Emergency situations in gastroenterology

Assoc. Prof. Ľudovít Lukáč, PhD. M.D.

Emergency situations in gastroenterology

1. Acute upper gastrointestinal bleeding
2. Overt lower gastrointestinal bleeding
3. Severe iron deficiency anaemia
4. Severe vomiting
5. Severe acute diarrhoea
6. Gastroenteritis
7. Complications of inflammatory bowel disease
8. Acute thoracic pain and dysphagia
9. Acute abdominal pain

Emergency situations in gastroenterology

10. Malnutrition and chronic gastrointestinal disease
11. Complications of nutritional support
12. HIV disease and the GI tract
13. Jaundice
14. Acute liver failure
15. Complications of cirrhosis and portal hypertension
16. Infections and the liver
17. Drug-induced liver injury
18. The liver in pregnancy
19. Hepatic trauma
20. Hepatic, neuroendocrine and general oncological emergencies
21. Liver transplant patients

Emergency situations in gastroenterology

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Acute upper gastrointestinal bleeding

Upper gastrointestinal bleeding (UGB) is defined as the intraluminal bleeding proximal to the Treitz ligament

UGB is the most common emergency in Gastroenterology

- Regarding the etiology, can be classified as:
  - nonvariceal
  - variceal UGB
- Incidence: 70-150/100 000/year
- Mortality:
  - 3.5 to 10% in cases of nonvariceal UGB
  - 15% to 20% in 6 weeks after variceal UGB

    it may reach 30% in patients with advanced cirrhosis

Acute upper gastrointestinal bleeding Causes

Peptic ulcer bleeding is the most common cause of upper gastrointestinal bleeding, responsible for about 50% of all cases, followed by oesophagitis and erosive disease.

Variceal bleeding is the cause of bleeding in cirrhotic patients in 50–60%.

Rebleeding in upper gastrointestinal bleeding occurs in 7–16%, despite endoscopic therapy.

Rebleeding is especially high in variceal bleeding and peptic ulcer bleeding

Other causes of bleeding

- Mallory-Weiss tear occur near the gastroesophageal junction, is caused by retching. There is usually a history of vomiting foodstuffs prior to hematemesis
- Neoplasms
- Angiodysplasias

Other causes of bleeding

- Aorto-enteric fistula

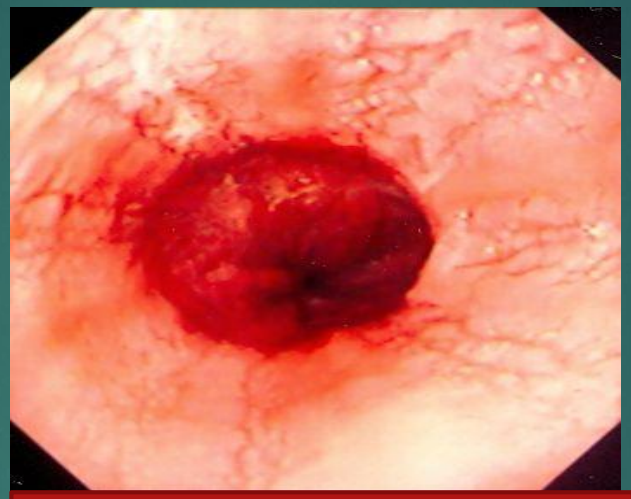
  (mostly in the third portion of duodenum, but they may rupture in to the jejunum, ileum, stomach, colon. It appears often after Dacron graft surgery

- Hematobilia and hemosuccus pancreaticus
- Dieulafouy´s disease

  ruptured thick walled arterial vessel with no associated ulceration. Dieulafoy´s vessel occurs in fundus and endoscopically appears as a round mucosal defect with portruding artery at he base.

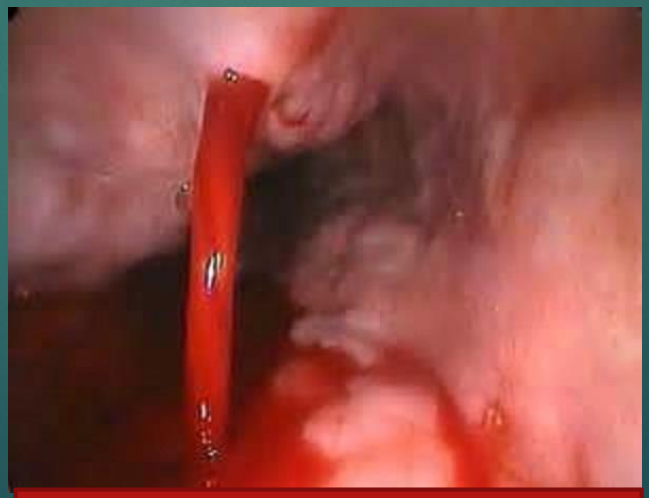
Acute upper gastrointestinal bleeding Causes

Peptic ulcer bleeding



Oesophagitis

Erosive disease



Variceal bleeding

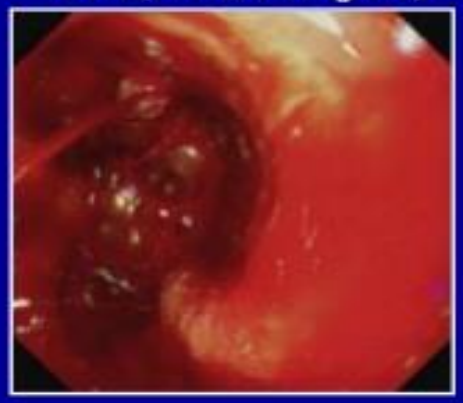
Acute upper gastrointestinal bleeding

Nonvariceal bleeding

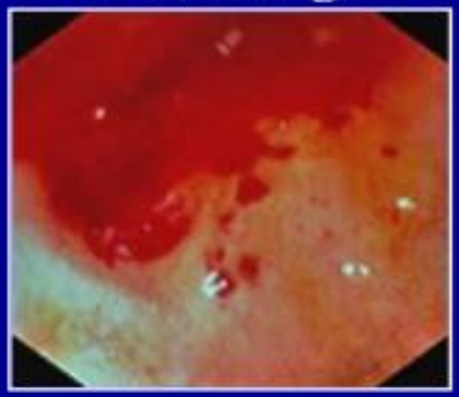
Acute upper gastrointestinal bleeding

Forrest's classification for PU bleeding

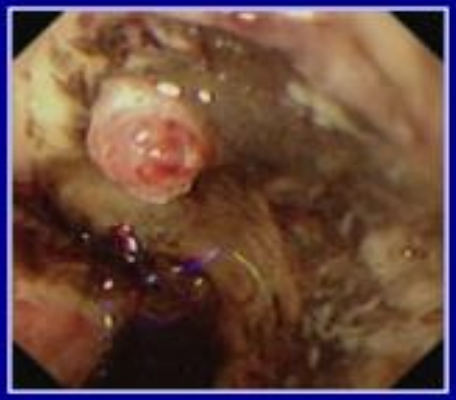
I-a (arterial jet)



I-b (oozing)



II-a (visible vessel)



II-b (adherent clot)

II-c (black spot)

III (clean base)

Clinical presentation

- Acute GI bleeding
  - Hematemesis- bright red vomitus or coffe-ground appearance
  - Melena (black tarry malodorous stool)
  - Hematochezia

Location of bleeding

- Melena indicates an upper GI source (above the ligament of Treitz) although bleeding may be from the small bowel or proximal colon.
- Melena occurs when hemoglobin is converted to hematin or other hemochromes by bacterial degradation
- 100-200 ml of blood can cause melena
- If colonic motility is sufficiently slow, bleeding from small bowel or proximal colon may cause melena
- Hematochezia indicates lower GI source
- 11% of patients with rapid bleeding from an upper source pass bright red blood per rectum because of rapid gastrointestinal transit

Acute upper gastrointestinal bleeding

Prediction of mortality

Rockall score

	0	1	2	3	
Age	<60	60-79	≥80	-	
Shock (Pulse: bpm, SBP: mmHg)	Pulse <100 SBP ≥100	Pulse ≥100 SBP ≥100	SBP <100	-	
Comorbidities	No major comorbidities	-	CF, IHD, any major comorbidity	RF, LF, disseminated malignancy	Clinical score
Diagnosis	Mallory-Weiss tear, no lesion identified and no SRH	All other diagnoses	Malignancy of upper GI tract		
Major SRH	None or dark spot only	-	Blood in the upper GI tract, adherent clot, visible or spurting vessel		Additional criteria for total score

SBP: systolic blood pressure; CF: cardiac failure; IHD: ischemic heart disease; RF: renal failure; LF: liver failure; SRH: stigmata of recent hemorrhage; GI: gastrointestinal.

The Rockall score (RS) was primarily developed for assessment of mortality after 30 days of UGB.
Rebleeding and mortality directly increase with the value of the RS

Acute upper gastrointestinal bleeding

Prediction of mortality

Rockall score

- The Rockall score (RS) was primarily developed for assessment of mortality after 30 days of UGB.
- Rebleeding and mortality directly increase with the value of the RS
- Patients with total RS ≤2 are considered low-risk, and can receive early hospital discharge. The clinical RS (pre-endoscopic) equal to zero identifies about 15% of cases. These patients can be submitted to outpatient endoscopy, given the mortality and rebleeding low risks

Acute upper gastrointestinal bleeding

Prediction of mortality and medical intervention

Glasgow Blatchford score (GBS)

	Score value
Blood urea (mmol/L)	
6·5–7·9	2
8·0–9·9	3
10·0–25·0	4
>25·0	6
Haemoglobin for men (g/L)	
120–129	1
100–119	3
<100	6
Haemoglobin for women (g/L)	
100–119	1
<100	6
Systolic blood pressure (mm Hg)	
100–109	1
90–99	2
<90	3
Other markers	
Pulse ≥100/min	1
Presentation with melaena	1
Presentation with syncope	2
Hepatic disease*	2
Cardiac failure†	2

*Known history, or clinical and laboratory evidence, of chronic or acute liver disease.
†Known history, or clinical and echocardiographic evidence, of cardiac failure.

Glasgow Blatchford score (GBS) was developed to predict mortality and medical intervention (blood transfusion, endoscopic or surgical treatment) after UGB episode[13]. The GBS only takes into account laboratory tests and clinical findings to its calculation, and can be easily used prior endoscopy

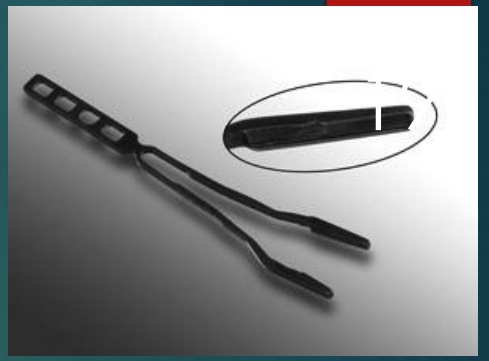
Acute upper gastrointestinal bleeding

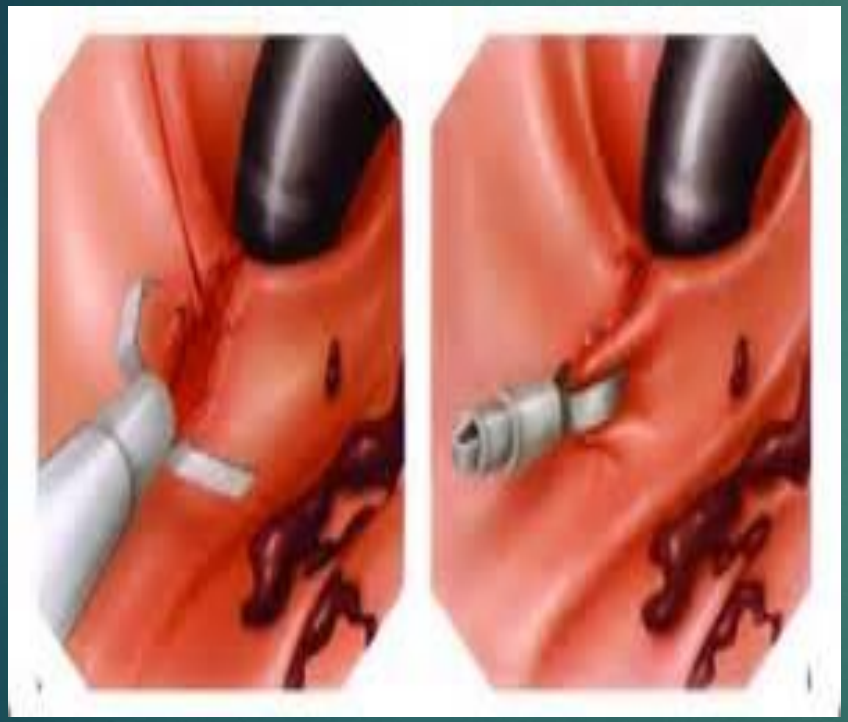
Endoscopic methods of treatment

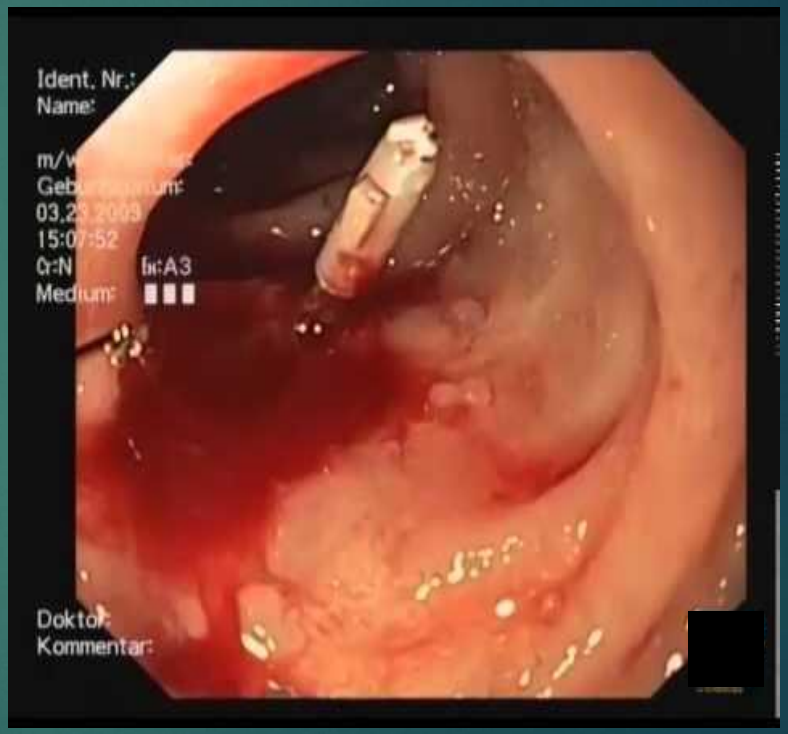
- Injection of vasoconstrictors- epinephrine
- Injection of sclerosing agents
- Tissue glues
- Metal clips
- Thermal methods – heater probe, electorcoagulation, Nd YAG laser

Injection therapy

Metal clips



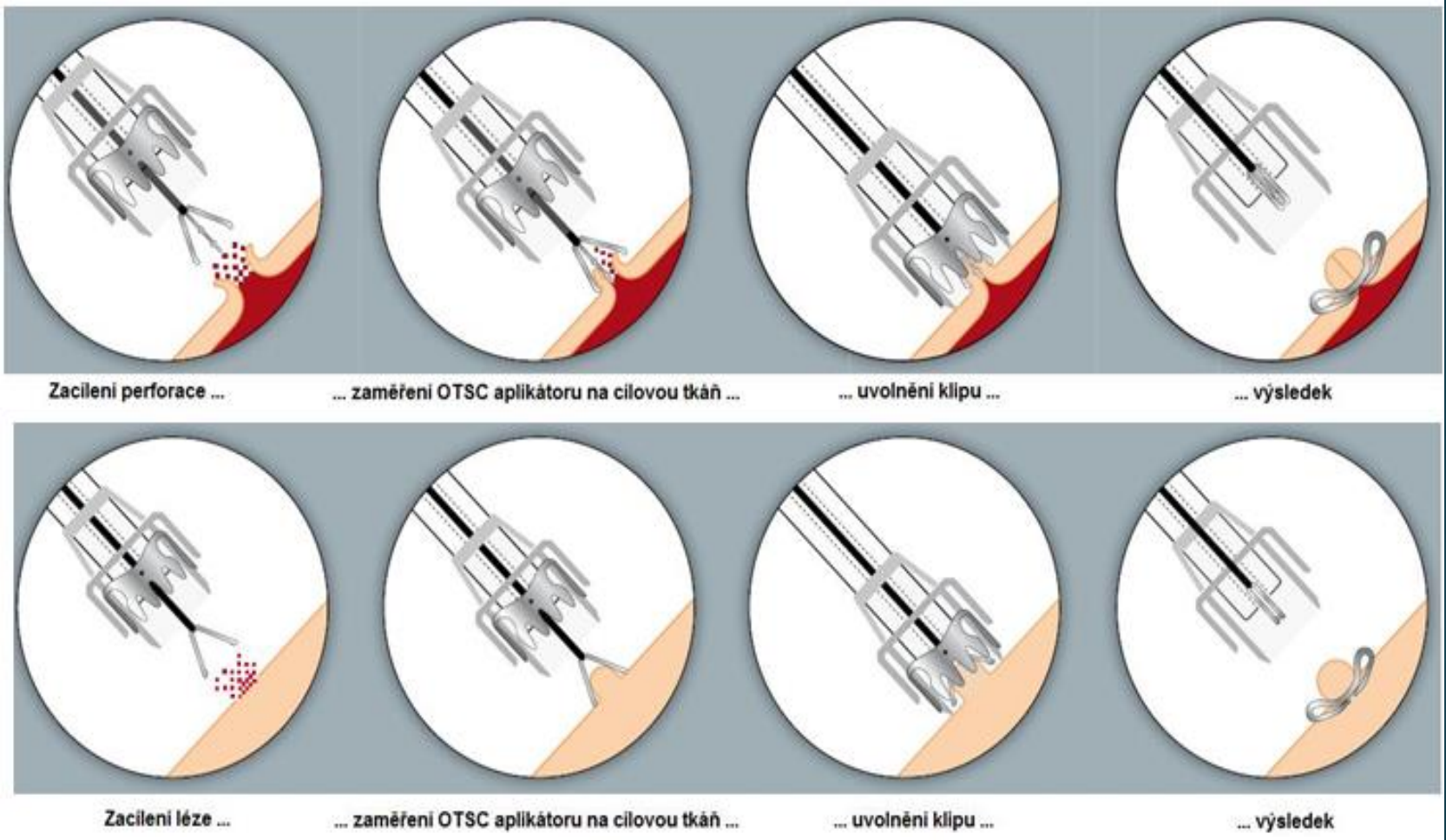


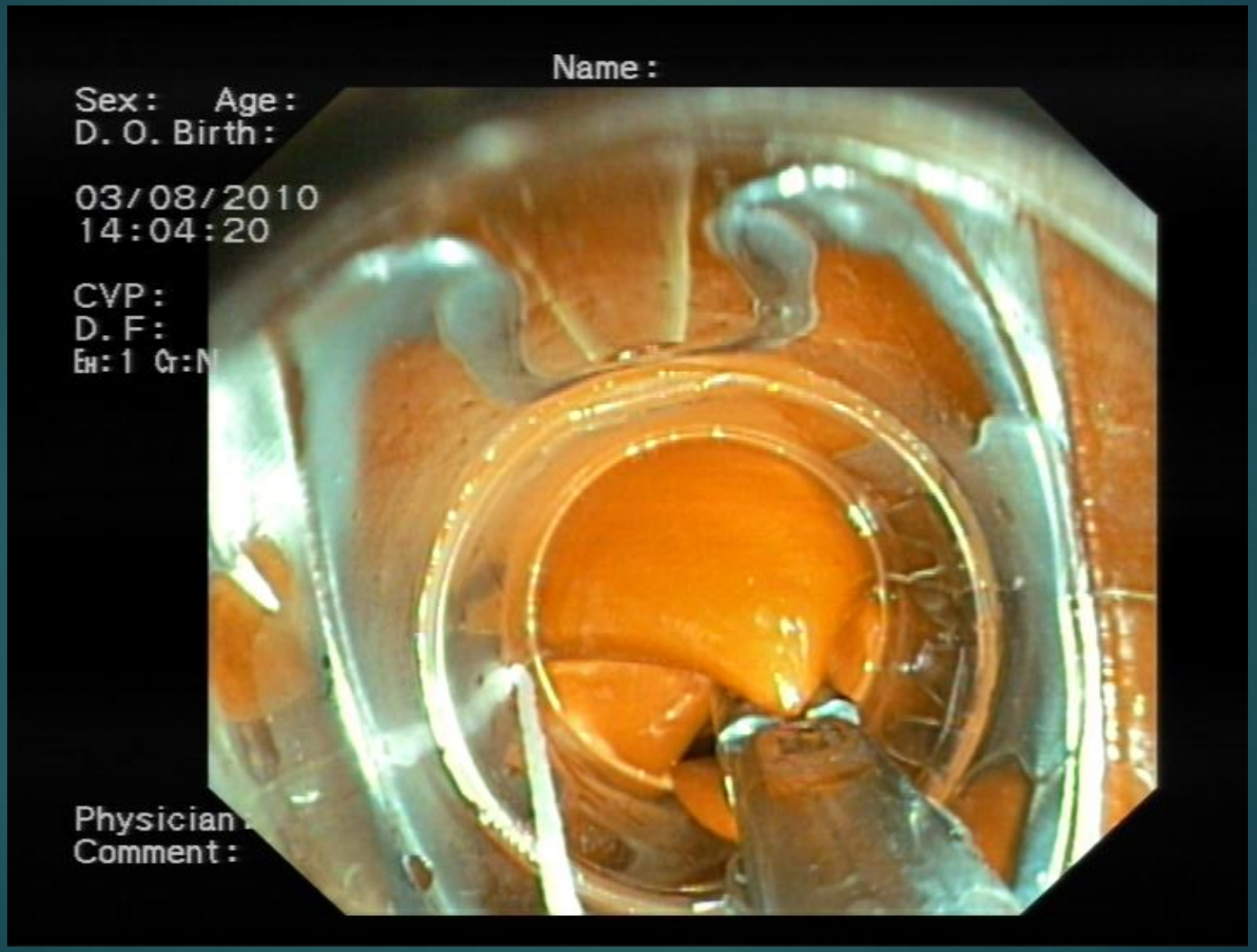

Ident. Nr.:
Name:
m/w
Geb
03,2
15:07:52
Q:N
Bi:A3
Medium:
Dokto
Kommentar:

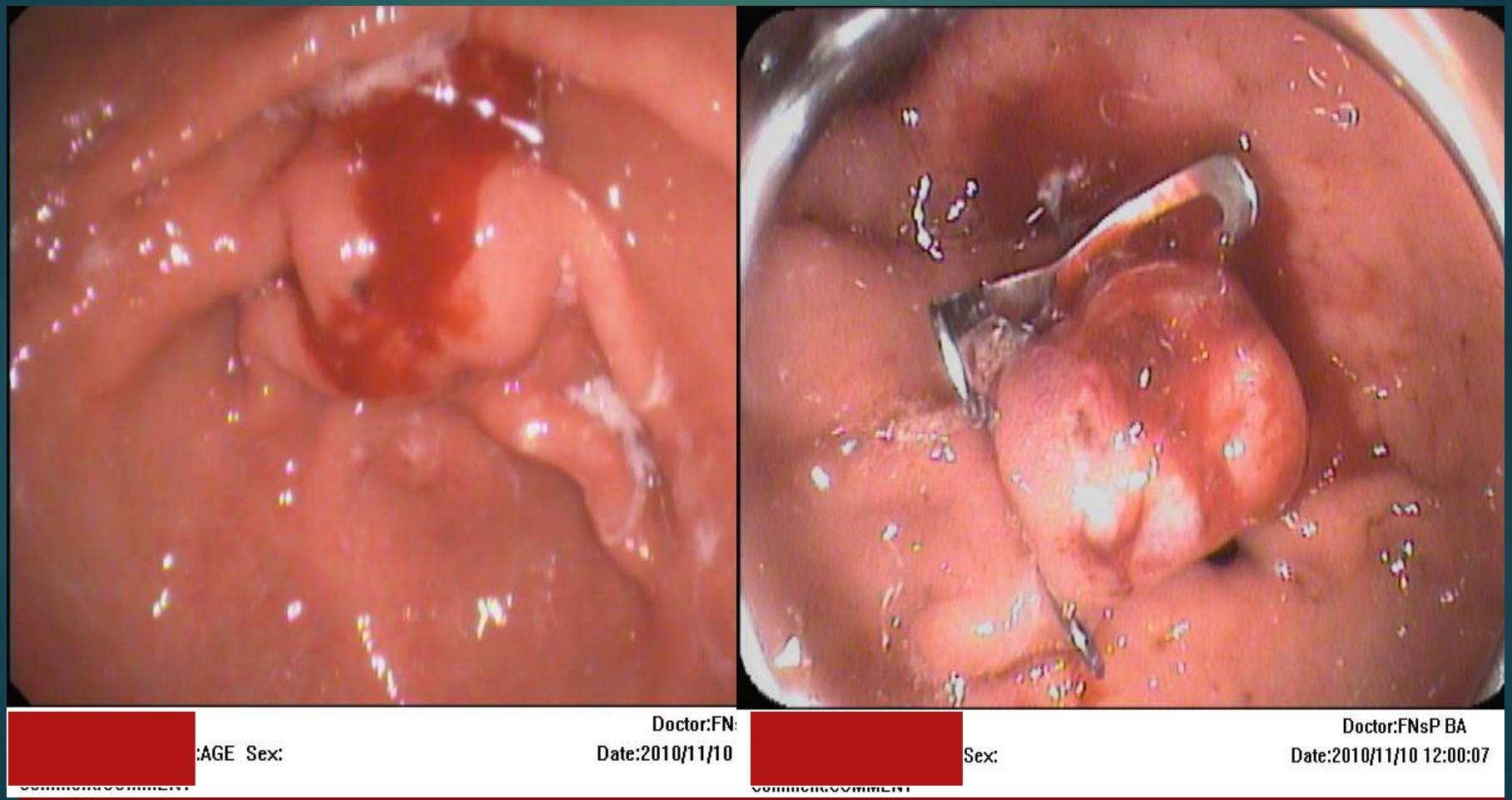
Thermal methods

OTSC

- Over The Scope Clip


Zacileni perforace ...
... zaměřeni OTSC aplikátoru na cilovou tkáň ...
... uvolněni klipu ...
... výsledek
Zacileni léze ...
... zaměřeni OTSC aplikátoru na cilovou tkáň ...
... uvolněni klipu ...
... výsledek


Name :
Sex : Age :
D. O. Birth :
03/08/2010
14:04:20
CVP :
D. F :
EH:1 CF:N
Physician :
Comment :



OTS-klipy - nové možnosti v endoskopickej liečbe / Ľudovít Lukáč
In: Gastroenterológia pre prax. - Roč. 10, č. 2 (2011), s. 127

Peptic ulcer bleeding treatment
Non-endoscopical methods

- Cessation o bleeding non- endoscopical methods
  - PPI I.V.
  - Volume replacement
  - Hemodynamic stabilisation
  - Emergency endoscopy

In case o failure of above-surgery

Prevention of recurrent bleeding

- Acid reducing phamacologic therapy- PPI
- PPI- prevent clot dissolution and enables healing of the lesion
- Coagulation and platelet function is better at neutral pH

Acute upper gastrointestinal bleeding

Variceal bleeding

Acute upper gastrointestinal bleeding
Variceal bleeding

- Mortality is 15% to 20% in 6 weeks after variceal UGB
- it may reach 30% in patients with advanced cirrhosis
- ¼ to 1/3 of patients with cirrhosis will bleed at least once from varices
- The best prediction of variceal bleeding is the size of varices

Esophageal varices classification

The size is classified according to the degree of protrusion into the lumen when oesophagus is maximally relaxed

- Grade 1 (small): minimally elevated veins above surface
- Grade 2 (medium): tortuous veins occupaying <1/3 of esophageal lumen
- Grade 3 (large): occupaying >1/3 of esophageal lumen

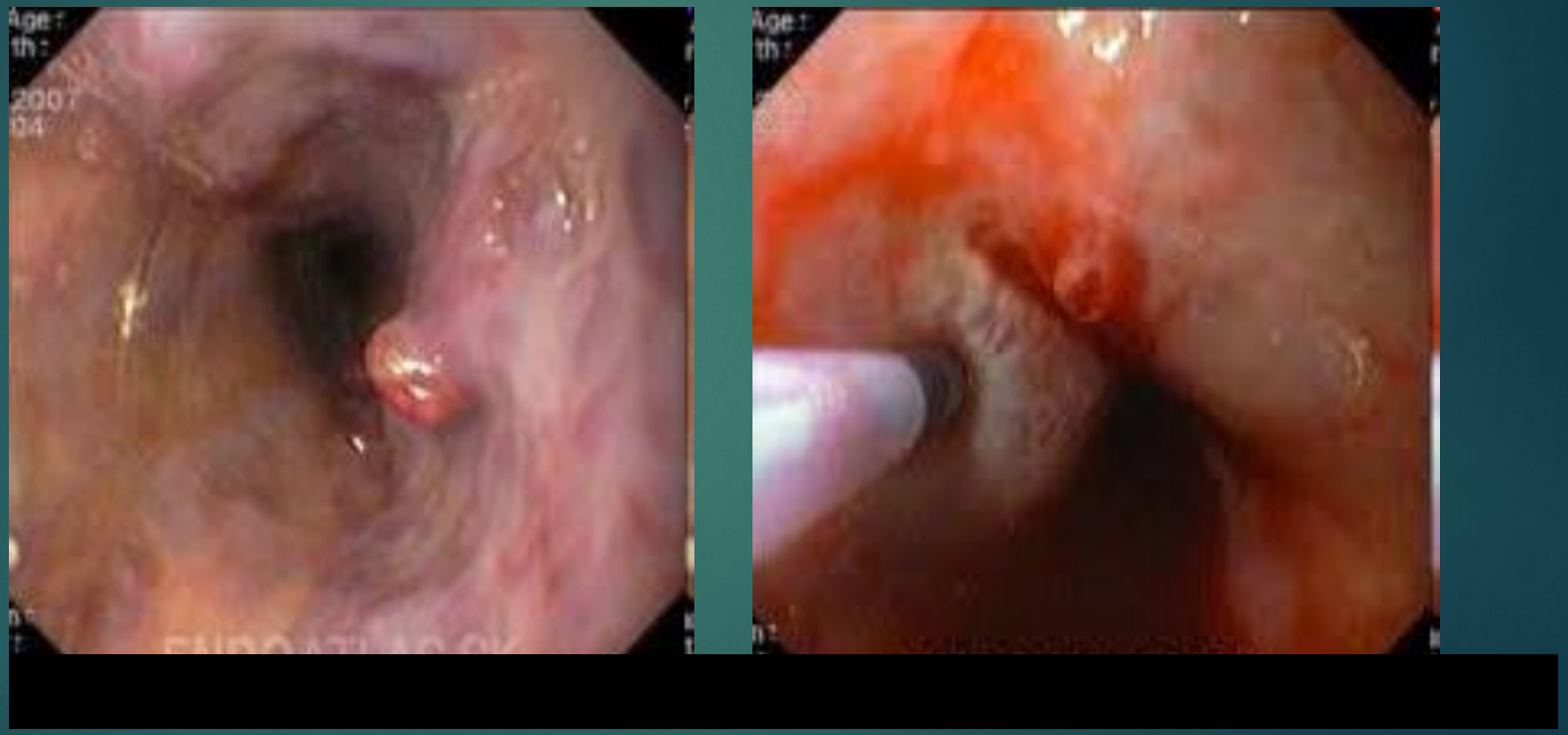
Oesophageal varices grading

Grade 1 Small	Grade 2 Medium	Grade 3 Large

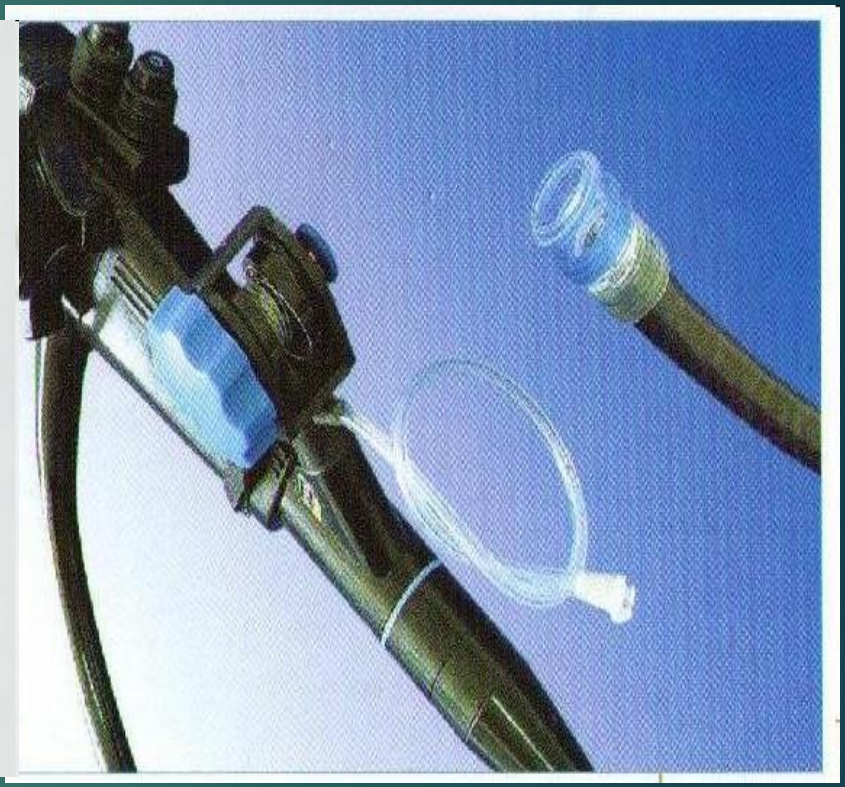
Management of acute variceal hemorrhage

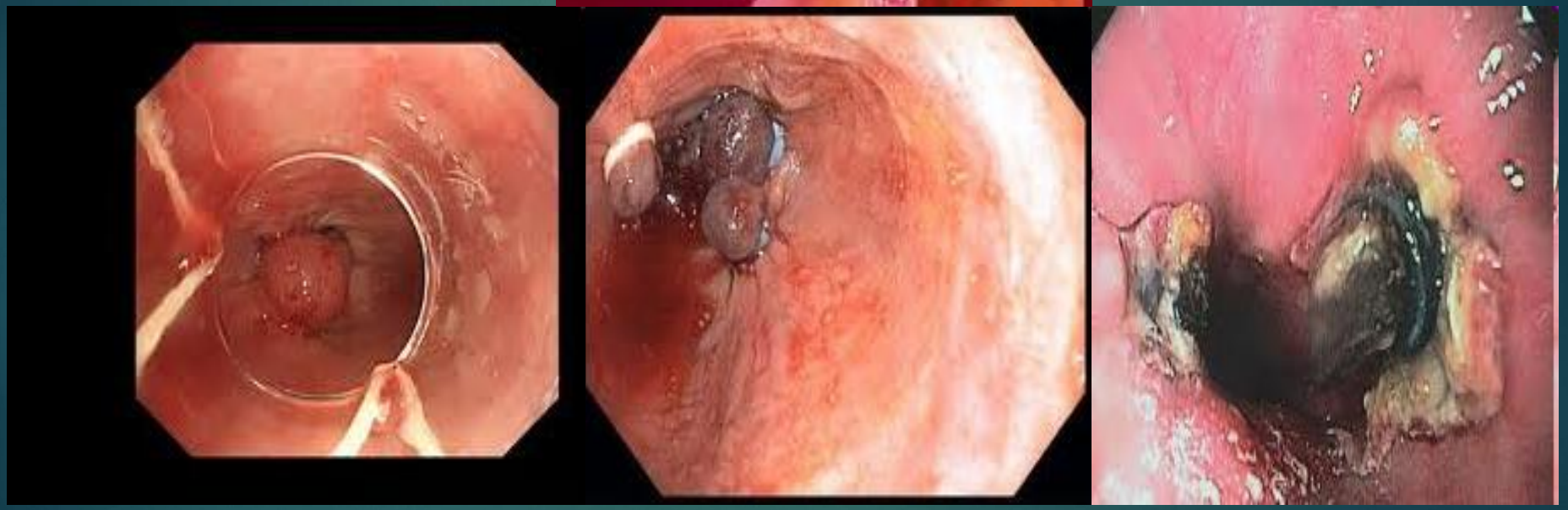
- I.V. vasopressin
- Urgent sclerotherapy
- Rubber band ligation
- Esophageal stent
- Baloon tamponade
- Percutaneous transhepatic obliteration of varices via angiographic cathetrisation of the portal vein and embolisation using Gelfoam and thrombin
- Surgical shunting of portal blood to the systemic circulation
- TIPS

Sclerotherapy



Rubber band ligation

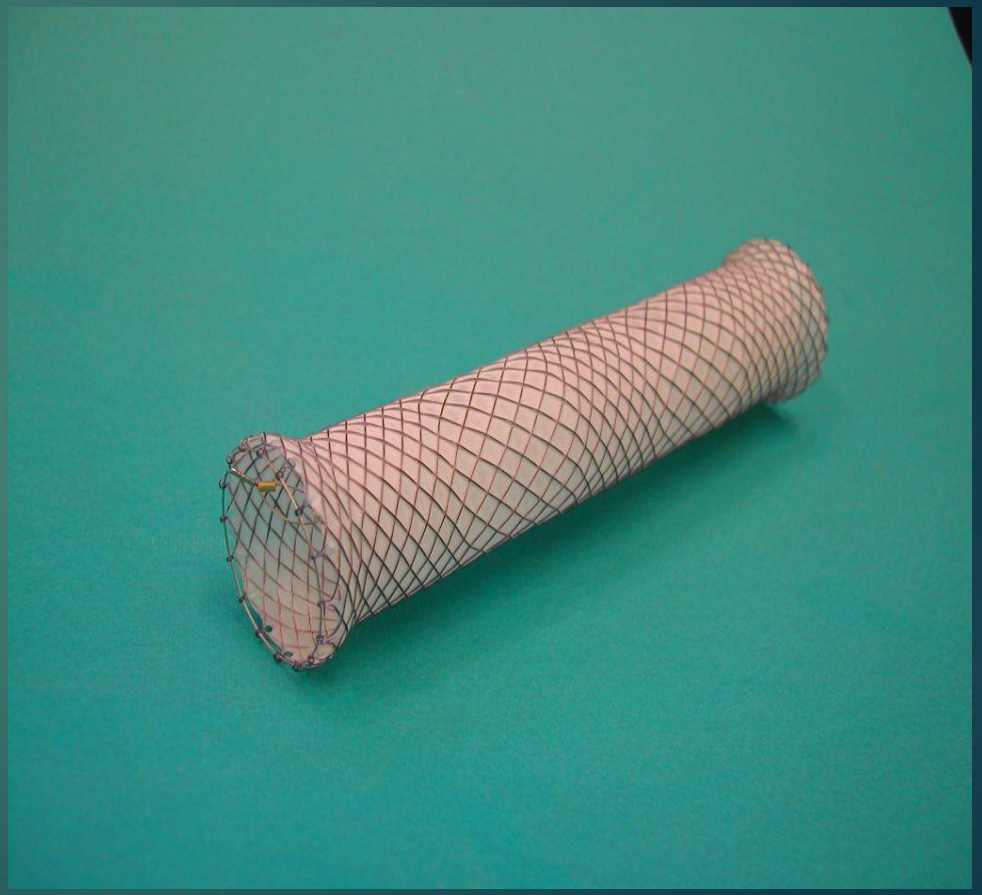


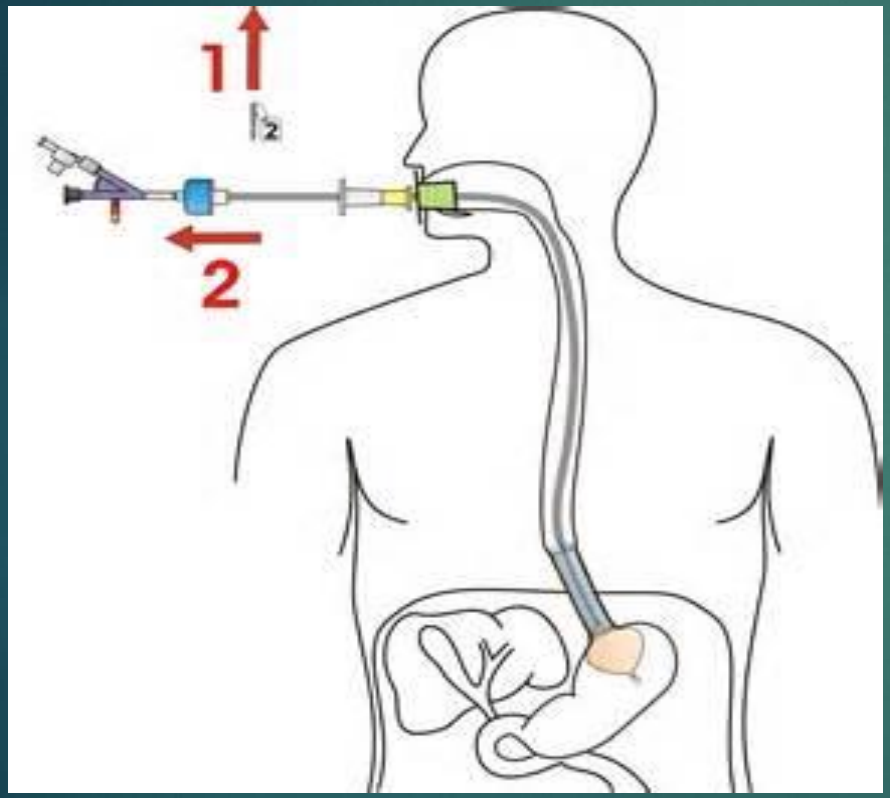


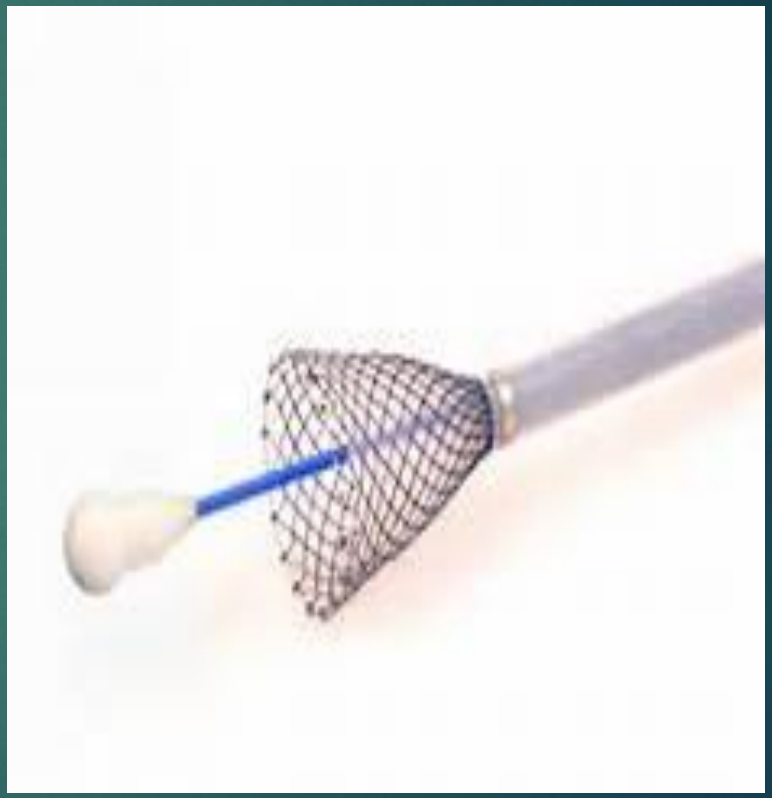
Endoskopická liečba (pažerákových varixov) / Ľ. Lukáč ... [et al.]
In: Gastroenterológia pre prax. - Roč. 5, č. 4 (2006), s. 249

Danis set


Bag No. 1
Bag No. 2
Bag No. 3
Bag No. 4
Bag No. 5
BAG No. 1 CONTENTS:
- 1 piece of SX-ELLA Stent Danis compressed inside the delivery system
- 1 piece of guide wire
BAG No. 2 CONTENTS:
- 2 pieces of plastic syringe (50 ml – for inflation of the balloon; 20 ml for air inflation into the stomach)
- 1 piece of mouthpiece
- 1 piece of paper emesis basin
BAG No. 3 CONTENTS:
- 1 piece of paper slobber cloth with fixing cord
BAG No. 4 CONTENTS:
- 1 piece of plastic clip for fixing the used guide wire and delivery system
- 1 piece of plastic waste bag
BAG No. 5 CONTENTS:
- 2 pairs of sterile medical gloves of two different sizes
BAG No. 6 CONTENTS:
- 1 piece of Instructions for Use
- 1 piece of unfixed product (delivery system with compressed stent) label (to be inserted into the patient's medical record)
- 1 piece of patient's card
SX - ELLA STENT Danis




1
2



Publication Abstract

Title:	**Variceal Hemorrhage**
Author(s):	Zhong Y, Seewald S, Soehendra N
Publication:	Gastrointestinal Emergencies
Copy:	2009; 2nd edition: 141-148
Released:	Sunday, August 16, 2009
Summary:	Acute esophagogastric variceal hemorrhage is a lifethreatening emergency that is still associated with a high mortality. This is especially true when advanced cirrhosis of the liver is the underlying disease, in particular if the cirrhosis of the liver is caused by alcoholism that most likely has also damaged other organs such as the kidney and heart. The management in the acute stage is therefore a complex issue requiring close multidisciplinary cooperation. ---- Excerpt: In such cases, the use of newly designed removable covered self-expandable metal stent (SX-Ella Danis stent, Ella-CS s.r.o. Czech Republic) has been recommended, as it is easier to insert and does not obstruct the esophagus. -----
Last change:	*Thursday, August 23, 2012 /Hegarová Alena/*

Assoc. Prof. Ján Daniš, CSc.

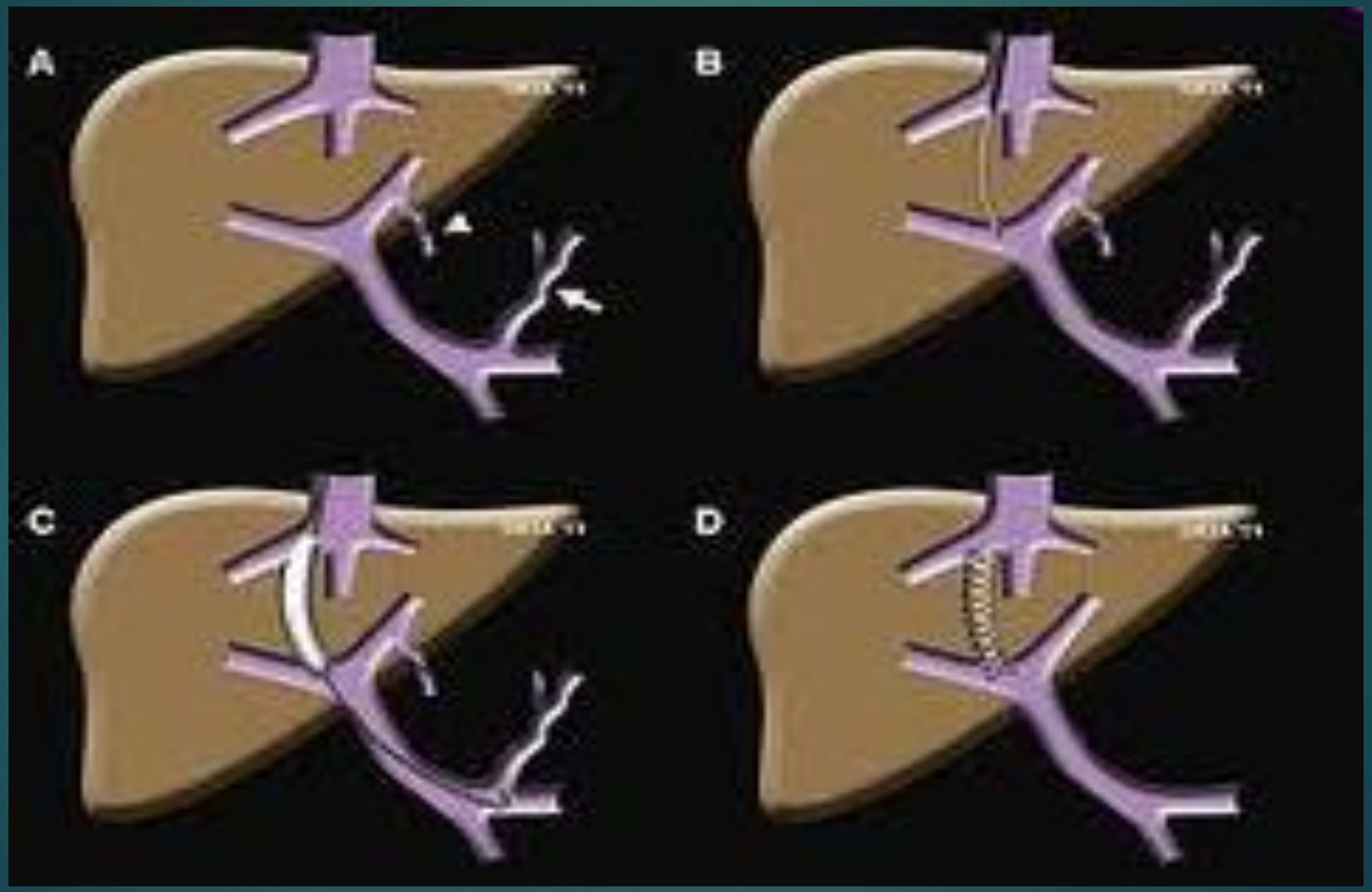
(*21. 2. 1952 – †16. 4. 2010)

Vita mortuorum in memoria
est posita vivorum.
(Cicero)
The Life of the Dead is placed in the memory of the alive


Name :
Sex : Age :
D. O. Birth :
28/12/2004
21:08:23
CVP : 1
D. F :
Bw: 1 G:N
Physician :
Comment :


Name :
Sex :
D. O
28/
06:
CVP
D. F
Bw:3
Physician :
Comment :

Transjugular Intrahepatic Portosystemic Shunt (TIPS)



Emergency situations in gastroenterology

1. Acute upper gastrointestinal bleeding
2. **Overt lower gastrointestinal bleeding**
3. Severe iron deficiency anaemia
4. Severe vomiting
5. Severe acute diarrhoea
6. Gastroenteritis
7. Complications of inflammatory bowel disease
8. Acute thoracic pain and dysphagia
9. Acute abdominal pain

Overt lower gastrointestinal bleeding

- Lower GI bleeding (LGIB) is a common reason for emergency hospital admission
- Most are elderly with major comorbidities
- Taking antiplatelets and anticoagulants
- Shock is uncommon
- The most common diagnoses are diverticular bleeding (25%) and benign anorectal conditions (20%)

Emergency situations in gastroenterology
Overt lower gastrointestinal bleeding

- 80% of bleeding episodes resolve spontaneusly
- Diverticular bleeding
  - The most common cause of major lower gI bleeding
  - Bleeding results from a colonic artery that penetrates into the dome of diverticulum
  - Vessel rupture is thought to be due to pressure erosion
  - Bleeding does not recur in majority of patients
  - Selective cathetrisation with administration of intraarterial vasopressin successfully controls bleeding

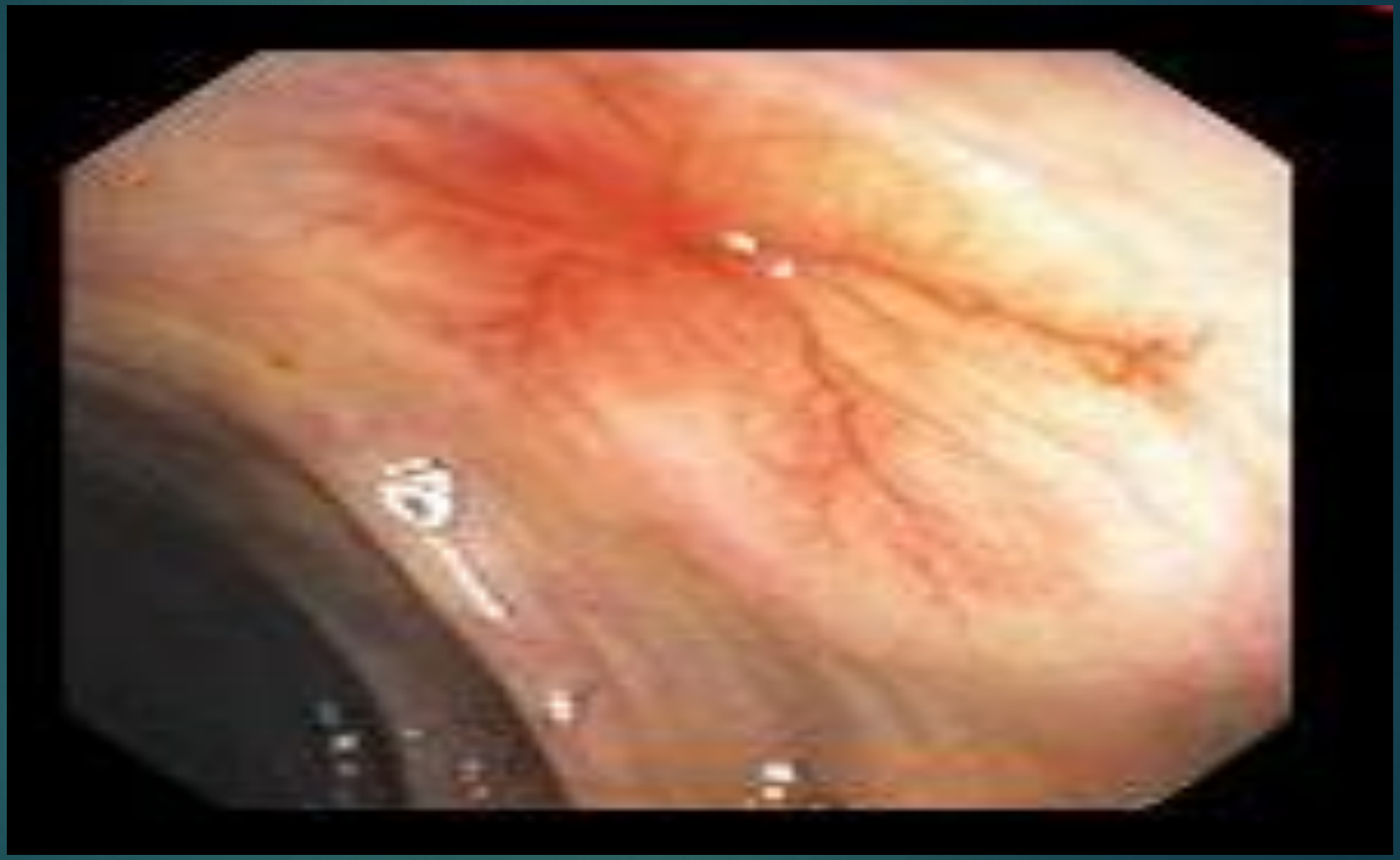
Acute lower gastrointestinal bleeding Causes

- Neoplasms
  - Rarely cause major hemorhages
- Perianal disease
  - Hemorrhoids
  - Anal fissures
- Inflammatory bowel disease
- Ischemic colitis
- Intussusception

Diverticulosis

Diverticular bleeding

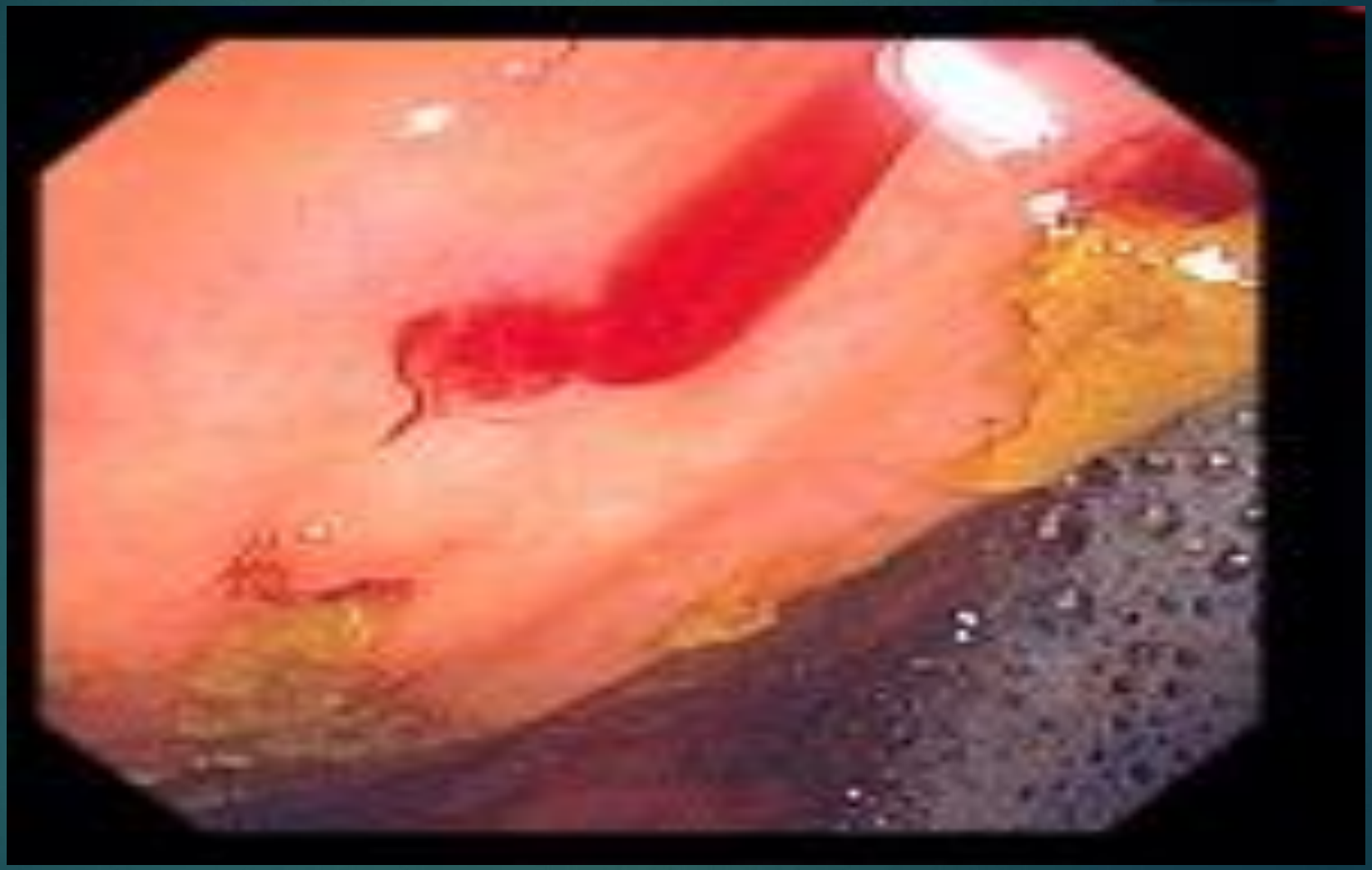
Angiodysplasia



Angiodysplasia

Angiodysplasia

Bleeding angiodysplasia



Bleeding hemorrhoids

Bleeding hemorrhoids

Acute Middle Gastrointestinal Bleeding

- Middle gastrointestinal bleeding (MGIB) risk has not been fully investigated due to its extremely rare occurrence
- Factors significantly associated with MGIB are chronic kidney disease, liver cirrhosis, NSAIDs, thienopyridines (selective, irreversible ADP receptor/P2Y12 inhibitors used for their anti-platelet activity.
  clopidogrel (Plavix), prasugrel (Effient), and ticlopidine (Ticlid).), and PPIs

Acute Middle Gastrointestinal Bleeding Causes

- Meckel diverticulum
- Gastrointestinal stromal tumor (GIST)
- Peutz-Jeghers syndrome
- Inflammatory fibroid polyps (IFPs), or Vanek's tumor
- IBD (M Crohn)

Acute Middle Gastrointestinal Bleeding Diagnosis

- Enteroscopy (single/double baloon enteroscope)
- Colonoscopy
- Esophagogastroduodenoscopy
- CT angiography

Francisco Goya: *The Sleep of Reason Produces Monsters* (Spanish: *El sueño de la razón produce monstruos*)

Thank you for attention

Diverticulitis

Biliary colic

- Biliary colic is a visceral pain originating from tonic spasm resulting from transient obstruction of the cystic duct by a stone
- Acute cholecystitis pain is caused by gallbladder wall inflammation
- Biliary colic is a steady pain and not one that is intermittent with fluctuating intensity

Acute cholecystitis

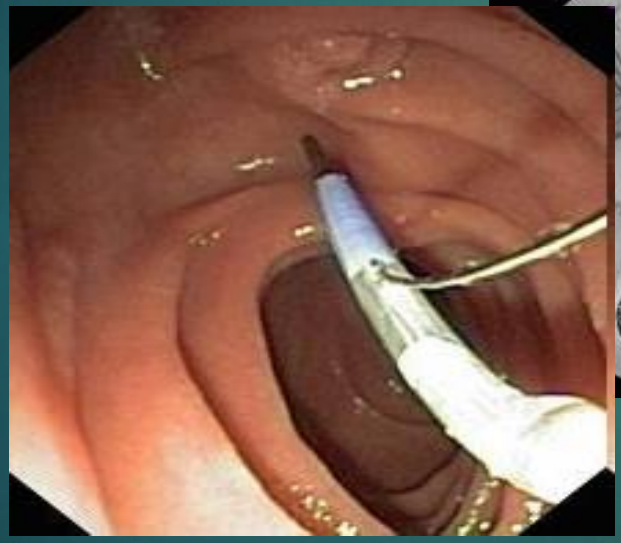
- Most common cause is obstruction of cystic duct by gallstones resulting in acute inflammation of the organ
- 90% is associated with cholelithiasis
- Bacterial infection is a secondary event
- Secondary bacterial infection can progress to empyema with or withouit perforation
- Acalculous cholcystitis represnets 5-10%

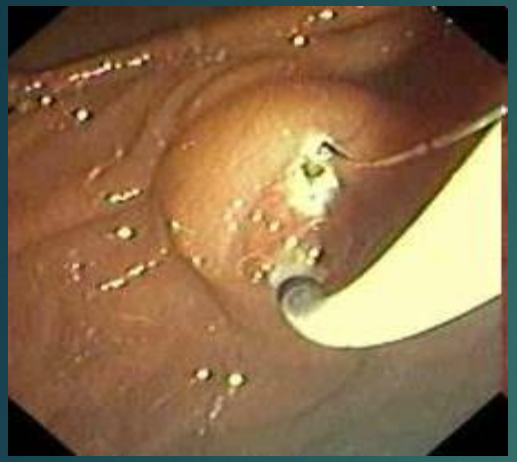
Acute cholecystitis

- Predisposing factors for acalculous cholcystitis
  - Major surgery
  - Critical ilness
  - Total parenetral nutrition
  - Extensive trauma
  - Burn related injury
- Pathogenesis of acalculous cholecystitis
  - Stasis
  - Ischemia
  - Chemical inflammation

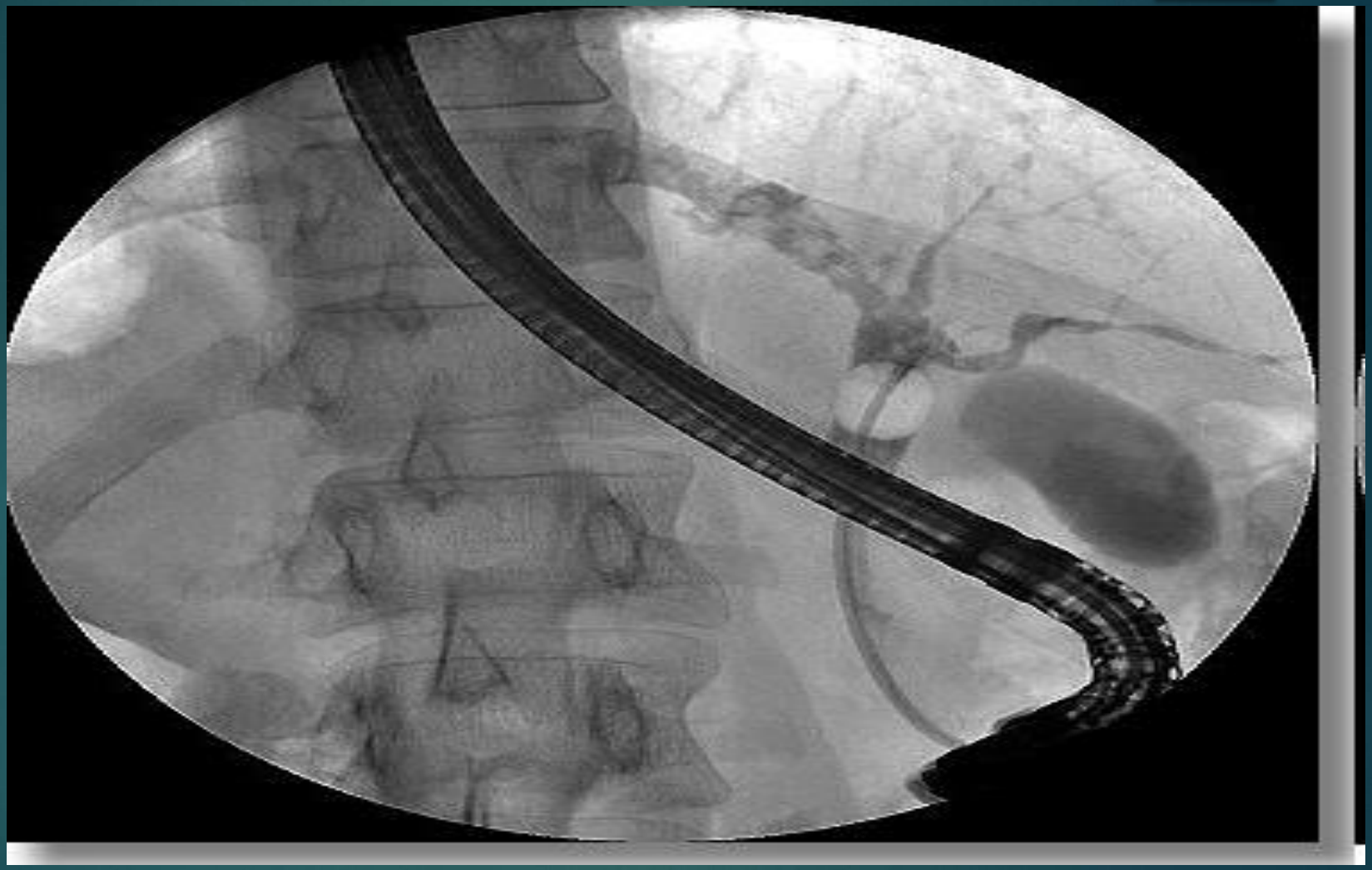
Acute cholecystitis- symptoms

- Pain lasting longer than 3 hours
- With time the intensity of pain may diminish but tenderness increases
- Vomiting
- Murphy´s sign
- jaundice





Stone extraction




www.medscape.com

Acute pancreatitis

- Etiology
  - Biliary tract stones
  - Ethanol abuse
  - Tumors
  - Infection
  - Drugs
  - Lipid abnormalities
  - Trauma
  - Idiopathic

  Biliary stones and ethanol account for 60-80% of causes of pancreatitis

Acute pancreatitis

- Drugs
  - Azathioprine
  - Thiazid diuretics
  - Furosemide
  - Ethycrynic acid
  - Sulfonamides
  - Tetracykline
  - Procainamide
  - Calcium
  - Estrogens
  - Methyldopa
  - 6-mercaptopurine

Acute pancreatitis

- Infections
  - Mumps virus
  - Coxackie virus
  - Mycoplasma pneumoniae
  - ascaris

Acute pancreatitis

- Trauma, surgery, ERCP
  - Common bile duct exploration
  - Sphincteroplasty
  - Gastrectomy
  - ERCP (1-2%)

Acute pancreatitis- clinical presentation

- Abdominal pain
- Nausea
- Vomiting

Acute pancreatitis- causes of hyperamylasemia

- Pancreatic:
  - Pancreatitis
  - Pancreatic pseudocyst
  - Pancreatic abscess
  - Pancreatic cancer
  - Pancreatic duct obstruction

Acute pancreatitis- causes of hyperamylasemia

- Nonpancreatic intra- abdominal
  - Perforated viscus
  - Mesenteric infarction
  - Bowel obstruction
  - Cholangitis
  - Cholecystitis
  - Appendicitis
  - Ruptured ectopic pregnancy
  - Ovarium cyst tumors
  - Renal failure

Acute pancreatitis- causes of hyperamylasemia

- Extra abdominal
  - Salivary gland trauma, tumors, duct obstruction, infection
  - Lung cancer
  - Diabetic acidosis
  - Cerebral trauma
  - Thermal burns

Ileus and obstruction

- Mechanical obstruction
- Adynamic ileus

Splanchnic ischemia syndromes

- Arterial occlusion
  - Embolism 15-40 cases
  - Thrombosis 15-65%
- Venous occlusion
  - Hypercoagulable states
  - Venous obstruction
  - Low splanchnic blood flow
  - Bowel obstruction
  - Trauma
  - vasospasm

Splanchnic ischemia syndromes

- Clinical features
  - Abdominal pain
  - Bloody diarrhea
  - Tender abdominal mass
  - peritonitis

Splanchnic ischemia syndromes

- Diagnosis
  - Plain radiograph
  - arteriography