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Fundoplication Experience in three Private Centers in South Southern Nigeria.

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Abstract

Background.:*Hiatal hernia is becoming a new face of treatment challenge in developing economy. Most cases are associated with reflux disease. Anti-reflux surgery where indicated will be rewarding.*

Aim.:*This was to elucidate an experience of fundoplication performed by a single surgeon in three different centers in the developing economy.*

Methodology: *This was a review of a prospectively collected data of cases performed, stored electronically in Excel spread sheet and Epi-info from December 2019 to December, 2025. The review included Laparoscopic procedures and laparoscopy assisted performed. Most case were done in Immaculate Conception Endoscopy and Minimal Access Surgery specialist centre (ICEMASS), while five case were done at Prime medical consultants, one case at Maggie Memorial hospital/ meridian hospital. The results were analyzed using SPSS version 25.*

Results: *A total of 78 cases were performed. Seventy-Five where laparoscopic fundoplication using Nissen method. Three were done via Laparoscopy assisted using Tourpet Method. The age range from 8 to 65 years with a mean age of 44.3 ± 8.1 years. Fourteen males and Sixty-four females with a M: F ration of 1:5. Most of the cases were done in 2025 with median duration of surgery of 2.5 ± 0.6 hours. Follow-up revealed complete resolution of symptom in 72 cases, one was lost on follow-up. Three cases experiences discomfort and still on follow-up. Two of the patients had dysphagia and had oesophageal balloon dilatation. One had oesophageal perforation and was managed conservatively. A case of esophago-gastric fistula following passage of nasogastric tube, was noted but this was treated with endoscopic clip application.*

We observed that three patients who had Barret's without dysplasia where found to have complete disappearance of Barrett's post-operatively. 5 patients who presented through referral by Otorhinolaryngology also had resolution of their concurrent halitosis, tonsillitis and pharyngeal nodules. Table 1 showed yearly distribution of surgery while figure 1 and 2 showed pre and post operation pictures of hernia state. Figure 3 A and 3B showed the presence of Barrett's in one of the patients.

Conclusion: *This experience is quite minute but will add to literature, especially in developing economy.*

Key words: *Fundoplication surgery, experience, South Southern Nigeria.*

Introduction

Hiatal hernia is becoming a new face of treatment challenge in developing economy.

Most cases are associated with reflux disease. Anti-reflux surgery where indicated will be rewarding.

Aim

This was to elucidate an experience of fundoplication performed by a single surgeon in three different centers in the developing economy.

Methodology

This was a review of a prospectively collected data of cases performed, stored electronically in Excel spread sheet and Epi-info from December 2019 to December, 2025. The review

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included Laparoscopic procedures and laparoscopy assisted performed.

The results were analyzed using SPSS version 25. This work has been reported in line with the SCARE criteria [16]. This research work has been reported in line with the PROCESS criteria [17].

Results

A total of 78 cases were performed. Seventy-Five where laparoscopic fundoplication using Nissen method. Three was done via Laparoscopy assisted using Tourpet Method. The age range from 8 to 65 years with a mean age of 44.3 ± 8.1 years. Fourteen males and Sixty-four females with a M: F ration of 1:5. Most of the cases were done in 2025 with median duration of surgery of 2.5 ± 0.6 hours. Follow-up revealed complete resolution of symptom in 72 cases, one was lost on follow-up. Three cases experiences discomfort and still on follow-up. Two of the patients had dysphagia and had oesophageal balloon dilatation. One had oesophageal perforation and was managed conservatively. A case of esophago-gastric fistula following passage of nasogastric tube, was noted but this was treated with endoscopic clip application.

We observed that three patients who had Barret's without dysplasia where found to have complete disappearance of Barrett's post-operatively. 5 patients who presented through referral by Otorhinolaryngology also had resolution of their concurrent halitosis, tonsillitis and pharyngeal nodules.. Figure 1 showed pre and post operation pictures of hernia state. Figure 2 showed yearly distribution of surgery, figure 3 showed lower oesophageal mucosa and intra-operative image, while Figure 4 A and 4B showed the presence of Barrett's in one of the patients.

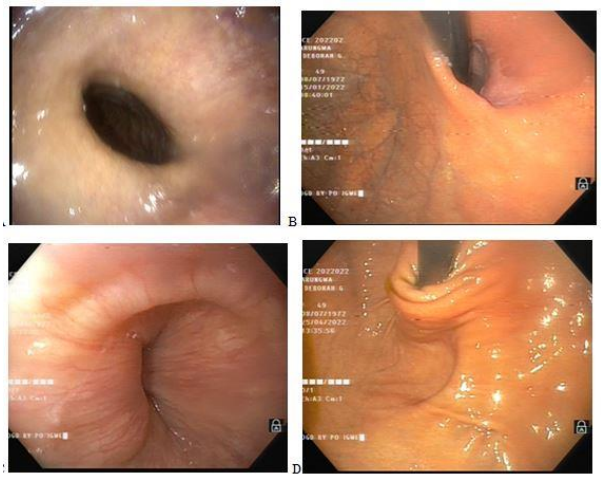

Figure A and B: showed gaping lower oesophagus in A and cardia in B prior to surgery while after fundoplication surgery seen C lower oesophagus and D same cardia,

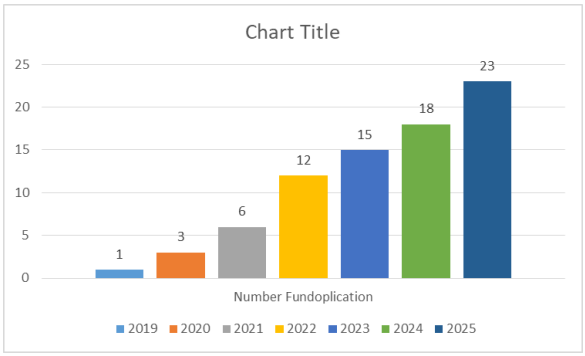

Figure 2 Fundoplication performed per year.

Lower oesophagus

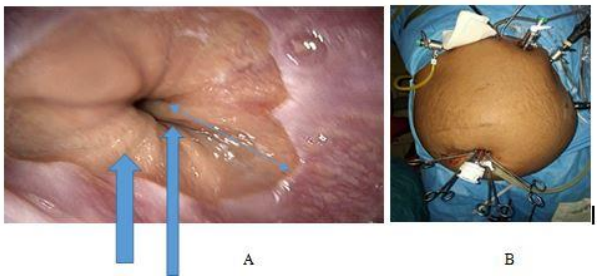

Figure 3 Intra-operative port placement.

A is squamocolummar junction while B is diaphragmatic indentation in lower esophagus Size of hiatus hernia is A-B = important determinant in pathology. The effect on mucosae also determines the degree of transformation (Dysplasia, metaplasia, anaplasia and carcinoma or adenocarcinoma)

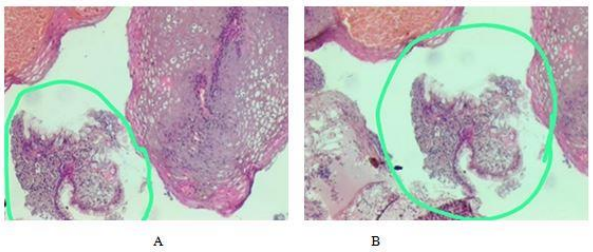

Figure 4 Micrograph of Barrett's esophagus.

Discussion

Many studies have demonstrated that hiatal hernia is closely related to reflux symptoms, reflux oesophagitis, Barrett's oesophagus and oesophageal adenocarcinoma. Patients with hiatal hernia are more likely to present with gastro-oesophageal reflux disease symptoms than those without hiatal hernia, and symptomatic GERD patient are more likely to have hiatal hernias compared to those without symptoms [1,4,5]. In addition studies from western countries showed that over half of the patients (50 to 94%) with reflux oesophagitis that was diagnosed either endoscopically or radiologically had concomitant hiatal hernias [7,8]. Most of our patients had endoscopically diagnosed. And few were recognised on abdominal and pelvic computerized axial tomographic scan. Furthermore both the presence and size of the hiatal hernia were important, with majority of patients with severe oesophagitis having hiatal hernia[15,16]. Also Barrett's oesophagus is strongly related to hiatal hernia with initial

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hiatal hernia being present in a great majority (72% to 96%) of patients with Barrett's oesophagus. The prevalence of hiatal hernia increases with the length of Barrett's oesophagus and the size of hiatal hernia was larger in those with Barrett's oesophagus compared to those without [13] and this is known to double the risk of developing oesophageal adenocarcinoma [14, 17]..In our series, quite a good number of oesophageal cancers were seen but they are not part of this report. They were referred to cardiothoracic surgeons for further treatment.

A study by Juliana et al on Hiatal hernia and the risk of Barrett's oesophagus was asystematic review of Barrett's oesophagus from thirty-three observational studies comprising 4390 Barrett's oesophagus patients[25]. The study showed that hiatal hernia was associated with an increased risk of Barrett's oesophagus of any length. (odds ratio 3.94; 95% confidence interval 3.02-5.13). The short segment Barrett's oesophagus subgroup revealed an increased risk (odds ratio 2.87; 95% confidence interval 1.75-4.70) [25]. However, the strongest association was noticed between hiatal hernia and long segment Barrett's oesophagus (odds ratio 12.67; 95% confidence interval 8.33-19.25). The increased incidence was present even after adjusting for reflux and body mass index. [25]

Study by BengtWallner et al identifying clinically relevant sliding hiatal hernias: a population-based endoscopy study, on a study population representative of the general Swedish population where they answered a questionnaire regarding gastrointestinal symptoms and then investigated with an upper gastrointestinal endoscopy [19]. They also measured the length of any sliding hiatal hernia. The upper endoscopy followed a strict and structured endoscopic protocol, investigating the oesophagus, stomach and upper duodenum. A total of 365 patients were included in the study, 186 women and 176 men. The participants were between 20 and 79 years of age(median 55 years). A total of 107 participants reported acid regurgitations and/or heartburn. Two hundred and forty-nine participants had sliding hiatal hernia, and fifty-eight participants had oesophagitis[19]. Of these 58 participants 36 had grade-Aoesophagitis according to the Los Angeles classification, 19 had grade B and 3 had grade C. The only symptoms that were associated with length of the hiatal hernia were reflux-related. Increasing length of sliding hiatal hernia was significantly associated with a higher odds of acid regurgitation (OR 1.46, CI 1.19-1.76), and heartburn (OR 1.27, CI 1.05-1.54). When evaluating the association between reflux symptoms and length of hiatal hernia in a binary fashion the association became significant at a length of 2cm [19]

They further observed that hernias smaller than 2cm endoscopically were not related to symptoms, and sliding hernias 2cm or larger were only associated with reflux symptoms but not with any other upper gastrointestinal symptoms [19].In our series too our patents had late symtoms such as regurgitation, severe reflux of Los Angeles type C and D, failed or prolonged medical therapy, huge or large hiatus hernia of ≥ 4 cm and most were Hills type IV.

Hiatal hernias of different lengths are common findings at endoscopy and are said to be present when there is oral displacement of the gastrooesophageal junction and the proximal part of the stomach into the chest. There is a physiological herniation of the gastro-oesophageal junction during swallowing and breathing but there is no defined consensus as to when this herniation becomes pathological, however in their study they noted that small hernias are asymptomatic and of no clinical relevance. [19]

M Al-Tashi et al carried out a study on hiatal hernia and Barrett's oesophagus impact on symptoms occurrence and complications. The aim was to evaluate the effect of sliding hiatal hernia over the Barrett's oesophagus, including symptoms rate and complications [24].

Total of 520 (4.6%) cases of Barrett's oesophagus were found out of 18,276 upper gastrointestinal endoscopies performed. Sliding hiatal hernia was found in 58% of patients with Barrett's oesophagus, more frequently in males (60%). The association between hernia and some complications of Barrett's oesophagus was significant (94% of Barrett's ulcer, 77% of low grade dysplasia with $p<0.01$).[24]However there was no significant association with adenocarcinoma (54%; $p>0.05$). Also they observed that the other complications of Barrett's oesophagus (i.e bleeding, stenosis, high grade dysplasia) were identified in small number (< 10) and so were not evaluated statistically. Association between hiatal hernia and occurrence of symptoms (reflux symptoms, dysphagia, odynophagia, dyspeptic and other symptoms) was significant with $p<0.01$. [24]

They concluded by suggesting from their study that sliding hiatal hernia may play a significant role in the pathophysiology of Barrett's oesophagus. Also noted that complication rate of Barrett's oesophagus was not equally frequent in particular cases with hiatal hernia. The occurrence of symptoms is getting pronounced in those with sliding hiatal hernia [24].Hence reparing this with anti-reflux surgery will play a major role in prevention and treatment.

Study by Michael Weitzendorfer et al (2017) on the preoperative diagnosis of hiatal hernia: barium swallow X-ray, high resolution manometry, or endoscopy, with the aim of assessing the clinical utility of these methods in terms of hiatal hernia detection and their correlation to gastro-oesophageal reflux disease(GERD) [26].Both before or after surgery for assessment will sure laid in managing these patients properly.

In our experience, we encountered few complications and these were managed conservatively, only one case of oesophageal perforation required reoperation, radiological guided drainage of intra-abdominal seroma collection played a major role in recovery.

Most of our patients had complete resolution of symptoms during the follow up period.

The cost benefit comparing drug treatment and surgery was assessed by an accountant who observed that those who had surgery with resolution of symptoms who had used drug

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therapy for a long period prior to surgery, felt better and saved cost.

Conclusion

This experience is quite minute but will add to literature, especially in developing economy.

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Ethical approval was obtained from Hospital Ethics Committee.

Consent was obtained from patients.

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