Esophageal injuries

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Pre-test 1

- What is the most common cause of esophageal injuries?
  A. Traffic accidents
  B. Gunshot wounds
  C. Iatrogenic

Pre-test 2

- Which contrast agent is more likely to cause severe pneumonitis if aspirated?
  A. Barium
  B. Gastrografin

Pre-test 3

- Which of the following drugs is indicated in treating impacted food in esophagus?
  A. Glucagon
  B. Primperan
  C. Buscopan

Pre-test 4

- When treating esophageal foreign body, which of the followings is considered an emergency?
  A. Coin in esophagus causing severe stridor
  B. Sharp ended toothpick in esophagus
  C. Disk battery in esophagus
  D. All of the above

Pre-test 5

- Which of the followings is contraindicated in treating acid ingestions?
  A. NG aspiration
  B. Cold water lavage
  C. Antacids

Agenda

1. Esophageal perforations
2. Esophageal foreign bodies
3. Chemical injuries of the esophagus

Pathophysiology

- Lack of serosal covering
  → anastomotic leak more likely

- Most injuries to the esophagus are iatrogenic and tend to occur at natural or acquired areas of narrowing

Pathophysiology

- Toxicity of esophageal rupture
  1. Chemical mediastinitis
     - from regurgitated gastric secretions
  2. Suppurative mediastinitis
     - from infection

Mortality

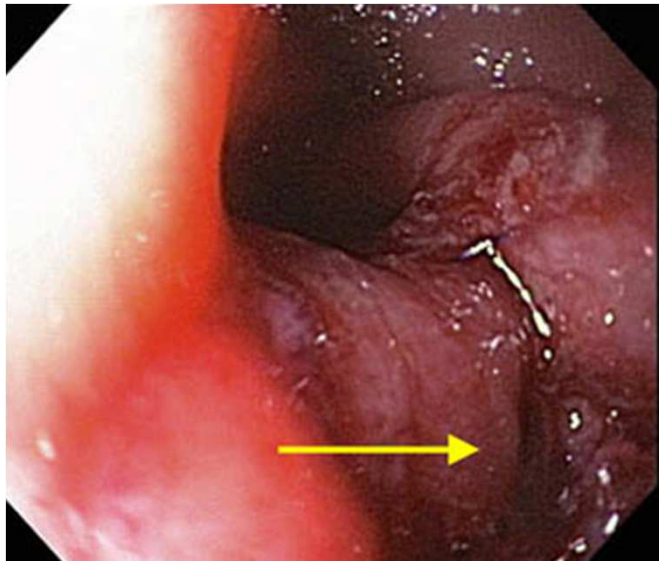
- Depends on time of definitive treatment:
  - Within 12h: 5~25% mortality
  - 12~24h: 10~44% mortality
  - Beyond 24h: 25~66% mortality

- Cause of death = severe suppurative mediastinitis; developed within 6~12h

Esophageal perforations

Esophageal perforations

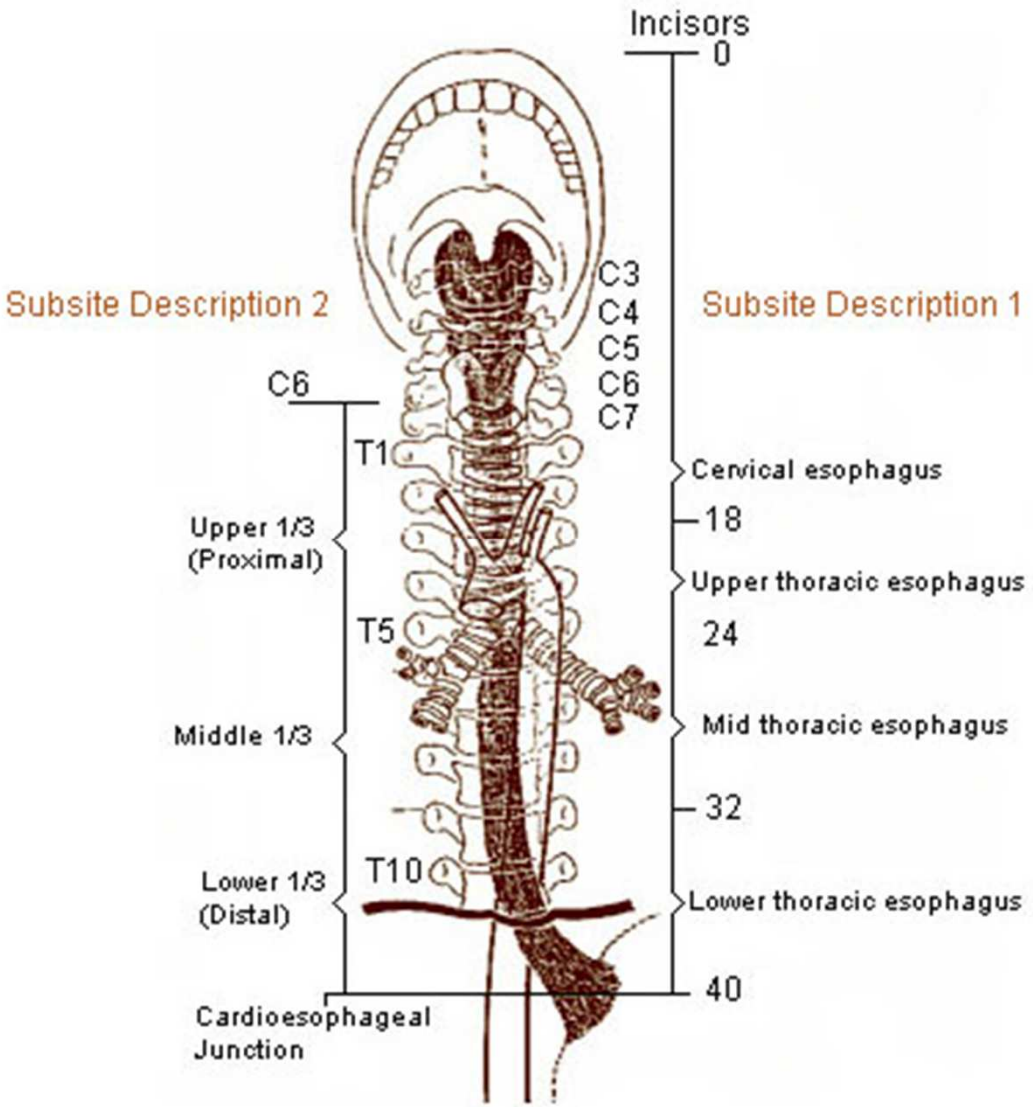
- Etiology
  1. Iatrogenic trauma (~66%)
  2. Penetrating trauma
  3. Blunt trauma



Iatrogenic trauma

- During efforts to dilate strictures
- During diagnostic endoscopy
  - biopsy, removal of sharp FB

- Sites prone to perforate:
  1. Esophageal introitus at the cricopharygeus
     - narrowest, most commonly perforated
  2. Diaphragmatic hiatus
  3. Left mainstem bronchus


Incisors
0
Subsite Description 2
Subsite Description 1
C3
C4
C5
C6
C7
C6
T1
Cervical esophagus
18
Upper 1/3
(Proximal)
Upper thoracic esophagus
T5
24
Middle 1/3
Mid thoracic esophagus
32
T10
Lower 1/3
(Distal)
Lower thoracic esophagus
40
Cardioesophageal
Junction

Penetrating trauma

- Caused by stabs or gunshot wounds
- Types:
  1. Cervical:
     - more common
     - mainly caused by stab wounds
  2. Intrathoracic / intraabdominal
     - less common
     - mainly caused by gunshot wounds

Blunt trauma

- Rare
- 70% cervical portion
- Mechanism
  1. Intraluminal pressure → rupture
  2. Compression → tear
  3. Contusion → necrosis

Esophageal injury

- When to suspect?
  1. Presence of pleural effusion or pneumothorax in patients with penetrating wound in thoracic inlet or mediastinum
  2. Cervical, thoracic, or abdominal symptoms after esophageal instrumentation

Esophageal perforation

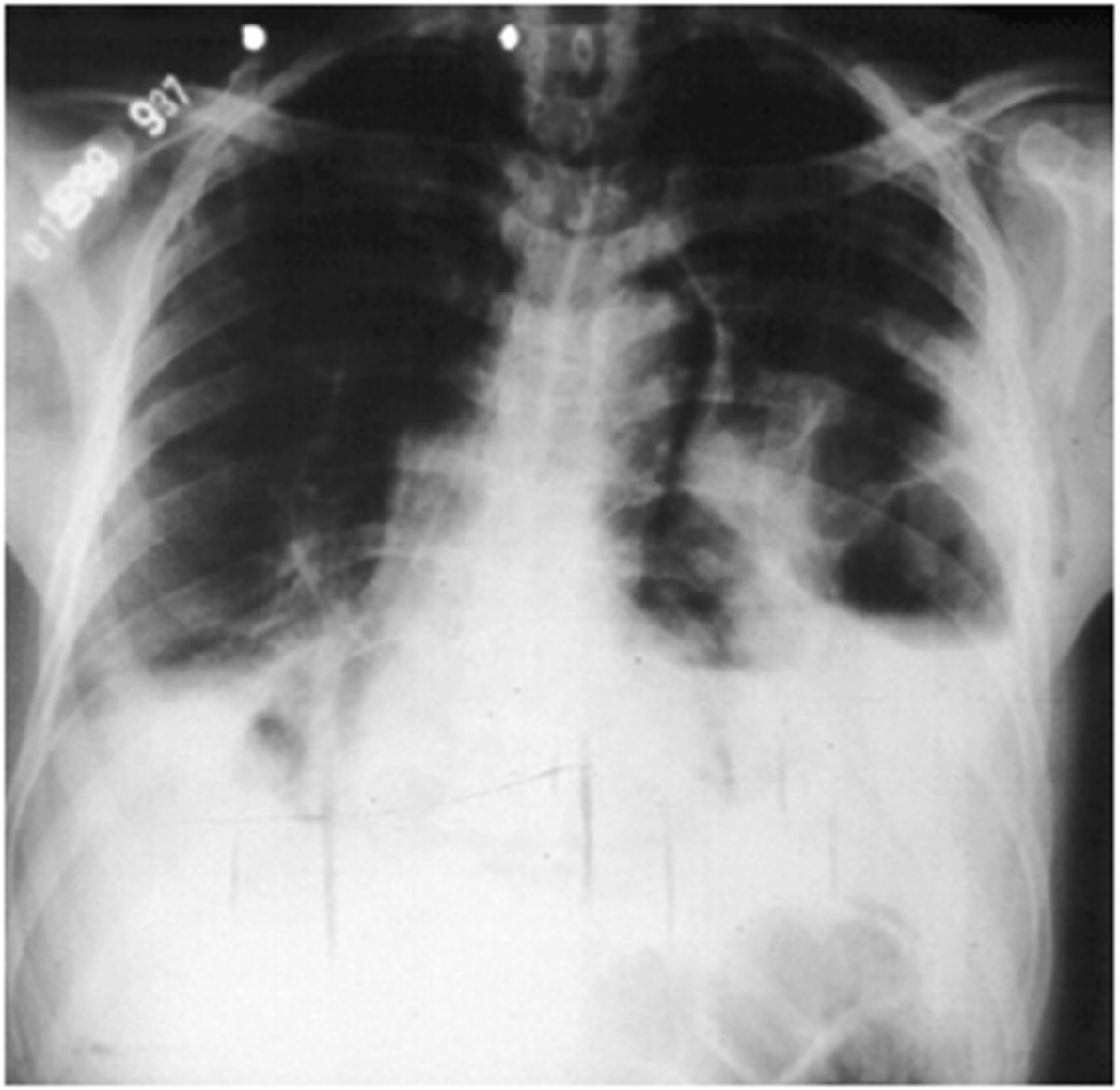
- Symptoms
  1. Chest/back/shoulder pain
  2. Abdominal pain and tenderness
     → lower esophageal perforation
  3. Difficult swallowing (dysphagia)
  4. Painful swallowing (odynophagia)
  5. Hematemesis

Esophageal perforation

- Signs
  1. Emphysema / pneumomediastinum
     → mediastinal / cervical
  2. Pleural effusions with increased amylase after chest trauma
  3. Pneumothorax
  4. Fever / sepsis

Esophageal perforation

- Diagnostic tests
  1. CXR
  2. Contrast swallows / esophagography
     - Gastrografin:
       # 40~50% false negative
       # cause severe pneumonitis if aspirated
     - Barium:
       # < 25% false negative
       # aggravate mediastinitis if leaked
  3. CT scan
  4. Esophagoscopy

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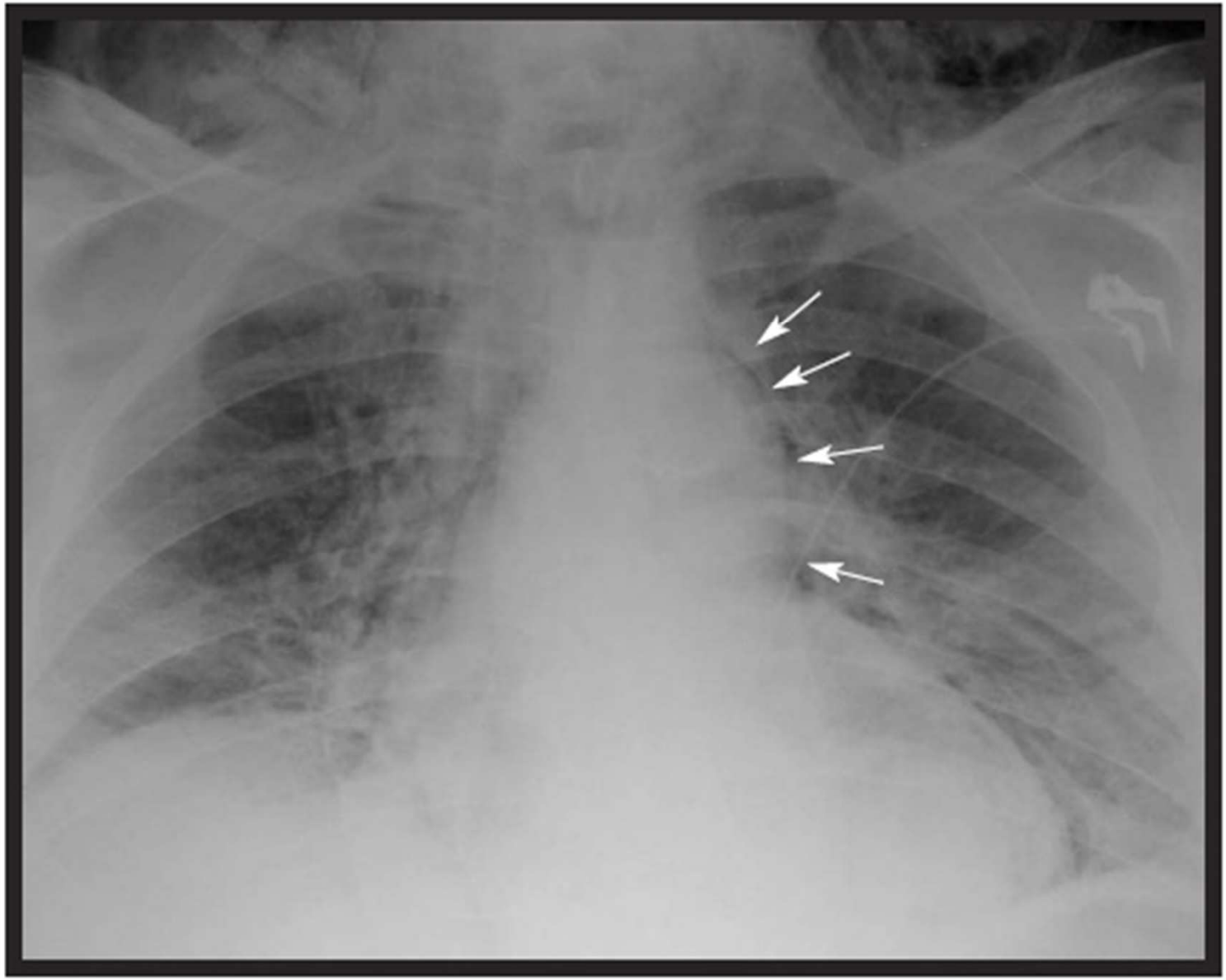


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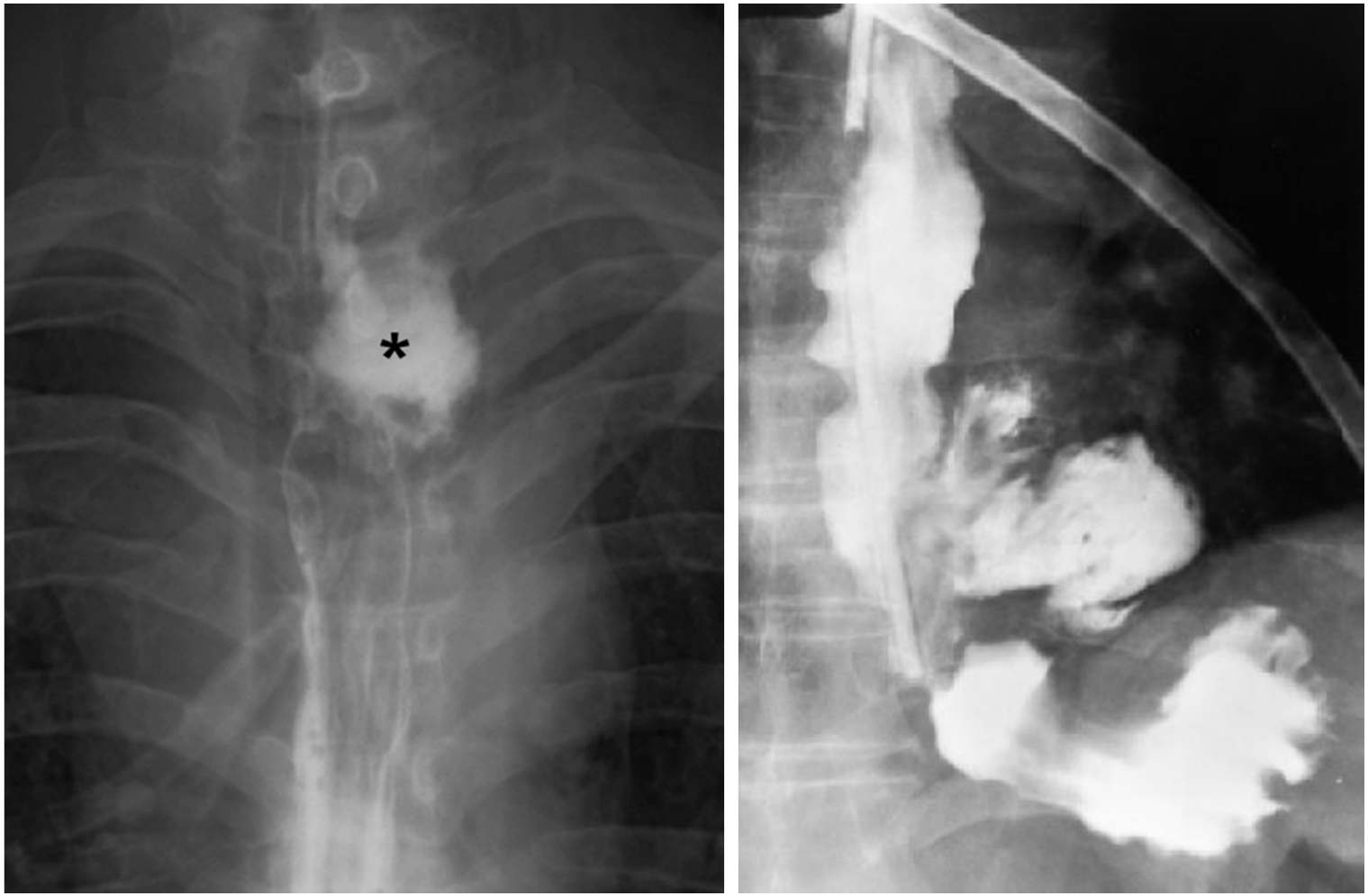
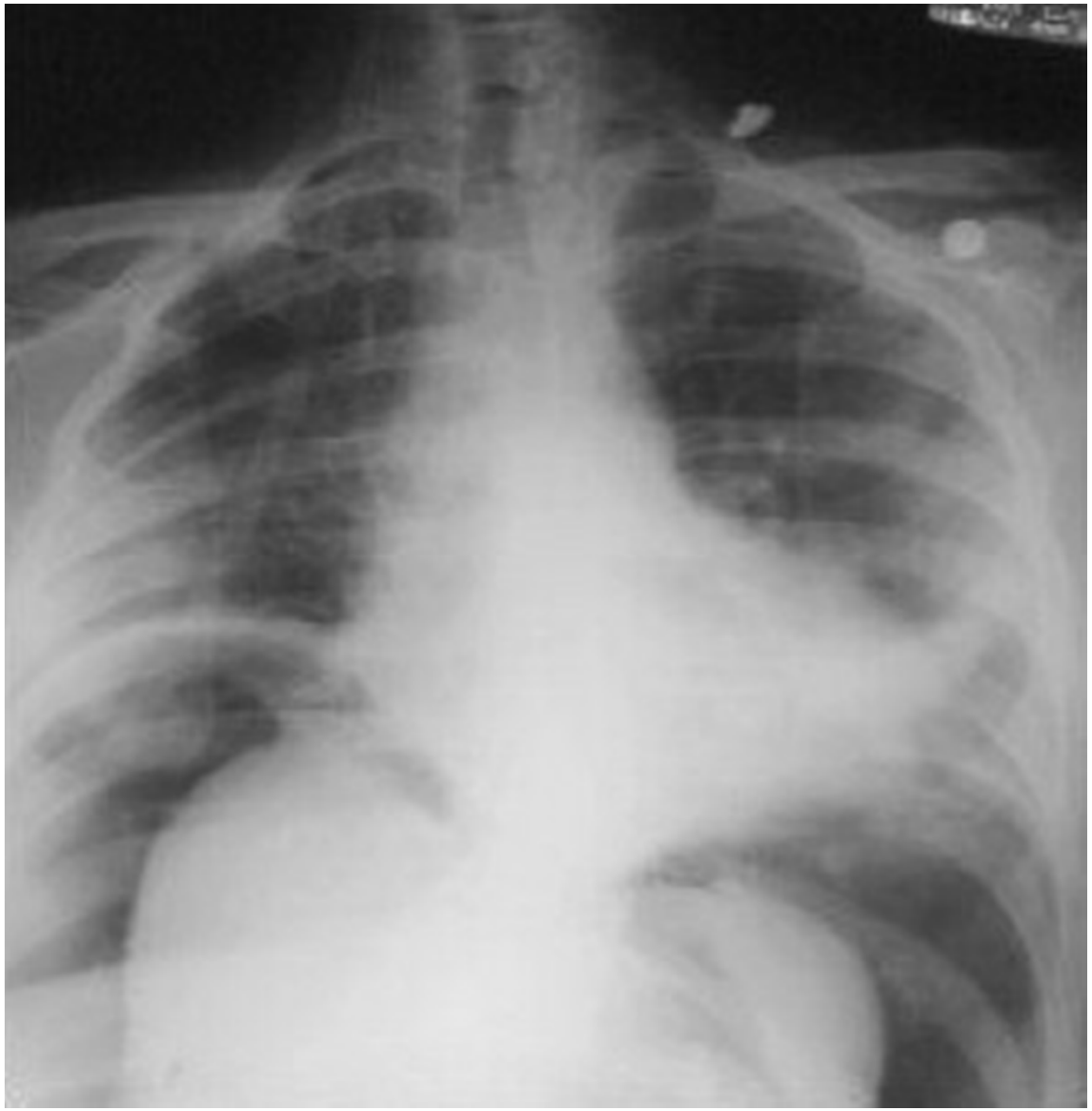
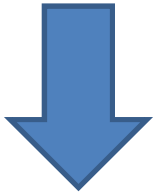


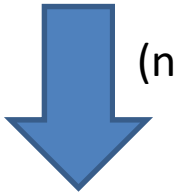


Blunt truncal trauma

Abdominal s/s



Explorative laparotomy



(negative)

Suspect thoracic injury

Esophageal perforation

- Management
  - Surgery
    - esp. if sepsis present
  - Small iatrogenic injuries of cervical esophagus or pharynx with contained leak can often be managed nonoperatively
    1. NPO + NG drainage
    2. Antibiotics - cover mouth organisms

Esophageal perforation

- Complications
  1. Sepsis – most deadly
     Negative contrast swallow / esophagoscopy does not rule out mediastinitis / abscess
  2. Fistulas
     In neck → heal in 2~3 wk
     In chest → sepsis and death
  3. Strictures
     DO dilation / colon bypass

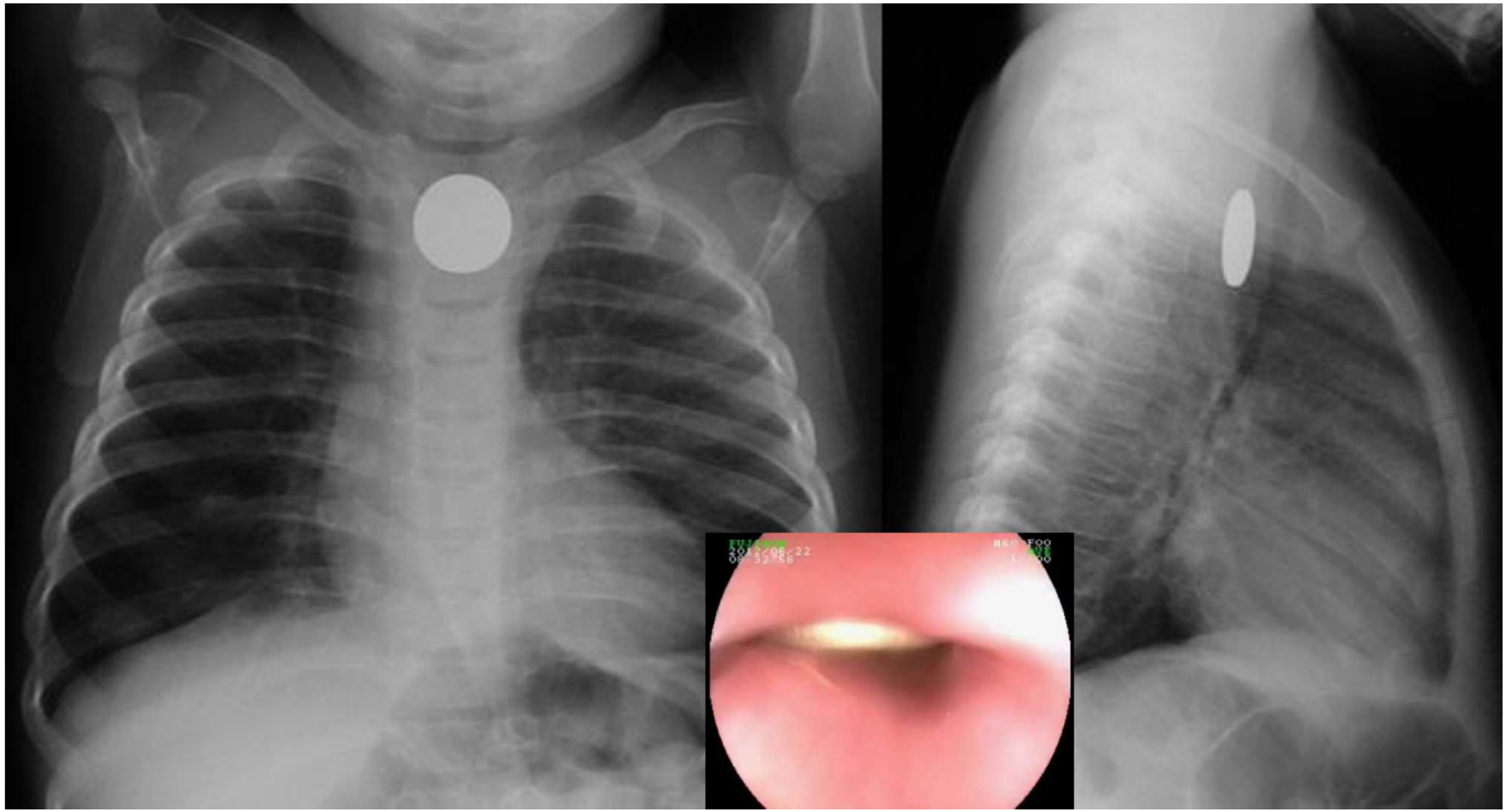
Esophageal foreign bodies

Esophageal FB

- Risks:
  1. Children
  2. Psychiatric disease
  3. Alcohol abuse
  4. Mental retardation
  5. Elderly – dentures
  6. Preexisting strictures – food impaction

Esophageal FB

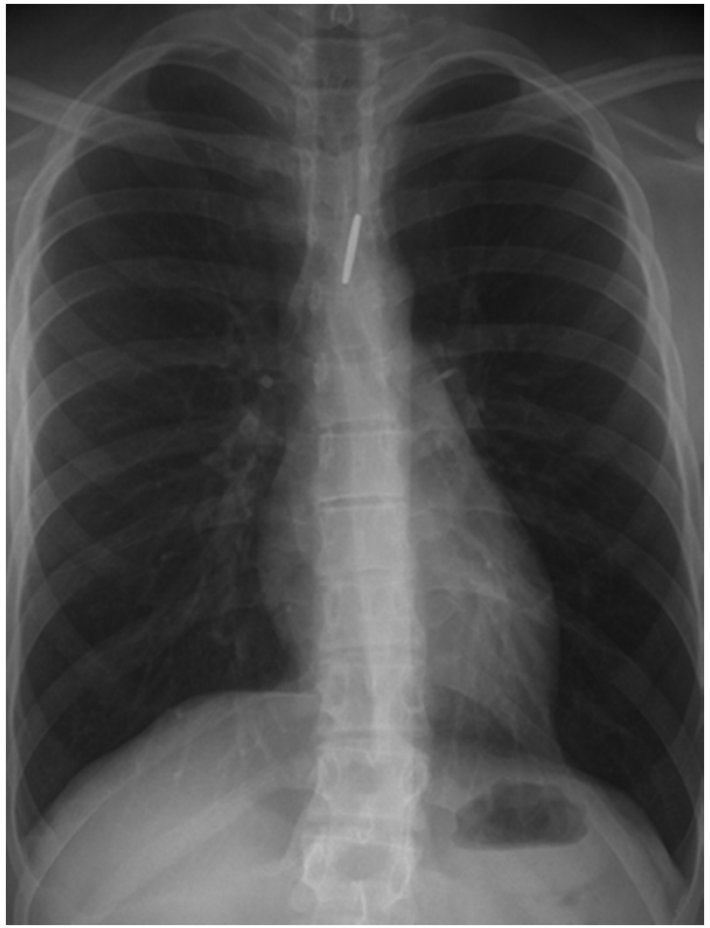
- Emergencies:
  1. Acute obstruction
  2. Sharp or irregular FB
     - e.g. toothpicks, pins, dentures
  3. Disk battery
- Caution:
  1. Keep patient in upright position
  2. Suction for oral secretions



Esophageal FB

- Coins on CXR:
  PA → “on face”; lat → “on edge”

- FB removal
  1. Delayed → edema → difficult to removed
     → increased risk of perforation
  2. After removal: check with CXR / endoscope

Esophageal FB removal

Catheter removal - E.g. Foley catheters

- Insert catheter past the object
- Lower head and neck
- Balloon inflated
- Catheter gently pulled back

Esophageal FB removal

Glucagon +/- gas-forming compound

- FB not sharp and patient not compromised
- Glucagon relaxes smooth muscles and LES
- May stimulate nausea
- Dose: 1-2 mg of glucagon intravenously (0.02-0.03 mg/kg in children, not to exceed 0.5 mg)
- May be followed by ingestion of [E-Z Gas + 240 mL water]. Hint: use carbonated beverages if E-Z Gas not available

Chemical injuries of the esophagus

Chemical injuries

- S/S: sudden difficult or painful swallowing
- Chemicals
  1. Strong acid
     → coagulation necrosis
  2. Strong alkali (pH > 12)
     → liquefaction necrosis → muscle layers
- Disk batteries
  1. Severe corrosive injury
  2. Leaking NaOH, KOH, mercury oxide

Chemical injuries

- Endoscopy
  - Do not pass beyond the 1st deep circumferential burn → easy perforation
  - Need antistricture management

Mild alkali

- E.g. small amount of bleaches
- May cautiously give milk, dilute vinegar, or citrus juice

Strong alkali

- Lye ingestion〔鹼液〕
  - Contraindications for emetics, charcoal, NG lavage


強力滲透霉
除霉殺菌
NEW
Mr Muscle
威猛先生
去霉劑
新全效潔淨
Kleen'n Fresh
愛地潔
2000ml
強鹼
PH值大於12
NEW 廚房
穩潔
威猛先生
潔霜
MR. Jackson
地板清潔劑
檸檬香
2000gm
魔術靈

Acid ingestion

- Early NG aspiration
- Cold water lavage
- Antacids are contraindicated (neutralization produces heat)


強酸
DH 值小於 2
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妙管家

Corticosteroids

- The use of corticosteroids for caustic ingestions is controversial
  - Current tendency – avoid steroids
  - Literature reviews – steroids may be helpful in preventing strictures in severe cases

Take home message

1. Low incidence, high morbidity/mortality
2. Commonly iatrogenic
3. Abdominal presentations probable
4. Check pleural fluid amylase
5. Beware of lye and disk battery
6. Repair within 6~12 h

Thank you