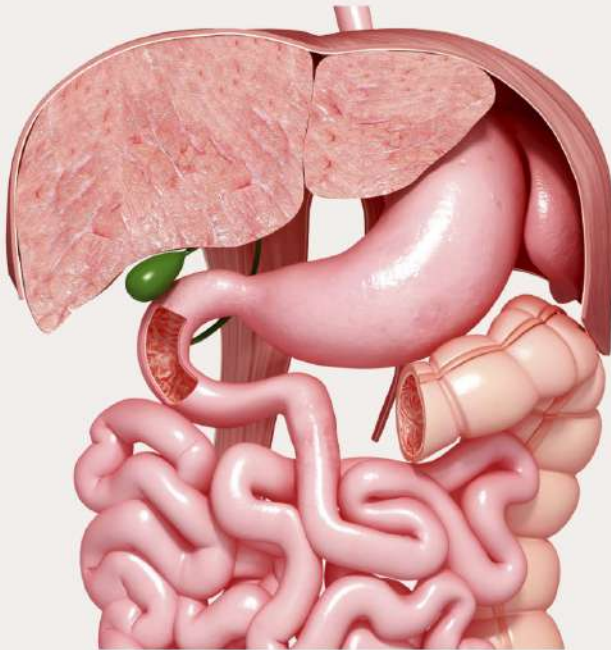




Internal Medicine



Topic : Dysmotility disorders Notes
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Dysmotility Disorders of the Esophagus

Introduction

Esophageal symptoms are among the most common complaints in both general and gastroenterologic practice.

• Prevalence & Significance:

- Dysphagia (difficulty swallowing) is more common with aging, affecting up to 15% of individuals aged 65 or older.
- Gastroesophageal reflux disease (GERD) symptoms, including heartburn and regurgitation, are widespread.

• Clinical Importance:

- Mild GERD symptoms rarely indicate severe disease but require attention, especially if persistent for years.
- Frequent dysphagia or odynophagia (painful swallowing) suggests an esophageal disorder needing further investigation.

• Other Possible Symptoms of Esophageal Dysfunction:

- Localized: Globus sensation, chest pain, belching, hiccups, rumination.
- Extraesophageal (atypical GERD symptoms): Wheezing, coughing, sore throat, hoarseness (especially when other causes are ruled out).

• Diagnostic Challenge:

- The severity of esophageal damage does not always correlate with symptom intensity.
- This discrepancy is particularly evident in older adults, where esophageal mucosal injury from GERD may be severe despite mild symptoms.

Dysphagia (Difficulty Swallowing)

Definition

A sensation of food being hindered in its passage from the mouth to the stomach.

- Patients often describe food “sticking,” “hanging up,” or “not going down right.”
- In cases of achalasia (esophageal motility disorder), a dilated esophagus may lead to misinterpretation of dysphagia as regurgitation or vomiting.

Pathophysiology

Dysphagia results from:

1. Muscle Dysfunction: Poor strength or coordination of muscles required to move food from the mouth to the stomach.
2. Obstruction: A fixed narrowing of the esophagus preventing smooth passage of food.

Normal Swallowing Mechanism

- Oropharyngeal Phase: Coordination of mouth, pharynx, and upper esophageal muscles.
- Esophageal Phase: Primary and secondary peristaltic contractions propel the food bolus to the stomach within 10 seconds.

Differential Diagnosis & Clinical Approach to Dysphagia

Feature	Oropharyngeal Dysphagia	Esophageal Dysphagia
Location	Mouth, hypopharynx, upper esophagus	Lower sternum or epigastric region
Swallowing Initiation	Difficulty initiating swallow, repeated attempts needed	Swallowing starts normally but food gets stuck
Associated Symptoms	Choking, coughing, nasal regurgitation, speech abnormalities (dysarthria, nasal speech)	Feeling of food “sticking” lower in the chest
Timing of Symptoms	Occurs immediately or within 1 second of swallowing	Symptoms arise after swallowing
Common Causes	Neuromuscular disorders (e.g., stroke, Parkinson's, myasthenia gravis)	Structural or motility disorders (e.g., GERD, achalasia, strictures)

Most patients can localize dysphagia to the upper or lower portion of the esophagus, although occasional patients with a distal esophageal cause of dysphagia will present with symptoms referred only to the suprasternal notch or higher.

Causes of Oropharyngeal Dysphagia

Neuromuscular Causes*

Amyotrophic lateral sclerosis (ALS, Lou Gehrig's disease)
CNS tumors (benign or malignant)
Idiopathic UES dysfunction
Manometric dysfunction of the UES or pharynx[†]
Multiple sclerosis
Muscular dystrophy
Myasthenia gravis
Parkinson's disease
Polymyositis or dermatomyositis
Postpolio syndrome
Stroke
Thyroid dysfunction

Structural Causes

Carcinoma
Infections of pharynx or neck
Osteophytes and other spinal disorders
Prior surgery or radiation therapy
Proximal esophageal web
Thyromegaly
Zenker's diverticulum

CNS, central nervous system; UES, upper esophageal sphincter.

Common Causes of Esophageal Dysphagia

Motility (Neuromuscular) Disorders

Primary

Achalasia
Distal esophageal spasm
Hypercontractile (jackhammer) esophagus
Hypertensive LES
Nutcracker (high-pressure) esophagus
Other peristaltic abnormalities*

Secondary

Chagas' disease
Reflux-related dysmotility
Scleroderma and other rheumatologic disorders

Structural (Mechanical) Disorders

Intrinsic

Carcinoma and benign tumors
Diverticula
Eosinophilic esophagitis
Esophageal rings and webs (other than Schatzki ring)
Foreign body
Lower esophageal (Schatzki) ring
Medication-induced stricture
Peptic stricture

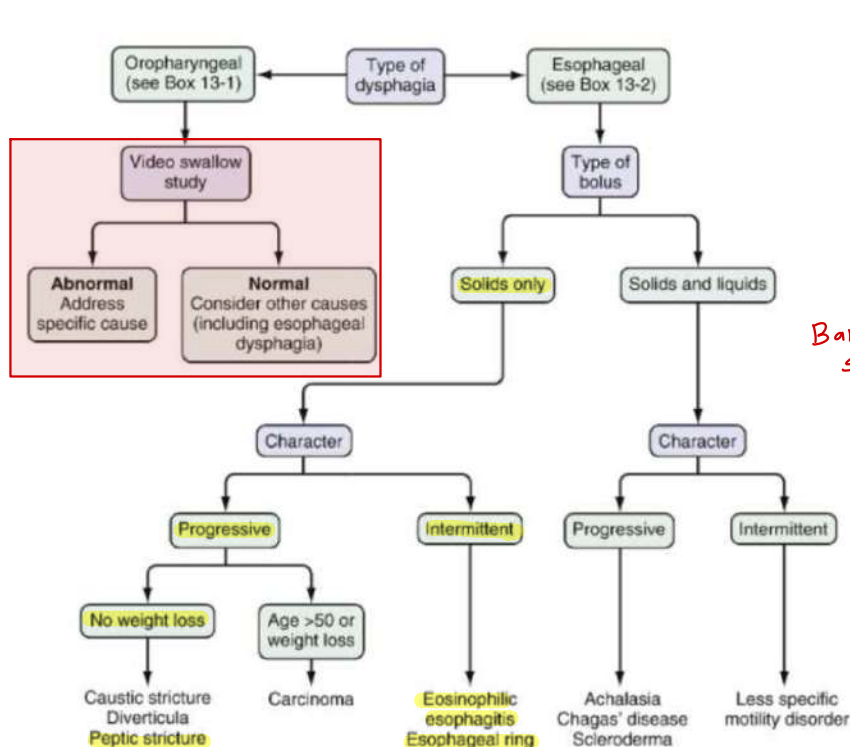
Extrinsic

Mediastinal mass
Spinal osteophytes
Vascular compression

LES, lower esophageal sphincter.

Key Questions for Diagnosis of Esophageal Dysphagia

- What type of food or liquid triggers symptoms?
 - Solids only: Suggests a mechanical obstruction (e.g., tumor, stricture).
 - Solids & liquids: Suggests a motility disorder (e.g., achalasia, esophageal spasm).
- Is the dysphagia intermittent or progressive?
 - Intermittent: Likely a motility issue (e.g., esophageal spasm).
 - Progressive: More indicative of an obstruction (e.g., malignancy, peptic stricture).
- Does the patient experience heartburn?
 - If present, GERD-related complications such as strictures or eosinophilic esophagitis may be suspected.



بالنسبة للأفضل في الـ diagnosis

Oropharyngeal
↓
Video swallow study

Esophageal
↓
1. Barium study
2. Endoscopy

Barium study
له صوب استخدام
المشكلة بتوافي.

Eosinophilic Esophagitis (EoE)

* Very common in young.
* treat well → good outcome.

Definition

Eosinophilic esophagitis (EoE) is a chronic, immune-mediated disorder characterized by:

- Symptoms of **esophageal dysfunction**.
- Pathologic evidence of **eosinophil-predominant inflammation, confined to the esophagus**.

EoE is distinct from other causes of **esophageal eosinophilia**, such as GERD, infections, or systemic disorders.

↳ food allergy

Etiology & Pathophysiology

Factor	Role in EoE
Food Allergy	Considered a primary trigger, with antigen-driven immune activation .
Chronic Inflammation	Leads to esophageal remodeling , fibrosis, and dysfunction.
Immune Dysregulation	Involves Th2-mediated inflammation , similar to other allergic conditions.
Genetic Predisposition	Associated with eotaxin-3 overexpression , which recruits eosinophils.

دلیلے بدی امیج
→ صول الکلالتا

- EoE is the second most common cause of chronic esophagitis after GERD.

Clinical Features & Diagnosis

Symptoms

Age Group	Common Symptoms
Infants & Children	Feeding difficulties, vomiting, failure to thrive, abdominal pain.
Adolescents & Adults	Dysphagia (especially with solids), food impaction, chest pain, reflux-like symptoms.

- Solid-food dysphagia is the most frequent symptom.
- Food impaction requiring endoscopic bolus removal occurs in 33–54% of adults with EoE.

Diagnostic Criteria

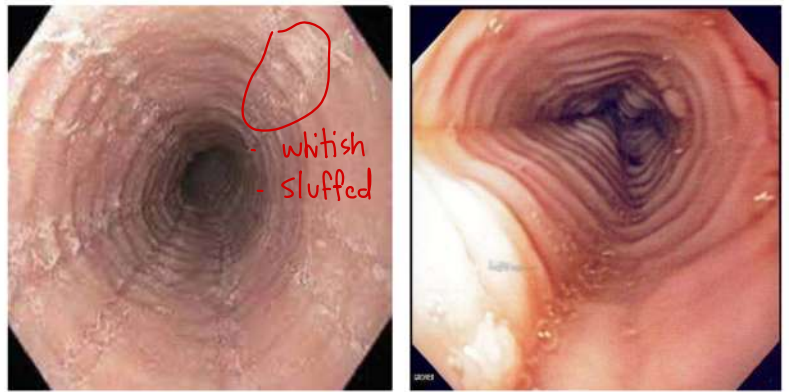
According to the 2011 consensus guidelines, EoE is diagnosed when:

1. Symptoms of esophageal dysfunction are present.
2. **More than 15 eosinophils per high-power field (HPF) are found in esophageal biopsy.**
3. **Proton pump inhibitor (PPI) therapy fails to resolve symptoms** and histologic findings (to differentiate from PPI-responsive esophageal eosinophilia).
4. Other causes of esophageal eosinophilia (e.g., GERD, infections, systemic disorders) are excluded.

مشرط

Endoscopic Findings

Feature	Description
Esophageal Rings (Trachealization)	Fixed concentric rings in chronic cases.
Furrows	Longitudinal creases in the esophageal mucosa.
White Exudates	White plaques indicating eosinophilic microabscesses.
Strictures & Narrow-Caliber Esophagus	Late-stage EoE leading to dysphagia and food impaction.



- Endoscopy with esophageal biopsy is the gold standard for diagnosis.

Treatment Strategies

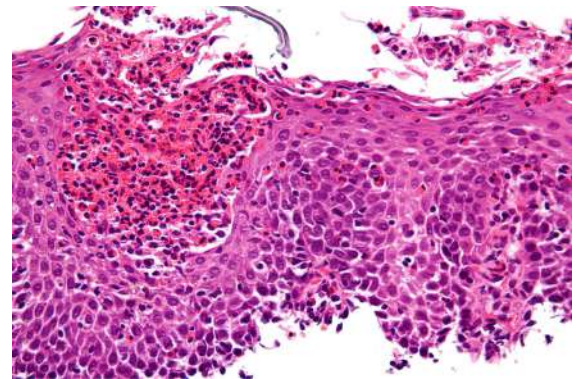
Currently, no FDA-approved medication exists for EoE. Management focuses on dietary modification, pharmacotherapy, and endoscopic interventions when necessary.

Dietary Therapy

Approach	Description
Elemental Diet	Uses amino acid-based formula to eliminate all potential allergens.
Six-Food Elimination Diet (SFED)	Avoids cow's milk, soy, wheat, egg, peanuts/tree nuts, and seafood/shellfish .
Empirical Elimination Diet	Eliminates specific suspected allergens based on allergy testing.

1. give PPI

→ used in paediatrics



- Dietary therapy reduces eosinophilic inflammation and improves symptoms.

Pharmacologic Therapy

Medication	Indication	Administration
Topical Glucocorticoids (e.g., Budesonide, Fluticasone)	First-line therapy for inflammation control	Swallowed (not inhaled) corticosteroids.
Systemic Glucocorticoids ↳ don't use it for long terms.	Used for acute exacerbations	Reserved for severe cases due to side effects.
Proton Pump Inhibitors (PPIs)	Used initially to rule out PPI-responsive esophageal eosinophilia (PPI-REE)	High-dose therapy may help in some EoE patients.

Treatment Plan :-

1. PPI

2. Topical steroids
if they weren't useful :-

3. Give systemic steroids in severe symptoms.

Endoscopic Therapy

- Esophageal Dilation: Reserved for severe strictures causing significant dysphagia.
- Complication Risk: Higher risk of mucosal tears and perforation in EoE patients.

Prognosis & Complications

- EoE requires prolonged treatment, similar to allergic asthma.
- Without treatment, chronic EoE may cause progressive fibrosis, strictures, and esophageal dysfunction.

So the earlier you diagnose → the better outcome.

Potential Complications

Complication	Description
Food Impaction	May require emergency endoscopic removal.
Esophageal Stricture	Narrowing of the esophagus, leading to progressive dysphagia.
Narrow-Caliber Esophagus	Severe form of EoE causing diffuse esophageal narrowing .
Esophageal Perforation	Rare but life-threatening complication, especially after dilation procedures.

Achalasia

*difficult in diagnosis.

Esophageal Motility Disorders

- Retention of food in the esophagus or excessive reflux indicates a peristalsis or sphincter dysfunction.
- Dysmotility may result from:**
 - Failure of deglutitive relaxation (including impaired sphincter relaxation).
 - Abnormal propagation of esophageal excitation.
 - Diagnosis is based on functional abnormalities, not histopathology. However, achalasia is an exception, as it involves a measurable loss of ganglion cells in the myenteric plexus.
 - Esophageal manometry and radiological studies are key for diagnosis.

- Achalasia Definition:** A motility disorder characterized by impaired LES (Lower Esophageal Sphincter) relaxation and absence of peristalsis in the smooth muscle esophagus.
- The name "Achalasia" is derived from Greek, meaning "failure to relax."
- Pathophysiology:** Progressive degeneration of ganglion cells in the myenteric plexus of the distal esophagus and LES.

*Chaga's disease mimic Achalasia → the infection destroy neurons.

Epidemiology

Aspect	Details
Incidence	1 per 100,000 per year
Gender	Equal in males and females
Age of onset	25 - 60 years (wide spectrum)

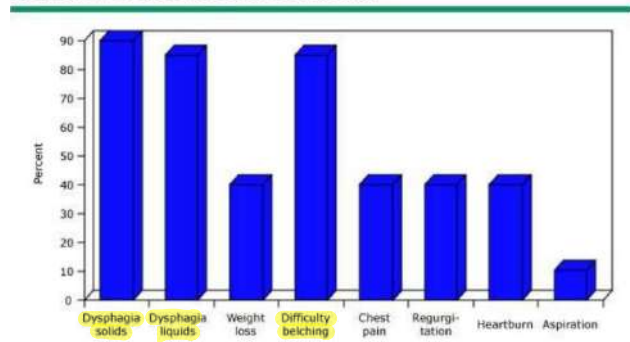
Pathogenesis

Mechanism	Effects
Loss of ganglion cells in Auerbach's plexus	Leads to progressive disease severity
Loss of inhibitory (NO) ganglion function	Impairs LES relaxation
Intact excitatory (cholinergic) function	May contribute to increased LES tone
Potential autoimmune etiology	Linked to latent HSV-1 infection
Genetic predisposition	Suggested by familial clustering
Association with Allgrove Syndrome (AAA)	Rare autosomal recessive disorder featuring Achalasia, Addison's disease, and Alacrimia

Clinical Presentation

Symptom	Prevalence
Dysphagia (solids: 91%, liquids: 85%) <i>Both</i>	Most common symptom
Regurgitation <i>(undigested vomit)</i>	Second most common
Difficult belching	Common
Chest pain	May mimic cardiac pain
Heartburn <i>(stasis esophagitis)</i>	Can occur despite low acid reflux
Weight loss <i>(advanced stage)</i>	Mild in most cases

Frequency of the symptoms of achalasia



Diagnosis ① take a proper history.

Test	Findings
② Chest X-ray (CXR)	Widened mediastinum , (wide esophagus), double shadow. absence of gastric bubble
③ Barium swallow	"Bird's beak" appearance
④ Manometry	Gold standard (confirms high LES pressure and aperistalsis)
Esophagogastroduodenoscopy (EGD) واجب علي اعمله it's a must	Rules out malignancy or pseudoachalasia



* double shadow.
* wide mediastinum

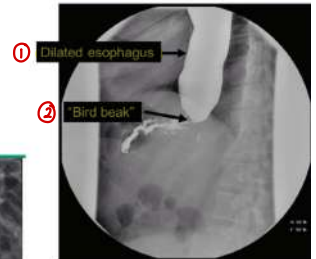
EGD Findings

- Recommended for all patients to exclude pseudoachalasia (e.g., malignancy).
- **Red flags for malignancy:**
 - Rapid onset symptoms (<6 months).
 - Age >60 years.
 - Significant weight loss.
- **Additional findings:**
 - Dilated esophagus with retained food.
 - Esophageal stasis may predispose to Candida esophagitis.

Manometry Findings (advanced, المطلوب كذا الدكتور)

Parameter	Achalasia Findings
LES pressure	Elevated (>45 mmHg)
LES relaxation	Incomplete (normal <8 mmHg)
Peristalsis	Absent (can have weak contractions)

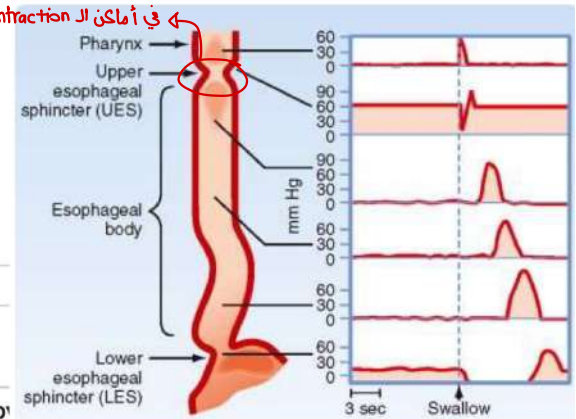
Barium swallow



* do upper endoscopy next

Barium swallow in a patient with "vigorous" achalasia. In addition to the narrowing at the esophagogastric junction, there are multiple, nonperistaltic muscular contractions in the dilated esophagus.
Reprinted, courtesy of the American Gastroenterological Association. The slide cannot be downloaded but may be purchased as part of a set from the AGA through Wiley-Blackwell, Inc. at 1-800-422-6423.

في أماكن ال contraction ال Pressure يكون أعلى.



Types of Achalasia (High-Resolution Manometry - HRM)

Type	Characteristics	Symptoms
Type I (Classic Achalasia) * LES not able to relax, no contractions	No peristalsis, minimal pressurization	Progressive dysphagia
Type II (Pan-esophageal Pressurization)	Increased pressure (>30 mmHg)	Most responsive to therapy
Type III (Spastic Achalasia) * 20% of contractions may happen	Spastic contractions (vigorous achalasia)	More chest pain, poor response to therapy

Treatment Options

Medical Therapy

Medication	Mechanism	Effectiveness
Nitrates, CCB (nifedipine)	Smooth muscle relaxation	Temporary relief
Botulinum toxin injection	Blocks acetylcholine release at LES	80% initial success, decreases to 41% by 12 months

* Should be repeated every 6 months.
* The perforation is less.
* The safest approach if the patient doesn't want to do a surgery.

Endoscopic and Surgical Interventions

Procedure	Mechanism	Success Rate	Complications
Bougie Dilation	Gradual stretching of LES	Temporary relief	Lower perforation risk
Pneumatic Dilation	Forceful LES disruption (3.0 → 3.5 → 4.0 cm dilation)	85% success	1.6% perforation risk, recurrence
Heller Myotomy	LES muscle incision (often with partial fundoplication)	70-85% at 10 years, 65-73% at 20-30 years	GERD, high cost, risk of failure if done after endoscopic therapy
Peroral Endoscopic Myotomy (POEM)	Endoscopic approach to myotomy	Comparable to Heller	GERD (high rate)

high risk of perforation

Treatment Based on Achalasia Type

Type	Best Treatment
Type I	Heller myotomy
Type II	Responds well to all treatments
Type III	Poor response to all therapies



Complications

Complication	Details
Aspiration pneumonia	Due to esophageal stasis and regurgitation
Epiphrenic diverticulum	Result of long-standing esophageal dysfunction
Esophageal cancer risk	16-fold increase in SCC (Squamous Cell Carcinoma) > Adenocarcinoma
Cancer onset	~15 years after achalasia diagnosis

* Barrets → high chance of adenocarcinoma.
* Achalasia → high risk of SCC

Conclusion

- Suspect achalasia in patients with progressive dysphagia to solids and liquids with regurgitation.
- Preferred treatment for medically fit patients is pneumatic dilation or surgical myotomy.
- Discuss risks/benefits with the patient.
- Goal after treatment: LES pressure <10 mmHg.