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Effictiveness of Laparoscopic Fundoplication in Releiving the Sypmtoms of Gastro-Oesophageal Reflux Disease in Patients of Sliding Hiatus Hernia

KEYWORDS: GERD, Nissan's Fundoplication, Reflux esophagitis, LOS, GOJ

Dr.Chetan N. Mhaske

MBBS, M.S.FIAGES,FMAS, DR.MHASKE HOSPITAL AND RESEARCH CENTRE PVT.LTD, JIYAJI MANTION BLD, PUNE-SOLAPUR HIGHWAY, GADITAL, HADAPSAR PUNE-411028,MAHARASHTRA

ABSTRACT *Sliding hiatus hernia disrupts both the anatomy and physiology of normal anti-reflex mechanism. The presence of hiatus hernia is associated with symptoms of gastro-esophageal reflux, increased prevalence and severity of reflux esophagitis, Barrett's esophagitis and malignancy. It was initially thought that a hiatus hernia has to be present for reflux esophagitis to occur. Subsequently hiatus hernia was considered an initial finding of consequences. In our institute over 1500 gastroscopies are done from May 2012 to June 2015 .Out of which those presenting with reflux esophagitis and other complications of hiatus hernia and GERD are taken for laparoscopic fundoplication surgery. We have observed that patient's undergone surgeries are much better and their quality of life was much improved than those only on medication. Also our study showed that the need of chronic medical therapy has reduced in patient who undergone this surgery.*

INTRODUCTION

Winklenstein first described gastro esophageal reflux disease in 1935 [1] and Allison[2] highlighted the association between esophagus and hiatus hernia. The association between hiatus hernia and GERD has long been recognized .[2,3] much work has been done recently to elucidate the effect of hiatus hernia in pathophysiology of GER , and we are now beginning to understand the complex relationship. [4]

Factors contributing to the antireflux mechanism in normal subjects:-

- Lower esophageal sphincter (LOS)
- Crural diaphragm
- Angle of His
- Intra-abdominal portion of the LOS
- Phrenoesophageal ligament
- Esophageal peristalsis
- saliva

Hiatus hernia: hiatus hernia refers to the herniation of parts of the abdominal contents through the esophageal hiatus of the diaphragm.

There are three recognized types[5, 6]

Type I – commonest type, characterized by widening of muscular hiatus aperture of diaphragm, with laxity of phreno-oesophageal membrane, allowing some of the gastric cardia to herniated upwards.

Type II- it result from a localized defect in phreno-oesophageal membrane. The GOJ remain fixed to the pre-aortic fascia and the arcuate ligament.

Type III- mixed type I and type II, with a sliding element to the type II hernia.

Pathophysiological effects of a hiatus hernia.

- Decrease in intra- abdominal length of the LOS
- Decreased LOS pressure
- Impairment of diaphragmatic sphincter
- Impairment of esophageal peristalsis
- Increased cross sectional area of the GOJ
- Decreased esophageal acid clearance
- Increased esophageal acid exposure

Diagnosis :

The GOJ moves during swallowing in relation to diaphragmatic crus. While large hernias are easily detected by endoscopy, radiological , manometric studies, the diagnosis of small hernia is not well standardized.

Radiography :

On barium studies, the lower esophageal mucosal ring demarcates the union of stomach with oesophagus[7], and thus its presence above the diaphragmatic hiatus is used as the sign of a hiatus hernia. Most authors agree that lower esophageal ring must be at least 1-2 cm above the level of diaphragmatic hiatus to diagnose a hiatus hernia[5].

Upper gastrointestinal endoscopy:

At upper GI endoscopy, the GOJ is recognized as the Z-line, where the dark pink columnar stomach mucosa changes to the lighter pink squamous esophageal mucosa above the visible stomach folds. In normal subjects, the GOJ is seen just above the diaphragmatic crus[8]. Most authors consider a hiatus hernia to be present if diaphragmatic indentation is seen 2cm or more distal to the Z-line and the top of the stomach folds[6, 8]**.** At present, radiology is the only accurate method of measuring hiatus hernia

size. However upper GI endoscopy is now the standard tool for assessing upper GI symptoms.

Esophageal manometry:

When the manometry probe is in the stomach, a deep inspiration is recorded as a positive deflection, as abdominal pressure rises. When the probe is in the thoracic cavity a deep inspiration causes negative deflection as thoracic pressure is lowered. With a small hiatus hernia, an accurate measurement can be difficult because diaphragm changes position with respiration. It is only in large hiatus hernia that the LOS is proximal to the respiratory reversal point. Therefore, manometry is not a sensitive tool for the diagnosis of a hiatus hernia.[6]

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Etiology:
The hiatus hernia can be caused by one or more of the three mechanisms:

- Widening of diaphragmatic hiatus,
- Pulling up of the stomach by esophageal shortening, and
- Pushing up of the stomach by increased intra-abdominal pressure.[9]

Methodology :
Prospective study of the patients screened at Dr.Mhaske hospital and research Centre Pvt.Ltd. (DMHRC) for upper gastrointestinal endoscopy were selected from May 2012 to June 2015, total of 1520 scopy has been considered as sample size. Pre-operative evaluation included Gastroscopy, barium study and Manometry. Visual analogue scoring scale (0-10 severity) has been used to assess degree of heartburn, regurgitation and dysphagia. Patients after endoscopy are marked with disease specific symptoms and scored on the scale. GERD scope (2-32) by Jamieson was also utilized. The need of GERD medications before and after surgery was assessed.

Observation and analysis:
Table -1.

Disease	Total no.
Normal endoscopy finding	210 (13.8%)
Reflux oesophagits	200 (13.15%)
Hiatus hernia (small and large both)	350 (23.02%)
Antral gastritis with or without duodenitis	320 (21.05%)
Others	440 (28.9%)
Total opd base gastroscopy	1520

Out of the 1520 upper GI endoscopies performed in DMHRC, 350 patients had either small or large hiatus hernia with or without symptoms. All the symptomatic patients were first given H-pylori treatment for eradication of h-pylori bacteria. Also they had been thought regarding dietary modifications and weight loss is some patients. In majority of patients simple change in diet and life style modification has made acceptable improvement in symptoms.

Those patients who were having secondary complications of hiatus like reflux esophagitis or beret's changes are then chosen for laparoscopic fundoplication. Also those patients who were shown atypical symptoms of hiatus, non-compliance on medical management were selected for surgery.

50 patients were selected after their fitness for laparoscopic Nissan's fundoplication.

Sex ratio:
In our study of 50 patients, 35 (70%) were male patients and remaining 15 (30%) were female. It showed that male population is at higher risk and at higher prevalence of hiatus hernia with complications.

Age wise distribution:
In our study, all the age group from 20 yrs above were chosen according to their fitness for surgery.

Table 2.

Age	Percentage
20-40-years	25 (50%)
40-60 years	18 (36%)
More than 60 years	7 (14%)

In our study, more of younger population in age group of 20 to 40yrs has been seen affected and getting treated. Stress, irregular dietary habits, lack of exercise, fast food, disturbed sleep as in IT professionals has been associated with it.

At 1 year follow up, the average symptom score decreased significantly in comparison to the pre-operative value.

Table 3-

Symptoms	Pre-op value	Post op value
Heartburn	8.4	1.7
Regurgitation	7.2	0.7
Dysphagia	3.7	1.0

The Jamieson GERD score also decreased from 25.7 preoperatively to 4.1 post-operatively. Only 5 patients i.e. 10% were on PPI at 1 year after surgery for symptoms of GERD. Some patients 4, (8%) with questionable results as of Barrett's esophagitis, IBS were on PPI. Repeated dilatation and redo-laparoscopy was required in 2 patient's i.e.4%.

Conclusion:
Laparoscopic fundoplication in well selected patients with good surgical technique can successfully eliminate GERD symptoms and improve the quality of life. Significant reduction in the need for chronic GERD medical treatment 1 year after Antireflux surgery can be anticipated.

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