

CLINICAL INSIGHTS IN MANAGEMENT OF HIATAL HERNIA- CASE SERIES

Gastroenterology

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ABSTRACT

Background Gastroesophageal reflux disease is the common illness affecting people of different ages in this modern world. It may present with esophageal or extraesophageal symptoms. Heartburn is the cardinal symptom often associated with regurgitation. Patients with long standing reflux symptoms or refractory to PPI therapy, diagnosed with pH monitoring and endoscopy. Treatment of GERD can be medical or surgical. Medical management includes lifestyle modifications and medications such as H2 antagonists, proton pump inhibitors. Surgical management typically involves Anti reflux surgeries such as fundoplication and repair of any existing hernia. **Method:** This is a retrospective observational case series of patients from 2022-2024 with long standing symptoms of GERD, on PPI therapy admitted at a local hospital, who underwent laparoscopic fundoplication with no major postoperative complications indicating the effectiveness of antireflux surgery. **Results:** A total of 19 patients who underwent laparoscopic fundoplication were followed for a minimum of 6 months. Preoperative evaluation included response to PPI, clinical scoring, endoscopy, barium studies. A preoperative and postoperative pain scoring scale (0-10) severity called Demeester scoring was used to evaluate the symptoms of heartburn, regurgitation and dysphagia. GERD symptoms were relieved after LNF procedure ($P=0.005$) LNF responders had improvement in quality-of-life post operation ($P<0.001$) **Conclusion:** Laparoscopic fundoplication can successfully alleviate GERD symptoms and improve quality of life. Significant reduction in need of chronic GERD medical treatment 2 years after antireflux surgery can be anticipated.

KEYWORDS

Laparoscopic fundoplication, GERD, Anti-reflux surgery, Hiatal hernia, Demeester score

INTRODUCTION

Gastroesophageal reflux disease (GERD) is currently defined as a condition that develops when the reflux of gastric contents into the esophagus leads to troublesome symptoms and/or complications. It is mostly prevalent in adult population [1] Typical symptoms include heartburn and regurgitation; atypical ones include chest pain, dysphagia, abdominal pain, nausea, and bloating; and extra-esophageal symptoms include a cough, hoarseness, pulmonary sequelae, and laryngotracheal stenosis [2] GERD is classified as erosive and nonerosive reflux disease. Erosive reflux disease is the most common complication of GERD. Hiatus hernia is one such known risk factor for GERD, it occurs when a part of the stomach protrudes into the thorax through diaphragm, the presence of hernia allows acid to freely flow into the esophagus causing reflux symptoms. A surgical procedure can repair these hernias and offer symptom relief [3]

Here we present a case series of 19 patients admitted with long standing heartburn and reflux symptoms, diagnosed to be having hiatal hernia, who have successfully undergone antireflux surgery with no postoperative complications.

Study Design

This is a retrospective observational case series of patients with long standing reflux symptoms, admitted at a local hospital, Hyderabad. Patient baseline characteristics such as age, sex, comorbidities, DeMeester scores, relative symptom improvement, endoscopic findings and complications after surgery were obtained from the patient database and reviewed.

Inclusion Criteria

Patients with long standing reflux symptoms, despite the daily use of PPI therapy for at least 3 years before the surgery were included in the study.

Exclusion Criteria

Patients with mild to moderate reflux symptoms who benefited from medical therapy [PPI] for less than 3 months were excluded.

Statistical Analysis

SPSS version 21.0 was used for all data analysis. The fisher exact test was used to identify factors that affected symptom relief and quality of life after surgery. P value of <0.05 was considered statistically significant.

Patient Characteristics

The study population included 11 males and 8 females. Patient age, sex, duration of PPI therapy and associated comorbidities were assessed in the study. The mean PPI therapy duration before surgery was 3 years. All the patients were on PPI therapy preoperatively.

All the patients experienced GERD symptoms with a mean duration of 3 years. Of these 14(73%) experienced typical symptoms, 2(10%) had atypical symptoms and 3(15%) had mixed symptoms, calculated through Demeester scoring scale as mentioned below. The Upper GI Endoscopy (Image-1) revealed the findings of hiatal hernia in majority of patients.

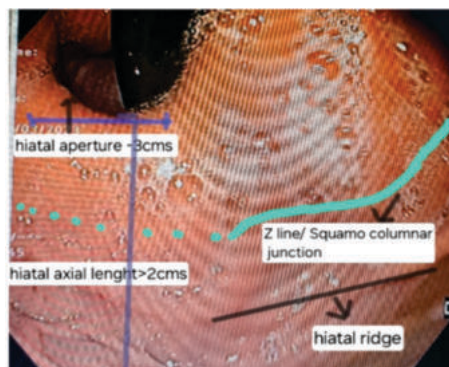


IMAGE-01 UGIE findings of Hiatal hernia Grade-IV

Table 1: Demeester score

Symptoms	Score	Description
Dysphagia	0	None
	1	Occasional transient episodes
	2	Require liquids to clear
	3	Impaction requiring medical attention
Heartburn	0	None
	1	Occasional brief episodes
	2	Frequent episodes requiring medical treatment
	3	Interference with daily activities
Regurgitation	0	None
	1	Occasional episodes
	2	Predictable by posture
	3	Interference with daily activities

Table 2: Demographic and Patient Characteristics

Sl.No/Pat	Complaints/History of GERD	Duration of PPI	Co-morbidities	Post-operative status	Date of surgery	Reoperation status	Post op
1/12/24	Hyperreflexia/heartburn/acid reflux	6 months	No	difficulties sensation after heavy meals	31/03/23	5	3
2/15/24	dysphagia	6 months	No	nocturnal belching	30/5/23	5	3
3/18/24	dysphagia/eructant RT/2 years	2 years	diabetes/hypertension	No	15/10/23	5	0
4/17/24	dysphagia/eructant RT for 3 years/RT pain	3 years	No	No	24/10/23	5	0
5/18/24	dysphagia	1 year	hypertension	difficulty to swallow	30/5/23	3	3
6/17/24	dysphagia, aggravated with diet 6 months	4 months	No	No	14/9/23	4	0
7/16/24	reflux symptoms/eructant pain 4 years	4 years	No	No	2/8/23	4	0
8/15/24	dysphagia, eructant pain/RT 1 year	6 months	hypertension, Central radiopathy	difficulty to swallow, heartburn for past 2 weeks	15/10/23	5	2
9/16/24	reflux symptoms + eructant pain 2 years	2 years	hypertension	No	16/7/22	5	0
10/16/24	reflux symptoms + heart pain + reflux RT 6 months	2 years	hypertension, hyperlipidemia	GERD discharge	16/8/22	0	4
11/16/24	reflux symptoms, eructant pain 5 years	2 years	No	No	29/9/22	2	0
12/15/24	hyperreflexia, heartburn/acid	3 months	No	heartburn/dysphagia	5/12/23	4	2
13/15/24	eructant pain + hyperreflexia 1 year	1 year	No	dysphagia	30/5/23	5	0
14/16/24	reflux symptoms + postprandial distress 2 years	1 year	hypertension	No	16/9/23	4	0
15/16/24	dysphagia + eructant pain 3 years	4 years	hypertension	No	15/10/23	3	0
16/16/24	heartburn/eructant pain 6 years	2 years	diabetes	dysphagia	16/8/23	4	1
17/17/24	eructant pain	4 months	hypertension	No	28/10/23	3	0
18/16/24	reflux symptoms + eructant RT 7 months	4 years	No	No	2/8/23	5	1

RESULTS

A total of 19 patients with GERD were studied by means of symptom onset, endoscopy, barium swallow (Image-2) and who were on PPI therapy. After GERD relapsed following withdrawal of medical therapy, all the patients were subjected to antireflux surgery.



Image-2 X-RAY -Upper GI Series: Barium Swallow and Barium Meal

Laparoscopic fundoplication (Image- 03) was done in patients with normal esophageal motility. Dysphagia was assessed prior to treatment, at 6 months of medical therapy and after 6 months of surgery. Dysphagia was improved in all the patient's following surgery, but only 2 patients following medical therapy, signifying the importance of antireflux surgery.

Demeester scoring scale was used to signify pre and postoperative symptom relief.

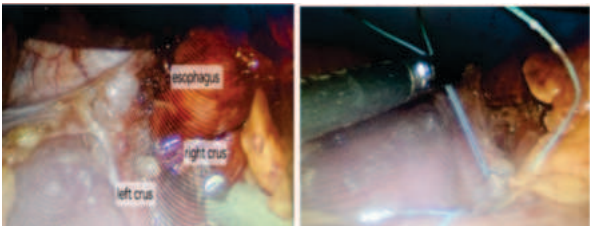


Image- 03 Intraoperative findings- dissection and repair of hiatal hernia



Nissen Fundoplication with complete 360° wrap

Surgical And Follow Up Outcomes

Most of the patients visited the outpatient clinic for follow-up after 6 months of surgery. Post operative fundoplication wrap was assessed using UGIE(Image-4) A telephonic survey was done on February 24,2024 for long term follow up and all the patients participated in it. The questionnaire (table-3) comprised of 4 questions:

1. Improvement of main symptoms
2. Discontinuation or reduction of PPI therapy
3. history of additional surgery or endoscopic treatments due to

- treatment failure
4. Improvement in quality of life after surgery

Table 3: Follow up results of QOL Survey

Variable	Value
Relief of main symptoms	
Markedly improved	15 (58.6%)
Partially improved	4 (24.2%)
Discontinuation of PPI at present	
Stop	16 (77.8%)
Maintenance	3 (7.4%)
History of reoperation/endoscopic treatment	
Yes	0
No	19 (100%)
Improvement of life quality	
Markedly improved	17 (62.1%)
Partially improved	2 (10.3%)



IMAGE -04 Post operative Upper GI endoscopy findings revealing absence of Z line in esophagus and fundoplication wrap at fundus, concluding a normal study

GERD symptoms markedly improved in 15(78%) patients and partially improved in 4(21%) patients. 16(84%) patients stopped PPI therapy, 3(16%) maintained the same treatment. None of the patients required any further invasive treatments.

Regarding the quality of life (QOL) after surgery, 17(89%) patients felt their quality of life improved, 2(11%) felt partially better. Factors affecting symptom control and quality of life index include age, sex, history of GERD, duration of PPI, surgical outcomes were demonstrated in the (table-4) as follows.

There was no significant association between QOL and demographic and clinical outcomes of patients with the exemptions of surgery. LNF surgery responders were more likely to perceive an improvement in their QOL (table-5) after surgery (P<0.05)

Table 4: Clinical Outcomes of Patients

Variable	Value
Age in years, Median (Range)	43 (22-60)
Sex	
Male	33
Female	51
PPI treatment duration	
≤ 6 months	3 (15.7%)
6 months - 1 year	7 (36.8%)
> 1 year	9 (47.4%)
History of GERD	
≤ 1 year	5 (26.4%)
1 year - 3 years	8 (42.1%)
> 3 years	6 (31.5%)
GERD Symptoms	
Typical	14 (73.6%)
Atypical	2 (10.5%)
Mixed	3 (15.7%)

Table 5: Factors affecting symptom relief after antireflux surgery

Variable	Good Responder	Partial Responder	P-value
Age in years			0.041
≤ 40	8 (100%)	0	
> 40	7 (63.7%)	4 (36.3%)	
Sex			0.043
Female	8 (72.7%)	3 (27.3%)	
Male	7 (87.5 %)	1 (12.5%)	
PPI treatment duration			0.002
≤ 6 months	3 (100%)	0	
6 months - 1 year	5 (71.4%)	2 (28.6%)	
> 1 year	8 (88.8%)	1 (11.2%)	
History of GERD			0.008
≤ 1 year	4 (80%)	1 (20%)	
1 year - 3 years	8 (80%)	2 (20%)	
> 3 years	6 (100%)	0	
GERD Symptoms			0.006
Typical	11 (78.5%)	3 (21.5%)	
Atypical	2 (100%)	0	
Mixed	3 (100%)	0	

DISCUSSION

This study was to assess the efficacy of fundoplication as a standard supplemental therapy for GERD and hiatal hernia. A hiatal hernia occurs when a portion of the stomach extends into the chest via the diaphragm, resulting in severe acid reflux or GERD symptoms. However, it can be managed with appropriate medications or surgical procedures. PPI is the mainstay of medical treatment for GERD.[4] It provides the most immediate and acute relief, although symptoms reappear in one year in more than 90% of patients after PPI withdrawal [5]. According to Dall et al, laparoscopic fundoplication is the only therapeutic modality currently advised for PPI failures.[6] Nissen fundoplication is one such procedures used to treat GERD and hiatal hernia. It tightens and strengthens the sphincter at the top of stomach to prevent the acid reflux into the esophagus.[7]

All patients who reported with persistent reflux symptoms were included in this retrospective study analysis, which was conducted from 2023 - 2024. First, a regimen of medical therapy was used to treat them. Out of 20 patients, 19 who experienced reflux symptoms after discontinuing PPIs were chosen as candidates for anti-reflux surgery. So far, the most popular anti-reflux surgery is the Nissen fundoplication with a complete (360°) wrap. Dysphagia and gas bloat are primary causes of dissatisfaction despite the reflux alleviation [8]A variety of treatments have been proposed to reduce post-operative symptoms, including the Toupet fundoplication consisting of posterior (270°) wrap and Dor fundoplication consisting of anterior (180°)wrap.[9] According to the latest studies, Nissen fundoplication is considerably more effective than the other two procedures, causing fewer dysphagia and gas bloat symptoms. Only a small percentage of our patients exhibited heartburn and reflux outcomes a year after intervention. According to Frazonni et al., few major technical difficulties, such as the division of short gastric arteries to mobilize the esophagus and make fundoplication tension-free, may mitigate postoperative dysphagia [10]. According to the survey conducted in 2011, the documented disparities in postoperative side effects disappeared after 2 decades of follow up [11]

Before surgical intervention, impedance pH monitoring and endoscopic evaluation are recommended to rule out any motility disorders. pH monitoring is conducted in patients with PPI discontinuation and esophageal hypersensitivity symptoms because they benefit from fundoplication[12] In a recent trail, normal reflux parameters and persistent symptom remission at 3-year follow-up, *i.e.*, GERD cure, were achieved with laparoscopic fundoplication in 90% of patients with PPI-refractory GERD as diagnosed by on-PPI impedance-pH monitoring[13]PPI therapy for extraesophageal symptoms in patients without heartburn is deemed ineffective. Only few observational studies suggest potential benefit from surgery, in certain groups of patients with asthma or nocturnal cough [14]. Given these restrictions, there is lack of evidence for performing laparoscopic fundoplication in individuals with extraesophageal symptoms in the absence of typical GERD. symptoms [15] Hence this case series was done as a retrospective observational study in order to indicate the importance of anti reflux surgery in management of long-standing GERD.

CONCLUSION

Laparoscopic fundoplication is quite effective in treating GERD. However, given its adverse effect profile, it should only be recommended in PPI-unresponsive patients or patients with a long

history of GERD, provided that objective evidence of reflux as a cause of persistent symptoms is obtained. pH monitoring and endoscopy are regarded as diagnostic gold standard workups. Nonetheless, clinical insights are crucial in diagnosing and treating long-standing GERD symptoms.

Conflict Of Interest:

The authors declare no conflict of interest

REFERENCES

- [1] Kahrilas PJ, Shaheen NJ, Vaezi MF; American Gastroenterological Association Institute; Clinical Practice and Quality Management Committee. American Gastroenterological Association Institute technical review on the management of gastroesophageal reflux disease. *Gastroenterology*. 2008 Oct;135(4):1392-1413, 1413. e1-5. doi: 10.1053/j.gastro.2008.08.044. Epub 2008 Sep 16. PMID: 18801365.
- [2] Nasrollah L, Maradey-Romero C, Jha LK, Gadam R, Quan SF, Fass R. Naps are associated more commonly with gastroesophageal reflux, compared with nocturnal sleep. *Clin Gastroenterol Hepatol*. 2015 Jan;13(1):94-9. doi: 10.1016/j.cgh.2014.05.017. Epub 2014 Jun 4. PMID: 24907504.
- [3] <https://www.dukehealth.org/treatments/digestive-disorders/esophagus-disorders>
- [4] Katz PO, Gerson LB, Vela MF. Guidelines for the diagnosis and management of gastroesophageal reflux disease. *Am J Gastroenterol*. 2013 Mar;108(3):308-28; quiz 329. doi: 10.1038/ajg.2012.444. Epub 2013 Feb 19. Erratum in: *Am J Gastroenterol*. 2013 Oct;108(10):1672. PMID: 23419381.
- [5] Sifrim D, Zerbib F. Diagnosis and management of patients with reflux symptoms refractory to proton pump inhibitors. *Gut*. 2012 Sep;61(9):1340-54. doi: 10.1136/gutjnl-2011-301897. Epub 2012 Jun 8. PMID: 22684483.
- [6] Dallemagne B, Perretta S. Twenty years of laparoscopic fundoplication for GERD. *World J Surg*. 2011 Jul;35(7):1428-35. doi: 10.1007/s00268-011-1050-6. PMID: 21404080.
- [7] <https://www.rwjbh.org/treatment-care/surgery/thoracic-surgery/thoracic-surgery-tests-and-procedures/nissen-fundoplication-paraesophageal-hernia-repa/>
- [8] Humphries LA, Hernandez JM, Clark W, Luberic K, Ross SB, Rosemurgy AS. Causes of dissatisfaction after laparoscopic fundoplication: the impact of new symptoms, recurrent symptoms, and the patient experience. *Surg Endosc*. 2013 May;27(5):1537-45. doi: 10.1007/s00464-012-2611-y. Epub 2013 Mar 19. PMID: 23508812.
- [9] Cao Z, Cai W, Qin M, Zhao H, Yue P, Li Y. Randomized clinical trial of laparoscopic anterior 180° partial versus 360° Nissen fundoplication: 5-year results. *Dis Esophagus*. 2012 Feb;25(2):114-20. doi: 10.1111/j.1442-2050.2011.01235.x. Epub 2011 Aug 24. PMID: 21883656.
- [10] Frazzoni M, Piccoli M, Conigliaro R, Manta R, Frazzoni L, Melotti G. Refractory gastroesophageal reflux disease as diagnosed by impedance-pH monitoring can be cured by laparoscopic fundoplication. *Surg Endosc*. 2013 Aug;27(8):2940-6. doi: 10.1007/s00464-013-2861-3. Epub 2013 Feb 23. PMID: 23436097.
- [11] Mardani J, Lundell L, Engström C. Total or posterior partial fundoplication in the treatment of GERD: results of a randomized trial after 2 decades of follow-up. *Ann Surg*. 2011 May;253(5):875-8. doi:10.1097/SLA.0b013e3182171c48. PMID: 21451393.
- [12] Broeders JA, Draaisma WA, Bredenoord AJ, de Vries DR, Rijnhart-de Jong HG, Smout AJ, Gooszen HG. Oesophageal acid hypersensitivity is not a contraindication to Nissen fundoplication. *Br J Surg*. 2009 Sep;96(9):1023-30. doi: 10.1002/bjs.6684. PMID: 19672931.
- [13] Broeders JA, Rijnhart-de Jong HG, Draaisma WA, Bredenoord AJ, Smout AJ, Gooszen HG. Ten-year outcome of laparoscopic and conventional nissen fundoplication: randomized clinical trial. *Ann Surg*. 2009 Nov;250(5):698-706. doi: 10.1097/SLA.0b013e3181bcdad7. PMID: 19801931.
- [14] Kahrilas PJ, Shaheen NJ, Vaezi MF; American Gastroenterological Association Institute; Clinical Practice and Quality Management Committee. American Gastroenterological Association Institute technical review on the management of gastroesophageal reflux disease. *Gastroenterology*. 2008 Oct;135(4):1392-1413, 1413. e1-5. doi: 10.1053/j.gastro.2008.08.044. Epub 2008 Sep 16. PMID: 18801365.
- [15] Katz PO, Gerson LB, Vela MF. Guidelines for the diagnosis and management of gastroesophageal reflux disease. *Am J Gastroenterol*. 2013 Mar;108(3):308-28; quiz 329. doi: 10.1038/ajg.2012.444. Epub 2013 Feb 19. Erratum in: *Am J Gastroenterol*. 2013 Oct;108(10):1672. PMID: 23419381.