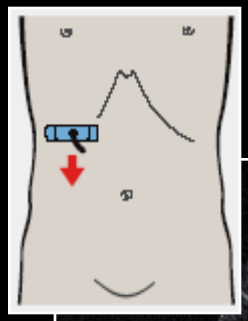
Prof.dr Simon Nikolić
opšta medicina

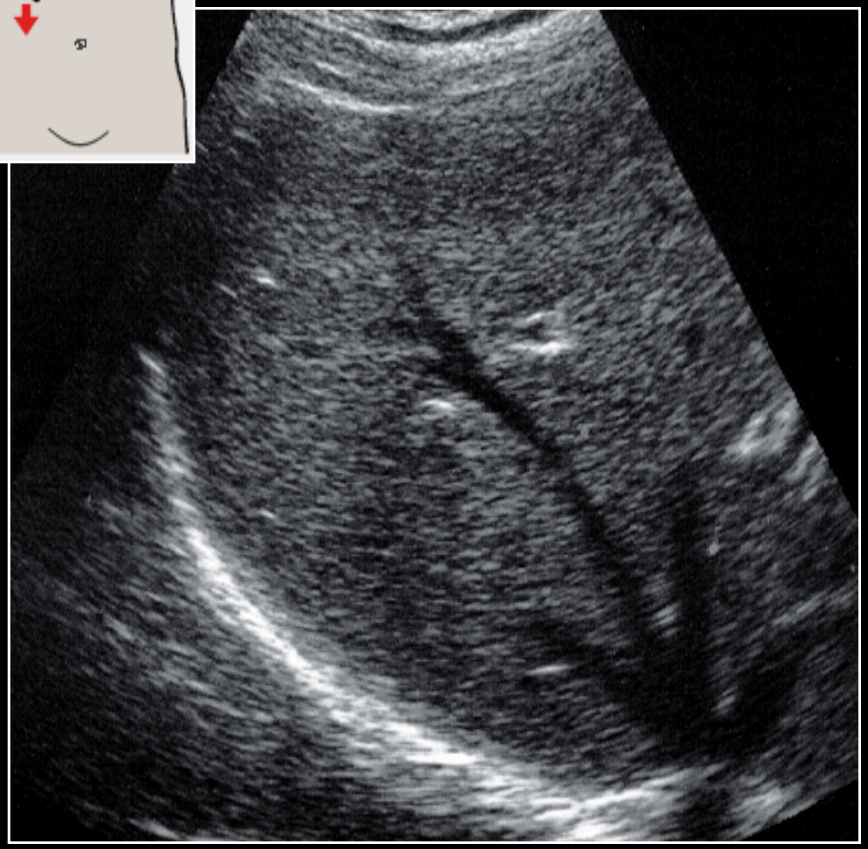
Radiološka dijagnostika hepatobilijarnog sistema i pankreasa

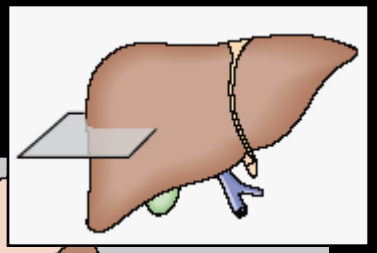


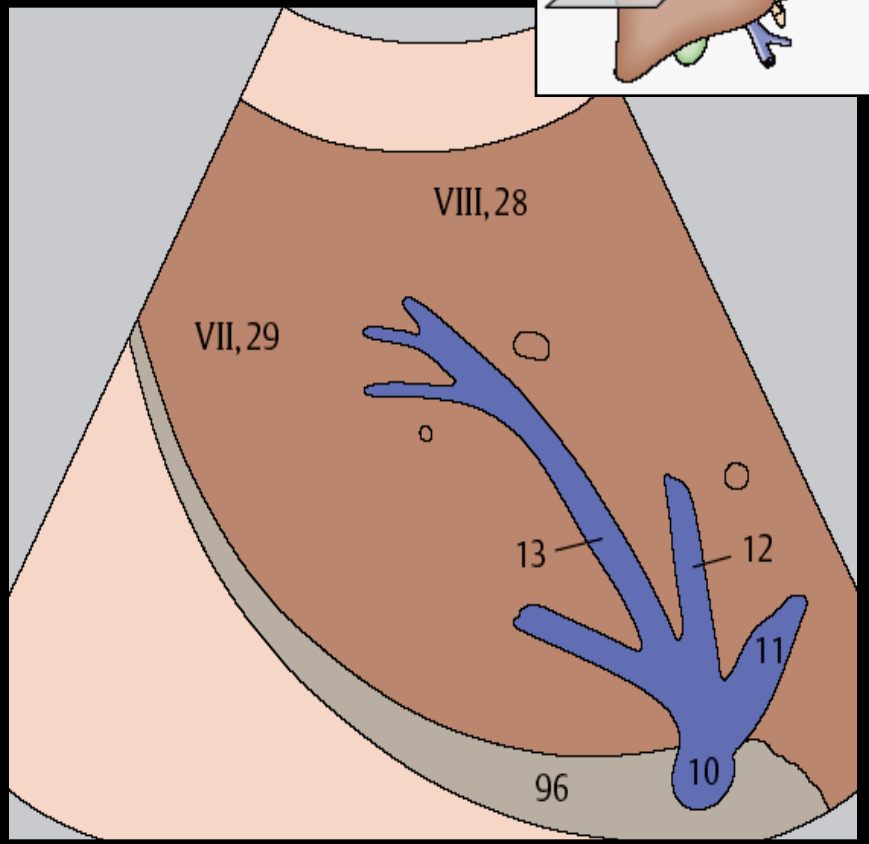
MMXV

Jetra UZ

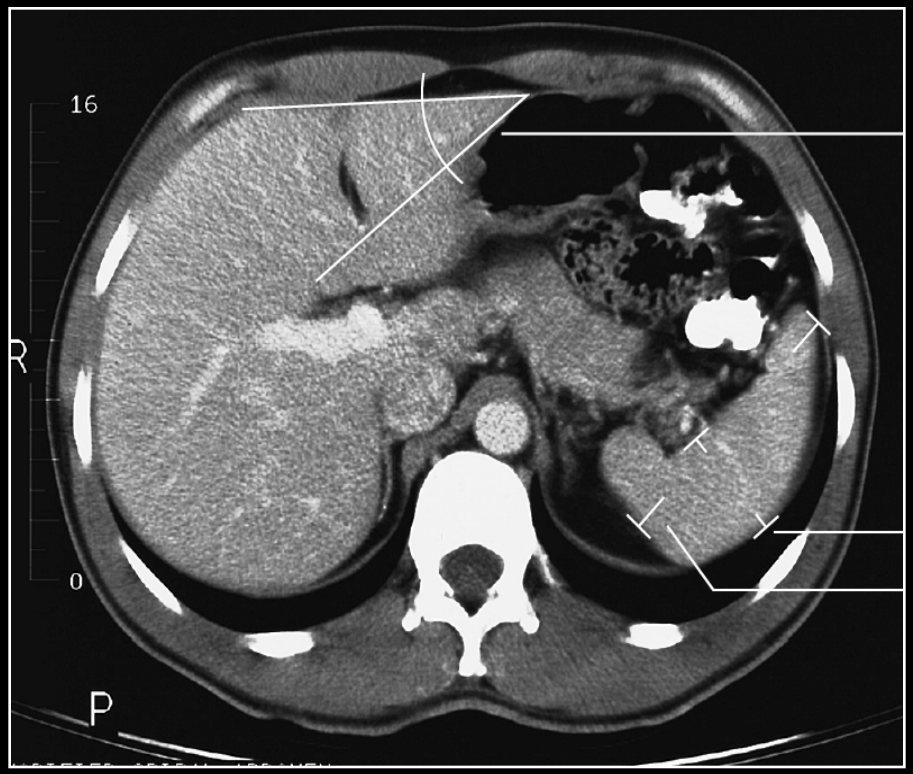








Jetra CT



- Položaj neposredno ispod desne hemidijafragme
- Veličine ugao l.lobusa 45^0
- oštre Konture
- Homogene strukture parenhima bez fokalnih abnormalnosti
- Denziteta 65 ±10 HU

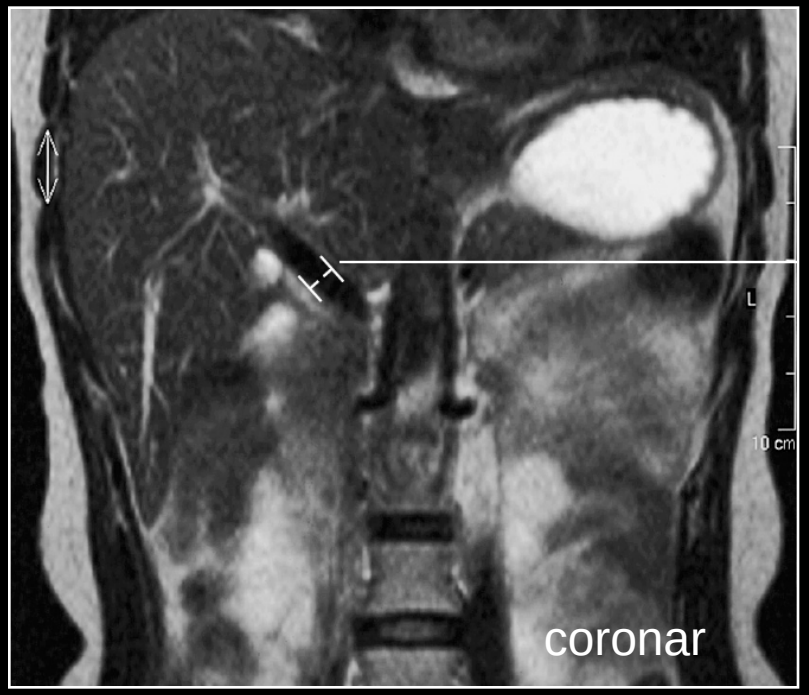
Intrahep. ž.putevi centrifugalno raspoređeni

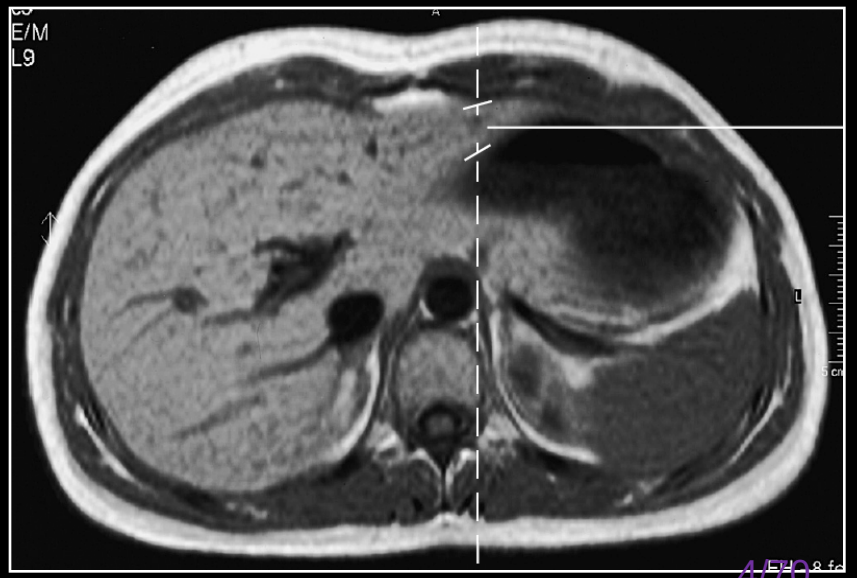
- širine (vide se neposredno nakon davanja K.S.)
- nema kalkulusa ni vazduha

Jetra MRI



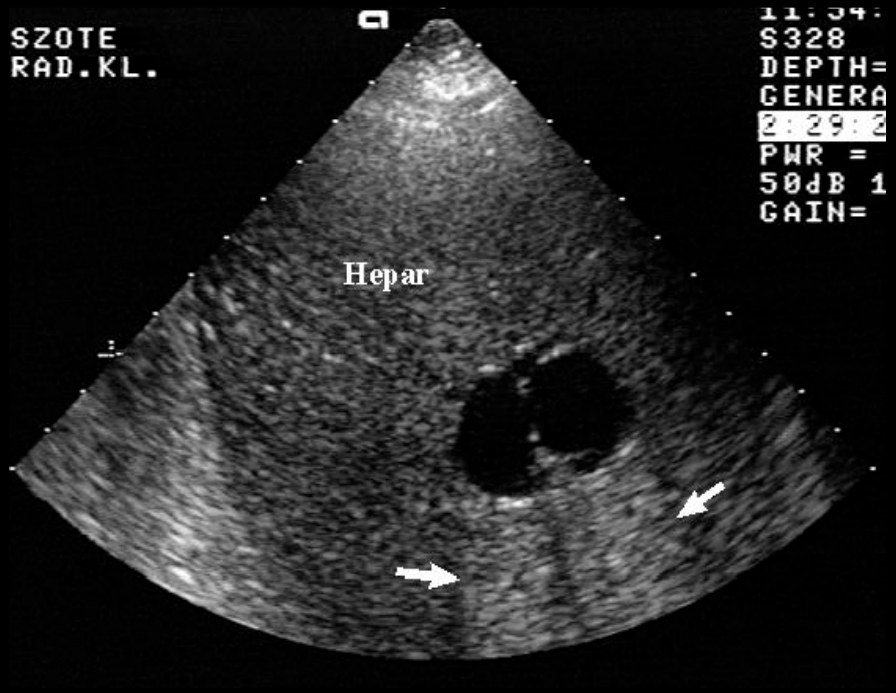
sagital





T1W axial

Cystis hepatis



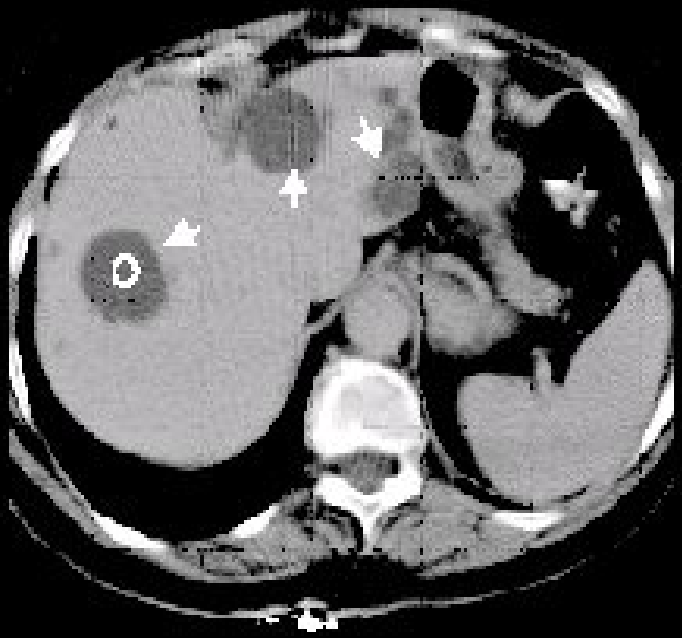
Bilijarnog porekla u 2,5% ljudi

- ovalne
- anehogene sa distalnim pojačanjem
- septirane ili ne
- jasno i oštro ograničena

Kreću zajedno sa pokretima jetre

Veoma velike

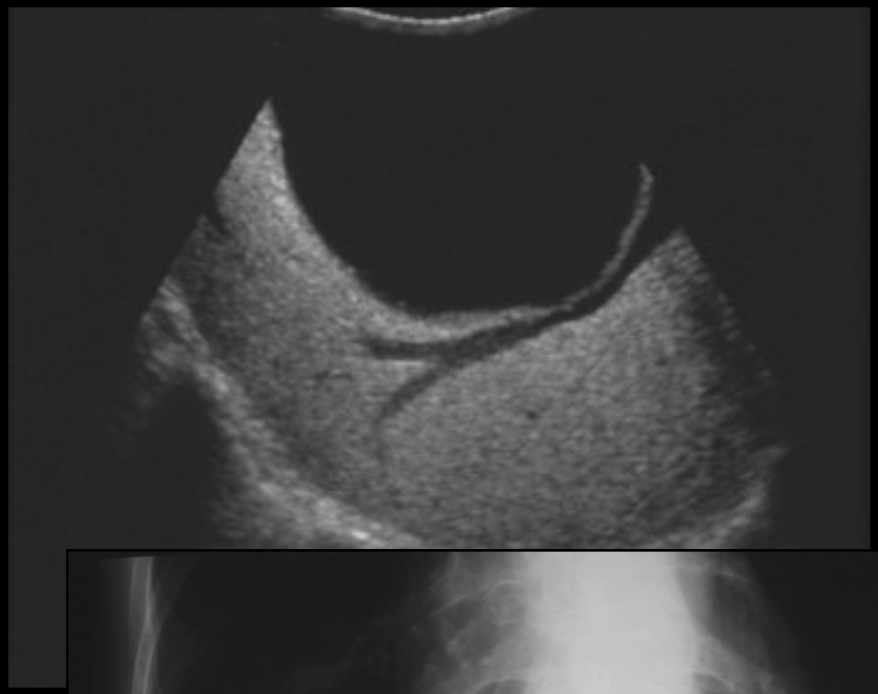
- th punkcija i sklerozacija
- (bistra tečnost boje ćilibara)



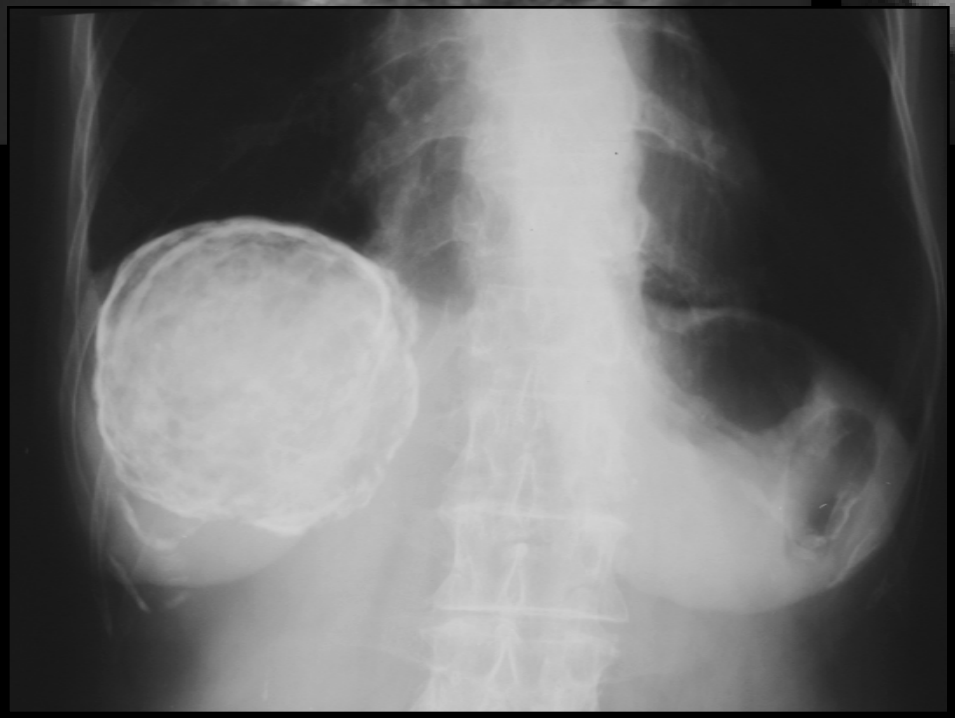
CT abd. presek kroz jetru prozor za meka tkiva sa kontrastom

- multiple promene u jetri
- kružnog Oblika
- Veličina mm
- Hipodenzne 5-10 HU
- Homogene
- jasno i oštro Ograničene

Dif.dg. policistična bolest







Ehinokokna cista

solitarna
US dvostruka membrana
multilokularna sec.infekcija

zidovi sa kalcifikatima

Haemangioma



Nastaju

- poremećajem koagulacije
- antikoagulantni lekovi
- trauma povlače se za nekoliko nedelja ograničeni zonom kontuzije

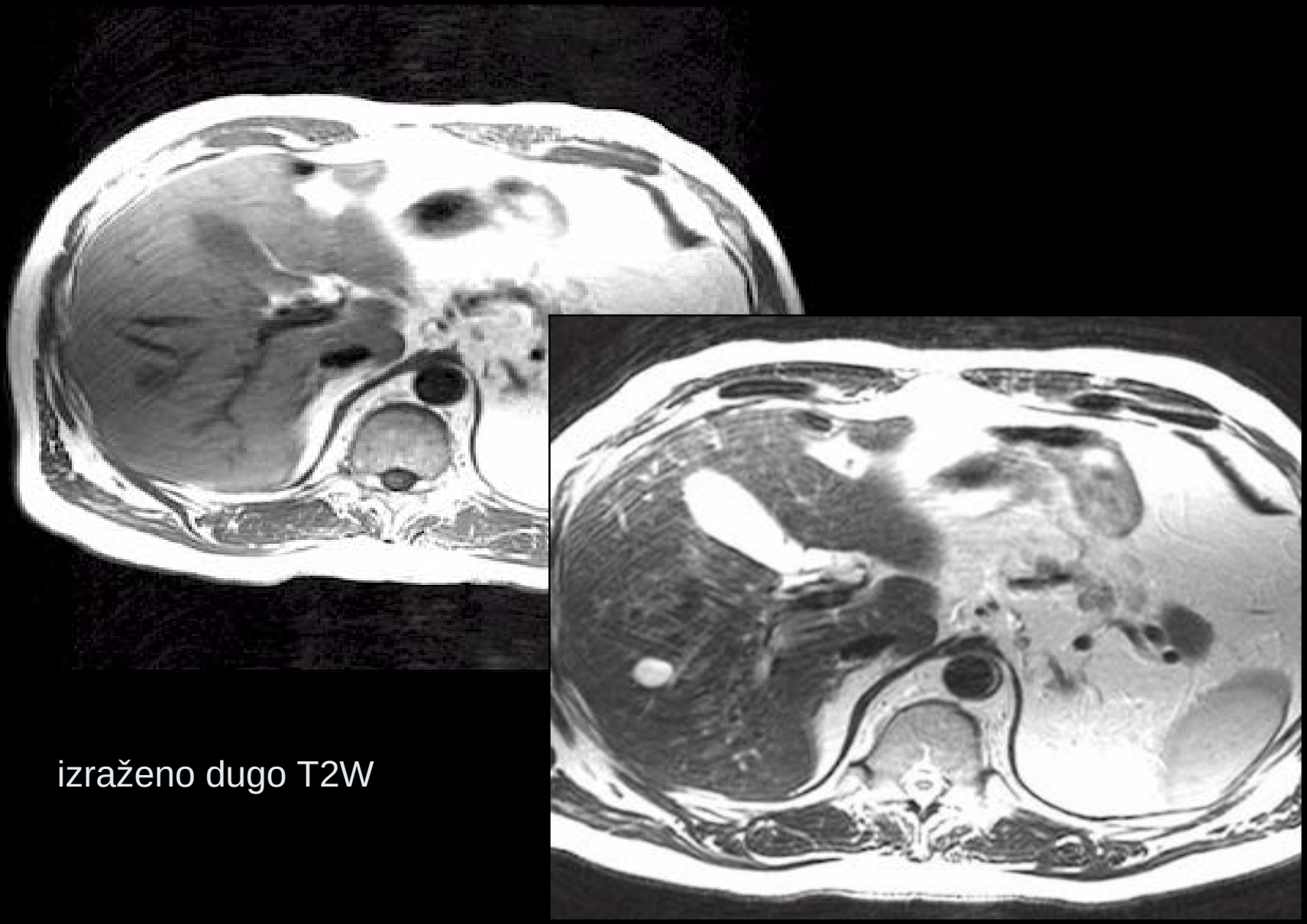
Sveži anehogeni (ređe vide)

Stariji hiperehogeni,
jasno ograničeni

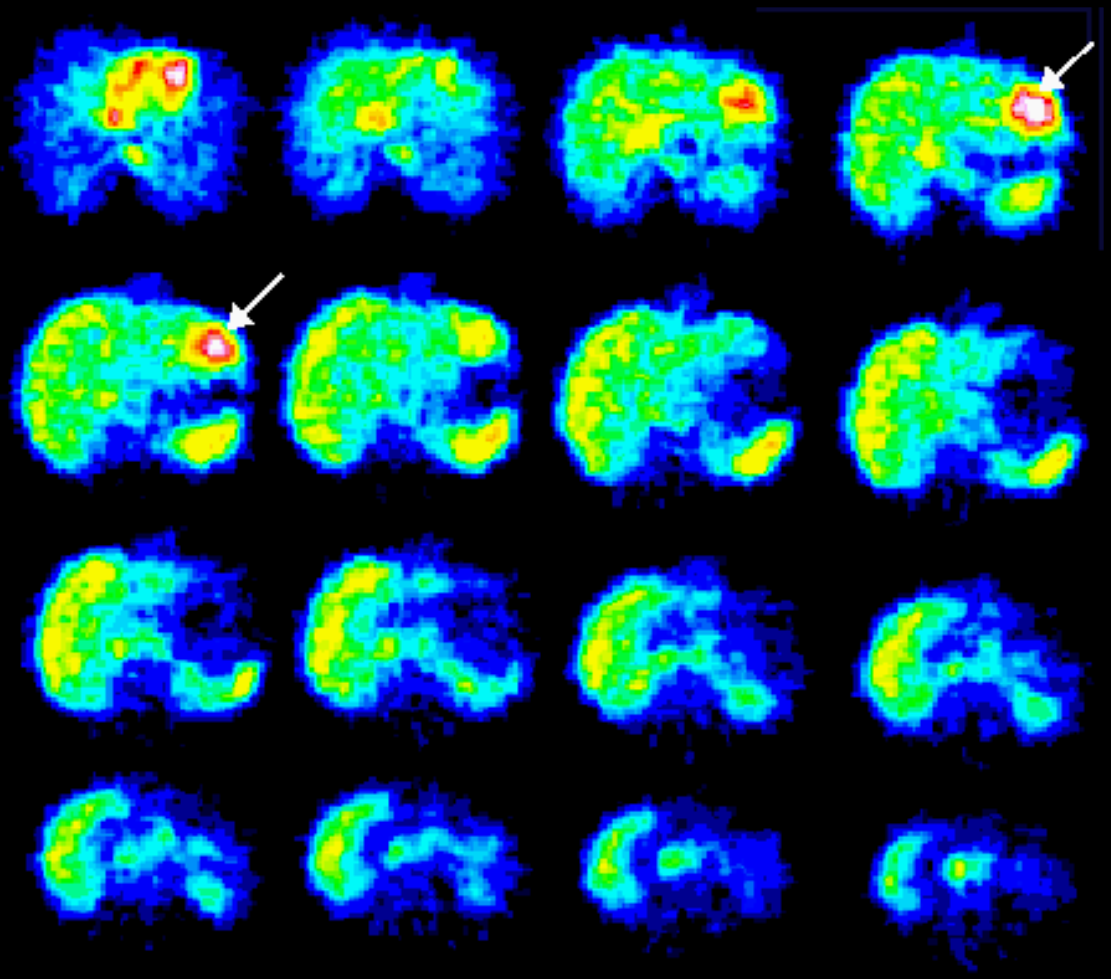


CT abd. presek kroz jetru
prozor za meka tkiva
sa kontrastom

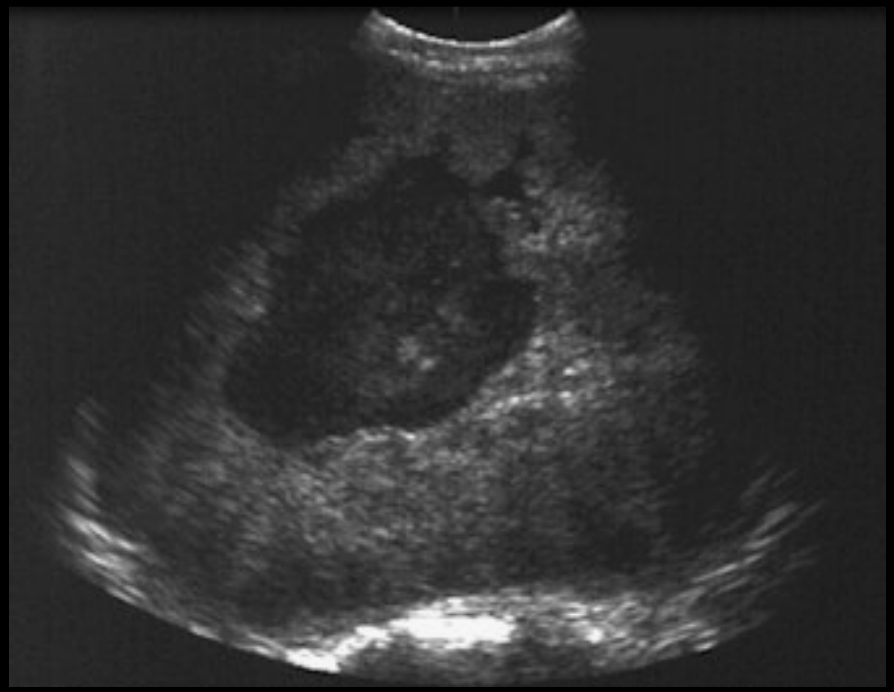
- više promena u jetri
- kružnog Oblika
- Veličine mm
- Hipodenzan u celini
  Nakon aplikacije KS
  u početku hiperdenzni rub
  nakon 2-5 min. hiperdenzan u celini
- neHomogene
- jasno i oštro Ograničene



izraženo dugo T2W



Ca hepatocellulare



Forme:
solitarni
multipli nodusi
fuziformni oblik

Solitarna forma

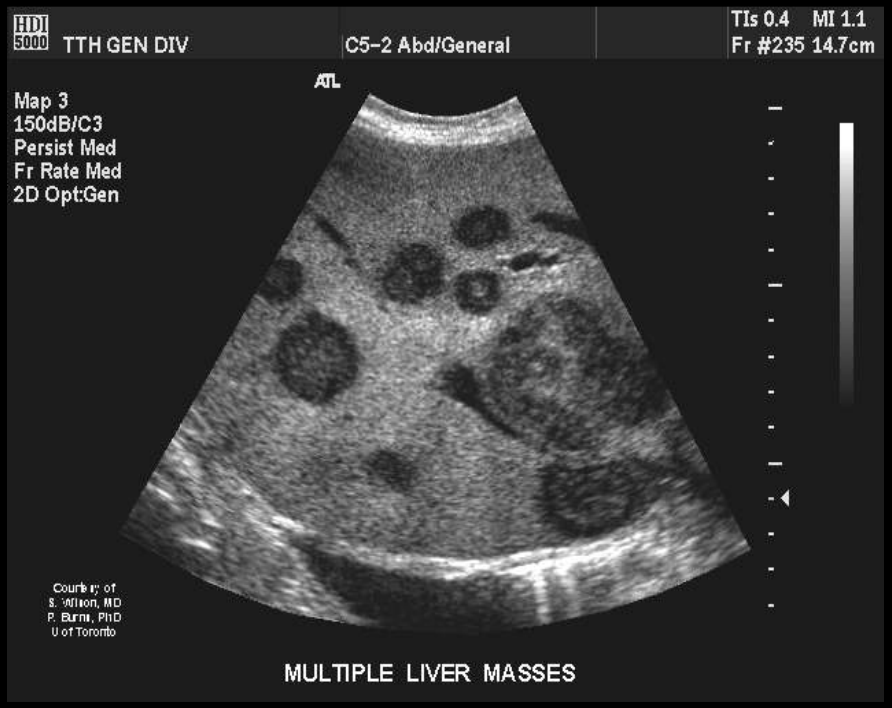
- Nepravilnog oblika
- Heteroehogen centralno Hipoehogena rubno
- dosta jasno ograničen



CT abd. presek kroz jetru
prozor za meka tkiva
sa kontrastom

- više promena u jetri
- nepravilnog oblika
- Hiperdenzan
  anarhična kaptaža ks.
- neHomogene
- neoštro ograničena

Metastaze



UZ abd. uzdužni presek kroz jetru

"Bivolje oko"

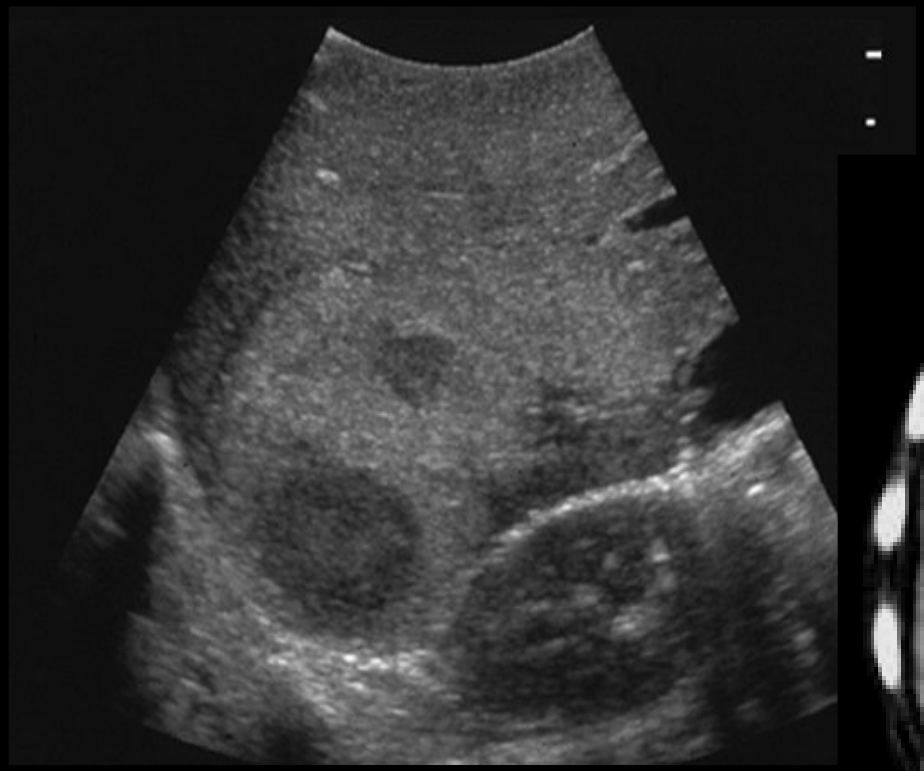
- više promena u jetri
- kružnog oblika
- hiperehogena u cenru sa hipoehogenim rubom
- neHomogna
- jasno ograničena

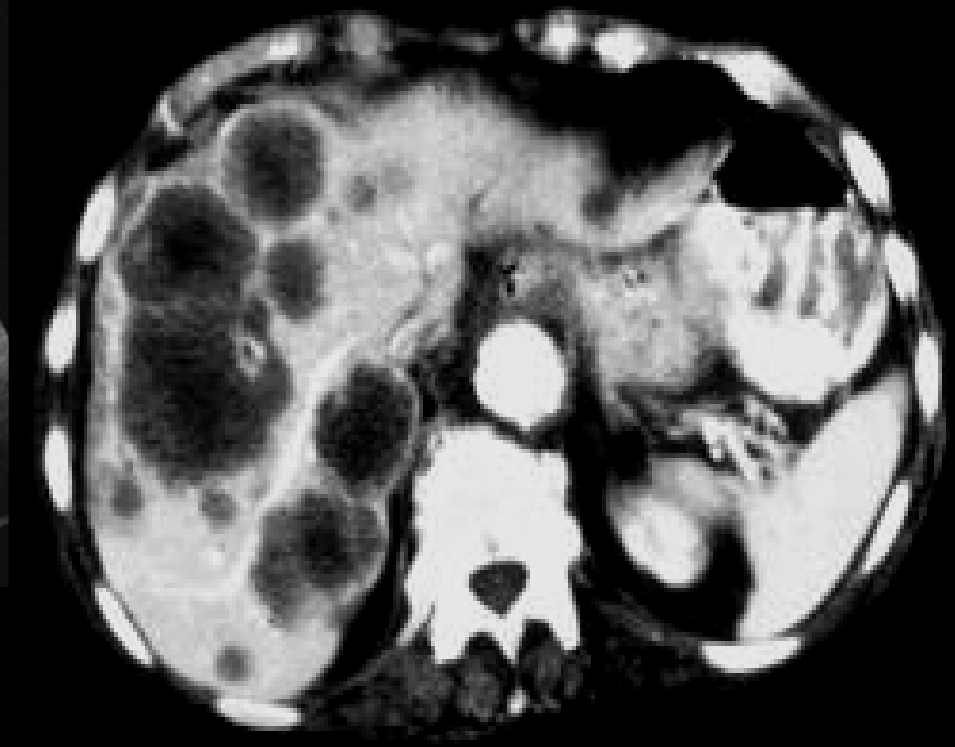


CT abd. presek kroz jetru, prozor za meka tkiva, bez kontrasta

Multiple

- multifokalno u jetri
- kružnog oblika
- hipodenzne
- neHomogene
- neoštro ograničene





Mešoviti tip

- multifokalno
- hipodenzne, nehomogene, neoštro ograničene
- KS u obliku nepravilnog prstena

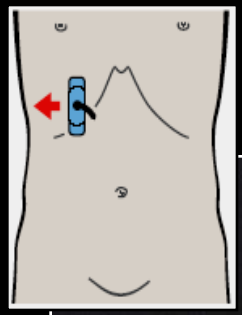
Jetra u celini izmenjena, polilobulirane konture

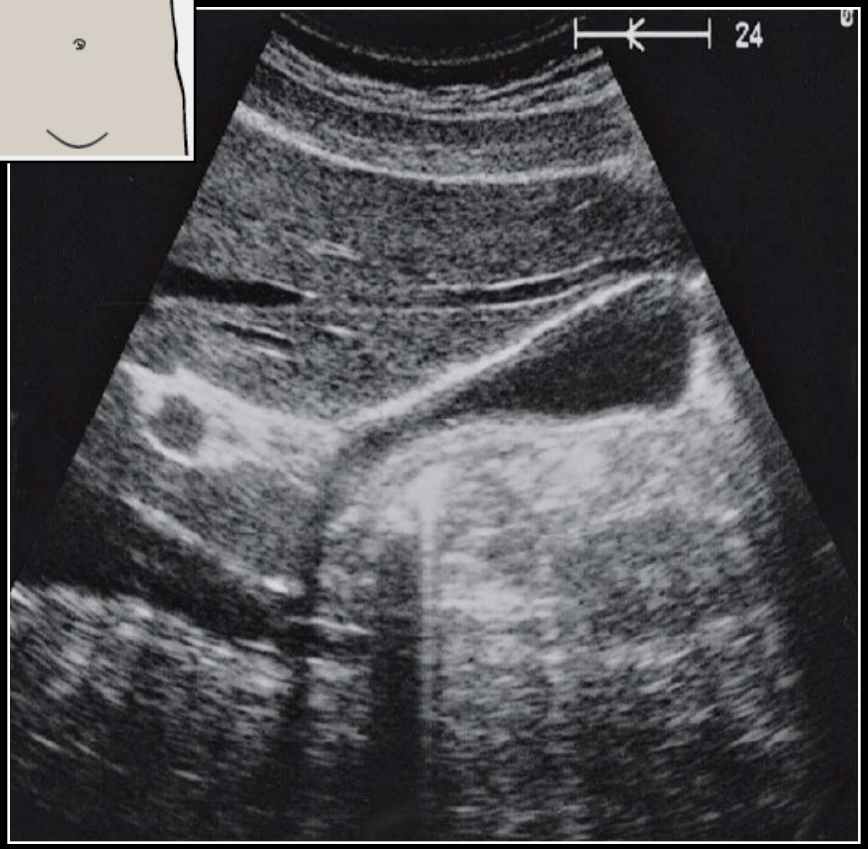
Cirrhosis hepatis

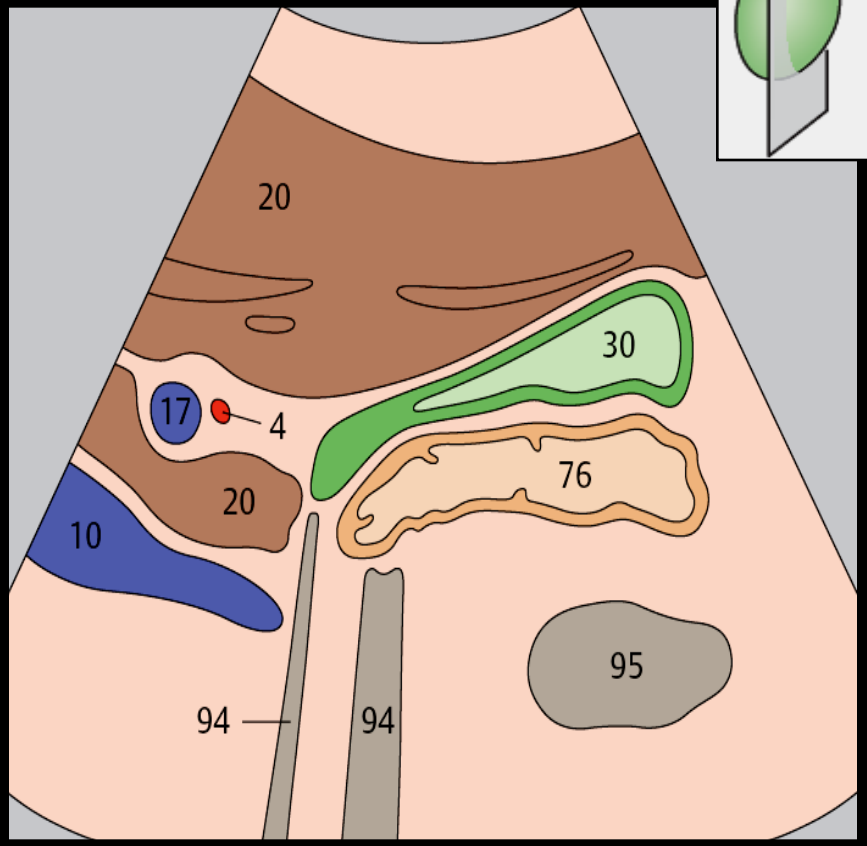


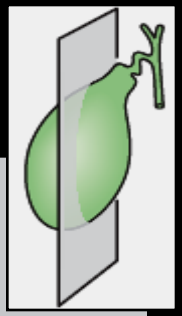
- Početna faza
  hepatomegalija, hipodenzna
- Kasna faza
  smanjena, talasastih kontura, ascit

Žučna kesa UZ

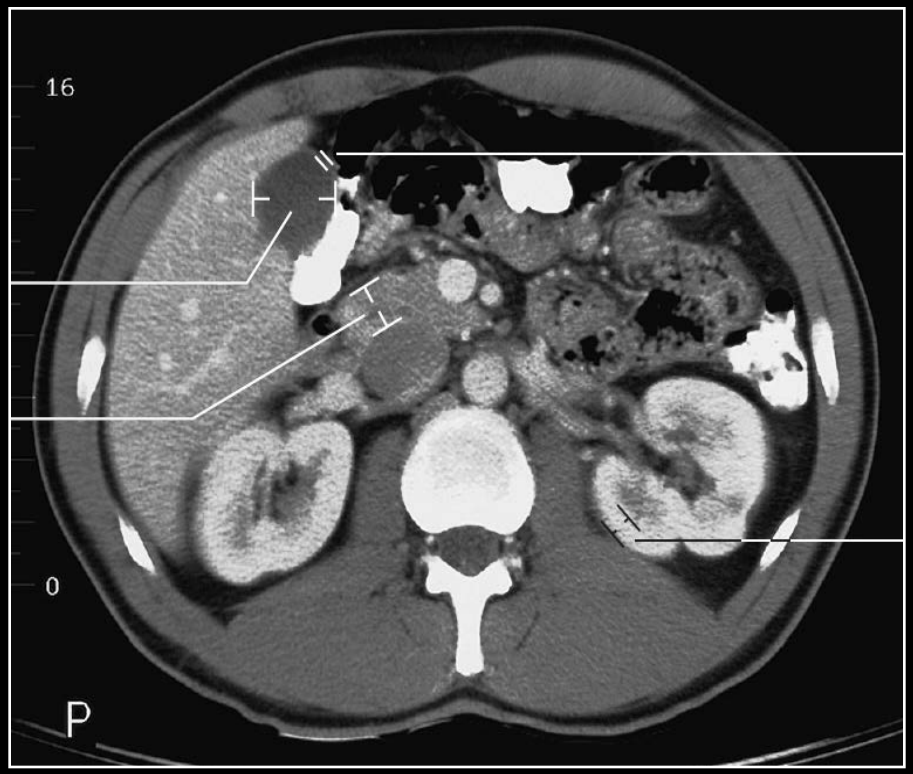








Žučna kesa CT



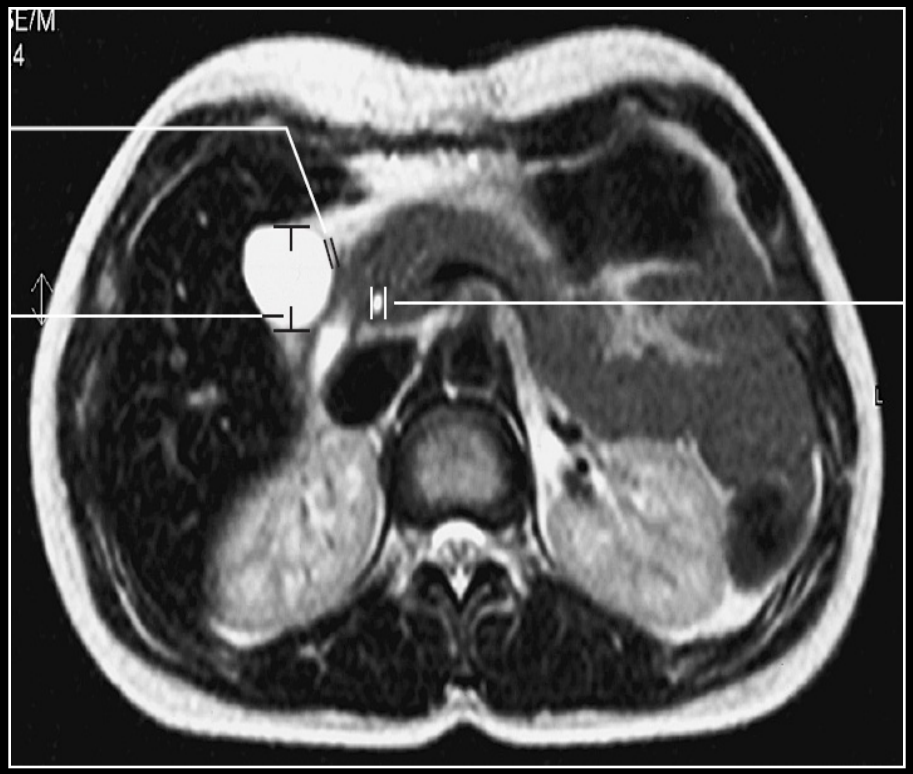
- Veličina 5 cm
- oštrih Kontura
- debljina Zida 3 mm
- Denzitet fluida 0-25 HU

Ext.hepatini ž.putevi

- pravac pružanja od porte hepatis do pankreasa
- širine ≤ 8mm

holecistektomija ≤ 10mm nema kalkulusa ni vazduha

Žučna kesa MRI



- Veličina 5 cm
- oštrih Kontura
- Debljina zida 3 mm
- Sadržaj žk. homogen, signal fluida intenzivan, (bez defekata kalkulusa ni gasa)
- Nema periholecističnog fluida

Promena oblika





Frigijska kapa

Holecistitis



<u>Acc</u>

iznenadna opstrukcija i distenzija organa.

Žuč toksično deluje na zid, upala sa obilnom sekrecijom mukusa.

Distenzija >5 cm

Edem zida >4 mm

Celularna infiltracija zida

Kamenci (do 96%) i mulj-detritus



Chr

ožiljne promene zida sa smanjenjem organa.

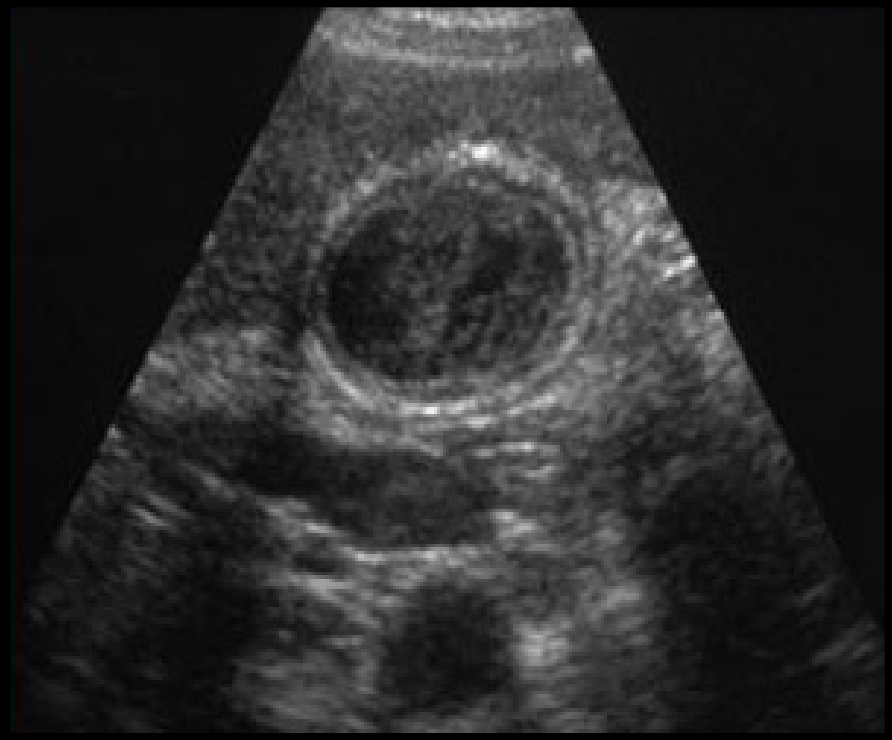
1. Opstrukcija kanala, resorpcija žuči sa dosta mukusa - Hidrops
2. Taloženje Ca-fosfata u zidu "Porcelansa žk".

Maligna alteracija 12%

Polip



Karcinom

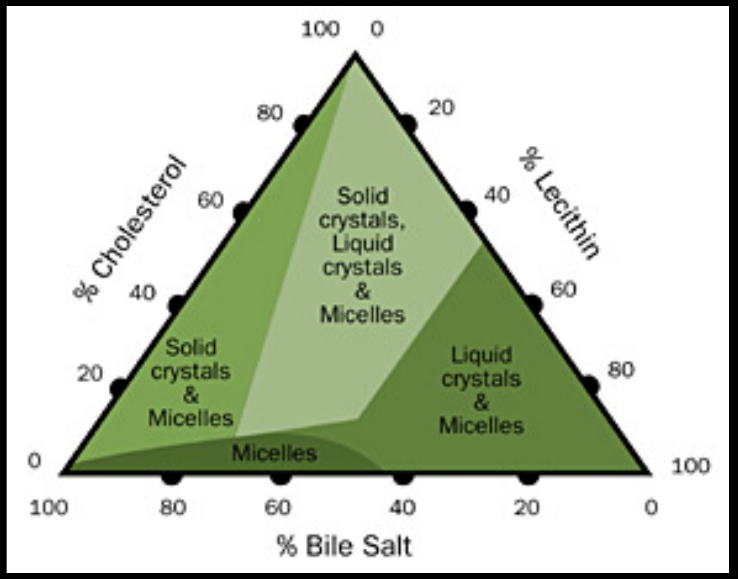


I. adenokarcinom
II. meta m.melanom

Asocijacija sa holelitijazom i chr.holecistitisom

Kalkuloza ž.k.



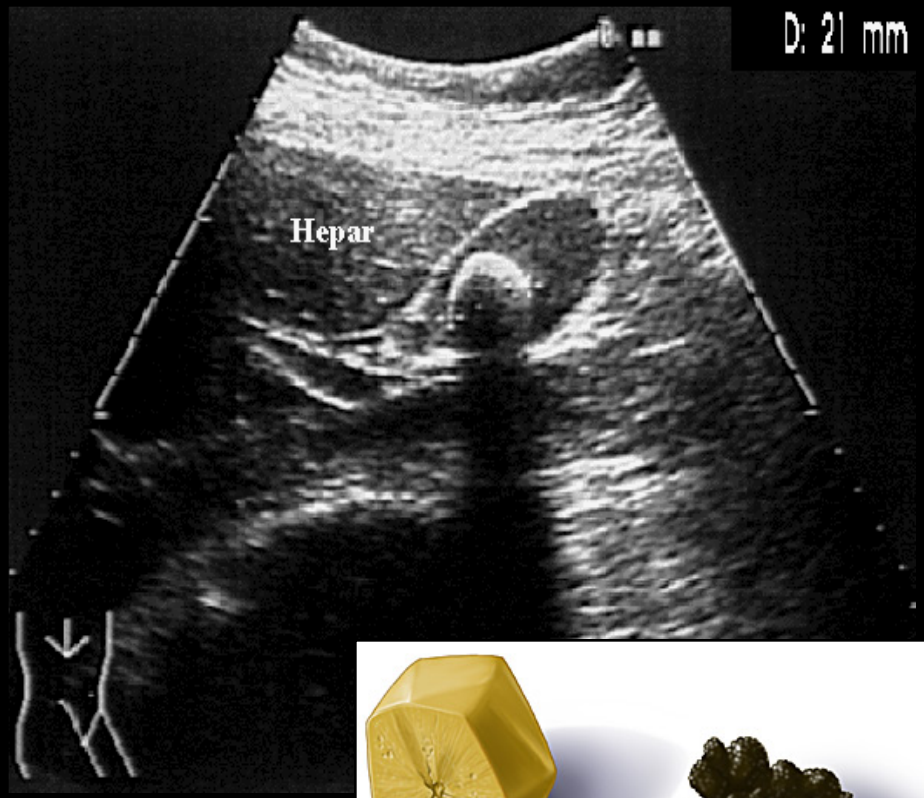


Litogena žuč

(višak holesterola u odnosu na ž.soli i lecitin)

+ lok.faktori

+ infekcija





Holesterinski

žutozelenkasti, slojeviti, mekotkivni

Bilirubinski

braon od Ca soli inkorporiranih u bilirubin, holesterol i mucin

Ca-karbonata

crni od kompleksa Ca, Cu i mucinoznog glukoproteina

mulj



Simptom
bilijarna kolika



PerOs holecistografija



Indikacije:

- Urođene anomalije
- Kalkuloza
- TU (polipi, adenomi)

Kontraindikacije:

- mlađi od 12 g.
- koronarna ob.
- hepato-renalni sy.,
- hipertireoidizam,
- bilirubin >5mg%,
- proliv, povraćanje.

Priprema:
Dan pre ručak od lako svarljive hrane.
17 č. tbl. Holevid, Biloptin 6 kom. na 10 min.
i ležati na desnom boku.
Sve do pregleda ne sme da uzima hranu.



Snimanje nakon 12-14 č.

<u>Boydenov orok</u>

2 tvrdo kuvana jaja, čokolada, maslac.

SubCut 10 ij Holecistokinin

Snimak nakon 35 min.

IV holecistoholangiografija

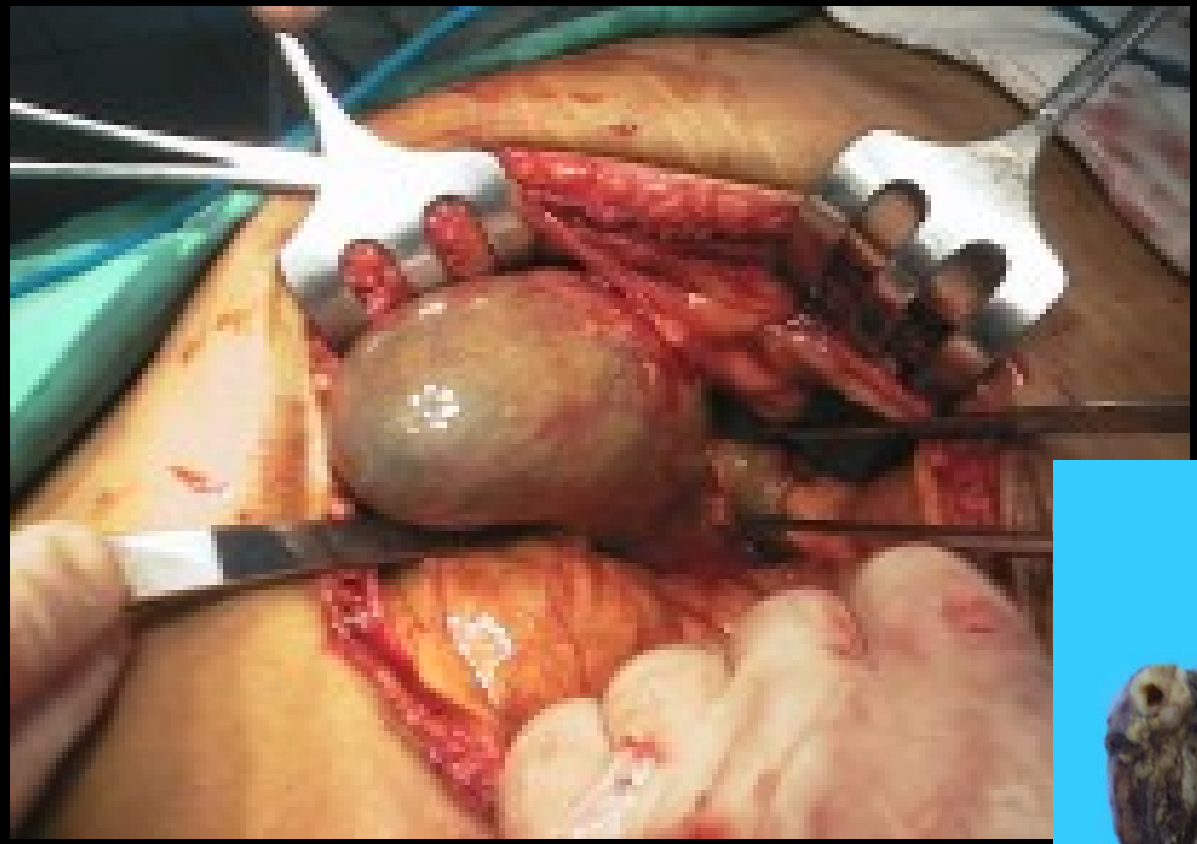




iv. 40ml Biligrafin, Endobil 35%

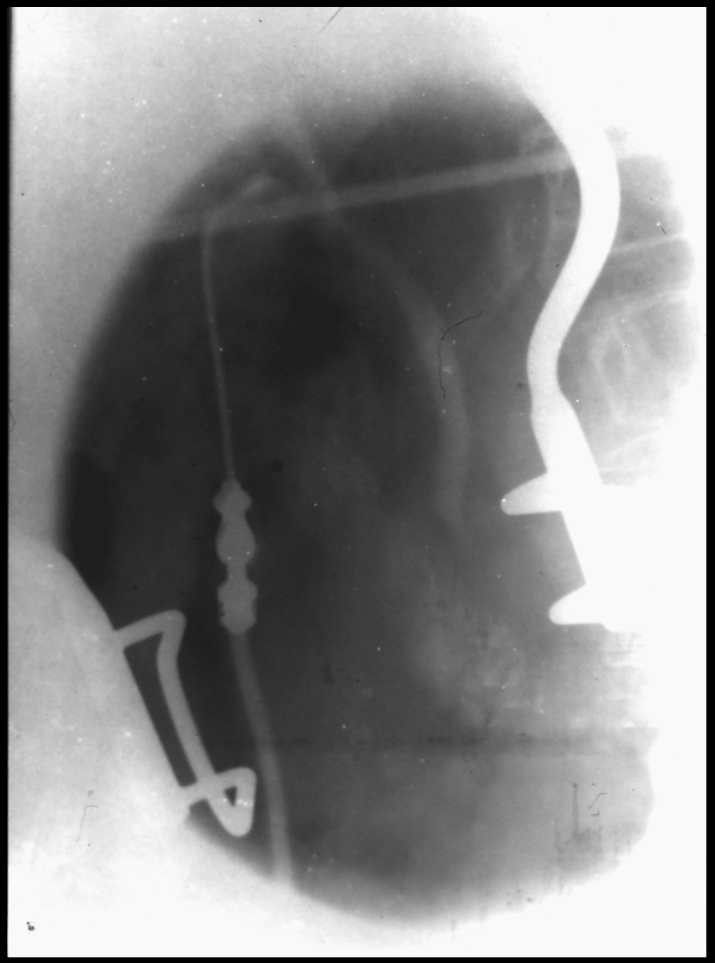
Snimanje

- za 30' u ž.vodovima
- za 60-100' u ž.kesi
- 45' nakon holagogog obroka
- dopunski nakon 24 č.





Intraoperativna holangiografija

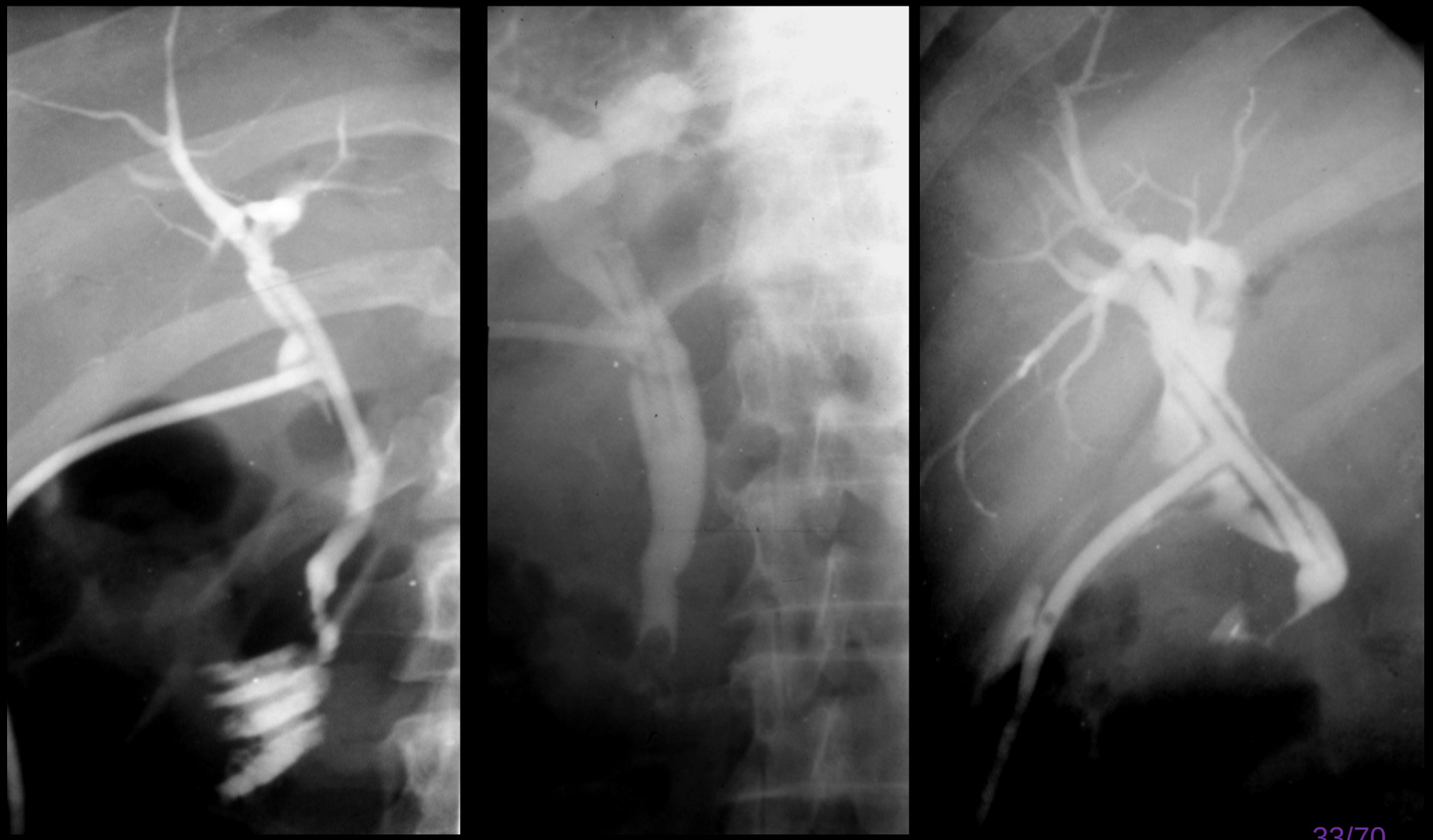


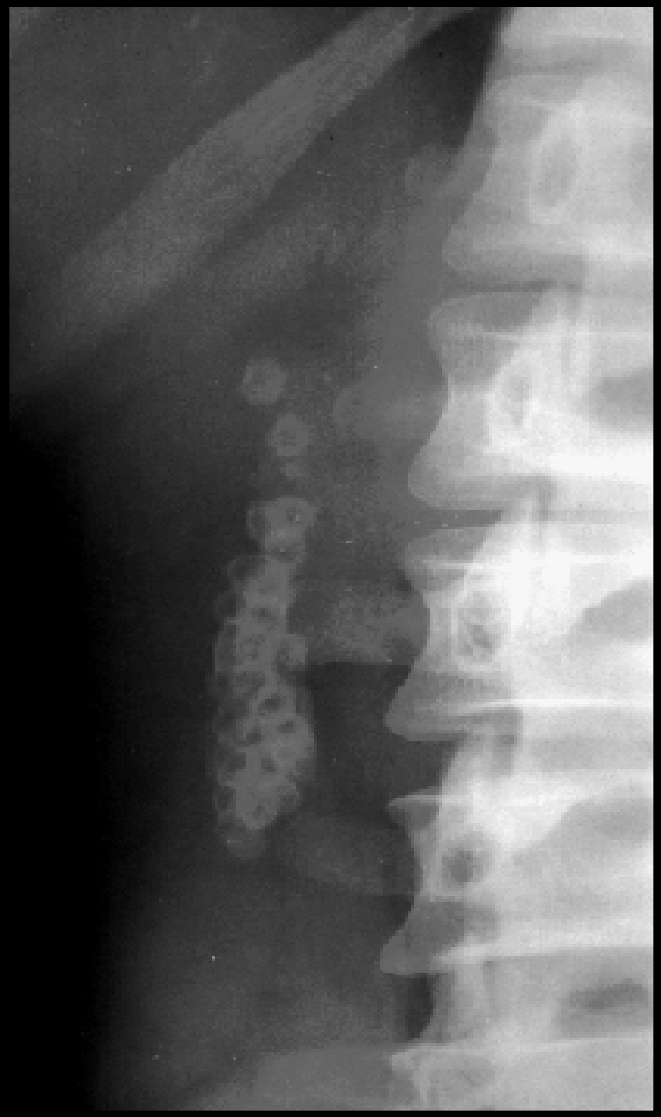
20-40 ml angiografskog ks 30%

Indikacije:

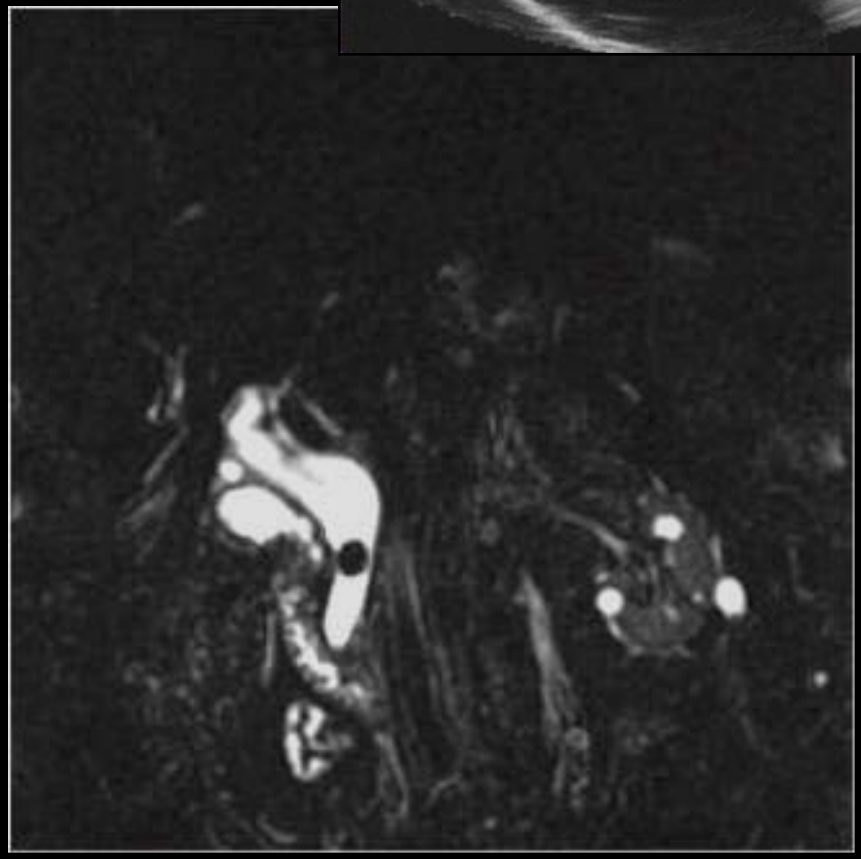
- kalkulusi u velikim vodovima
- manometrija-uvid u tonus Oddijevog sfinktera

Holangiografija "T" dren



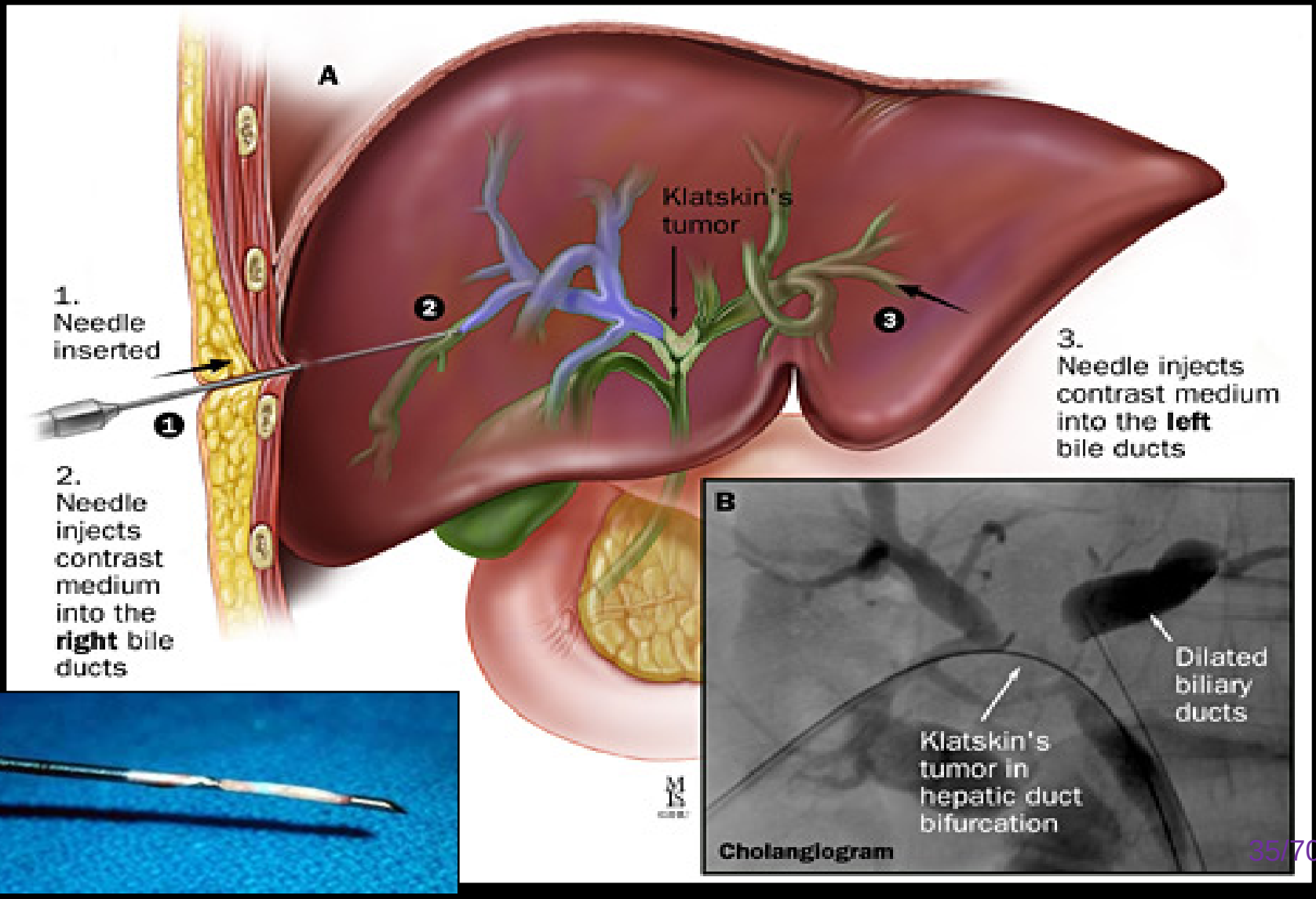


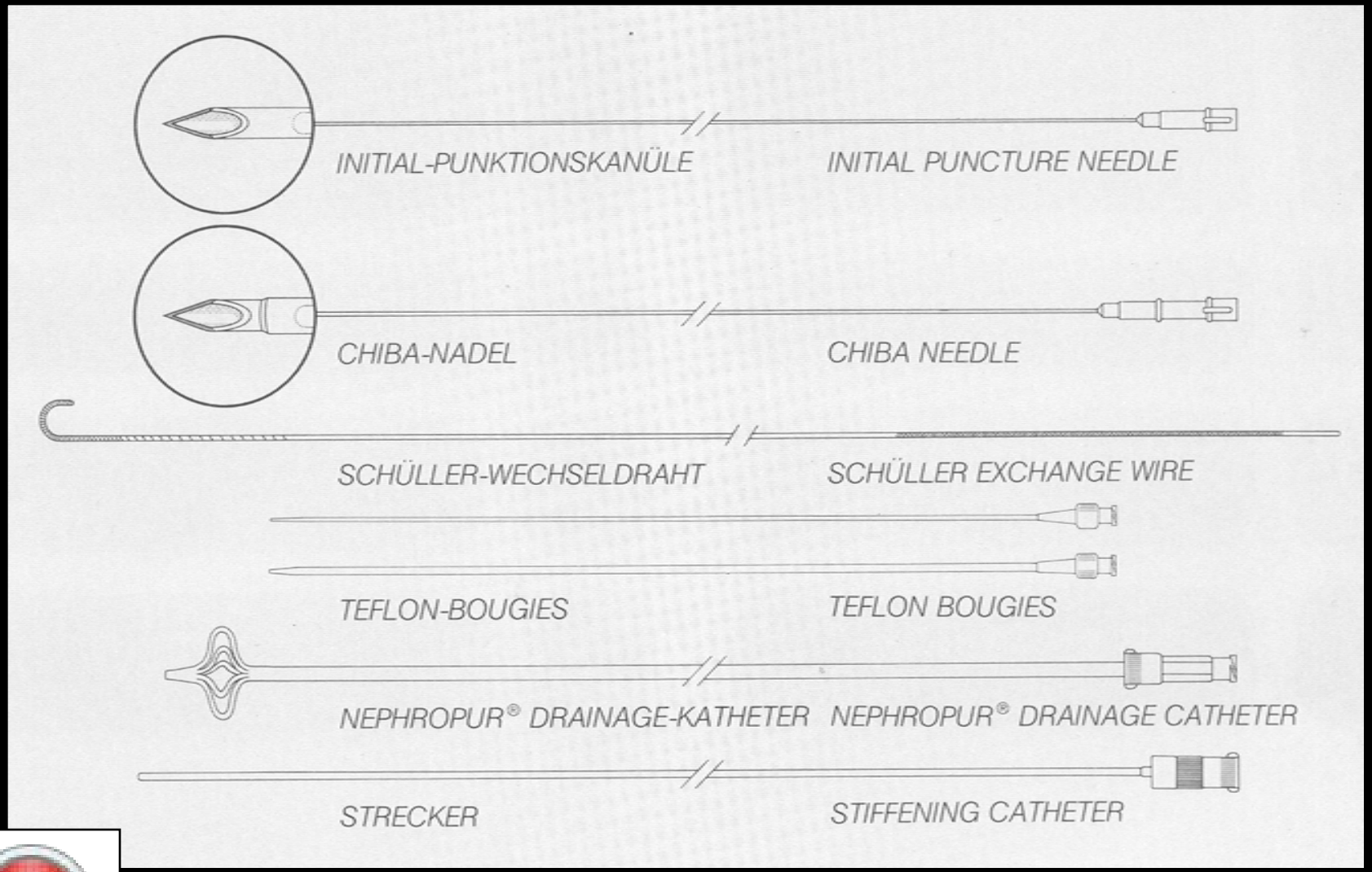




PTC

perkutana transhepatična holangiografija





15 cm promera 0,7 mm

Opstukcioni ikterus



Proširenje žučnih vodova (preko 1 mm) konvergiraju hilusu, vidljivi u celoj jetri.

"Fenomen dvocevke" izjednačava se širina duct.choledohusa sa v.porte



Indikacije:

- opstrukcija bilijarnog stabla sa visokim vrednostima bilirubina u serumu kada drugi dg. postupci nemogu da se primene

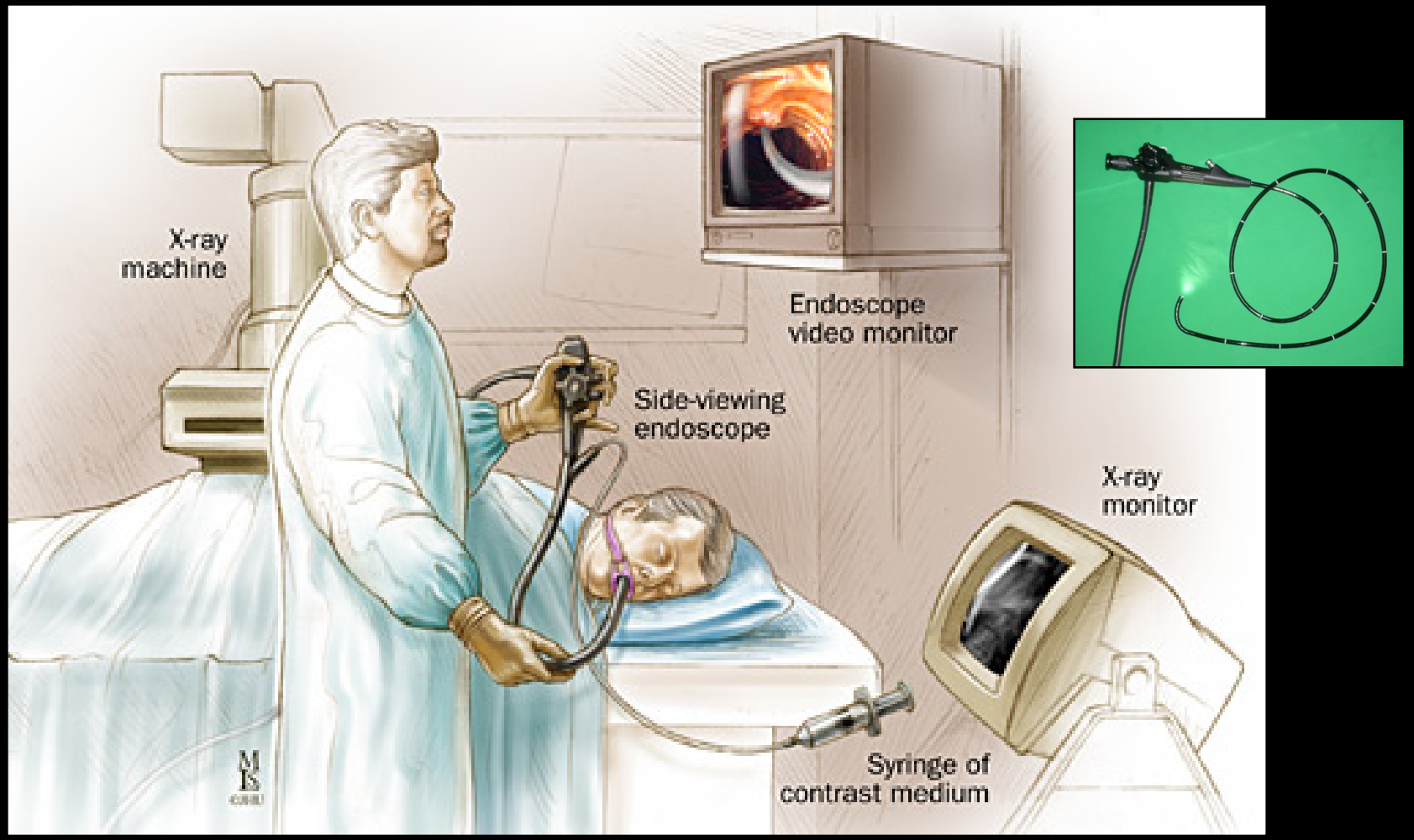


Komplikacije: (2%)

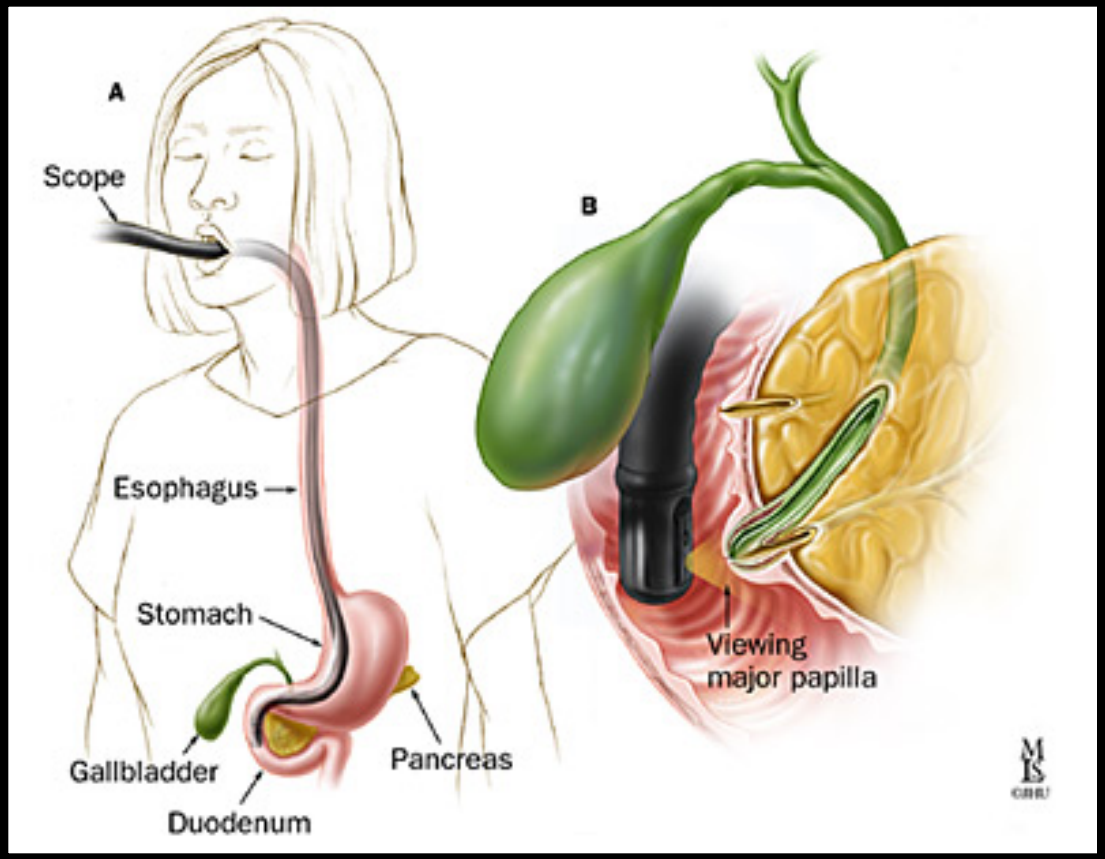
- pneumotorax
- krvarenje
- izlivanje žuči
- hemobilija
- bakterije u krvi

ERCP

endoskopska retrogradna holangiopankreatografija



Kombinovana endoskopska i rendgenološka metoda.

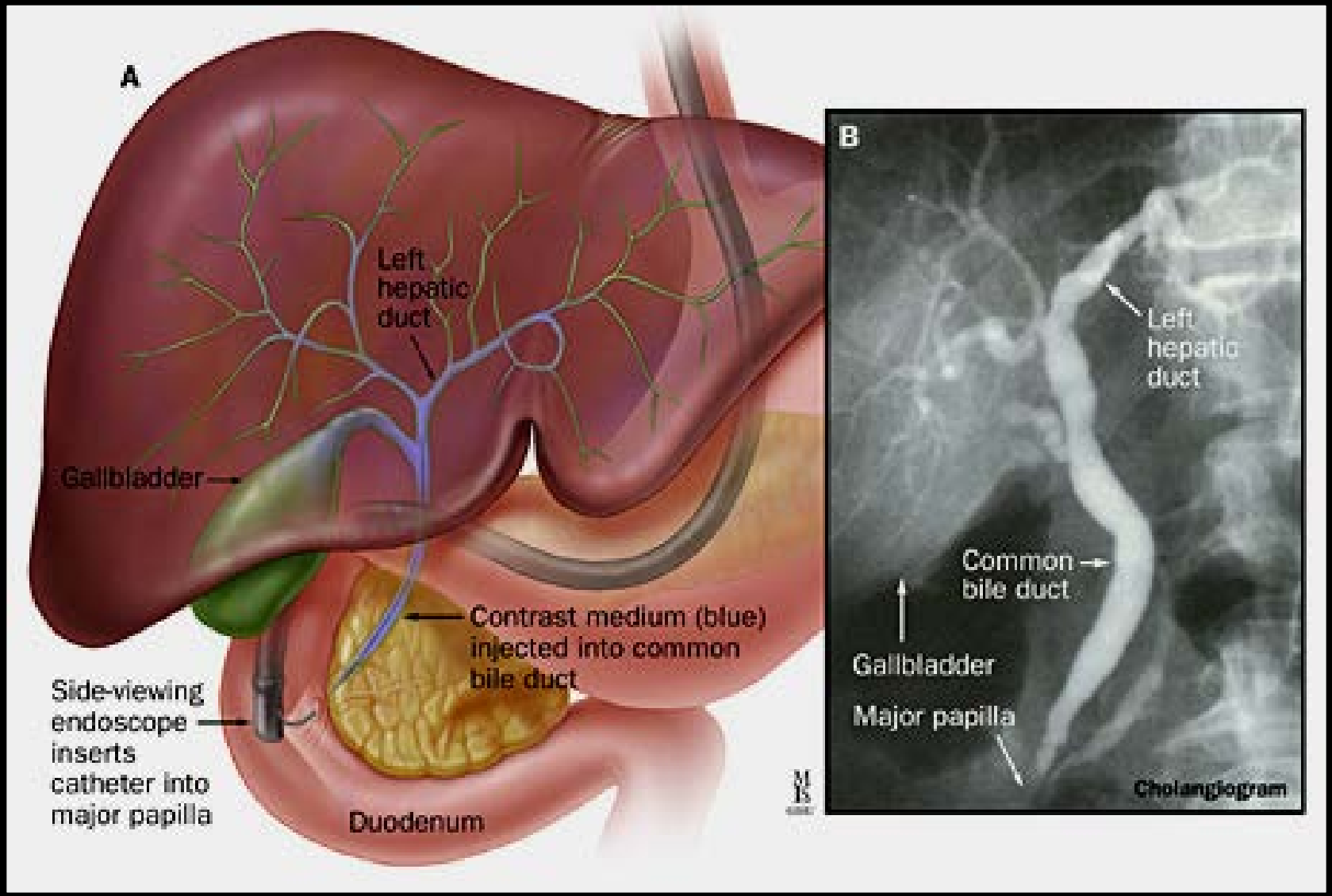


Indikacije:

- promene na amp. Vateri i Oddi-jevom sfinkteru
- oboljenja pankreasa
- ikterus nepoznate etiologije sa visokim vrednostima serumskog bilirubina

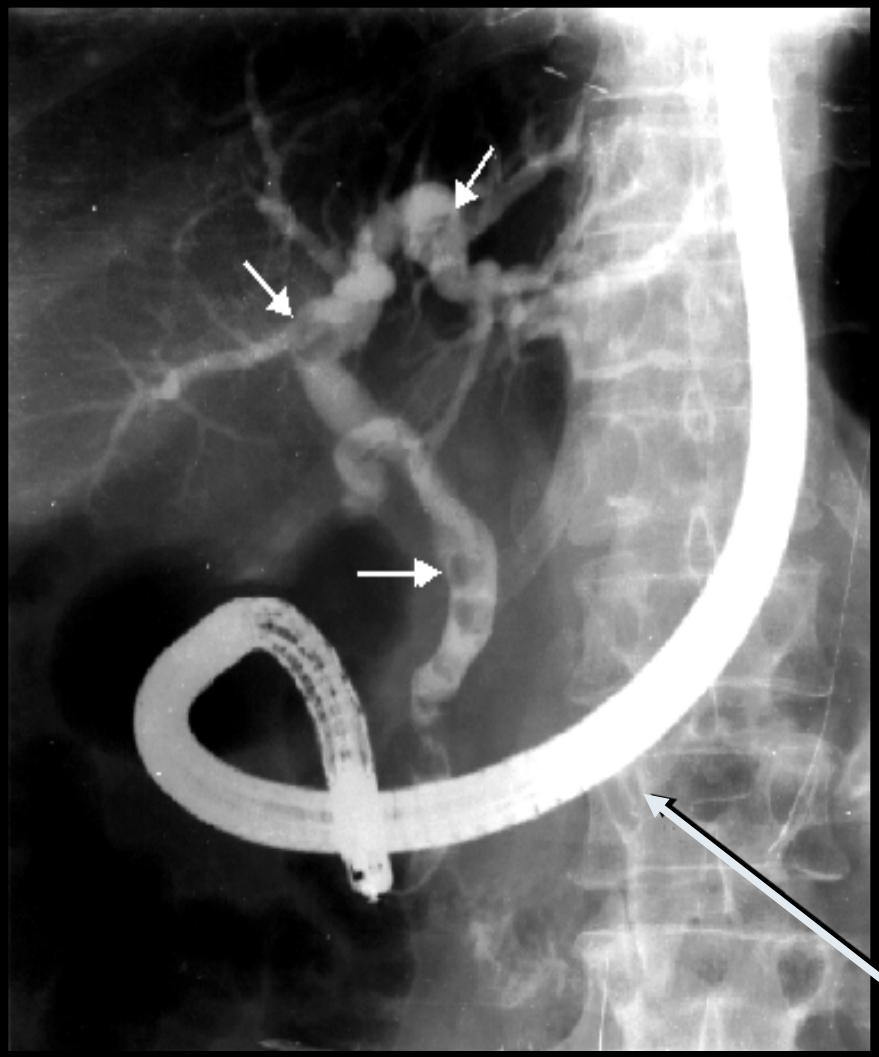
Kontraindikacije:

- stenoze jednjaka i pilorusa
- infarkt
- acc. pankreatitis

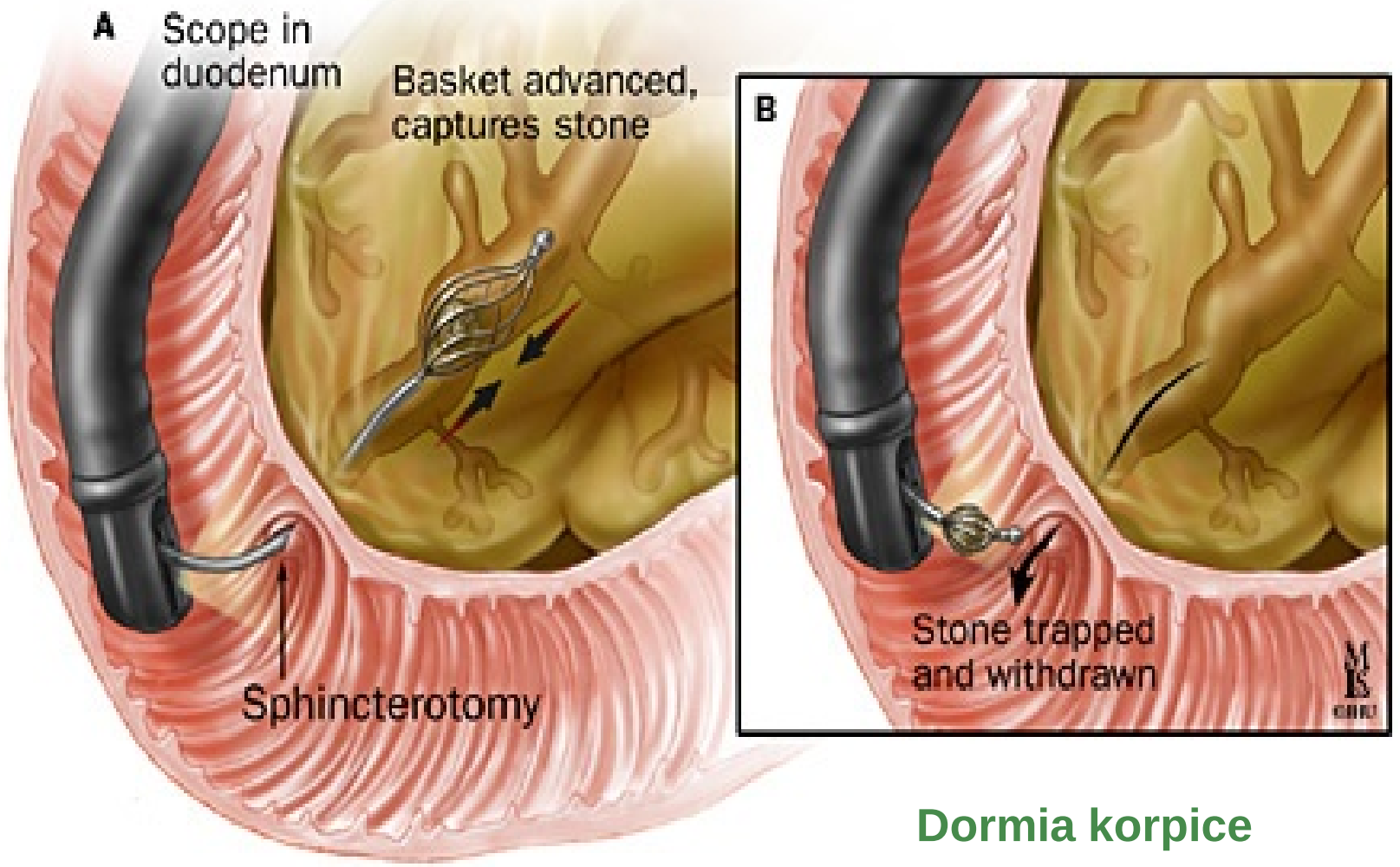


Kanulacija teflonskim kateterom
20-40 ml k.s. 30-60%

Kalkuloza duct.choledohusa

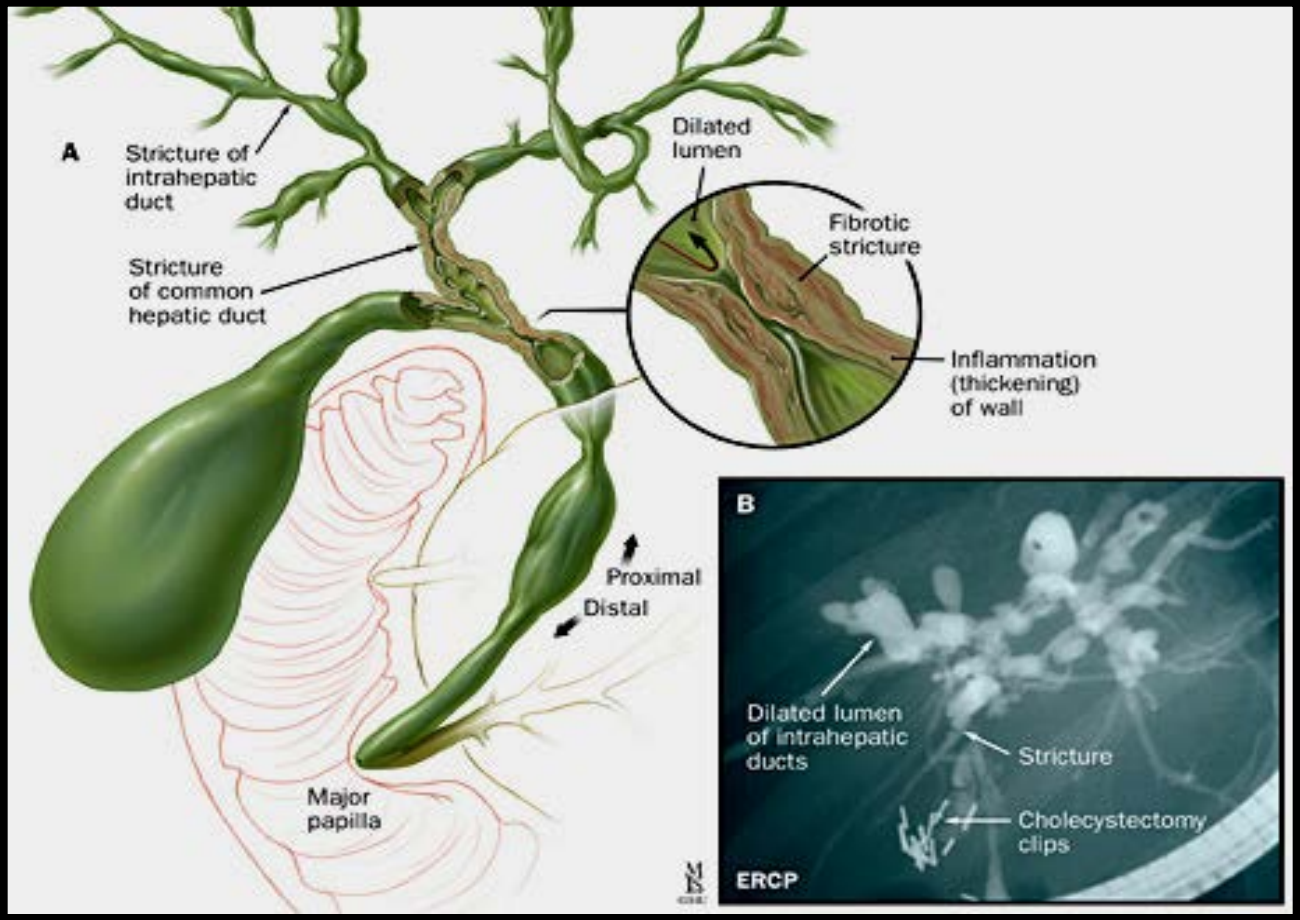


- Položaj organa normalan
- dilatirani žučni vodovi sa defektima u punjenju ↑
- Konture (sluznice) uredne
- Pasaža otežana



Dormia korpice

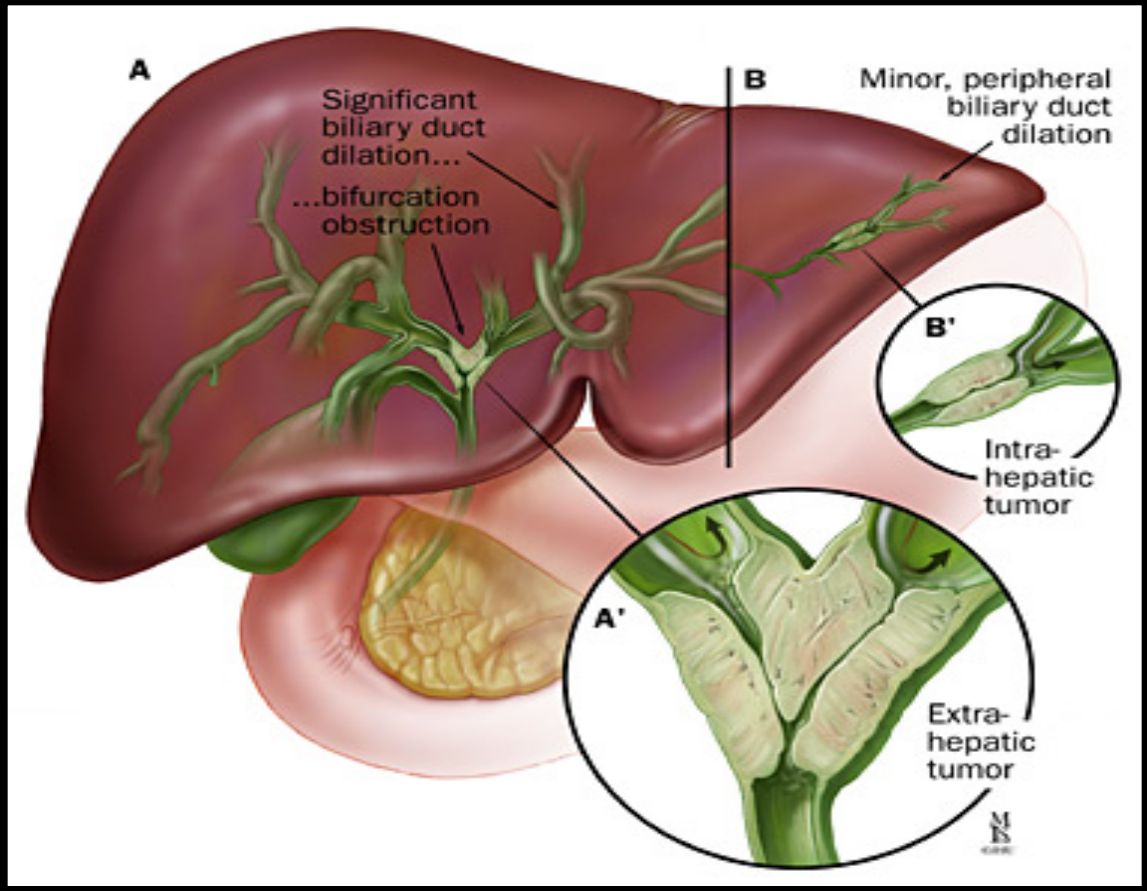
Prim.sklerozantni holangitis



Chr fibrozno zapaljenje intra i extra hepatičnih ž.kanala

M-75% preko 40 g. Kavkaza
85% udruženo sa ulceroznim kolitisom
10-15% rizik za nastanak holangiokarcinom

Cholangiocarcinoma



Epitel bil.trakta

Sporog rasta

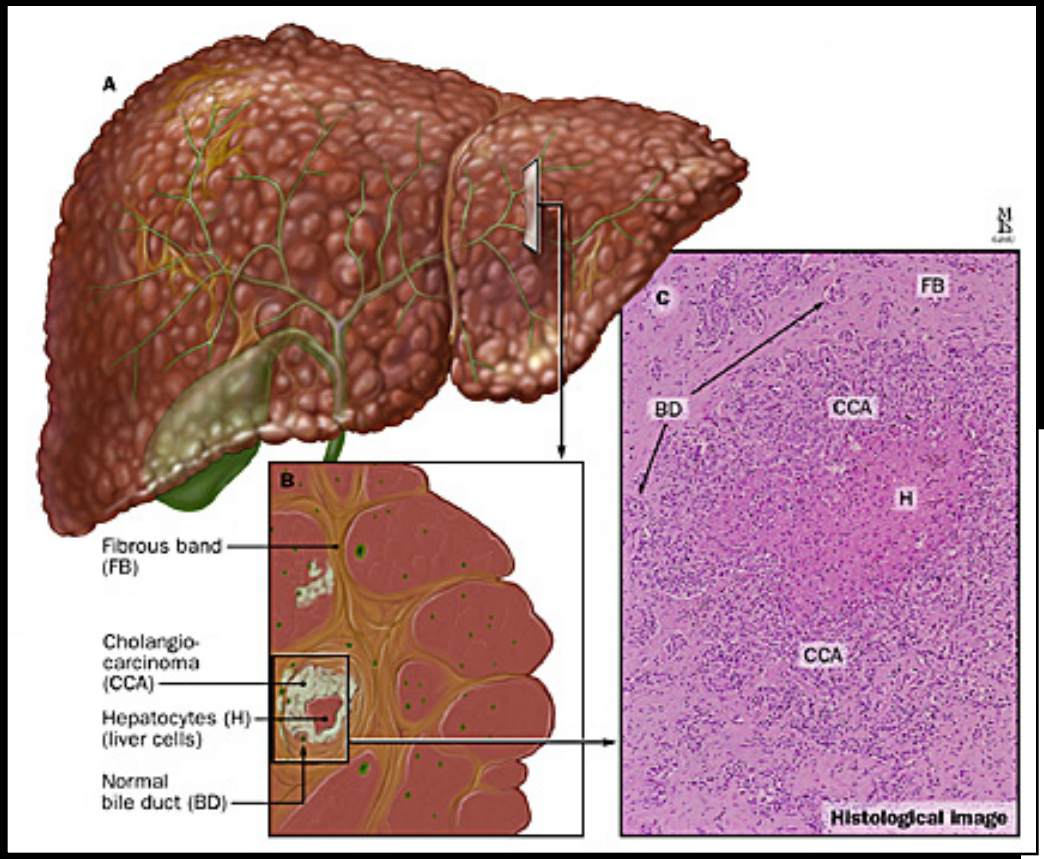
95% svih ca bil.tr.

M:F 1,3:1

Žučni putevi

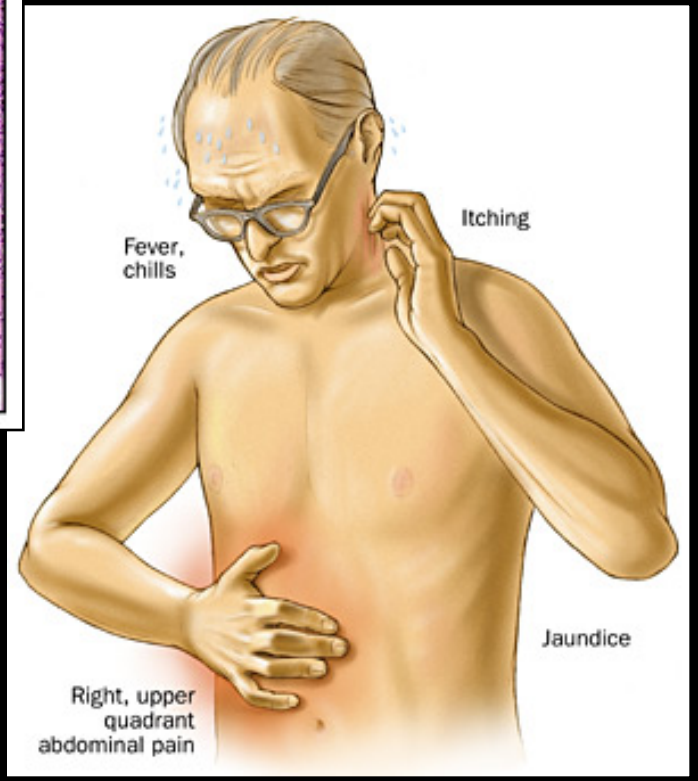
intrahep. žp. 45% uključujući i hilarnu varijantu - Klatskin's

extrahep. donja i srednja trećina 20-35%



Makroskopski intramuralna, tvrda, anularna masa.

Mikroskopskim sliči adenokarcinomu.



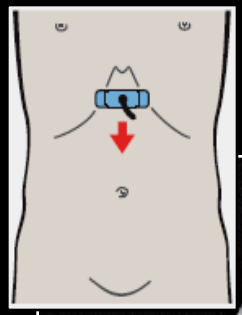
Simptomi

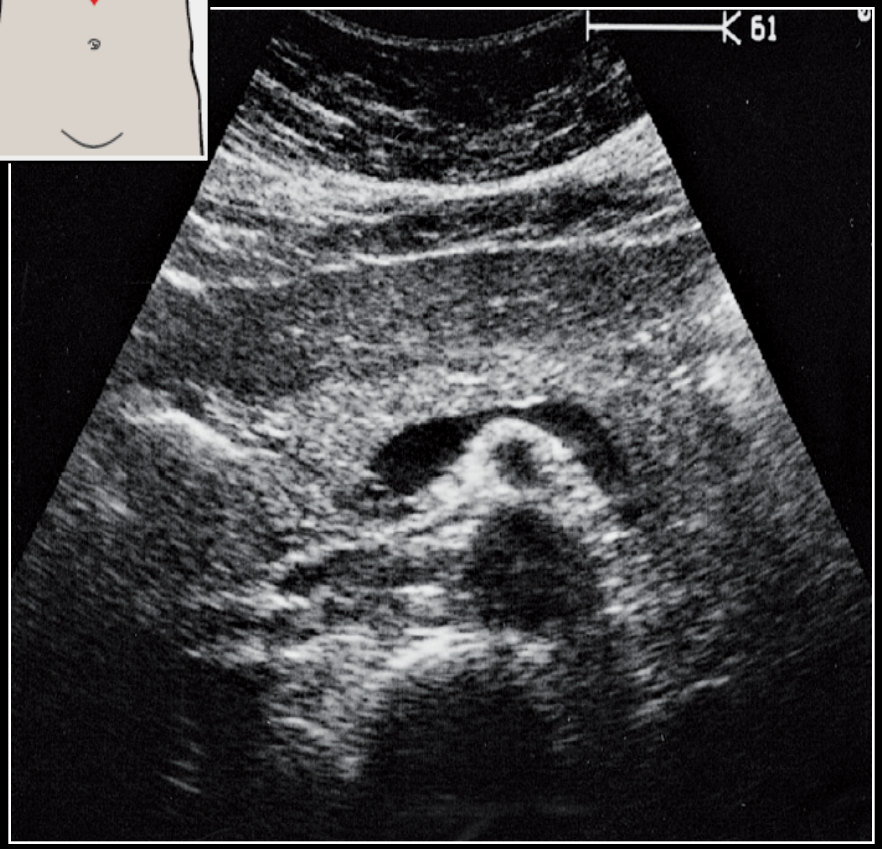
groznica,

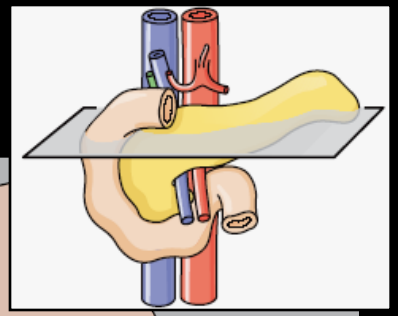
svrab, ikterus,

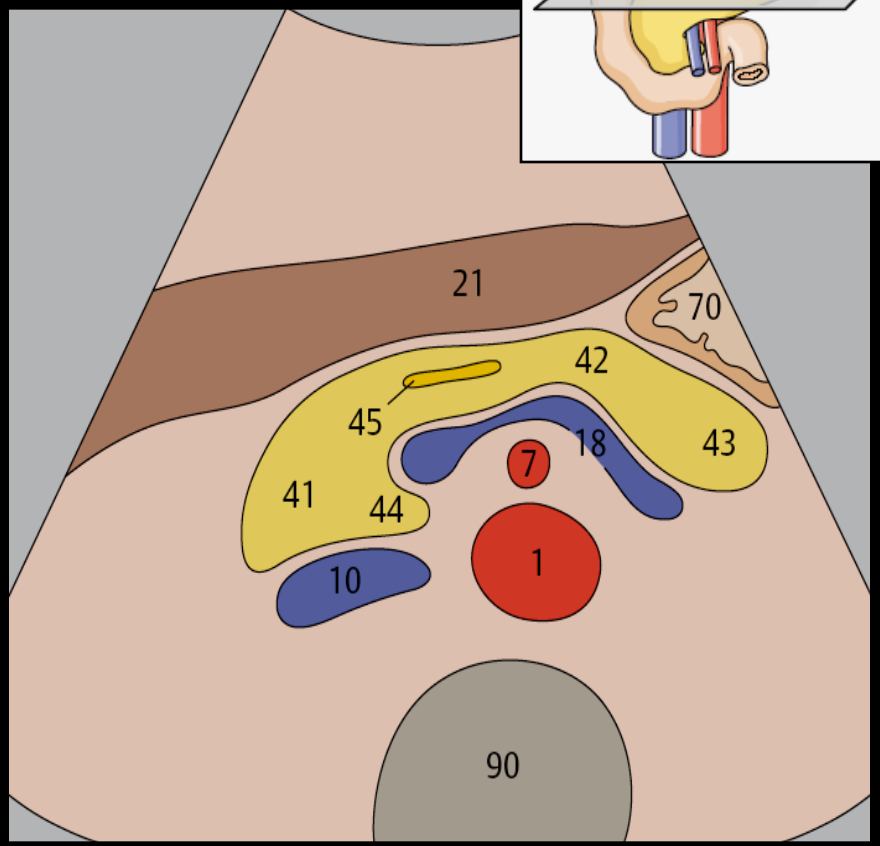
+ Courvoisier's znak

Pankreas UZ

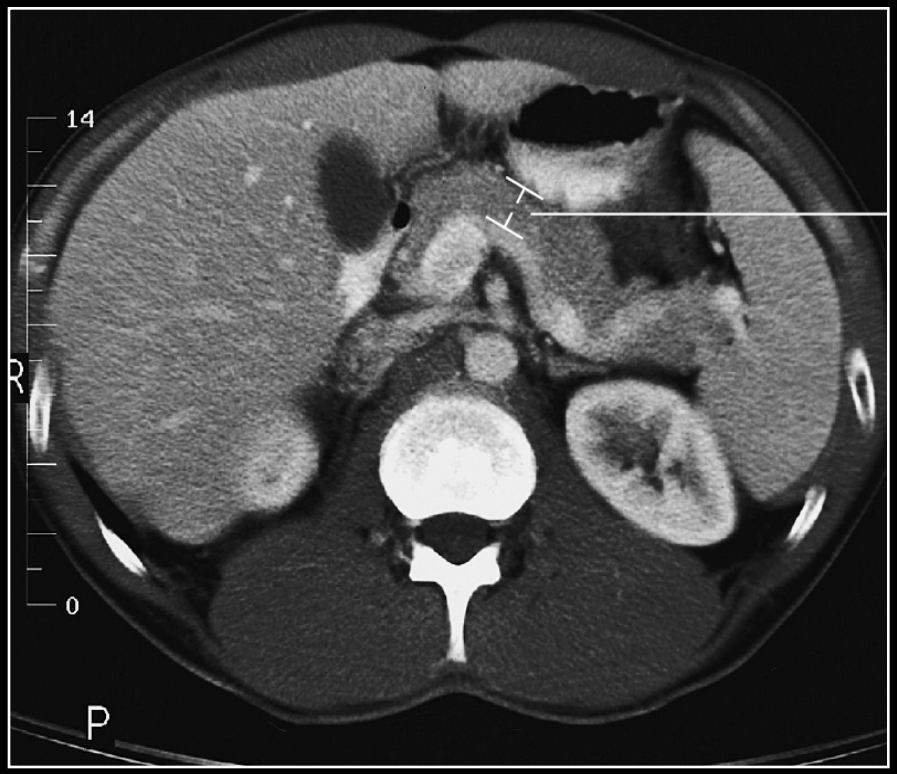








Pankreas CT

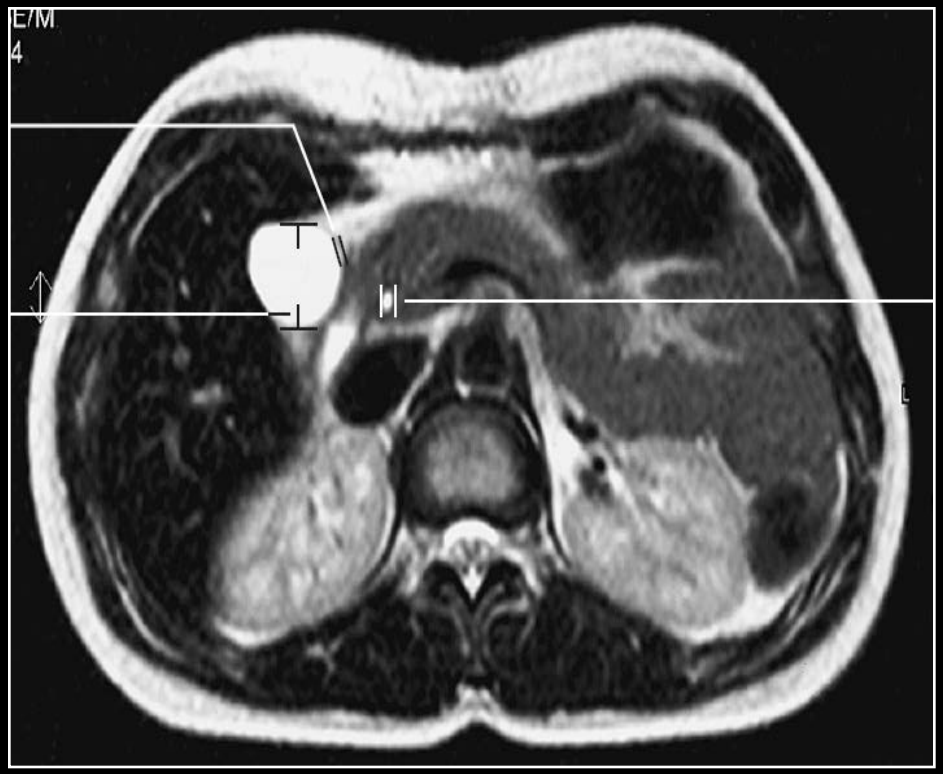


- Veličine 3,5-2,5-2,5cm
- oštre Konture
- Normalne lobulacije
- Denziteta 40±10 HU
- duktus neopstruiran

Nema parapankreatičnog fluida

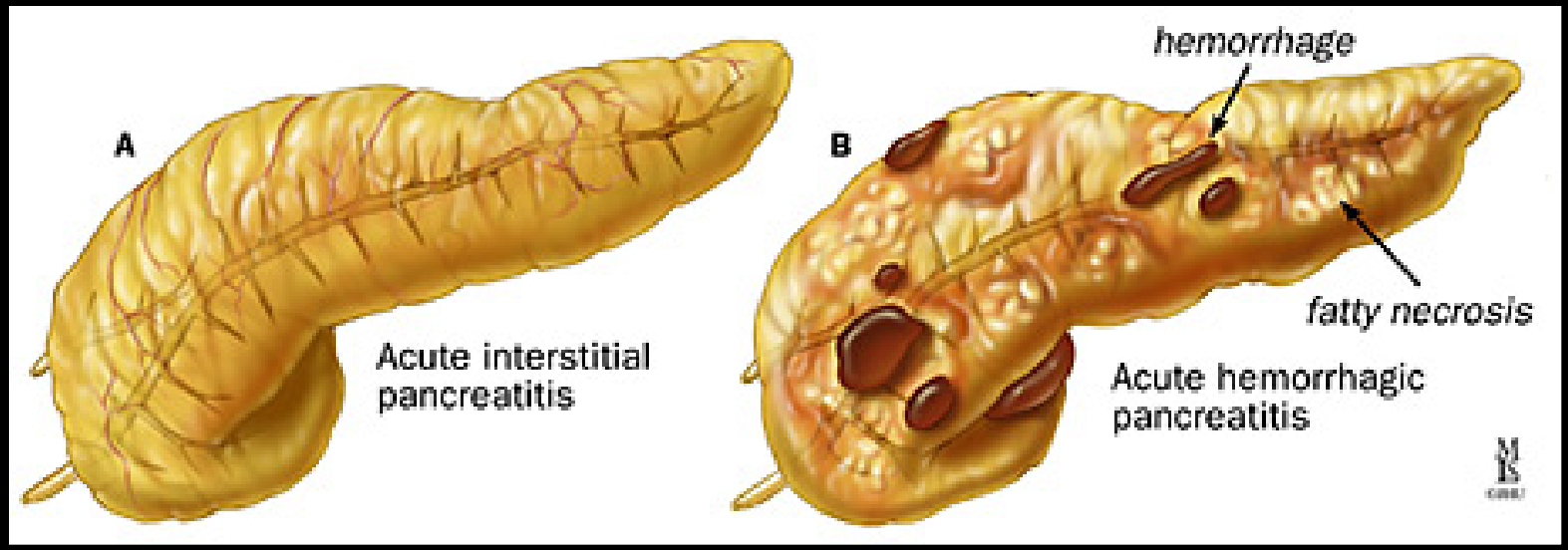
Norm. paraaortalni region

Pankreas MRI





Acc pancreatitis

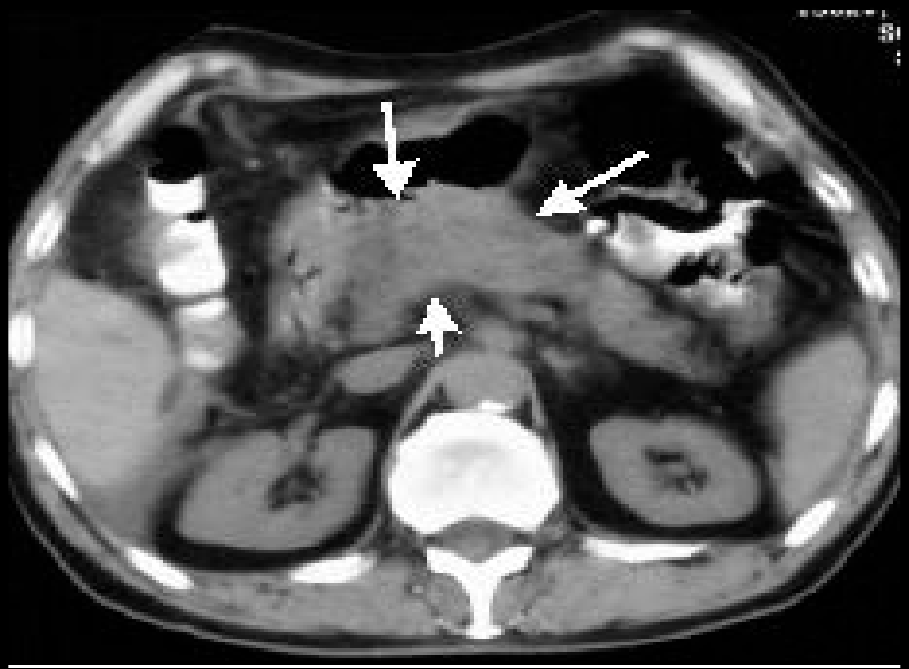


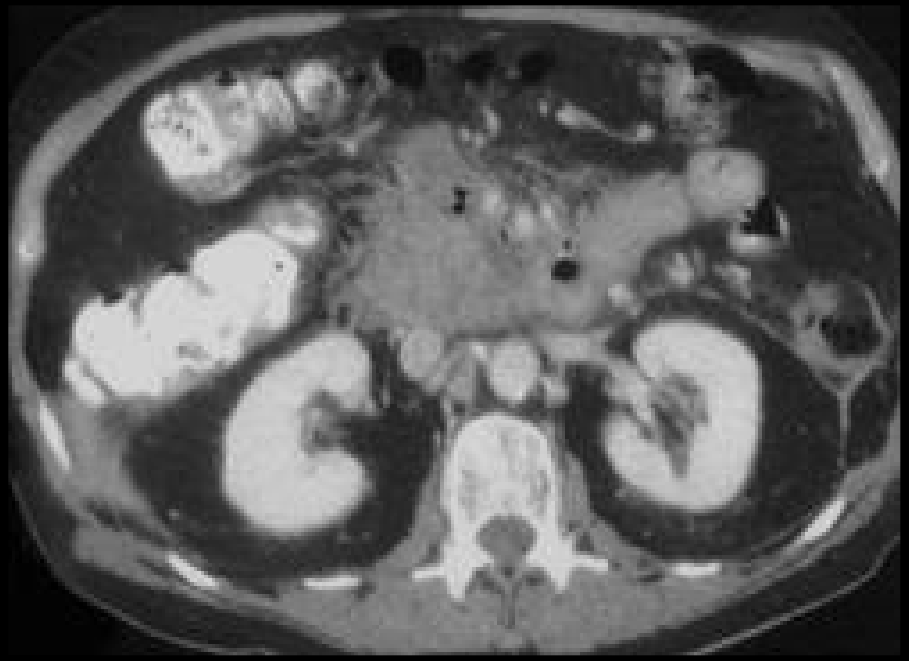
Tipičan abd.bol sa povećanjem serumskih pankreatičnih enzima.

Udružen sa bilijarnim kalkulusima i alkoholizmom.

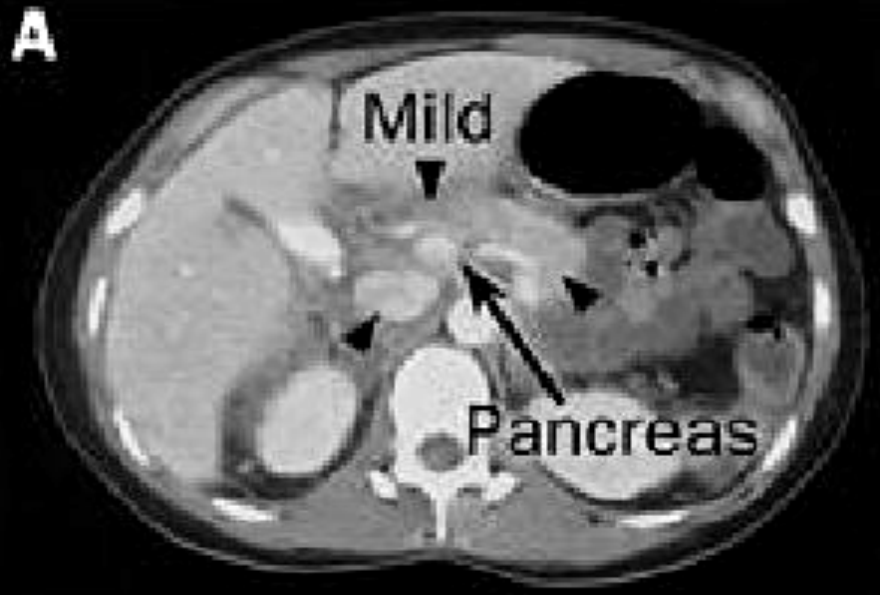
Simtomi: bol, muka i povraćanje 85%,

tahikardija, hipotenzija, umerena žutica i pleuralni izliv.





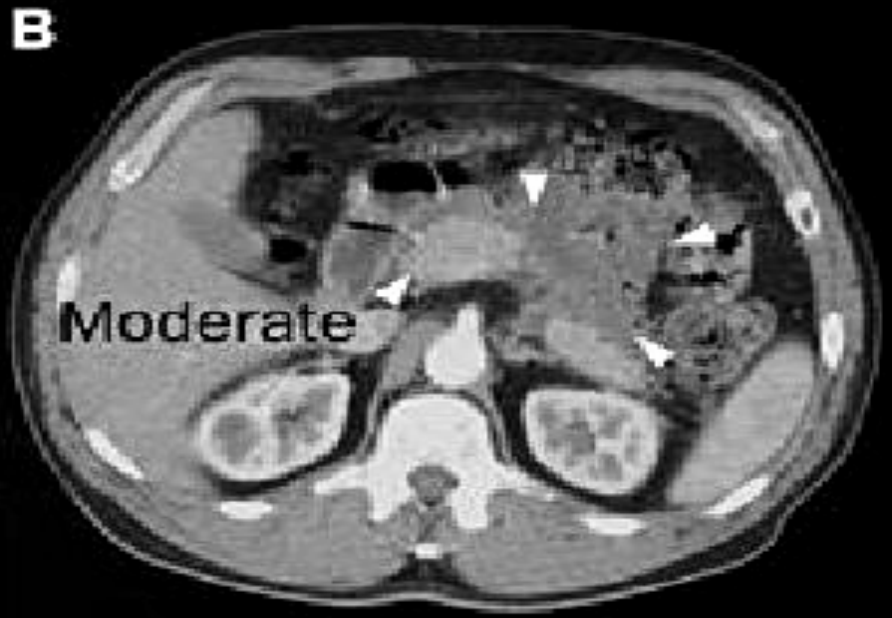
- **Edematozni** oblik
- **Nekrotizirajući** oblik

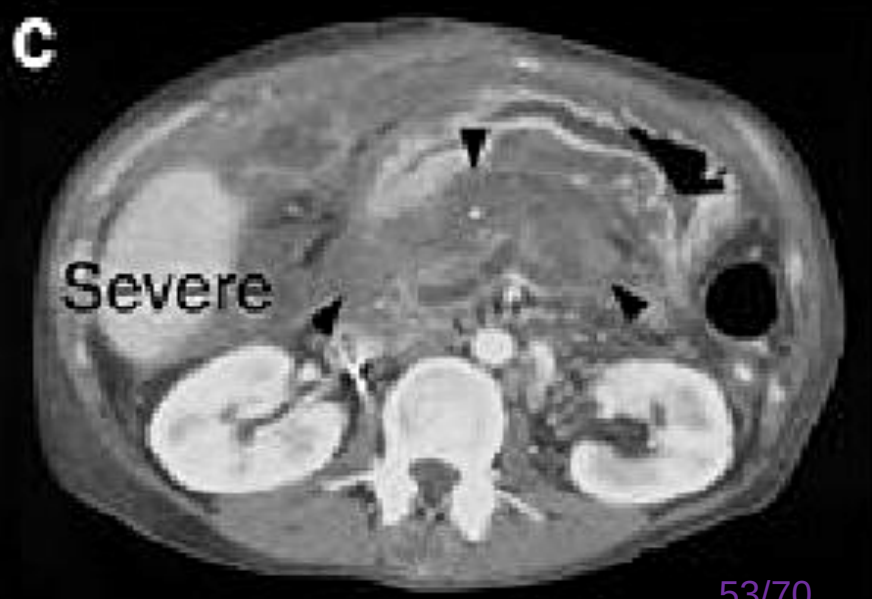


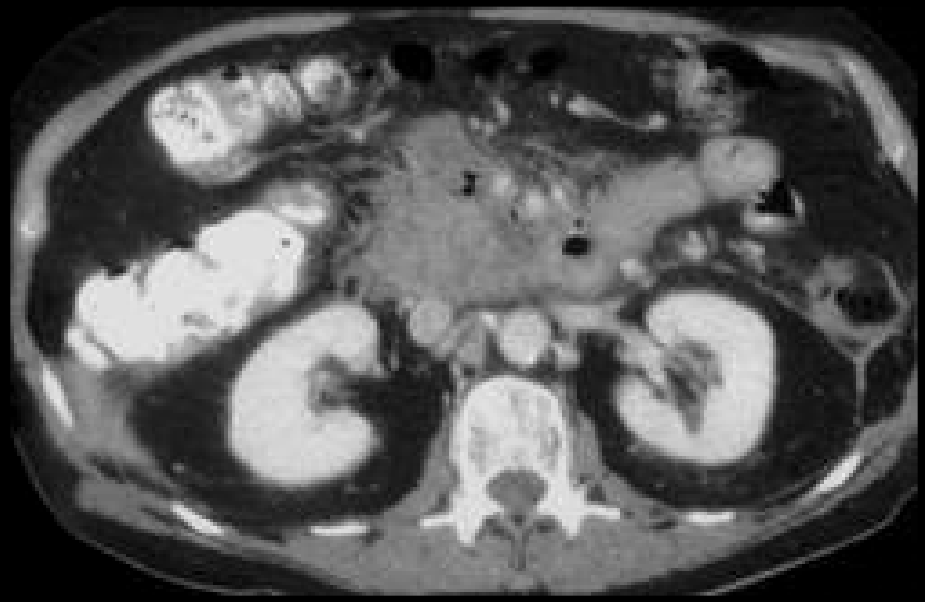
Edematozni:

- blag, umeren, jak

u celini uvećan, Hipo-Izodenzan neHomogen, neoštrih kontura







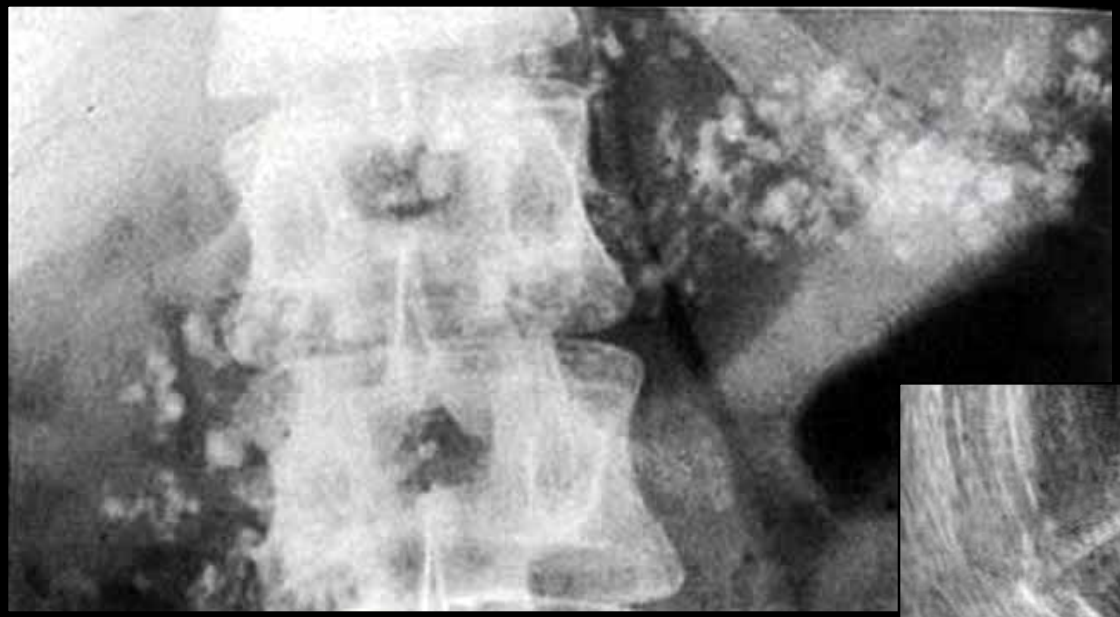


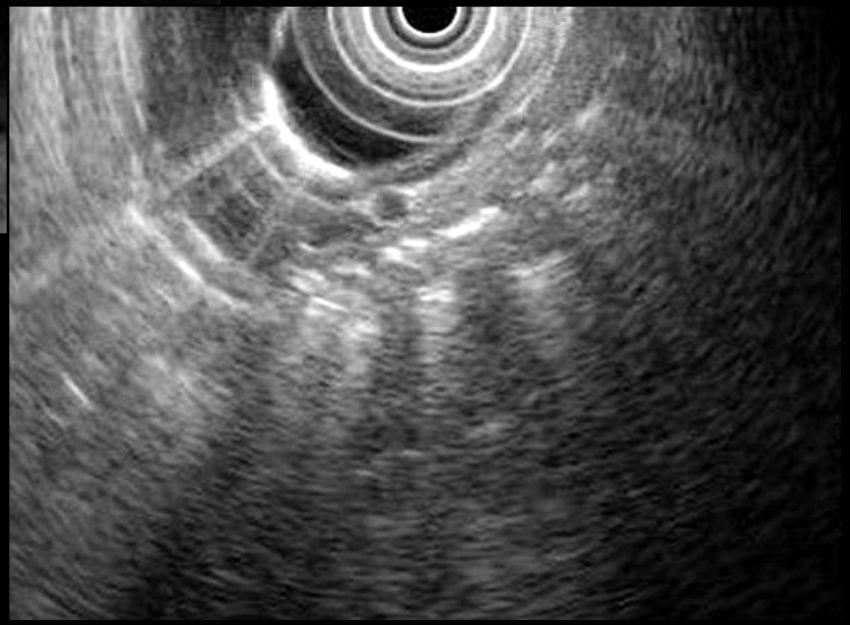
Nekrotizirajući

- Parcijalno
- Totalno nekrotizirajući

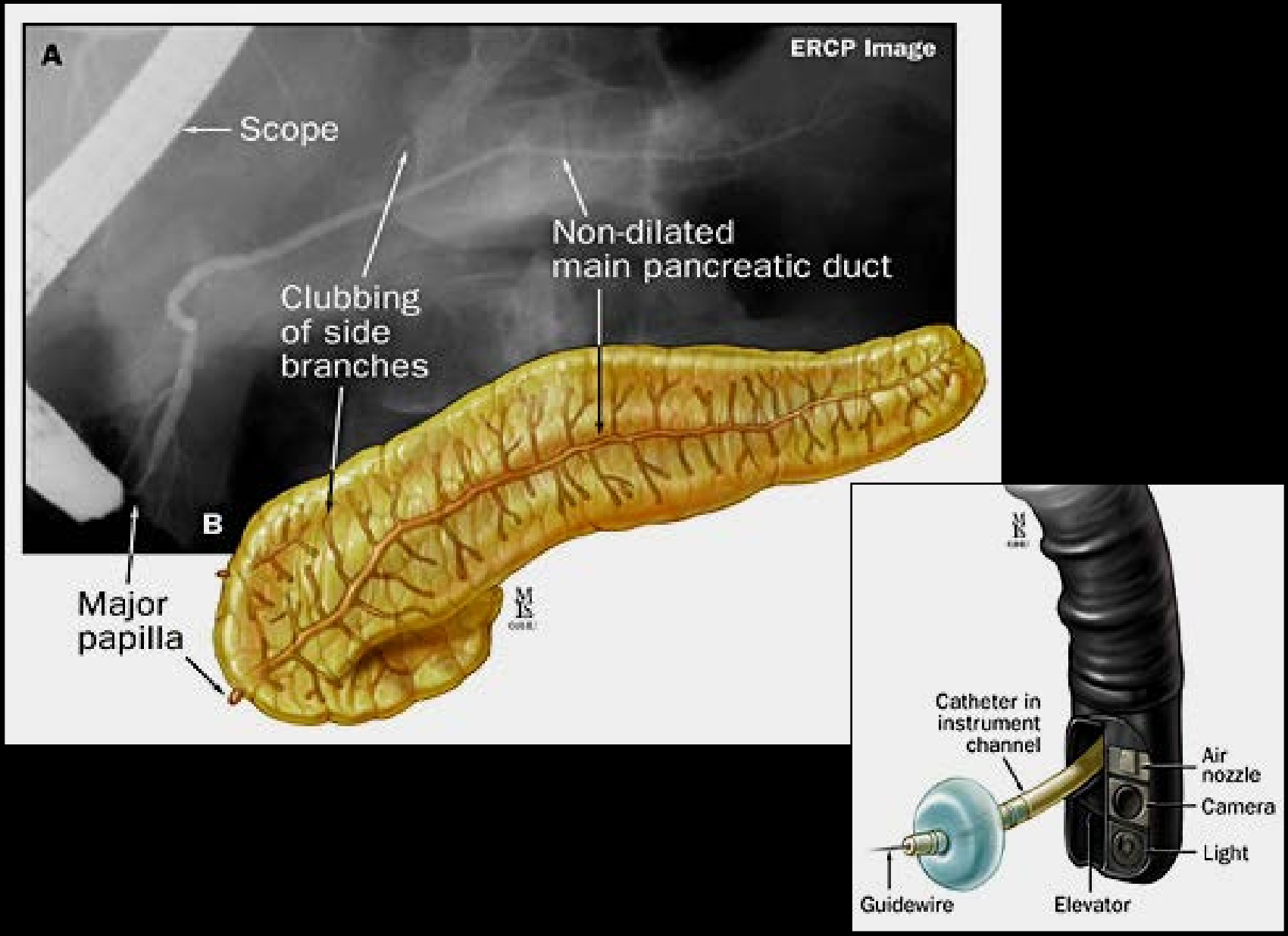
  heterogeni hipodenzitet se pacijalnim kaptažom KS

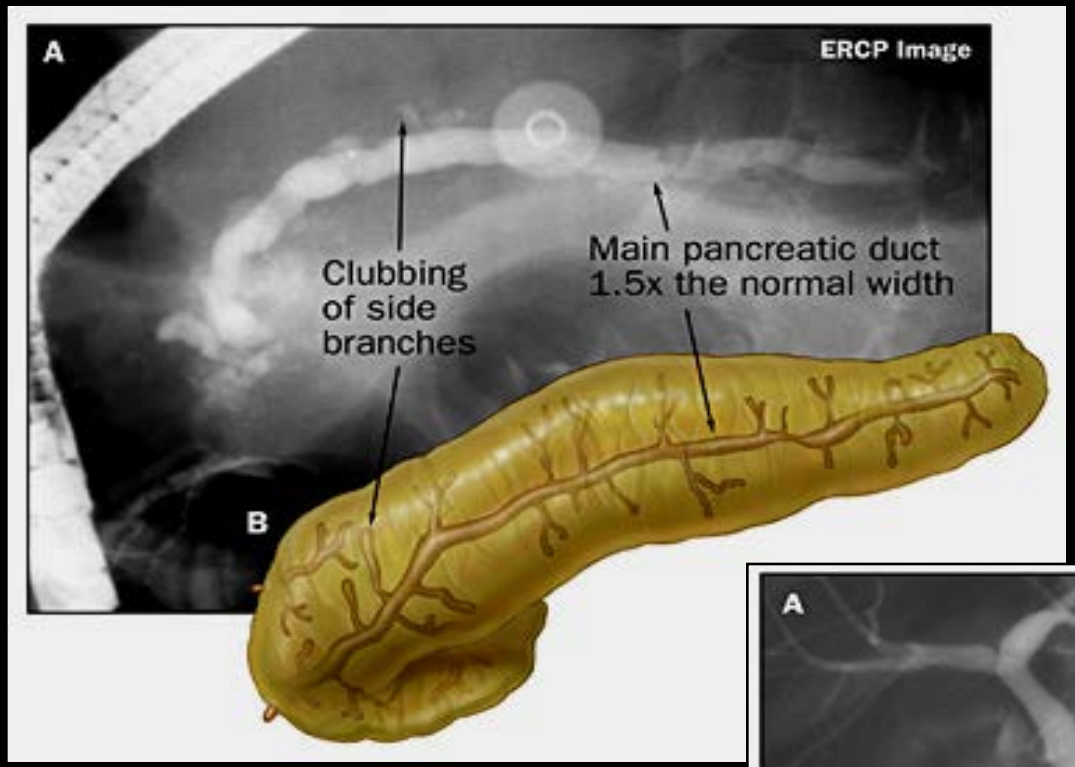
Chr pancreatitis

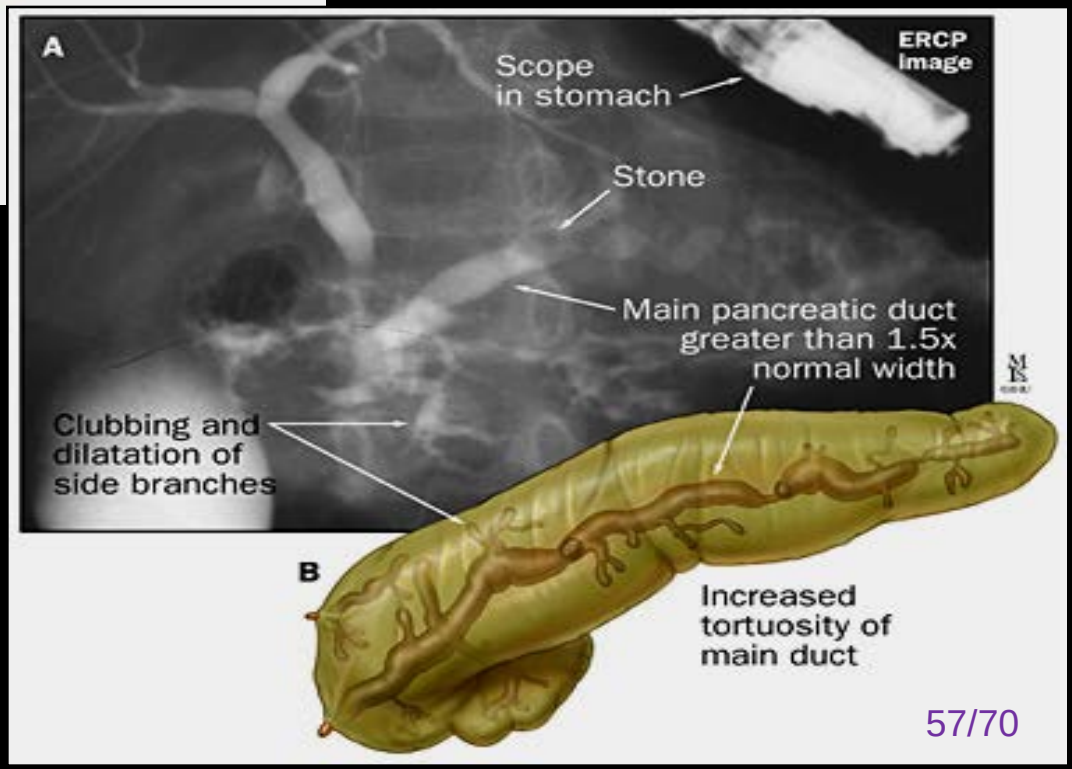


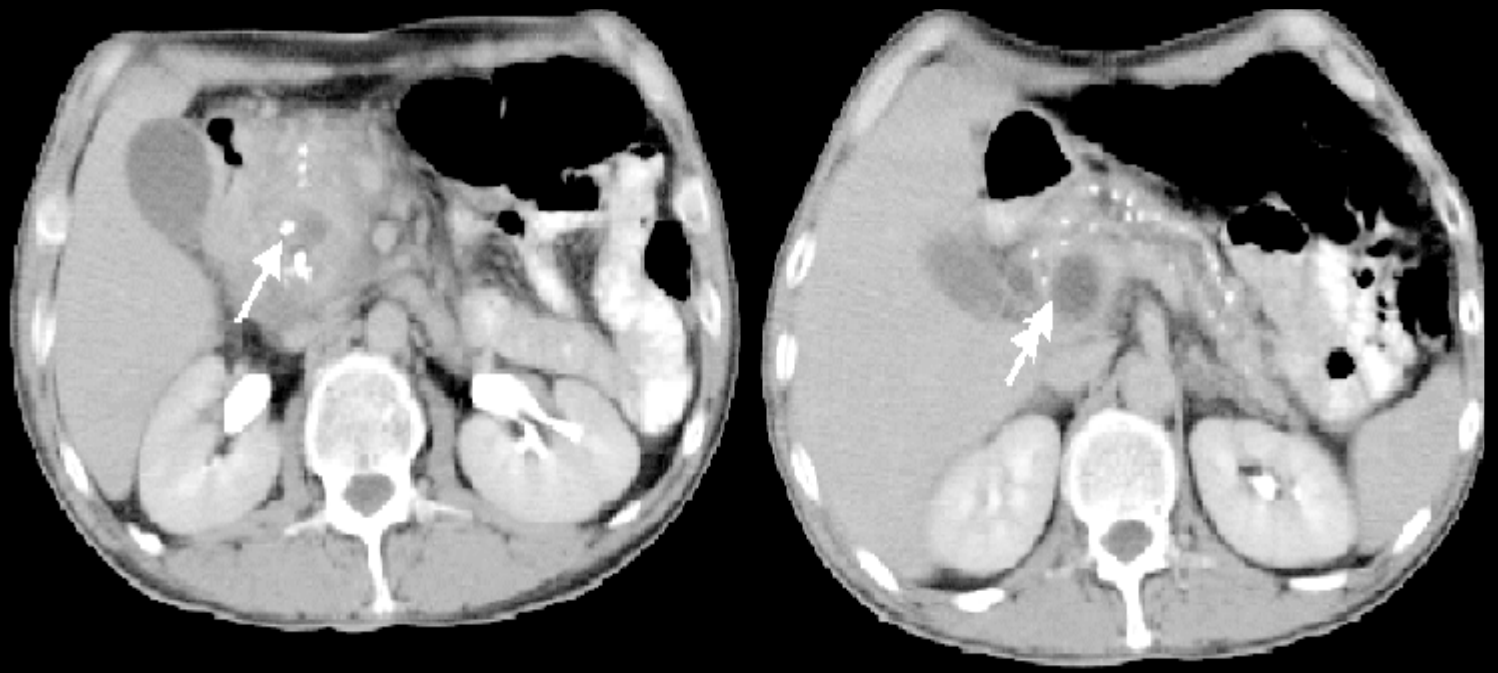


Delimični ili u celini uvećan, iregularne konture, heteroehogen, proširenje Wirsunga sa kalcifikacijama i cistama.


A
ERCP Image
Scope
Non-dilated
main pancreatic duct
Clubbing
of side
branches
B
Major
papilla
Catheter in
instrument
channel
Air
nozzle
Camera
Light
Guidewire
Elevator

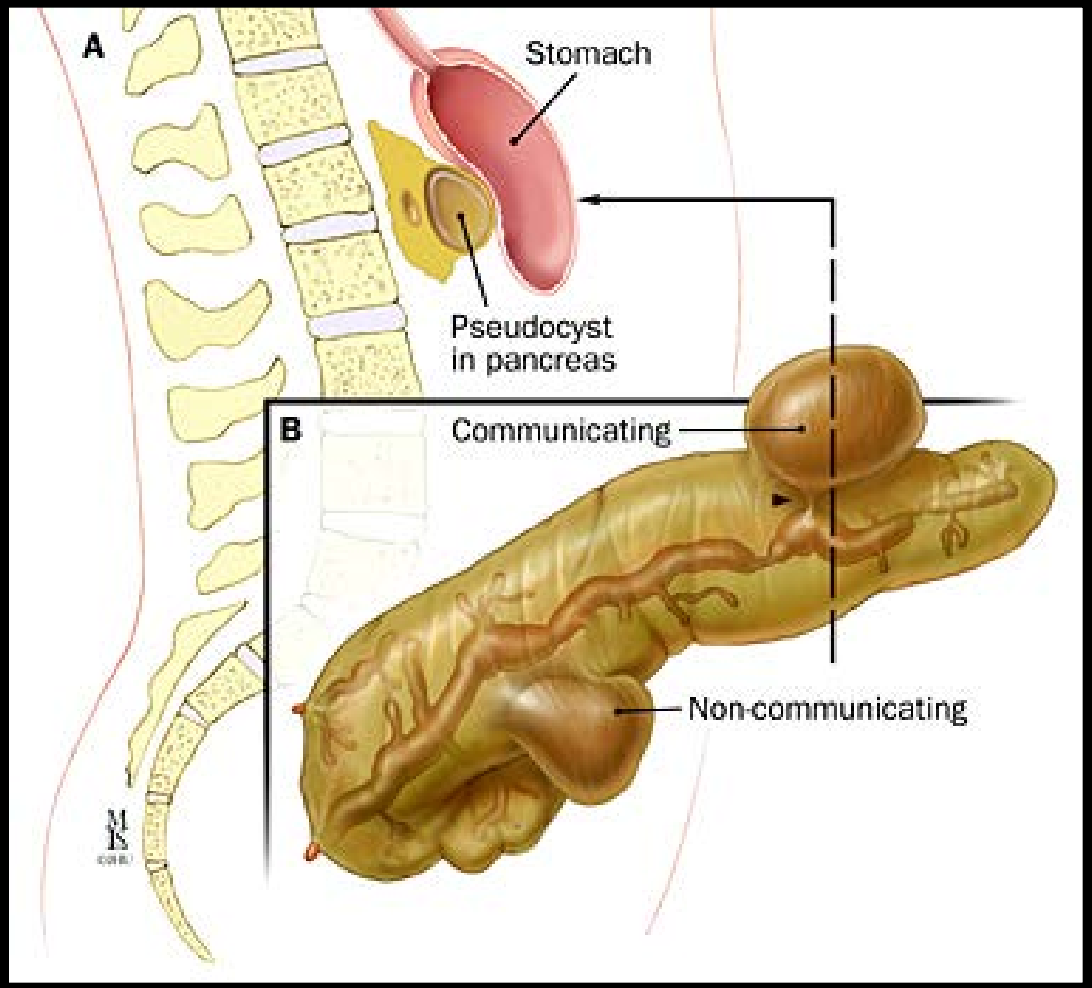

A
ERCP Image
Clubbing of side branches
Main pancreatic duct 1.5x the normal width
B


A
ERCP Image
Scope in stomach
Stone
Main pancreatic duct greater than 1.5x normal width
Clubbing and dilatation of side branches
B
Increased tortuosity of main duct



- Parcijalno ili totalno proširenje (sclerolipomatosis) ili atrophia
- nepravilnih kontura
- nehomogene
- hiperdenzan sa kalcifikacijama
- proširenje d.pancreaticusa
- retencione ciste

Ciste i pseudociste



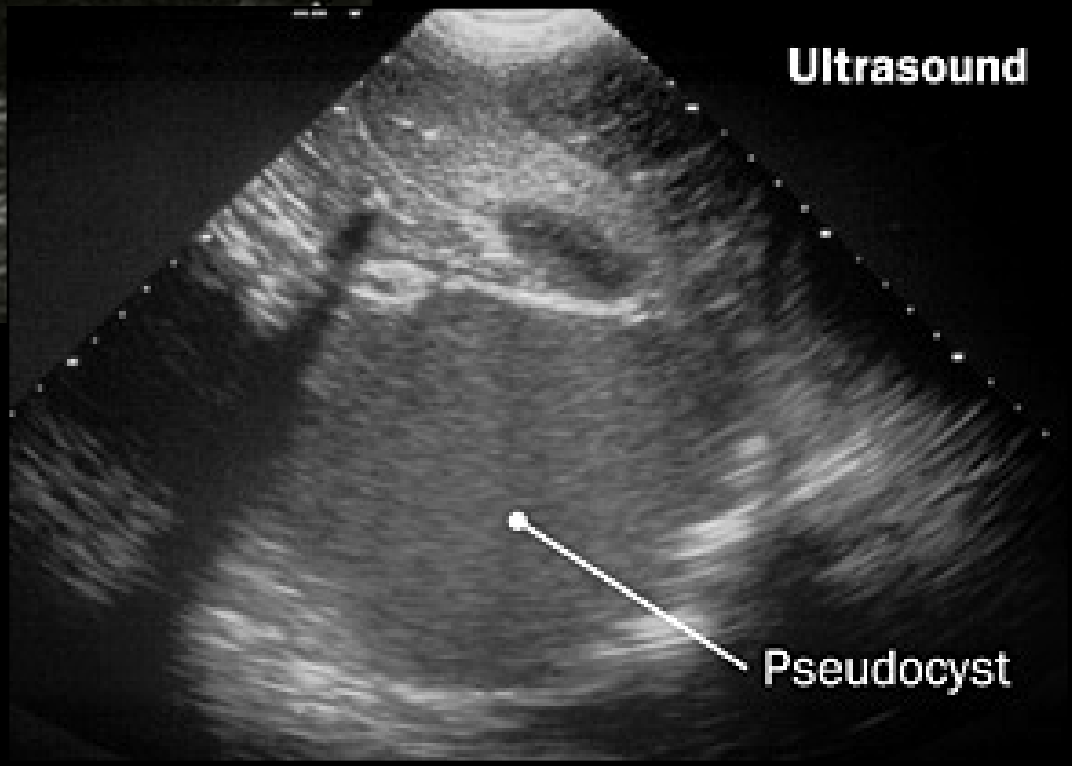
Ruptura pankreatičnog voda,

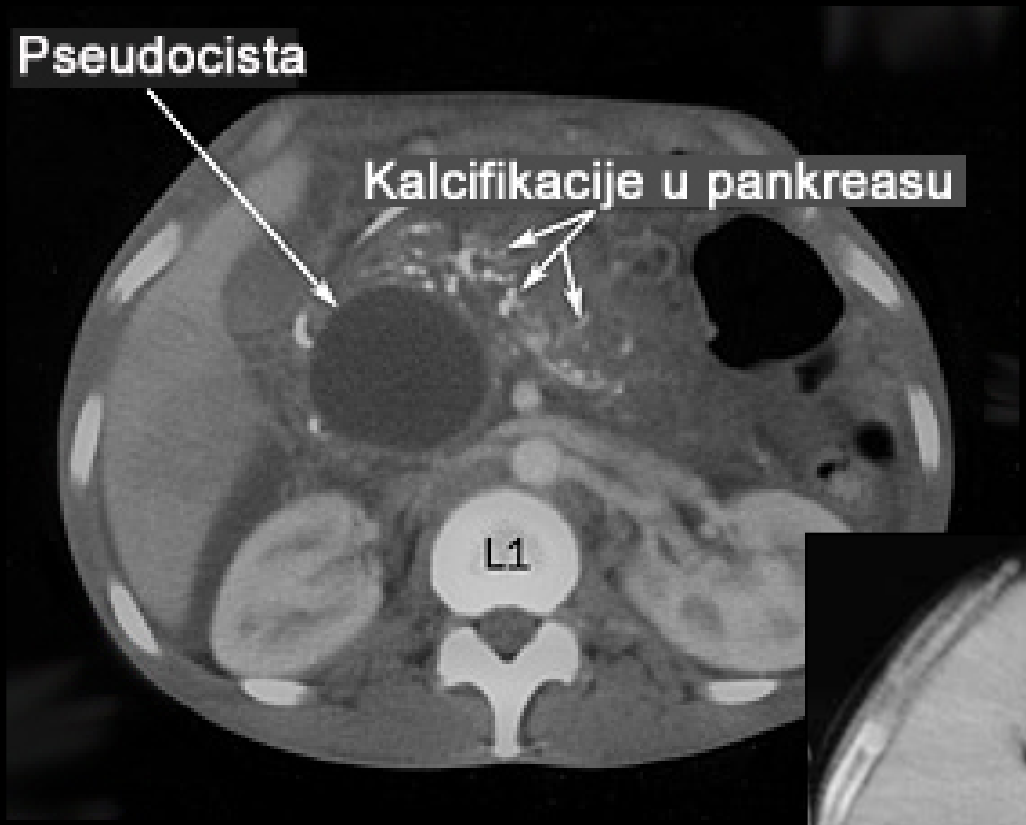
aktivacija enzima,

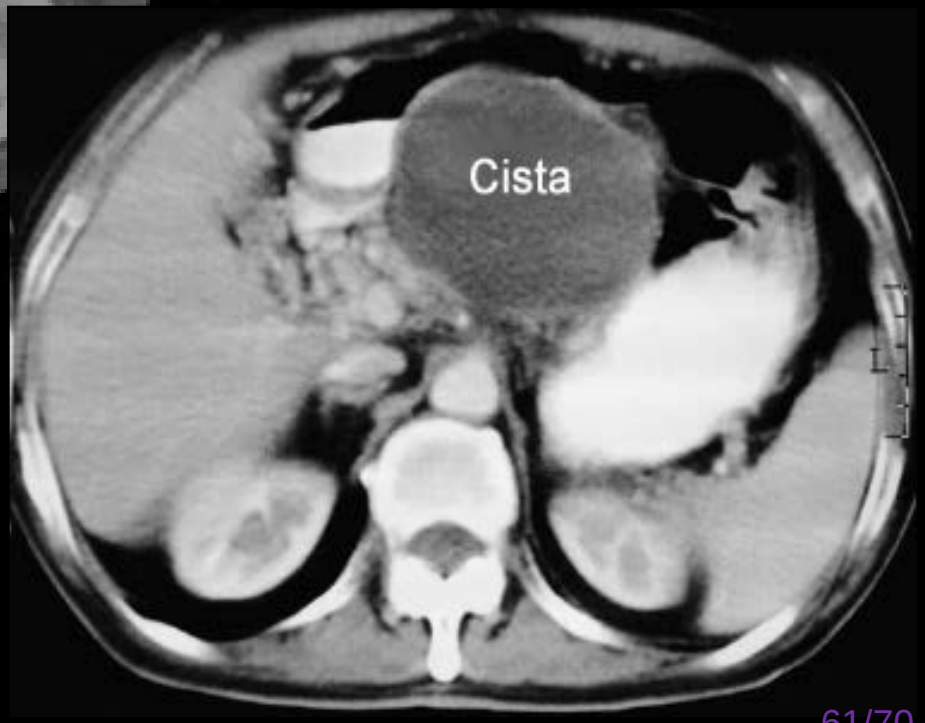
parenhimalna nekroza,

lokalna reakcija sa stvaranjem fibrozne memebrane.


Izmenjeno pankreasno tkivo
Pseudocista

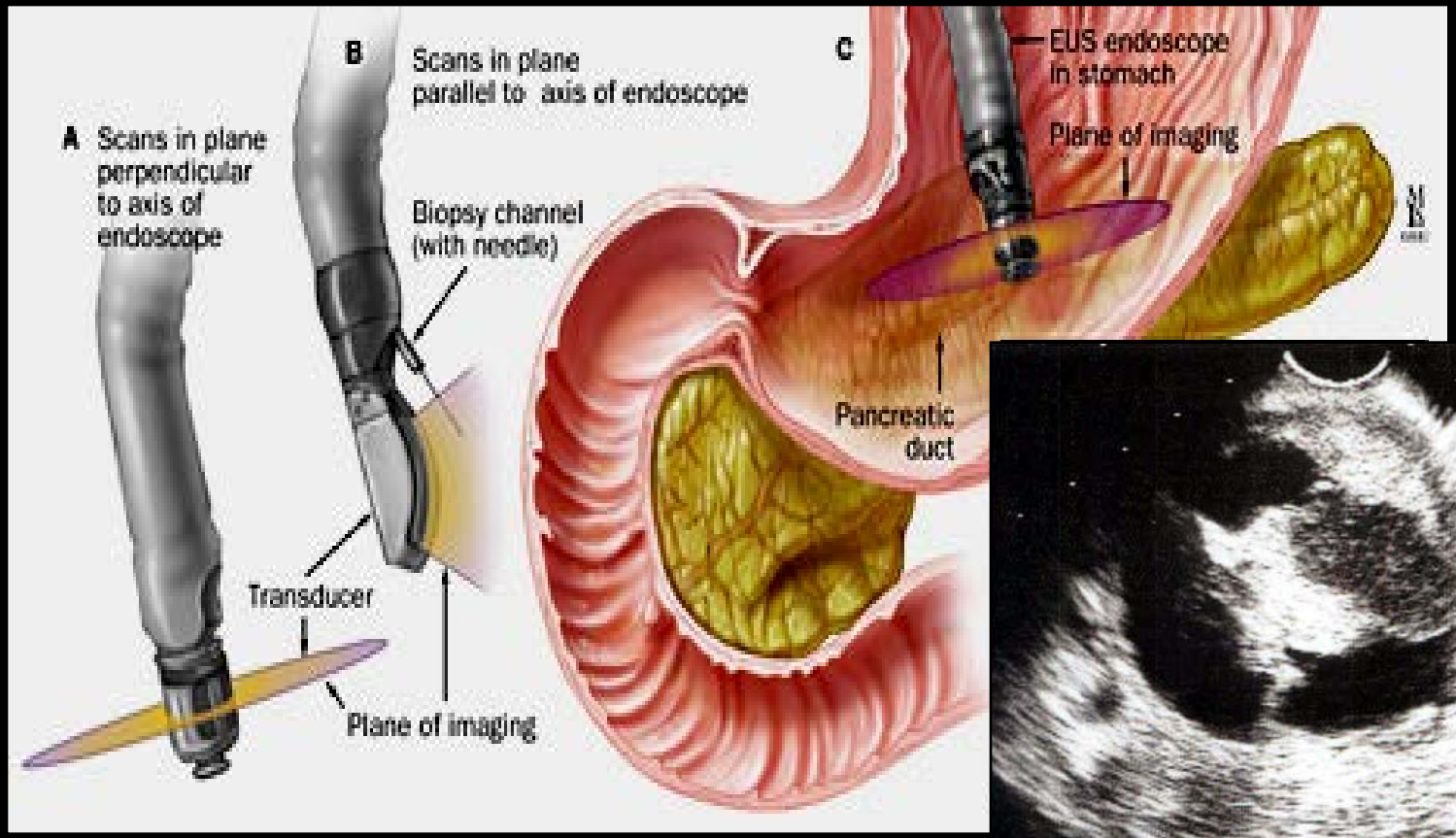

Ultrasound
Pseudocyst



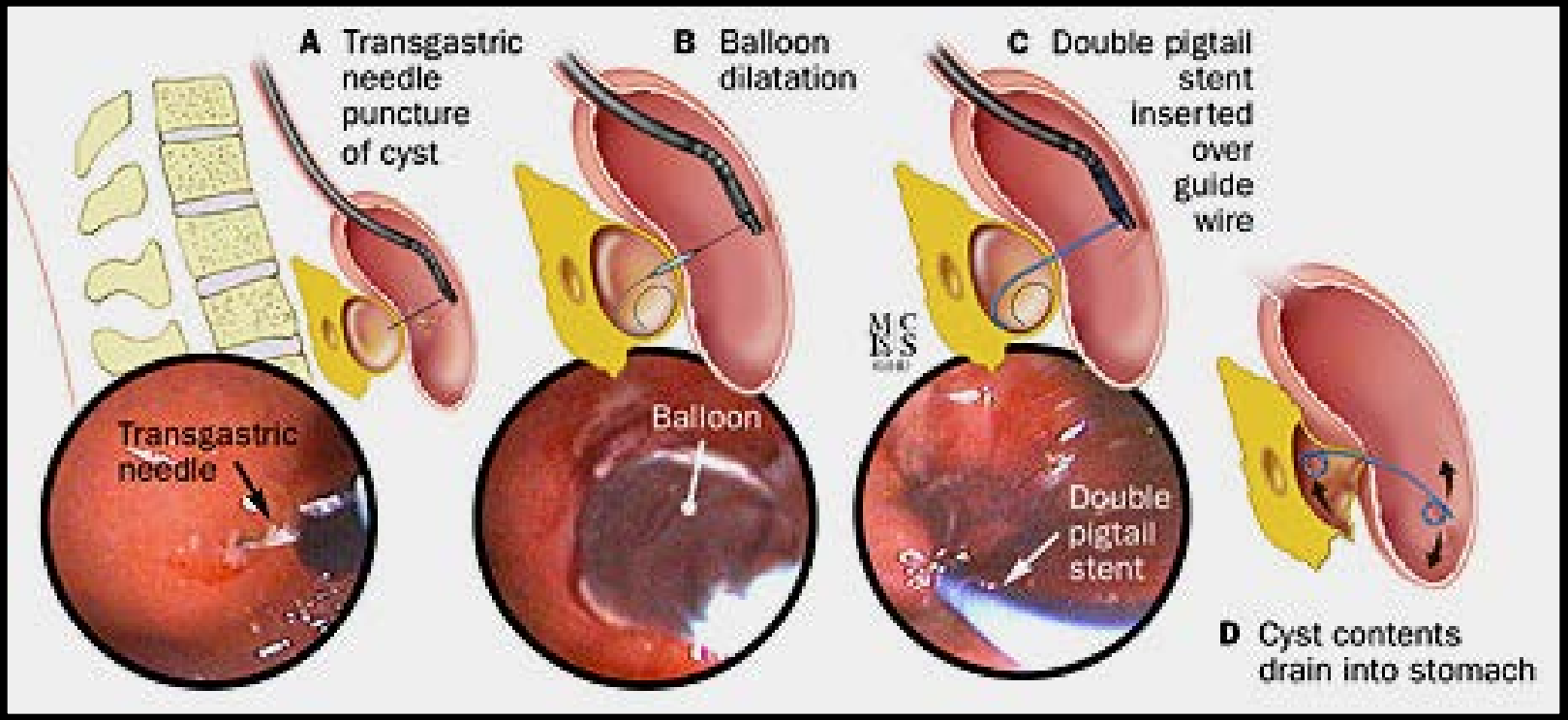


Retencione ciste
- ovalne,
- oštro ograničene,
- hipodenzne

EUS


A Scans in plane perpendicular to axis of endoscope
B
Scans in plane parallel to axis of endoscope
Biopsy channel (with needle)
Transducer
Plane of imaging
C
EUS endoscope in stomach
Plane of imaging
Pancreatic duct

Nekomunikativne ciste

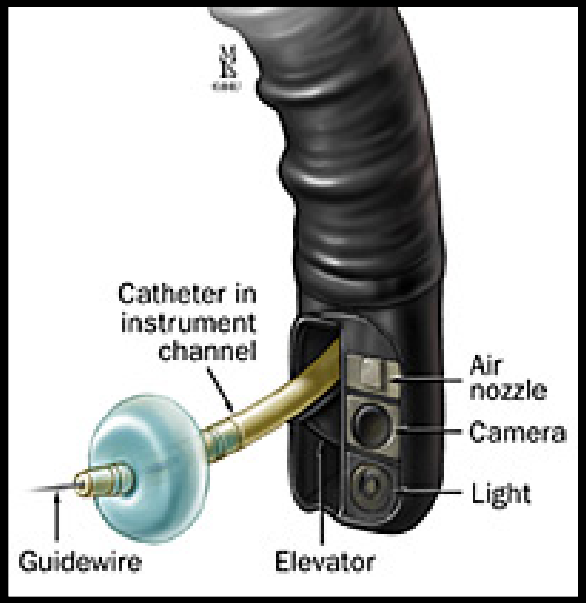


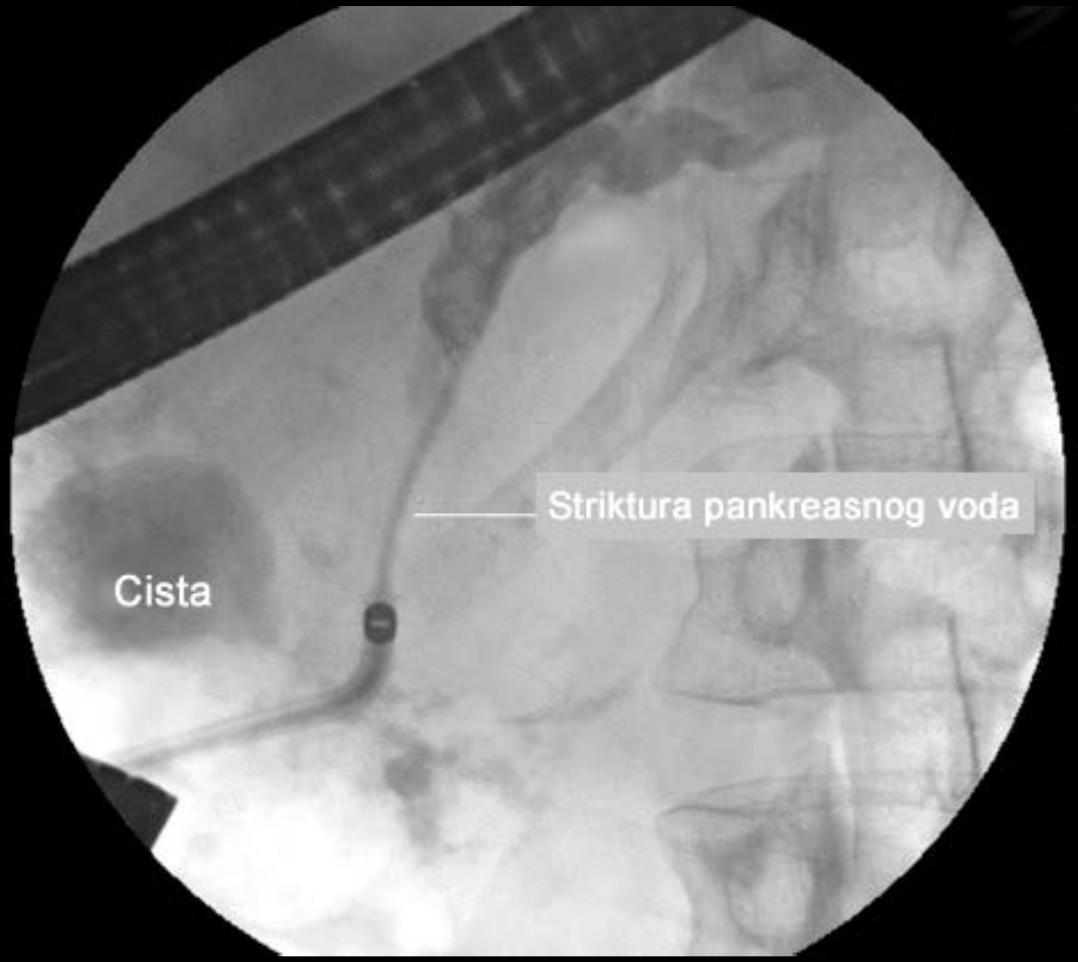
Transmuralna punkcija EUS i FNB

jedina endoskopska alternativa kod kompletne obstrukcije

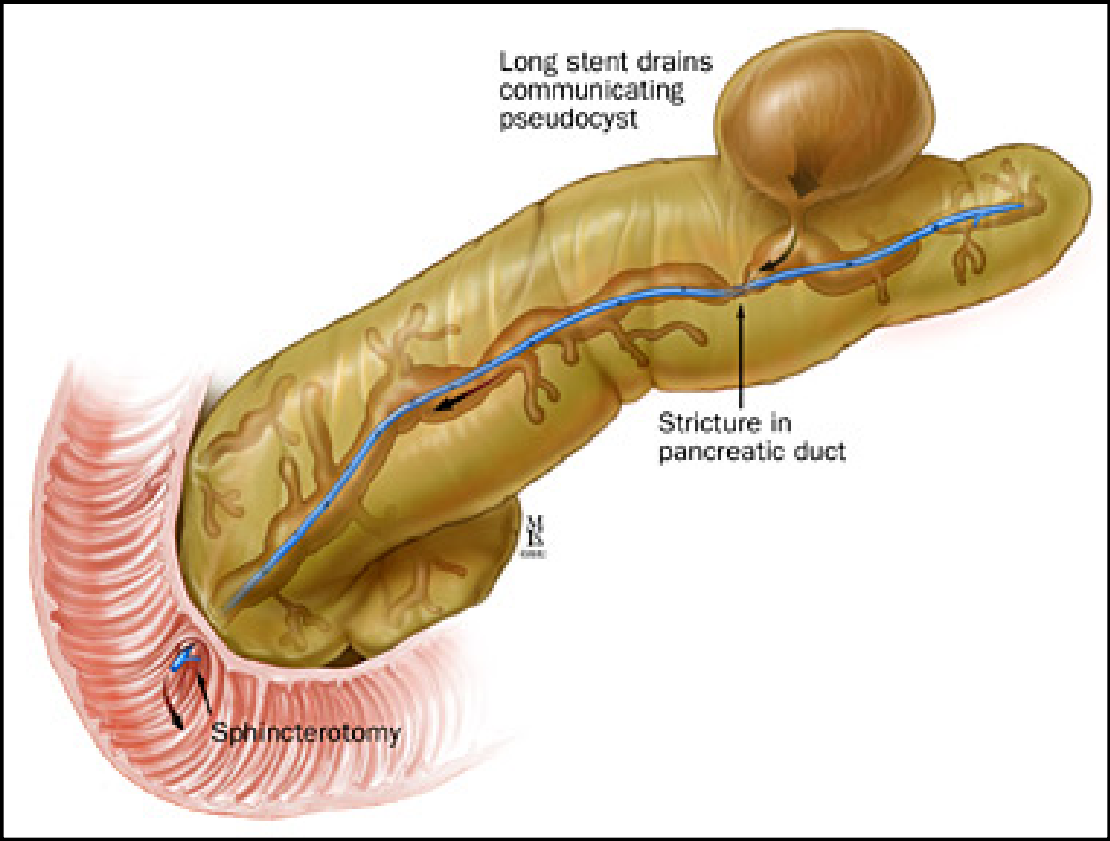
preoperatovno antibiotici

ERCP


Catheter in instrument channel
Air nozzle
Camera
Light
Guidewire
Elevator


Striktura pankreasnog voda
Cista

Komunikativne ciste



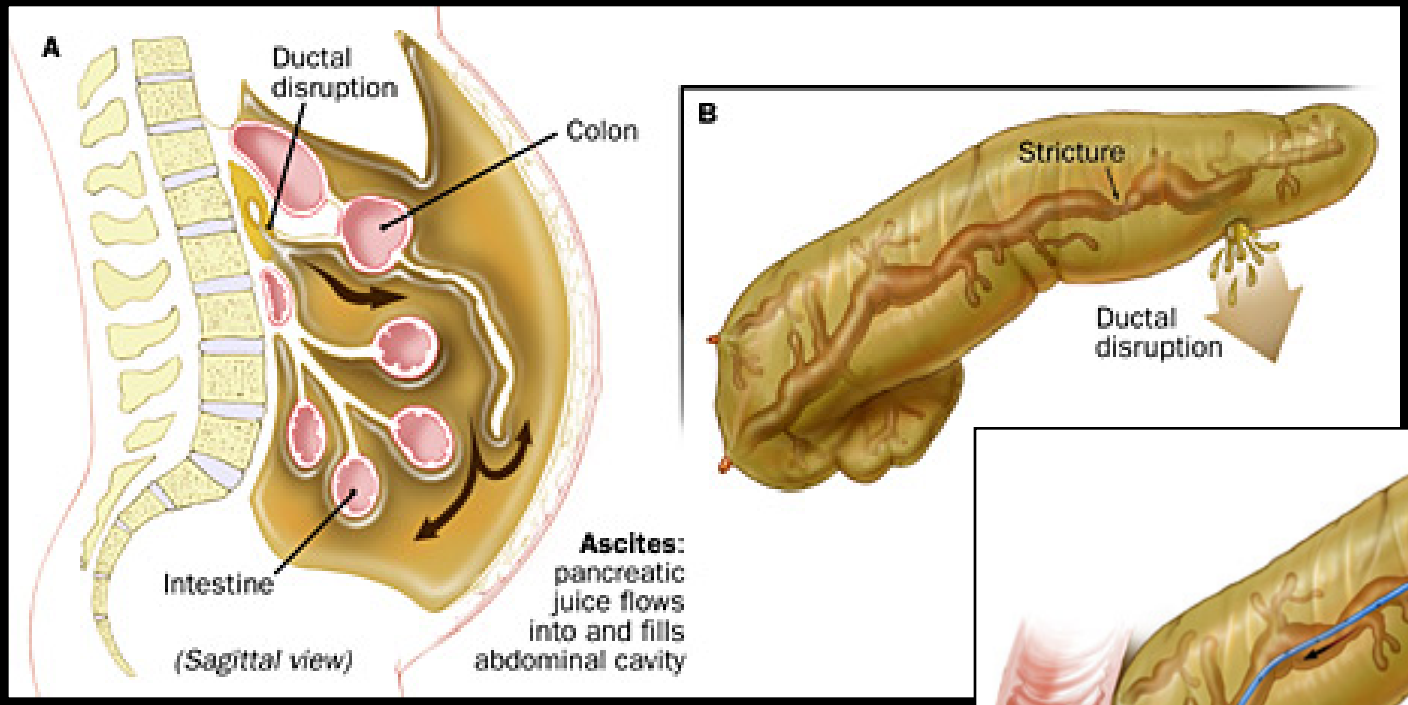
Transpapilarni stent

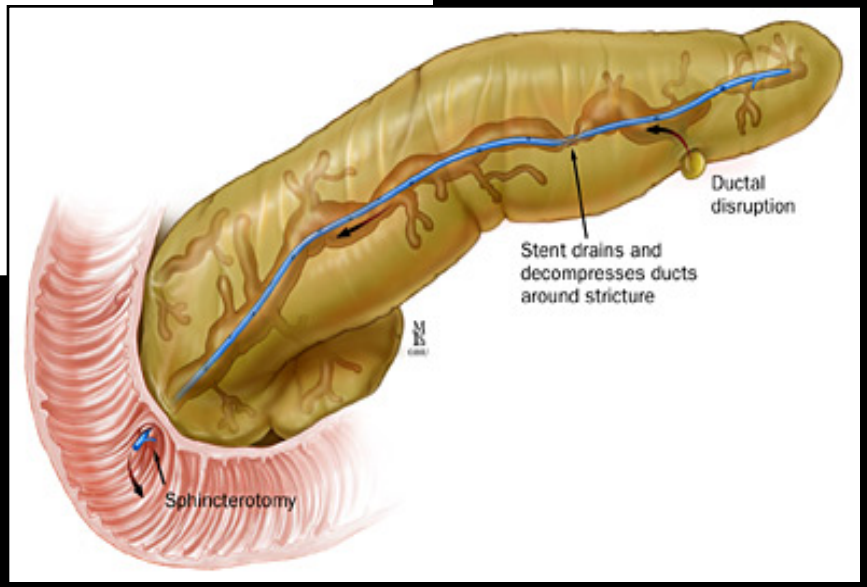
Početna za relativno male komunikativne pseudociste

7-8,5 F

4-6 ned. povuče 70%

Ascit



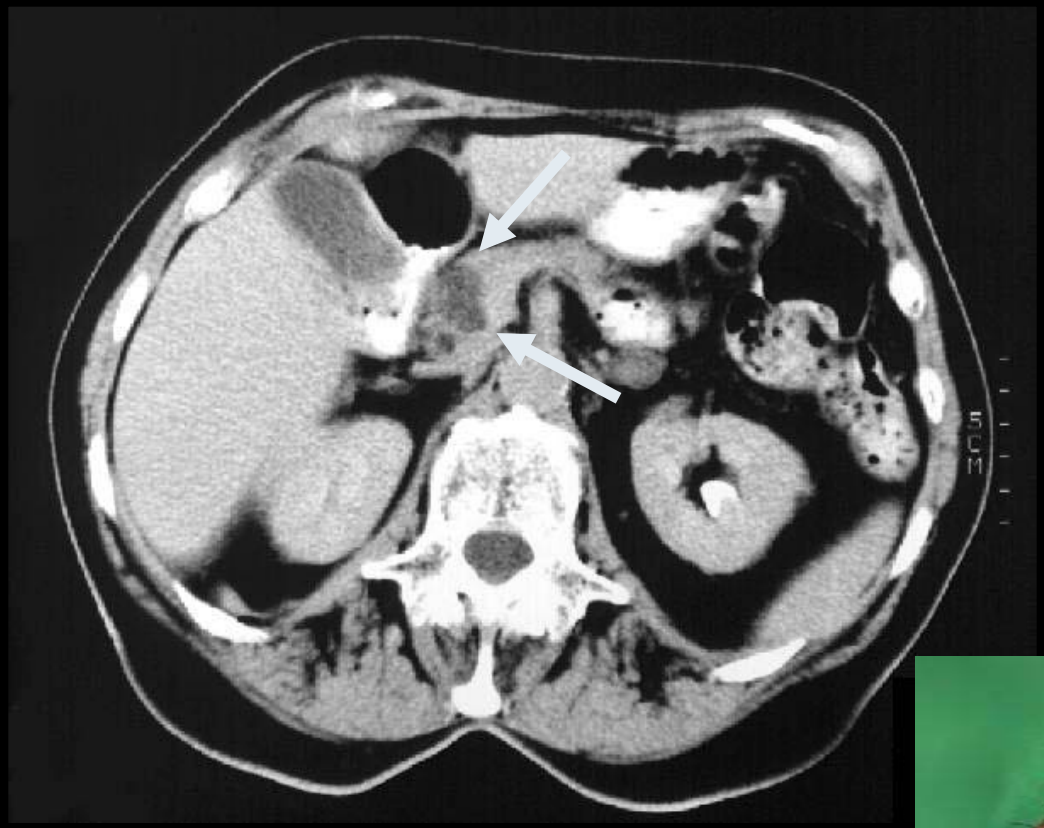


< 1% kod pseudocisti
chr pankreatitu

5-10 F transampularno

4 ned.

TU



Cystadenoma

jasno lokalizovan

oštro ograničen

ovalan

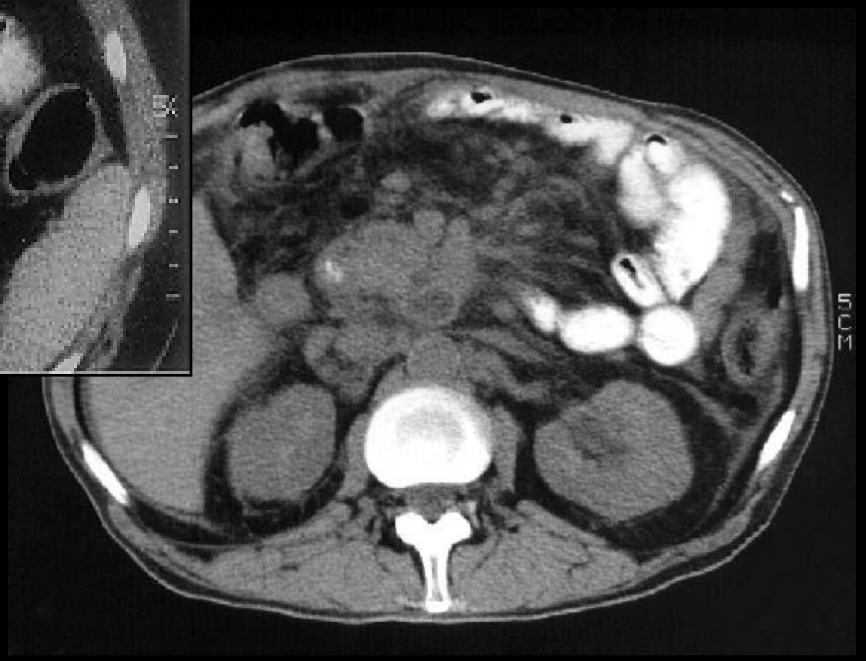
hipodenzan

homogena

sa pojačanjem KS solidnih delova



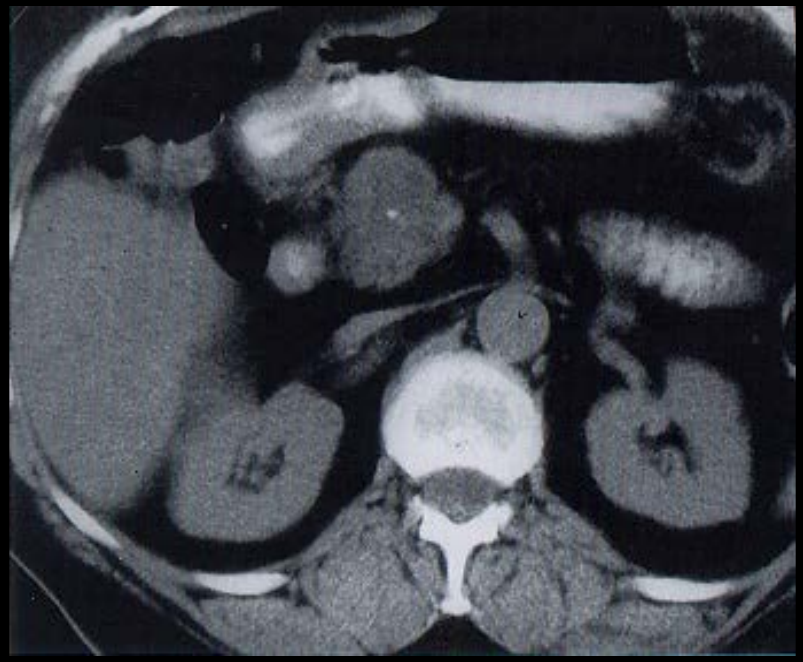




Adenocarcinoma

I. izodenzna ili hipodenzna formacija, najčešće u glavi, uvećava i deformiše formu organa, sa znatnim KS
II. dilatacija d.choledohusa, ascit, metastase





opsrtukcioni ikterus



- http:// www.med.pr.ac/katedra/interna-medicina.php