

# Gastroesophageal Reflux Disease

## Abstract

Gastroesophageal reflux disease (GERD) is a chronic symptom of mucosal damage caused by stomach acid coming up from the stomach into the esophagus. In the Western world, about 15~25% of the population is affected. The prevalence is increasing due to inappropriate life style.

GERD is usually caused by changes of the barrier between stomach and esophagus, including abnormal relaxation of lower esophageal sphincter (LES) or impaired expulsion of gastric reflux from the esophagus.

Typical signs and symptoms include heart burn, regurgitation and dysphagia. However, some atypical presentation such as chronic cough, asthma, hoarseness and chest pain should be considered.

Treatments include lifestyle changes and medications such as proton pump inhibitors, H<sub>2</sub> receptor blockers or antacids. Surgery may be an option in those who do not improve under pharmacological therapy.

## Causes and risk factors

GERD is usually caused by abnormal relaxation of the lower esophageal sphincter (LES), impaired expulsion of gastric reflux from the esophagus or a hiatal hernia. The following factors can contribute to GERD:

1. Hiatal hernia.
2. Scleroderma and systemic sclerosis, which cause esophageal dysmotility.
3. Zollinger-Ellison syndrome: Increased gastric acid due to gastrin production.
4. Hypercalcemia: Increase gastrin production, leading to increased acidity.
5. Visceroptosis or Glénard syndrome: Stomach has sunk in the abdomen upsetting the motility and acid secretion of the stomach.

The following risk factors may exacerbate the severity of GERD:

1. **Obesity:** In a large series of 2000 patients with symptomatic reflux disease, it has been shown that 13% of changes in esophageal acid exposure is attributable to changes in body mass index (BMI).
2. **Smoking:** It can lead to abnormal relaxation of the LES.
3. **Position:** lying down after the meal, bending or tight pants

4. Certain food: Alcohol, soft drink, coffee, tea, citrus, chocolate, mint, tomato, greasy or spicy food.
5. Certain medicine:
  - A. Anti-hypertension drugs:  $\beta$ -antagonists & CCBs
  - B. Analgesics: Aspirin & NSAIDs
  - C. Anti-cholinergics & theophylline
  - D. Anti-depression agents: TCAs & benzodiazepine
  - E. Tetracycline

## Signs and symptoms

### Typical esophageal symptoms

1. Heartburn: A retrosternal sensation of burning or discomfort is the most common typical symptom of GERD. It usually occurs after eating, lying supine or bending over.
2. Regurgitation: May induce respiratory complications if gastric contents spill into the tracheobronchial tree.
3. Dysphagia: A sensation that food is stuck, particularly in the retrosternal area.

### Atypical extraesophageal symptoms

1. Respiratory complications: Cough, wheezing, GERD-induced asthma, aspiration pneumonia, idiopathic pulmonary fibrosis and so on.
2. ENT complication: Hoarseness, laryngitis, vocal spasm, otitis media and sinusitis.
3. Chest pain: Need to differentiate with cardiac chest pain.
4. Dental: Enamel decay.

## Diagnosis

1. Presentation of typical signs and symptoms of GERD.
2. Esophageal pH monitoring: The current gold standard for diagnosis. It allows monitoring GERD patients in their response to medical or surgical treatment.
3. Short-term treatment with proton-pump inhibitors (PPIs): Improvement in symptoms suggests a positive diagnosis.

4. Endoscopy (EGD): It demonstrates anatomy and identifies the possible presence and severity of complications of reflux disease (esophagitis, Barrett esophagus or strictures). Biopsy can be done simultaneously if necessary. However, it is not effective diagnostic study.
5. Barium swallows X-ray: Not for diagnostic study but helpful in identification of structural abnormalities, such as stricture or hiatal hernia.
6. Esophageal manometry: Recommended when adequate medication fails or preparation for surgery.
7. Gastroesophageal reflux scintigraphy: Commonly used in infants and children due to noninvasive nature and relatively low radiation dose. In addition to evaluating the degree of reflux, pulmonary aspiration can be detected by imaging over the lungs.

## **Treatment**

### 1. Lifestyle modifications

The first-line management of GERD, especially for pregnant women.

- A. Losing weight (if overweight)
- B. Avoiding alcohol, chocolate, citrus, tomato-based products, peppermint, coffee and onion family
- C. Avoiding large meals
- D. Waiting 3 hours after a meal before lying down
- E. Elevating the head of the bed 8 inches

### 2. Pharmacological therapy

- A. Antacids: Useful for symptoms relief.
- B. H<sub>2</sub> receptor antagonists/blockers therapy: The first-line agents for patients with mild to moderate symptoms and grades I-II esophagitis. It has been reported to be useful in patients who have nocturnal acid breakthrough.
- C. Proton pump inhibitors (PPIs):
  - ① The most powerful medications available for treating GERD. PPIs were superior to H<sub>2</sub> receptor antagonists for resolution of GERD symptoms at 4 weeks and healing of esophagitis at 8 weeks. No difference between individual PPIs for relief of symptoms at 8 weeks.

- ② PPIs can interfere with calcium homeostasis and aggravate cardiac conduction defects. Also, PPIs may increase the risk of hip fracture, especially in postmenopausal women with osteoporosis (*JAMA*. Dec 27 2006;296(24):2947-53)

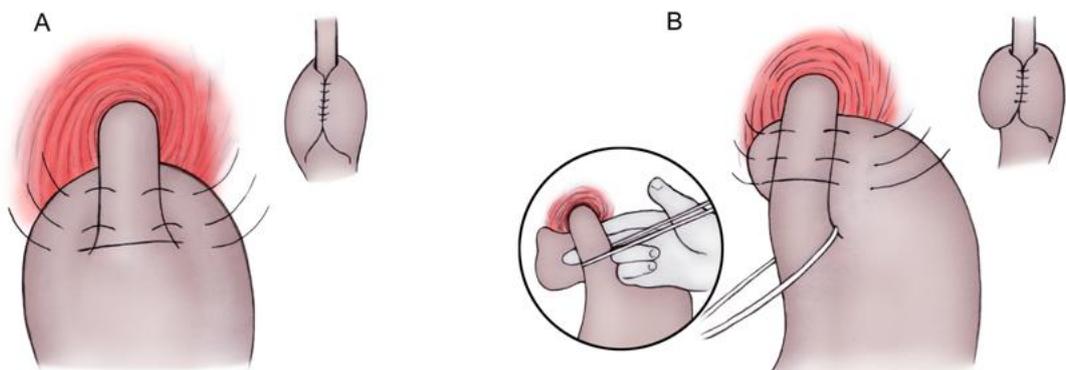
D. Prokinetic medications and reflux inhibitors: It usually requires additional acid-suppressing medications. Long-term use of prokinetic agents may have serious, even potentially fatal, complications and should be discouraged.

### 3. Surgical intervention

A. Nissen fundoplication: The most commonly performed operation today in both children and adults, which is a 360° transabdominal fundoplication. Laparoscopic fundoplication is well studied in adult populations. Laparoscopic fundoplication has also quickly gained acceptance for use in children. (See picture below)

B. Indications for fundoplication

- ① Failure of PPI therapy or patients desire definitive treatment even under well control.
- ② Presence of Barrett esophagus
- ③ Presence of extraesophageal manifestations of GERD
- ④ Young patients
- ⑤ Patients with cardiac conduction defects
- ⑥ Postmenopausal women with osteoporosis
- ⑦ Poor compliance or cost of medication.



Sutures approximate anterior fundus, esophagus and posterior fundus

Rosetti modification

***Edited by NDU medical office***

Resource: Wikipedia [http://en.wikipedia.org/wiki/Gastroesophageal\\_reflux\\_disease](http://en.wikipedia.org/wiki/Gastroesophageal_reflux_disease)

Resource: Medscape <http://emedicine.medscape.com/article/176595-overview>