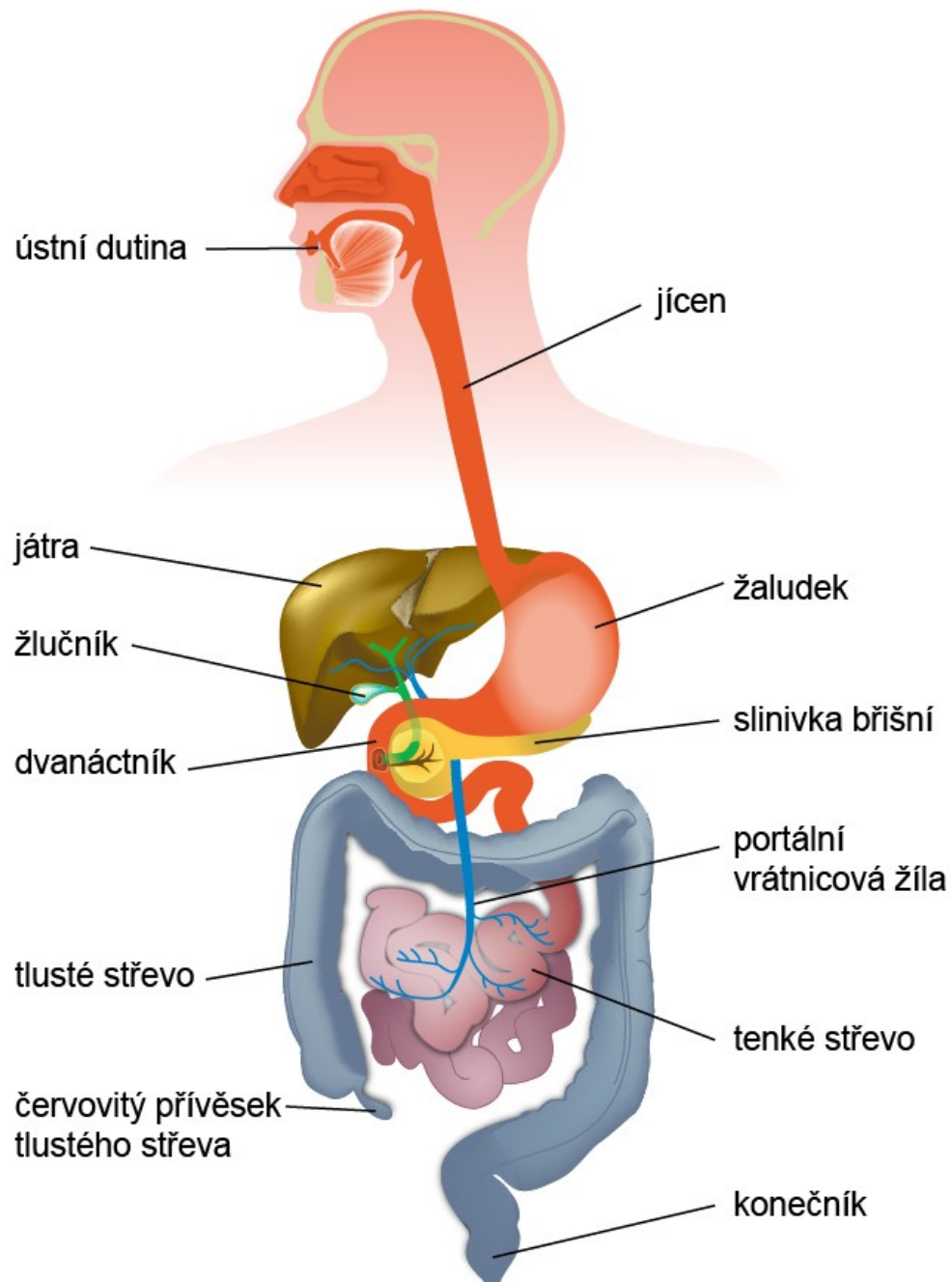


# Nádory GIT

Tomáš Kazda

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Klinika radiační onkologie  
MOÚ



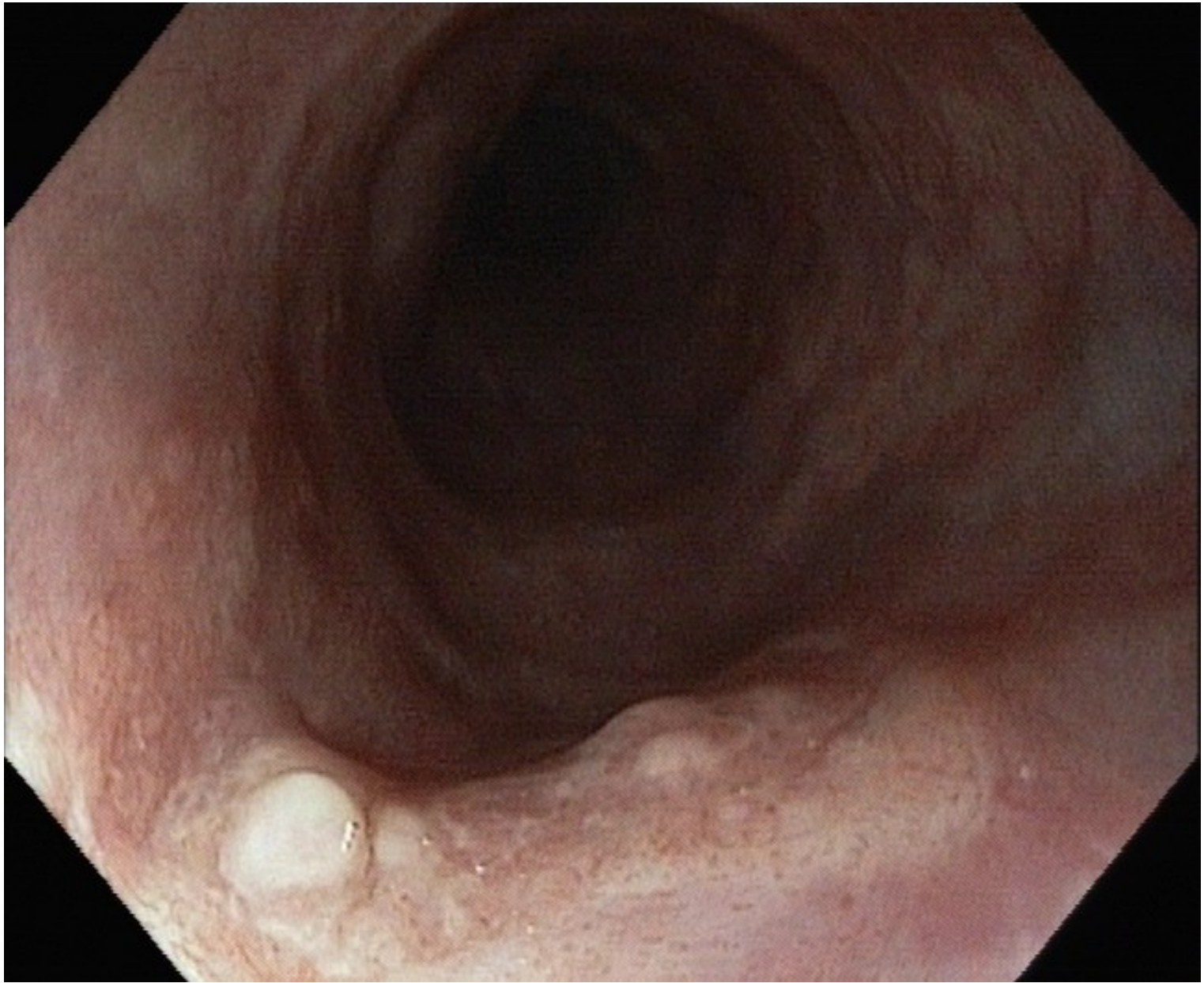
- epidemiologie – jak časté (incidence, prevalence, mortalita)
- etiologie – příčiny vzniku (faktory vnitřní, zevní)
- symptomatologie
- diagnostika
- klasifikace (TNM), histologie
- léčba – kurativní, adjuvantní, paliativní, neoadjuvantní
  - operace, radioterapie, chemoterapie, hormonoterapie, cílená léčba, imunoterapie, podpůrná léčba

# Společné charakteristiky nádorů GIT

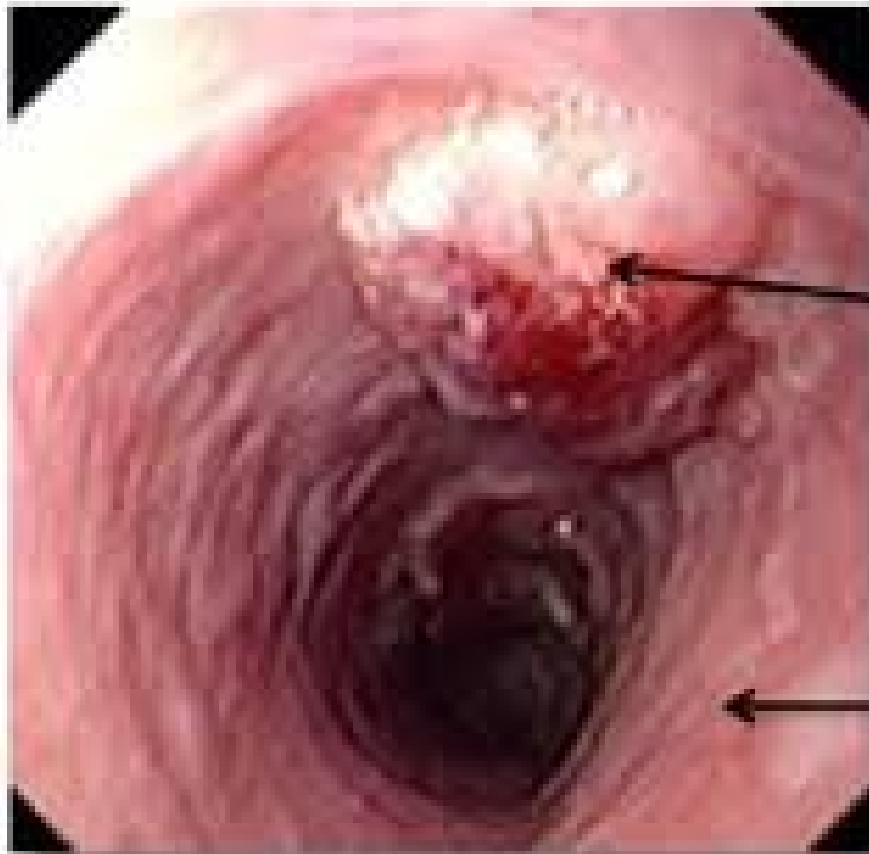
- většina nádorů vzniká maligní transformací slizničního epitelu
- vnější etiologické faktory - životospráva
- diagnostika – endoskopie, zobrazovací metody
- význam mají všechny základní typy léčby – komplexní onkologické péče (operace, radioterapie, chemoterapie, cílená léčba)
- důraz na včasný záchyt onemocnění – kurativní léčba – operace (resekce)
- chemoterapie: 5 fluorouracil

# Nádory jícnu

- relativně vzácné
- kouření, alkohol, iritace sliznice HCl, Barretův jícn
- polykací potíže, hubnutí, bolest při polykání
- endoskopie (esofagogastroskopie) s biopsií, RTG hrudníku (pasáž), CT hrudníku a další
- histologické typy
  - spinocelulární karcinom (kouření, alkohol)
  - adenokarcinom (působení HCl, Barretův jícn)
- léčba se liší stádiem onemocnění a lokalitou postižení – krční vs. hrudní úsek
- radikální operační výkon je možný jen u vybraných pacientů
- kombinace radioterapie a chemoterapie (neoadjuvantní, kurativní)
- důraz na podpůrnou léčbu, zajištění nutrice



## Endoscopy of the esophagus



Tumor

Esophagus

GE MEDICAL SYSTEMS  
Lithotripsy System  
MULTI-COCH



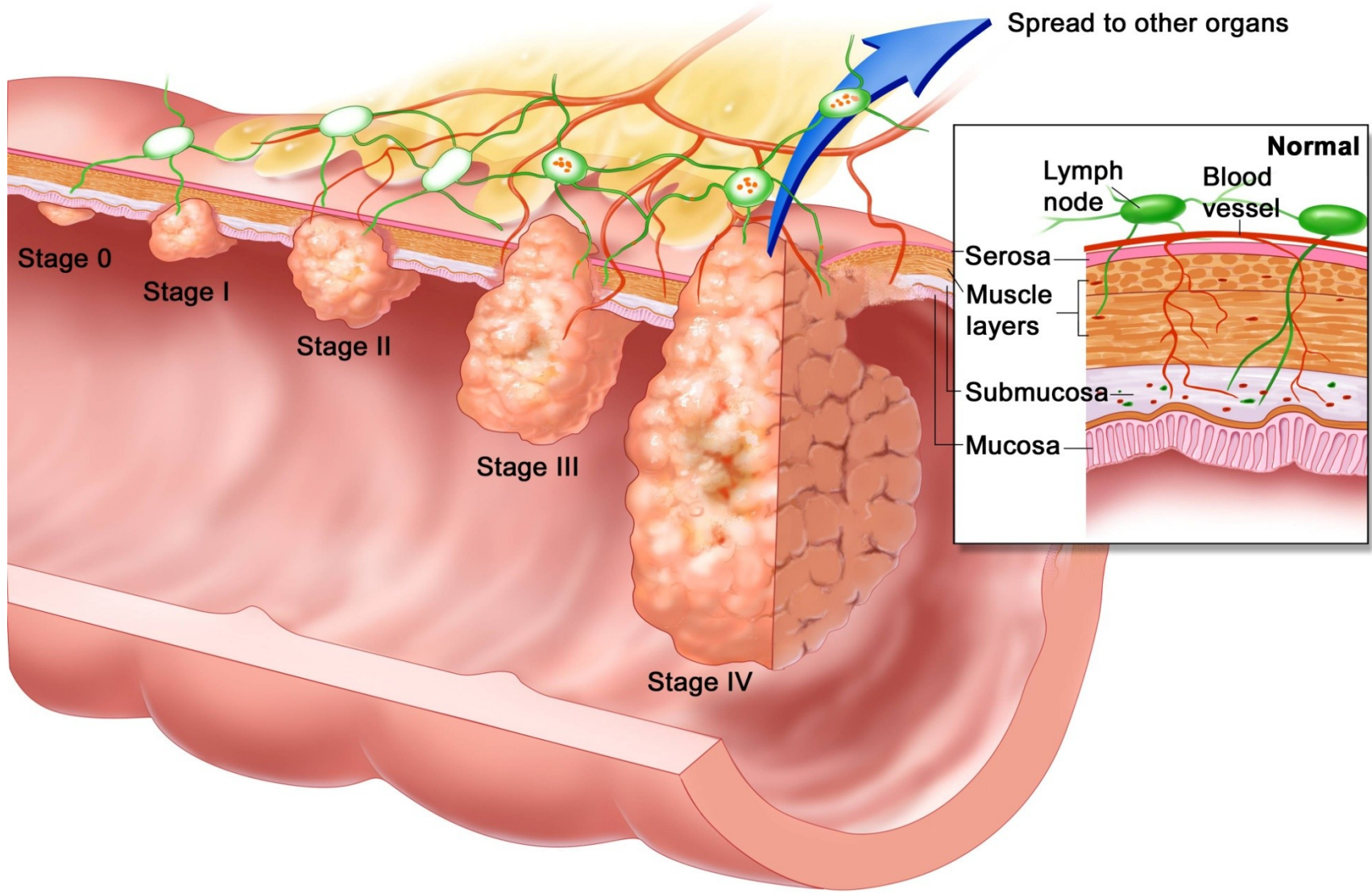
ES: 1.000  
DA: 49.2 deg  
DB: 0.0 deg  
L: 1.00 deg  
TR: 0 deg  
Mag: 1.00  
FL: 150  
APR: 0000: 10  
REV: 000000

118 10  
(2nd)

118 10  
1000000000000000







Spread to other organs

Stage 0

Stage I

Stage II

Stage III

Stage IV

Normal

Lymph node

Blood vessel

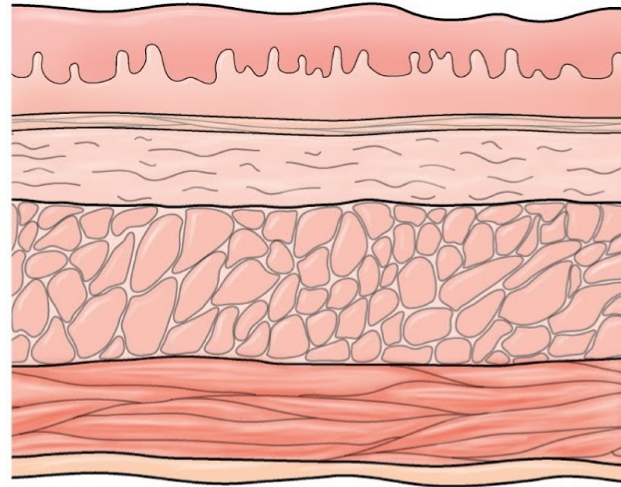
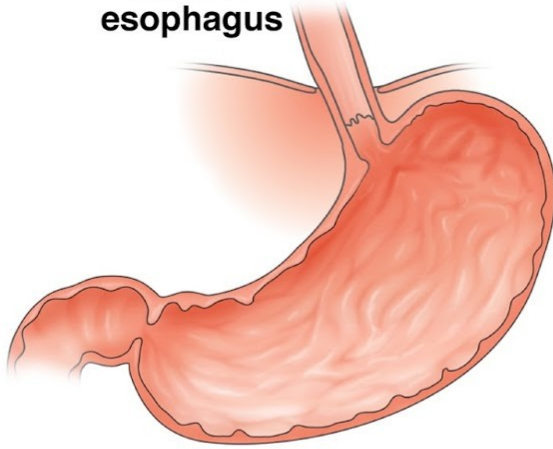
Serosa

Muscle layers

Submucosa

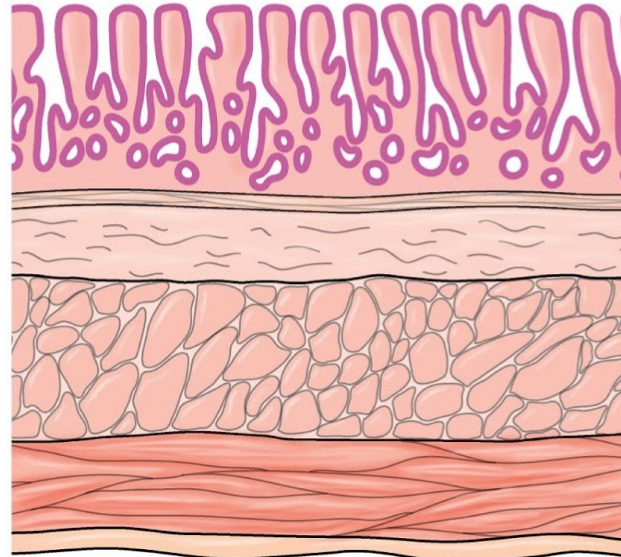
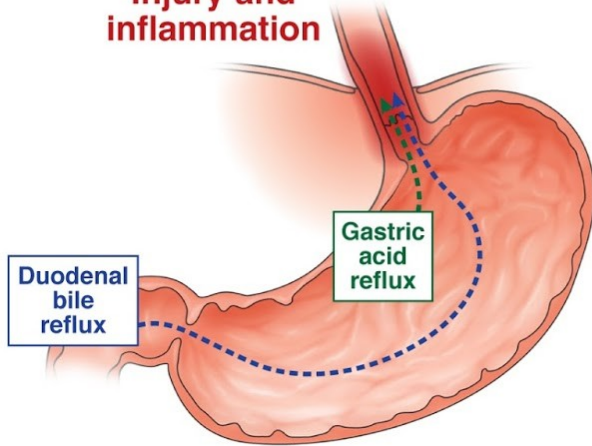
Mucosa

Normal  
esophagus



**A** Normal  
squamous  
epithelium

Injury and  
inflammation

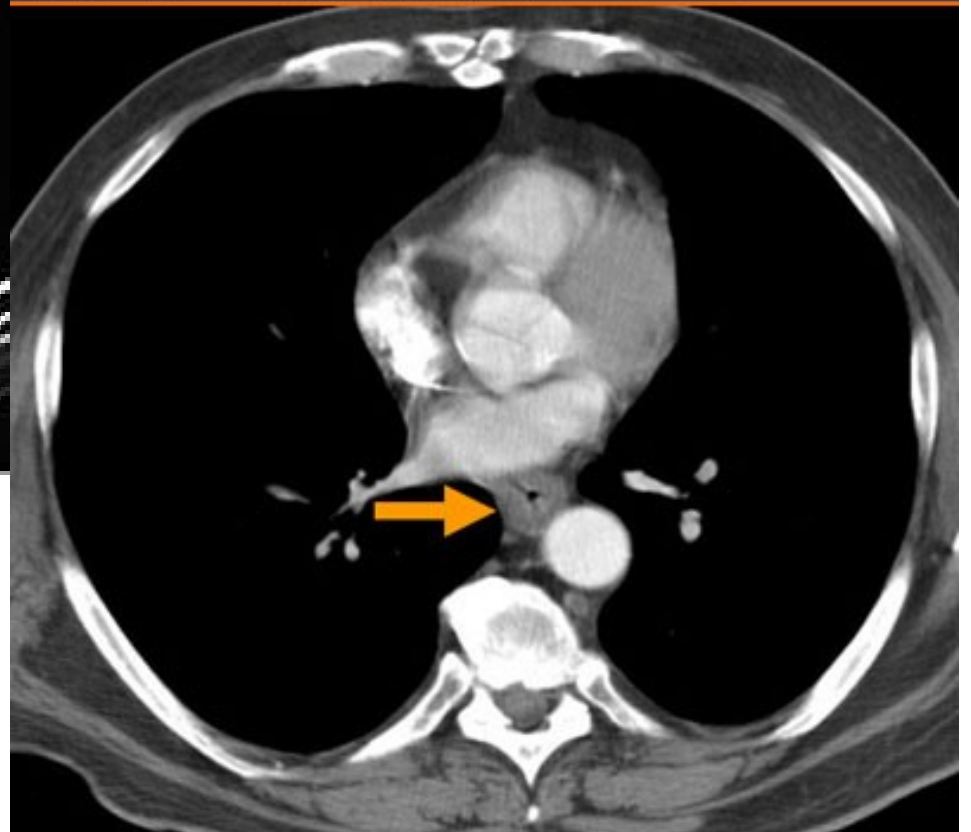


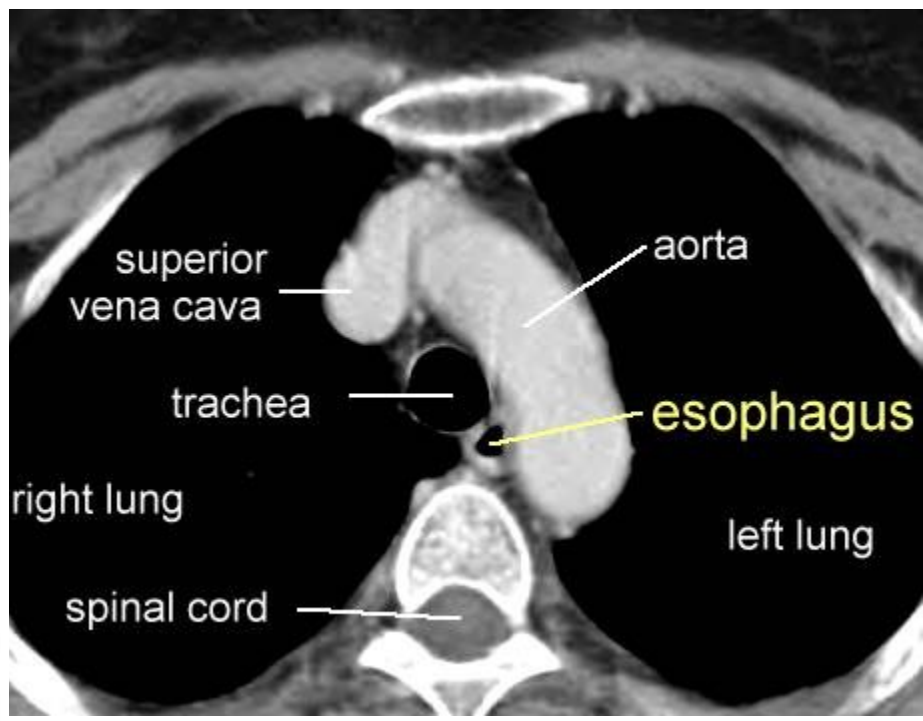
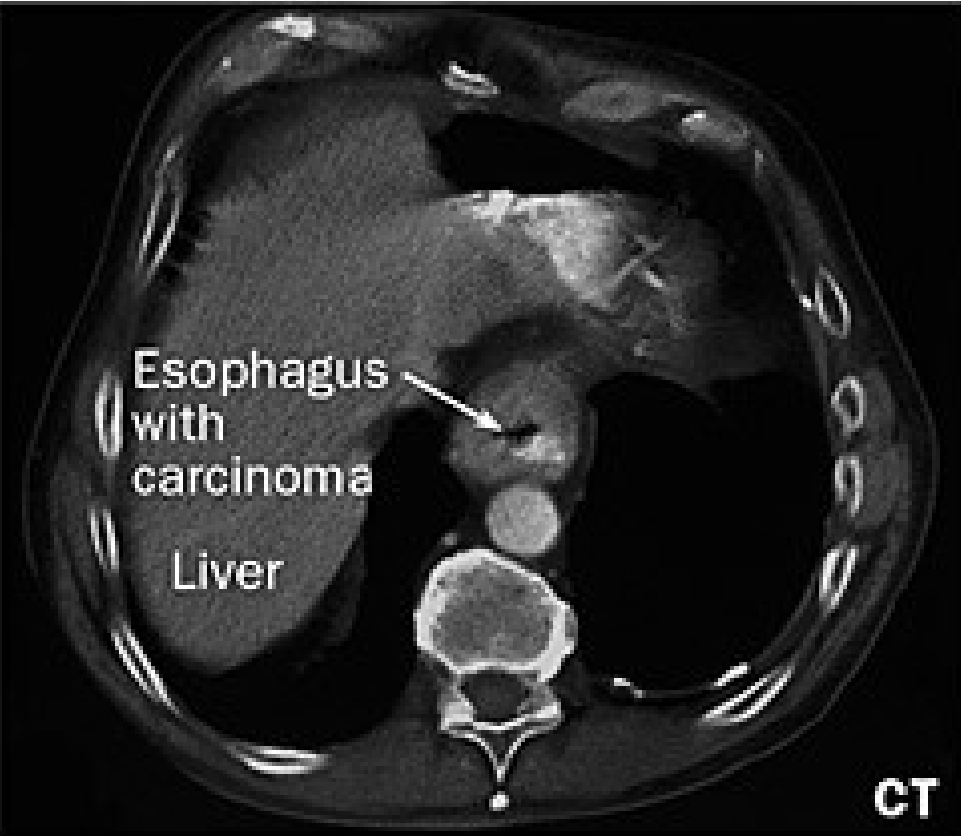
**B** Metaplastic  
columnar  
tissue (BE)



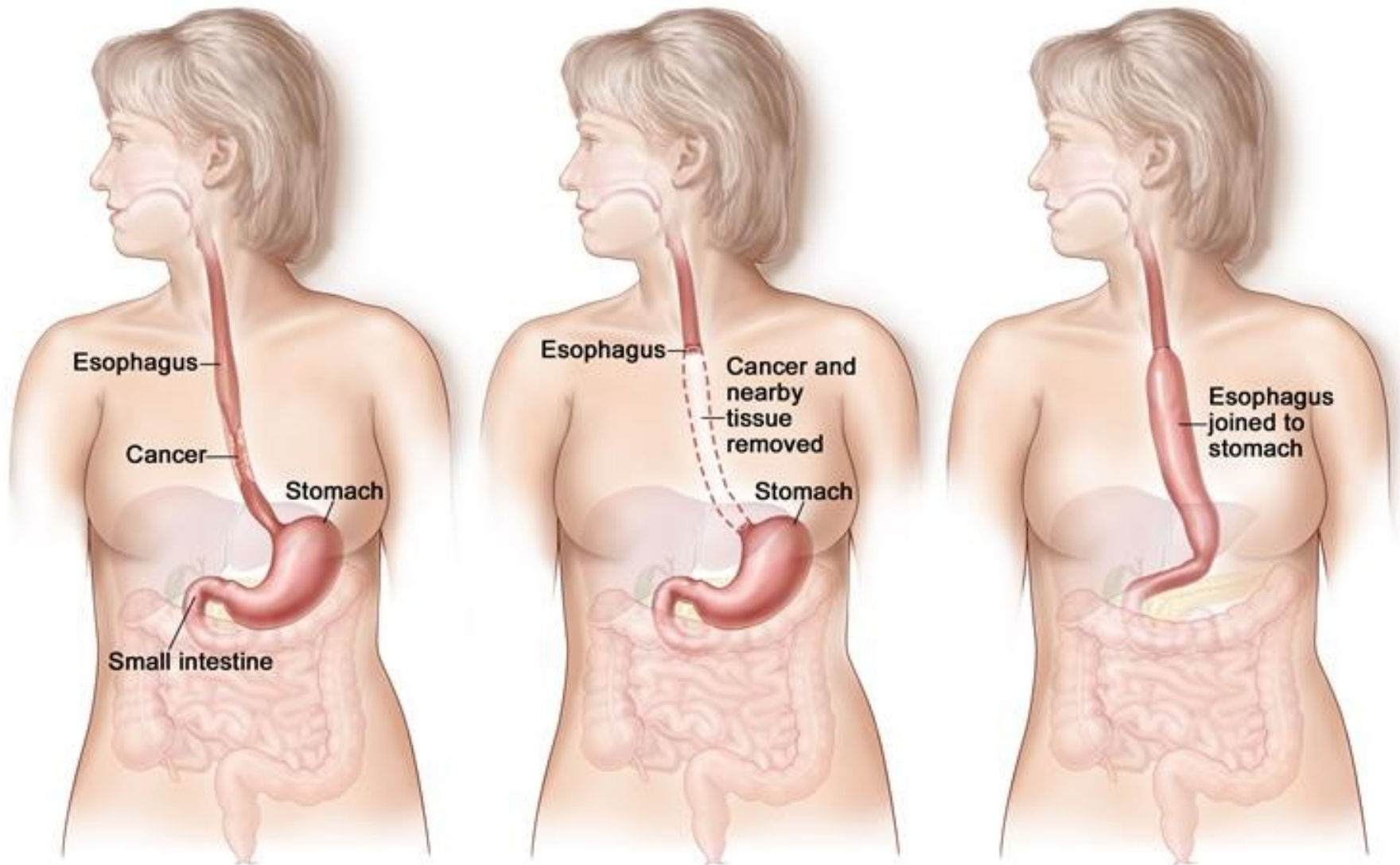
Medscape®

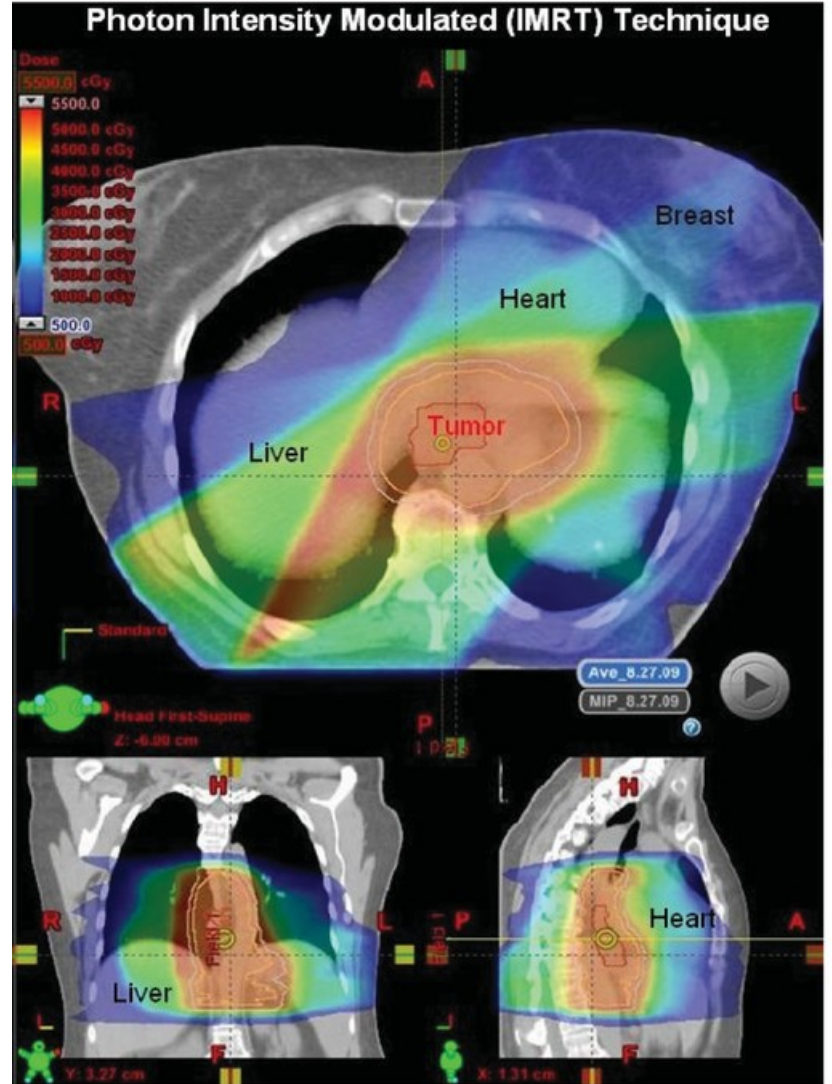
[www.medscape.com](http://www.medscape.com)

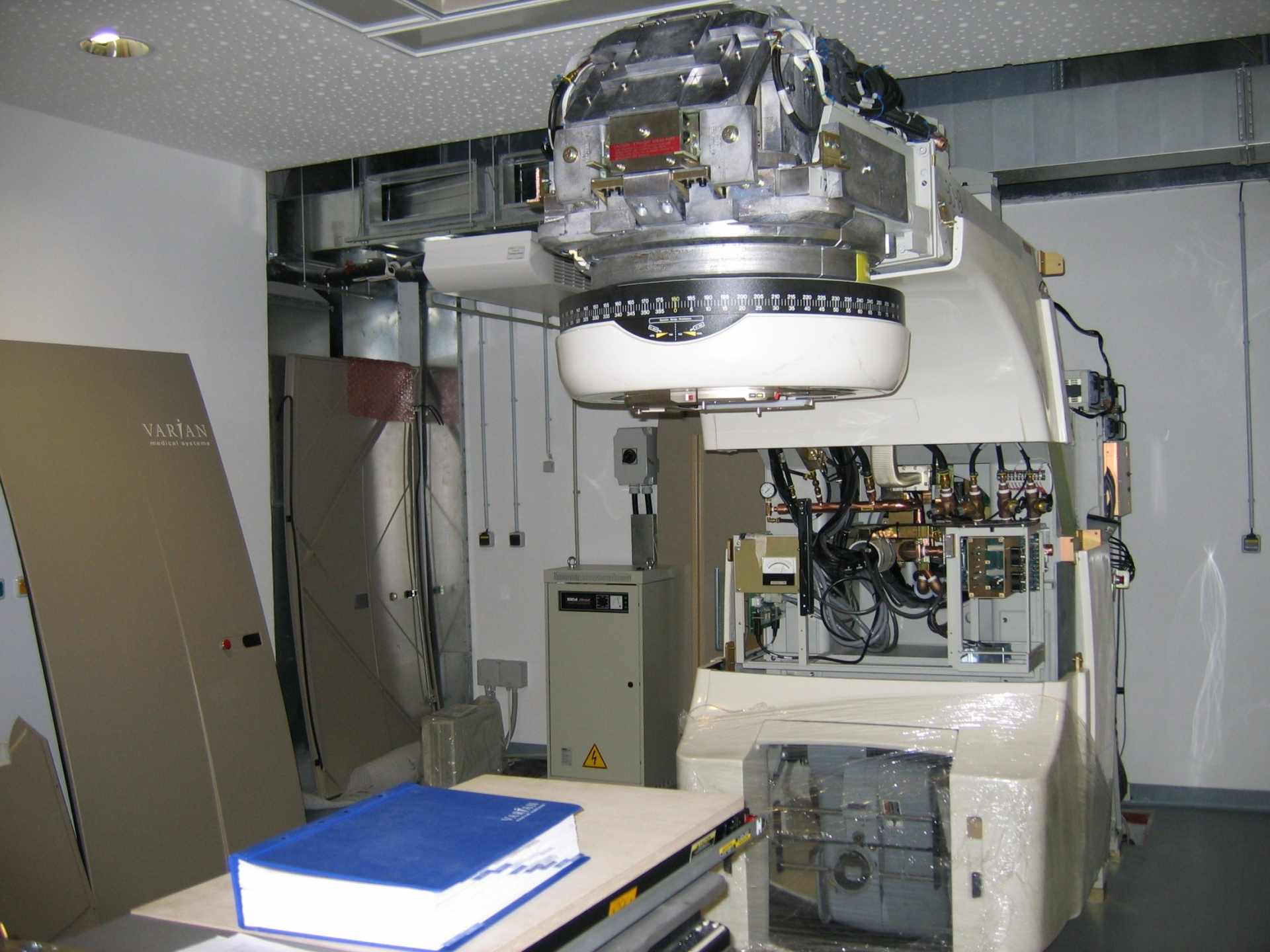




# Esophagectomy

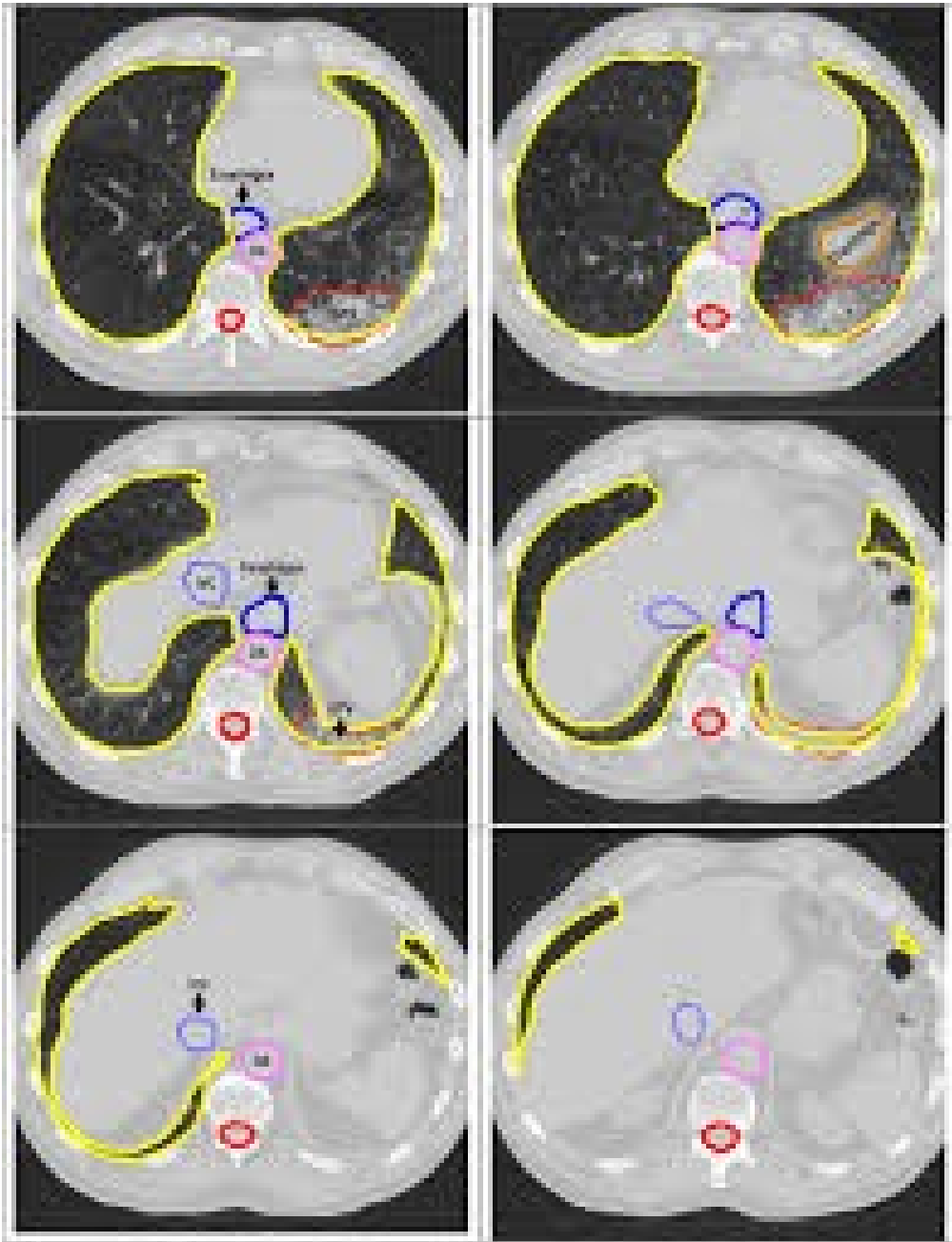


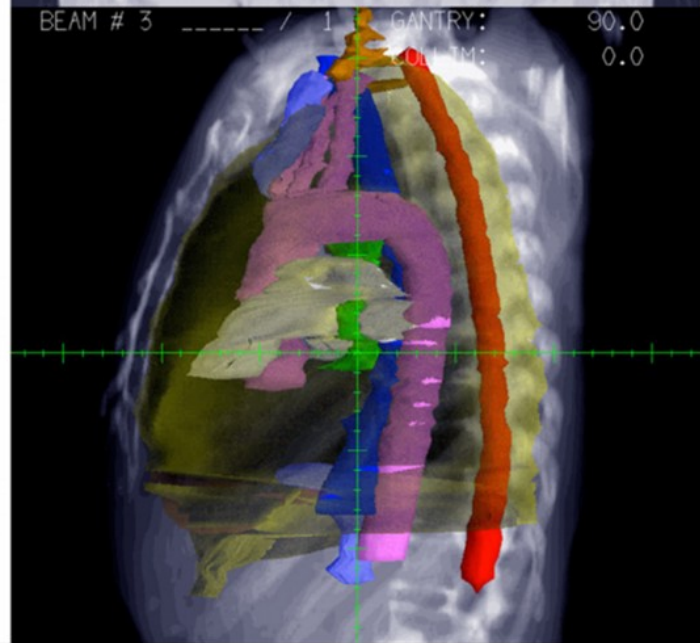
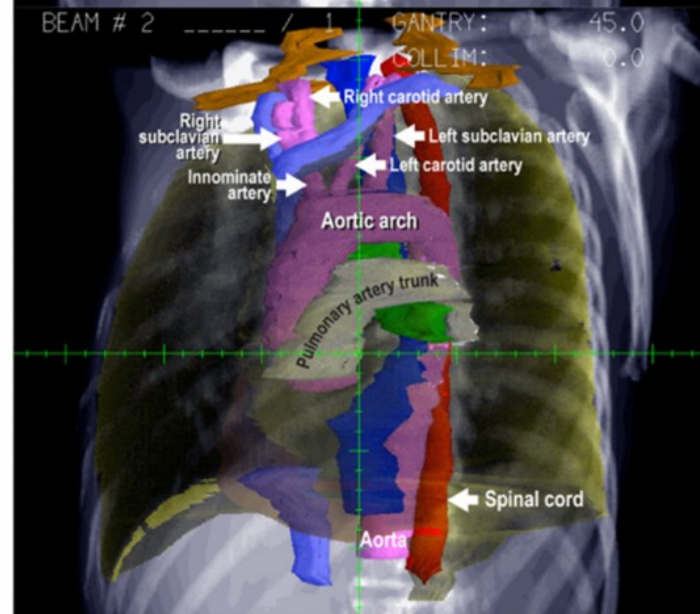
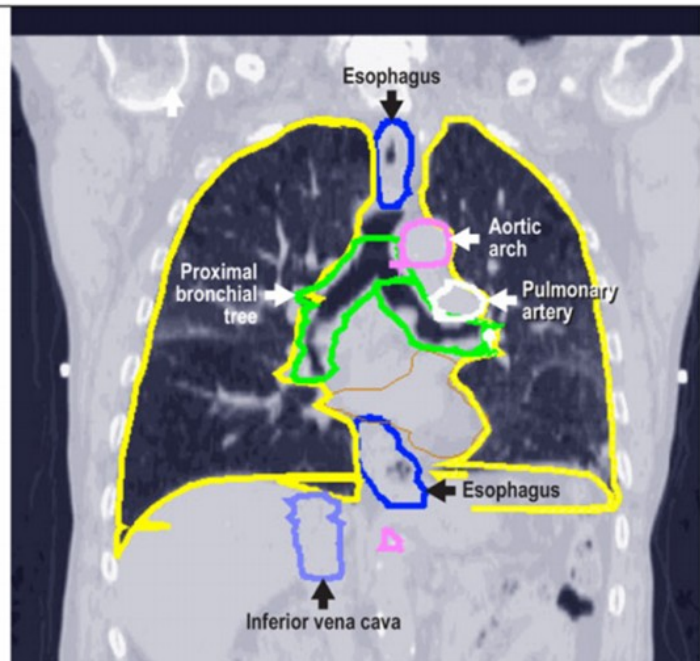
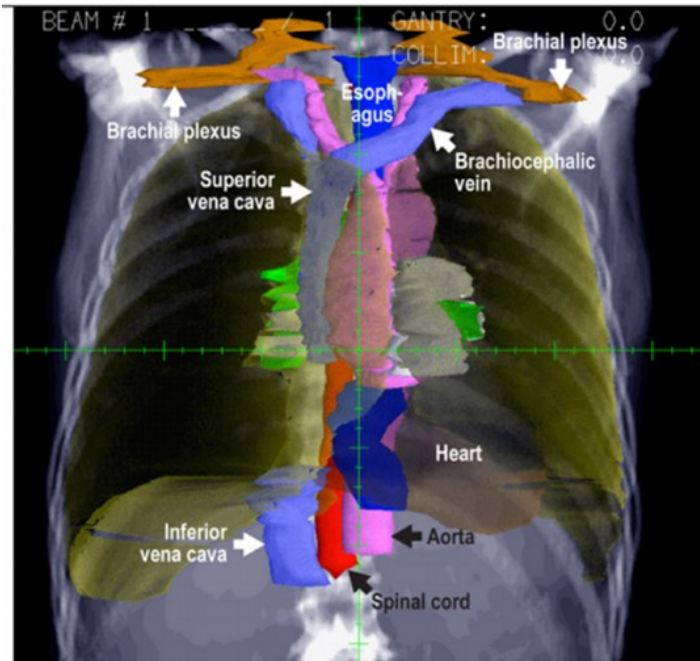


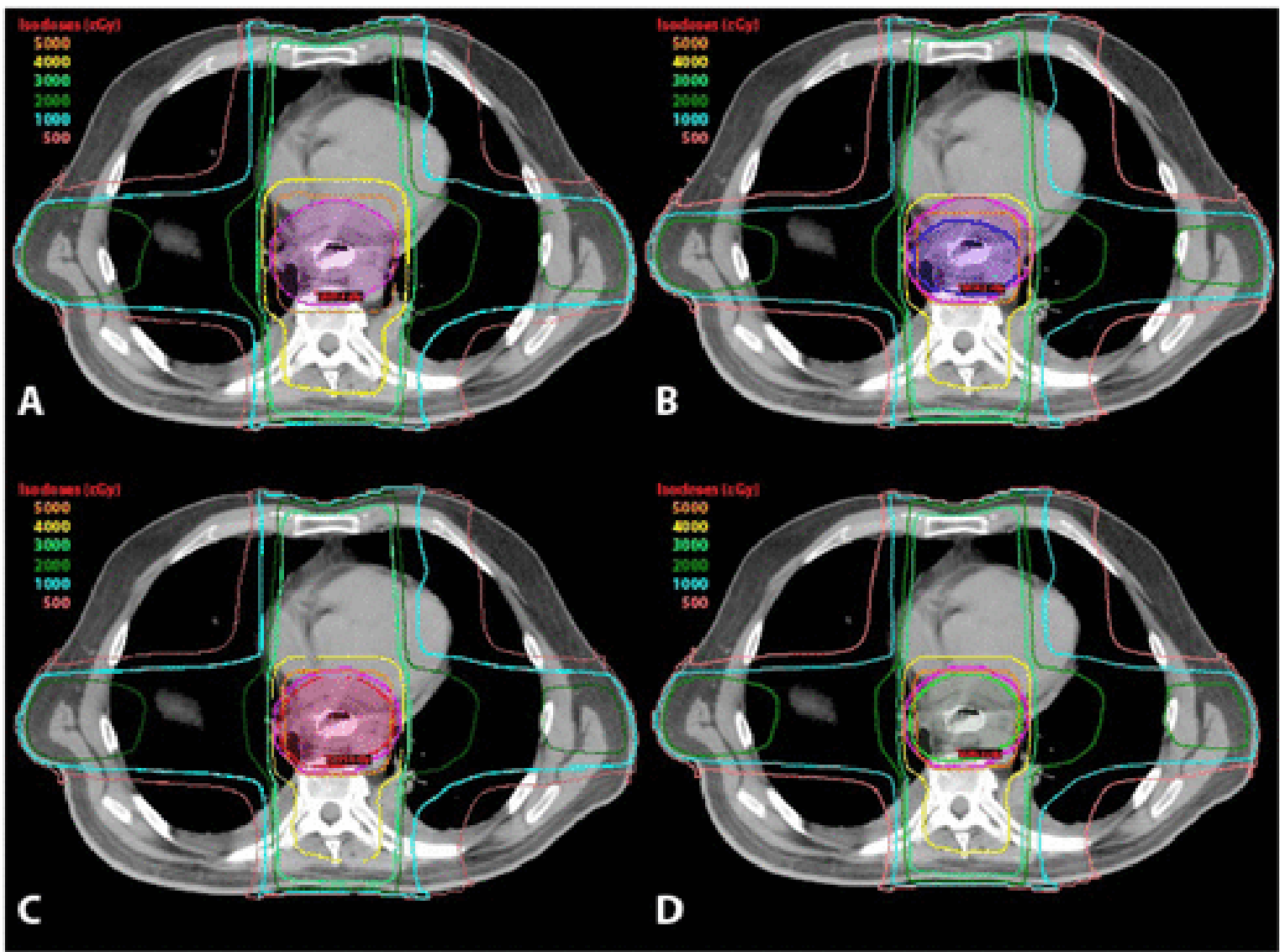


VARIAN  
medical systems





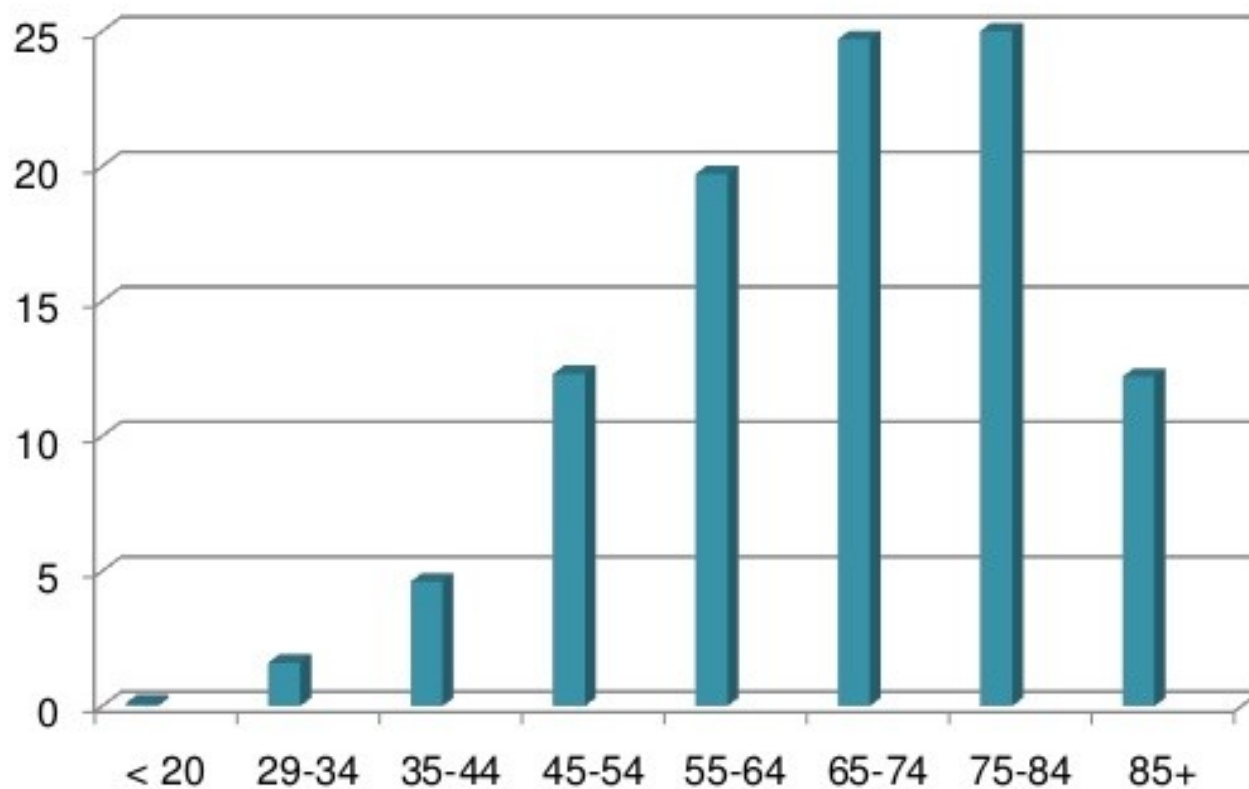




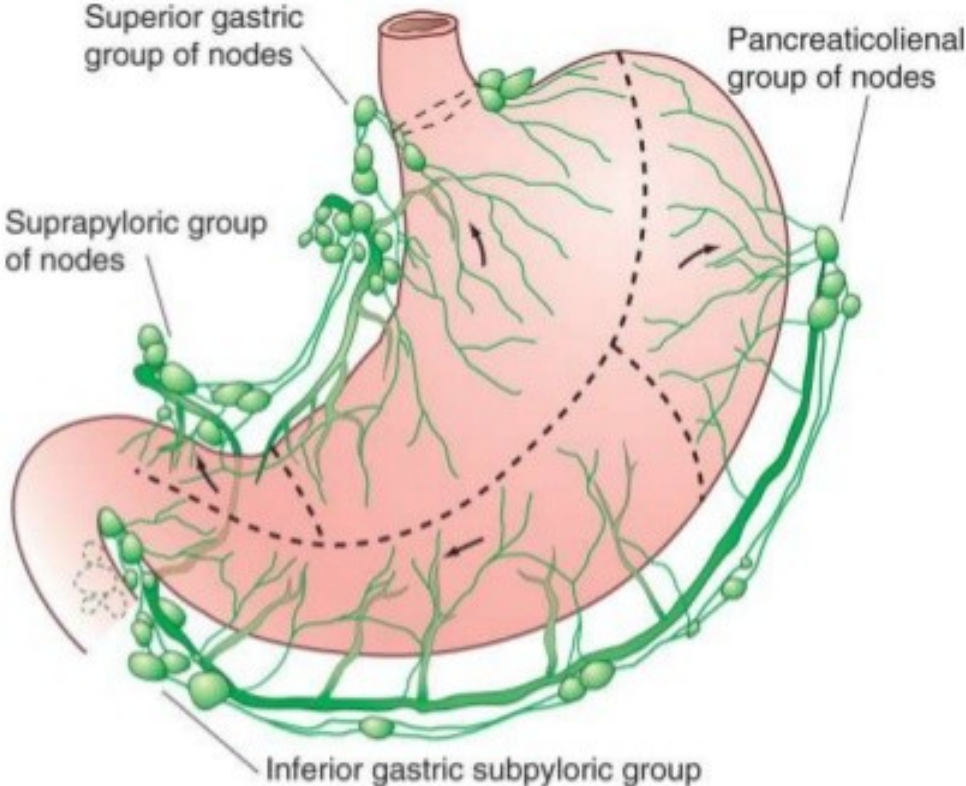
# Nádory žaludku

- celosvětově poměrně časté, u nás incidence klesá
- kouření, strava (sůl), obezita, Helicobacter pylori, věk
- symptomy často nespecifické (dyspepsie, jako vředová choroba), hubnutí, zvracení
- endoskopie (esofagogastroskopie) s biopsií, RTG hrudníku, CT hrudníku, markery..
- patologická uzlina v nadklíčku – Virchowova; MTS ovaria – Krukenbergův nádor
- histologické typy – adenokarcinom, GIST
- léčba se liší stádiem onemocnění a lokalitou postižení – krční vs. hrudní úsek
- jedinou kurativní metodou je operace (endoskopická, radikální gastrektomie)
- chemoradioterapie, perioperační chemoterapie
- důraz na podpůrnou léčbu, zajištění nutrice

# Age Distribution

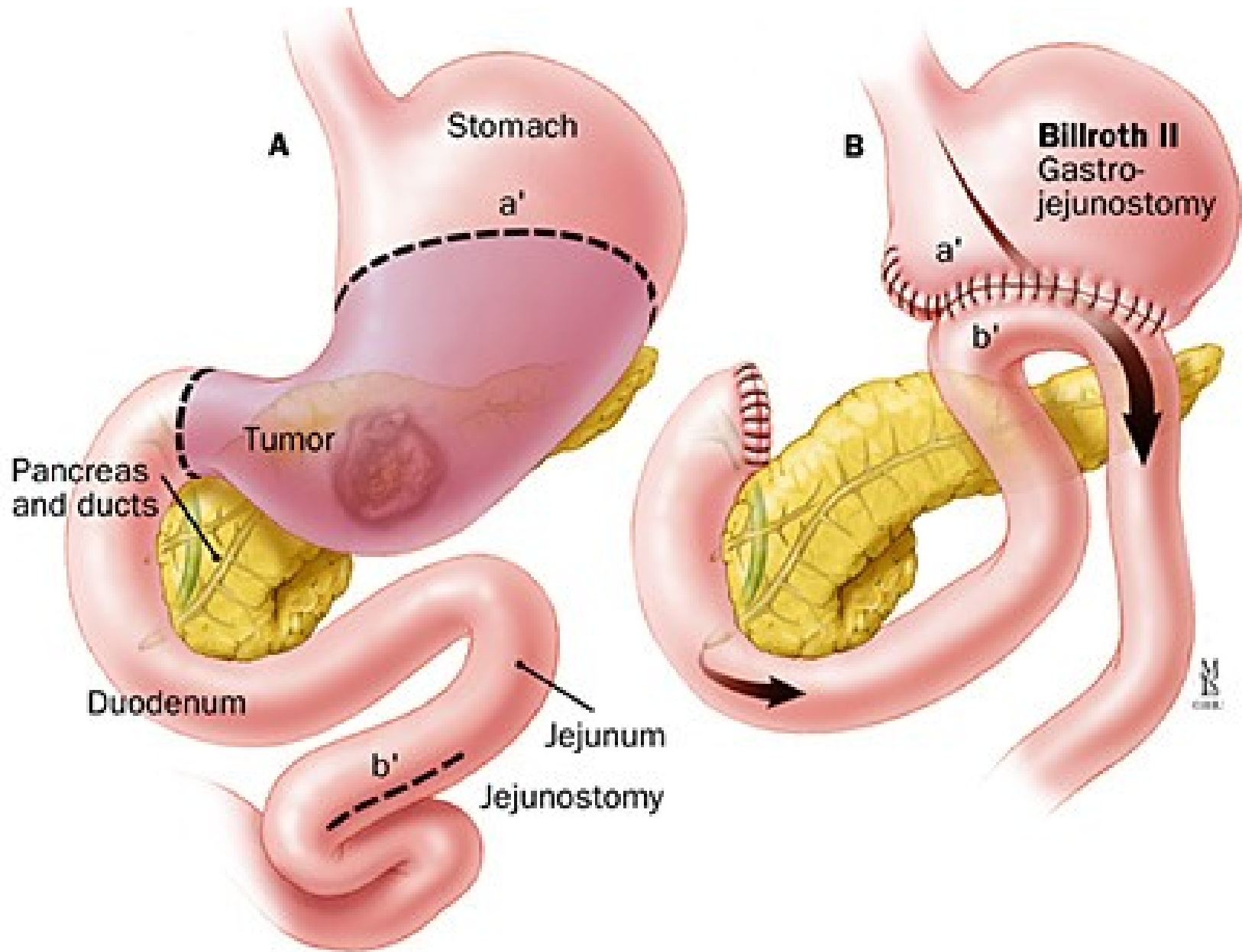


# Stomach and Regional Lymph Nodes



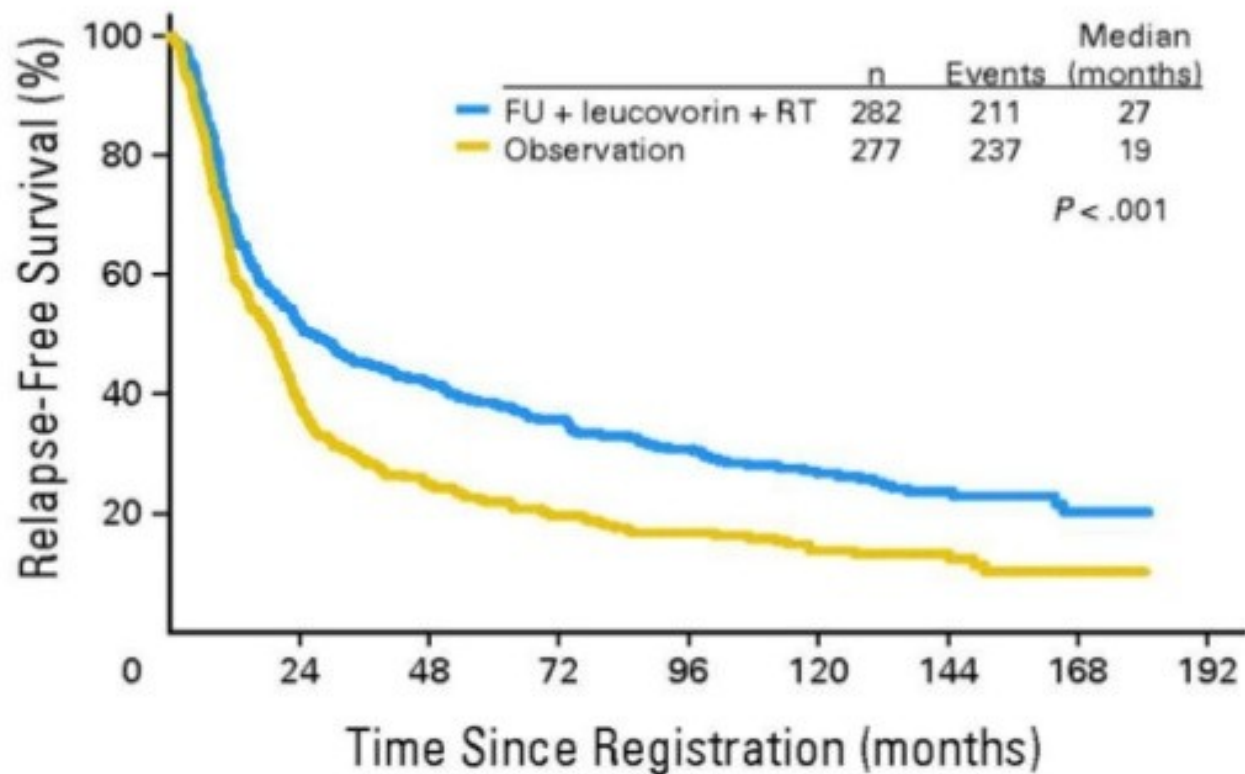
## 5 Year Survival by Stage

<b>IA</b>	<b>70.8%</b>
IB	57.4%
IIA	45.5%
IIB	32.8%
IIIA	19.8%
IIIB	14.0%
IIIC	9.2%
IV	4.0%



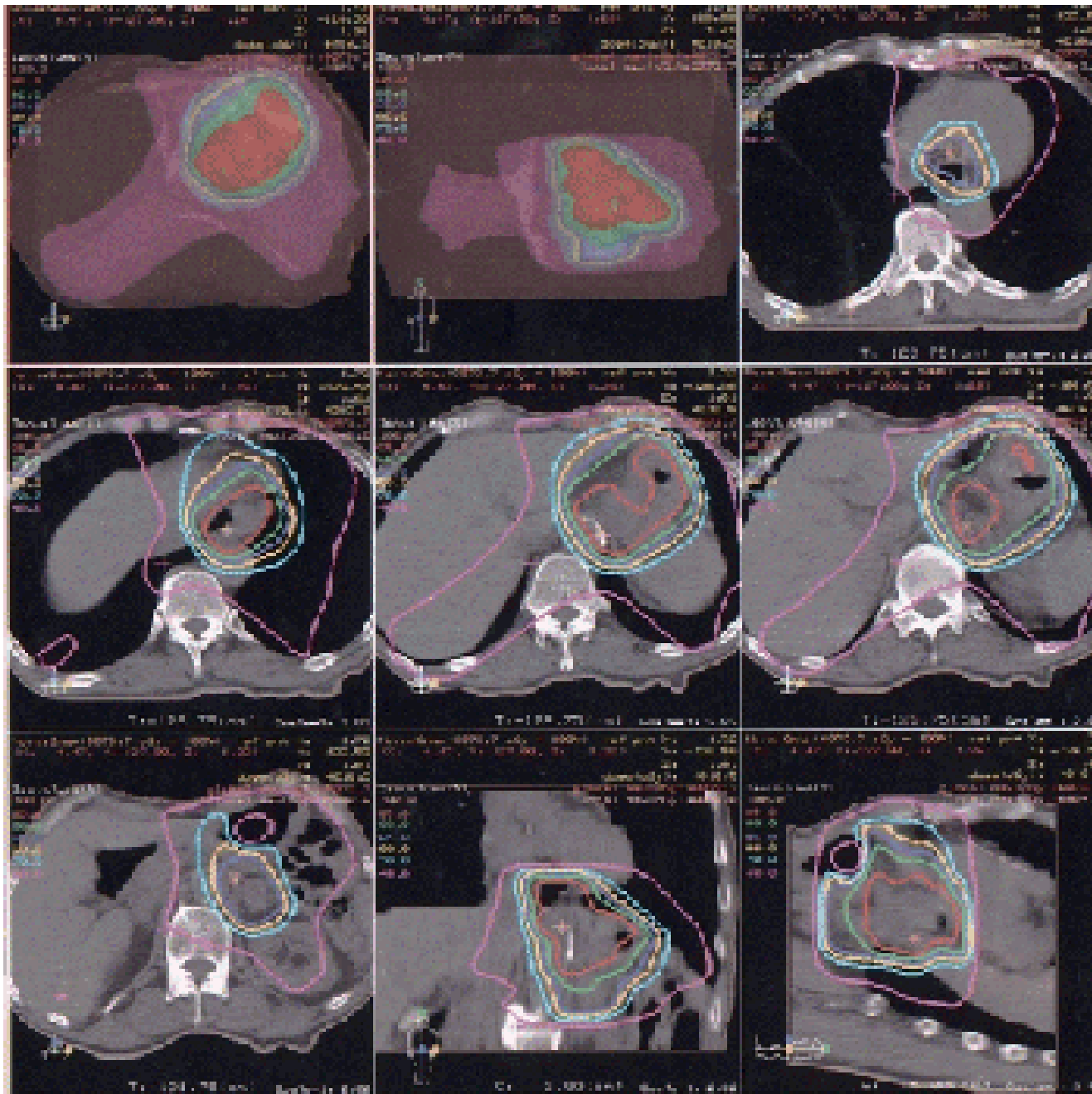


## Updated Analysis of SWOG-Directed Intergroup Study 0116: A Phase III Trial of Adjuvant Radiochemotherapy Versus Observation After Curative Gastric Cancer Resection



JCO July 1, 2012 vol. 30 no. 192327-2333

[https://www.rtog.org/LinkClick.aspx?fileticket=dgwtfz553\\_g%3d&tabid=387](https://www.rtog.org/LinkClick.aspx?fileticket=dgwtfz553_g%3d&tabid=387)

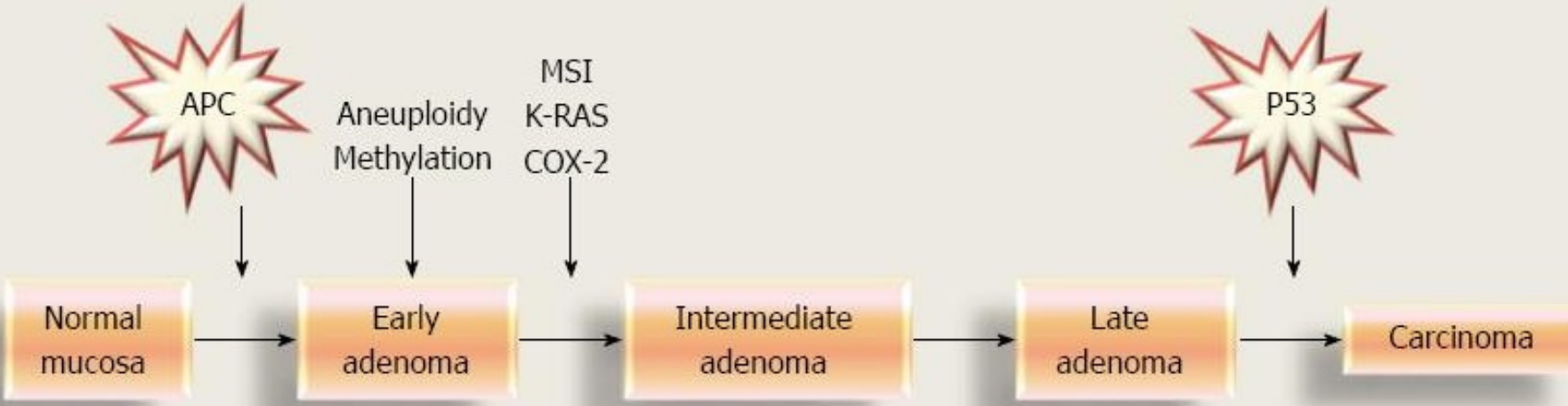


# Nádory kolorekta

- celosvětově druhou nejčastější příčinou úmrtí na nádorové onemocnění
- v ČR nejvyšší incidence: 70/100.000, mortalita 37/100.000
- západní styl života, obezita, červené maso, málo vlákniny
- hereditární syndromy (FAP, HNPCC – Lynchův sy)
- screening (TOKS, kolonoskopie)
- dlouho bezpříznakové, krvácení, změna defekačního stereotypu, hubnutí
- vyšetření per rektum, kolonoskopie s biopsií, CT, MR břicha, UZ břicha, TRUS
- 90% adenokarcinomy, z polypů
- důraz na správnou klasifikaci onemocnění – vliv na léčebnou strategii
- chirurgie – lokální excize, totální mesorektální excize, abdominoperineální resekce (Miles), metastazektomie, odlehčovací stomie
- neoadjuvantní chemoradioterapie
- adjuvantní chemoterapie – 5 fluorouracil, kombinace (oxaliplatina, irinotekan)
- cílená léčba (bevacizumab, panitumumab)
- specifika léčby jaterních metastáz

TNM	Rozsah šíření tumoru
Tis	Carcinoma in situ: intraepithelial or invasion of lamina propria
T1 T1sm1 T1sm2 T1sm3	Submucosa T1sm1 – infiltrace vnitřní 1/3 submukózy T1sm2 – infiltrace střední třetiny submukózy T1sm3 – infiltrace zevní 1/3 submukózy <small>(Annals of Oncology: Clinical practice guidelines, Volume 24, Supplement 6, October 2013)</small>
T2	Muscularis propria
T3 T3a T3b T3c T3d	Subserosa/perirectal tissue <1 mm 1-5 mm 5-15 mm 15+ mm
T4	Perforation intovisceral peritoneum(a) or invasion to other organs (b)
N N1a N1b N1c N2a N2b	Regional lymphnodes 1 LU + 2-3 LU + malá deposita v okolním tuku 4-6 LU + 7 a více LU +
M M1a M1b	Vzdálené metastázy 1 postižený orgán nebo set LU více než 1 postižený orgán nebo postižené peritoneum

Sporadic colon cancer

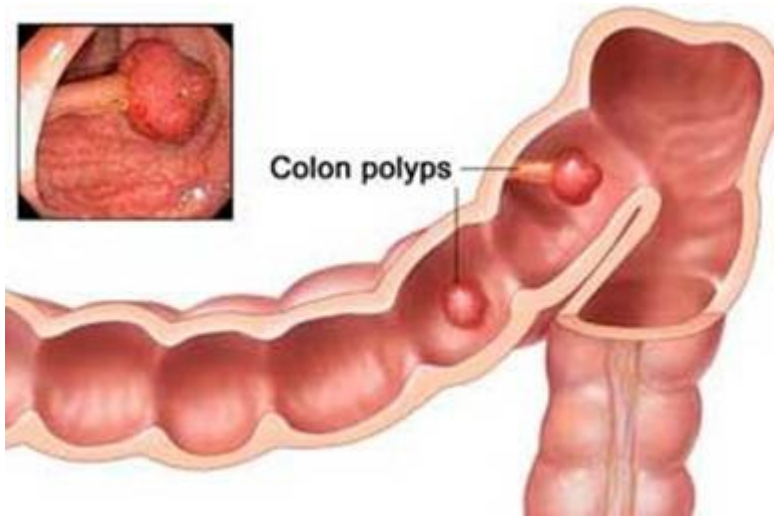


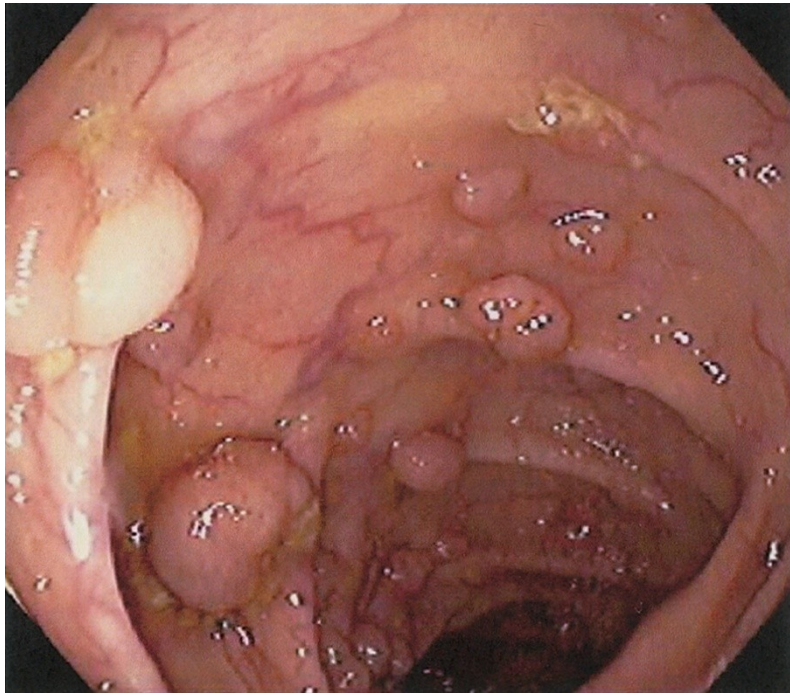
Prognostická skupina	TN substage	Terapeutické možnosti
Very early (2% LR v 5 letech po LE)	cT1 sm1 N0	Lokální excise (TEM) - nutno dosáhnout R0
	If poor prognostic signs (cT1 sm2,3 nebo high grade nebo V1)	Resekce (TME) (or possibly CRT)
Early (good) 3-4% LR	cT1-2; cT3a (b) if middle or high, N0 (or cN1 if high), mrf-, no EMVI	Surgery(TME) alone.
	If poor prognostic signs (crm+, N2)	Surgery (TME) + postop CRT or CTa (CRT with evaluation, if cCR wait-and-see, organ preservation)
Intermediate (bad)	cT2 very low, cT3mrf- (unless cT3a(b)and mid- or high rectum, N1-2, EMVI+, limited cT4aN0	Preop RT (5 5 Gy) or CRT followed by TME. If CRT and cCR, wait-and-see in high risk patients for surgery.
Locally advanced (ugly)	cT3mrf+, cT4a,b, lateral node+	Preop CRT followed by surgery (TME+more extended surgery if needed due to tumour overgrowth). 5 5 Gy with a delay to surgery in elderly or in patients with severe comorbidity who cannot tolerate CRT

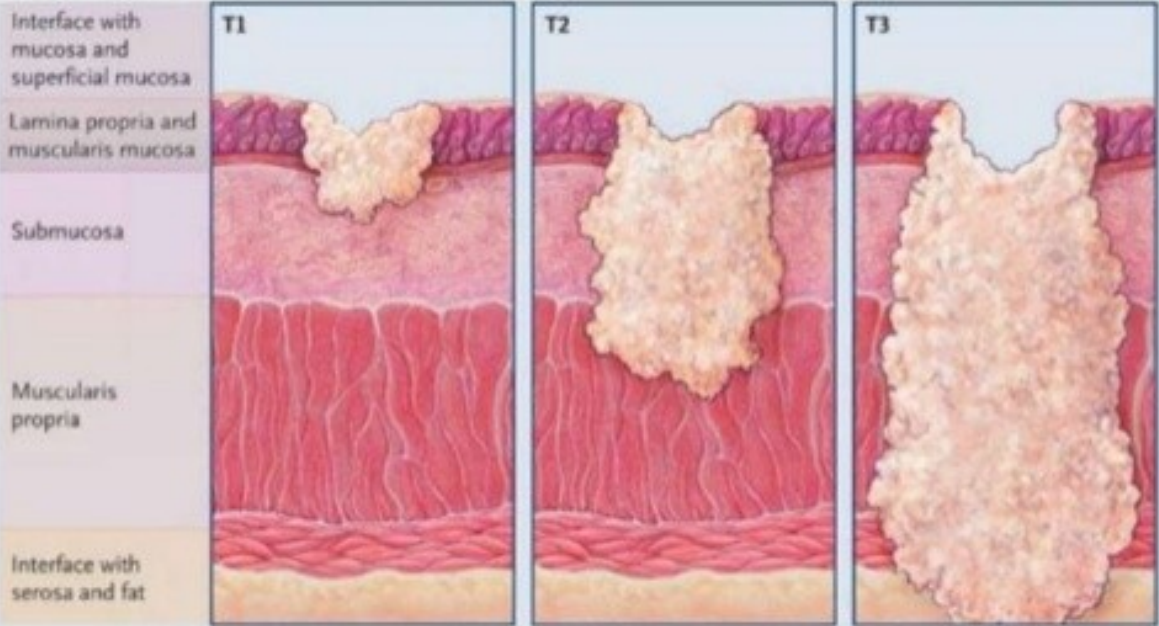
# Colonoscopy



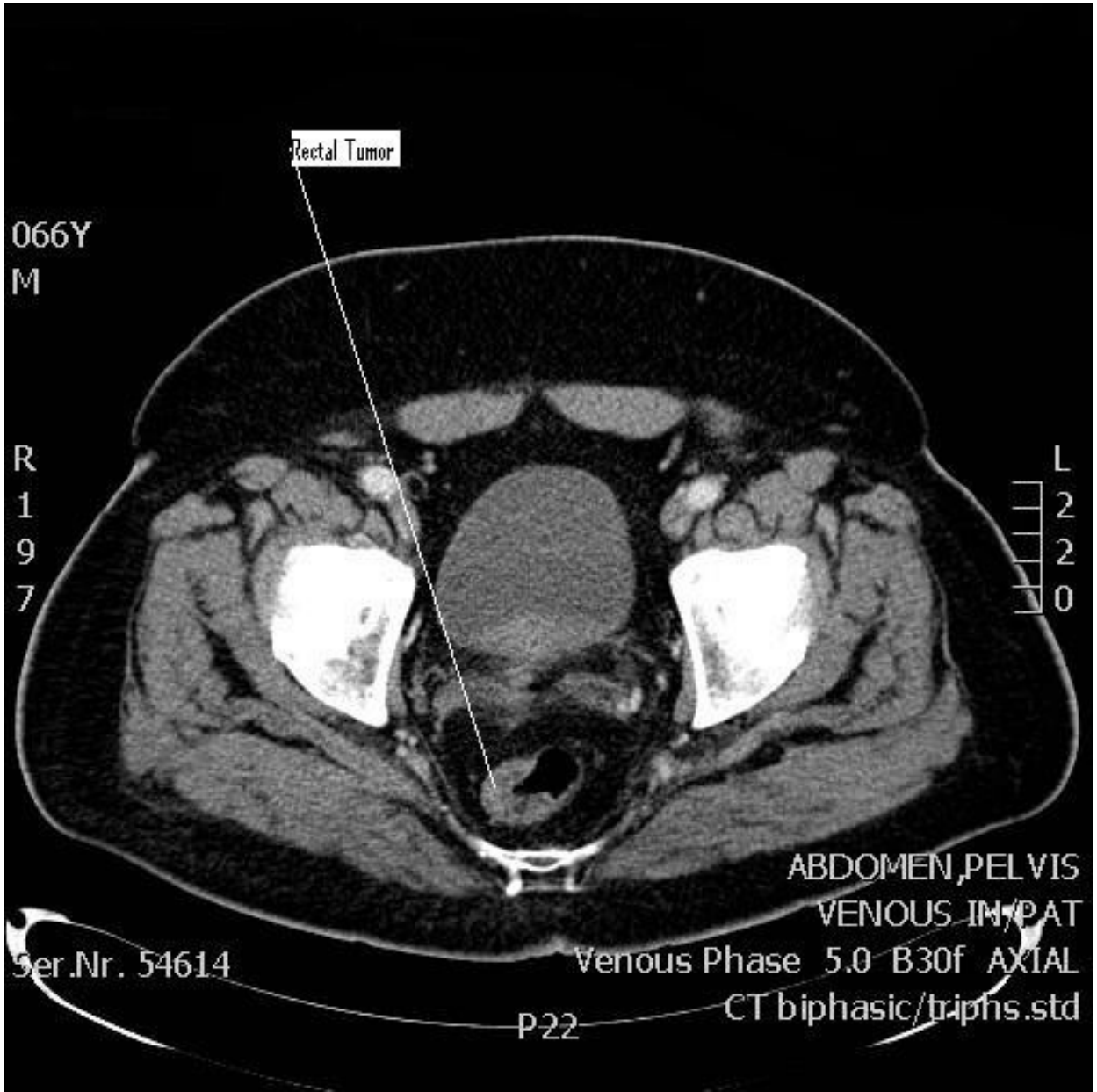












066Y  
M

R  
1  
9  
7

Rectal Tumor

L  
2  
2  
0

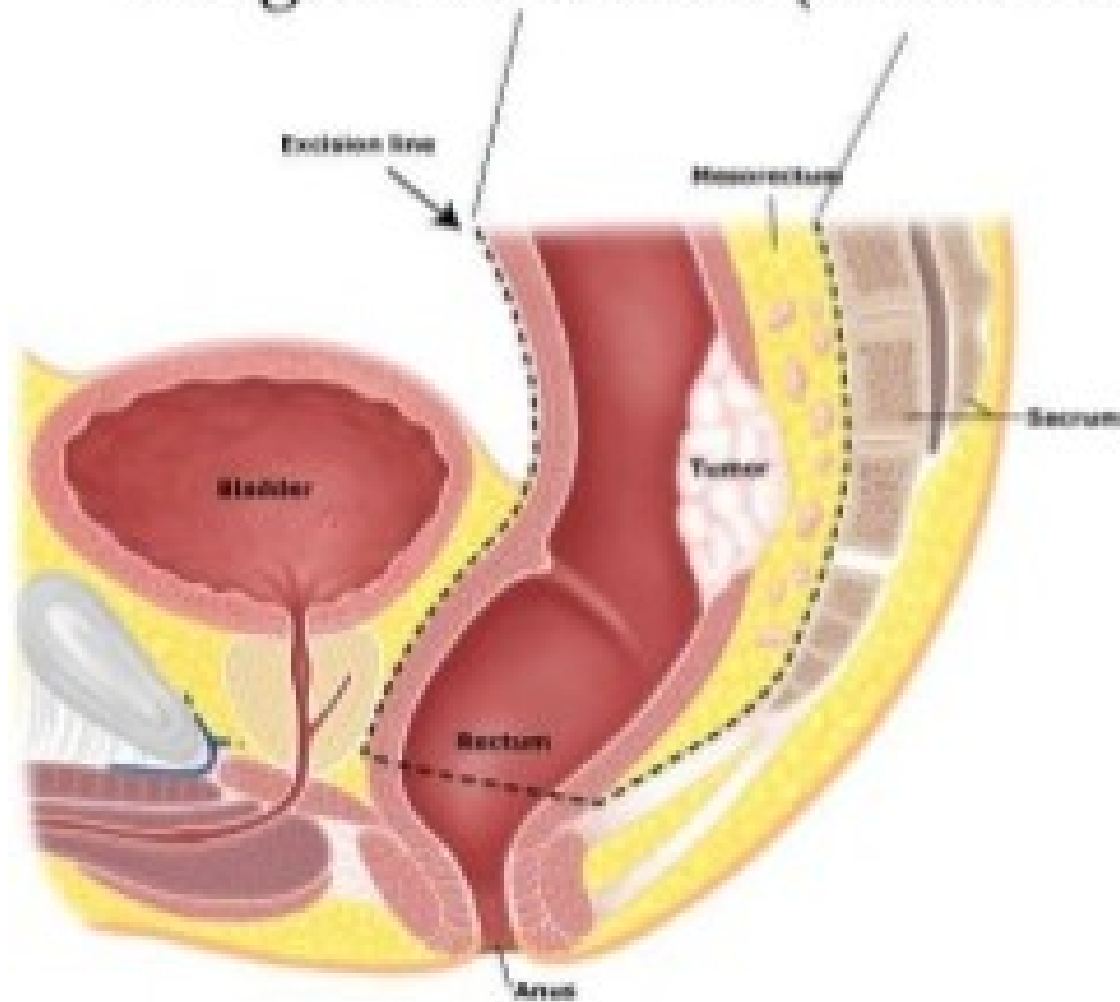
Ser.Nr. 54614

P22

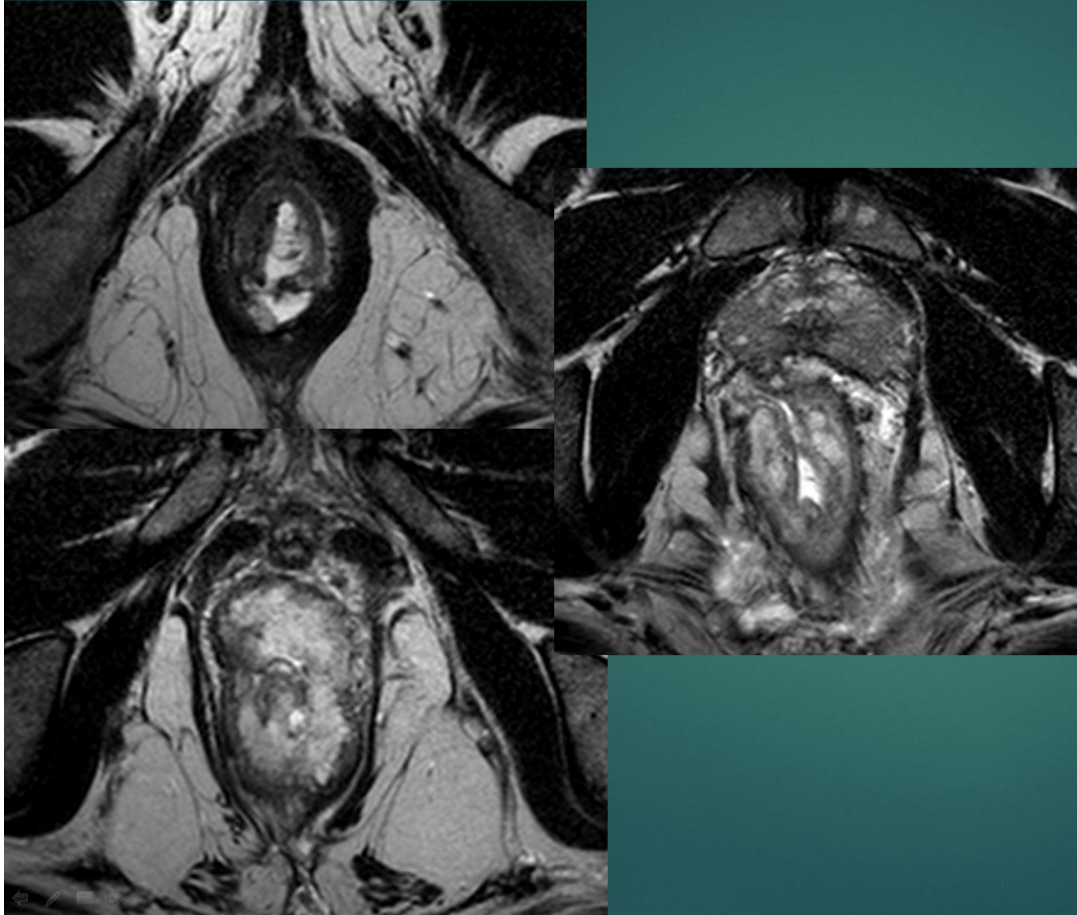
ABDOMEN, PELVIS  
VENOUS IM/PAT  
Venous Phase 5.0 B30f AXIAL  
CT biphasic/triphs.std



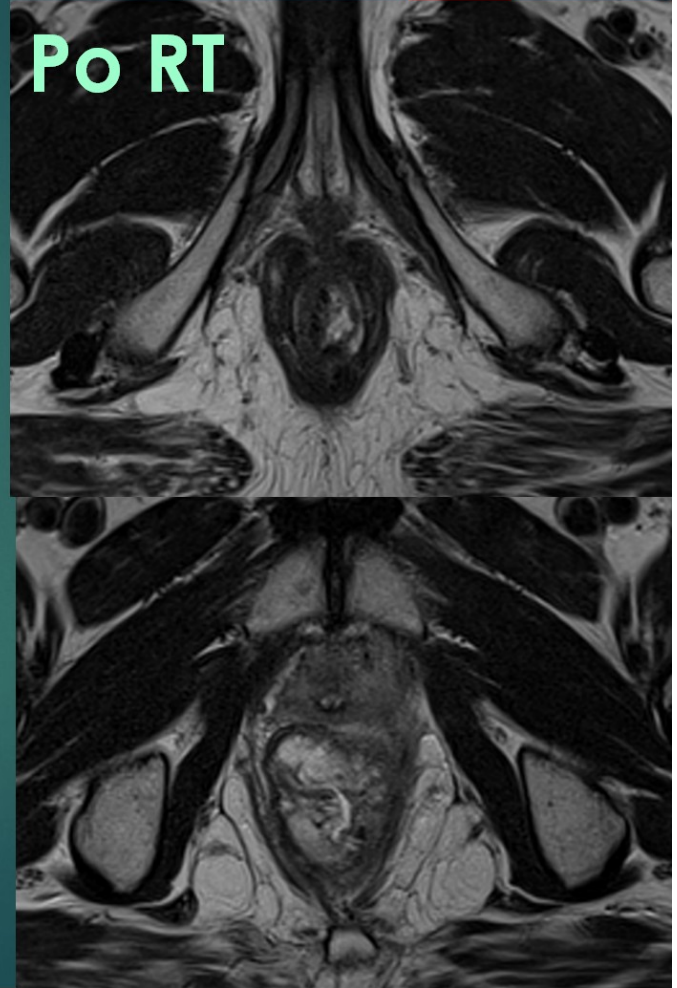
# Surgical Resection (Mesorectal)



Před RT

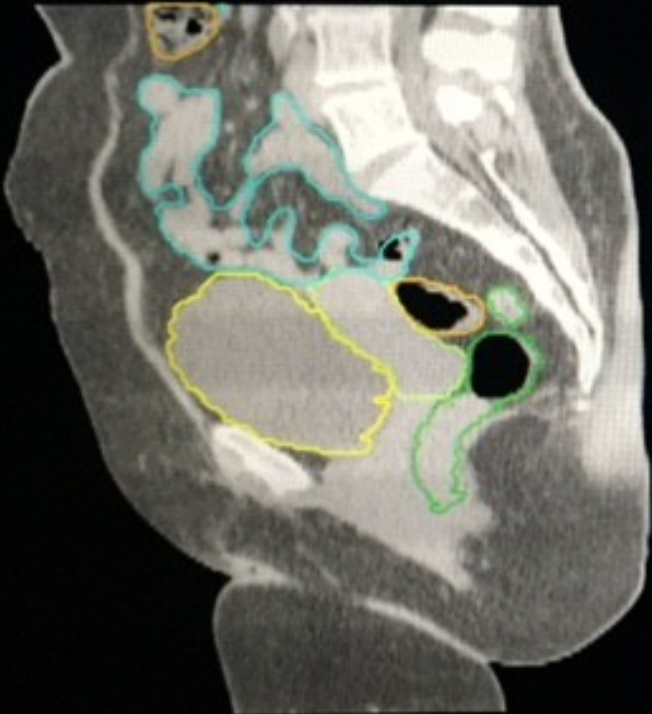


Po RT



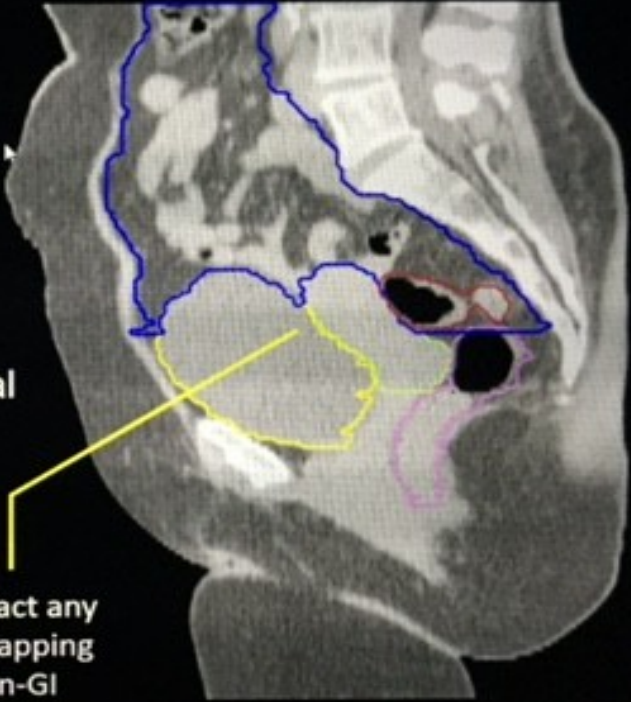


Contour BowelBag, Colon and SmallBowel the recommended cm above PTV, not necessarily this high



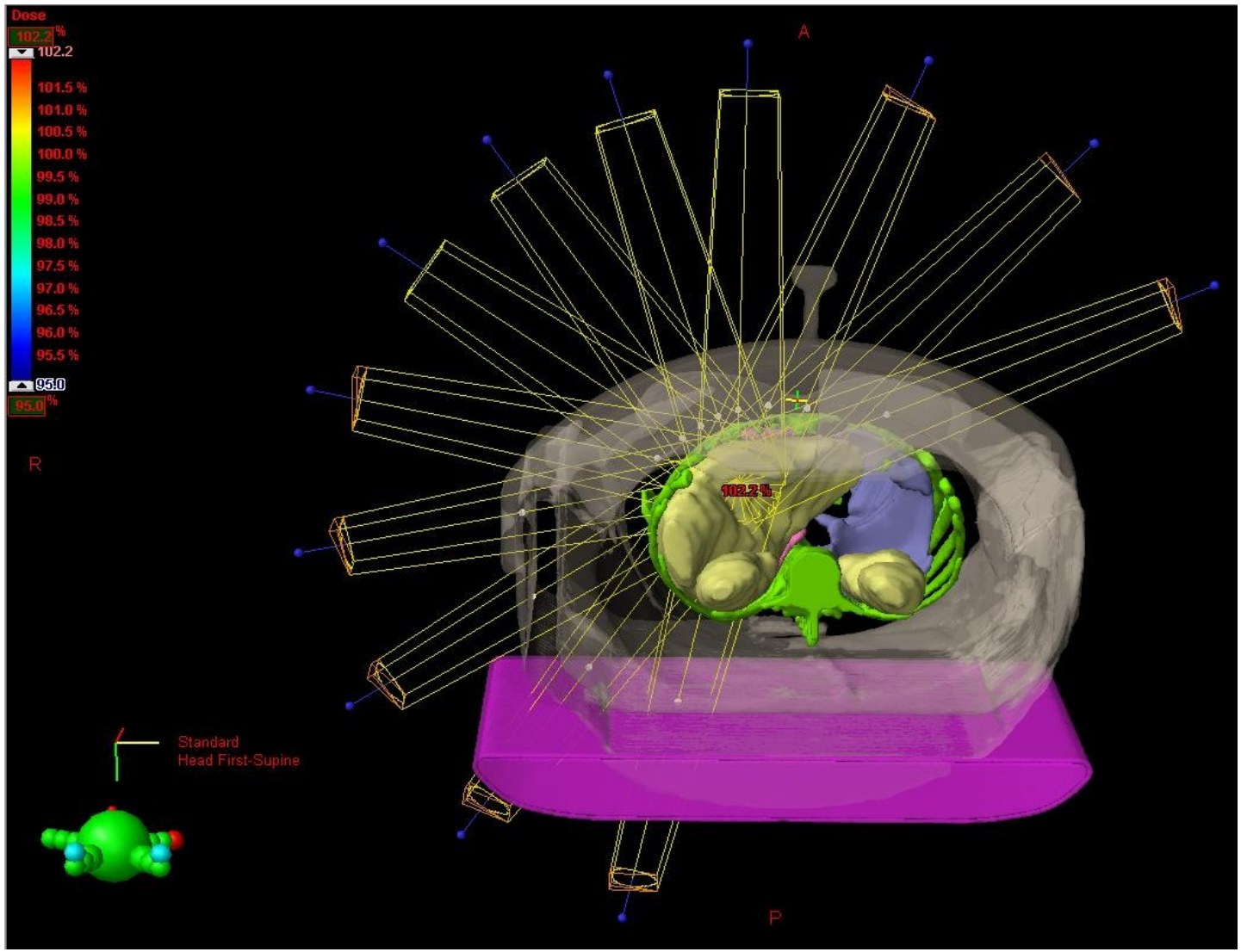
- Small Bowel
- AnoRectumSig
- Colon
- UteroCervix
- Bladder

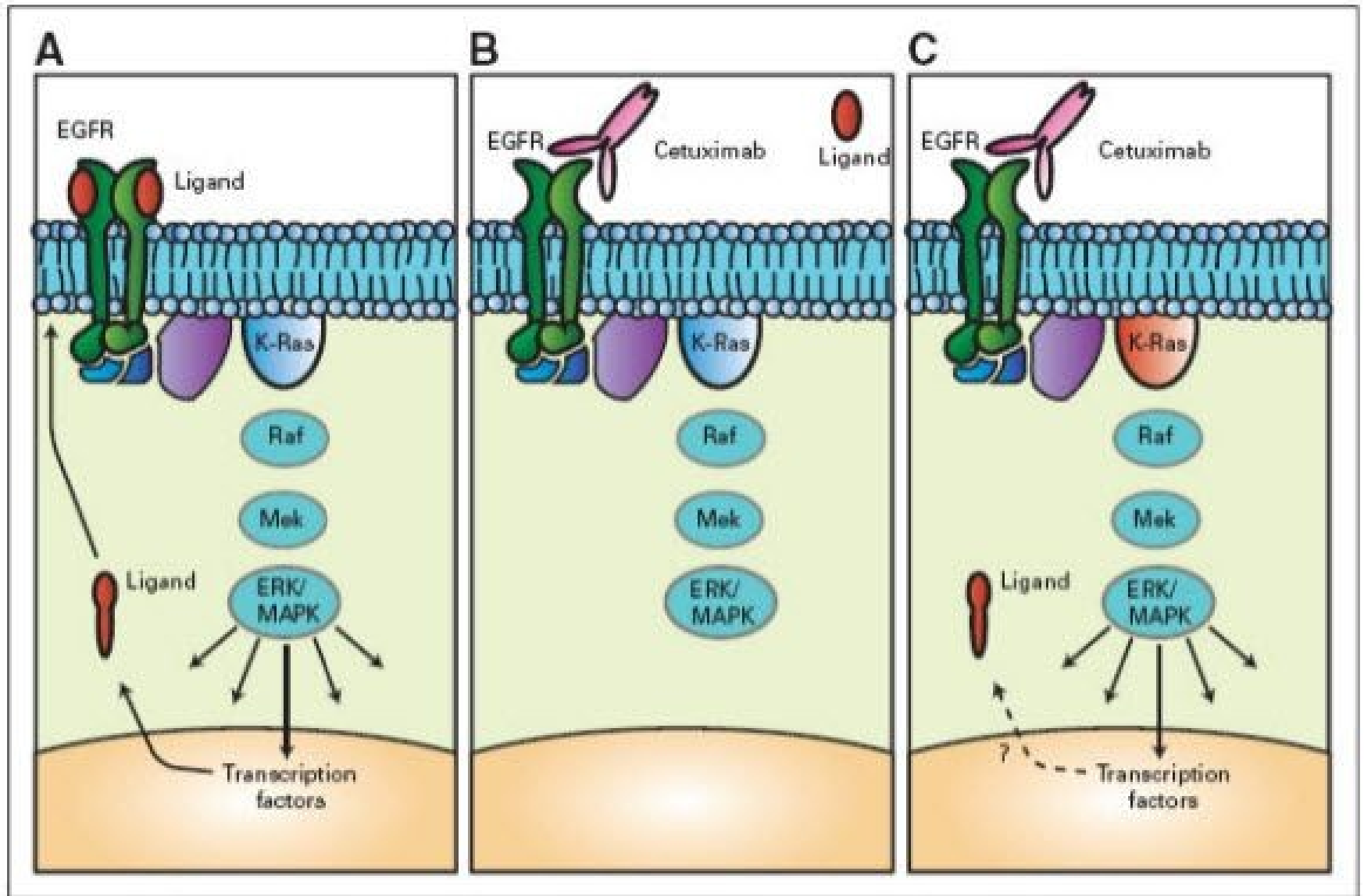
Sagittal



subtract any overlapping non-GI normal structures from BowelBag

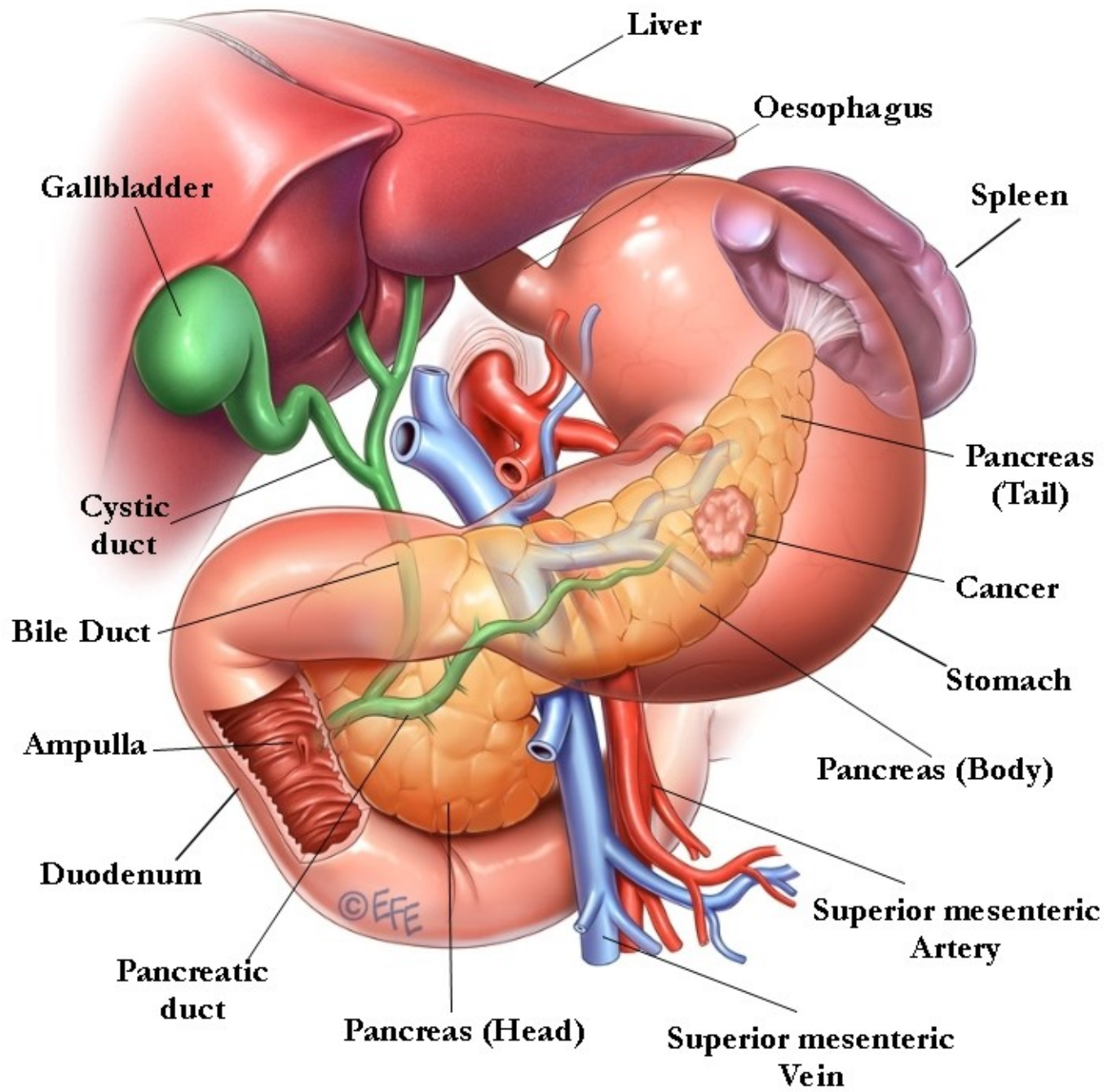
- Sigmoid
- AnoRectum
- BowelBag
- UteroCervix
- Bladder





# Nádory pankreatu

- jen cca 3% všech nádorů, ale na 5. místě v mortalitě
- genetické faktory, kouření, alkoholismus, obezita, chronická pankreatitida
- dlouho bezpříznakové, později nespecifické příznaky (bolest břicha, hubnutí), později ikterus
- CT, endoskopický ultrazvuk (tenkojehlová biopsie), peroperační staging
- 80% adenokarcinomy. Nádory hlavy x těla x kaudy pankreatu
- léčba dle rozsahu: resekabilní x lokálně pokročilé x metastatický
- chirurgie – hemipankreatoduodenektomie, levostranná hemipankreatektomie a splenektomie
- adjuvantní chemoterapie ± radioterapie
- u lokálně pokročilých definitivní chemoradioterapie, dle stavu pacienta
- paliativní chemoterapie – monoterapie, nebo kombinace, dle stavu pacienta
- podpůrná a symptomatická léčba (řešení ikteru, léčba bolesti, nutriční podpora)
- medián přežití 13- 20 měsíců. 40% pacientů má v době diagnózy MTS..přežití 4-6M

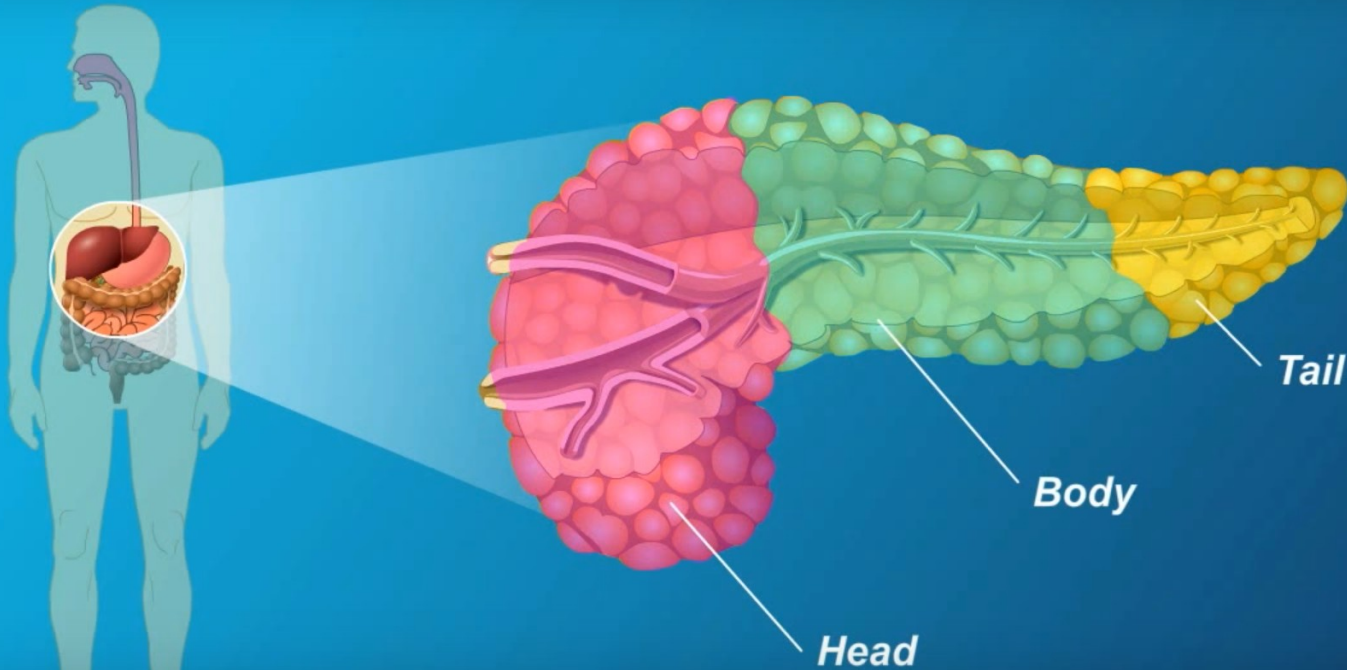


<http://www.animatedpancreaspatient.com/en/home.aspx>

[https://www.youtube.com/watch?v=B\\_13DH7loI8](https://www.youtube.com/watch?v=B_13DH7loI8)

[https://www.youtube.com/watch?v=YmsR\\_Vmom8o](https://www.youtube.com/watch?v=YmsR_Vmom8o)

# The pancreas is divided into three regions



# Diagnosis

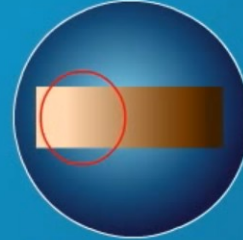
Pancreatic cancer is suspected based on a set of symptoms:



Jaundice



Dark urine



Light stool



Weight loss



Fatigue



Upper abdominal  
or back pain



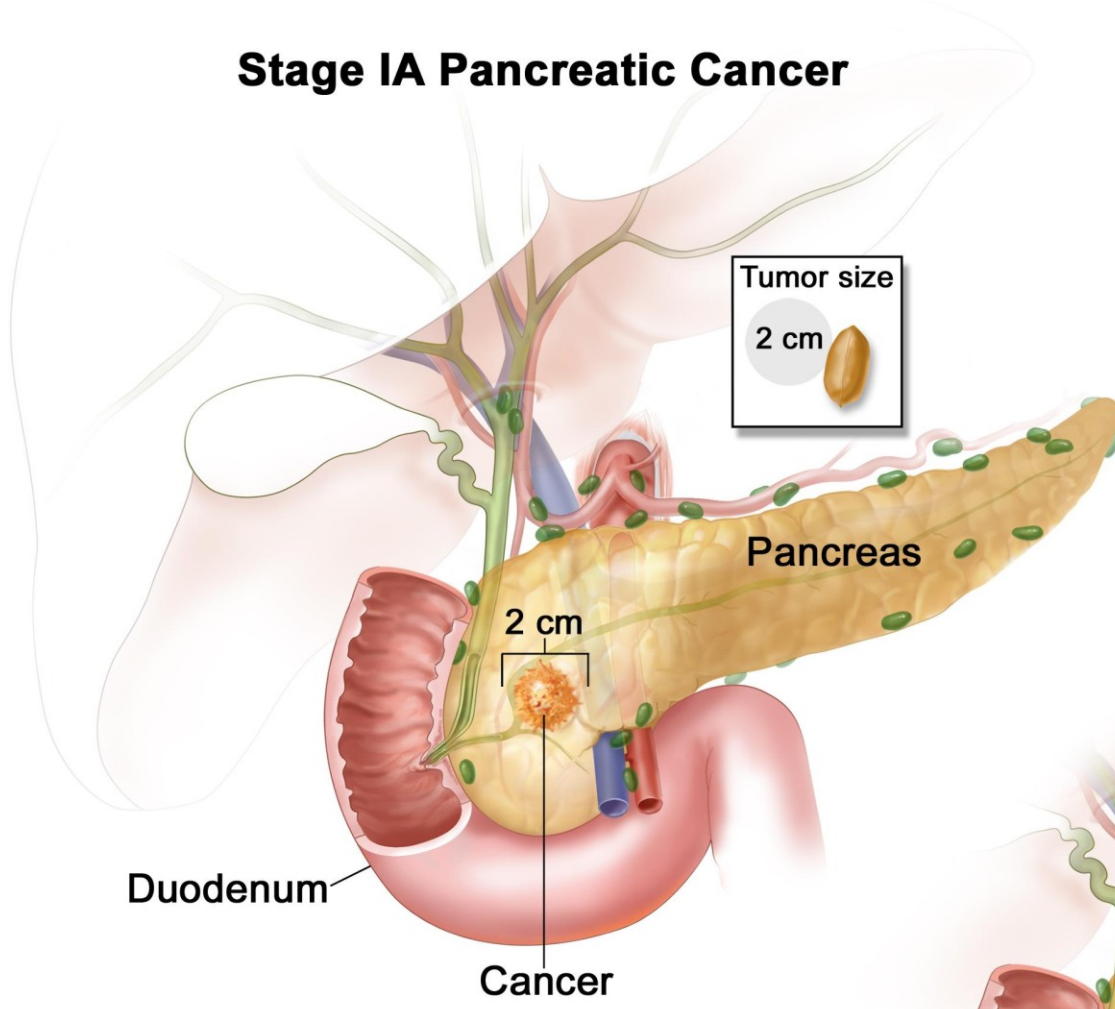
Fullness after  
eating



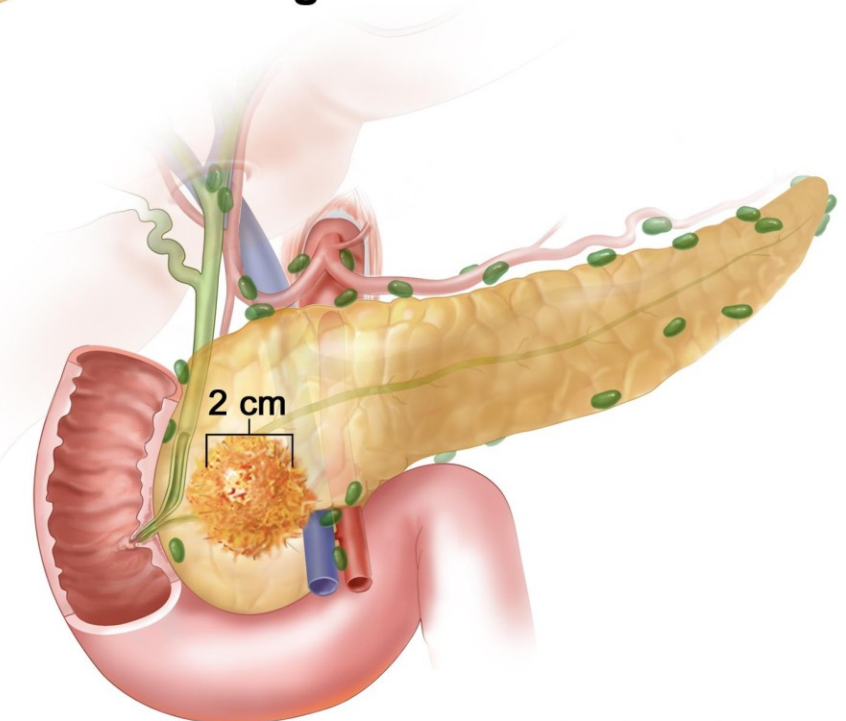
New or recent  
worsening of diabetes



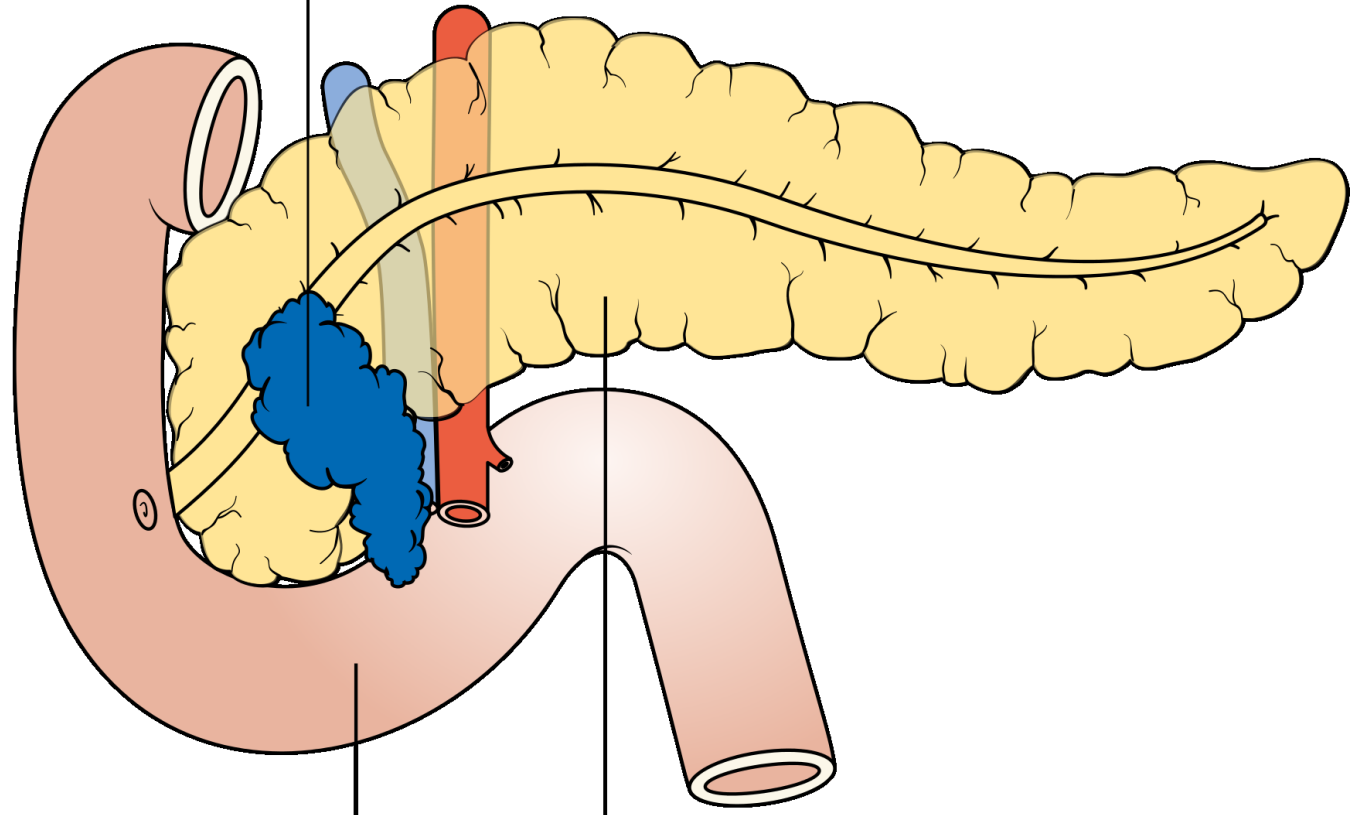
# Stage IA Pancreatic Cancer



# Stage IB Pancreatic Cancer



The cancer has grown outside the pancreas and into one of the blood vessels

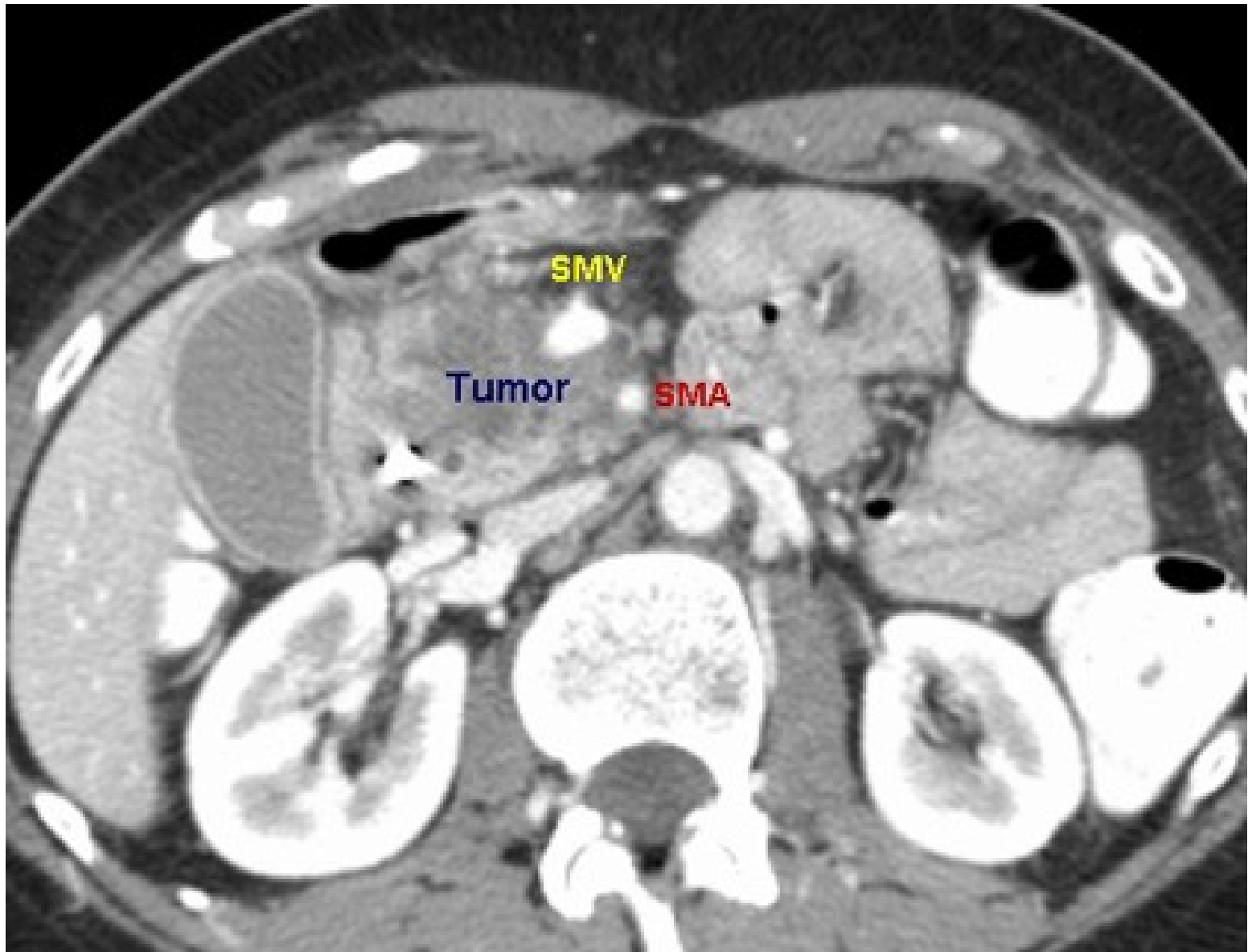


Bowel

Pancreas





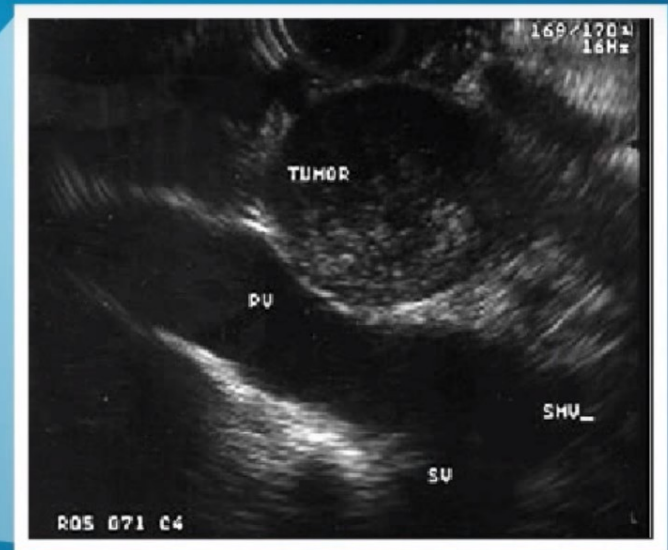
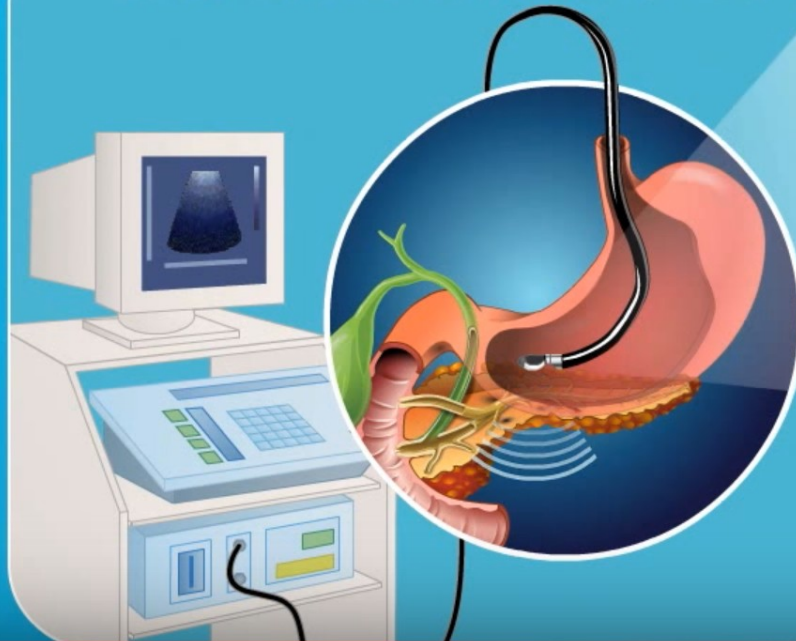




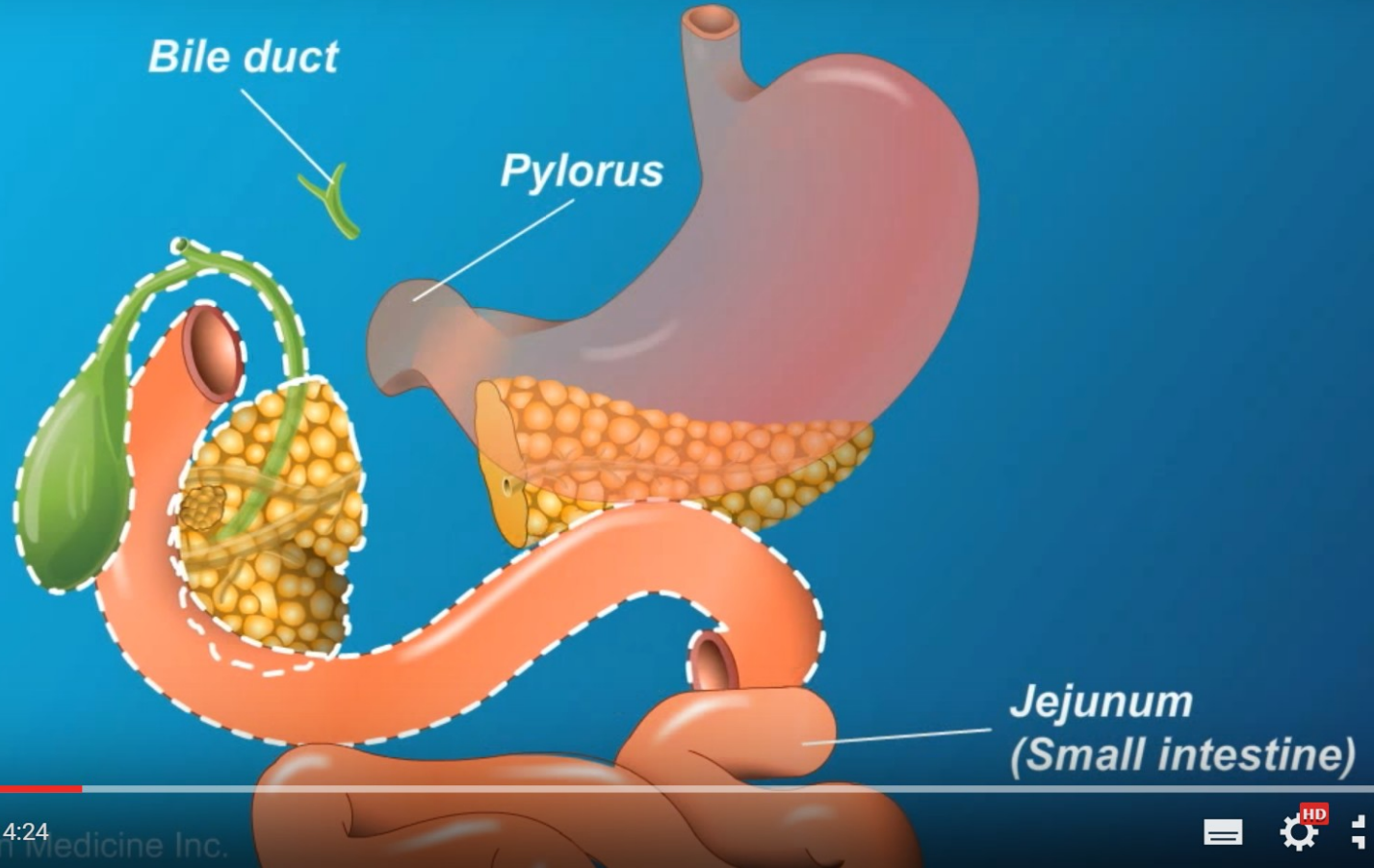
# Diagnosis: Imaging



## Endoscopic ultrasound (EUS)



# Curative treatment: Whipple procedure

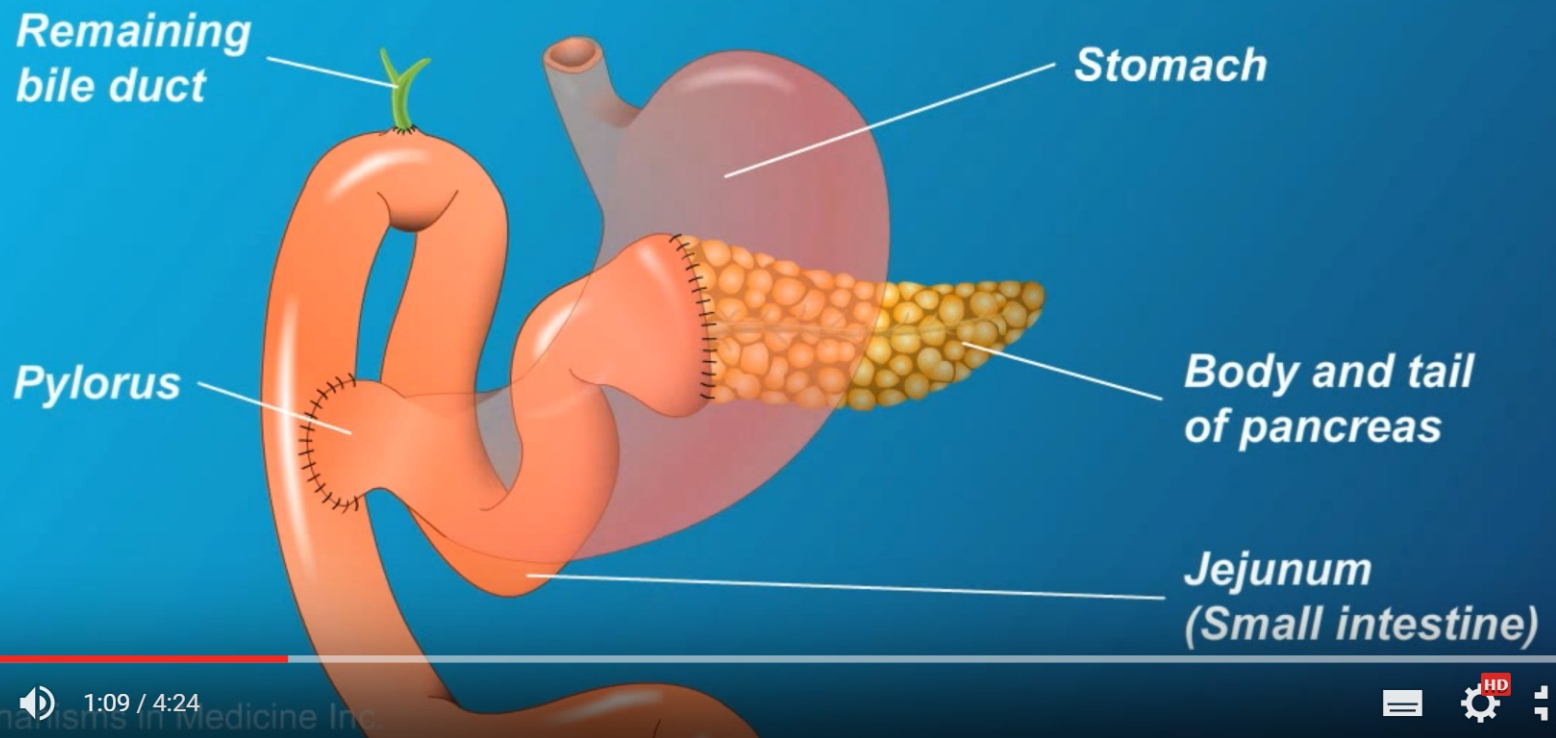


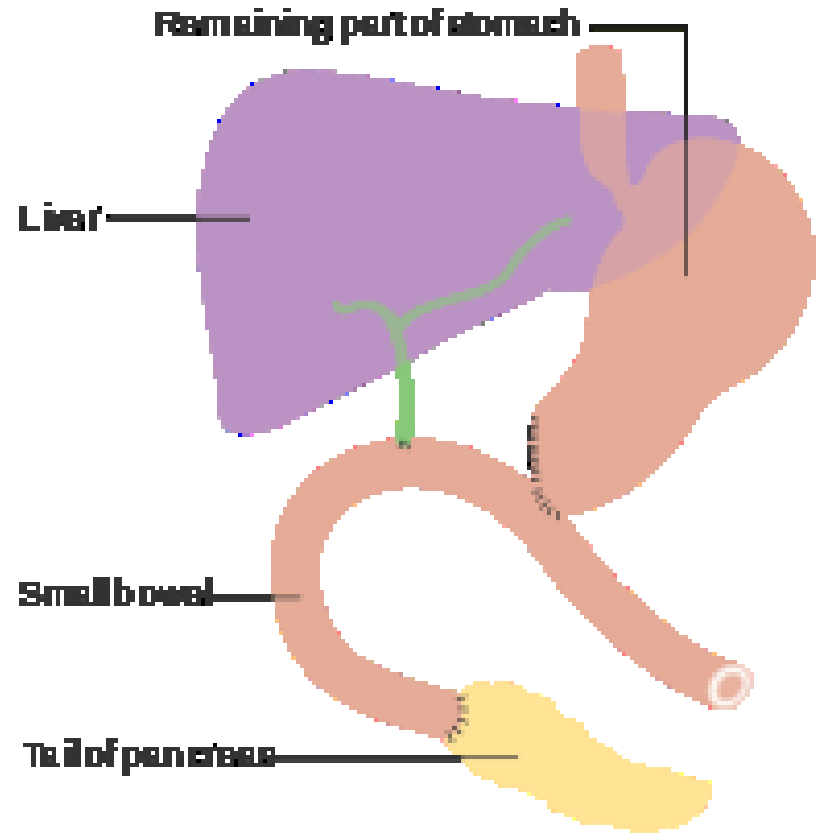
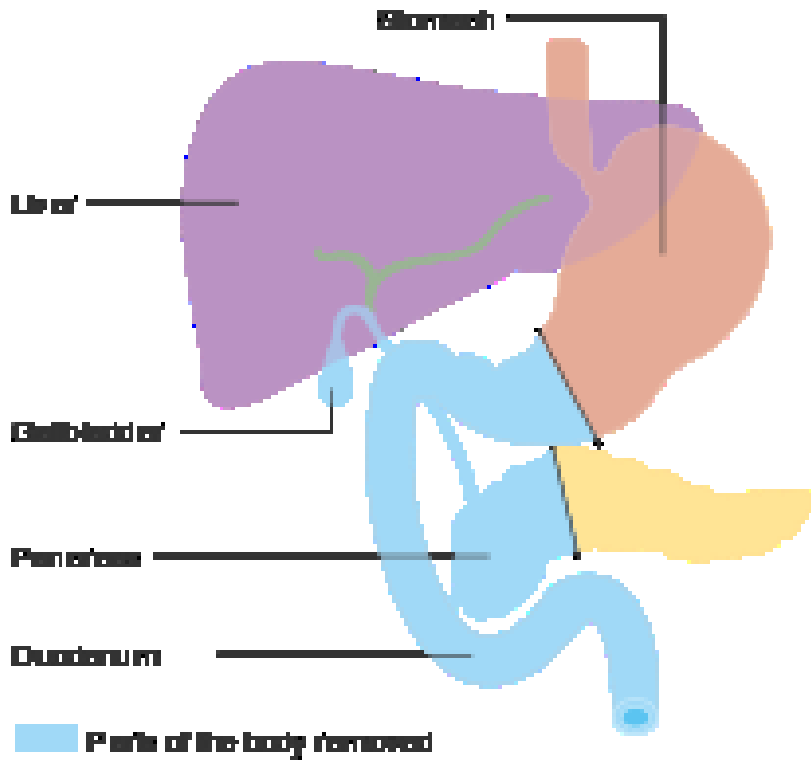


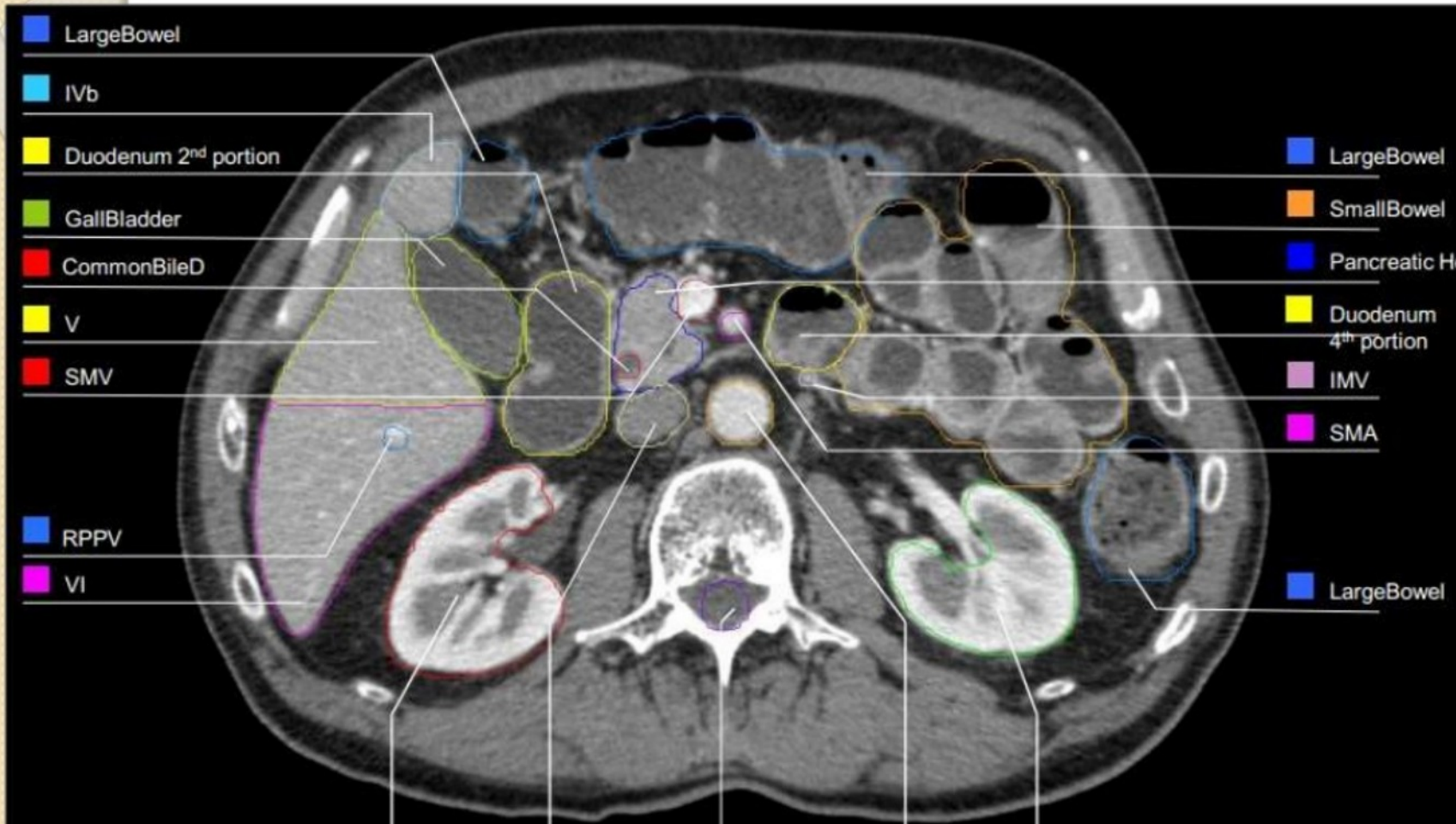
# Curative treatment: Whipple procedure



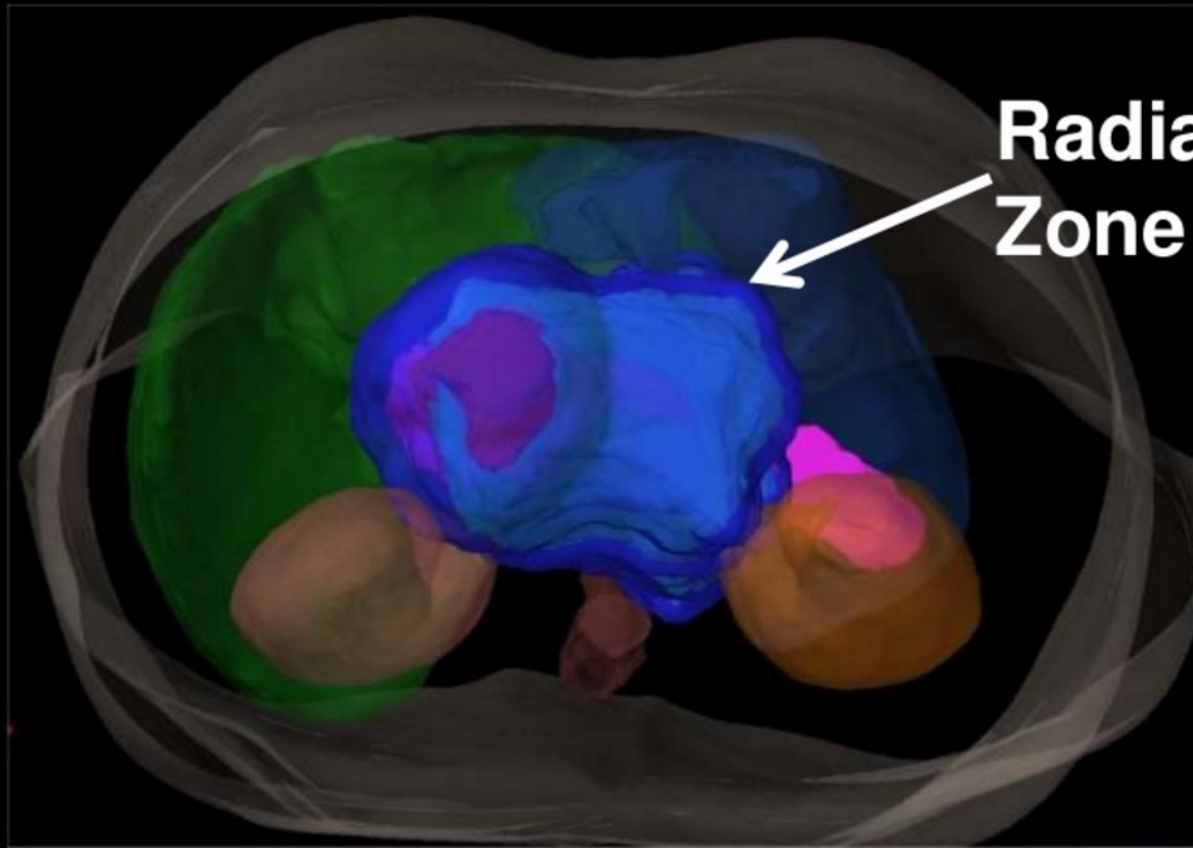
Reconstructive surgery







# Computer Reconstruction from the CT Scan

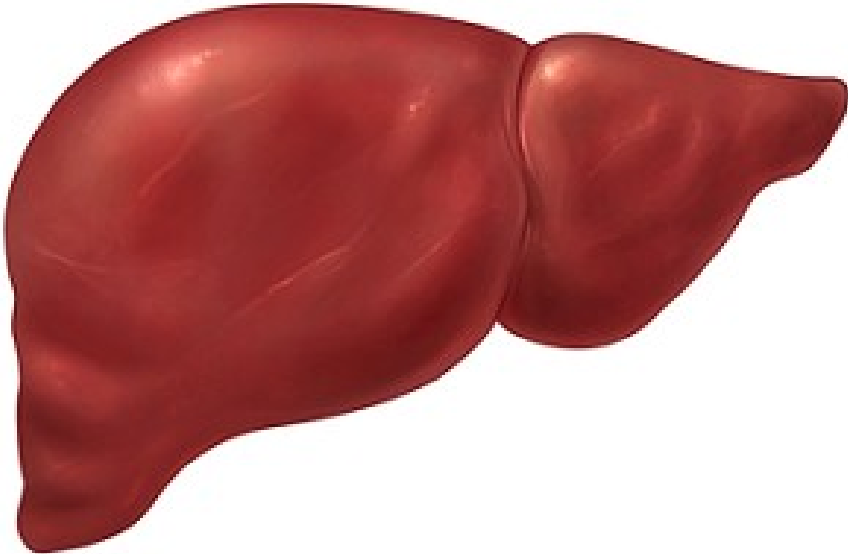


**Radiation  
Zone**

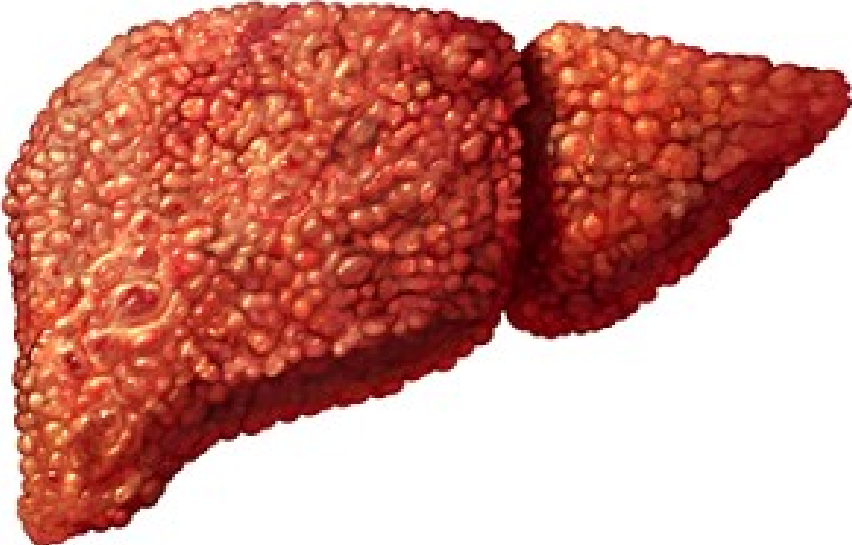
# Nádory jater

- vzácné nádory, celosvětově geografická závislost
- alkoholická cirhoza jater, virové hepatitidy (HCV, HBV – očkování), aflatoxin
- dlouho bezpříznakové, později nespecifické, společné cirhoze.
- screening rizikových pacientů schopných event. léčby
- kontrastní CT, MRI, funkční vyšetření jater – Childova-Pughova klasifikace
- léčba dle rozsahu choroby a celkového stavu pacienta
- resekce, transplantace, radiofrekvenční ablace, perkutánní etanolová injeckce, transarteriální chemoembolizace, cílená léčba (sorafenib), stereotaktická radioterapie
- 5-ti leté přežití u kurativní léčby 60%, u paliativní léčby 3 leté přežití 20-40%

Normal Liver



Liver with Cirrhosis





**Cirrhotic Liver**



# Child-Pugh Classification of Cirrhosis

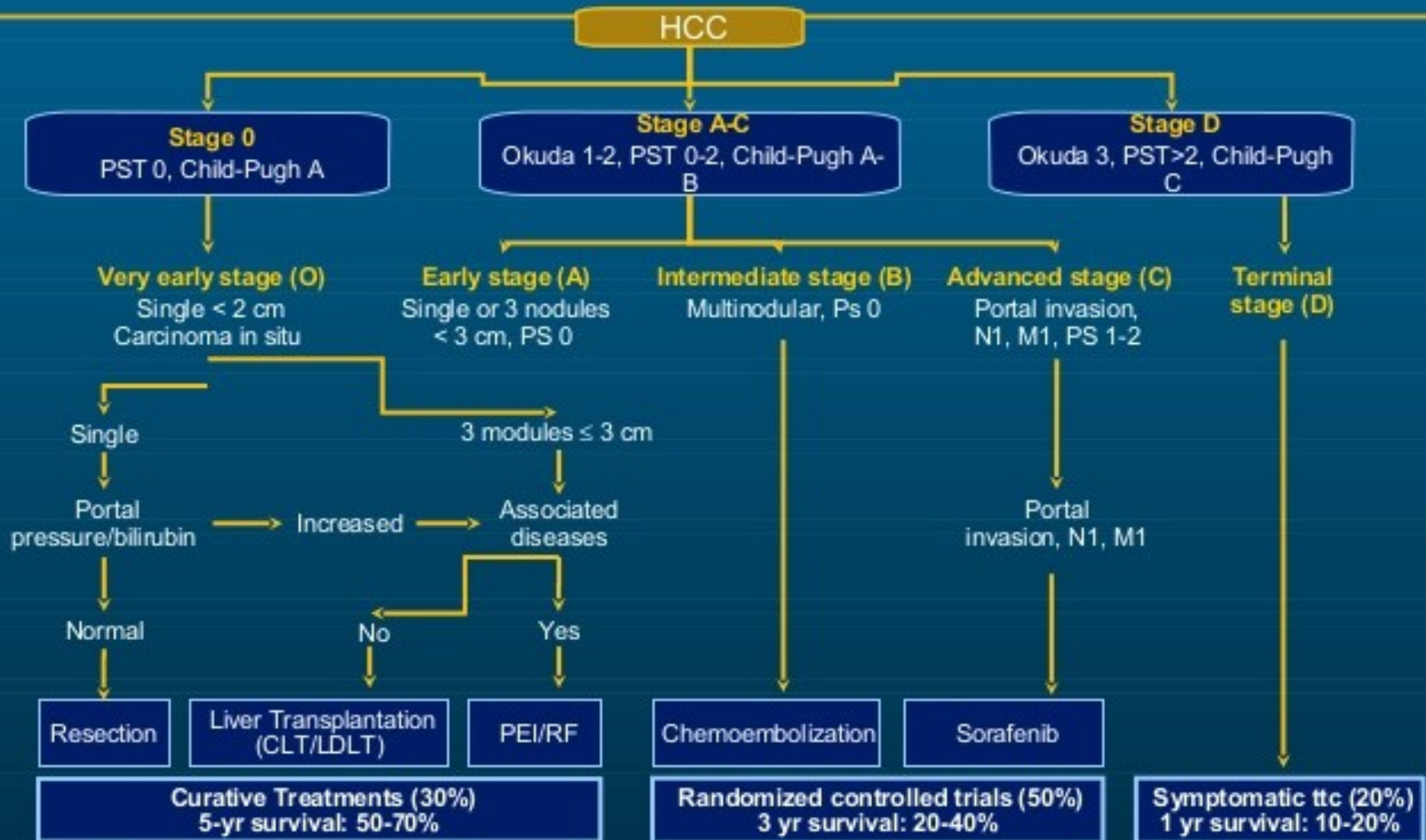
©Medical Addicts

Factor	Units	1	2	3
Serum bilirubin	mol/L	<34	34-51	>51
	mg/dL	<2.0	2.0-3.0	>3.0
Serum albumin	g/L	>35	30-35	<30
	g/dL	>3.5	3.0-3.5	<3.0
Prothrombin time	seconds	0-4	4-6	>6
	prolonged INR	<1.7	1.7-2.3	>2.3
Ascites		None	Easily controlled	Poorly controlled
Hepatic encephalopathy		None	Minimal	Advanced

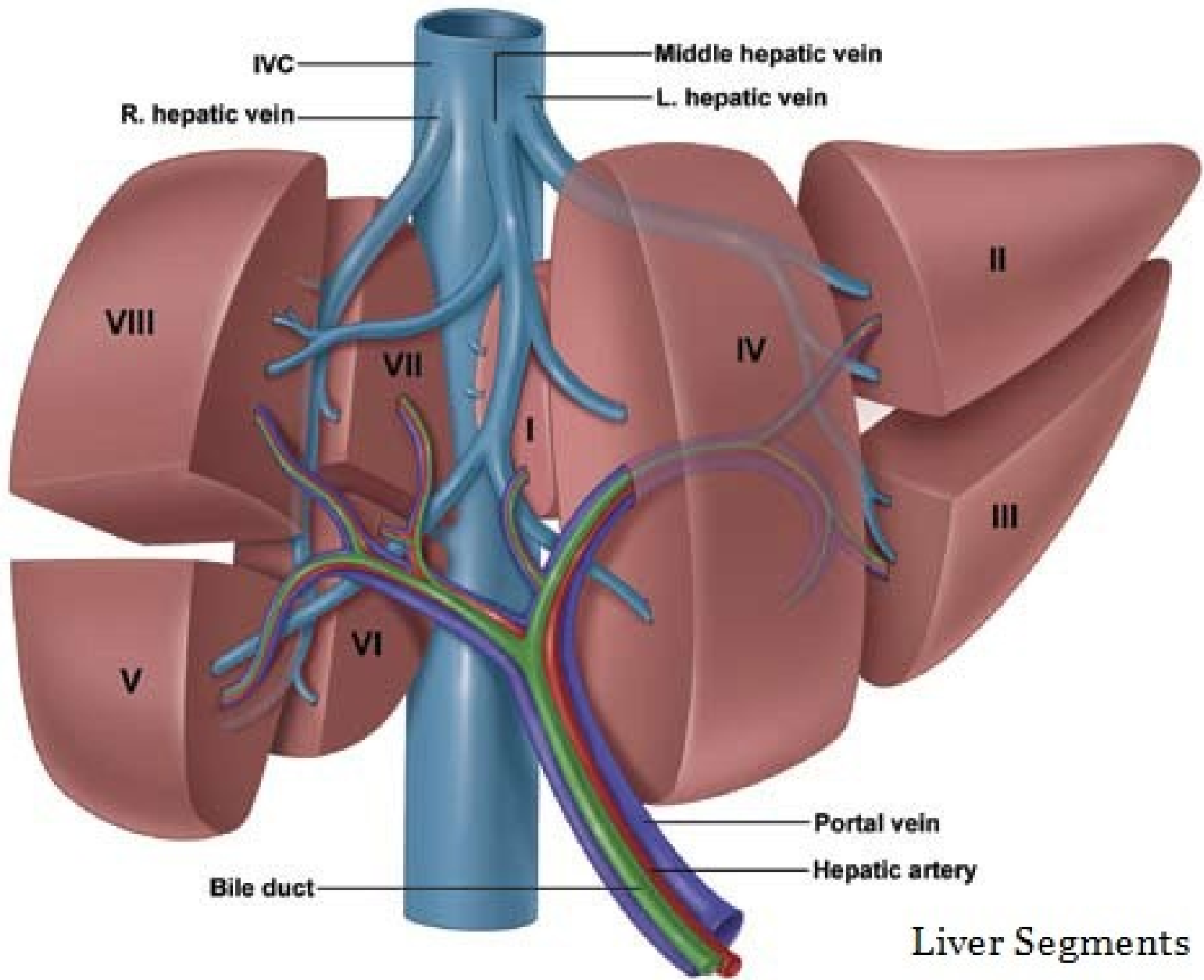
The Child-Pugh score is calculated by adding the scores of the five factors and can range from 5 to 15. Child-Pugh class can be A (a score of 5-6), B (7-9), or C (10 or above). Decompensation indicates cirrhosis with a Child-Pugh score of >7 (class B). This level has been the accepted criterion for listing liver transplantation.



# BCLC Staging and Treatment Schedule



ttc: treatment



IVC  
R. hepatic vein  
Middle hepatic vein  
L. hepatic vein

VIII

VII

IV

II

III

V

VI

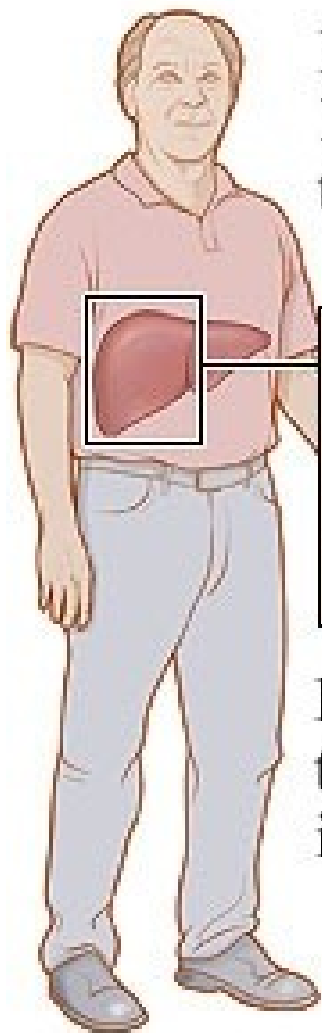
I

Portal vein

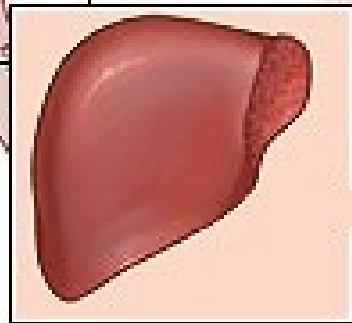
Hepatic artery

Bile duct

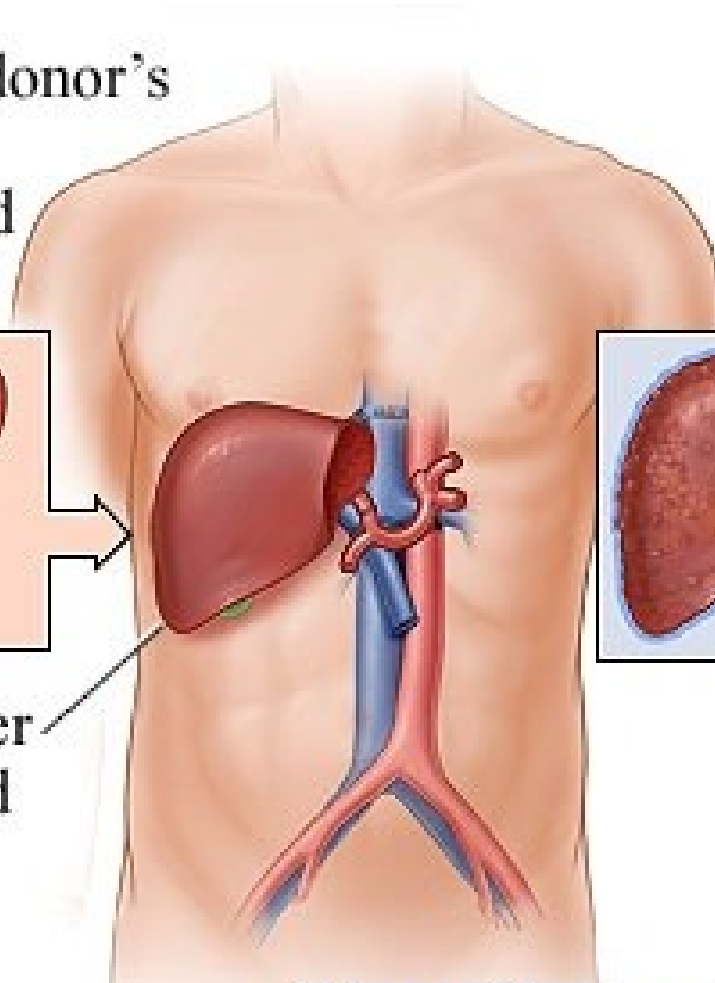
Liver Segments



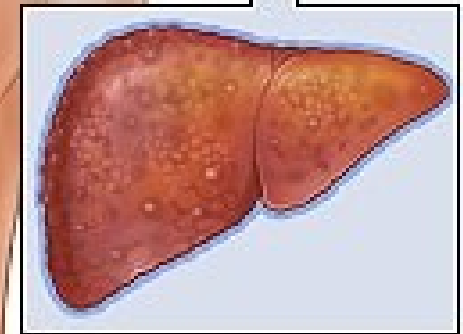
Portion of donor's liver to be transplanted



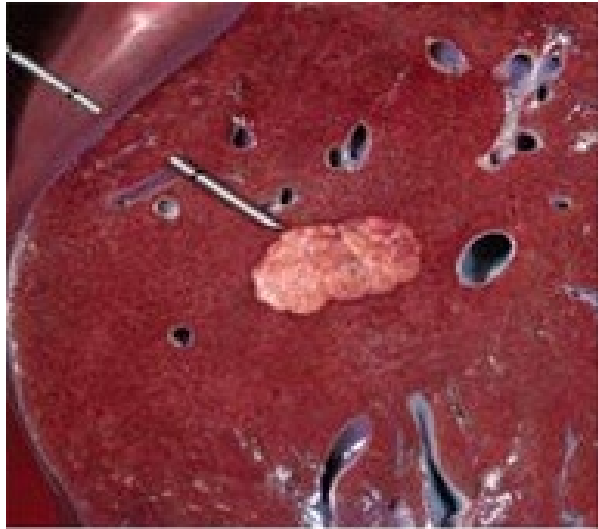
Donor's liver transplanted in recipient



Recipient's liver removed



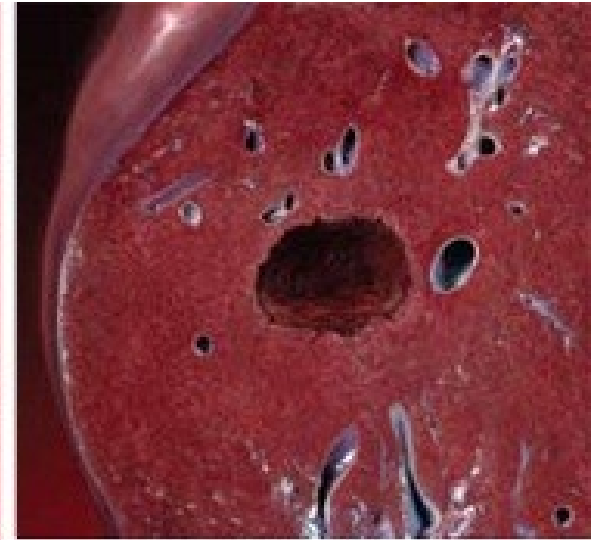
## Liver Transplantation



*The radiofrequency probe is inserted into the liver tumor.*

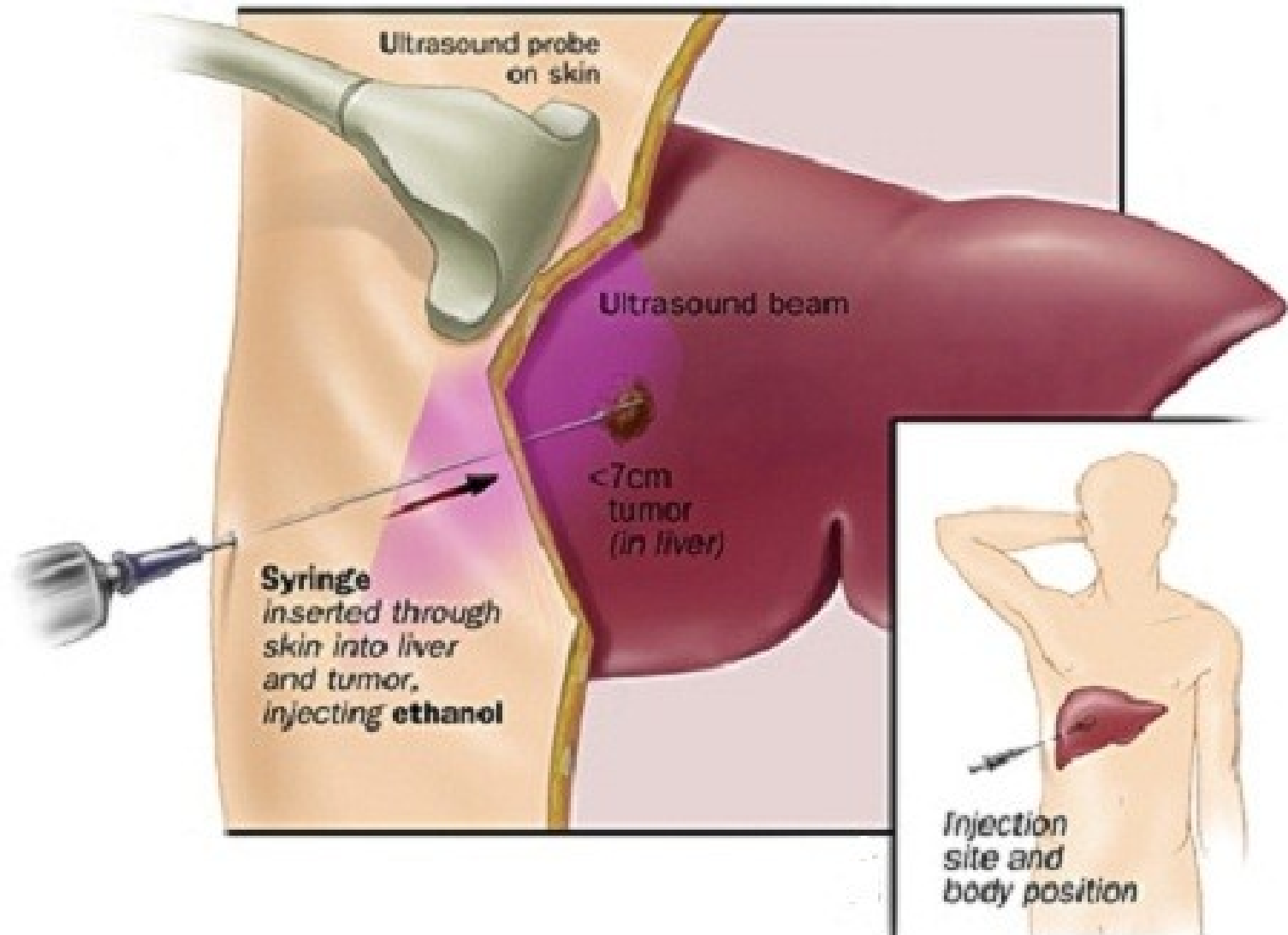


*The surgeon deploys electrodes from the probe which deliver radiofrequency energy. This high heat causes death of tumor cells.*

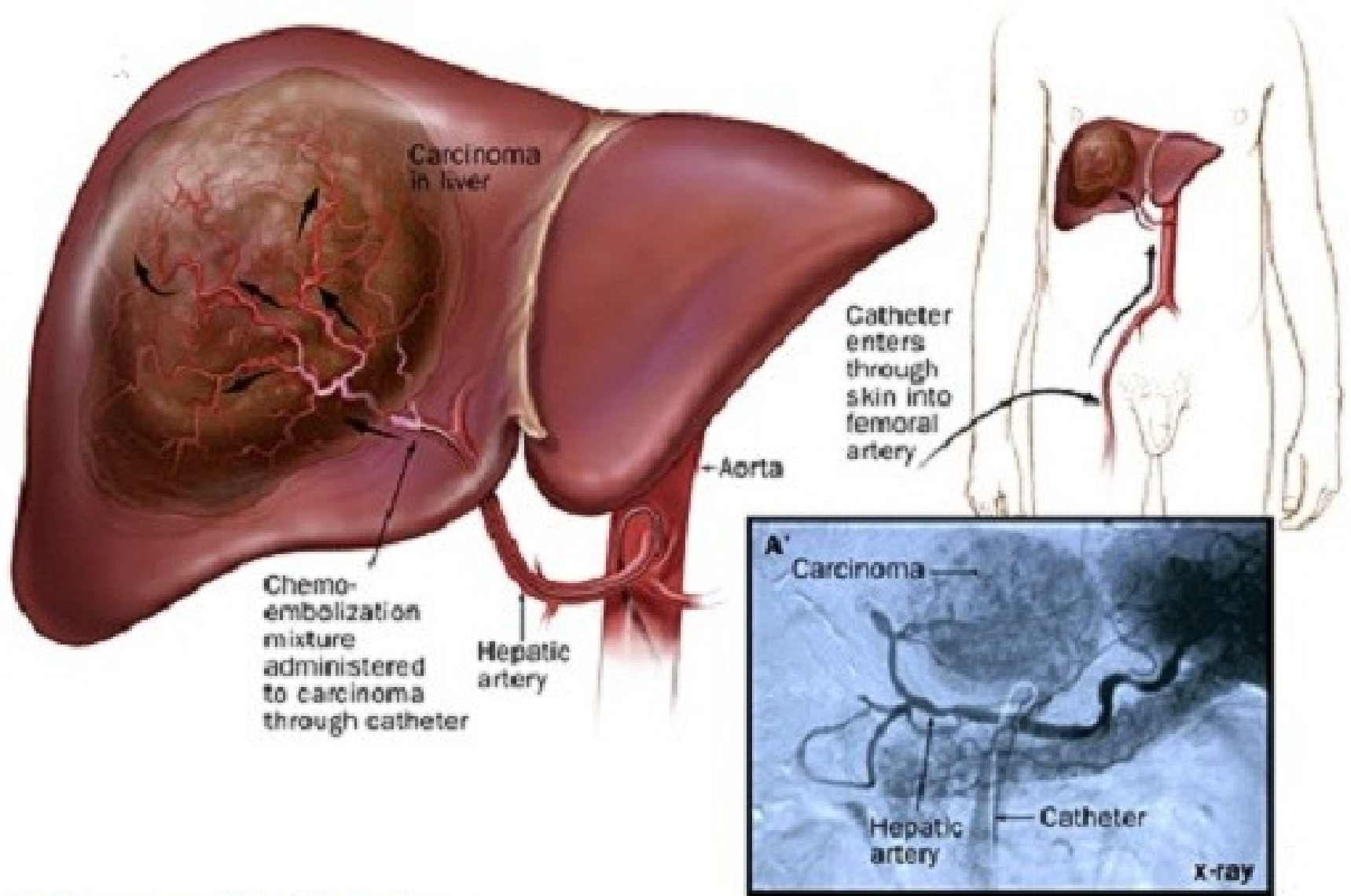


*Following the procedure, the tumor cells are destroyed and will eventually be replaced by scar tissue.*

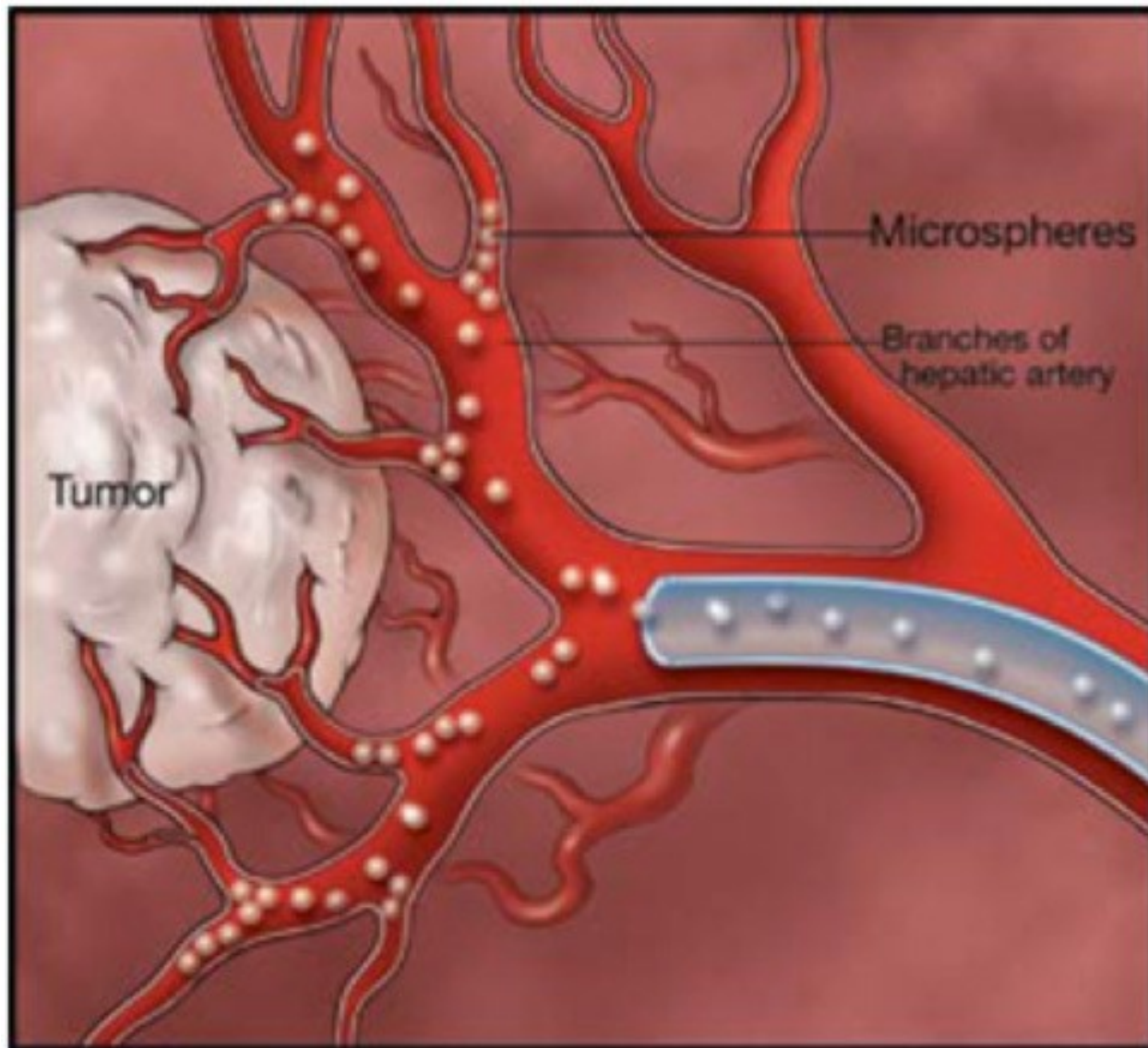
## **Radiofrequency Ablation (RFA)**



**Percutaneous ethanol or acetic acid ablation**



## Chemoembolization



*Microspheres injected during transarterial therapy "lock in" chemotherapy and block the blood supply to the tumor.*

