did not have reflux disease (22,23). Our research findings were also consistent with those obtained above. In order to investigate and clarify the causes of erosive reflux esophagitis, a case-control strategy was used to examine possible risk variables in a large cohort of patients. Their findings unambiguously showed that the existence of a hiatus hernia heightened the susceptibility to all levels of esophagitis progression. An association was found

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between hiatal hernia and a 5-fold higher incidence of esophageal erosions. Moreover, the authors cited endoscopic, radiographic, and manometric investigations. A prevalence of hiatus hernia was seen in 50-94% of patients diagnosed with reflux illness (24-26). Our investigation revealed a reflux rate ranging from 66.66% to 100% in individuals with HH.

Conclusion:

Our research found a statistically significant 17.19% of cases of hiatal hernia being closely linked to GERD. Early detection and prompt treatment or surgical intervention decrease the negative health outcomes linked to hiatus hernia and acid reflux. Therefore, it is recommended that all individuals experienced with ongoing upper gastrointestinal symptoms should have upper GI endoscopy and be treated appropriately. Additional research endeavors are advised to be undertaken with bigger sample sizes in order to distinguish between newly diagnosed instances of GERD and Hiatal Hernia. It is advisable to provide the GERD questionnaire to all patients, regardless of whether they are experiencing symptoms or not, after surgery.

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Table 3: Reflux Characteristics in GERD Patients With and Without a Hiatus Hernia

Variables	**GERD patients with hia-tus hernia**	**ERD patients without hiatushernia**	**P Value**
Time with esophageal pH ≤ 4 (%)	8.3 (6.7–12.3)	4.1 (3.5–6.8)	0.01
Reflux episodes (n/h)	3.8 (3.1–5.2)	2.1 (1.8–2.4)	0.001
Mean duration reflux episode (s)	81.5 (54.0–108.9	96.8 (70.7–96.0)	ns

Table 4: Association between the hiatal hernia size and reflux Hiatal hernia

Variables	**Hital Hernia**		**P value**
Size		Acid Reflux %	
Small	6 (54.54%)	66.66%	0.042/0.013
Medium	3 (27.27%)	66.66%	0.023/0.012
Large	2 (18.18%)	100%	0.041/0.05