



# Examination of Abdomen

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- Anamnesis - "GIT symptoms,,
- Physical Examination
- Additional Diagnostic Methods

# Anamnesis – GIT symptoms

- Anorexia
- Dysphagia (*classical x paradoxical*)
- Odynophagia
- Heartburn
- Regurgitation
- Rumination
- Dyspepsia
- Belching

# Anamnesis – GIT symptoms

- Nauzea
- Vomitus (character of vomits)
- Meteorism
- Borborygmi
- Diarrhea
- Obstipation
- Jaundice
- Weight loss

# Symptoms related to GIT

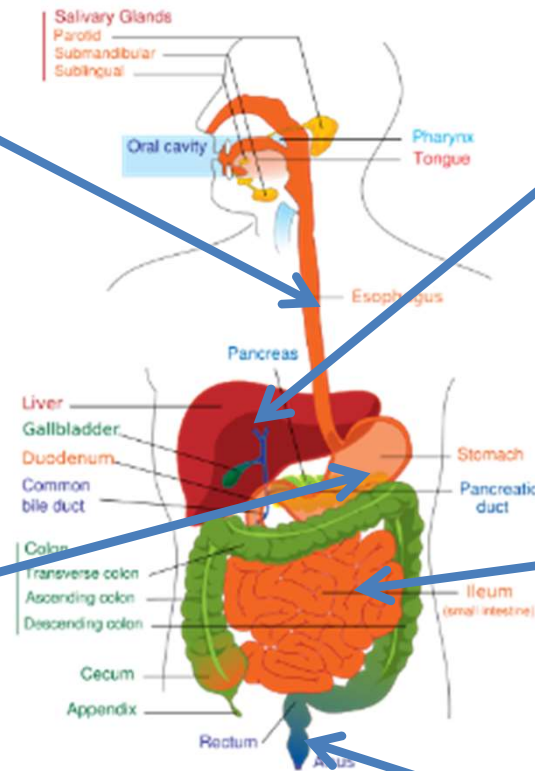
Odynophagia,  
Heartburn,  
Regurgitation,  
Hematemesis

Jaundice, Anorexia,  
Meteorism, Acholic  
Stool, Hematemesis,  
Melena

Feeling full, Pressure in  
epigastrium,  
Ructus, Anorexia,  
Nausea, Vomitus,  
Hematemesis, Melena

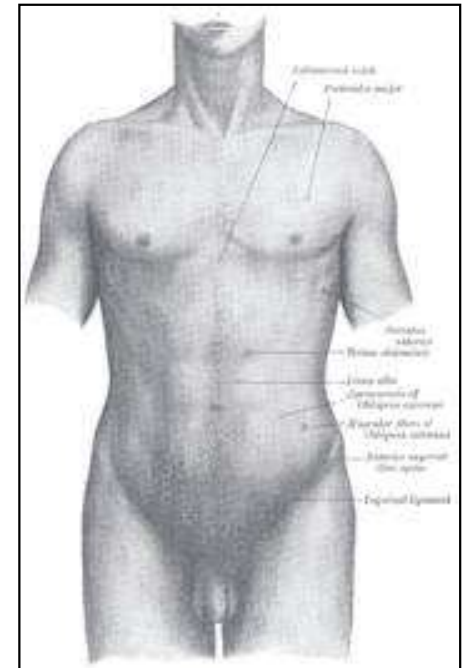
Meteorismus,  
Borborygmus,  
Flatulence, Obstipation,  
Diarhea, Enteroragia

Tenesmus, Incontinence,  
enteroragia



# Abdominal Pain

- **Visceral** (*blunt, without a distinct localization, in midline, e.g. Uncomplicated gastric ulcer*)
- **Somatic** (*sharp, acute, precisely localized and associated with palpation e.g. Perforated gastric ulcer, cholecystitis*)
- **Radiation of pain** in the direction of the spread of inflammation - the gallbladder under the right blade, the pancreas in the back. **Phrenic sign**- pain in the shoulder during the process in the subdiaphragmatic area
- **Colic** strong convulsive pain coming in the waves responding to the spasm of smooth muscle.  
Etiology - biliary, intestinal, urinary

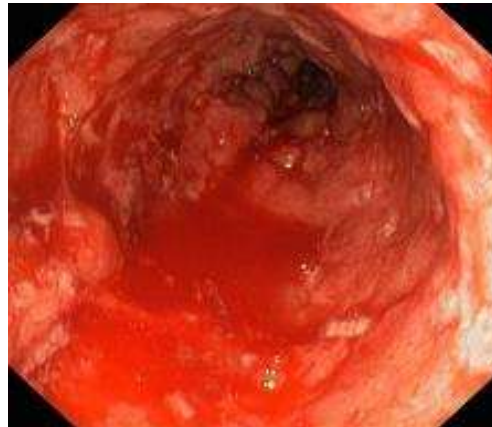


# Abdominal Pain

- Pain after meal (early) x fasting (late)
- Dependence on food intake, type of food. Fatty food – gallbladder, proteins and fat - pancreas, milk - lactose intolerance
- **Relieving position** gastric ulcer - lying, pancreatitis – bend forward, cholecystitis- curl up in fetal position, esophagitis - upright

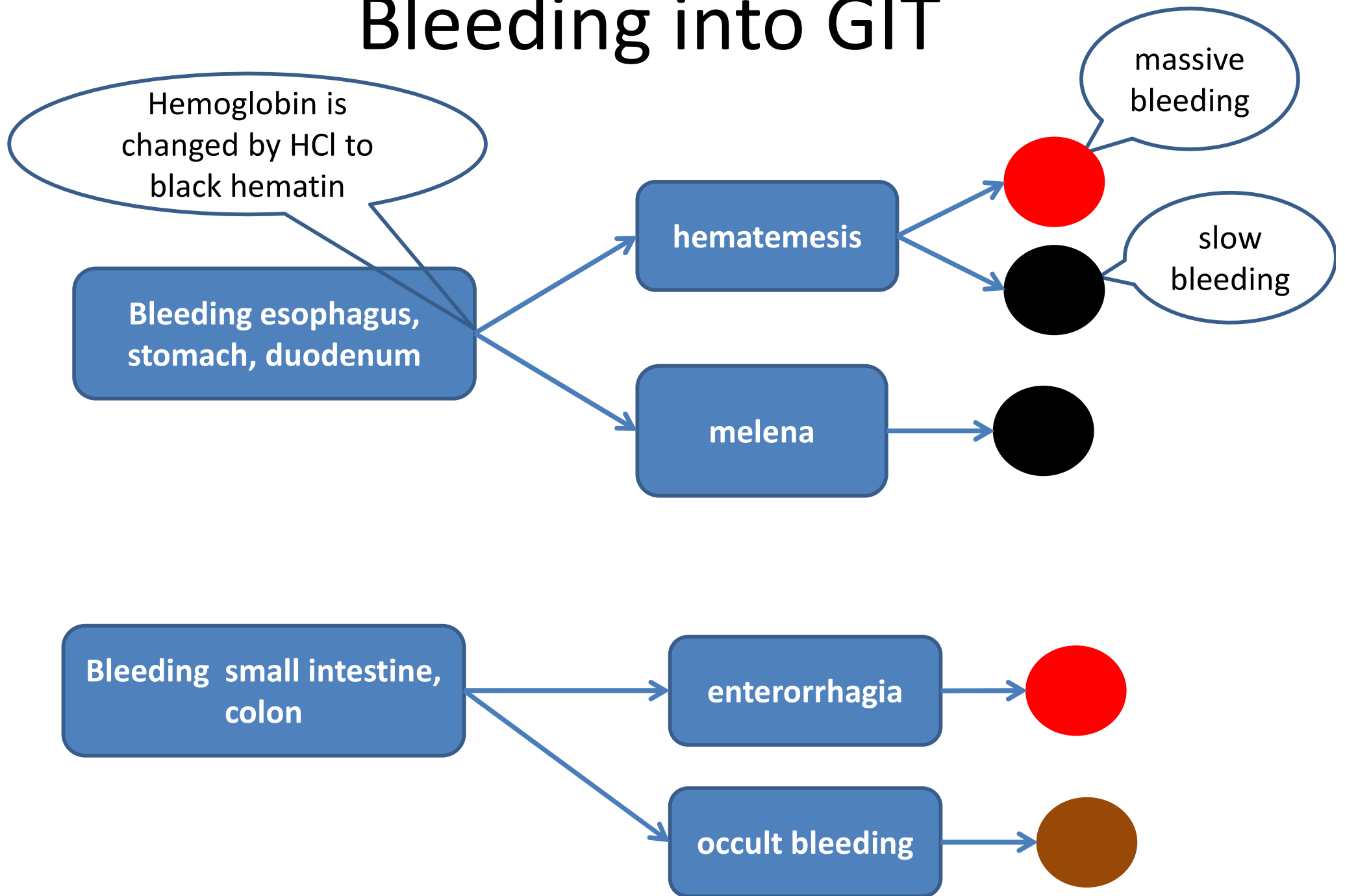
# Bleeding into the Gastrointestinal Tract

- Hematemesis
- Melena
- Enterorrhagia





# Bleeding into GIT



- Anamnesis - "GIT symptoms,,
- **Physical Examination**
- Additional Diagnostic Methods

# Basic notes

- Examination in supine position
- Slightly bent knees
- Arms at sides



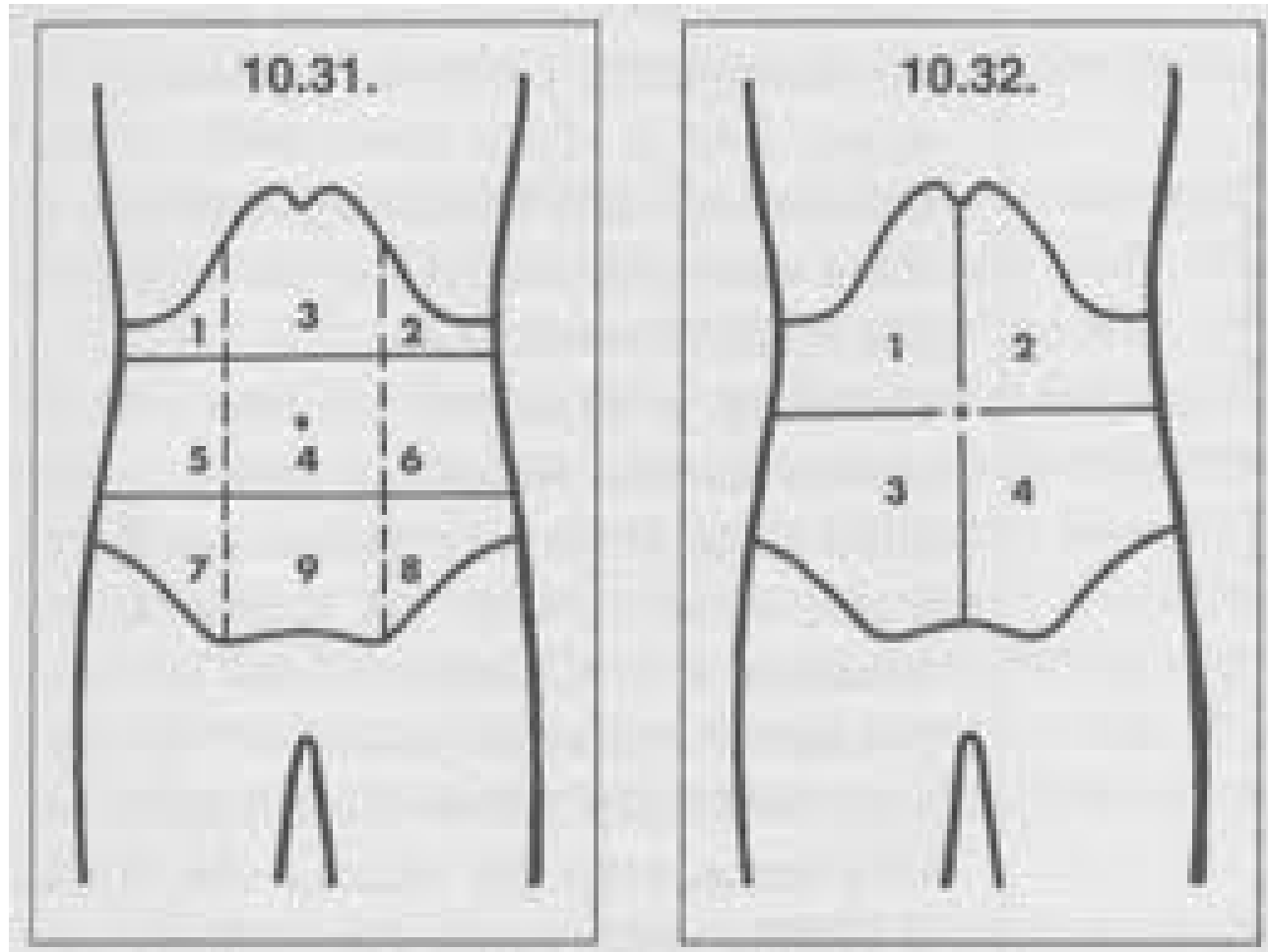
Standard

- Examination in upright position
  - hernias, ascites
- Examination lying on side
  - spleen



Modification

# Surface Anatomy of Abdomen



# Surface Anatomy of Abdomen

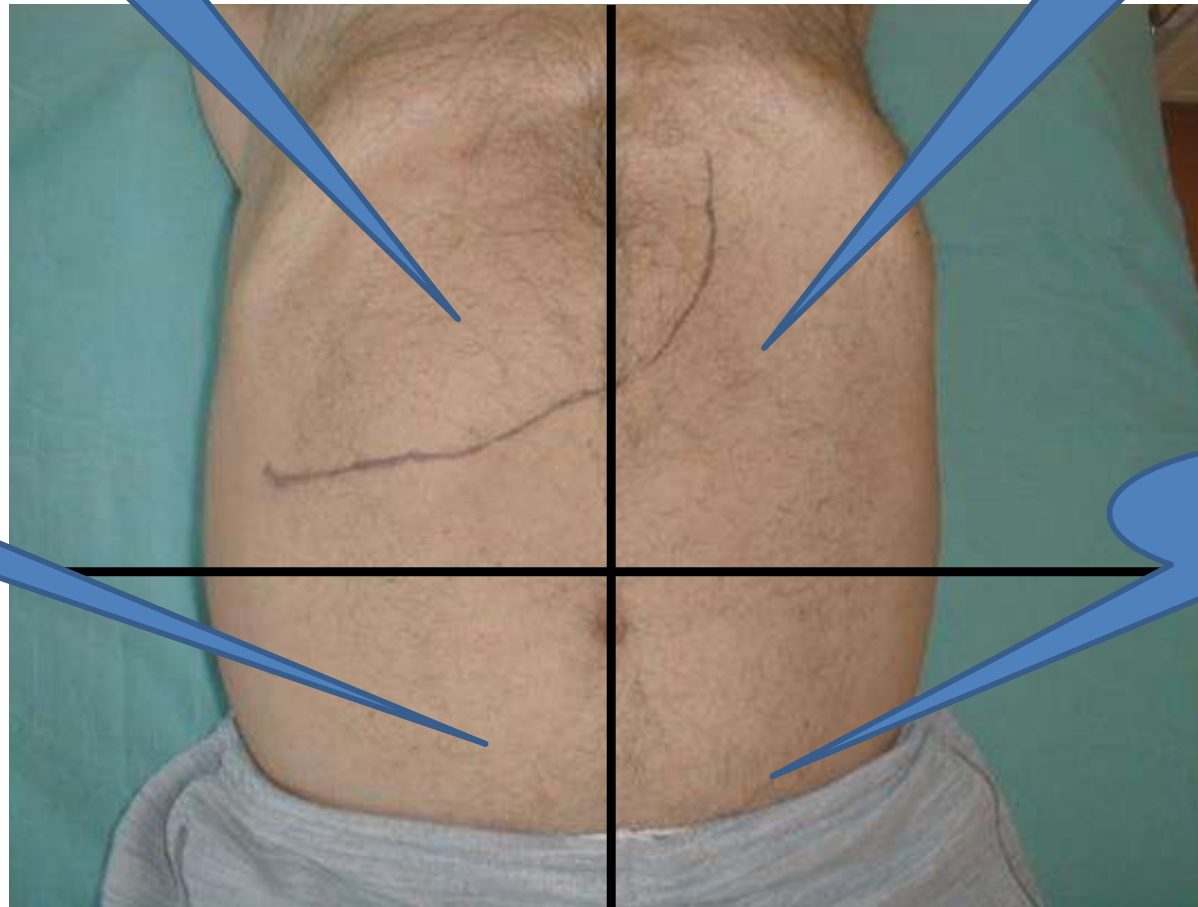
## Quadrants

Right upper  
quadran

Left upper  
quadran

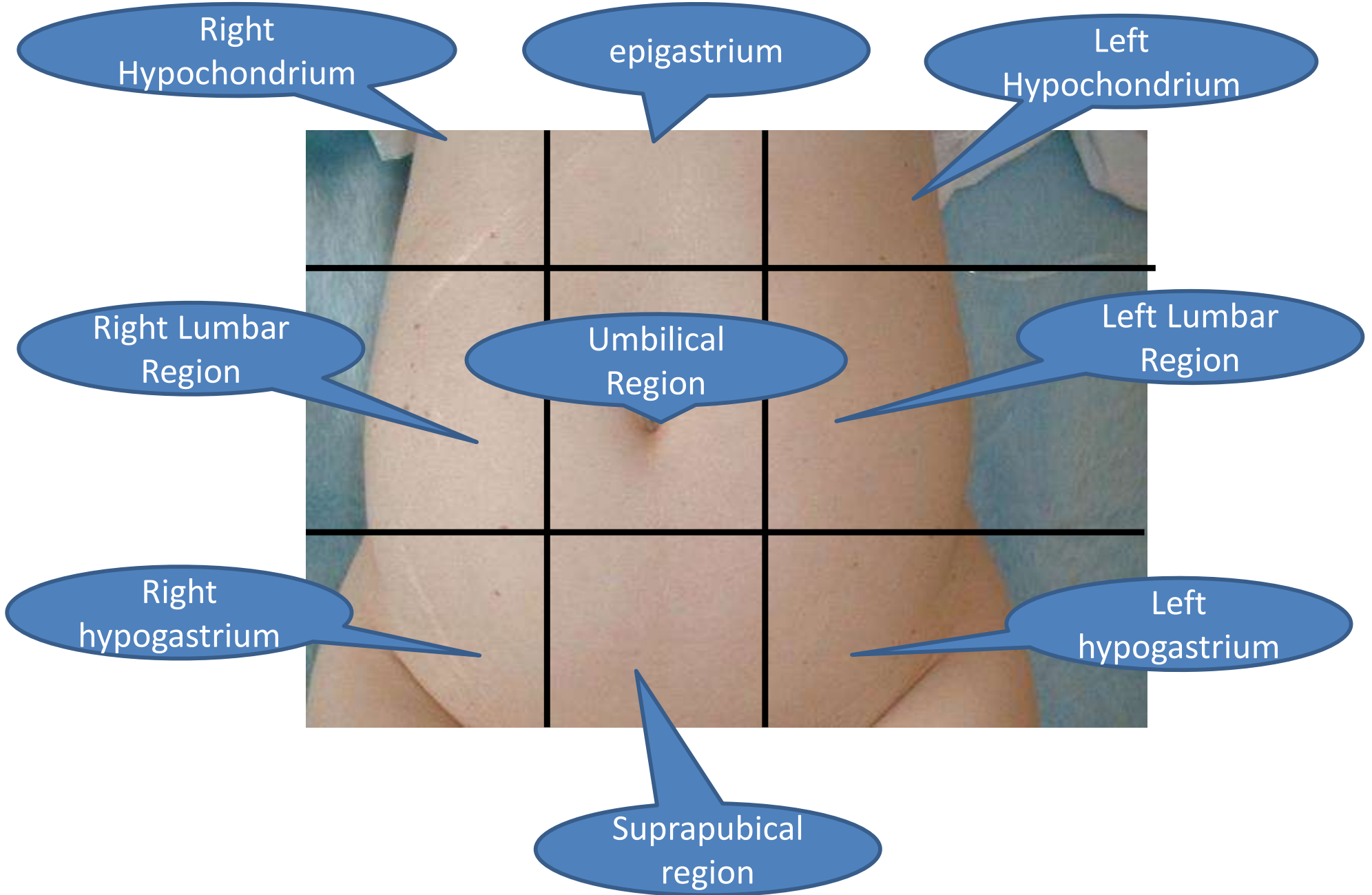
Right lower  
quadran

Left lower  
quadran

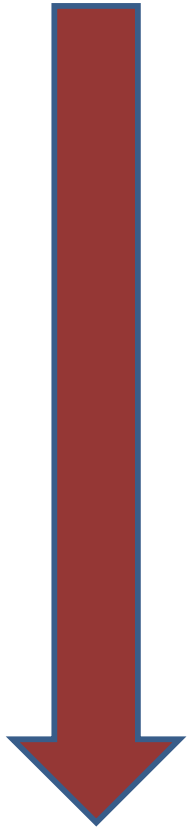


# Surface Anatomy of Abdomen

## Regions



# Physical Examination



Inspection

Palpation

Percussion

Auscultation

# Inspection of Abdomen

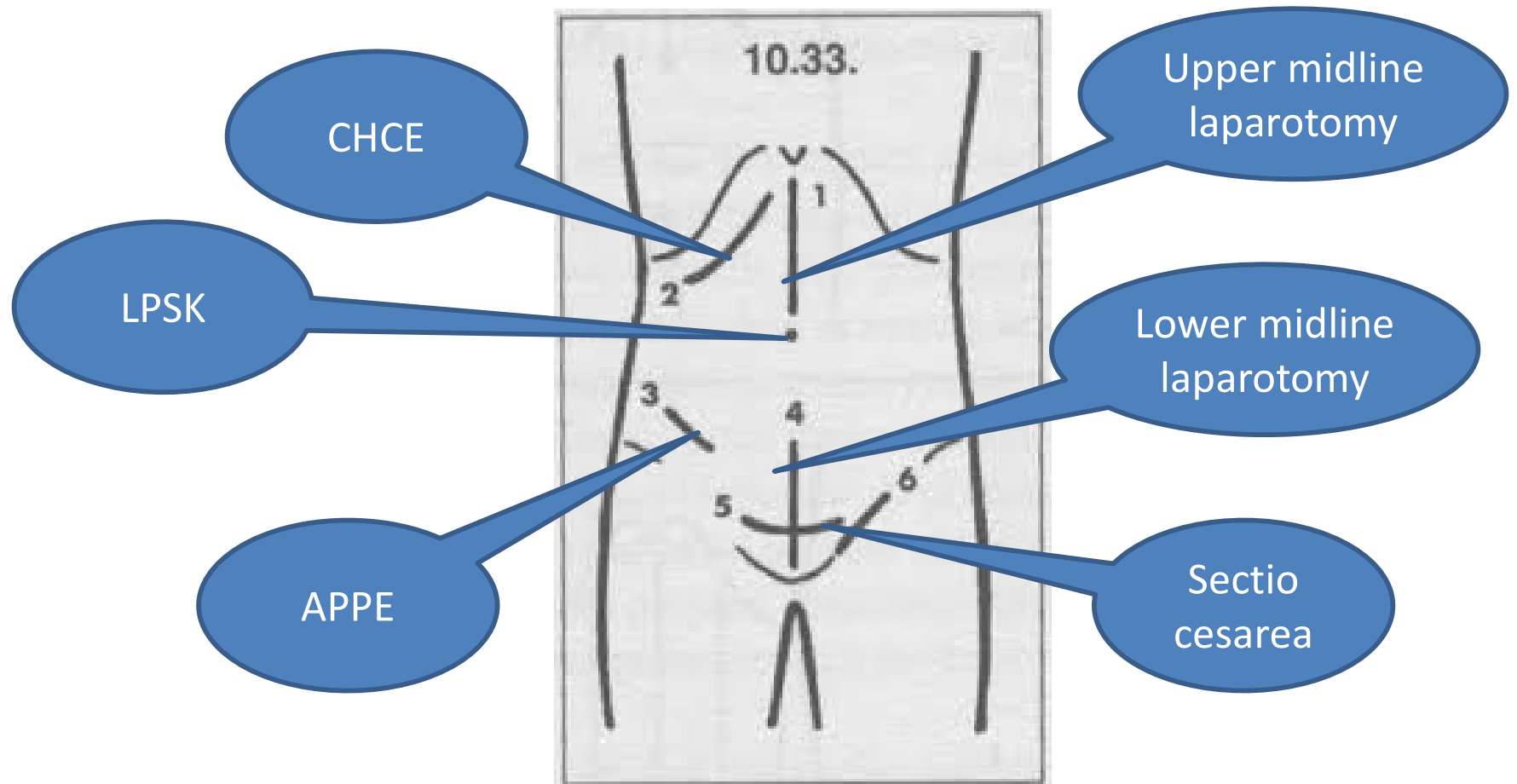
- Level of the abdomen in relation to the chest in the supine position *(in niveau, down niveau, up niveau)*





# Inspection of Abdomen

- Scars on abdomen



# Inspection of Abdomen

- Scars

CHCE

LAPAROTOMY

CHCE



# Inspection of Abdomen

- Scars



Conservative healing of laparotomy dehiscence with intestinal fistula PV  
2M



Final result after surgical resection of fistula



# Inspection of Abdomen

- **Striae or stretch marks**
- Rapid growth of abdomen volume (pregnancy, obesity, Cushing's syndrome)



# Inspection of Abdomen

- Collateral circulation
- Hepatic cirrhosis, portal vein thrombosis, Budd-Chiari syndrome
- Right-side heart failure (congestion in VCI), VCI thrombosis

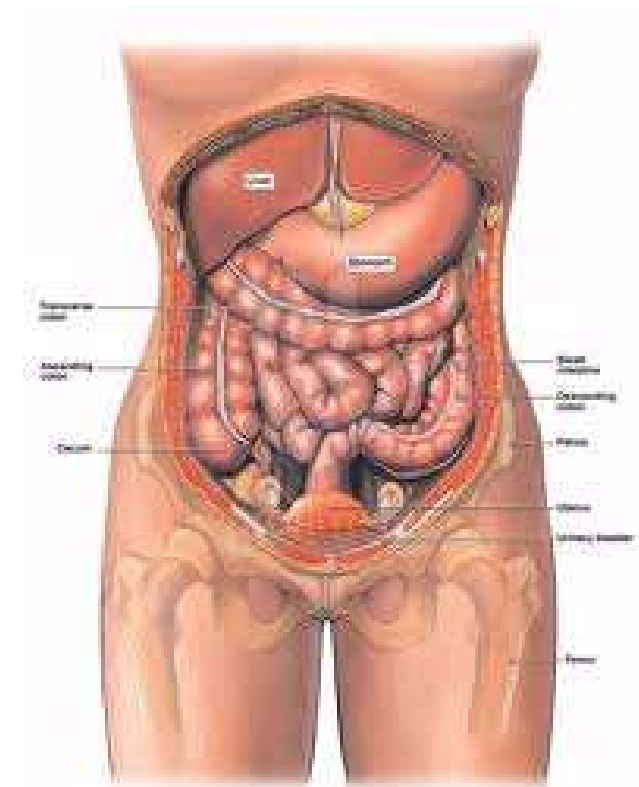


# Inspection of Abdomen

- Prominence of abdomen
- Epigastrium – stomach distension, liver tumor
- Right hypochondrium – liver, gallbladder hydrops
- Left hypochondrium – spleen
- Hypogastrium – bladder distension



Meta  
hepatis



# Inspection of Abdomen

- Pigmentation and color changes



Hematomas  
after s.c.  
injection



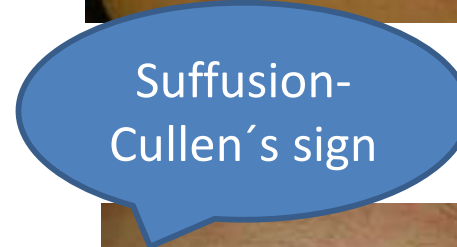
Allergy  
symptom -  
urtica



Addison's  
disease



Pigmented  
nevus



Suffusion-  
Cullen's sign

# Inspection of Abdomen

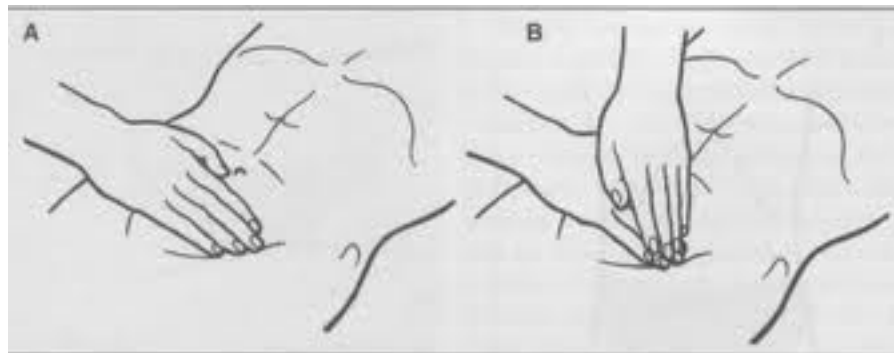
- Enhancement of intestinal loops
- Bowel loop with peristalsis visible through abdominal wall, asthenic people, blocked passage in intestinal obstruction
- **Hernias**
- Inguinal, umbilical, incisional
- Hernia ring, reducible x unreducible, size, pain
- Examination in upright position, during cough





# Palpation of abdomen

- Most important part of examination of abdomen
- Superficial palpation, deep palpation
- To start palpation out of the painful area
- Distracting the patient



Obř. 10.37. Palpace břicha. A – povrchní; B – bimanuální

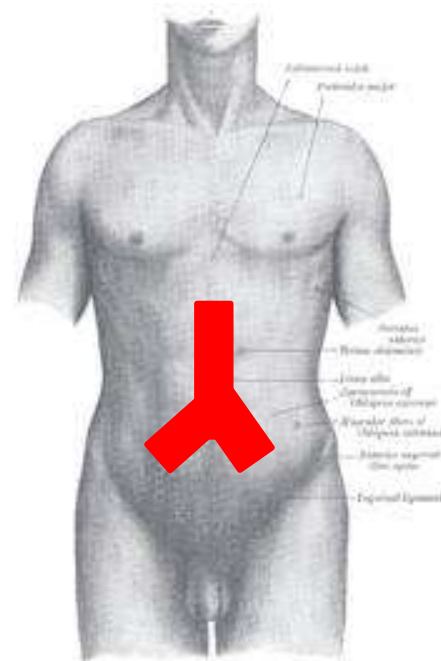
# Palpation of abdomen

- Palpable resistance
- Locate
- Size, shape, surface
- Consistency – soft, semi-hard, hard, stone-like
- Tenderness
- Movement with respiration, pulsation



# Palpation of abdomen - tenderness

- Physiologic finding – elastic resistency of abdominal wall, no pathological resistencies or tenderness
- Sensitive strip-like resistency in left hypogastrium - spastic colon descendens
- Solar syndrome
- Irritation of abdominal sympathetic trunk
- Palpable tenderness in area of abd. aorta



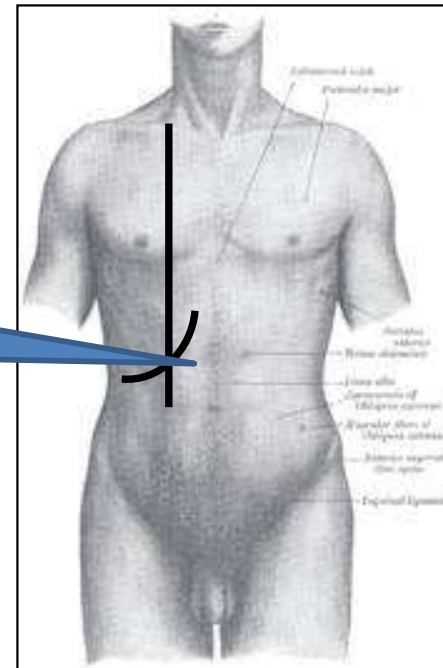
# Palpation of abdomen - tenderness

- Pathology of appendix and caecum
- McBurney's point



- Pathology of gall bladder
- Physiologically gall bladder is not palpable
- Murphy's sign
- Curvoisier's sign

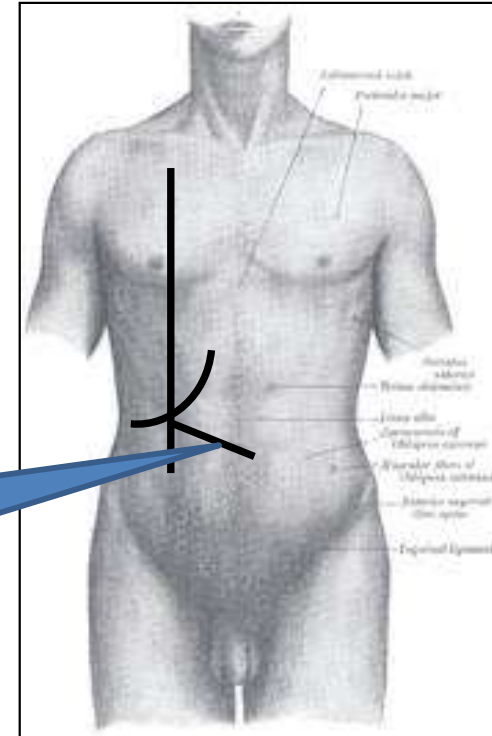
Gall bladder point



# Palpation of abdomen - tenderness

- Duodenum point
- Pathology of duodenum and pancreas

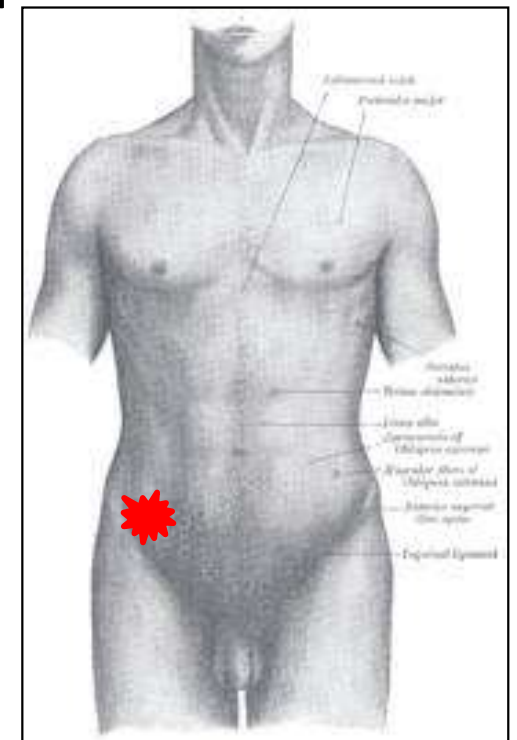
Centre of connecting line between umbilicus and gall bladder point



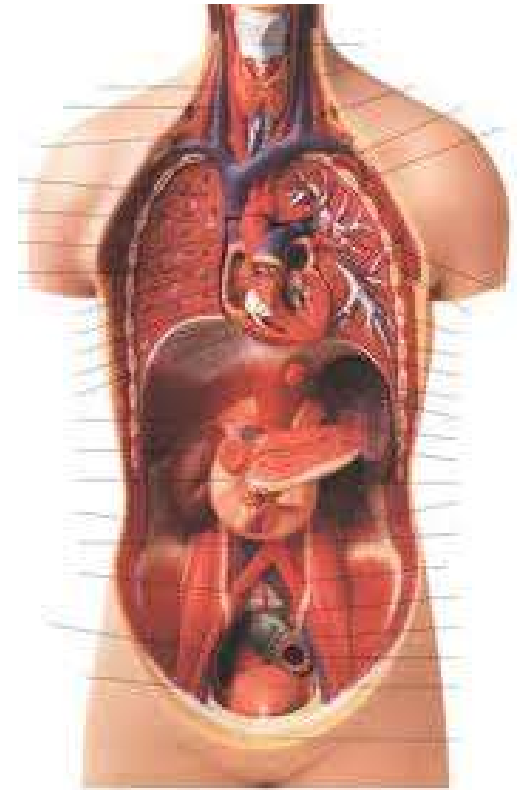
- Carnett's sign, manoeuvre
- Tenderness of abdomen gets increased during palpation ( if patient asked to tense muscoli recti abdominis - raise both legs with straight knees) in case underlying pathology is muscular, if it is intraabdominal or visceral in origin, it gets decreased.

# Palpation of abdomen - tenderness

- **Peritoneal irritation – sign of acute abdomen !**  
(*hollow viscus perforation -HWP, covered HWP, cholecystitis, appendicitis, diverticulitis*)
- **Défense musculaire (muscle guarding)**– reflex contraction of muscles of abdominal wall with generally or locally increased tension of abdom. wall.
- **Pleniér’s sign** – pain is triggered by percussion of abdomen
- **Blumberg’s sign** – by deep palpation with consequent release of abdominal wall in the area of presumed pathology, we trigger the pain into the area of pathological process.
- **Rovsing’s sign** – by deep palpation in the area contralateral to the area of presumed pathological process and consequent release, we trigger the pain in the area of pathologic process.

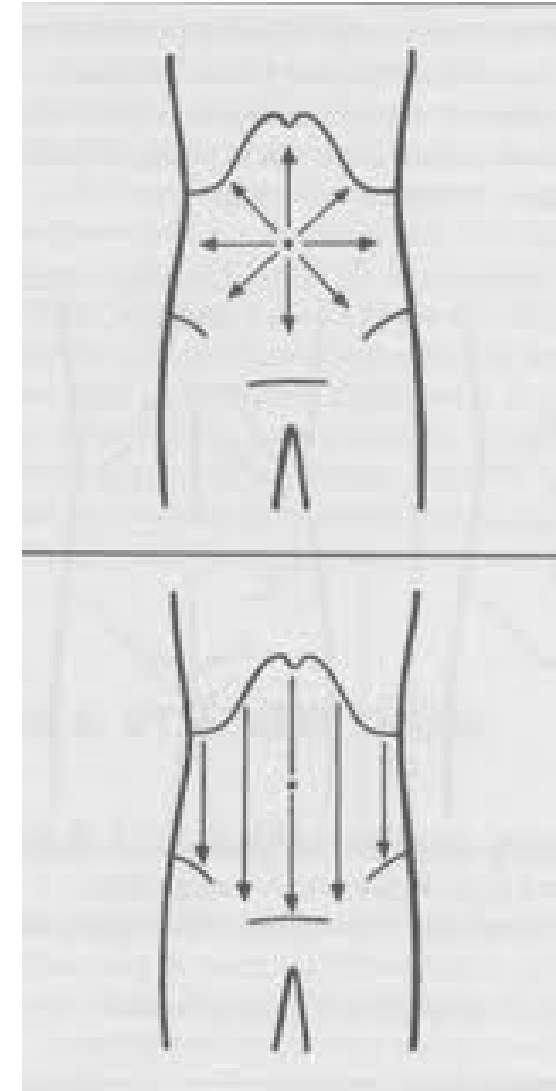


# Palpation of abdomen – colon, pancreas, stomach, aorta



# Percussion of abdomen

- Variably tympanitic percussion
- Higher level of distension of hollow organ – higher pitched tone
- Importance for differentiation fluid ( ascites ) from meteorism
- Dullness during percussion – liver, spleen, fluid, solid resistency
- Technique of percussion – force of impact, pressure of underlying finger, directions of percussion





# Percussion of abdomen

Dulness produced by percussion -  
hepar

High-pitched  
tympanitic –  
distended stomach

Dulness produced  
by percussion -  
splenomegaly

High-pitched  
tympanitic –  
distended coecum

Variably  
tympanitic -  
bowel

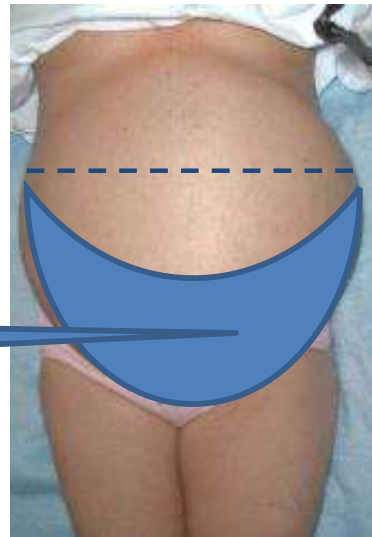
Dulness on percussion  
and distension –  
urinary retention



# Percussion of abdomen - ascites

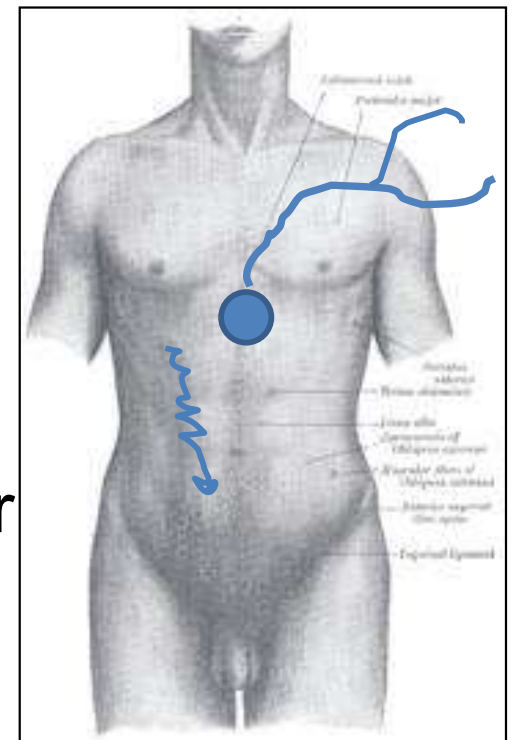
- Presence of fluid in abdominal cavity
- Liver cirrhosis, right-sided heart failure, peritoneal carcinomatosis, gynecological tumors, hypoalbuminemia
- Amount of fluid 500ml – 40l
- By percussion detectable approx. 1000ml and more
- Dulness above fluid is cranially concave in vertical position
- Undulation ( fluid wave test )
- Examination in vertical position

Dullness  
produced by  
percussion



# Auscultation of abdomen

- Auscultation of peristalsis noise (bowel sounds)
- Frequent bowel sounds ("rushes,,), metallic sounds, tinkles - **bowel obstruction (formerly mechanic ileus)**
- Bowel sounds infrequent or absent – **ileus (formerly paralytic ileus)**
- Vascular murmurs – **aortic aneurysm**
- Friction rub due to **inflammation of hepatic or lienal capsule**
- **Scratch test** – assessment of size of the liver
  - Dampening of the sound means end of the liver edge



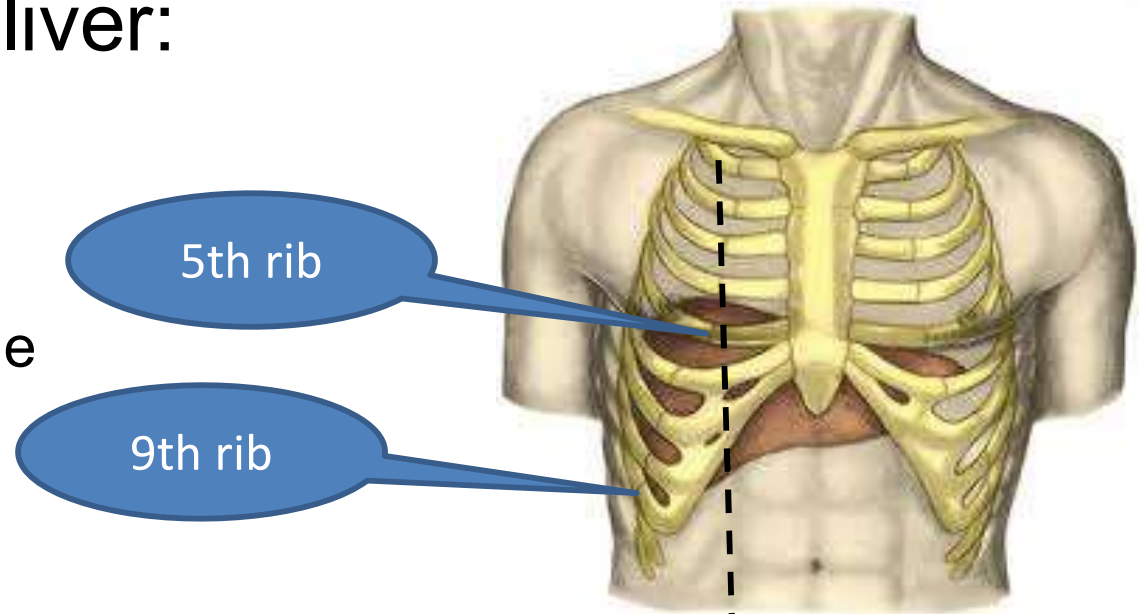
# Liver examination

- **Upper edge of the liver:**

- expiration: 4th rib
- inhalation: 5th rib

- **Lower edge:**

- 9th rib on the right side
- 8th rib on the left



- Inspection – only in skinny people, hepatomegaly
- Palpation – the basic method of examination
- Percussion – size of the liver, mid-clavicular line
- Auscultation – complementary examination – liver scratch test, vascular sounds

# Palpation of the liver

- **Size** (*during inspiration, midc line, upper border detected by percussion, lower border by palpation, normal liver span 6-12cm*)
- **Edge** (*soft, smooth X irregular, rounded, uneven*)
- **Consistency**
  - 1st grade – soft, elastic – healthy liver
  - 2nd grade – tougher in venostasis, inflammatory and infiltration liver diseases
  - 3rd grade – tough, inflexible – hepatic cirrhosis
  - 4th grade – very tough (rock) – cancer infiltration



# Palpation of the liver

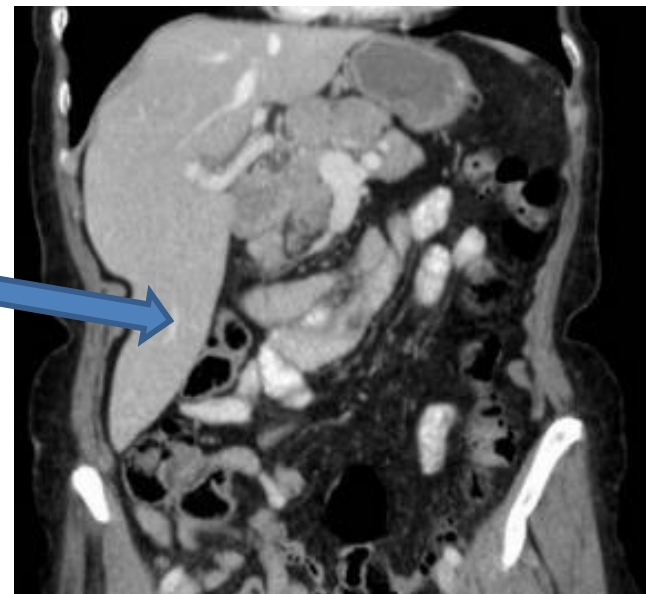
- **Surface** (*smooth – venostasis, hepatitis X*  
*uneven – mts, macronodular cirrhosis*)
- **Soreness** (*acute venostasis, infectious hepatitis*)
- **Pulsation** (*serious tricuspid valve insufficiency of the heart*)
- **Hepatojugular reflux** (*manual pressure → increased filling of cervical veins*)



# Percussion of the liver

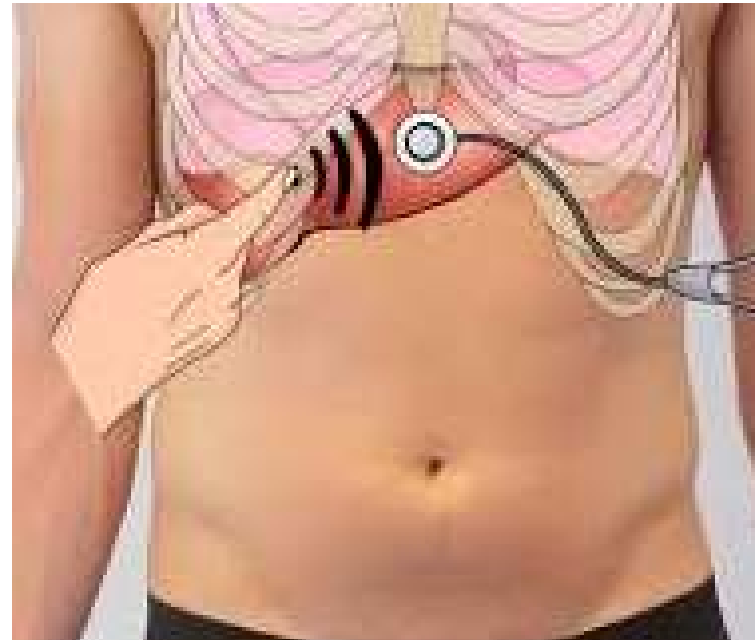
- Measuring the liver size
- Liver span = liver size between the upper and the lower edge
- **Presence of the liver below the costal margin**  
**≠ always hepatomegaly** (*right pleural effusion, consolidated lung, emphysema*)

Riedel lobe - common anatomical variant of the liver, it can simulate a mass !



# Auscultation of the liver

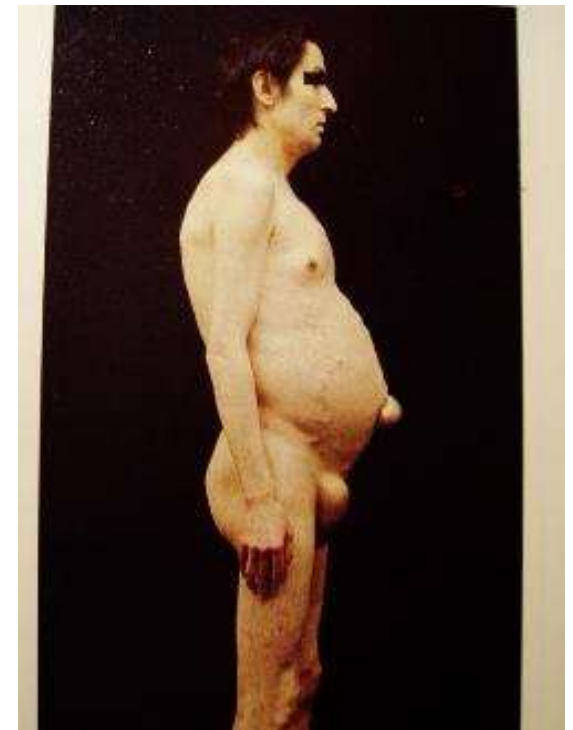
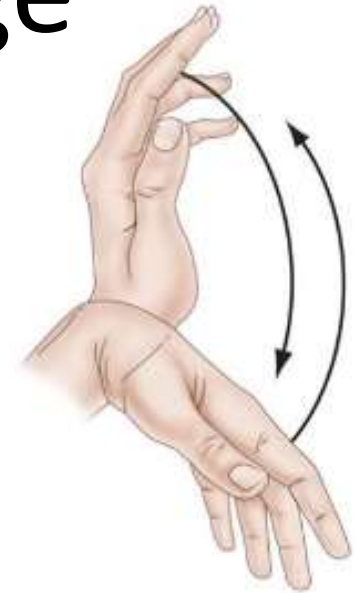
- **Hepatic rub** (*perihepatitis, tumour invasion of the visceral peritoneum*)
- **Venous hum** (*over collaterals in portal hypertension, hemangioma*)
- **„Scratch test“** – to determine the size of the liver (*limited reliability*)

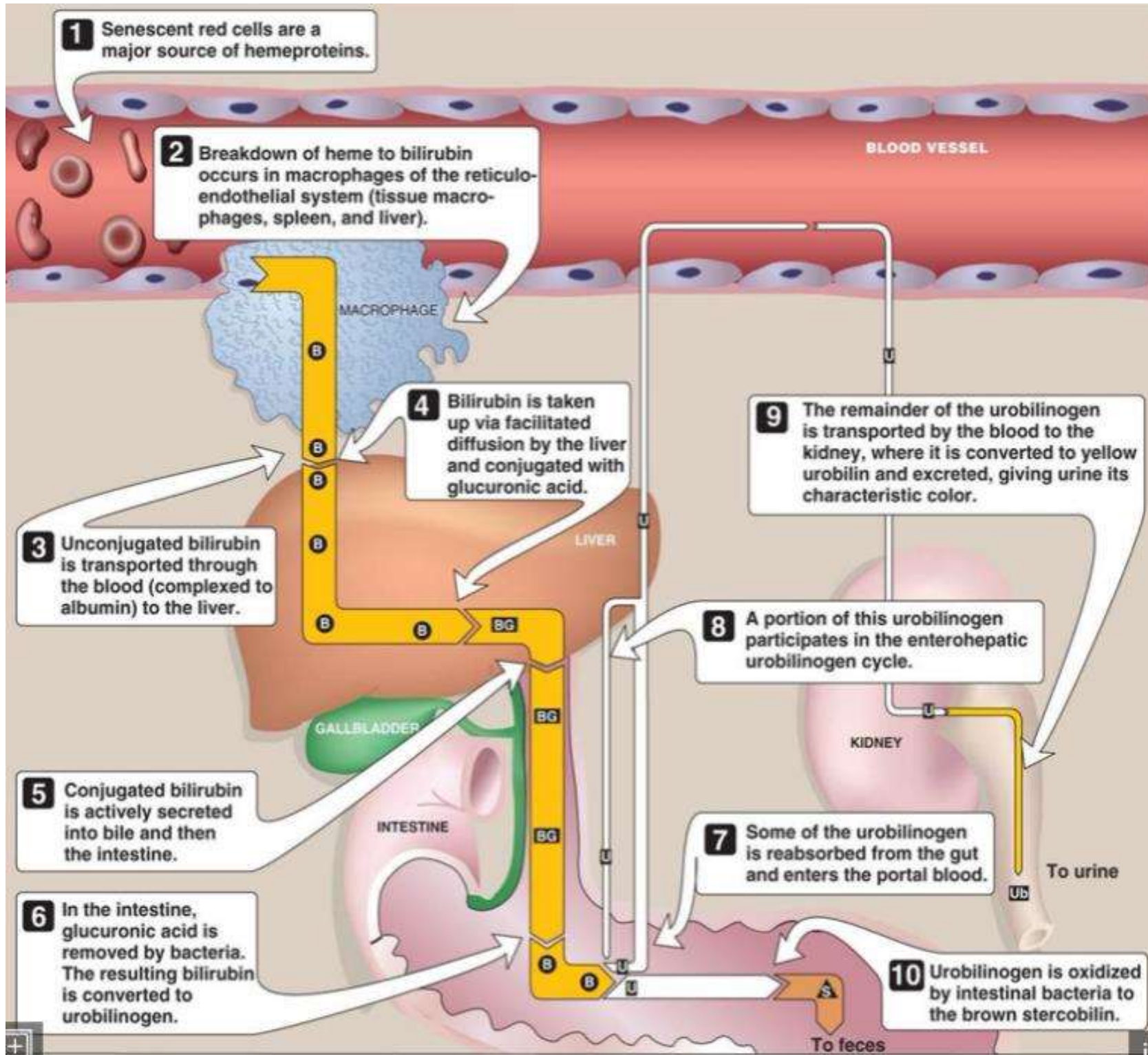




# Symptoms of liver damage

- Jaundice (icterus)
- Ascites
- Oedema
- Malnutrition
- Bleeding disorders (*bruising, GIT bleeding...*)
- Encephalopathy (*confusion, irritability, asterixis, seizures, foetor hepaticus, coma*)
- Dyspepsia





**1** Senescent red cells are a major source of hemeproteins.

**2** Breakdown of heme to bilirubin occurs in macrophages of the reticulo-endothelial system (tissue macrophages, spleen, and liver).

**3** Unconjugated bilirubin is transported through the blood (complexed to albumin) to the liver.

**4** Bilirubin is taken up via facilitated diffusion by the liver and conjugated with glucuronic acid.

**5** Conjugated bilirubin is actively secreted into bile and then the intestine.

**6** In the intestine, glucuronic acid is removed by bacteria. The resulting bilirubin is converted to urobilinogen.

**8** A portion of this urobilinogen participates in the enterohepatic urobilinogen cycle.

**7** Some of the urobilinogen is reabsorbed from the gut and enters the portal blood.

**9** The remainder of the urobilinogen is transported by the blood to the kidney, where it is converted to yellow urobilin and excreted, giving urine its characteristic color.

**10** Urobilinogen is oxidized by intestinal bacteria to the brown stercobilin.

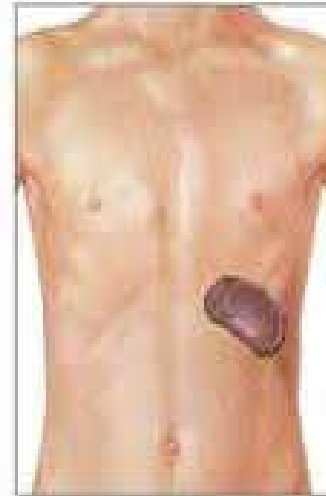
## Summary in liver function tests in the differential diagnosis of jaundice

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Test	Prehepatic	Hepatic	Cholestatic
Serum bilirubin Unconjugated Conjugated	Unconjugated	Mixed	
Urine bilirubin	Absent//Present	Present	Present
Urine Urobilinogen	Increased	Increased	Decreased
ALT & AST	Normal	Marked increase	Slight increase
ALP	Normal	Slight increase	Marked

# Spleen examination

- between 9 to 11<sup>th</sup> rib, 12-15cm
- concealed behind the rib cage
- the basic examination method - palpation
- palpable spleen = enlargement
- deep breath → spleen edge palpation during inspiratory phase



Normal spleen



Splenomegaly

# Splenomegaly

- **MILD SPLENOMEGALY**
  - infectious diseases (typhoid fever, mononucleosis)
  - sepsis
  - infectious endocarditis
- **MODERATE SPLENOMEGALY**
  - lymphomas
  - thrombosis of portal vein
  - liver cirrhosis
- **PRONOUNCED SPLENOMEGALY**
  - myelofibrosis, CML
  - thrombosis of portal vein



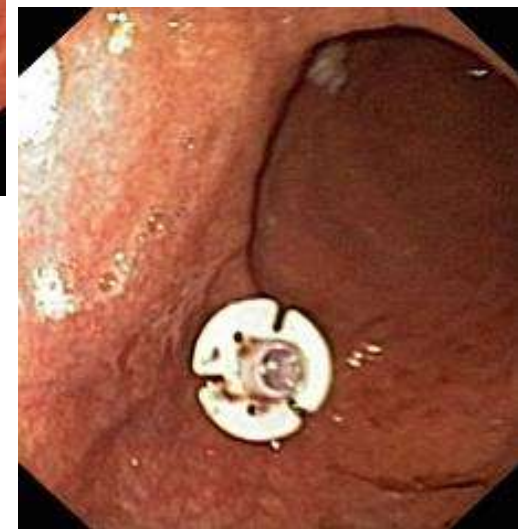
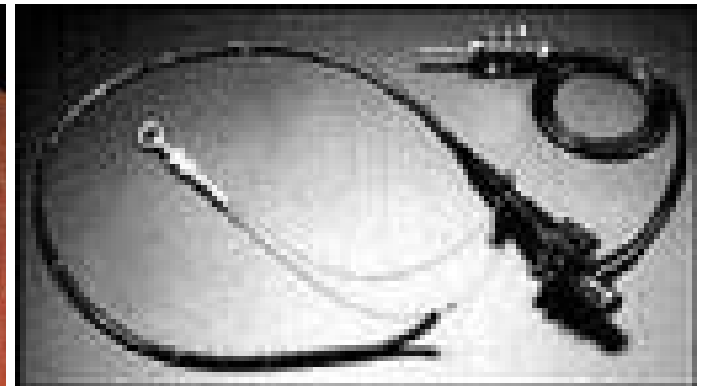
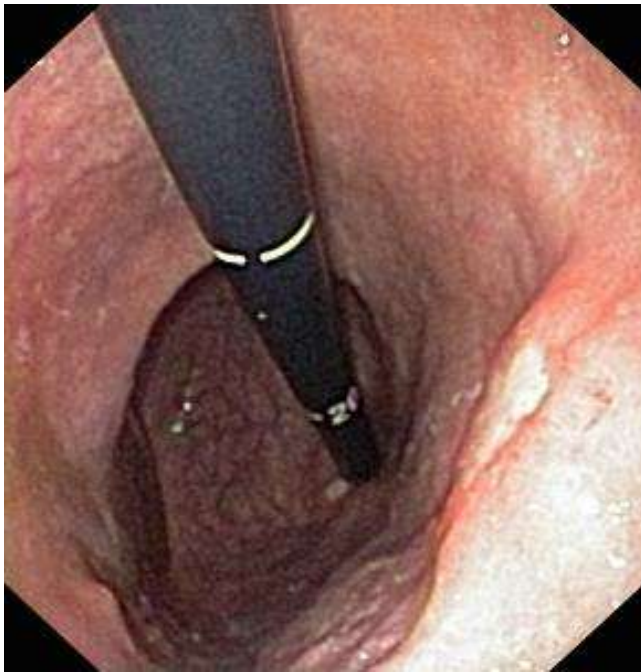
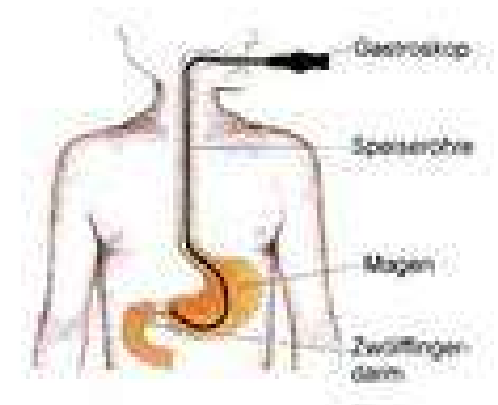
- Anamnesis – „GIT symptoms“
- Physical examination of abdomen
- **Additional Diagnostic Methods**

# Laboratory testing

- CBC, hemocoagulation
- **Biochemistry** (*urea, creatinin, minerals, bilirubin, liver tests, albumin, total protein, CRP, amylase, lipase, Fe, triglycerides, cholesterol, vit B12, gly, oncomarkers*)
- FOBT (feacal occult blood test)
- Breath tests
- Microbiological testing
- Serology

# Endoscopy

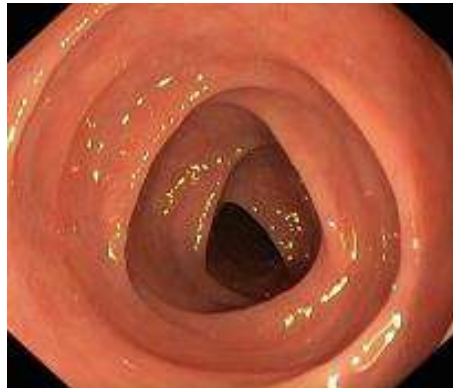
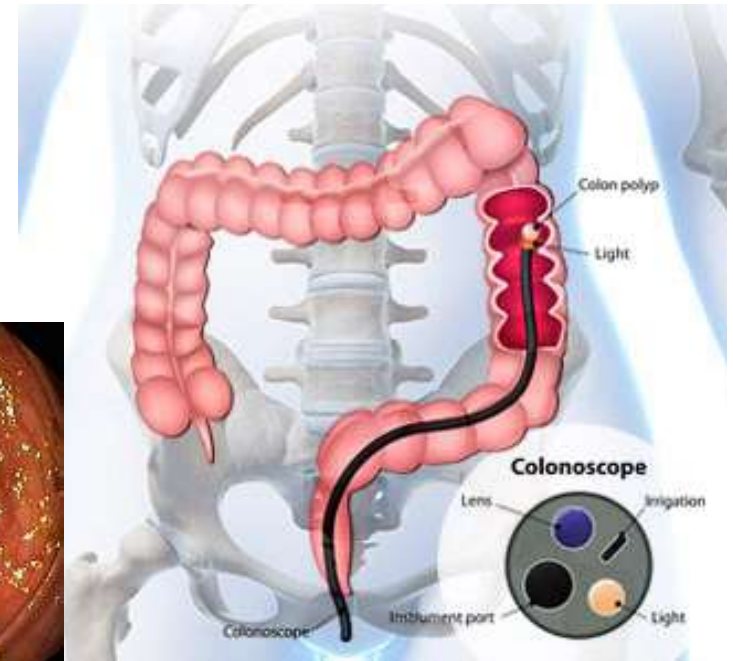
- Upper GI endoscopy (gastroscopy)
- Oesophagus, stomach, duodenum





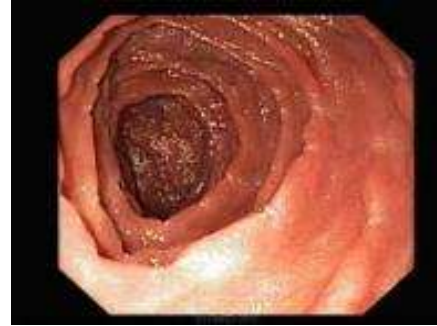
# Endoscopic methods

- Colonoscopy

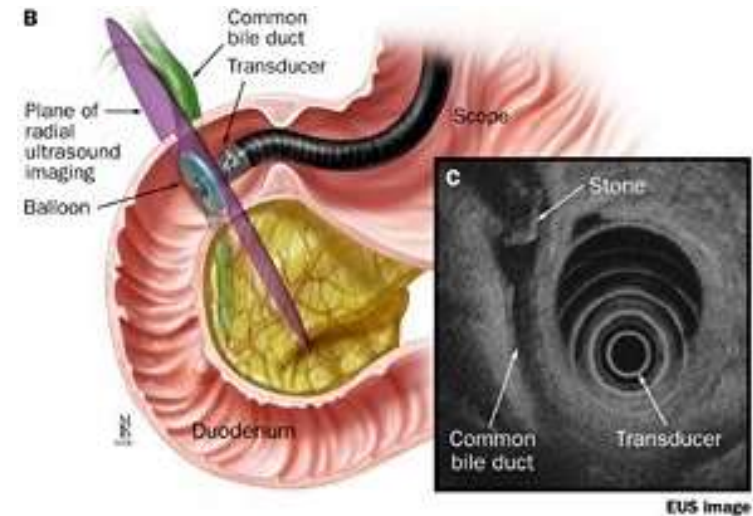


# Endoscopic methods

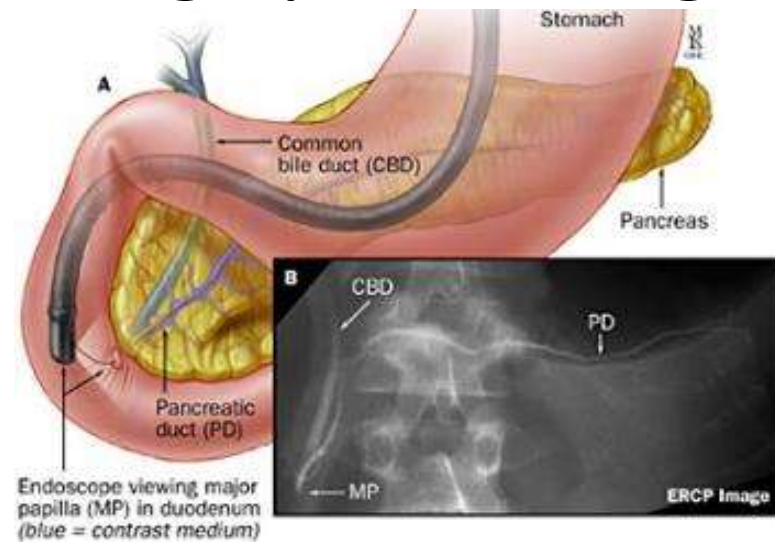
- Enteroscopy



- Endosonography

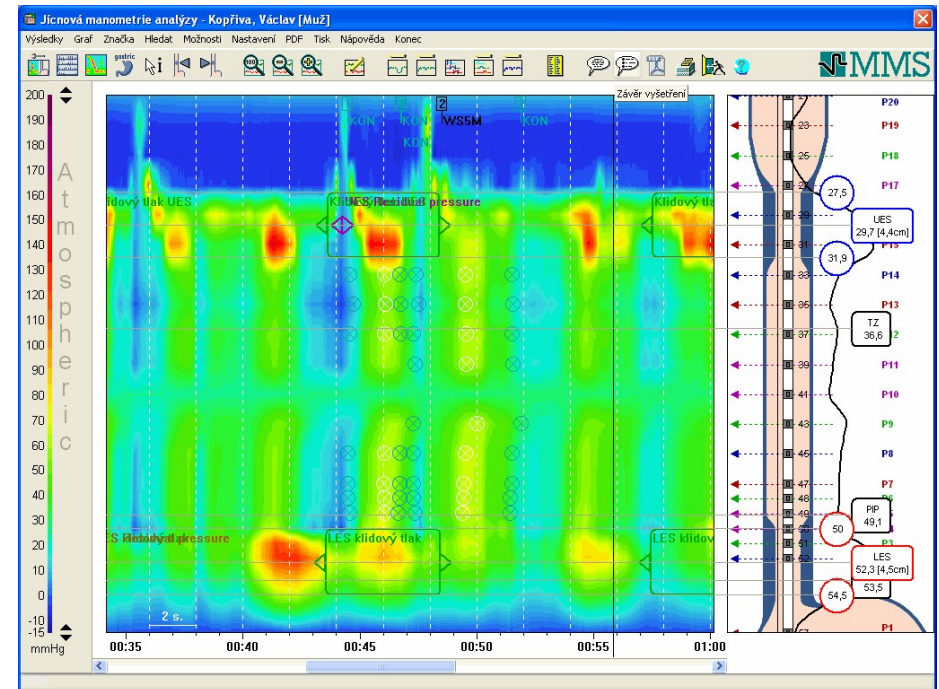


- Endoscopic retrograde cholangiopancreatography (ERCP)



# Gastrointestinal functional tests

- pH-metry
- Esophageal manometry
- Anorectal manometry
- Urea breath test



# X - ray methods

Ultrasound



Plain abdominal  
X-ray



Irrigography



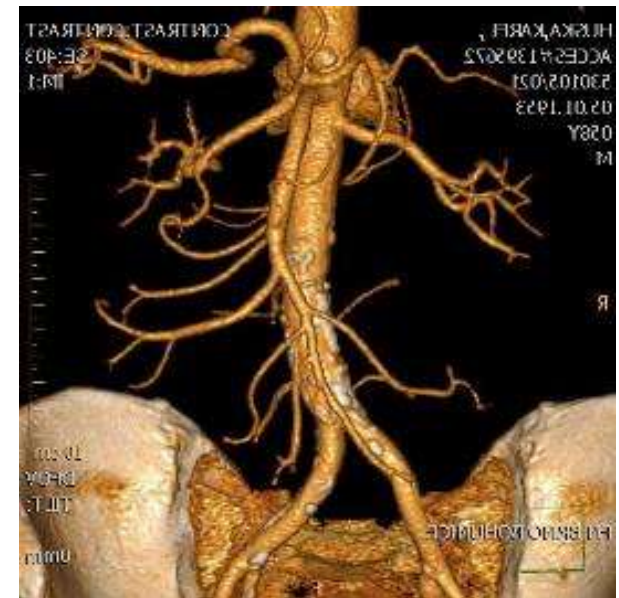
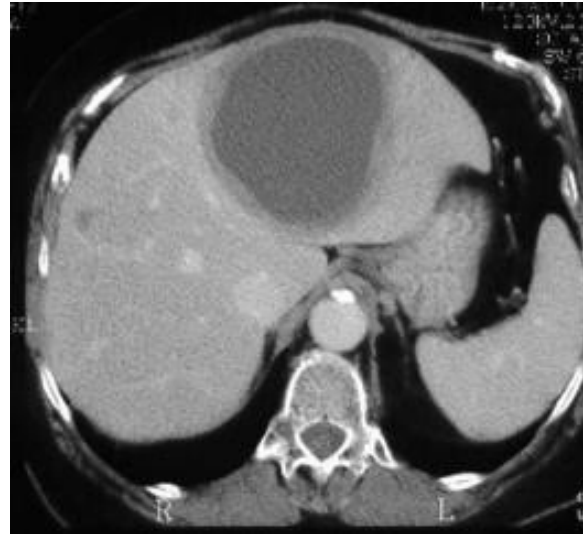
# X - ray methods

- Enteroclysis, enterography, evaluation of esophageal passage



# X - ray methods

- CT, MRI



# Nuclear scanning tests

- HIDA
- Evaluation of Gastric Emptying Function

