

The role of anti-reflux surgery in the management of respiratory symptoms in gastro-esophageal reflux disease

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Abstract

Introduction: Gastro-esophageal reflux (GER) is common among children of different ages and treatment is necessary since it could turn in to Gastroesophageal Reflux Disease (GERD) and cause complications. In patients that do not respond to medical treatment and patients that have complications such as repeated apnea, pneumonia, stricture caused by esophagitis and failure to thrive, surgical treatment is indicated. In this article the rates of clinical presentations of the disease particularly the respiratory manifestations after operation with the loose Nissen Fundoplication technique are studied.

Material and Methods: In this descriptive retrospective study 76 cases of GERD underwent loose Nissen Fundoplication. Clinical presentations and diagnostic methods and the result of surgical treatment were studied.

Results: During March 1997 till August 2010, 76 patients were studied. Male to female ratio was 1.6. The mean age of patients was 24.5 months (ranging between 17 days to 18 years). Fifty nine (78%) patients had respiratory presentations such as RAD (reactive airway disease) and respiratory distress with recurrent pneumonia and apnea. Thirty one (41%) cases had associated anomalies. The most used diagnostic studies were radiography (100%), endoscopy (41%) and PH metry (1.3%). Eleven patients (14.4%) had early or late surgical complications. Respiratory presentations in almost all the patients were controlled postoperatively. The success rate of the operation was 75 (98.6%). There was no operative mortality, but non-operative mortality occurred in one patient (1.3%).

Conclusion: Loose Nissen Fundoplication technique has a good success rate with a low rate of complications. Respiratory presentations are the most common presentations of GERD, and in all patients who have respiratory symptoms, GERD workup is necessary, and anti-reflux surgery can control nearly all of these symptoms.

KeyWords: Gastro-Esophageal Reflux, Children, Loose Nissen Fundoplication, Respiratory symptoms

Introduction

Gastroesophageal reflux (GER) is a normal physiologic reflux of gastric contents into the esophagus.¹ GER is a frequent phenomenon in infancy with a marked tendency to improve spontaneously, thus only a fraction of these children end up suffering from real GER disease (GERD).² Various physiologic mechanisms protect the esophagus from injury, and when one or more of these defense mechanisms breaks down, pathologic reflux occurs. Symptoms of reflux are referred to as “atypical” or “extra-esophageal” when specifically associated with the pharynx or larynx.¹ Treatment of GER is necessary when it turns in to GERD and causes complications.³ Posture and diet help treat

reflux in most cases before the age of 12 to 18 months.² Antacid and prokinetic medications are indicated as the first-line therapy for cases with GERD⁴, and only a minority of them ultimately require surgical treatment.⁵ In patients that don't respond to medical treatment and patients that have complications such as: repeated apnea or pneumonia, stricture caused by esophagitis and failure to thrive; surgical treatment is indicated.³

According to a recent global definition, GERD can cause esophageal and extra-oesophageal syndromes, which can co-exist in the same individual. Respiratory symptoms of GERD represent one of the most prevalent and challenging of this extra-

esophageal syndromes.⁶ GERD occurs in about two thirds of children with asthma. In any case, aggressive treatment of GERD seems to improve asthma outcomes. GERD should be in mind in asthma cases who do not have any known risk factors or those who are becoming difficult to treat.⁷ In this article clinical presentations of the disease particularly the respiratory manifestations after operation with the loose Nissen Fundoplication are studied.

Results

From March 1997 till August 2010, 76 patients underwent surgery. Male to female ratio was 1.6 (Fig 1). The mean age of the patients was 24.5 months (range between 17 days to 18 years). Fifty nine (77.63%) patients had respiratory presentations such as RAD (reactive airway disease) and

Material and Methods

In this descriptive retrospective study 76 cases of GERD underwent an anti-reflux operation with the loose Nissen Fundoplication technique. Clinical presentations and diagnostic methods and the result of surgical treatment were studied. Statistical analysis was carried out using SPSS version 18.

respiratory distress with recurrent pneumonia and apnea. Thirty two (42.1%) had vomiting, 16(21 %) FTT, 6 (7.8 %) heartburn and one patient had Sandifer syndrome (Table 1). Thirty one (41.7 %) cases had associated anomalies; the most common of which being neurological impairment, and esophageal atresia (Table 2).

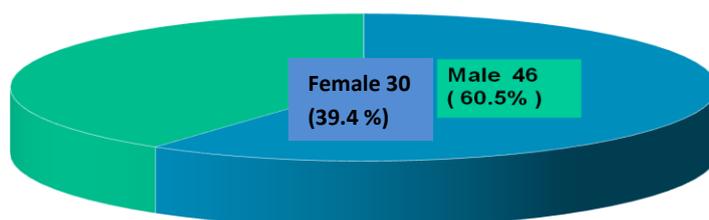


Fig 1: Male to female ratio

Table 1: Clinical presentations in our 76 patients

Presentations	No.	Percent
RAD*	34	44.7
Vomiting	32	42.1
Respiratory distress/Pneumonia	18	23.6
FTT**	16	21
Apnea	7	9.2
Heartburn	6	7.8
Sandifer syndrome	1	1.3

*Reactive Airway Disease

**Failure to Thrive

Table 2- Associated anomalies of patients in our study.

Type of anomaly	No.	Percent
Neurologic Impairment	11	14.4
Esophageal Atresia	9	11.8
Achelasia	3	3.9
Diaphragmatic hernia	3	3.9
Hypertrophic pyloric stenosis	1	1.3
Omphalocle	1	1.3
Cystic fibrosis	1	1.3
Hodgkin's lymphoma	1	1.3
Inguinal hernia	1	1.3
Total	31	40.7

The diagnostic modalities which we used were radiography in all cases (100%), Endoscopy 31(40.7%) cases, and PH-metry in one (1.3%). Eleven patients (14.4%) had early or late surgical complications. Intraoperative complication was esophageal perforation in two cases. Immediate post-operative complication was bleeding, pneumothorax, and vomiting, and delayed

complications were minor recurrence, and hiatal hernia (Table 3).

Respiratory presentations in almost all patients were controlled postoperatively. The success rate of the operation was 75 (98.6%). There were no operative mortality, but non-operative mortality occurred in one patient (1.3%). Post-operative results are shown in Table 4.

Table 3: Operative complications in our study group

Time	Type	No. (%)	Management
Intraoperative	Esophageal Perforation	2 (2.6)	Serosal Patch
Immediate Post-op	1. Bleeding	1 (1.3)	Laparotomy, Ligation of short Gastric vessels
	2. Pneumothorax	2 (2.6)	Chest Tube
	3. Vomiting	2 (2.6)	Medical Tx
Delayed Complication	1. Stricture	2 (2.6)	Dilatation
	2. Minor Recurrence	1 (1.3)	Medical Tx
	3. Hiatal Hernia	1 (1.3)	Surgical repair
Total	-	11(14.4)	-

Table 4: Results of the 76 patients in our study group

Results	No.	Percent
Success Rate	75	98.6
Operative Mortality	0	0
Non-Operative Mortality	1	1.3
Recurrence	1	1.3
Gas Bloat Syndrome	0	0
Operative esoph.Perforation	2	2.6
Stricture	1	1.3
Second Operation	0	0

Discussion

GERD is a common disorder caused by the reflux of gastric contents into the esophagus. Respiratory manifestations of GERD represent one of the most prevalent and challenging of its extra-esophageal syndromes.⁶ The occurrence of respiratory symptoms with gastroesophageal reflux is variable, and the reported prevalence ranges from 9% to 50%⁸. W, Johnson, et al reported respiratory symptoms of 53% in their study.⁹ Patients with airway manifestations remain a difficult subgroup of the GERD spectrum to manage.¹⁰ The relationship between asthma and gastroesophageal reflux disease is not completely understood.

Several theories exist as to how gastroesophageal reflux might exacerbate asthma: esophagobronchial reflux, heightened bronchial reactivity, direct alternations in ventilation, or microaspiration.¹¹ Evidence supports the esophagobronchial reflux theory based on decreased expiratory airflow and increased airway resistance in response to esophageal acid infusion.⁸ Data also support heightened bronchial reactivity; esophageal acid exposure increases bronchial reactivity to other stimuli such as isocapnic hyperventilation and methacholine, furthermore, patients with asthma and gastroesophageal reflux disease show

evidence of autonomic dysfunction with hypervagal responsiveness.⁸ In patients with both GER and asthma, antireflux surgery has minimal effect on pulmonary symptoms and their treatment or survival, but alters asthma symptoms and overall clinical status.¹² In our study nearly all patients with Reactive Airway Disease, and other Respiratory symptoms survived (96.6%). Many uncontrolled studies have been carried out to investigate the effect of anti-reflux surgery on asthma outcome. The results of such studies imply that surgery could improve asthma symptoms and reduce medication use in 80% to 90% of asthma patients; and pulmonary function, in approximately 25% of cases. Reflux-related respiratory symptoms in the neurologically impaired children were significantly improved by Nissen fundoplication.¹³⁻¹⁵ Among our study cases, we had 11(14.4%) cases of neurologically impaired patients which survived after our surgical intervention, and now their conditions are ample.¹⁶⁻²⁰

In this study, eleven patients (14.4%) had surgical complications. Respiratory presentations in almost all the patients were controlled postoperatively.

In Johnson et al.'s⁹ report reflux respiratory symptoms were relieved in 86% and in Greason's⁸ report improvement in respiratory symptoms was 83%, but the

success rate in our study was 98.6%. In Chao, et al.'s¹³ report mortality rate was 13%, we had no operative mortality, but non-operative mortality occurred in one patient.

Conclusion

GERD is common in infants and children and respiratory symptoms are the most common presenting symptoms in this group of patients. Surgical management will control these symptoms, and our success rates in these patients were excellent.

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