

Research Article

Hiatus Hernia in Nigerians – An Endoscopic Study

Bashiru Ismaila*, Alexander Ale, Emmanuel Ojo, Michael Misauno, and Augustine Sule

Department of Surgery, Jos University Teaching Hospital, Nigeria

*Corresponding author

Bashiru Ismaila, Department of Surgery, Jos University Teaching Hospital, P.M.B 2076 Jos, Plateau State, Nigeria, Tel: 234-8035-863-928; Email: bashhomeiza@gmail.com

Submitted: 13 February 2017

Accepted: 27 March 2017

Published: 29 March 2017

ISSN: 2379-0911

Copyright

© 2017 Ismaila et al.

OPEN ACCESS

Keywords

- Hiatus hernia
- Prevalence
- Upper gastrointestinal endoscopy
- Nigerians

Abstract

Hiatus hernia is considered to be rare in Nigerians. Older radiological studies utilizing barium suggest 0.39% prevalence. More recent retrospective endoscopic studies in Nigeria suggest that the prevalence ranges from 2% to 28% but it is unclear how the diagnosis was made.

A prospective study examining consecutive videos of the retroflexed view of patients undergoing endoscopy was carried out to determine grades of gastro-esophageal disruption. The fundal area was also examined for paraesophageal hernia.

Of 193 patients who had endoscopy in the study period, after excluding repeat endoscopies and patients with proximal obstructing lesions, 151 had clear unobstructed retroflexed views. Grade IV gastro-esophageal junction disruption (hiatus hernia) was seen in 5 (3.3%) patients while 4 (2.6%) had grade III disruption. Twenty-five (16.6%) had grade II while 117 (77.5%) of the patients had grade I (normal). None of the patients had paraesophageal hernia.

Hiatus hernia and major gastro esophageal junction disruption are relatively rare in Nigerian patients who underwent endoscopy.

ABBREVIATIONS

GEJ: Gastro Esophageal Junction; GI: Gastrointestinal

INTRODUCTION

Although hiatus hernia is considered rare in Nigerians, this is derived from old studies utilizing barium meal [1]. While more recent retrospective endoscopic studies in Nigeria suggest that the prevalence ranges from 2% to 28%, they do not all state how the diagnosis was made [2-4]. Hiatus hernia involves the herniation of abdominal contents, usually stomach, through the diaphragm into the mediastinum. It is classified into sliding (85-95%) and paraesophageal hernias [5]. On upper gastrointestinal endoscopy, a sliding hiatus hernia is defined as a greater than 2 cm separation between the squamocolumnar junction and the diaphragmatic impression using the hash marks on the endoscope relative to the incisors. However this method is subjective and prone to several problems [6]. An alternative but also subjective approach assesses the gastro esophageal junction (GEJ) through the retroflexed endoscope and describes a progressive anatomical disruption which has been graded and corresponds to the degree of gastro-esophageal reflux (Figure 1) [7]. There have been attempts to improve the objectivity of this approach [6]. This retroflexed view determines whether there is widening of the hiatus and laxity of the phrenoesophageal membrane which enables the stomach to herniated into the mediastinum. Grade I is normal while Grade IV corresponds

to sliding hiatus hernia. The retroflexed endoscopic views also provide the opportunity to assess the fundal area of the stomach for paraesophageal hernia.

Thus observing the degree of disruption of the GEJ in Nigerians would be an estimate of the prevalence of hiatus hernia. The examination of the fundus of the stomach will also show presence of paraesophageal hernia. The study was to determine the grades of GEJ disruption and presence of hiatus hernia in Nigerian patients undergoing upper GI endoscopy.

MATERIALS AND METHODS

This was a prospective cross sectional study of consecutive patients presenting for upper GI endoscopy in a private hospital from July 2013 to November 2016. The sample size was calculated using StatCalc (Epi Info 7.2.0.1, Centre for Disease Control) utilizing a population of 900000 for Jos with an expected prevalence of 6.8% [2]. With confidence limit set at 5 %, and a confidence interval of 95%, the sample size was 97. All consecutive upper GI endoscopies performed in the hospital were entered in a prospective database. Endoscopy was performed using Olympus video endoscopes (GIF-XQ-140, GIF 140, GIF 2T100). The endoscopies were performed by a single endoscopist in this facility and recorded. Recorded videos of the retroflexed views were then isolated and reviewed by the authors and graded independently. Grading was performed by comparing the recorded endoscopic view with diagrams

containing descriptions of the different grades of progressive anatomic GEJ disruption (Figure 1) [6]. Differences in grading were resolved by repeat viewing and grading until all examiners agreed on grade. This consensus grade was recorded in the proforma as the endoscopic grade of the anatomic disruption of the GEJ. The views were also accessed for paraesophageal hernia. Endoscopic examinations that did not display a retroflexed view of the stomach, or performed on non-Nigerians were excluded. Hiatus hernia was defined as grade IV deformity – the gastroesophageal hiatus stays open continuously and the axially displaced squamous epithelium of the distal esophagus could be seen, in the retroflexed view (Figure 1).

Statistical analysis was done to determine frequencies and percentages.

RESULTS AND DISCUSSION

Overall, 193 consecutive upper GI endoscopies were carried out within the study period, 151 had suitable displayed retroflexed views (Figure 2). Seventy-two (47.7%) were male and 79 (52.3%) were females. Mean age of the participants was 49 years (Range, 6yrs – 90yrs). Hiatus hernia was found in 5 (3.3%) The grades of GEJ disruption found in participants are shown in Table (1). All the patients with hiatus hernia had symptoms. There were no paraesophageal hernias seen.

There were 3 males and 2 females with hiatus hernia; the mean age was 55.6 years (Table 2). However only 1 male had grade III GEJ disruption, the other 3 were females; their mean age was 52.3 years (range 12 – 75 years).

Discussion

The most important finding in this study, examining the retroflexed views for disruption of the GEJ was that the prevalence of hiatus hernia (Grade IV GEJ disruption) in Nigerian patients undergoing endoscopy is 3.3%. Only a minority (nine)

of the participants had Grade III and IV GEJ disruptions. Majority of the patients (77.5%) had normal gastroesophageal junctions (grade I). There were no paraesophageal hernias in our series. The prevalence of hiatus hernia is relatively low in Nigerians undergoing endoscopy when a reproducible endoscopic method is utilized. To our knowledge, this is one of the few attempts to determine the endoscopic prevalence of hiatus hernia in Nigerians prospectively.

Hiatus hernia is relatively difficult to diagnose. Not all patients with hiatus hernia are symptomatic, and even symptomatic patients have upper gastrointestinal symptoms that are not specific [5]. Also there is no direct correlation between the presence and severity of symptoms with presence or size of hernia. The complementary role of hiatus hernia in the pathogenesis of gastro esophageal reflux disease has been described [8,9]. Currently diagnosis of hiatus hernia is made mainly by radiological contrast study, endoscopy and manometry, all of which have their shortcomings [6]. Smaller disruptions that have less than 2 cm axial displacement and more accurate detection of hiatus hernia require high resolution manometry [6,10]. These investigative modalities are not readily available in Nigeria.

On upper GI endoscopy, there are two commonly used methods for detecting sliding hiatus hernia. In the first method, at the distal esophagus sliding hiatus hernia is defined as a greater than 2 cm separation between the squamocolumnar junction and the diaphragmatic impression using the hash marks on the endoscope relative to the incisors [6]. However this method is subjective and prone to several problems. These include reflex shortening of the esophagus by contractions of its longitudinal muscles caused by presence of the endoscope; this can be further worsened by retching. Furthermore hash marks (5 cm apart) on the endoscope are used to access this distance relative to the incisors with an often opaque bite guard increasing the

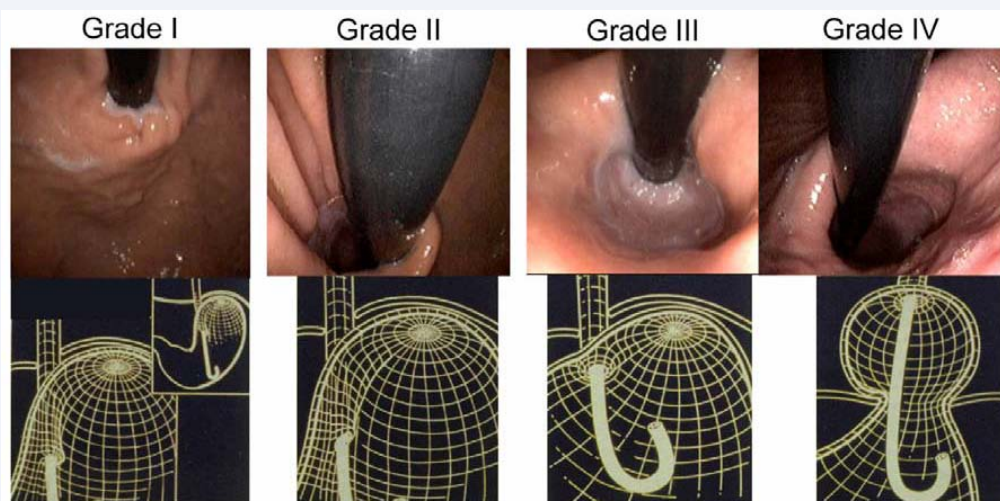


Figure 1 Endoscopic appearance and 3 dimensional representation of gastroesophageal junction disruption. In grade I, a ridge of muscular tissue is closely approximated to shaft of the retroflexed endoscope. In grade II the ridge of tissue is less well defined with slight proximal displacement of the squamocolumnar junction and widening of the angle of His. In grade III, the ridge of tissue is barely present and there is incomplete luminal closure around endoscope. Grade IV has no muscular ridge, the gastroesophageal junction is open all the time and the squamous epithelium of the distal esophagus can be seen.

Table 1: Observed grades of GEJ disruption.

Grade	Number (%)
I	117 (77.5)
II	25 (16.6)
III	4 (2.6)
IV	5 (3.3)
Total	151 (100)

Abbreviations: GEJ: Gastro Esophageal Junction

subjectivity. In the second method, the gastroesophageal junction is observed through the retroflexed endoscope and describes a progressive anatomical disruption which is graded. Four grades demonstrating the progressive widening of the hiatus tunnel and laxity of the surrounding phrenoesophageal membrane are recognized [7]. In grade I, a ridge of muscular tissue is closely approximated to the shaft of the retroflexed endoscope. With a grade II the ridge of tissue is less well defined and there is slight proximal displacement of the squamocolumnar junction and widening of the angle of His. In grade III, the ridge of tissue is barely present and there is incomplete luminal closure around the endoscope. Grade IV has no muscular ridge, the gastroesophageal junction is open all the time and the squamous epithelium of

the distal esophagus can be seen. This method has also been described as subjective but attempts have been made to make it more objective [6,11]. The use of endoscopy for hiatus hernia assessment is attractive because it is the investigation of choice for evaluating the upper GI symptoms and multiple lesions can be diagnosed. However in an unseated patient, the retroflexed view is associated with discomfort making the examination more difficult. Conversely hiatus hernia is difficult to assess in fully sedated patients undergoing endoscopy due to reduced respiratory movements of diaphragm [12].

Barium examinations were the earliest method utilized to determine the prevalence of hiatus hernia in Nigerians. Bassey and coworkers about 40 years ago reported that after 1030 consecutive barium meal assessments, they found only 0.39% with hiatus hernia [1]. More recent endoscopic studies show higher prevalence of hiatus hernia. Misauno et al., in a retrospective study in Jos University Teaching Hospital reported that of 989 patients who had upper GI endoscopy by the surgical endoscopy unit from 1999 to 2010, 6.8% had hiatus hernia [2]. Okeke et al., in another retrospective study of 3069 upper gastrointestinal endoscopies performed by gastroenterologists in Jos University Teaching Hospital from 2000 to 2010 reported a hiatus hernia finding of 2% (3). However it was not stated in either study how the diagnosis of hiatus hernia was made during endoscopy. David

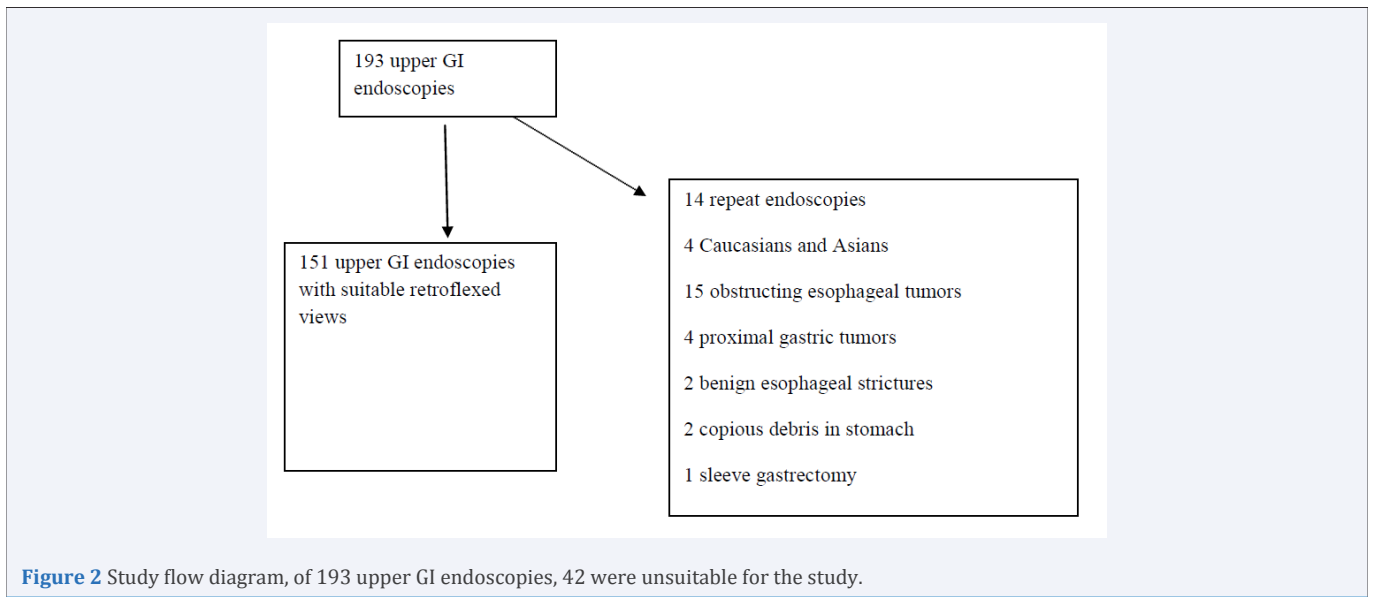


Table 2: Age, sex, clinical diagnosis and endoscopy findings in patients with hiatus hernia

S/no	Age (Years)	Sex	Symptoms	Previous Diagnosis	Endoscopy findings
1	62	M	Epigastric pain	PUD	HH, esophagitis, prepyloric ulcer
2	56	F	Obesity, DM, hypertension Epigastric pain, regurgitation	Metabolic syndrome, GERD	HH
3	58	F	Epigastric pain, reflux	Hiatus hernia	esophagitis, HH
4	32	M	Recurrent epigastric pain	PUD	esophagitis, inflammatory distal esophageal polyp, HH
5	70	M	Dysphagia retrosternal pain, vomiting	Proximal gastric cancer	esophagitis, HH

Abbreviations: PUD: Peptic Ulcer Disease; HH: Hiatus Hernia; DM: Diabetes Mellitus; GERD: Gastroesophageal Reflux Disease

et al in a retrospective analysis of 91 cases of upper GIT bleeding who had endoscopy in Kaduna, Nigeria found that 3.3% had hiatus hernia [13]. In this study it was also not stated how the diagnosis was made. These studies suggested that the prevalence of hiatus hernia was low in the Nigerian population. Interestingly Ajayi and coworkers in another retrospective study of 118 subjects in South West Nigeria in 2009 in which retroflexed views of the esophagus were used, found a 28% prevalence of hiatus hernia [4]. This study, which defined hiatus hernia, had a much higher prevalence rate than the other studies. These endoscopic studies suggested higher rates of hiatus hernia than in the radiological study but with a wide range and were all retrospective in design. This made it necessary for another study utilizing an established endoscopic method of determining the presence of hiatus hernia to be carried out in a prospective manner with several observers to reduce subjectivity.

Our study also suggests that the use of the retroflexed view to evaluate GEJ disruption is suitable way of determining the presence of hiatus hernia. The performance of the procedure by a single endoscopist and the use of video recordings to assess the GEJ obstruction were designed to reduce the subjectivity of the study. The endoscopist was likely to perform all the examinations in a similar way and this will prevent variability between endoscopists. The study of the recorded retroflexed views by the authors and reaching a consensus view on the grade reduced the subjectivity that can be associated with grading performed by the endoscopist alone.

Age is a major risk factor for hiatus hernia [5]. In our study all the patients with hiatus hernia except one were above 55 years (Table 2). The mean age of the patients with hiatus hernia (55.6 years) was higher than the mean age for the sample population (49 years). Only 1 of the 5 patients with hiatus hernia had a clinical diagnosis before endoscopy underscoring the unreliability of clinical diagnosis in this condition. The presence of other lesions during endoscopy in some patients with hiatus hernia recommends endoscopy as an important investigation in these patients.

Geographic variations in the prevalence of hiatus hernia have been described in literature [14]. The prevalence of hiatus hernia detected via endoscopy in Europe is above 15% with a Turkish study detecting 40% while the prevalence from endoscopic studies in the Orient is lower, 2.9-6.9%. The prevalence in the US varies widely and estimated to be 10-80% in adults [5], while Cuba has a prevalence of 46.5% [15]. Our study suggests that the prevalence in countries like Nigeria is low and similar to what has been observed in the Far East. This also agrees with earlier observations about the rarity of hiatus hernia in Africans [16]. Thus the study was able to demonstrate via endoscopy the prevalence of hiatus hernia in a cohort of Nigerian patients. It confirms that the prevalence of hiatus hernia is low even in symptomatic patients undergoing endoscopy. This supports the current view that hiatus hernia is low in the Nigerian population. Whether our study just validates the assertion that hiatus hernia prevalence is low in Nigerians or is a snapshot of changing rate of hiatus hernia as our population become older and urban is uncertain.

Our study has several limitations. Although the study had a

relatively small sample size, it was above the number calculated to determine the prevalence of hiatus hernia in the region. A selection bias in our study is a possibility as hiatus hernia is more likely to be detected in subjects that are symptomatic than in the general population, since ours was a hospital based study. If this is the case, the prevalence of hiatus hernia can be lower in the general population. We intend to continue the study with other endoscopists and in other facilities to see if the current trends continue. A large population based screening endoscopy study involving the different regions in Nigeria will reduce sampling bias.

CONCLUSION

In conclusion our study shows that the prevalence of hiatus hernia in Nigerians is 3.3% and suggests that most subjects undergoing endoscopy have normal gastroesophageal junctions. Grading of the gastroesophageal junction with a retroflexed view during endoscopy is a useful method for determining the presence of hiatus hernia.

REFERENCES

1. Bassey OO, Eyo EE, Akinhanmi GA. Incidence of hiatus hernia and gastro-oesophageal reflux in 1030 prospective barium meal examinations in adult Nigerians. *Thorax*. 1977; 32: 356-359.
2. Misauno MA, Ismaila BO, Usman BD, Abdulwahab AA, Achinge GI. Spectrum of endoscopically diagnosed upper gastrointestinal diseases in Jos. *Sahel Med J*. 2011; 14:63-66.
3. Okeke EN, Duguru MJ, Adabe R, Ladep GN, Malu AO, Agaba EI. Upper gastrointestinal endoscopy at the Jos University Teaching Hospital: a 10 year review. *J Med Res Pract*. 2013; 2: 2-5.
4. Ajayi AO, Solomon OA, Adegun PT. Prevalence of ERD in Ado-Ekiti, Nigeria. *Nig J Gastroenterol Hepatol*. 2013; 5: 79-84.
5. Roman S, Kahrilas PJ. The diagnosis and management of hiatus hernia. *BMJ*. 2014; 349: 6154.
6. Kahrilas PJ, Kim HC, Pandolfino JE. Approaches to the diagnosis and grading of hiatal hernia. *Best Pract Res Clin Gastroenterol*. 2008; 22: 601-616.
7. Hill LD, Kozarek RA, Kraemer SJ, Aye RW, Mercer CD, Low DE, et al. The gastroesophageal flap valve: *in vitro* and *in vivo* observations. *Gastrointest Endosc*. 1996; 44: 541-547.
8. van Herwaarden MA, Samsom M, Smout AJ. Excess gastroesophageal reflux in patients with hiatus hernia is caused by mechanisms other than transient LES relaxations. *Gastroenterology*. 2000; 119: 1439-1446.
9. Kahrilas PJ. The role of hiatus hernia in GERD. *Yale J Biol Med*. 1999; 72: 101-111.
10. Weijenborg PW, van Hoeij FB, Smout AJ, Bredenoord AJ. Accuracy of hiatal hernia detection with esophageal high-resolution manometry. *Neurogastroenterol Motil*. 2015; 27: 293-299.
11. Seltman AK, Kahrilas PJ, Chang EY, Mori M, Hunter JG, Jobe BA. Endoscopic measurement of cardia circumference as an indicator of GERD. *Gastrointest Endosc*. 2006; 63: 22-31.
12. Lee HJ, Kim B, Kim DW, Park JC, Shin SK, Lee YC, et al. Does Sedation Affect Examination of Esophagogastric Junction during Upper Endoscopy? *Yonsei Med J*. 2015; 56: 1566-1571.
13. David OS, Ibinaiye P. Diagnostic endoscopic findings in patients with upper gastrointestinal tract bleeding in Kaduna State, Northwestern

- Nigeria. *Eur J Sci Res.* 2013; 99: 194-199.
14. Kang JY. Systematic review: geographical and ethnic differences in gastro-oesophageal reflux disease. *Aliment Pharmacol Ther.* 2004; 20: 705-717.
15. Galbán E, Arús E, Periles U. Endoscopic findings and associated risk factors in primary health care settings in Havana, Cuba. *MEDICC Rev.* 2012; 14: 30-37.
16. Burkitt DP. Hiatus hernia: is it preventable? *Am J Clin Nutr.* 1981; 34: 428-431.

Cite this article

Ismaila B, Ale A, Ojo E, Misauno M, Sule A (2017) Hiatus Hernia in Nigerians – An Endoscopic Study. *J Surg Transplant Sci* 5(1): 1048.