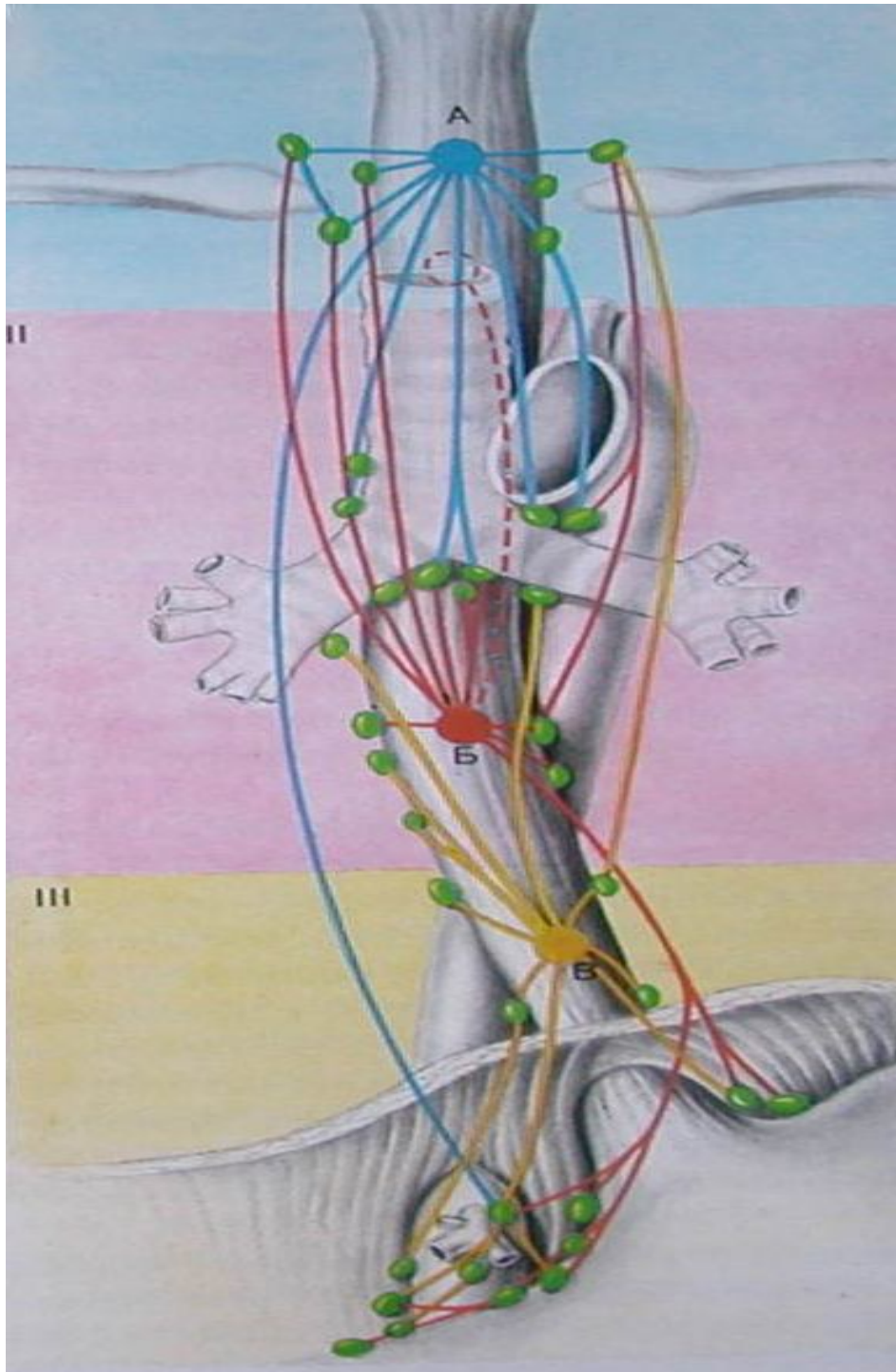


# **Esophagus Surgical Diseases**

**Department of Hospital Surgery, Urology  
Orenburg State Medical University  
2020**



**four departments:**

**1. pharyngeal-esophageal (two triangles: Lannier-Haeckermann and Lemer-Killian)**

**2. cervical**

**3. chest (upper part Th1-IV, middle - ThV-VII, lower - ThVII-XII),**

**4. abdominal (abdominal).**

**Surgical access to segments:**

**left-sided - to the cervical,**

**right transpleural - to the middle chest,**

**left-sided transpleural - to the lower thoracic,**

**abdominal - to the abdominal**

**Four physiological constrictions:**

**1) cricoid-pharyngeal (esophagus mouth, Killian mouth);**

**2) aortic;**

**3) bronchial;**

**4) diaphragmatic.**

**Cardia**

**Gubarev valve. Hiss angle.**

# Chemical burns and strictures of the oesophagus

# CHEMICAL BURNING OF THE ESOPHAGUS

Type	Example
Alkali	Sodium hydroxide, potassium hydroxide, (oven cleaners, liquid agents, liquid drain cleaners, disk batteries), calcium and lithium hydroxide (hair relaxers), ammonia (household cleaners), dishwasher detergents
Acid	Sulfuric acid, hydrochloric acid, nitric acid (toilet bowl cleaners, swimming pool cleaners, rust removers)
Bleaches and other caustics	Hypochlorous acid (bleach—generally neutral pH commercially), peroxide (mildew remover)

- ***coagulation necrosis***
- ***collicative necrosis***

**The first stage** is hyperemia and swelling of the mucous membrane.

- Mild - damage to the superficial layers of the mucosa
- Medium - all mucous
- Severe - all layers of the esophagus

**The second stage** is necrosis and ulceration.  
(Necrosis rejection - after 7-8 days)

**The third stage** is the formation of granulations.  
(1-2 months)

**The fourth stage** is formation of scars, strictures.  
(10-20 years)

# Clinical manifestations.

**The first period** is acute (stage of acute corrosive esophagitis). 5-10 days.

- Strong pain
- Multiple reflex vomiting
- Hypersalivation
- Hoarseness
- Dysphagia
- Cough
- Burn toxemia, acute renal failure
- Mediastinitis
- Peritonitis
- Aspiration pneumonia

***The second period is the development of chronic esophagitis (stage of imaginary well-being, up to 30 days).***

- *esophagus patency is restored for liquid and soft foods.*

### ***Complications:***

- *esophageal perforation with the development of mediastinitis, pleural empyema, pericarditis;*
- *esophageal bleeding,*
- *purulent-inflammatory diseases of the lungs.*

**Third period - stricture formation  
stage of organic narrowing of the  
esophagus**

1. The formation of stricture of the esophagus after 2-4 months. after a burn and lasts up to 2-3 years).
2. Dysphagia.

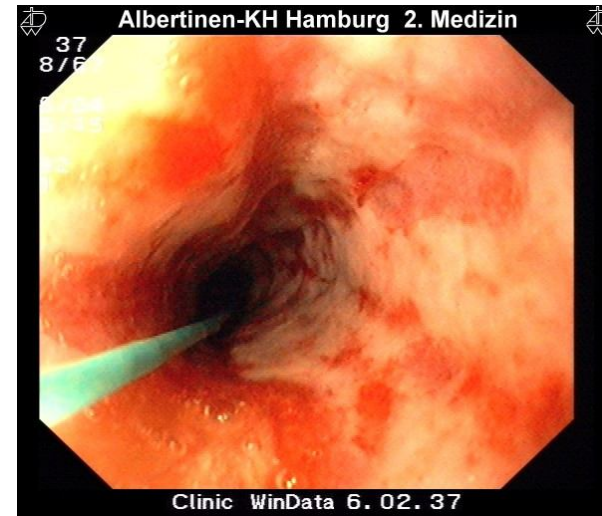
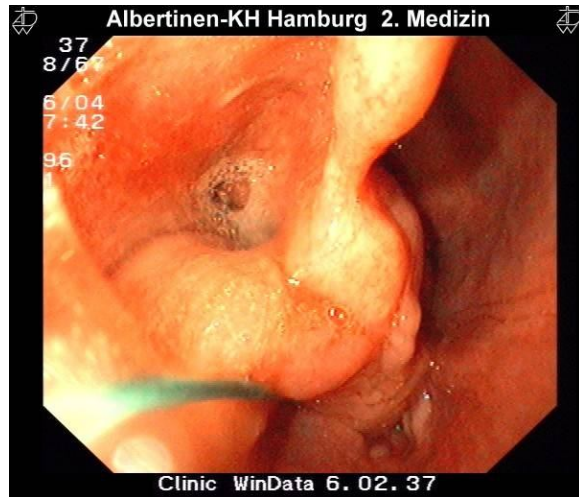


## **The fourth period**

the appearance of late complications

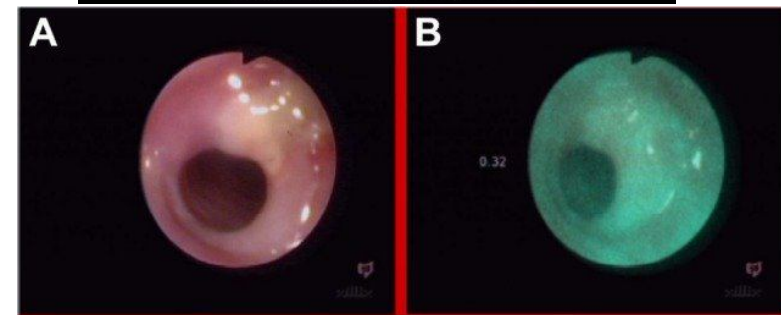
- Esophageal lumen obliteration
- Spontaneous perforation
- Diverticulums
- Fistulas (esophageal - bronchial, esophageal - tracheal)
- Malignancy

# Diagnostics



- **Laryngoscopy**
- **Fiberoesophagoscopy**

Including luminescent esophagoscopy: intravenous administration of 5 ml of a 20% phosphor solution (water-soluble salt of fluorescein sodium) followed by irradiation of the esophagus wall with ultraviolet rays.



# Esophageal burns treatment

1. Chemical agent removal (rinsing, probe washing of the esophagus and stomach, much drink)
2. Detoxification therapy, forced diuresis.
  - In case of poisoning with oxalic acid and in the presence of hypocalcemia, calcium chloride and calcium gluconate (10-20 ml of 10% solutions) are intravenously administered.
  - In case of a burn with concentrated acetic acid, alkalizing therapy is prescribed (50-100 ml of 3-5% sodium bicarbonate solution is administered intravenously).
3. With the threat of asphyxia due to a burn of the epiglottis - tracheostomy
4. With the development of acute renal failure - hemodialysis.

## Esophageal burns treatment

5. Painkillers, antihistamines,
6. Antispasmodics
7. Sedative therapy
8. Antibiotics, antimycotics.
9. Symptomatic treatment (cardiac glycosides, corticosteroids, bronchodilators, antioxidants).
10. Early bougienage of the esophagus  
(alternative - stenting of the esophagus up to 14-21 days to provide epithelization).

In case of complication of a chemical burn of the esophagus with its perforation with the development of mediastinitis or necrosis of the stomach wall and peritonitis, an appropriate operation is performed.

# **Cicatricial esophageal strictures**

- **Cicatricial narrowing (stricture of the esophagus) is formed in 70-80% of patients who have suffered a chemical burn. Most often they are localized in places of physiological narrowing of the esophagus.**
- **Single and multiple**
- **Complete and incomplete**
- **High (pharyngeal, cervical, bifurcation)  
low (epiphrenal, abdominal)**

# Clinical manifestations of esophageal strictures

- Dysphagia
- Feeling of heaviness
- Pain behind the sternum
- Heartburn
- Burping
- Regurgitation
- Hypersalivation
- Weight loss

# Diagnosics

## **X-ray examination of the esophagus**

1. narrowing of the lumen of the esophagus of a tubular form with the absence in this area of the relief of the mucous membrane and peristalsis (pencil symptom);
2. the presence of suprastenotic expansion of a conical or saccular shape above the cicatricial stricture without pitting, jagged edges.

## **Esophagoscopy.**



narrowing of the lumen of the esophagus in a tubular form with the absence in this area of the relief of the mucous membrane and peristalsis (pencil symptom); the presence of a suprastenotic expansion of a conical or saccular shape above the cicatricial stricture without pitting, serration of the edges.



# Esophageal stricture treatment

- *Bougieirage*
  1. *blindly through the mouth (blind bougieirage);*
  2. *under the control of an esophagoscope;*
  3. *hollow radiopaque bougie along a metal conductor;*
  4. *on the principle of "bougieu without end";*
  5. *retrograde;*
- *Balloon (hydro) dilatation;*
- *Electrical dissection;*
- *Cardiodilation with a metal dilator Stark (dangerous, has historical significance);*
- *Temporary replacement of the esophagus.*

***"bougieu without end";***



***"bougieu without end";***



***"bougieu without end";***





# Complications of bougieurage

- acute esophagitis
- esophageal bleeding
- perforation

## **Indications for Surgical treatment of cicatricial stricture of the esophagus:**

1. the inability to perform bougienage due to complete obliteration of the lumen of the esophagus;
2. unsuccessful attempts to conduct a bougie through cicatricial stricture;
3. long single and short multiple cicatricial strictures;
4. multiple diverticulosis (pseudo-diverticulosis) of the esophagus;
5. rapid recurrence of scar stricture;
6. perforation of the esophagus during bougieurage;
7. the presence of esophageal-bronchial fistula;
8. malignancy of burn stricture.

## Surgical operations:

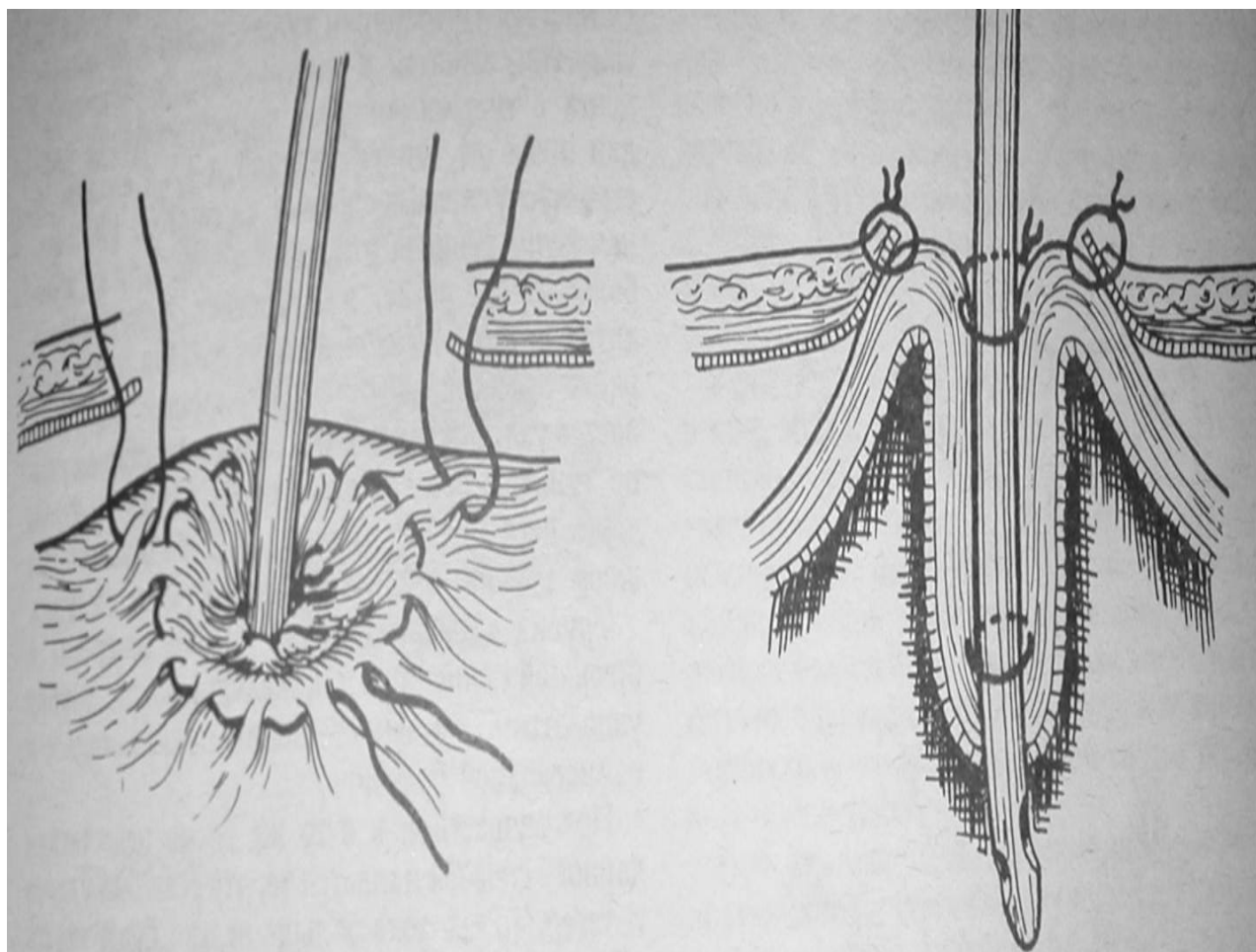
### 1. Gastrostomy

- a. For bougieurage (retrograde, according to the method "without end")
- b. For enteral nutrition of patients with full stricture

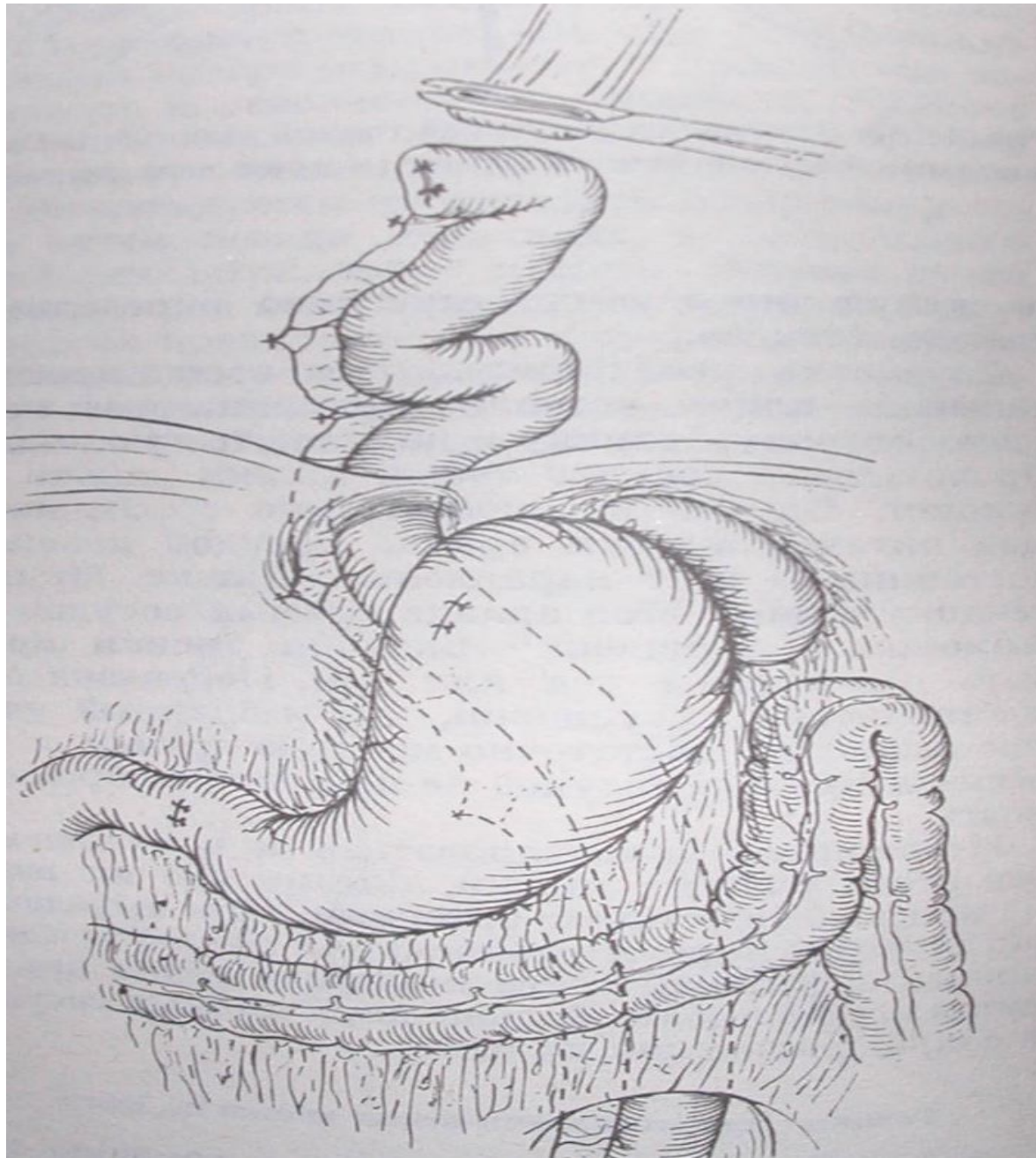
### 2. Esophagoplasty

- a. small intestine
- b. gastric
- c. colonic

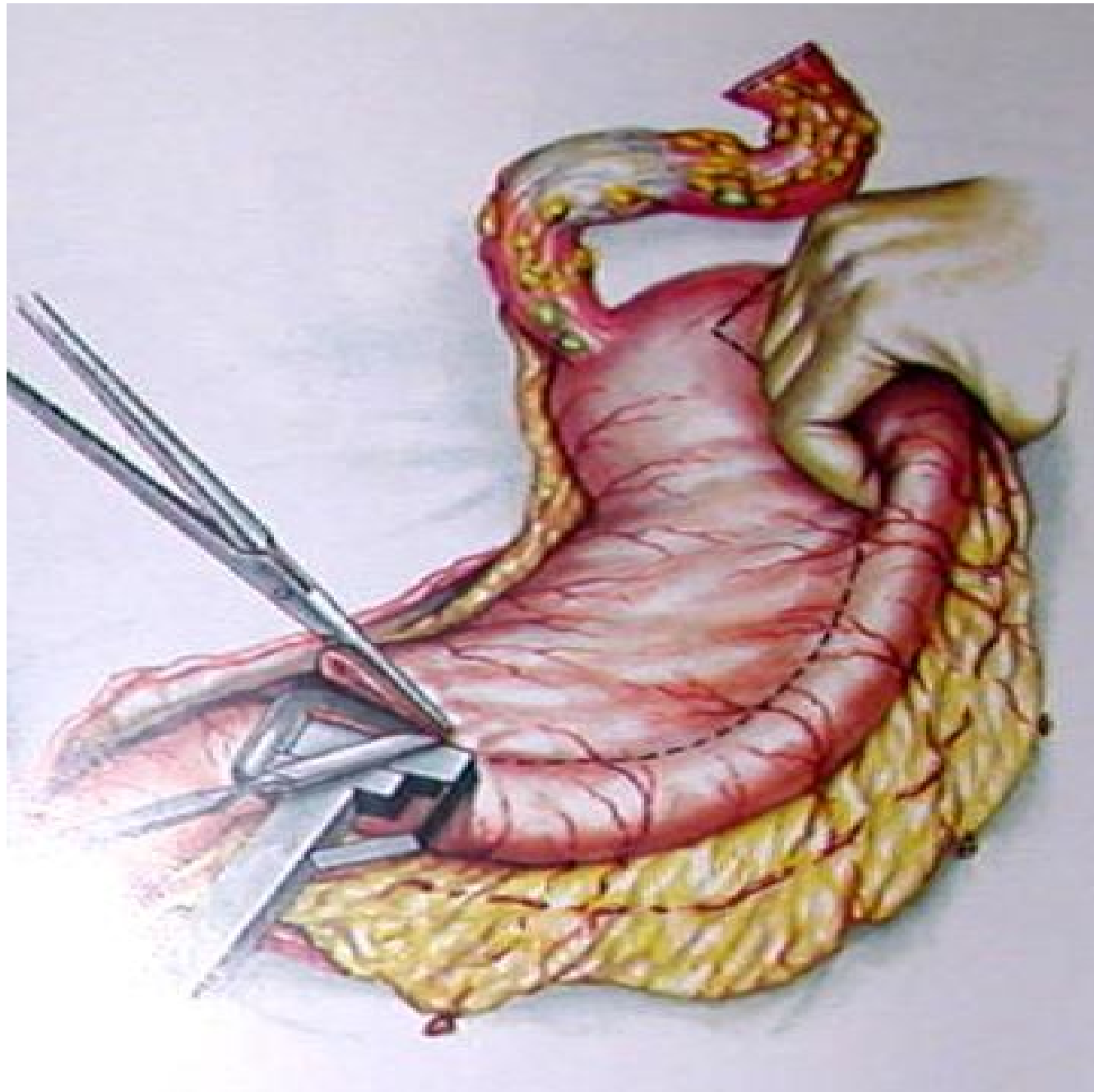




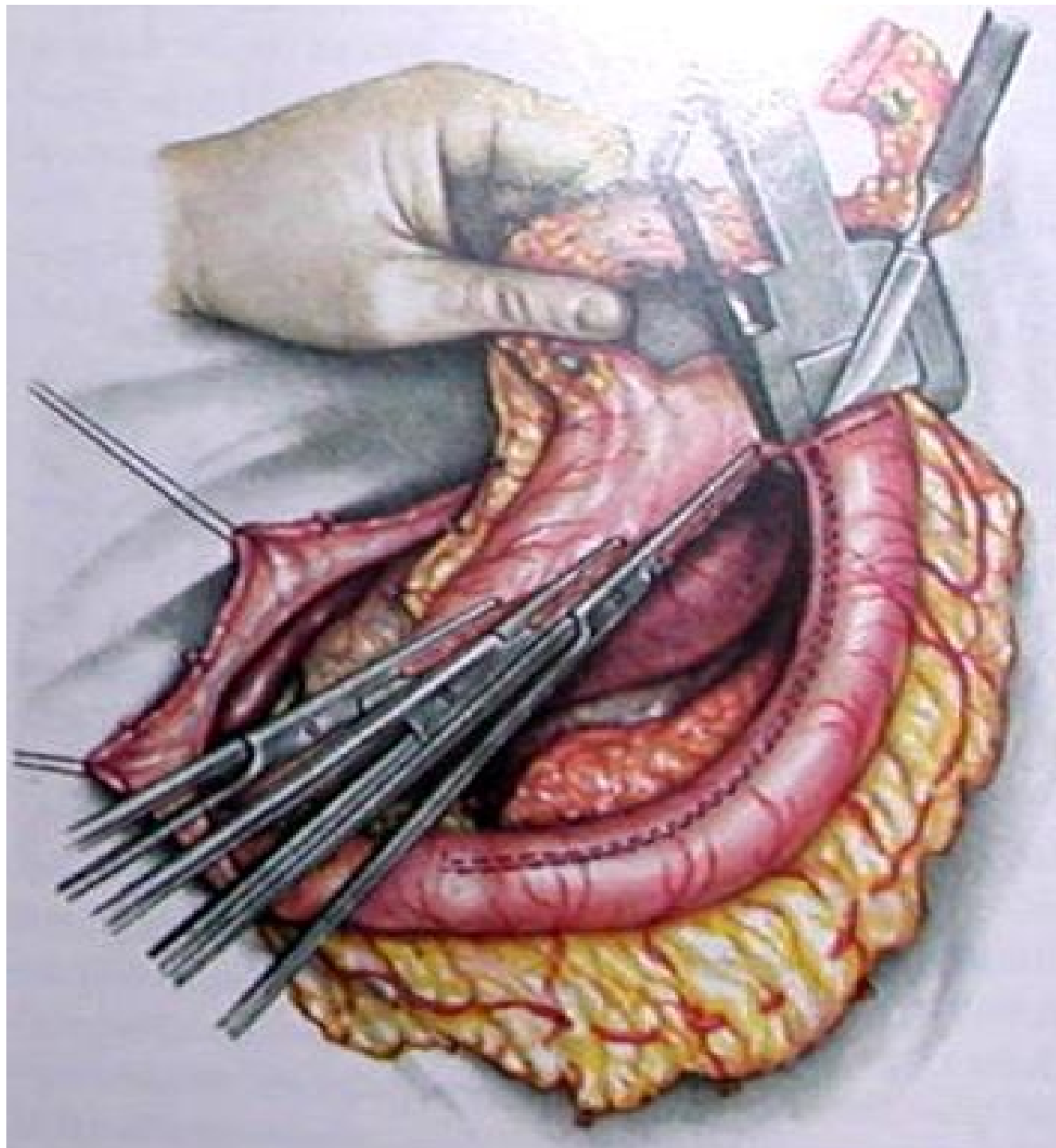
*В настоящее время к наиболее распространенным способам гастростомии относятся гастростомия по Штамму - Сенну и Кодеру, а также лапароскопическая гастростомия*

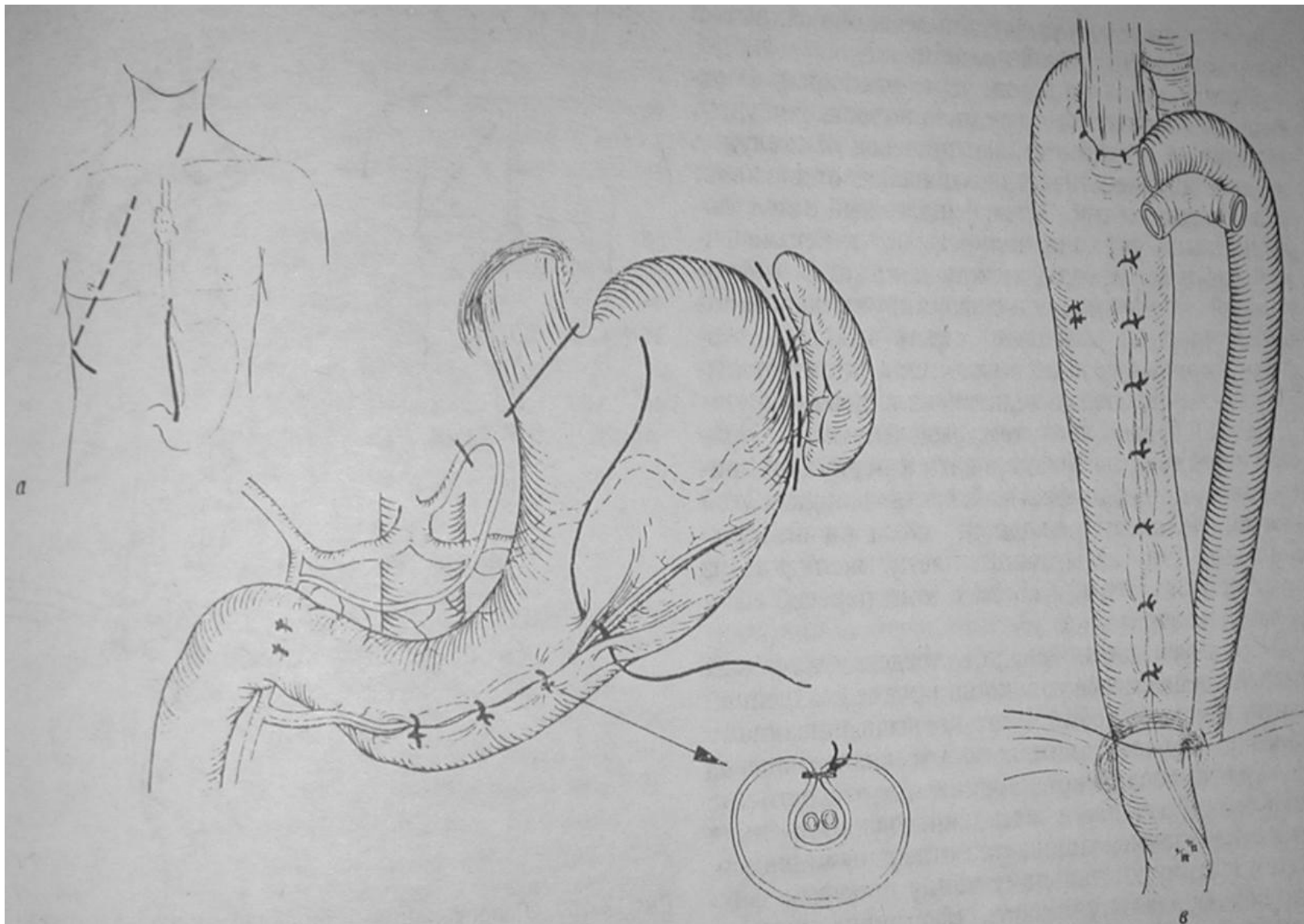


***Тонкокишечная пластика пищевода по Ру (1906)***



Пластика пищевода изоперистальтической трубкой из большой кривизны желудка (А. Ф. Черноусов, 1980).





Операция Льюиса

# Cardiaspasm

# Esophagus Achalasia

(from Greek a - absence, chalasis - relaxation)

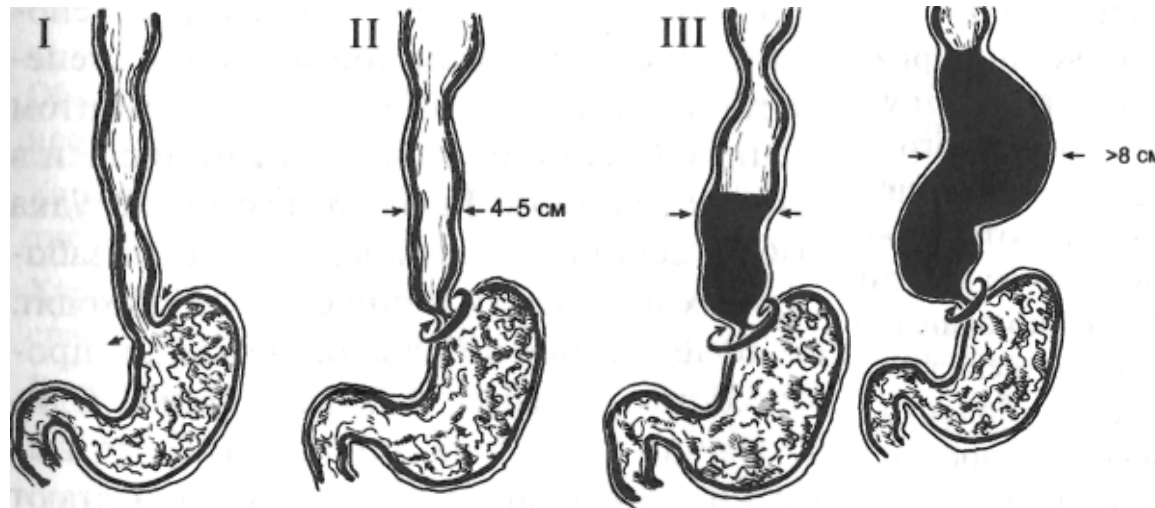
Esophageal achalasia, cardiospasm, megaesophagus is a neuromuscular disorder of esophageal motility, manifested by a violation of the passage of food into the stomach not due to an obstruction, but as a result of insufficient reflex opening of the lower esophageal sphincter when swallowing, irregular peristalsis..

# Pathogenesis of achalasia of the esophagus

- 1. Hypo- and agangliosis of the Auerbach nerve plexus
- 2. Degeneration of the esophageal fibers of the vagus nerve in combination with dysfunction of its dorsal nucleus
- 3. Hypersensitive reaction to cholinergic stimulation and gastrin



# Классификация (Б.В. Петровский, 1962).



- Stage I - intermittent functional spasm without expansion of the esophagus.
- Stage II - stable spasm with an unsharp expansion of the esophagus.
- Stage III - cicatricial changes (stenosis) of the NSP with a pronounced expansion of the esophagus.
- Stage IV - pronounced stenosis of the cardia with great dilatation, elongation, S-shaped deformation of the esophagus and esophagitis.

# Чикагская классификация нарушений моторики пищевода (Чикаго, 2008; Аскона, 2011)

## **Motility disorders of the esophagus based on Chicago Classification v3.0**

Disorders with EGJOO

Achalasia type I: classic achalasia  
Achalasia type II: with pan-pressurization  
Achalasia type III: spastic achalasia  
EGJOO

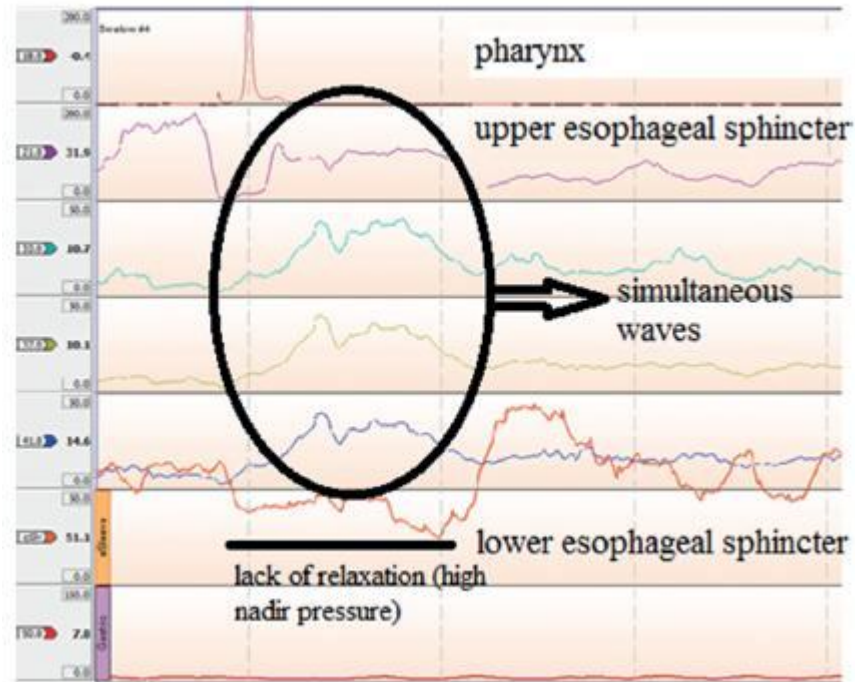
Major disorders of peristalsis

Absent contractility  
Distal esophageal spasm  
Jackhammer esophagus

Minor disorders of peristalsis

Ineffective esophageal motility  
Fragmented peristalsis

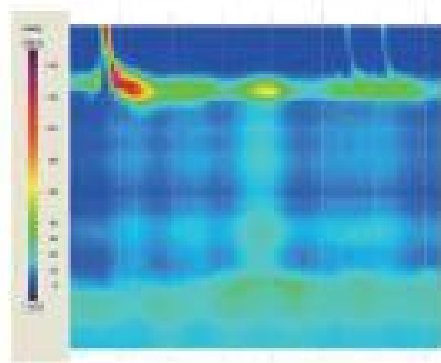
EGJOO - esophagogastric junction outlet obstruction



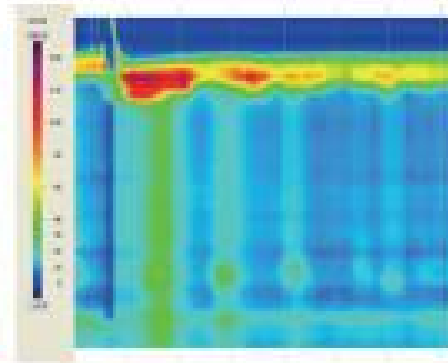
Aperistalsis is usually noticed as simultaneous mirrored contractions with complete loss of propagation of the contractions

# Manometric Chicago Classification for achalasia

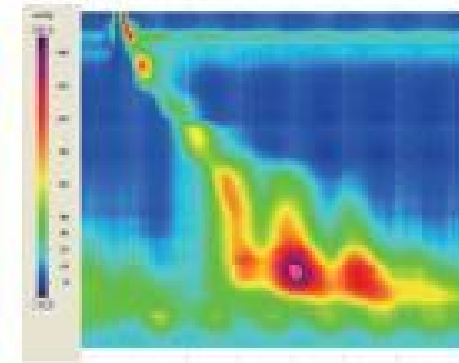
Type	Lower esophageal sphincter	Esophageal body
I	Incomplete relaxation	Aperistalsis and absence of esophageal pressurization
II	Incomplete relaxation	Aperistalsis and panesophageal pressurization in at least 20% of swallows
III	Incomplete relaxation	Premature (spastic) contractions with distal contractility integral (DCI) $>450$ mmHg·s·cm with $\geq 20\%$ of swallows



Chicago I



Chicago II



Chicago III

# **Clinical manifestations of achalasia of the esophagus**

## **Typical triad of symptoms:**

- **Dysphagia, including paradoxical**
- **Regurgitation, (symptoms of "wet pillow", "shoe lacing", "night cough")**
- **pain when swallowing, pain behind the sternum, simulating angina pectoris (in 60% of patients quite pronounced)**
- *Weight loss (in 90% of patients).*
- *Slow food intake, night cough, anemia.*
- *There may be a splash behind the sternum*

# Complications of achalasia

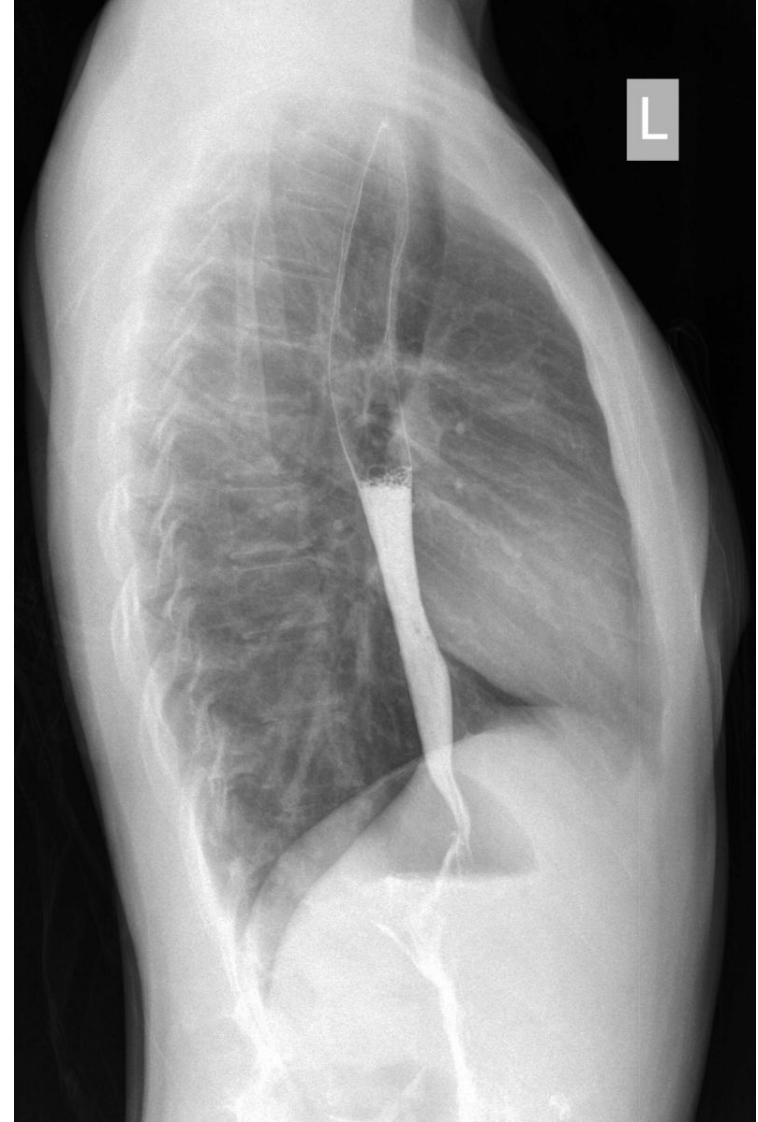
- esophagitis;
- esophageal bleeding;
- esophageal perforation;
- periesophagitis;
- aspiration bronchopneumonia, lung abscess

# diagnosis of achalasia

- X-ray examination.
- Fibroesophagoscopy.
- Manometry (esophagotonokimografiya).
- Esophagoscopy.
- Diagnostic pharmacological tests.
  - Nitroglycerin, amyl nitrite facilitate the passage of the contents of the esophagus into the stomach by reducing the tone of the muscular membrane of the esophagus and lower esophageal sphincter.
  - Acetylcholine, carbacholine have a stimulating effect on the muscular membrane of the esophageal wall and lower esophageal sphincter.







Девочка 9 лет. Жалобы на ночной кашель в течение примерно полугода. Дефицит массы тела. Во время УЗИ брюшной полости случайно обнаружено расширение пищевода. Нижний пищеводный сфинктер сомкнут, пассаж небольшого количества жидкости в желудок начался только после приёма 1,5 стаканов жидкости и переходе в вертикальное положение.



Продольный срез на уровне  
нижнего пищеводного  
сфинктера

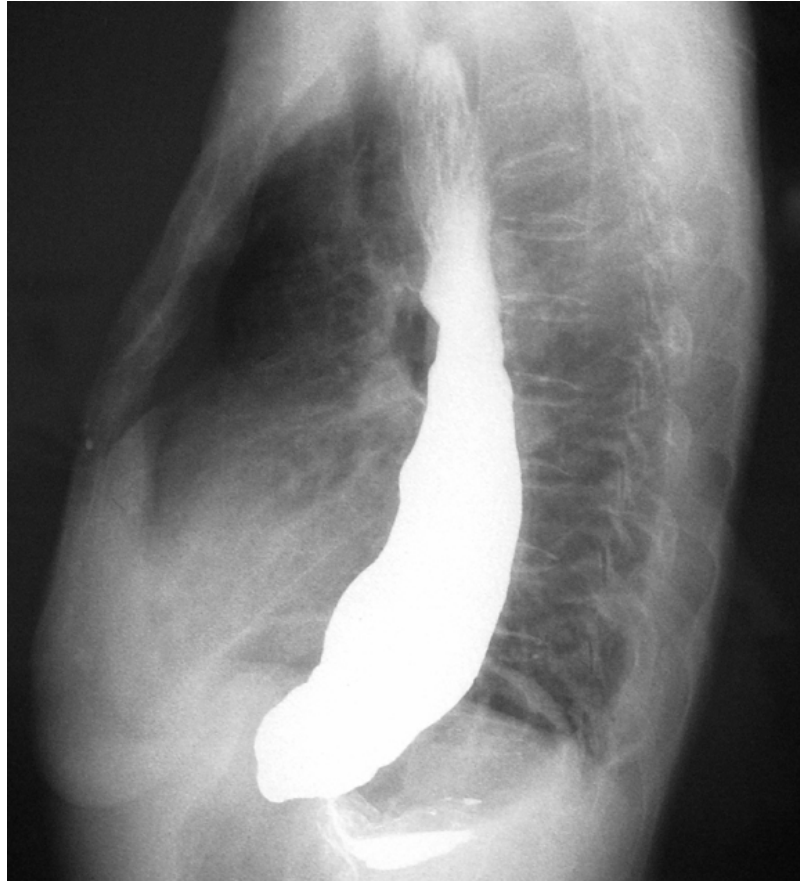
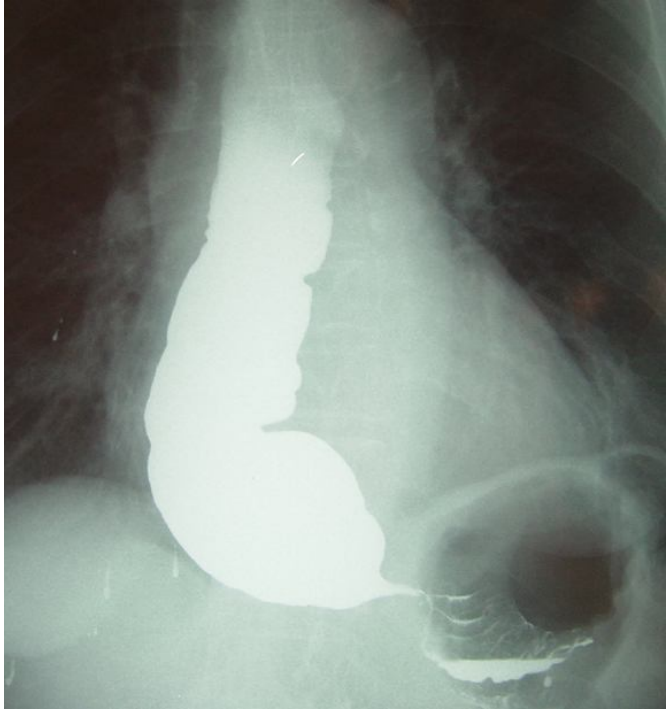


Поперечный срез в средней  
части пищевода

Девочке была проведена ЭГДС, патологии не выявлено, рентгенография:



World J  
Gastroenterol. 2009  
August 28; 15(32):  
3969–3975



# **Conservative treatment of achalasia**

- **Medicinal Nitrates (Isosorbide Mononitrate, Isosorbide Dinitrate), anticholinergics, calcium channel blockers (Nifedipine), prostaglandins can improve the condition.**
- **Dilation is the main treatment for achalasia of the cardia.**
  - 1. balloon pneumatic cardiodylator**
  - 2. mechanical pacemaker, outdated, has historical significance (Stark apparatus)**

## **Contraindications for cardiodilation**

1. Varicose veins of the esophagus,
2. Severe esophagitis.
3. Blood diseases accompanied by increased bleeding.

## **Cardiodilations complications**

1. Rupture of the esophagus with the development of mediastinitis.
2. Acute esophageal-gastric bleeding.
3. Cardia insufficiency with the development of severe reflux esophagitis.

# Botulinum Toxin Administration

intramural endoscopic administration of botulinum toxin A in the NPS at a dose of 80-100 units.

## Off-label-use problem

To date, in the Russian Federation, the drug “Dysport®” (Ipsen Pharma, France) is not registered as a means for use in gastroenterology. For the treatment of achalasia of cardia, the drug is used in the Republic of Tatarstan with the special permission of the Ministry of Health of this subject of the Russian Federation.

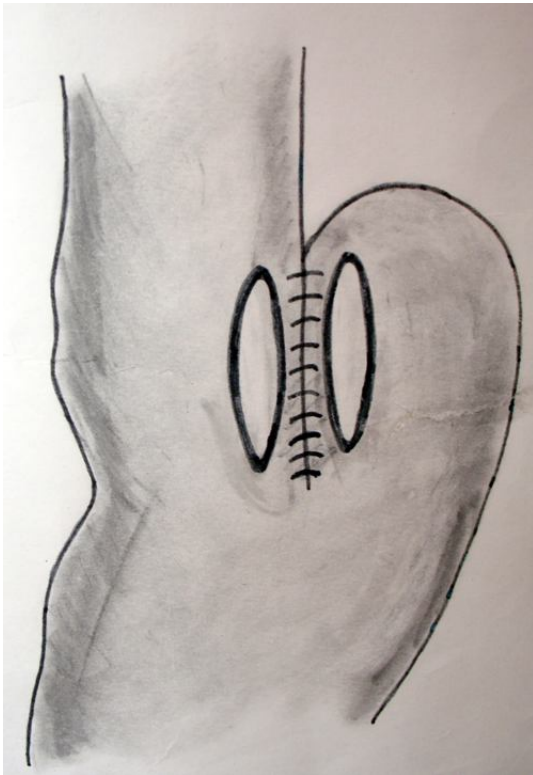
# **Surgical treatment is indicated for 10-15% of patients.**

Indications:

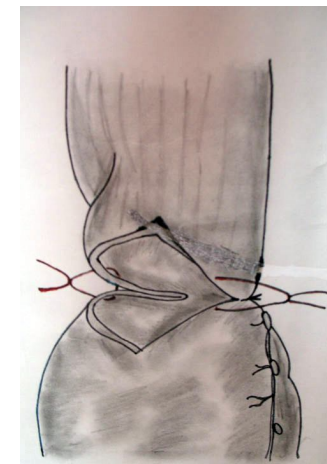
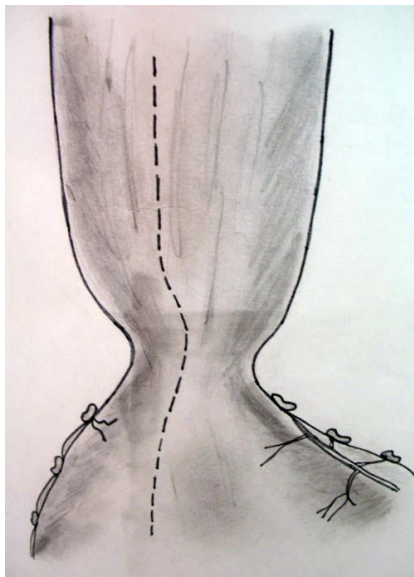
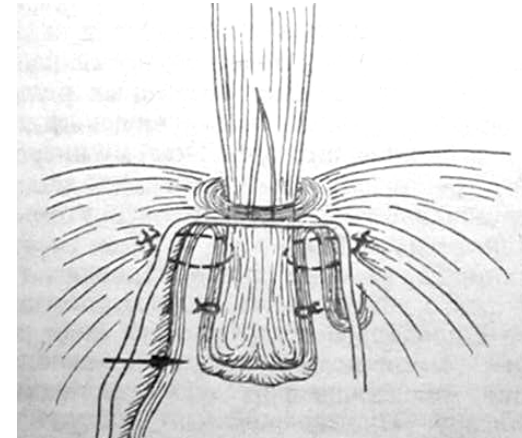
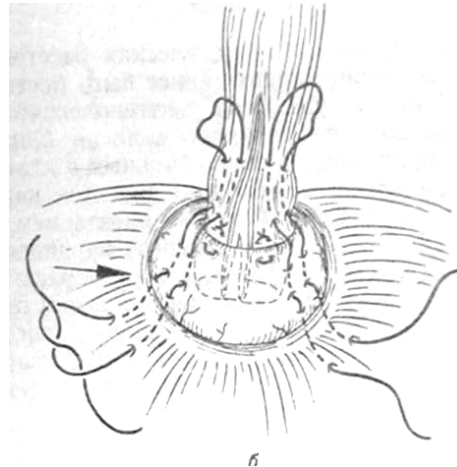
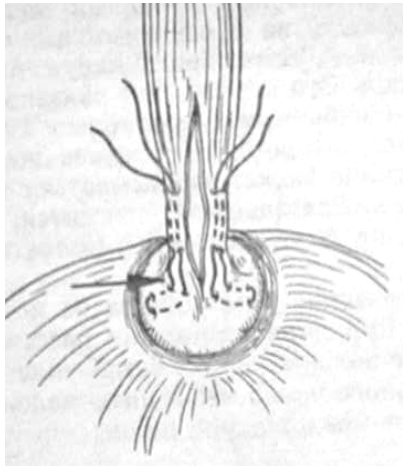
1. The inability to carry out cardiodilation;
2. Lack of effect from repeated courses of cardiodilation;
3. Rupture of the esophagus during cardiodilation;
4. III-IV stage of achalasia of the cardia;
5. Suspicion of cancer of the esophagus.



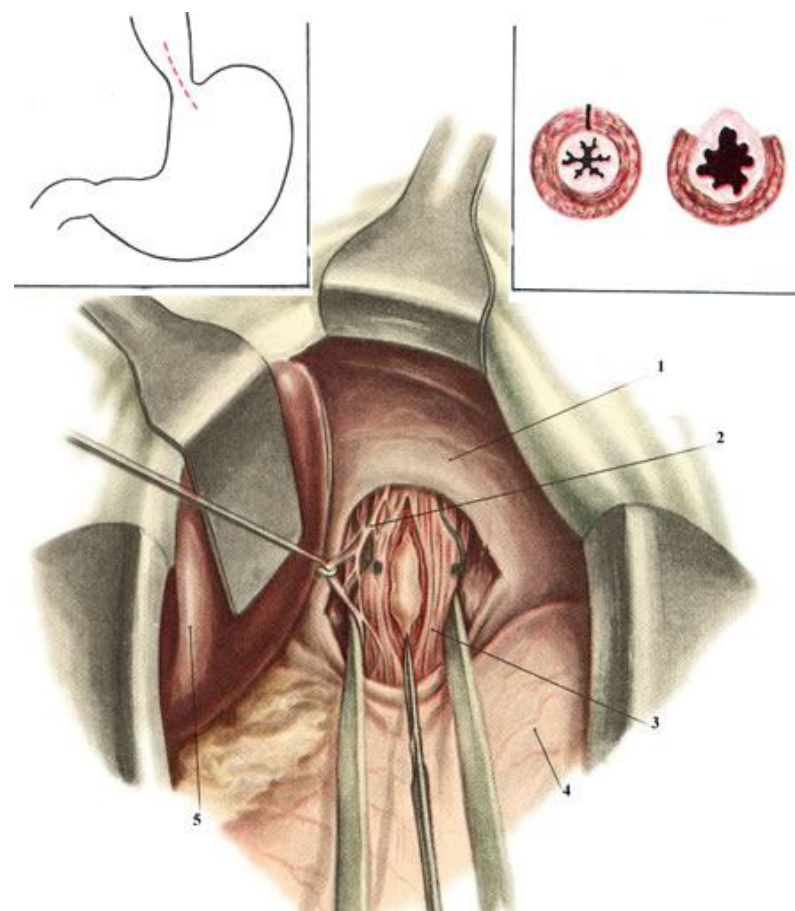
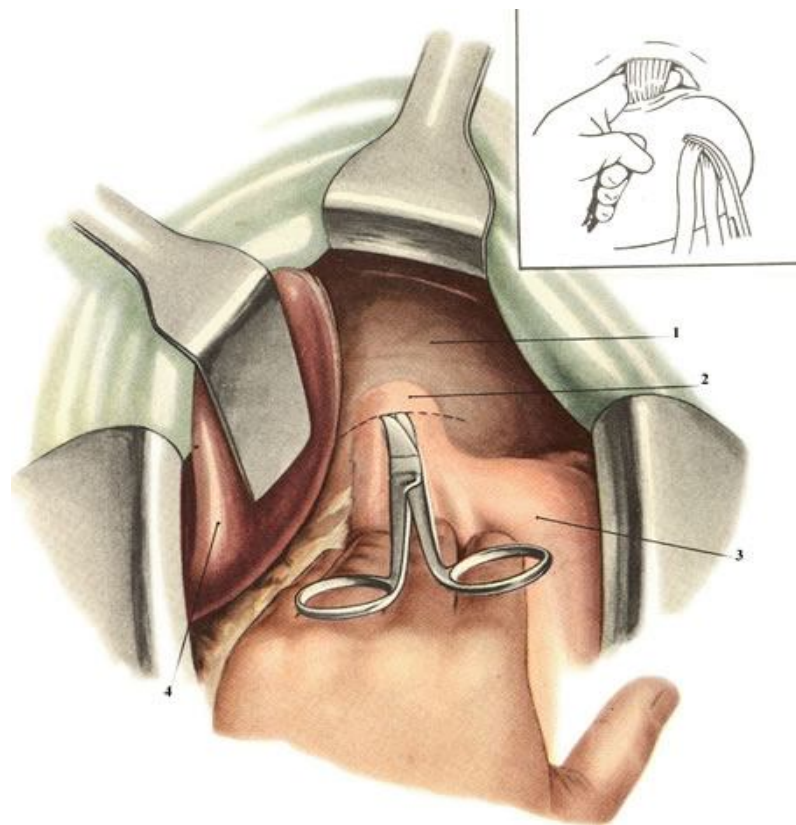
# Операция Гейровского



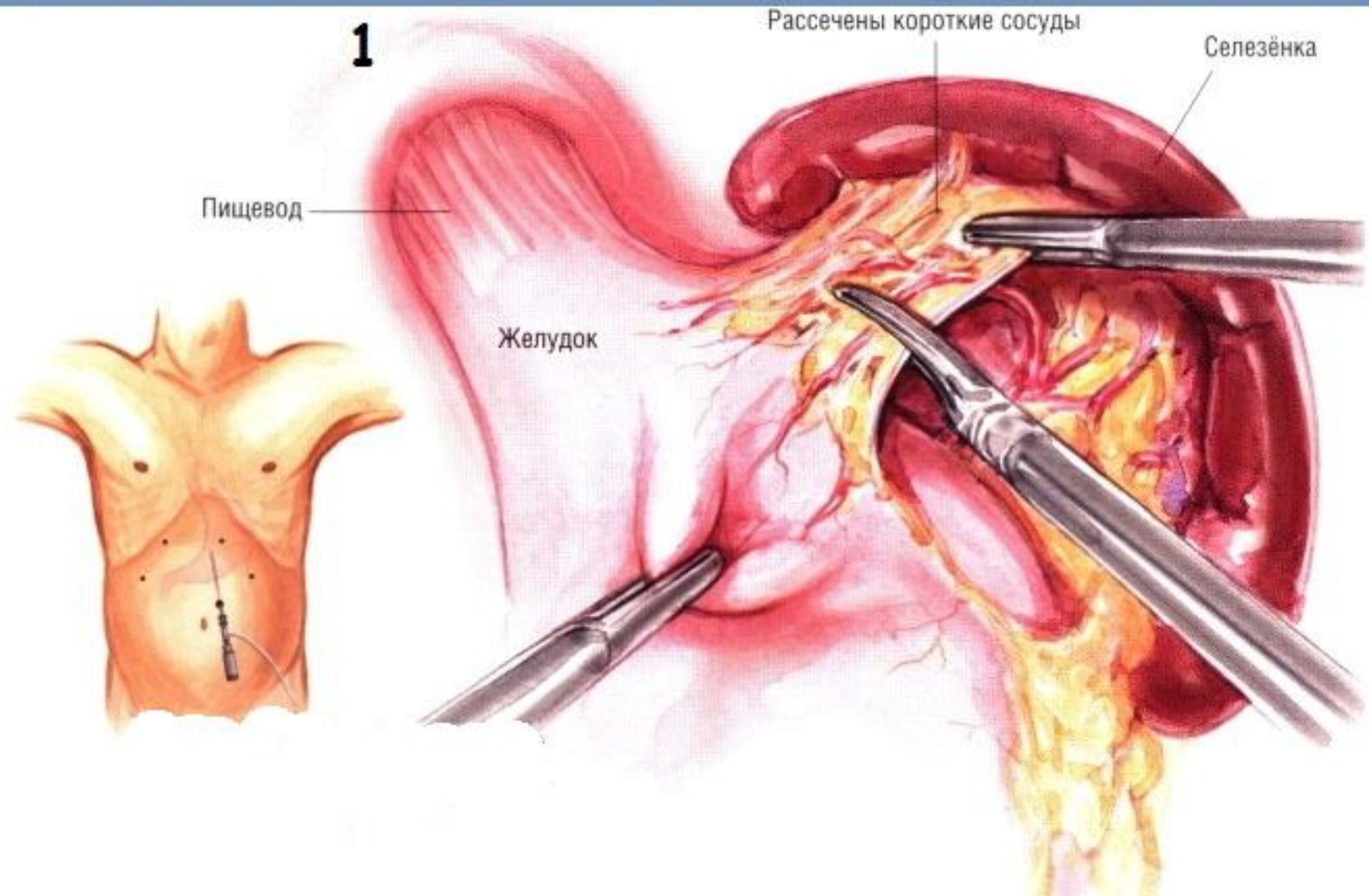
Внеслизистая кардиомиотомия (**Heller**) из абдоминального доступа, реконструкция кардии (**Belsey**).  
Эндоскопическая миотомия.



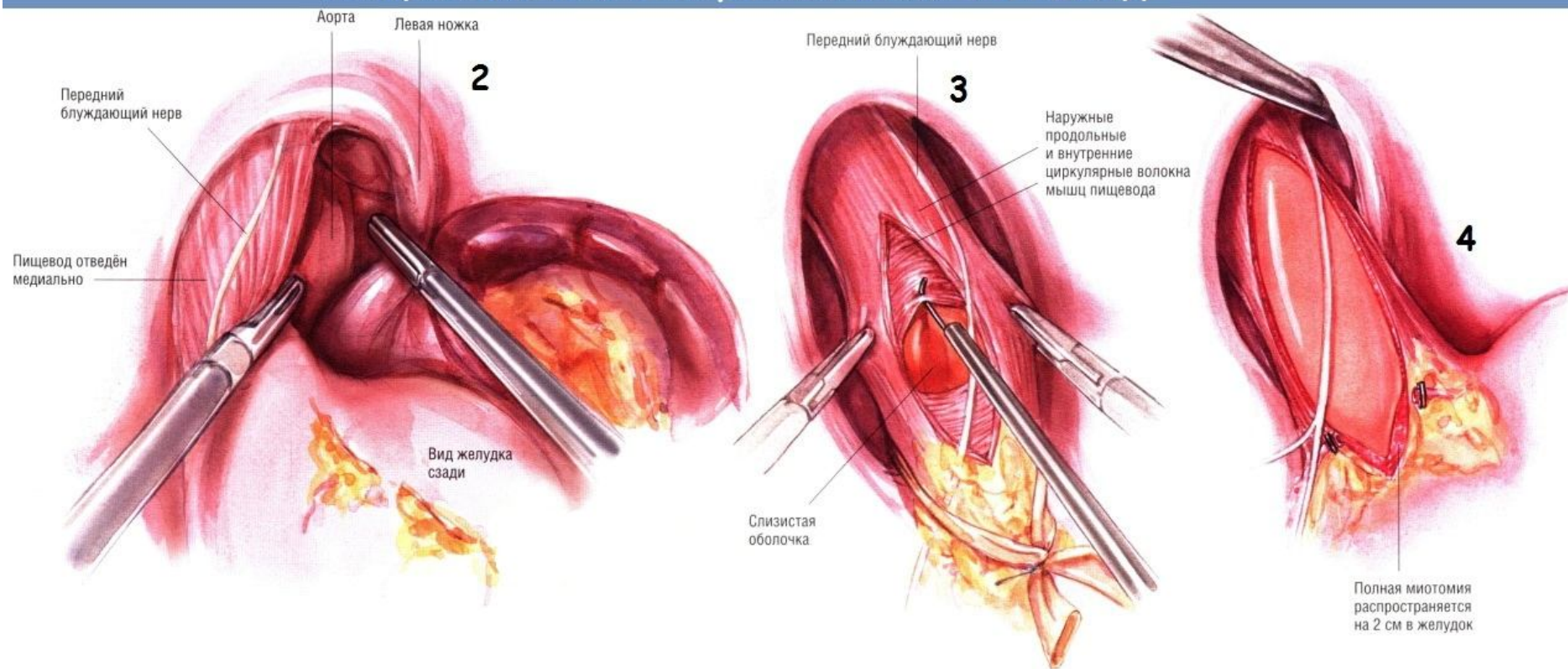
# Эзофагомиотомия



# Лапароскопическая эзофагомиотомия по Геллеру



## Лапароскопическая эзофагомиотомия по Геллеру

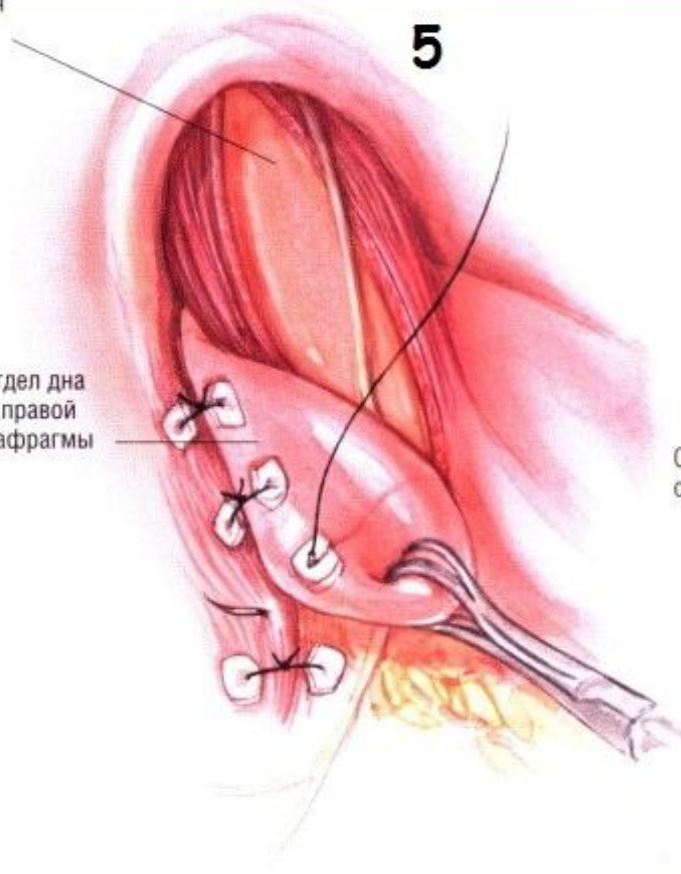


## Лапароскопическая эзофагомиотомия по Геллеру

Слизистая оболочка

5

Задний отдел дна пришит к правой ножке диафрагмы

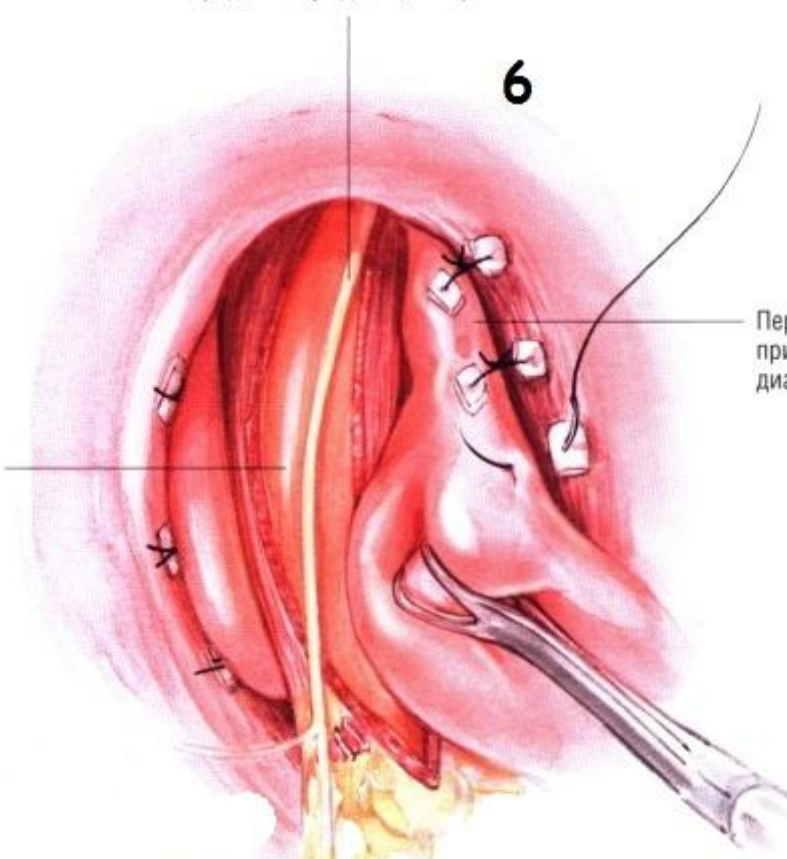


Передний блуждающий нерв

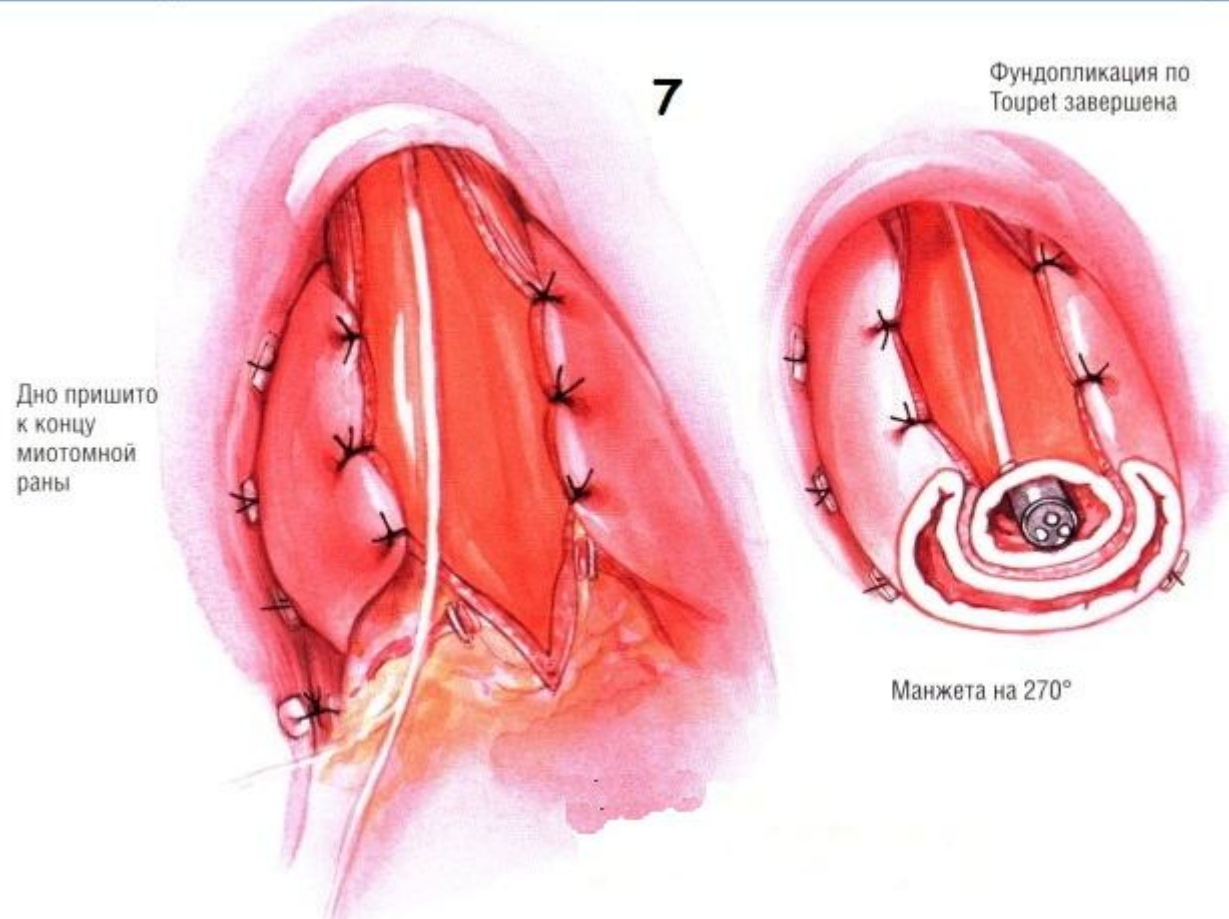
6

Слизистая оболочка

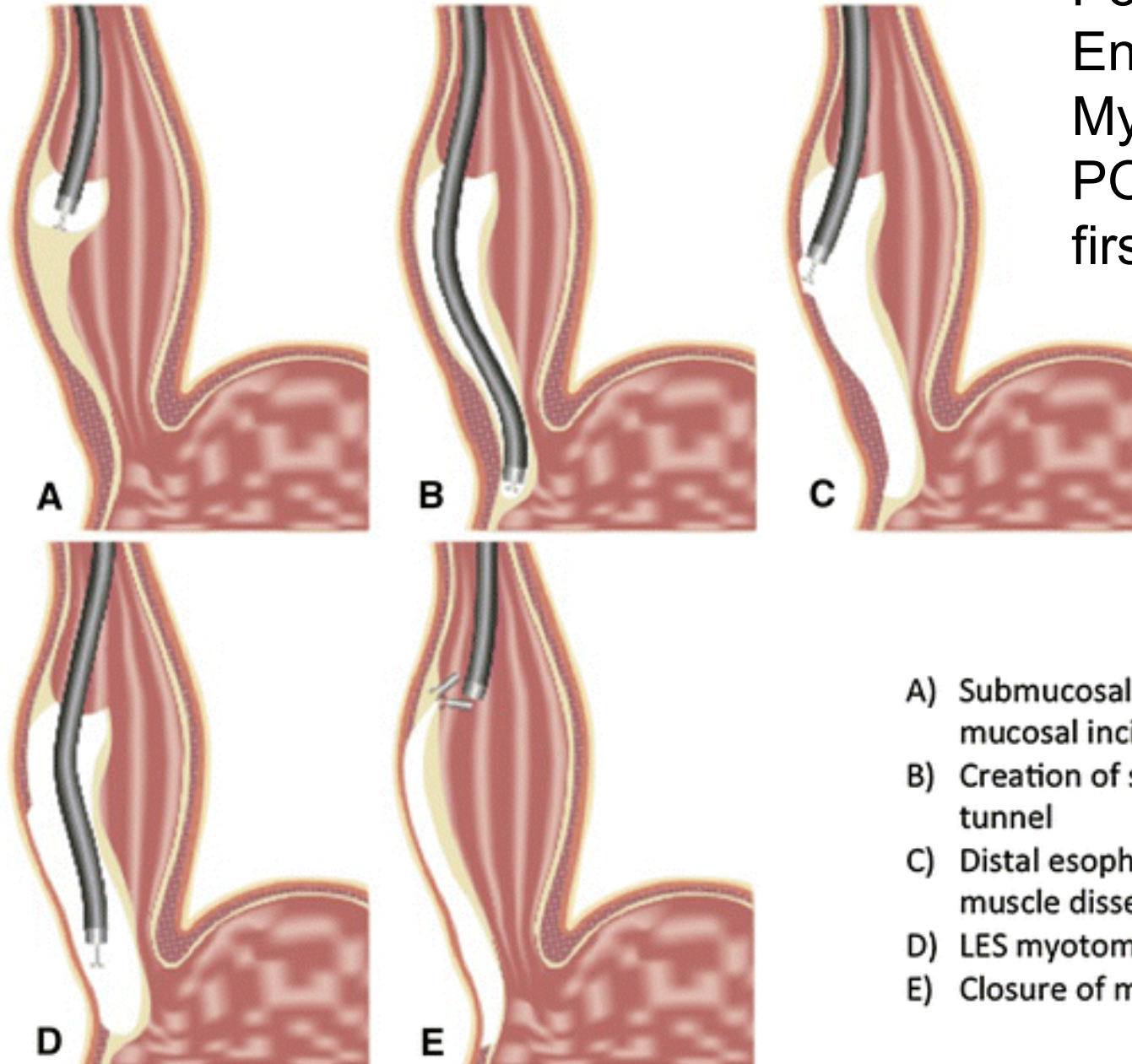
Передний отдел дна пришит к левой ножке диафрагмы



## Лапароскопическая эзофагомиотомия по Геллеру



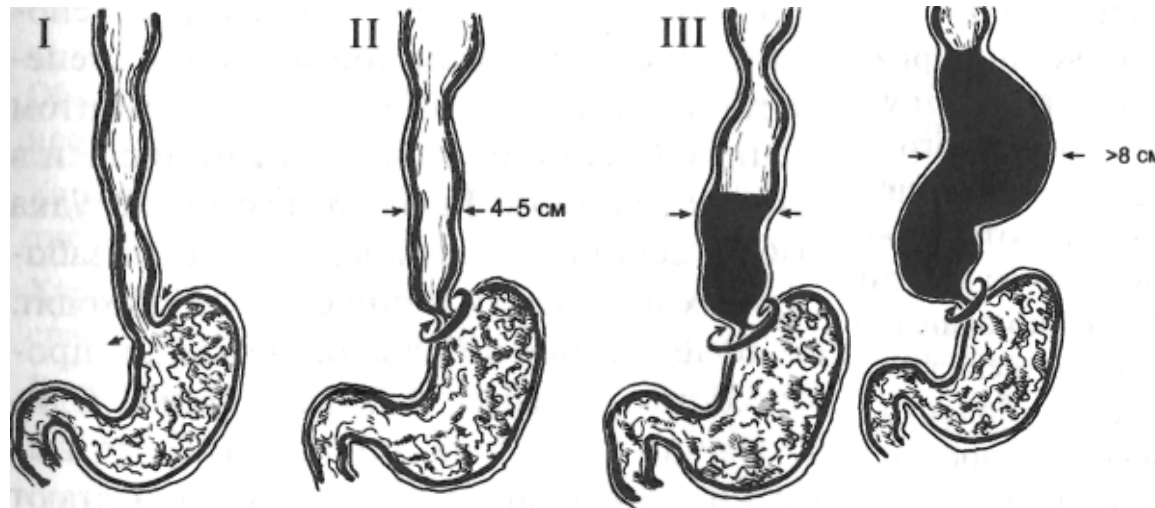
Per-Oral  
Endoscopic  
Myotomy  
POEM  
first case in 2008



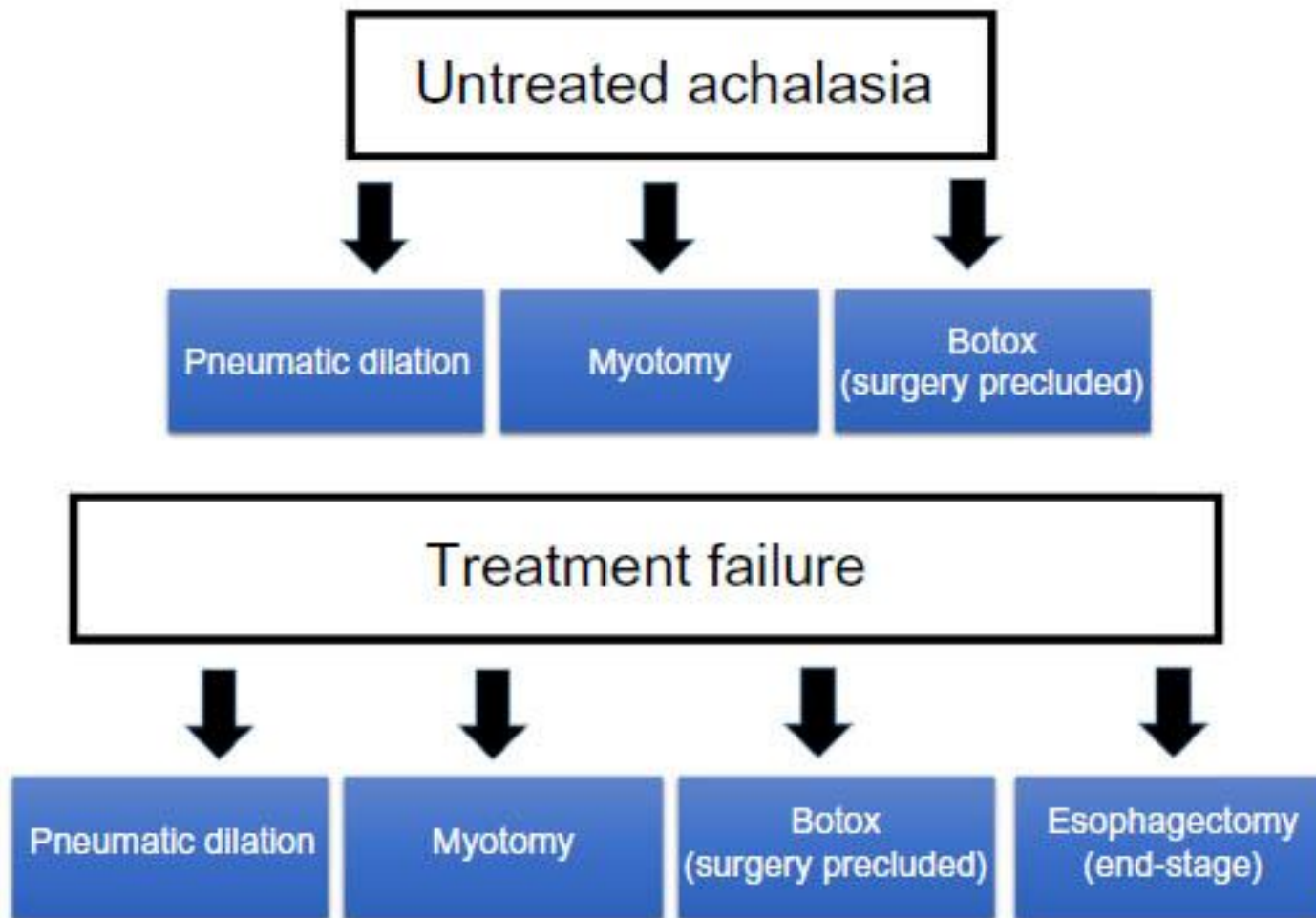
- A) Submucosal injection and mucosal incision
- B) Creation of submucosal tunnel
- C) Distal esophageal circular muscle dissection
- D) LES myotomy
- E) Closure of mucosal incision



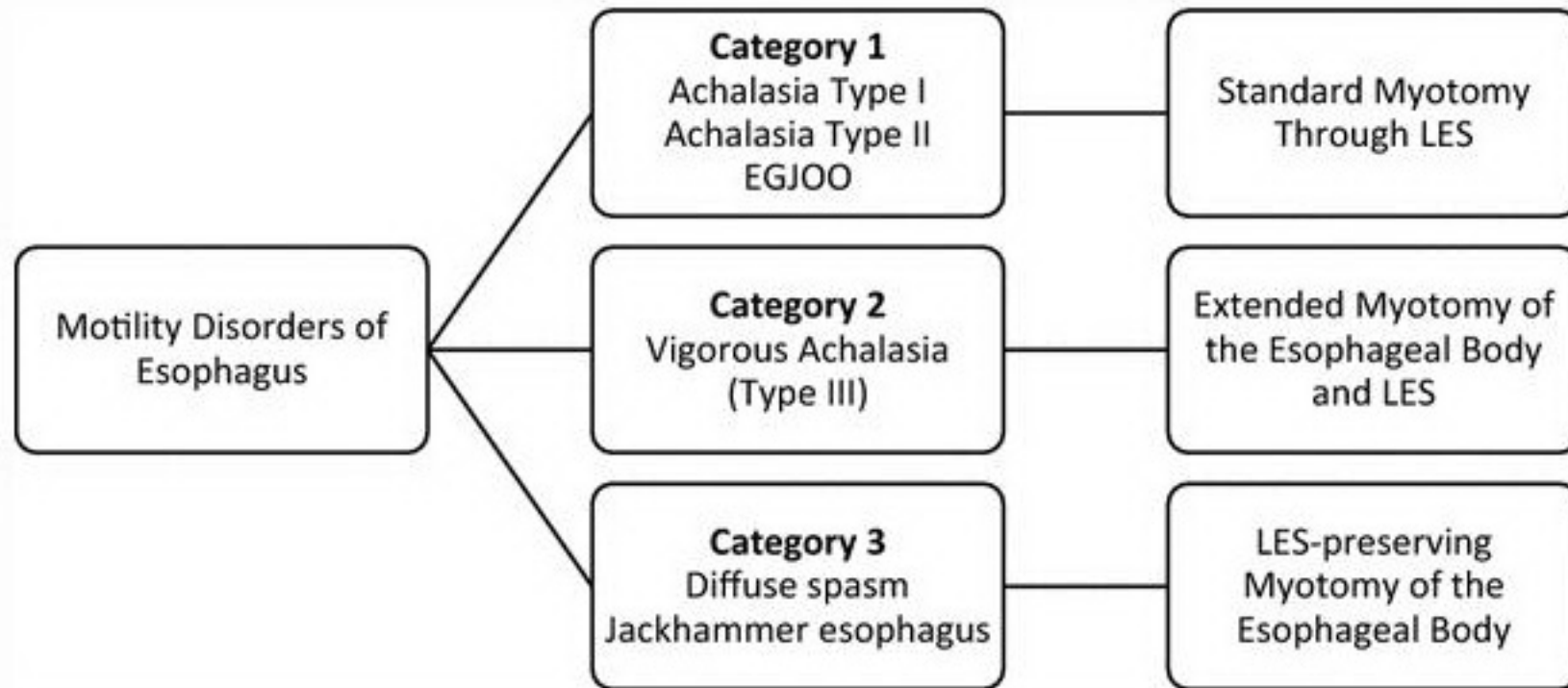
# Классификация (Б.В. Петровский, 1962).



- Stage I - conservative treatment, pneumodilation, botulinum toxin. Surgery is not performed.
- Stage II - pneumodilation, botulinum toxin. If not effective, cardiomyotomy.
- Stage III - cardiomyotomy.
- Stage IV - resection of the stricture.



Treatment algorithm for POEM.  
*EGJOO* Esophagogastric junction outlet obstruction,  
*LES* lower esophageal sphincter



# Esophageal diverticula

Classification of diverticula.

1. By origin:

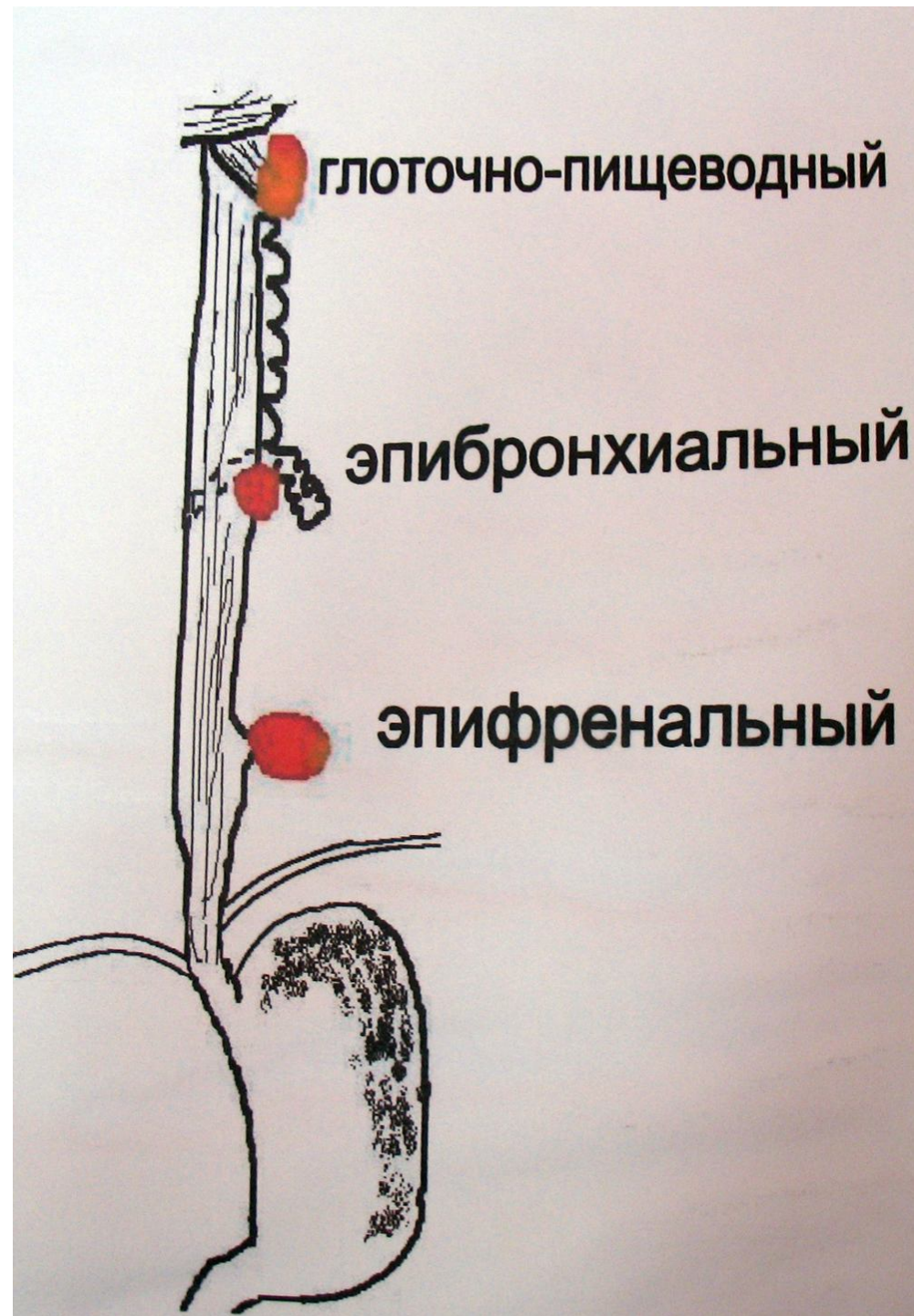
- congenital;
- acquired.

2. By localization:

- pharyngeal-esophageal (Zenker diverticulum);
- epibronchial (bifurcation, mid-esophageal);
- diverticula of the lower third of the esophagus;
- epiphrenal (supraphrenic);
- abdominal.

# Classification of diverticulums

3. According to the development mechanism:
  - pulsion - protrusion through weak points with increased intraesophageal pressure;
  - traction - involvement of the esophagus wall in the inflammatory-cicatricial process in the mediastinal tissue;
  - pulsion-traction (mixed).
4. By structure:
  - true;
  - false - do not contain muscle shell.
5. By quantity: single and multiple.



# Stages of diverticulum development

1. slight protrusion of the wall of the esophagus
2. the diverticulum goes down and is located between the esophagus and the spine
3. The diverticulum descends into the mediastinum.

While the etiology of esophageal diverticula is not fully known, there is a thought that the diverticula form when there is an increase in luminal pressure, and the pressure pushes outward where there is a weakness in the lumen resulting in an outpouching of the mucosa.

Esophageal diverticula occur in less than 1% of the population. They are found in approximately 1% to 3% of those presenting with dysphagia. It can occur in all ages but are typically diagnosed in the elderly. They are usually found more in men than in women.

# Clinical manifestations of esophageal diverticula

The pharyngeal-esophageal diverticulum occurs in two weak points of the junction of the pharynx and esophagus - in the region of the Lannier-Haeckerman and Lemer-Killian triangle

Sometimes pharyngeal-esophageal diverticula contain up to 1.5 liters of fluid.

## **Symptom Triad (Terracol et Sweet):**

1. stagnant food regurgitation
2. the constant presence in the pharynx of mucus
3. bubbling noises when pressing on the throat



# Clinical manifestations of esophageal diverticula

- Palpation of the diverticulum is accompanied by the appearance of splashing noise - a symptom of Cooper.
- Burning
- Sore throat
- Salivation
- Bad breath
- The phenomenon of blockade - compression of the esophagus
- Hoarseness
- Swelling of the neck and face
- Strengthening the pattern of saphenous veins
- Spitting up decomposed food

## Bifurcation diverticula

1. Rare development of dysphagia
2. Belching with air
3. Severity and pain in the chest
4. Food regurgitation
5. Shortness of breath
6. Cough

Often combined with peptic ulcer, gastritis, colitis.

# ***Epiphrenic diverticula***

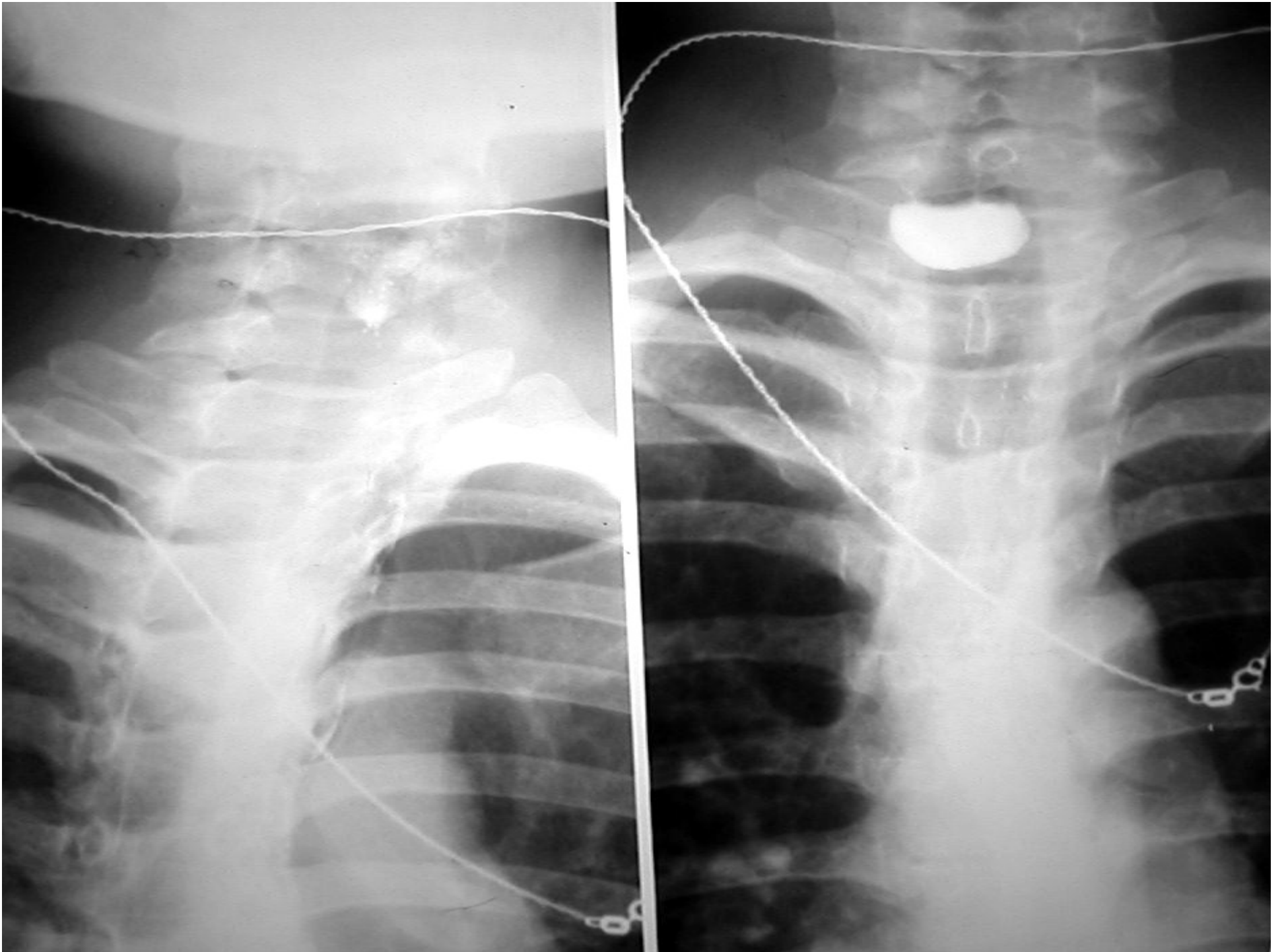
1. The feeling of heaviness
2. Pain in the lower part of the sternum
3. Aerophagy
4. Putrid smell
5. spitting up
6. Attacks of asthma, angina pectoris

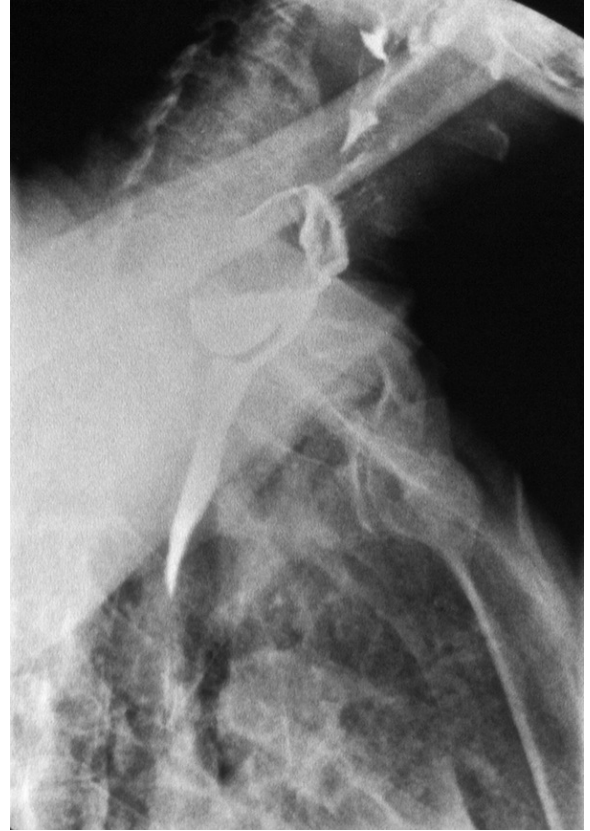
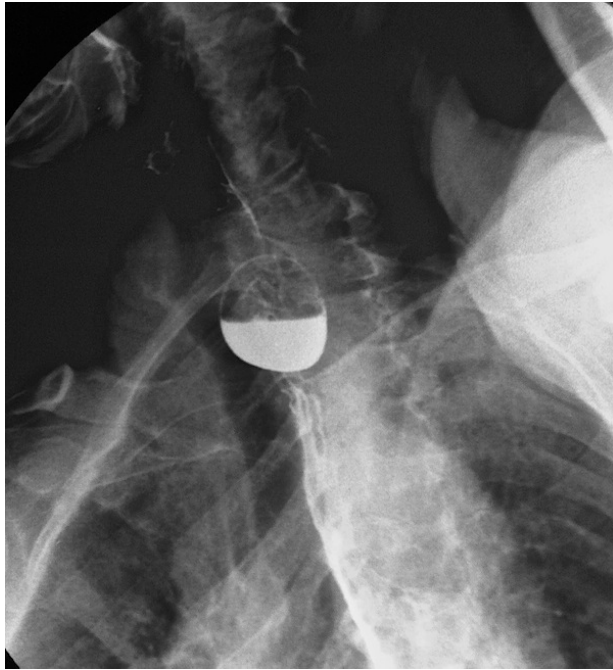
# Complications

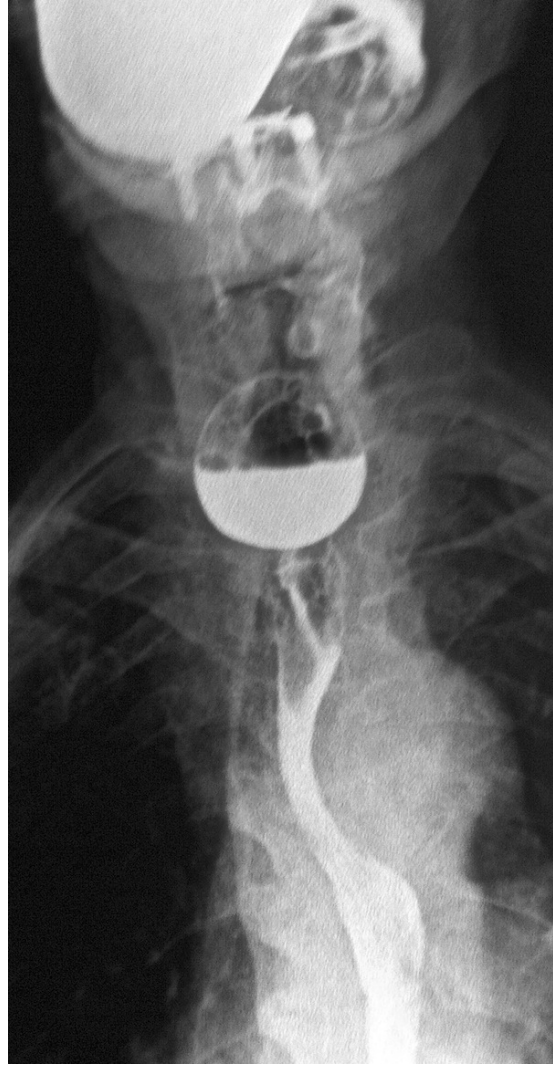
1. Diverticulitis and esophagitis with the formation of abscesses,
2. Aspiration of diverticulum contents (recurrent bronchitis, pneumonia, lung abscesses);
3. Bleeding due to vascular erosion;
4. Perforation of diverticula with subsequent mediastinitis;
5. Esophageal-tracheobronchial fistula;
6. Cicatricial stenosis of the esophagus;
7. Malignancy.

# Diagnostics

- Contrast radiography
- Fibroesophagoscopy
- CT scan

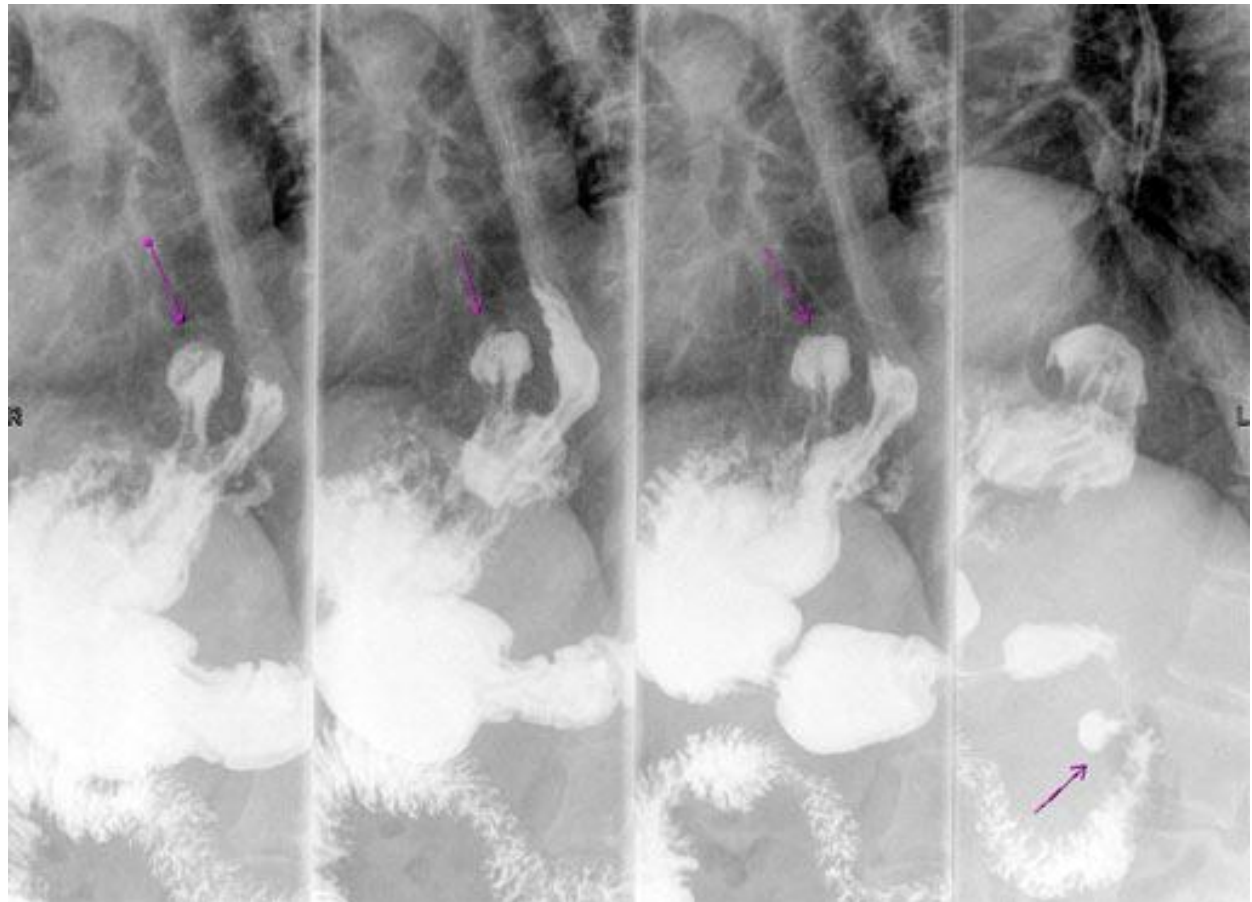
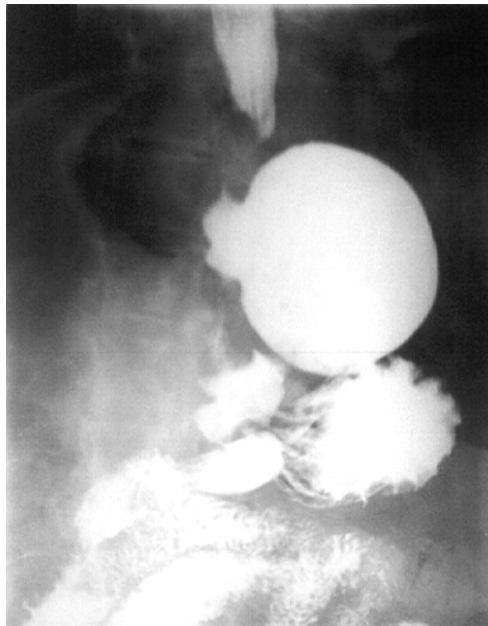








# Эпифренальные дивертикулы



# Дивертикул пищевода с явлениями дивертикулита



Дивертикулит, эзофагит,  
перфорация, медиастинит.



# X-ray stages of diverticulum development:

1. The diverticulum in shape resembles a rose thorn;
2. The diverticulum is shaped like a mace;
3. The diverticulum has the form of a bag that does not compresses the esophagus;
4. The diverticulum compresses and pushes the esophagus anteriorly.

# Conservative treatment of diverticulums

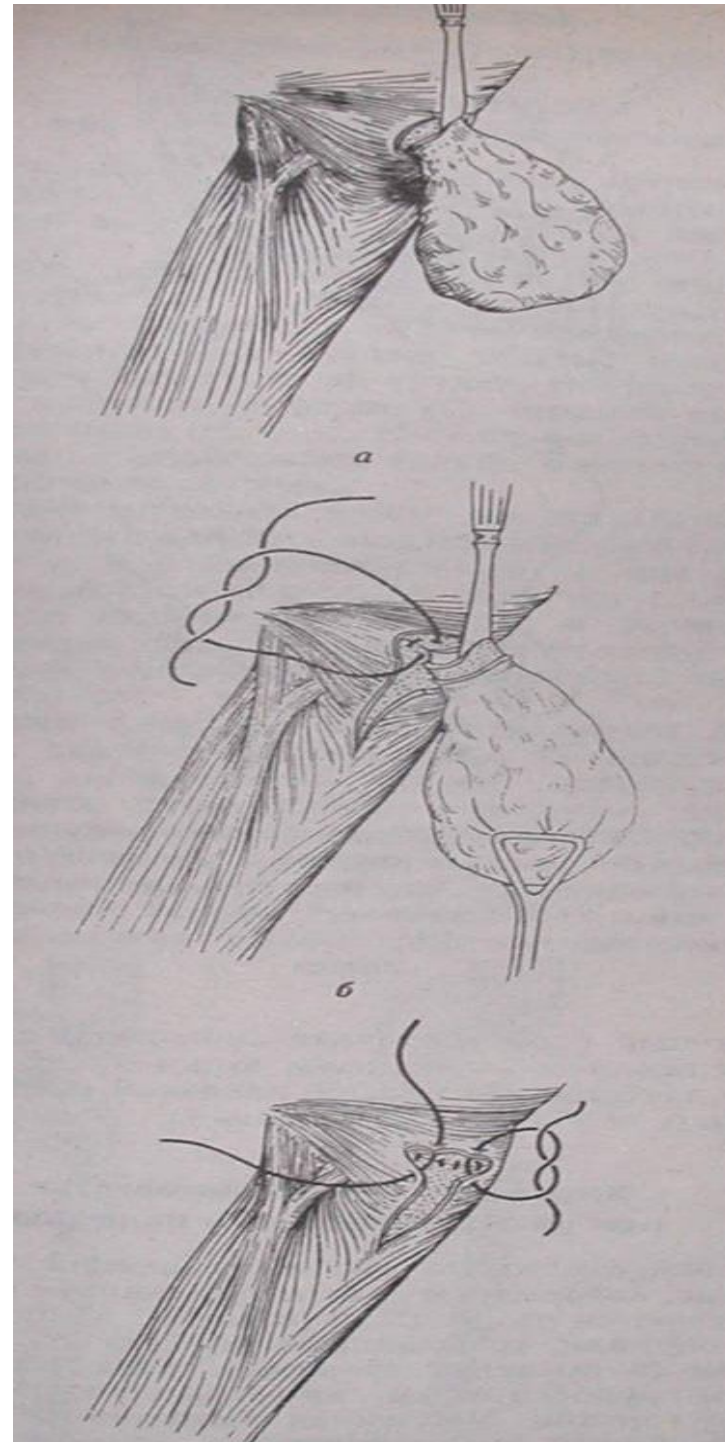
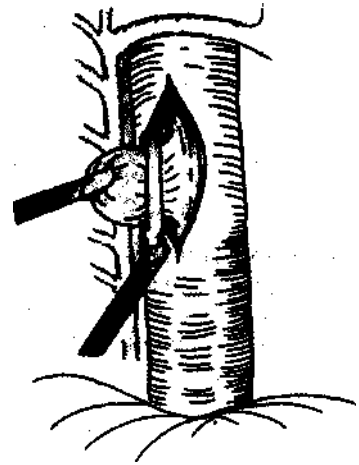
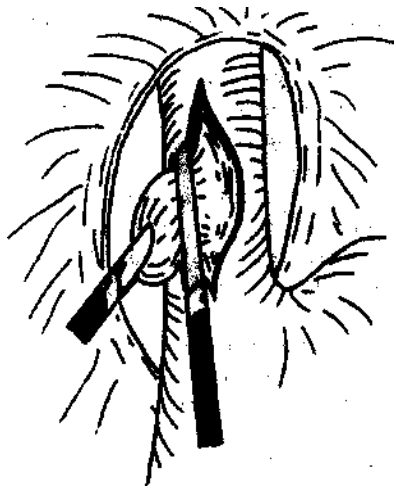
- Diet and diet.
- Postural diverticulum drainage

# Indications for surgical intervention:

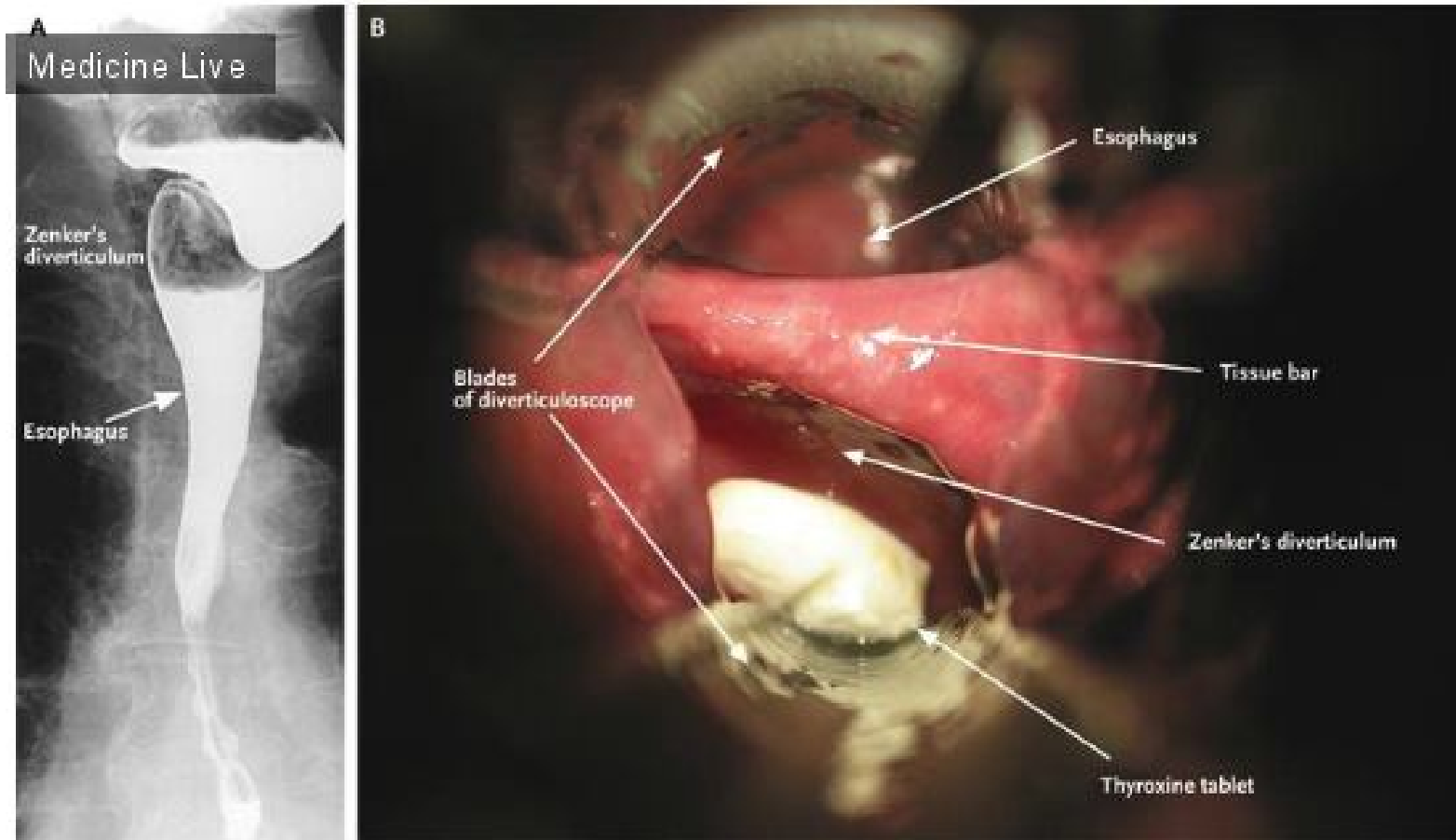
1. Large diverticula that violate the patency of the esophagus and are accompanied by prolonged stagnation of food masses in its cavity;
2. Complicated diverticula (frequent diverticulitis, bleeding, perforation, malignancy);
3. Violation of the functions of other organs and systems due to pathology of the esophagus;
4. The ineffectiveness of conservative treatment.

## Types of surgical treatment:

1. diverticulectomy;
2. diverticulopexy;
3. diverticulum intussusception;
4. segmental resection of the esophagus.







Мужчина 68 лет, больной гипотиреозом, обратился за медицинской помощью в связи с прогрессирующей дисфагией и регургитацией.

Пациент был переведен на энтеральное питание через зонд. После оптимизации питания и тиреоидного статуса пациент перенес эндоскопическую дивертикулотомию с прошиванием («endoscopic diverticulotomy involving stapling»).

S. Alam Hannan, Ghassan Alusi, 2006.  
St. Bartholomew's Hospital, London EC1A  
7BE, United Kingdom

# Benign tumors of the esophagus

## 1. Origin

- Epithelial: adenomas (polyps)
- Non-epithelial: lipomas, leiomyomas, fibrolipomas, myxofibromas, neuromas, osteochondromas, angiomas, myxomas

## 2. Nature of growth

Intraluminal: polyps, lipomas, fibrolipomas, myxofibromas

Intramural: leiomyoma

- Leiomyomas are tumors that develop in the muscle layer of the esophagus and do not involve the mucous membrane in the process.
- Leiomyomas account for 2/3 of benign tumors of the esophagus.
- If leiomyomas reach sizes of 5 cm or more, patients have dysphagia.

# Clinical manifestations of esophageal leiomyoma

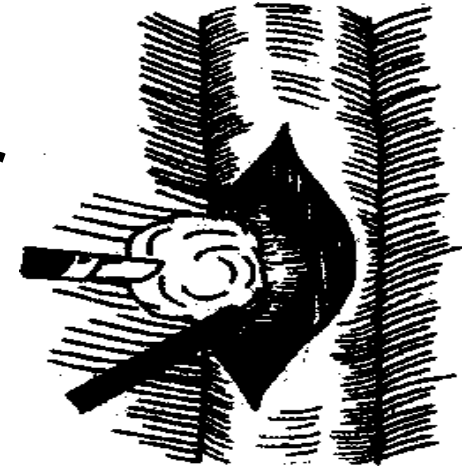
1. Dysphagia
2. Occasionally burping
3. Weight loss.

## Diagnosics

1. Contrast x-ray examination. In the wall of the esophagus, a filling defect with smooth edges and an unchanged mucous membrane is detected.
2. Esophagoscopy.

# Surgical treatment

- 1. Endoscopic tumor removal**
- 2. Enucleation (husking) of a tumor from the wall of the esophagus only without damaging the mucous membrane.**
- 3. Esophagotomy, tumor excision.**
- 4. Resection of the esophagus is performed if the tumor is located in the lower part of the esophagus and it is impossible to enucleate or excise it.**



# Esophageal carcinoma

# The risk of esophageal cancer is increased by factors:

- Smoking (2-4 times).
- Alcohol abuse (12 times).
- Geographical factors.
- Vitamin deficiency, especially A and C.
- Alkali burn (even many years after exposure).
- Achalasia. The risk of developing carcinoma is 10%.
- Barrett's esophagus (risk increases 30 times)
- Gastroesophageal reflux (7 times)
- Obesity

The most common morphological forms:

- squamous cell carcinoma;
- adenocarcinoma

Rare morphological forms:

- adenocystic cancer;
- mucoepidermoid cancer;
- carcinosarcoma;
- small cell cancer;
- melanoma.

- Exophytic form (nodular, villous, warty).
- Endophytic (ulcerative) form.
- Sclerosing (circular form).



# ICD-10 Version:2019

## **C15 Malignant neoplasm of oesophagus**

### ***Note:***

Two alternative subclassifications are given:

.0-.2 by anatomical description

.3-.5 by thirds

This departure from the principle that categories should be mutually exclusive is deliberate, since both forms of terminology are in use but the resulting anatomical divisions are not analogous.

**C15.0 Cervical part of oesophagus**

**C15.1 Thoracic part of oesophagus**

**C15.2 Abdominal part of oesophagus**

**C15.3 Upper third of oesophagus**

**C15.4 Middle third of oesophagus**

**C15.5 Lower third of oesophagus**

**C15.8 Overlapping lesion of oesophagus**

**C15.9 Oesophagus, unspecified**

# Features of metastasis

Cancer of the cervical esophagus - early metastasis to the mediastinum, cellular spaces of the neck, supraclavicular areas.

Cancer of the thoracic esophagus - in the l / y of the mediastinum, periophageal tissue.

Cancer of the lower esophagus - in l / at the upper part of the small omentum.

For all localizations - Virchow metastases in the left supraclavicular region.

Distant metastases - to the liver (20%), lungs (10%), bones, brain.

The frequency of lymphogenous metastasis is largely determined not by the size of the tumor, but by the depth of invasion.

High frequency of "jumping" metastasis - reaching 30%.

# TNM

Tis - carcinoma in situ / high grade dysplasia

T1 - germination of a tumor in its own plate or submucosal layer

T1a - own plate or muscle plate of the mucous membrane

T1b is the submucosal layer.

T2 - germination in the muscle layer

T3 - germination in adventitia

T4 - germination of adjacent structures

T4a - pleura, peritoneum, pericardium, diaphragm;

T4b - aorta, vertebrae, trachea.

# TNM

- **N0 - no metastases in regional lymph nodes**
- **N1 - defeat of 1-2 regional lymph nodes**
- **N2 - defeat of 3-6 regional lymph nodes**
- **N3 - defeat of 7 or more regional lymph nodes.**
- **M1 - the presence of distant metastases.**

# International Cancer Union Recommendations (UICC)

- Early consider intramucous cancer of the esophagus, which in the entire group of patients operated by us was detected only in 1% of cases. Tumors that go beyond the mucosa are referred to as late esophageal cancer.
- Distant metastases affect the liver (32%), lungs (21%) and bones (8%).
- The overall frequency of lymphogenous metastasis of esophageal cancer ranges from 34 to 85%.
- Metastatic lesion of regional lymph nodes in cancer of the esophagus is the main prognostic factor that has a greater impact on the long-term results of treatment than the extent of the tumor or the depth of invasion of the organ wall.

# International Cancer Union Recommendations (UICC)

- There are three anatomical regions of the esophagus lymphatic drainage - cervical, mediastinal and abdominal.
- The regions of lymphatic drainage are the same for the entire esophagus and can be involved at any location of the tumor, i.e. lack of sequence and selectivity of their defeat.
- The frequency of lymphogenous metastasis is largely determined not by the size of the tumor, but by the depth of invasion of the esophagus wall.
- The paradoxical nature of the lymphogenous dissemination of cancer of the esophagus consists in the predominant lesion not of the nodes closest to the primary focus, but remote from it. Evidence of this is the high frequency of "jumping" metastasis, reaching 30%.

## Tumors of the esophageal-gastric anastomosis (Siewert):

Type I - adenocarcinoma of the distal esophagus (often associated with Barrett's esophagus), the center of which is located within 1 to 5 cm above the Z-line.

Type II - true adenocarcinoma of the esophageal-gastric transition zone (true cancer of the cardia), the center of the tumor is located within 1 cm above and 2 cm below the Z-line.

Type III - cancer with localization of the main tumor mass in the subcardial part of the stomach (from 2 to 5 cm from the Z-line) and the possible involvement of the distal esophagus.

Tumors of the esophageal-gastric anastomosis of types I and II according to Siewert are subject to treatment algorithms corresponding to cancer of the esophagus.

Type III tumors are subject to treatment algorithms appropriate for gastric cancer.

# Clinical manifestations of esophageal cancer

## 1. Dysphagia (85%):

1st degree - any food passes through the esophagus, but the patient experiences unpleasant sensations, the passage of food is slow, sometimes there is pain behind the sternum, in the interscapular space, in the epigastrium;

2nd degree - any food passes, but the patient is forced to drink it;

3rd degree - only liquid food passes;

4th degree - food does not pass (aphagia).



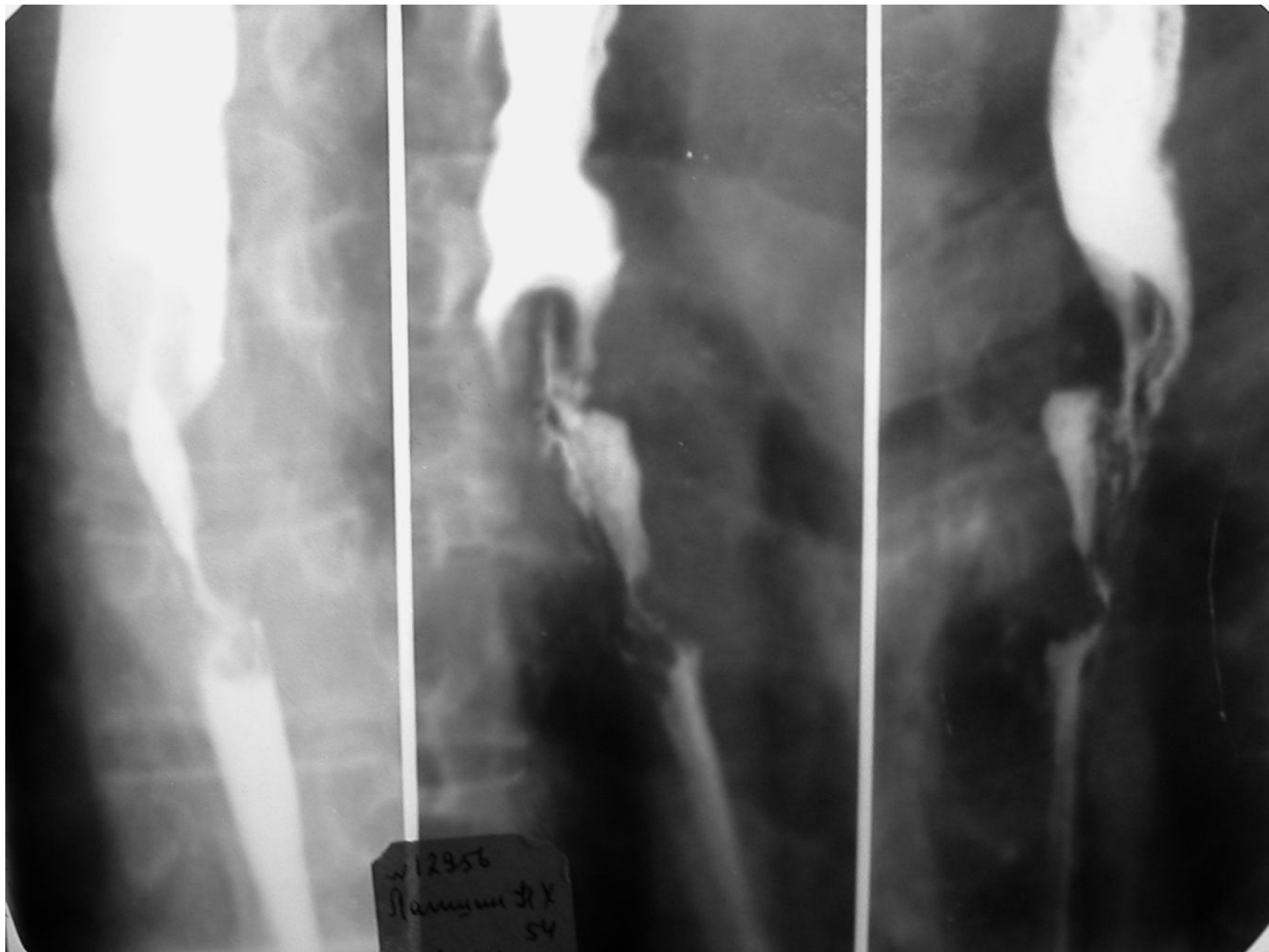
# Clinical manifestations of esophageal cancer

2. Increased salivation
3. Pain when swallowing -25% (tumor spreading beyond the wall).
4. Bad breath
5. Regurgitation (regurgitation, "esophageal vomiting").
6. Damage to the organs of the chest cavity: dull chest pain, shortness of breath, tachycardia after eating, change in voice timbre (5%), cough (3%), supraclavicular fossa.
7. Nonspecific symptoms: loss or lack of appetite, weight loss: adynamia, fatigue, weakness, sweating, apathy, weight loss, causeless subfebrile condition

# esophageal cancer diagnosis

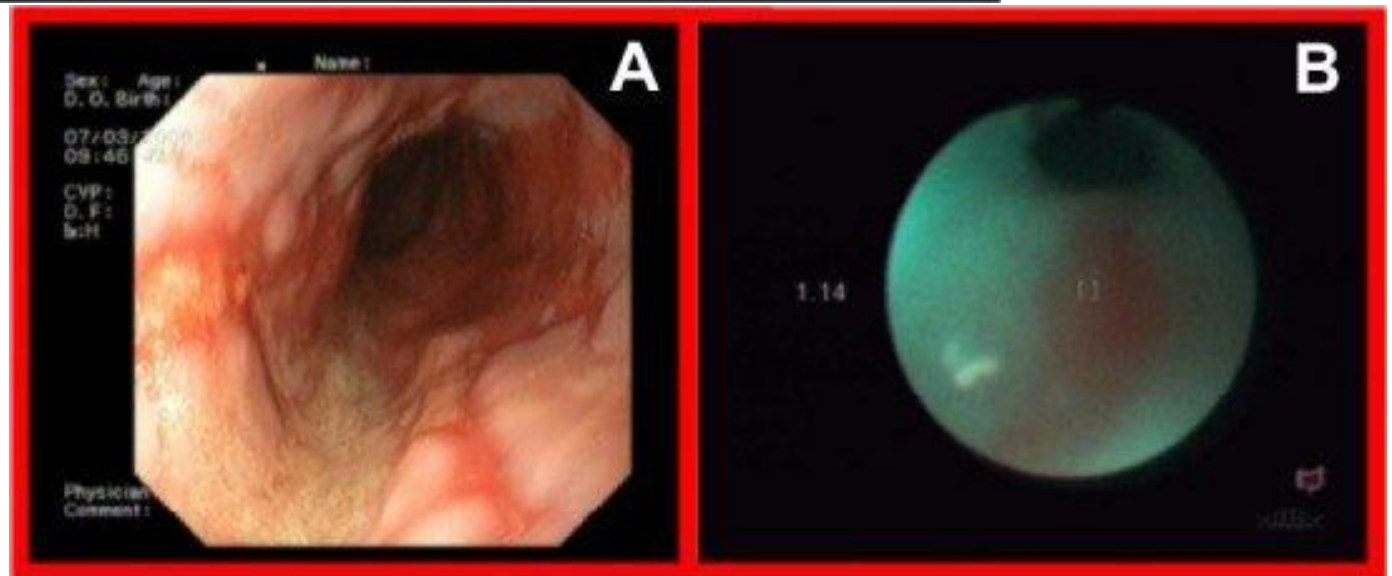
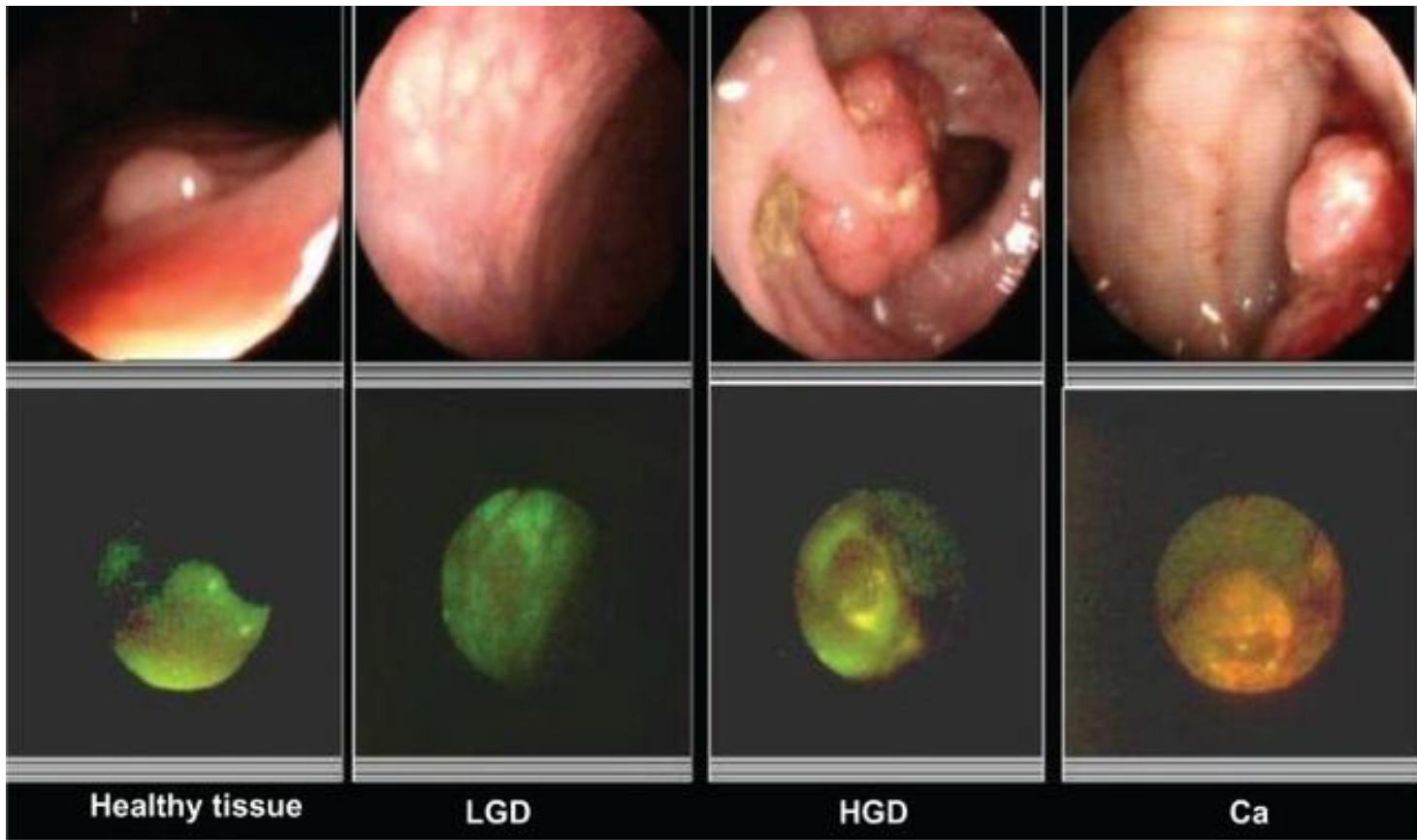
- X-ray examination of the esophagus.
- Esophagoscopy.
- Bronchoscopy
- CT scan
- Endoscopic ultrasound.

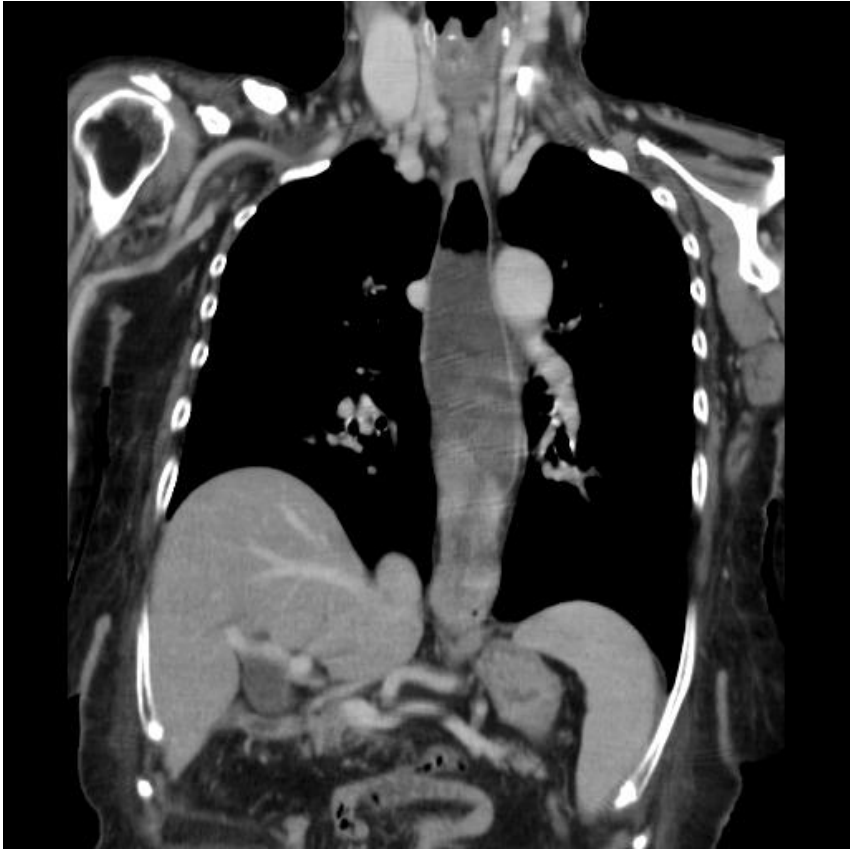
anemia usually comes late



W12956  
Лариса Ш X  
54







# Esophageal Cancer Treatment

- 1. Radiotherapy and chemotherapy exist as an adjunct to surgical treatment.**
- 2. Radiation therapy is indicated for the localization of lesions in the proximal middle third or in the upper third of the esophagus. The average dose is approximately 40-60 Gy**
- 3. Chemotherapy has practically no effect on the life expectancy of patients. More encouraging results were obtained with combinations of chemo and radiation therapy.**
- 4. Neoadjuvant chemotherapy and radiation therapy before surgery reduces the size of the tumor and improves the long-term results of surgical treatment.**
  - A. Possible reduction of the primary focus**
  - B. Early treatment of micrometastases**
  - B. Better tolerated**

# Surgery

## 1. Palliative

A. Gastrostomy

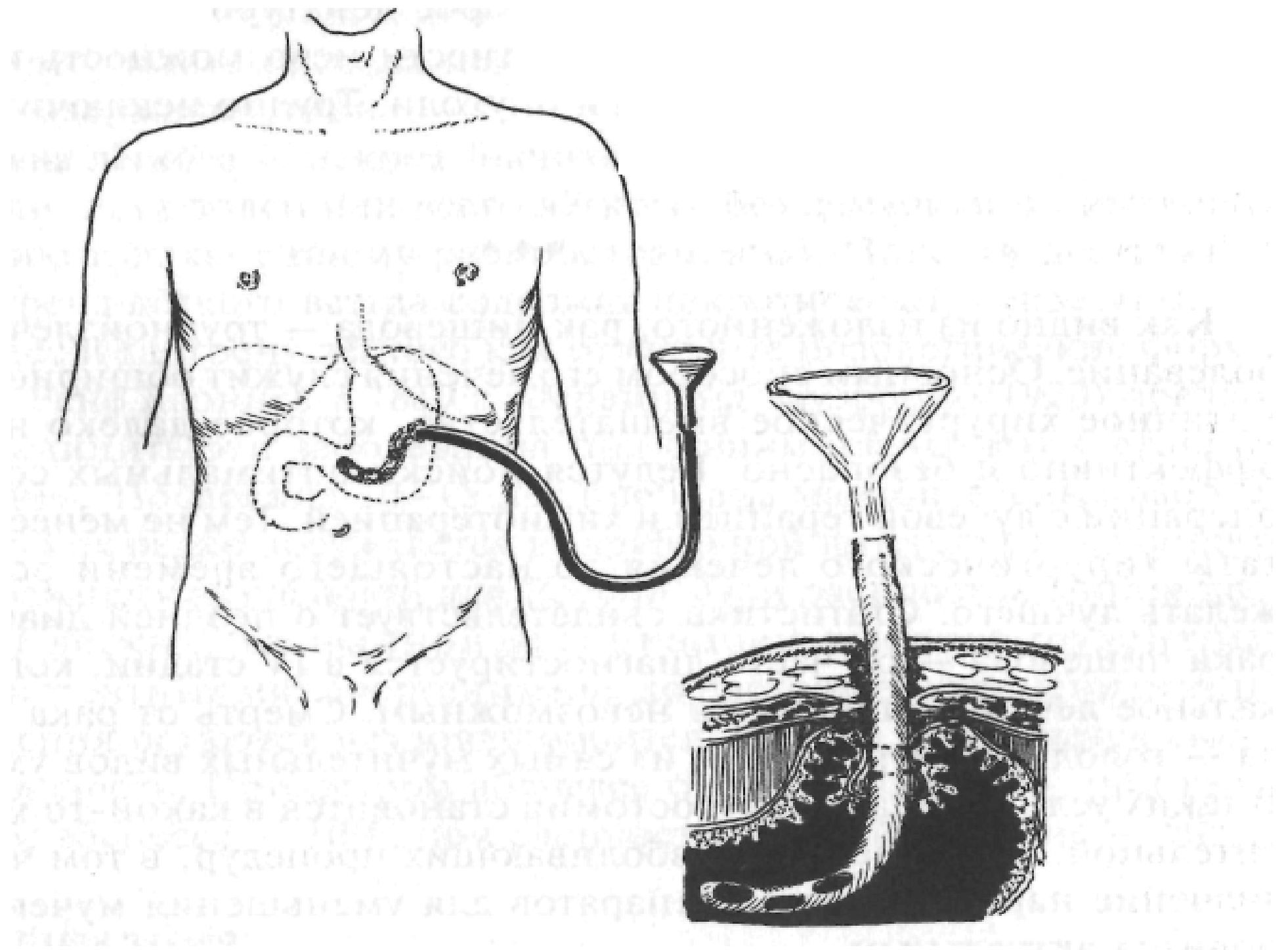
B. Gulping and stenting of the esophagus

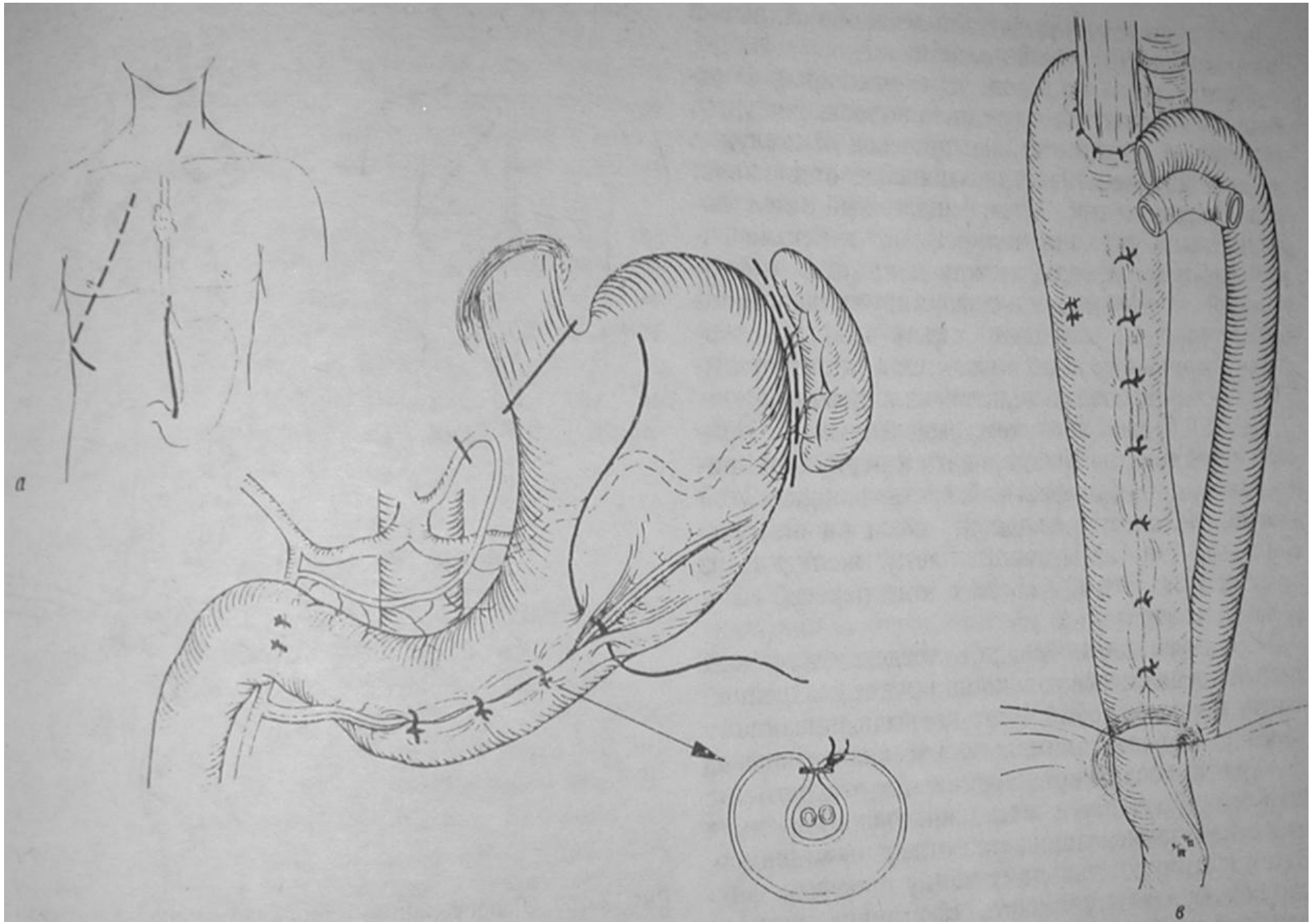
B. Endoscopic tumor resection (electro, laser)

## 2. Radical - resection of the esophagus

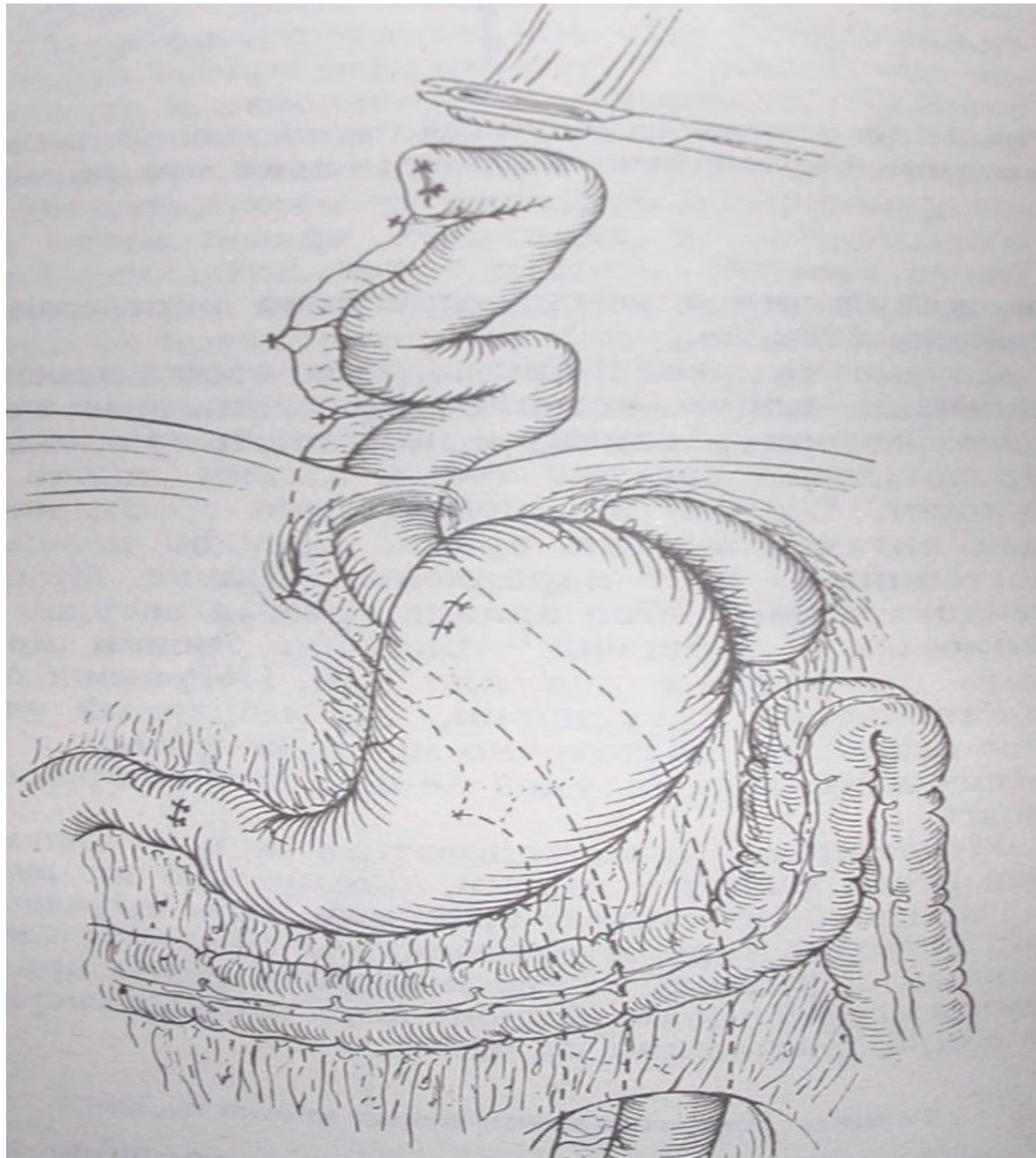
The methodical use of expanded abdominal lymphadenectomy allowed to increase the five-year survival of patients by 2 times



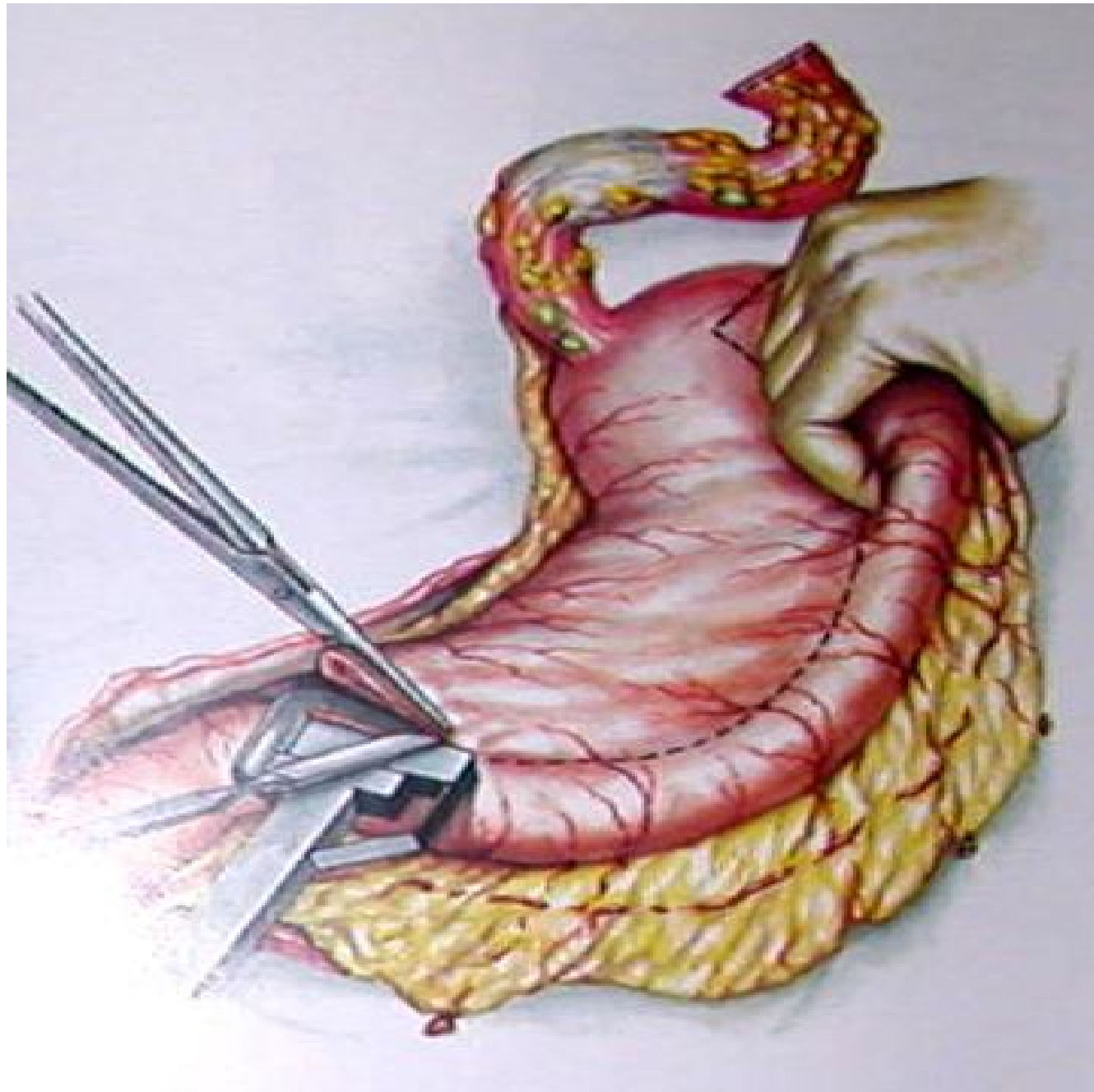




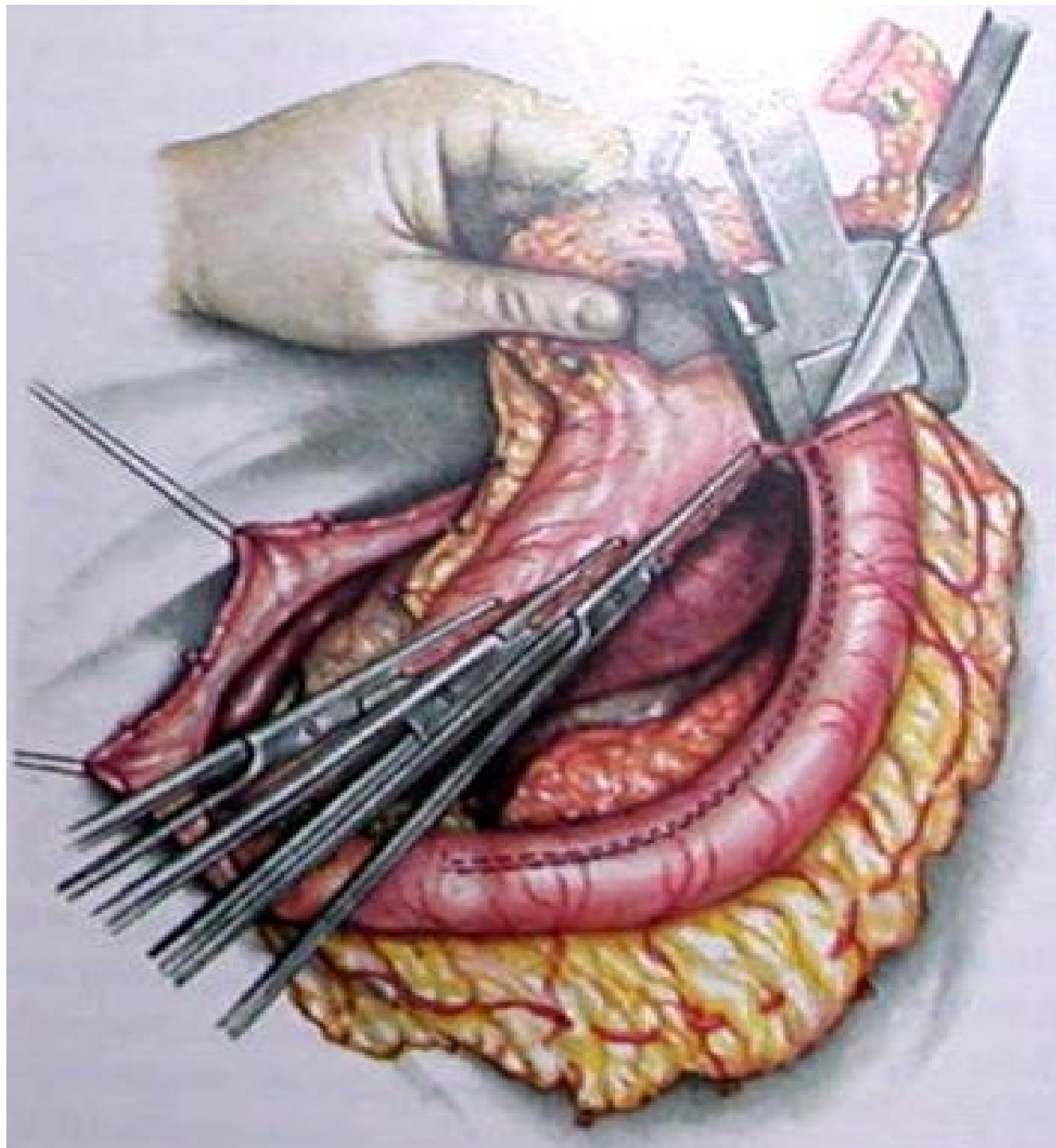
Операция Льюиса



***Тонкокишечная пластика пищевода по Ру (1906)***



Пластика пищевода изоперистальтической трубкой из большой кривизны желудка (А. Ф. Черноусов, 1980).



## Treatment, stage I-IIa (T<sub>1-3</sub>N<sub>0</sub>M<sub>0</sub>)

- transthoracic subtotal resection of the esophagus with simultaneous intrapleural plasty by the stem of the stomach or segment of the colon
- minimally invasive (thoraco-laparoscopic) or hybrid (thoracotomy + laparoscopy or thoracoscopy + laparotomy) esophagectomy or robot-assisted resection of the esophagus.
- Endoscopic resection is the treatment of choice for carcinoma in situ, for severe dysplasia, and for T1.
- 5-year survival reaches 85-100%

# Esophageal Cancer Treatment, Stage IIb-III (T<sub>1-2</sub>N<sub>1</sub>M<sub>0</sub>; T<sub>3</sub>N<sub>1</sub>M<sub>0</sub>)

- Treatment Options: Surgical; preoperative chemotherapy + surgical treatment; preoperative chemoradiotherapy + surgical treatment.
- In order to improve the results, various combinations of drug and radiation therapies are used (preoperative chemotherapy, preoperative chemoradiotherapy, independent chemoradiotherapy)

- Preoperative (Neoadjuvant) Chemotherapy
- with squamous cell carcinoma - noneffective
- with adenocarcinoma - 2-3 courses before surgery and 3-4 courses - after it.
  
- Postoperative (adjuvant) chemotherapy is not indicated
- Radiation therapy without chemotherapy is not effective



# SIMULTANEOUS CHEMICAL RADIATION THERAPY

- Preoperative chemoradiotherapy - weekly administration of paclitaxel and carboplatin with 5 weeks of radiation therapy - complete regression of adenocarcinoma in 23% and squamous cell carcinoma in 49%. The toxicity of the regimen is 4% mortality. Surgical intervention after 6-8 weeks.
- Independent chemoradiotherapy - 5-year survival - 20–27%.

Stage III (T4 or multiple metastases to regional mediastinal lymph nodes)

- The main method of treatment is self-chemotherapy.

IV stage

- The main objectives of the treatment of patients with metastatic cancer of the esophagus are the elimination of painful symptoms, an increase in life expectancy.
- Chemotherapy in patients with satisfactory general condition and grade I – II dysphagia
- With severe (III – IV) dysphagia - restoration of patency of the esophagus (stenting, recanalization).

## Palliative care (relief of dysphagia)

- endoscopic methods (balloon dilatation, electro-, argon-plasma or laser destruction, photodynamic therapy),
- radiation therapy (remote, brachytherapy),
- staging of intraluminal stents.
- Palliative chemoradiotherapy does not have obvious advantages compared with radiation therapy alone and is only associated with greater toxicity.
- In the case of esophageal-bronchial or mediastinal fistula development, the placement of coated stents allows to stop these complications in 70-100% of patients

Thank you for reading and understanding.