

Cytoreductie en HIPEC voor colorectale carcinomatose



Dr. Stefaan Mulier
Park Leopold Ziekenhuis, Brussel
<http://www.drmulier.com/>



HIPEC:

H yperthermic

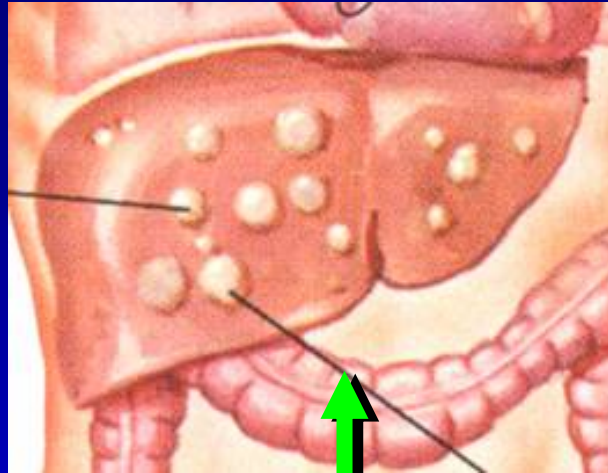
I ntra-

PE ritoneal

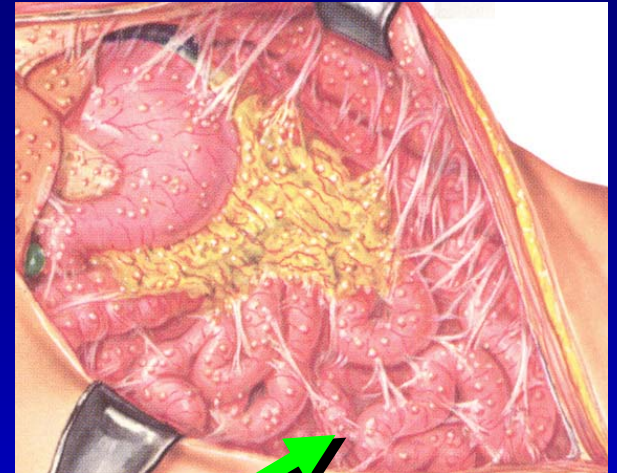
C hemotherapy



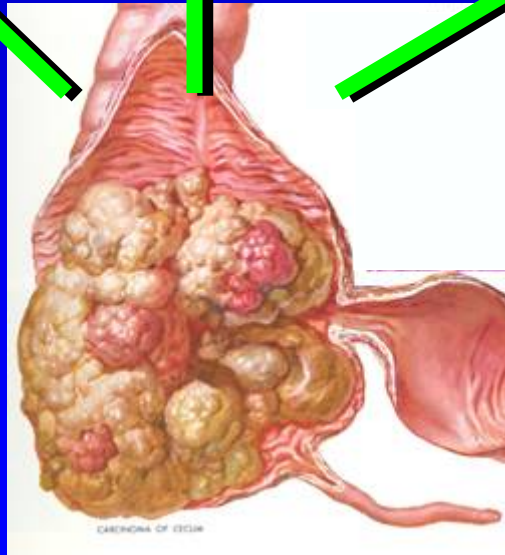
lymfeklieren



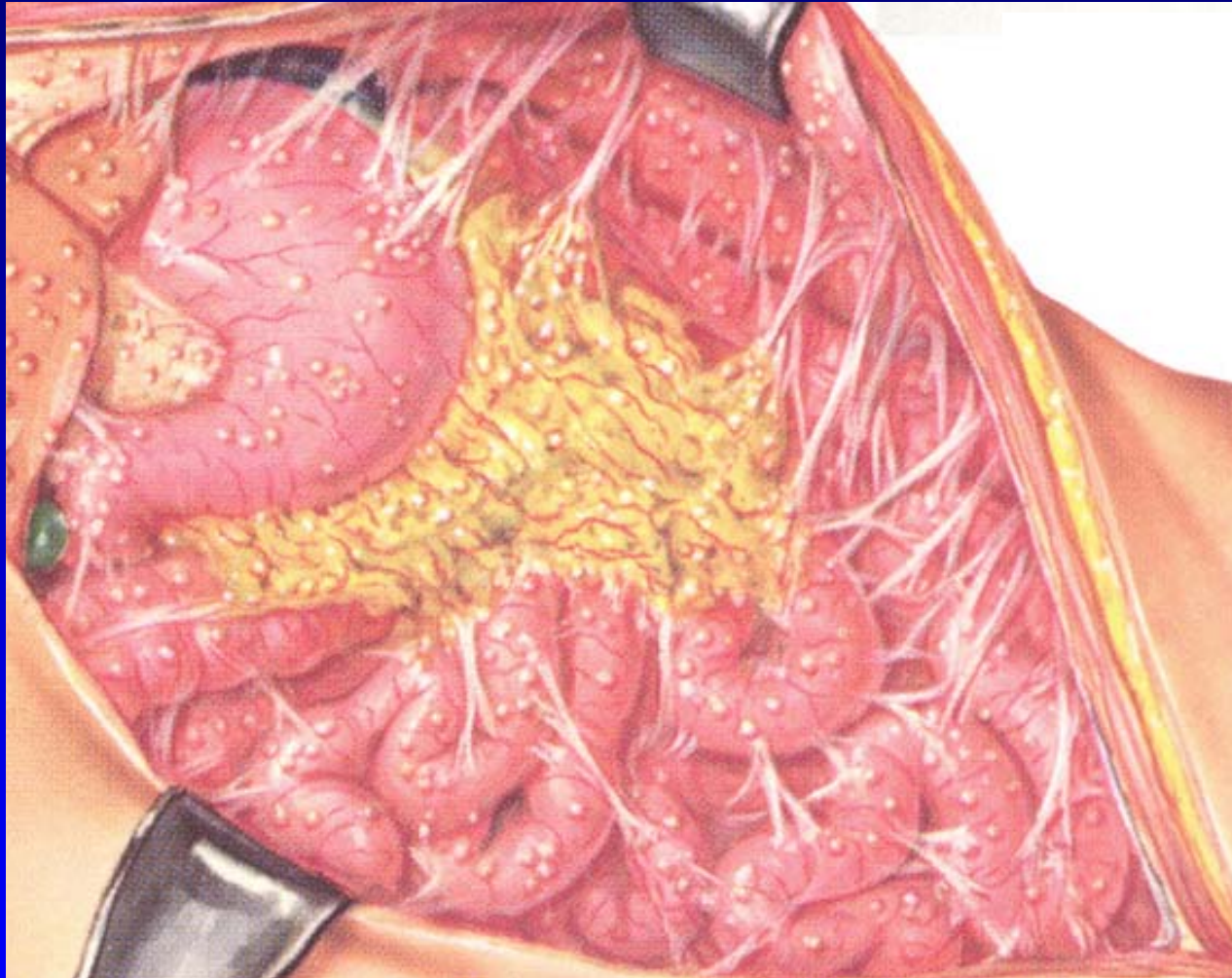
lever



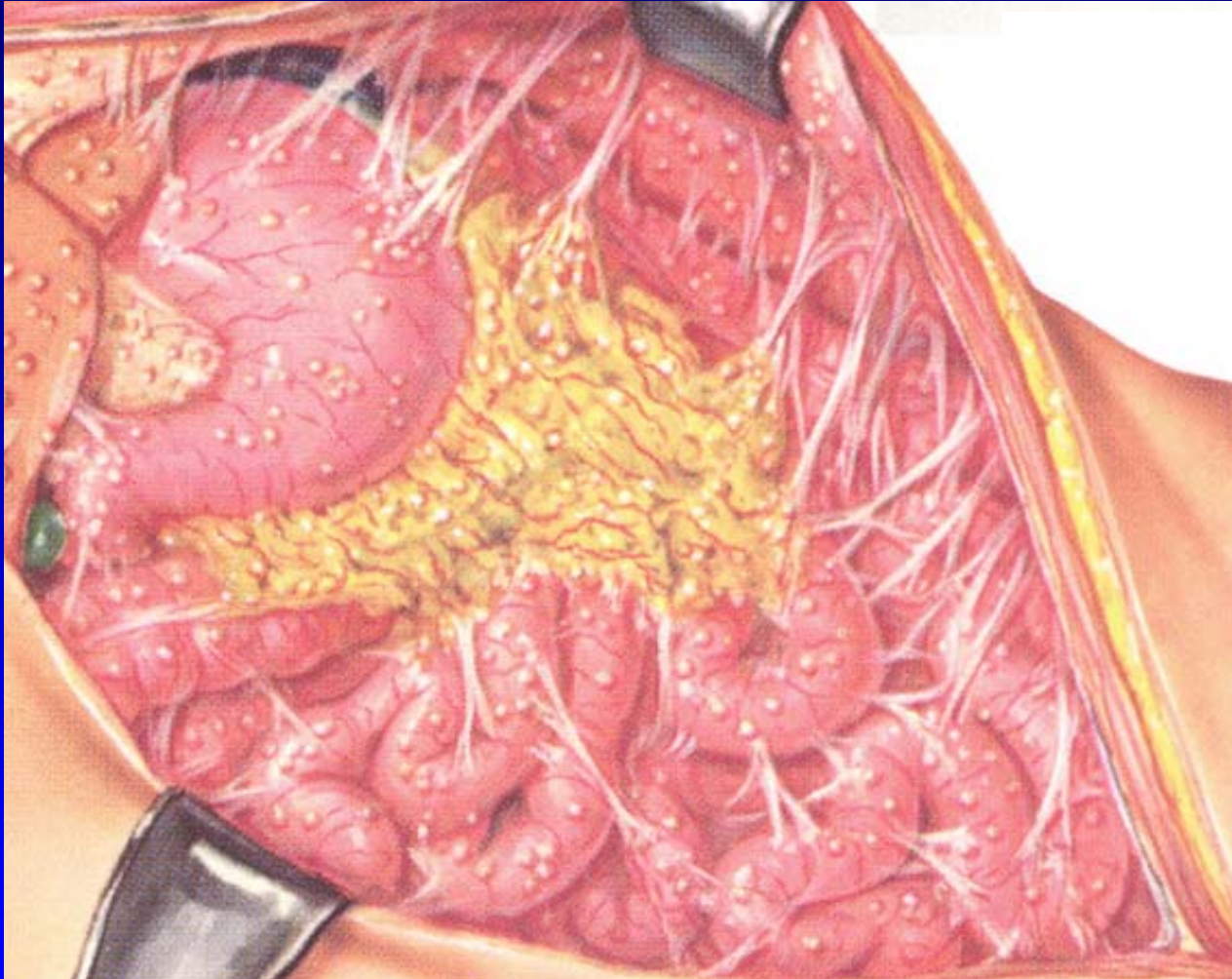
peritoneum



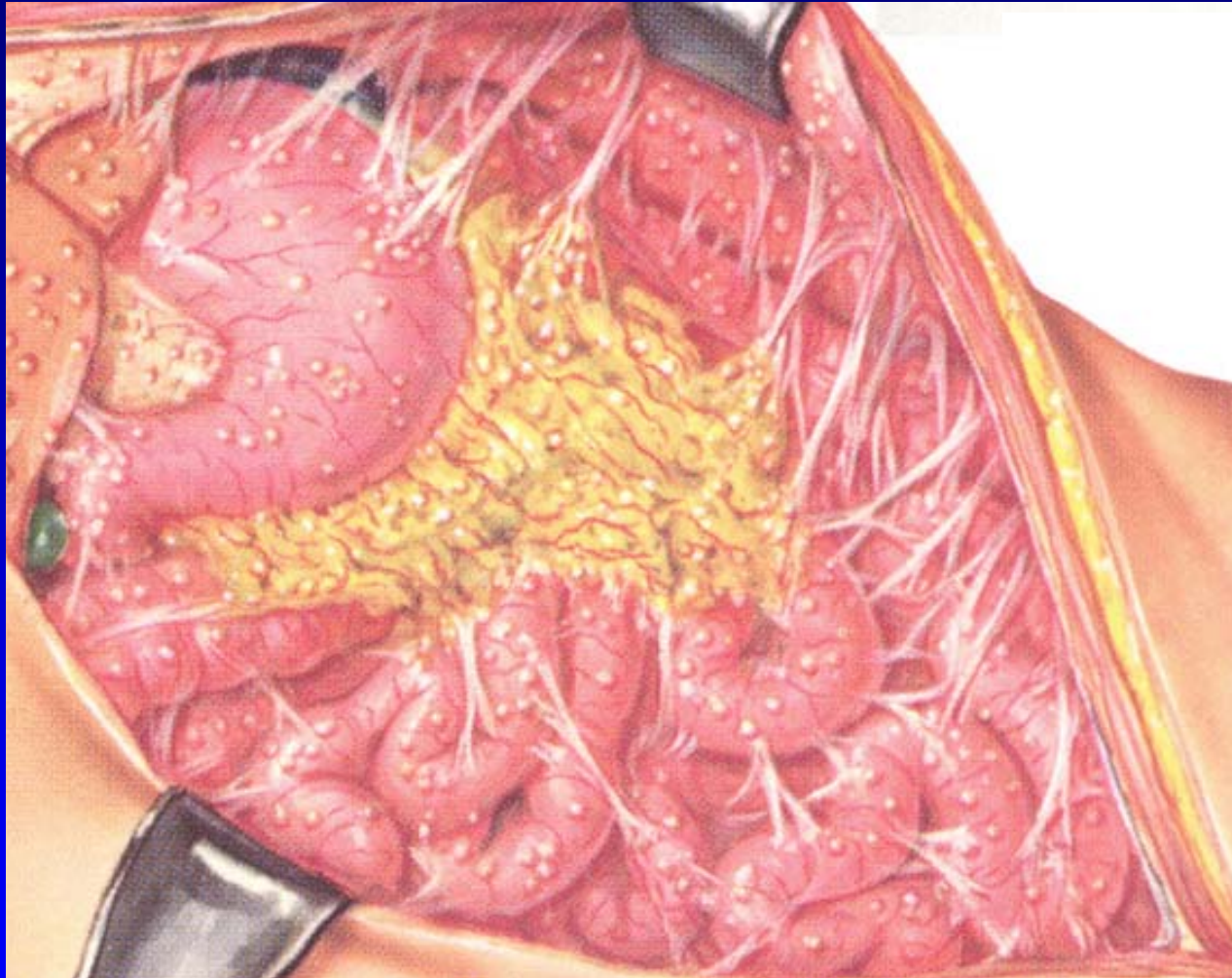
colorectaal carcinoom



peritoneale carcinomatose



→ obstructie



→ overlijden

peritoneale carcinosomatose: behandeling

tot vóór enkele jaren:

- ‘ongeneesbaar’
- mediane overleving van 6-8 m
- chemotherapie
± minimale palliatieve chirurgie

peritoneale carcinosomatose: behandeling

sinds september 2003:

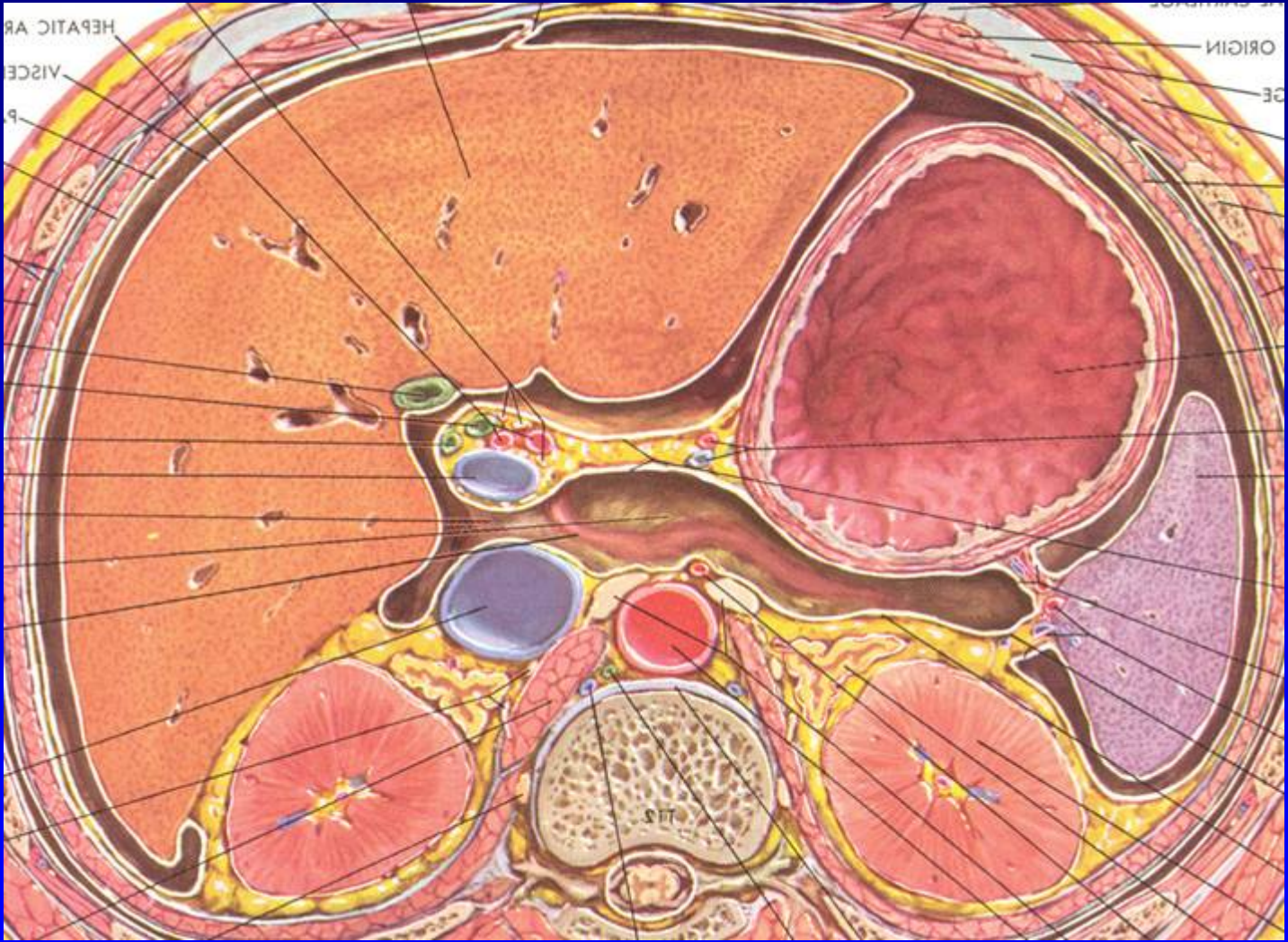
- HIPEC
- geeft een duidelijke verbetering van de overleving
- lijkt sommige patiënten te genezen

Cytoreductie en HIPEC voor colorectale carcinomatose

- inleiding
- techniek
- resultaten
- indicaties

fysiologie van het peritoneum





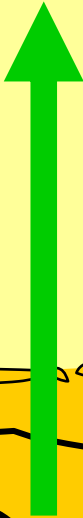
oppervlak van 2 m²

buikholte

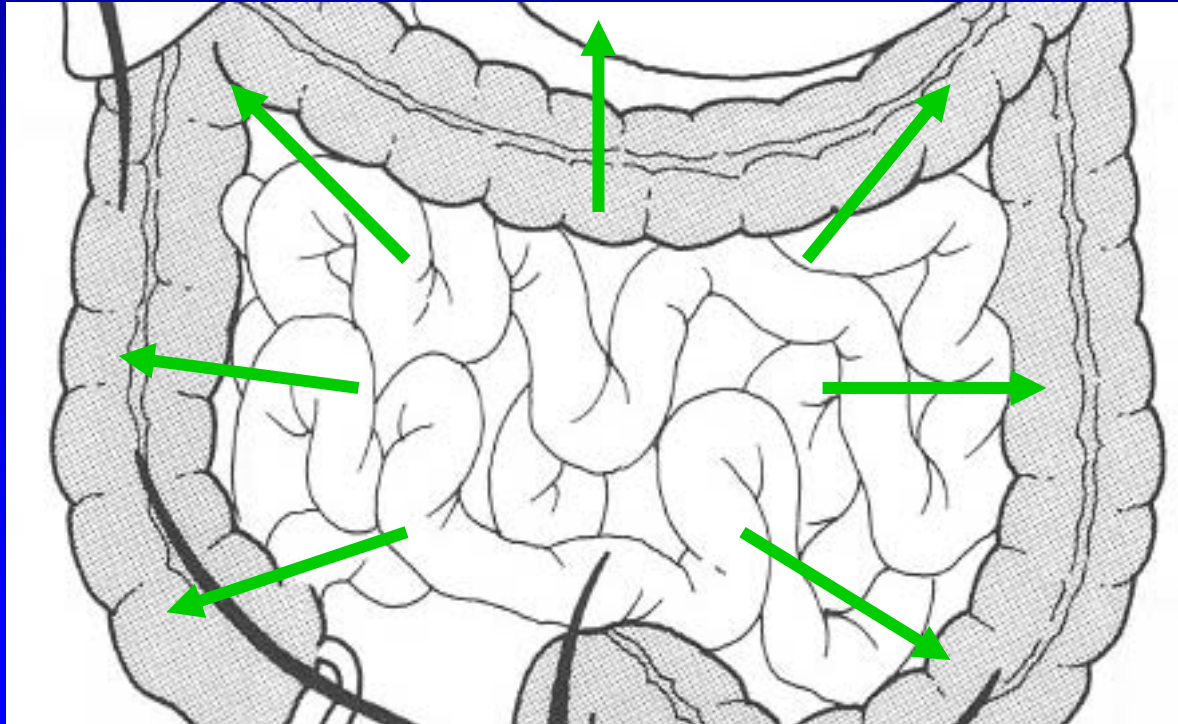
mesotheel

bindweefsel

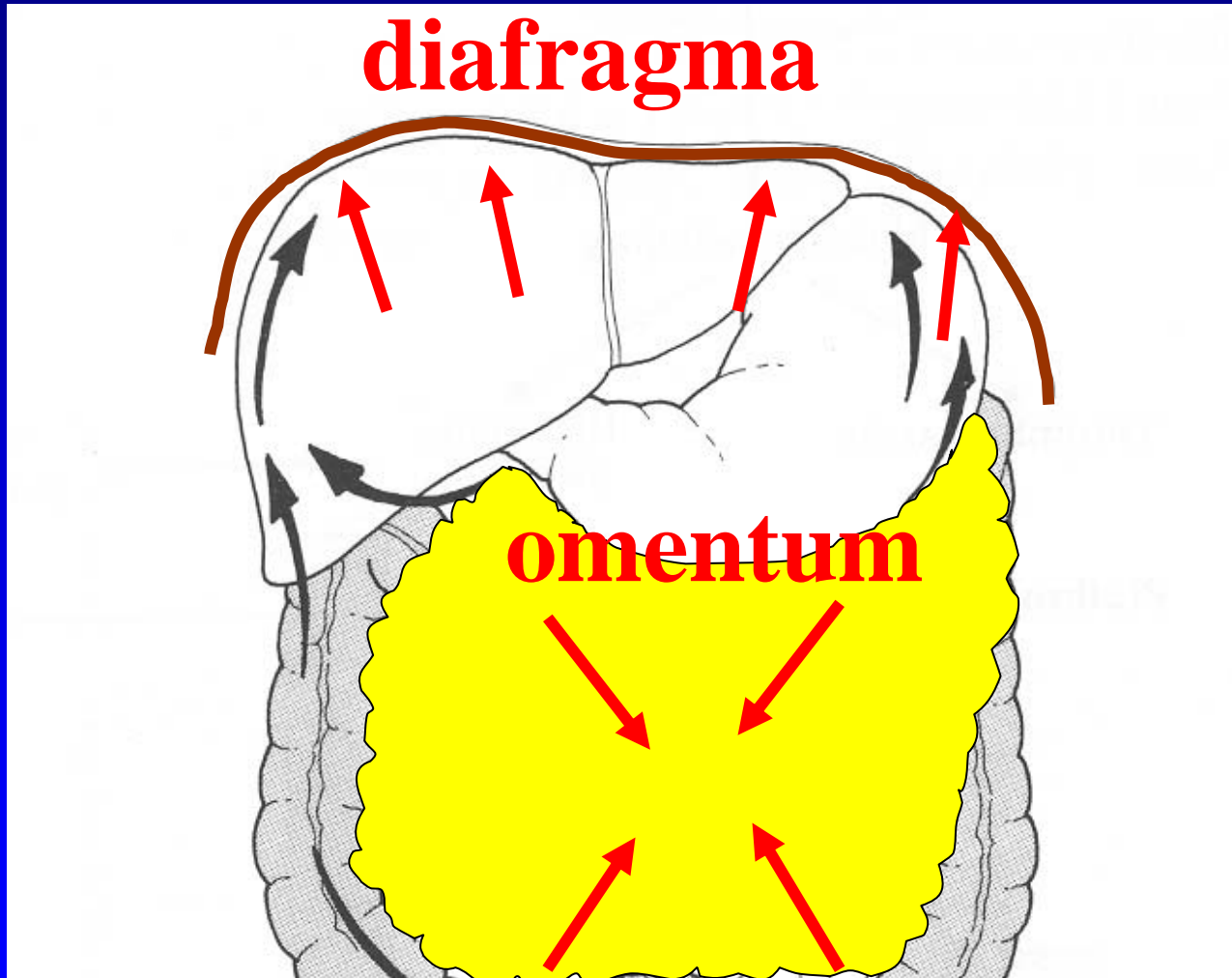
capillairen



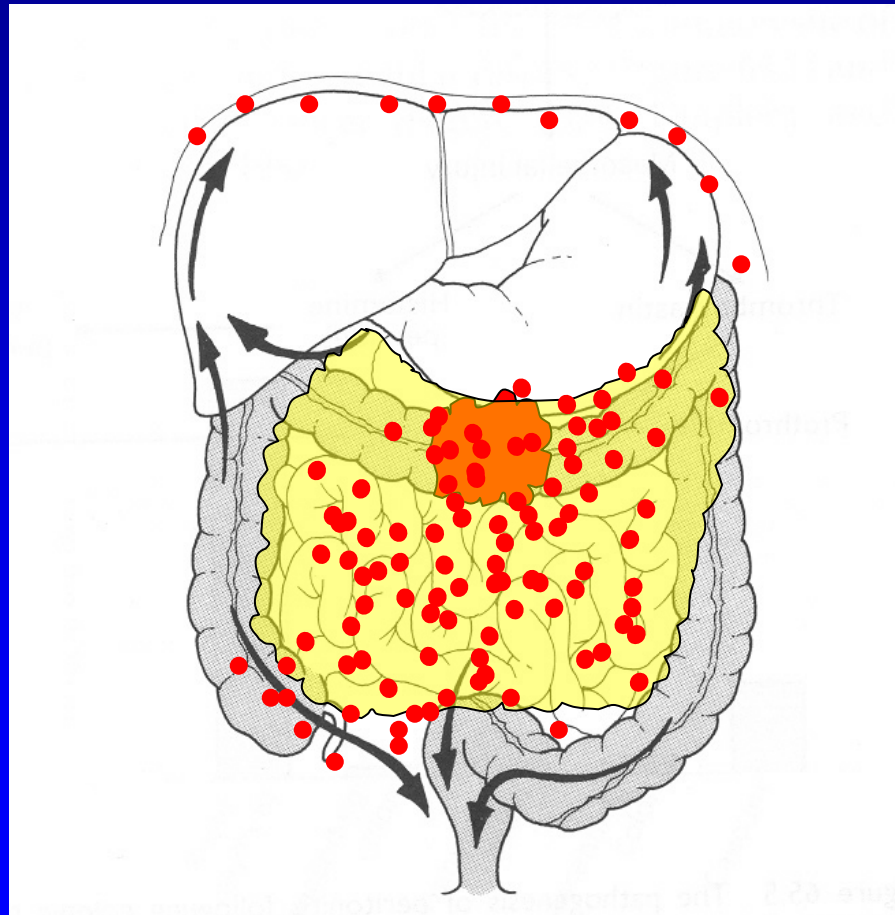
peritoneum: secretie dundarm

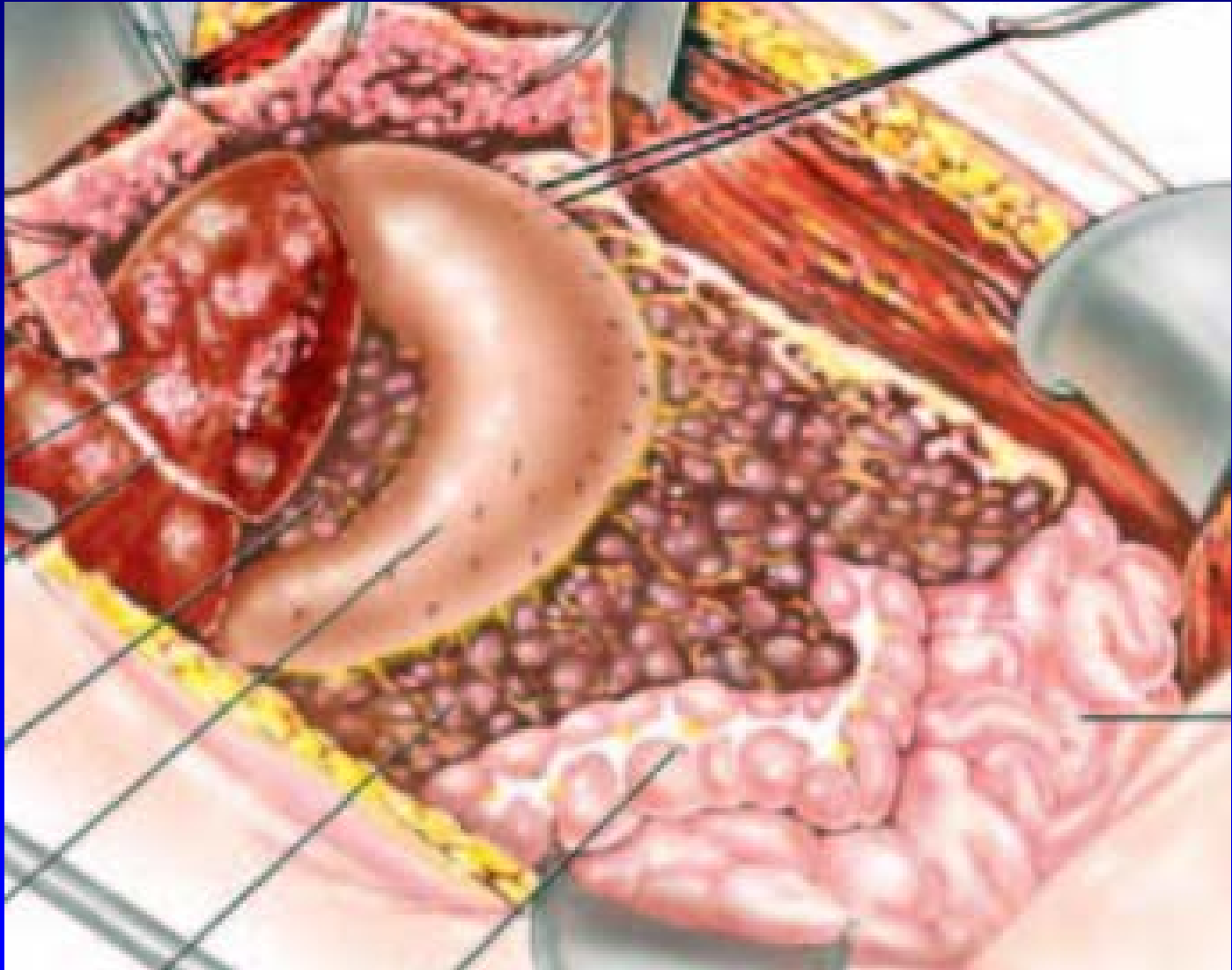


peritoneum: absorptie



peritoneale carcinomatose: distributie van de noduli





Sugarbaker, Surg Clin N Am 2003

HIPEC:

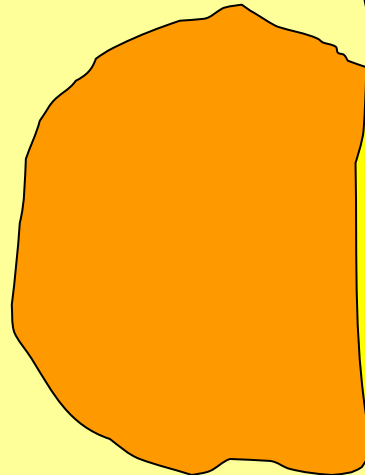
1. cytoreductie

macroscopische tumorhaarden

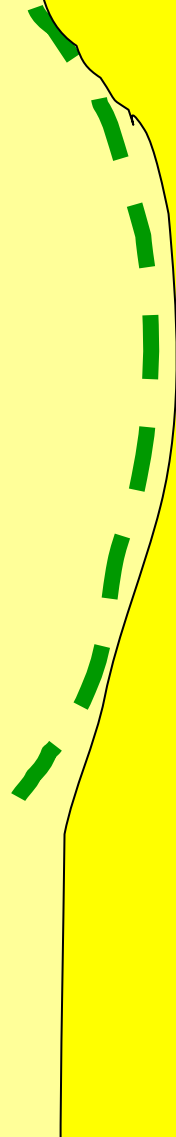
2. intraperitoneale chemo

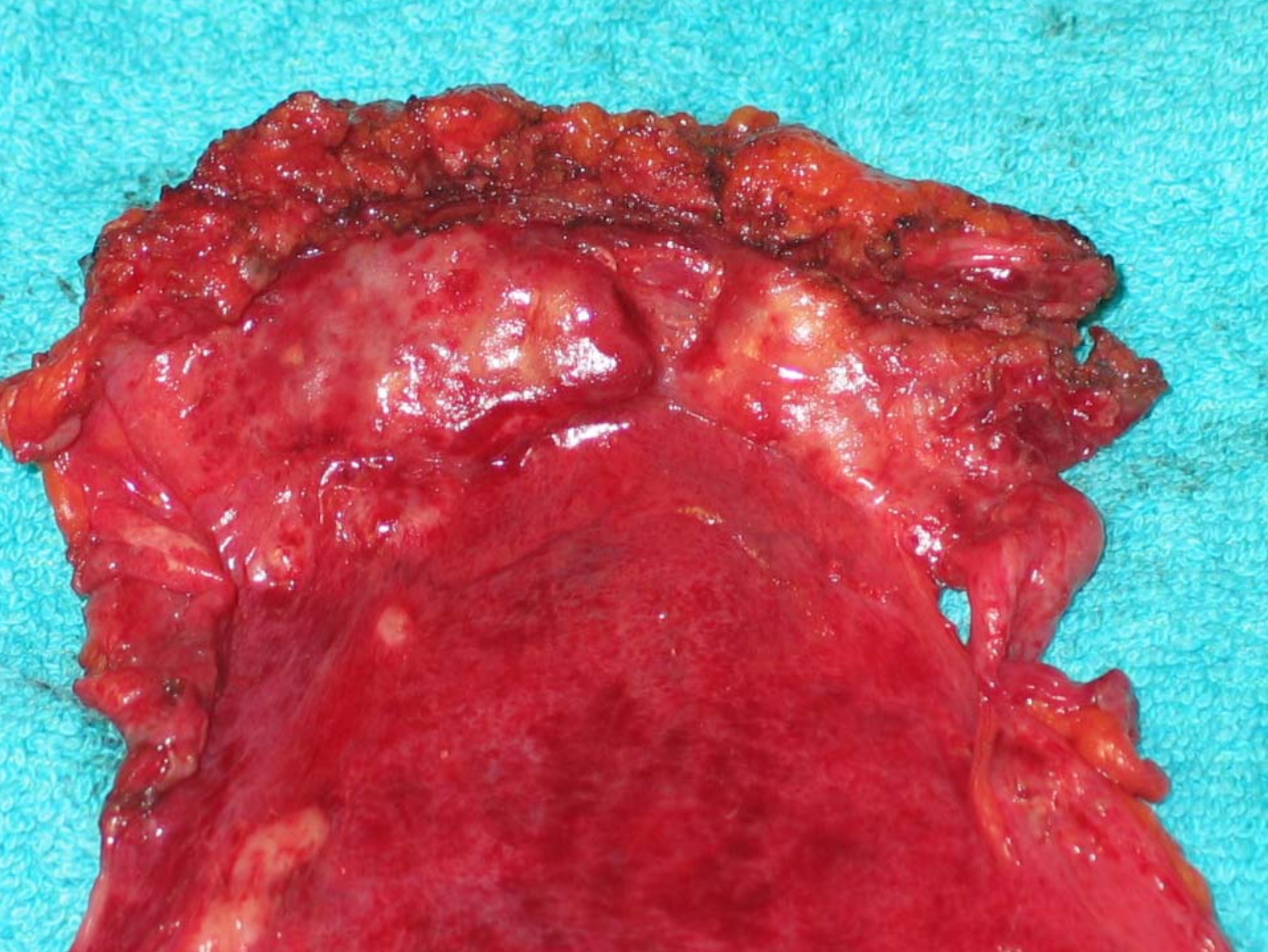
microscopische tumorhaarden

1. cytoreductie: resectie



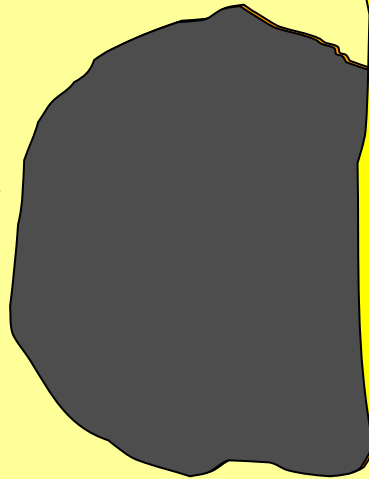
1. cytoreductie: resectie







1. cytoreductie: coagulatie



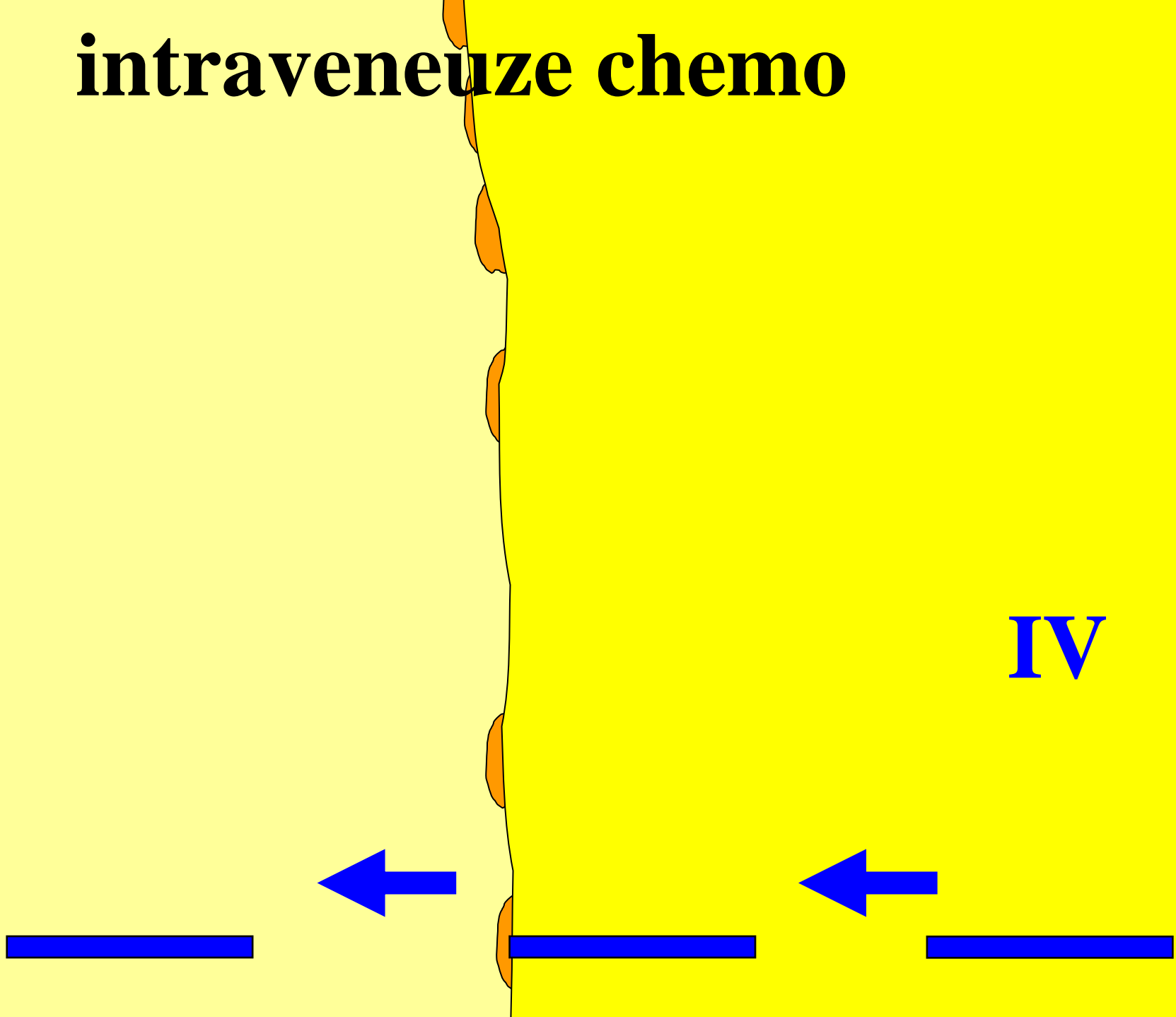


Detroz, 2004

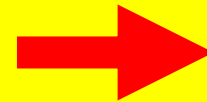
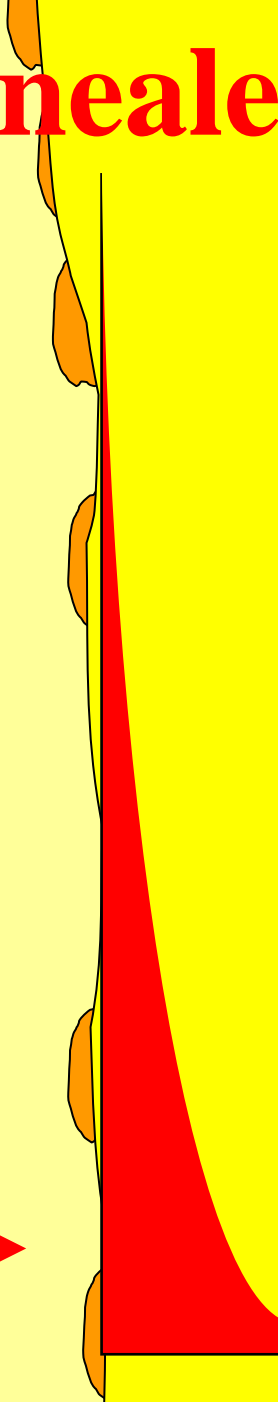
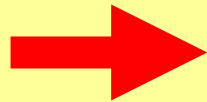
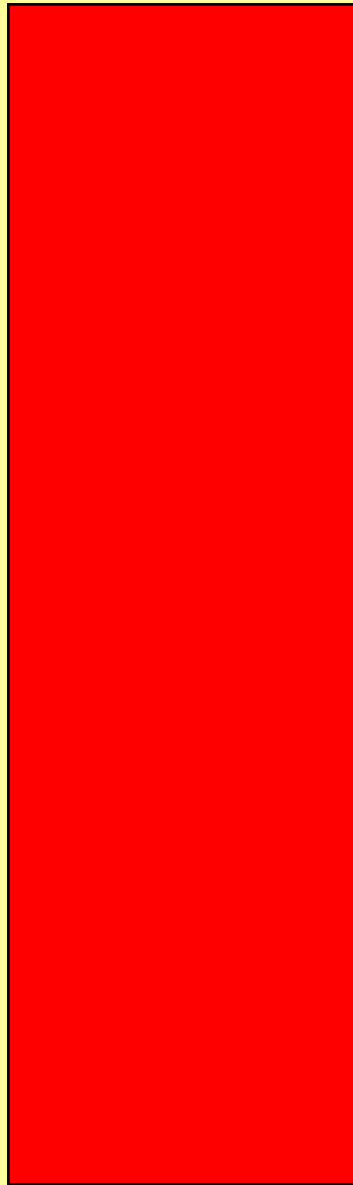


Detroz, 2004

intraveneuze chemo



intraperitoneale chemo



IV

intraperitoneale chemo

42°

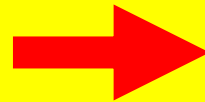
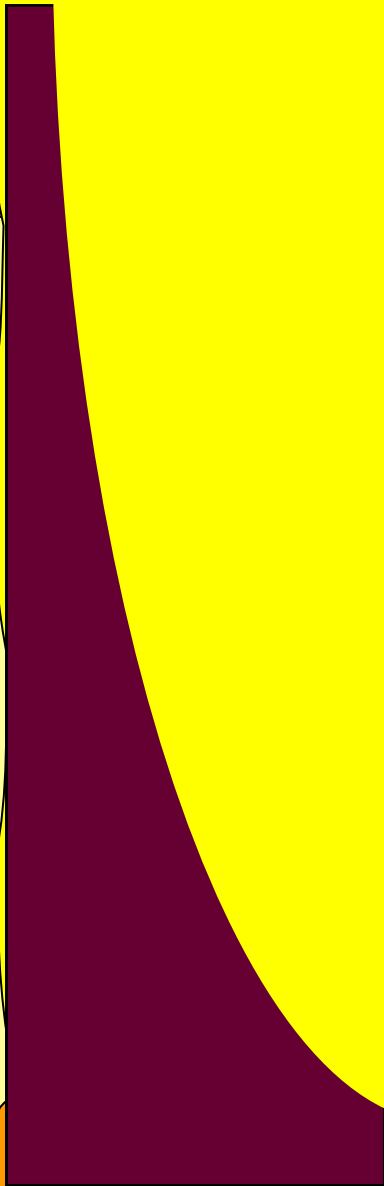
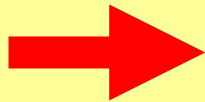
41°

40°

39°

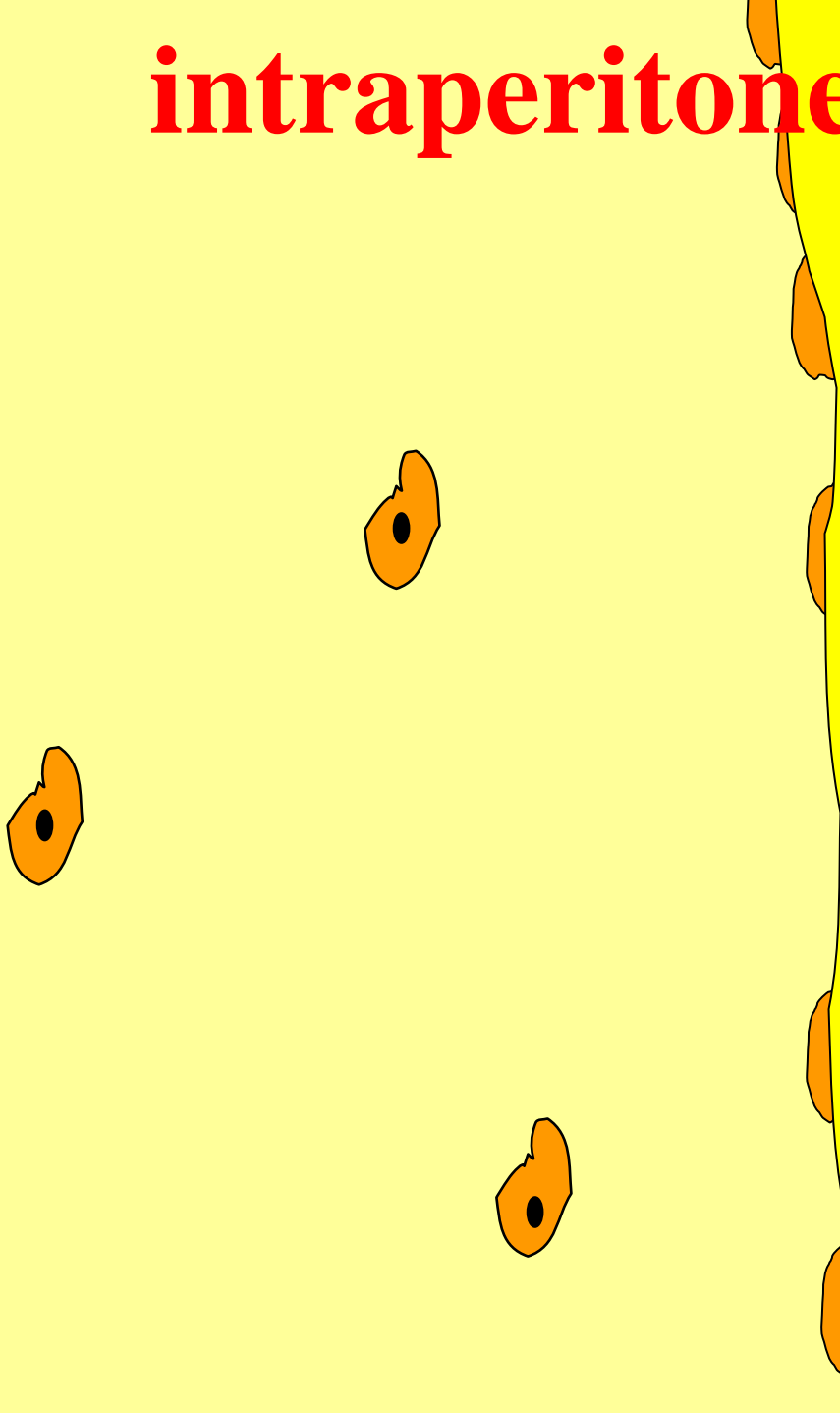
38°

37°



IV

intraperitoneale chemo



intraperitoneale chemo



synergie

-cytoreductie:

**behandelt geen microscopische
tumorhaarden**

-intraperitoneale chemo:

**onwerkzaam op macroscopische
tumorhaarden**

Cytoreductie en HIPEC voor colorectale carcinomatose

- inleiding
- techniek**
- resultaten
- indicaties

HIPEC: technieken

1. installatie
2. exploratie
3. cytoreductie
4. peroperatieve chemo
5. reconstructie
6. drains

Installatie



Installatie

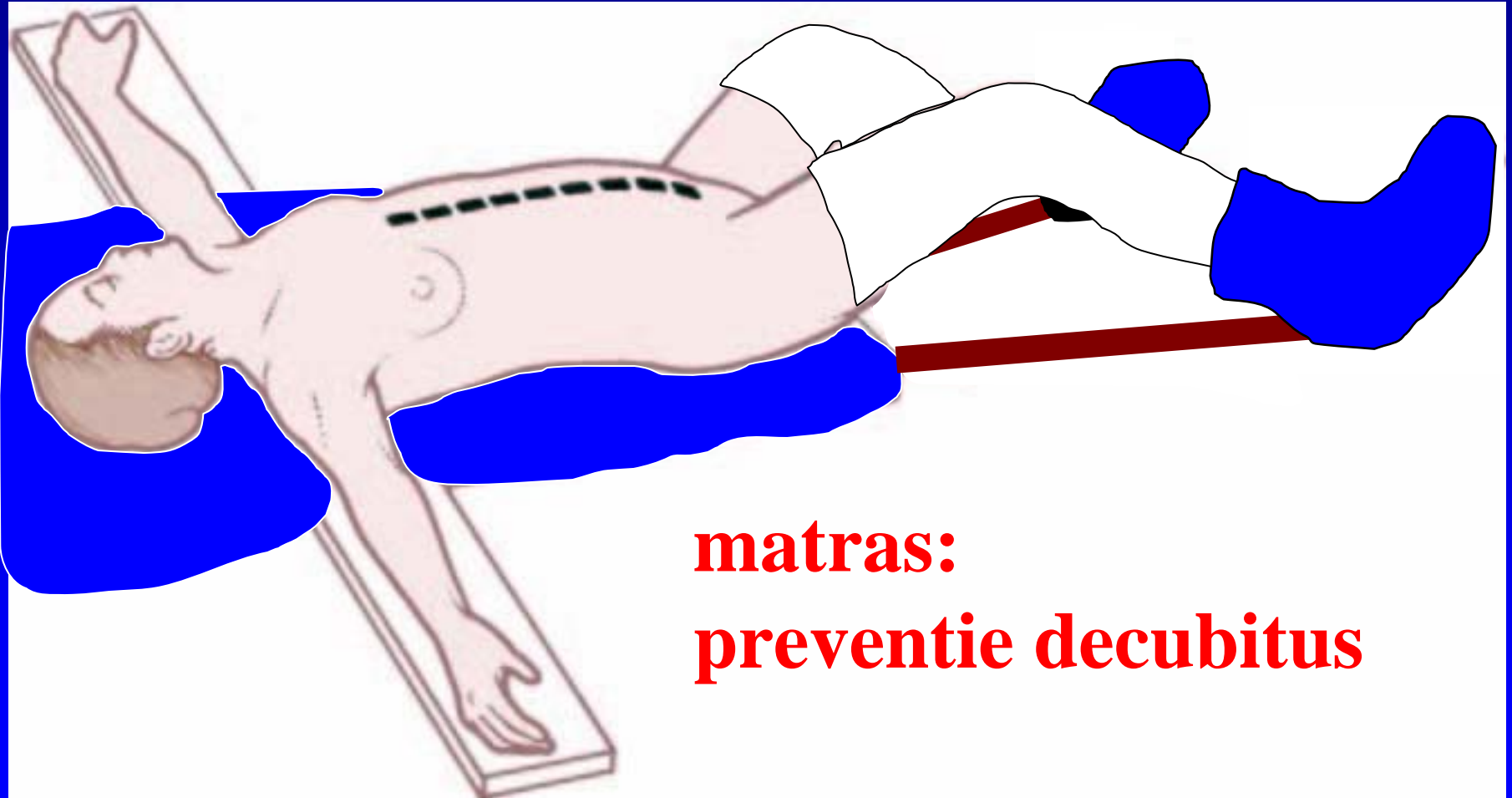


Installatie



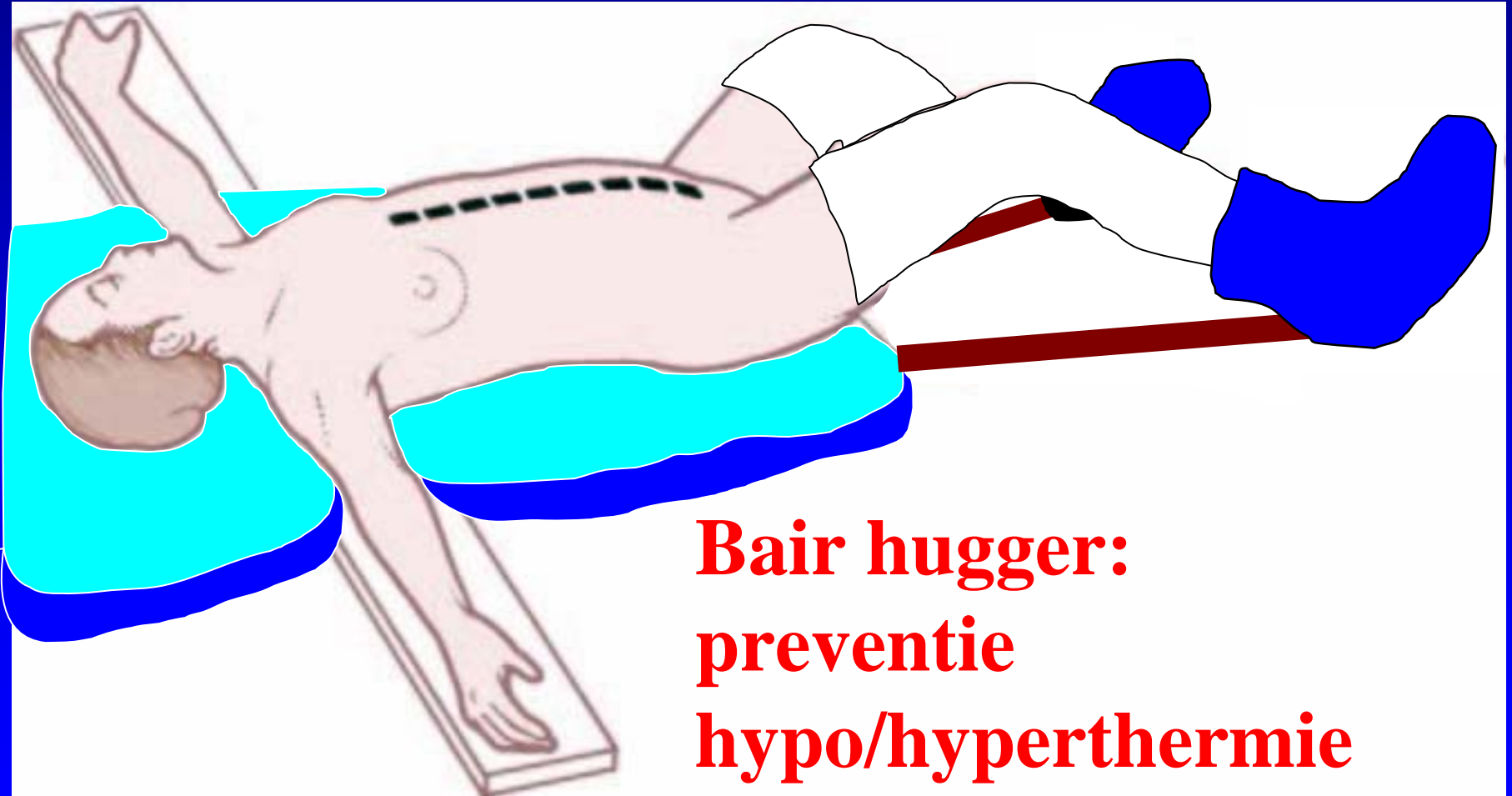
**beenhouders:
preventie van zenuw-
en spiercompressie**

Installatie



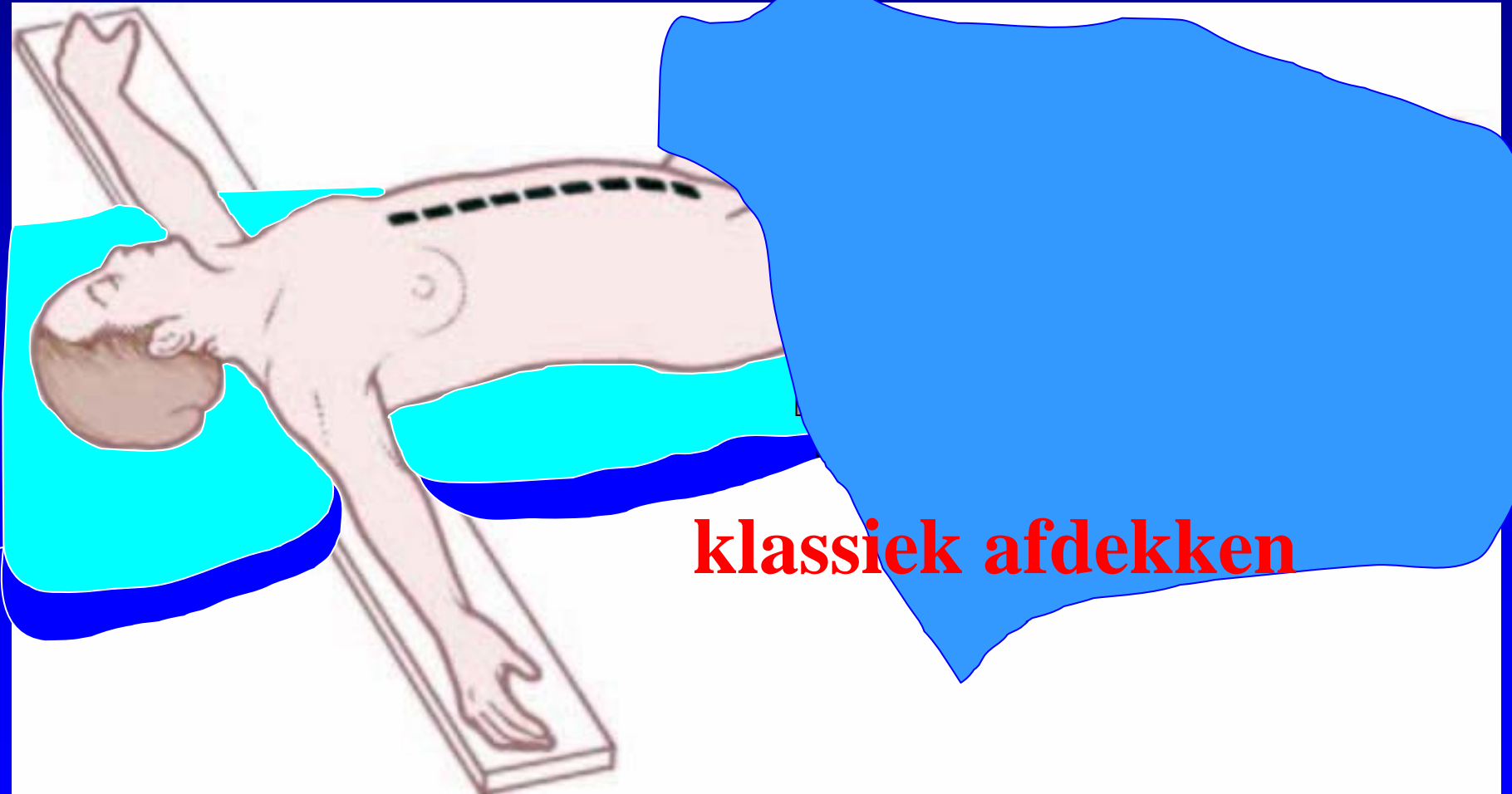
**matras:
preventie decubitus**

Installatie



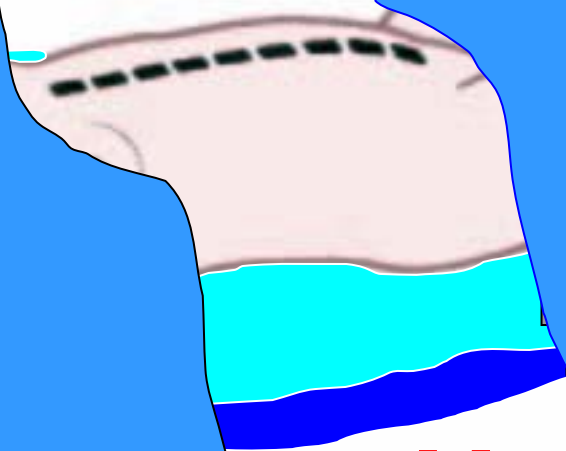
**Bair hugger:
preventie
hypo/hyperthermie**

Installatie



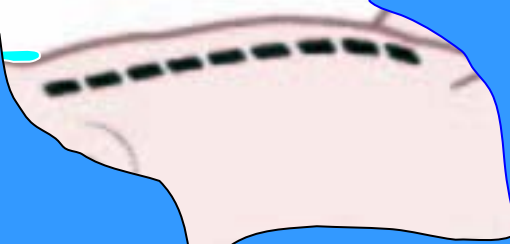
klassiek afdekken

Installatie



klassiek afdekken

Installatie



klassiek afdekken

Installatie



klassiek afdekken

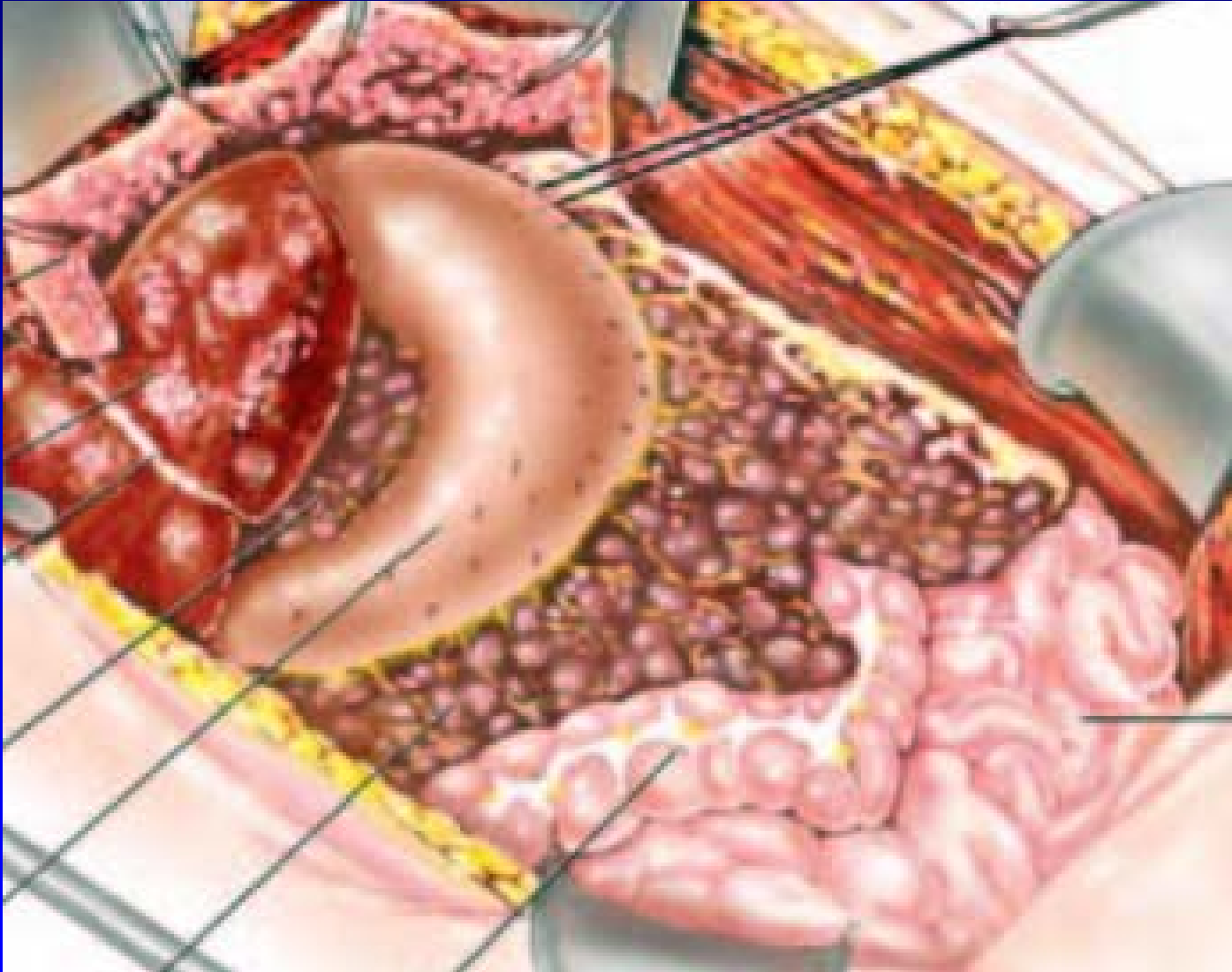


**keizersenee afdekset
preventie lekkage chemo**

HIPEC: technieken

1. installatie
2. exploratie
3. cytoreductie
4. peroperatieve chemo
5. reconstructie
6. drains

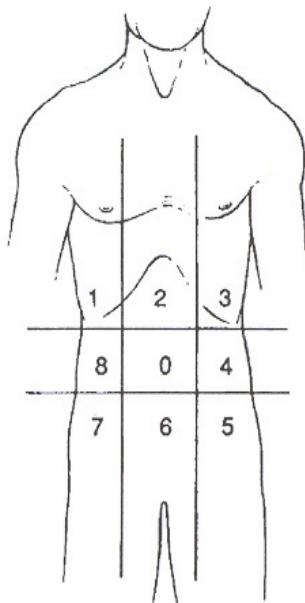
exploratie



Sugarbaker, Surg Clin N Am 2003

1. Uitgebreidheid?

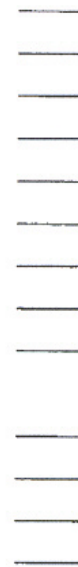
Peritoneal Cancer Index



Regions

- 0 Central
- 1 Right Upper
- 2 Epigastrium
- 3 Left Upper
- 4 Left Flank
- 5 Left Lower
- 6 Pelvis
- 7 Right Lower
- 8 Right Flank
- 9 Upper Jejunum
- 10 Lower Jejunum
- 11 Upper Ileum
- 12 Lower Ileum

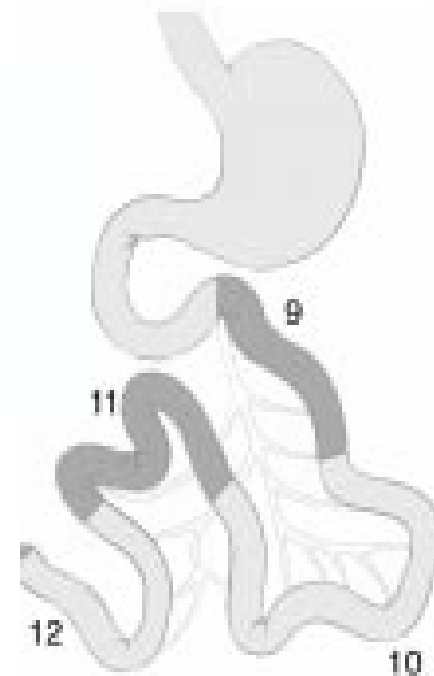
Lesion Size

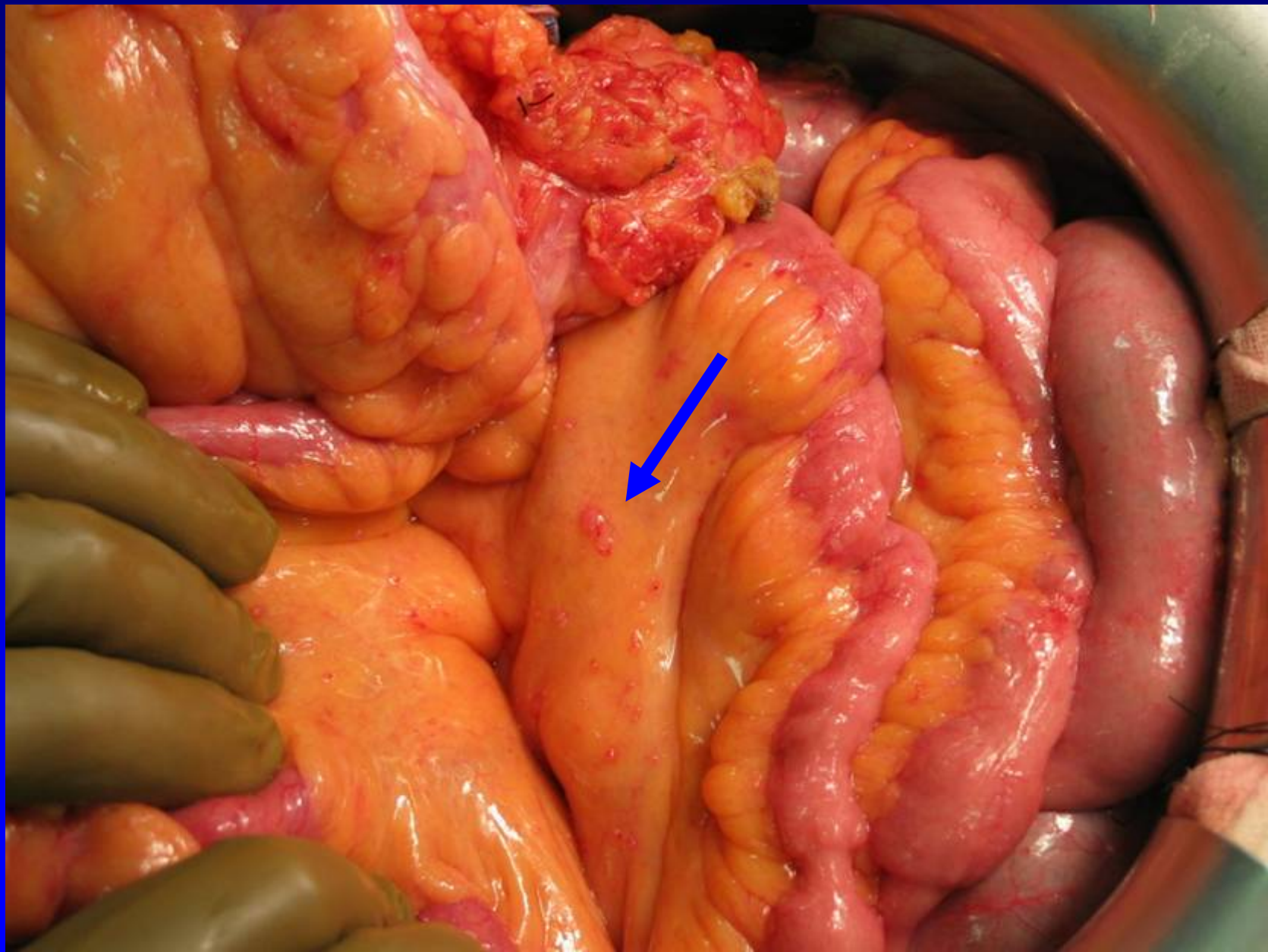


Lesion Size Score

- LS 0 No tumor seen
- LS 1 Tumor up to 0.5
- LS 2 Tumor up to 5.0
- LS 3 Tumor > 5.0 cm

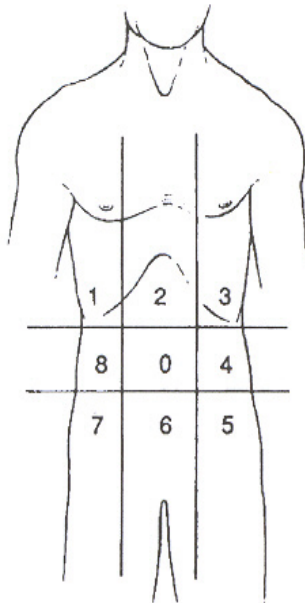
PCI





1. Uitgebreidheid?

Sugarbaker peritoneal cancer index



Regions

- 0 Central
- 1 Right Upper
- 2 Epigastrium
- 3 Left Upper
- 4 Left Flank
- 5 Left Lower
- 6 Pelvis
- 7 Right Lower
- 8 Right Flank

- 9 Upper Jejunum
- 10 Lower Jejunum
- 11 Upper Ileum
- 12 Lower Ileum

Lesion Size

- 0
- 2
- 3
- 0
- 1
- 1
- 0
- 0
- 2

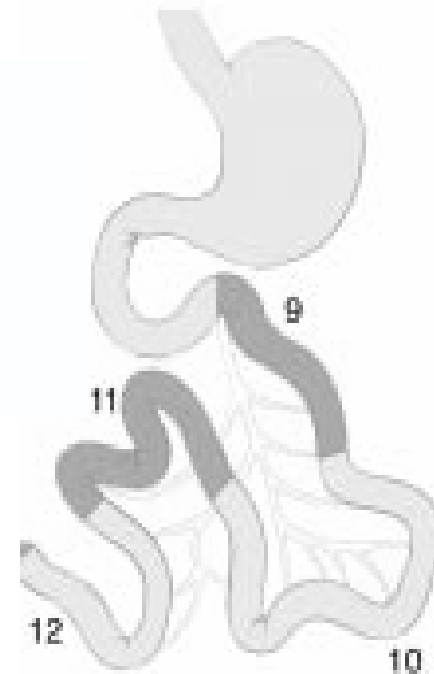
- 0
- 3
- 1
- 3

Lesion Size Score

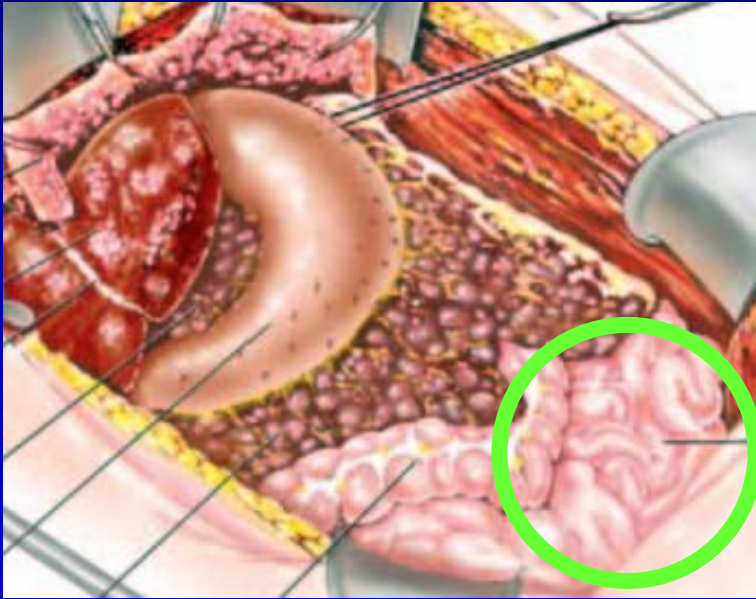
- LS 0 No tumor seen
- LS 1 Tumor up to 0.5
- LS 2 Tumor up to 5.0
- LS 3 Tumor > 5.0 cm

PCI

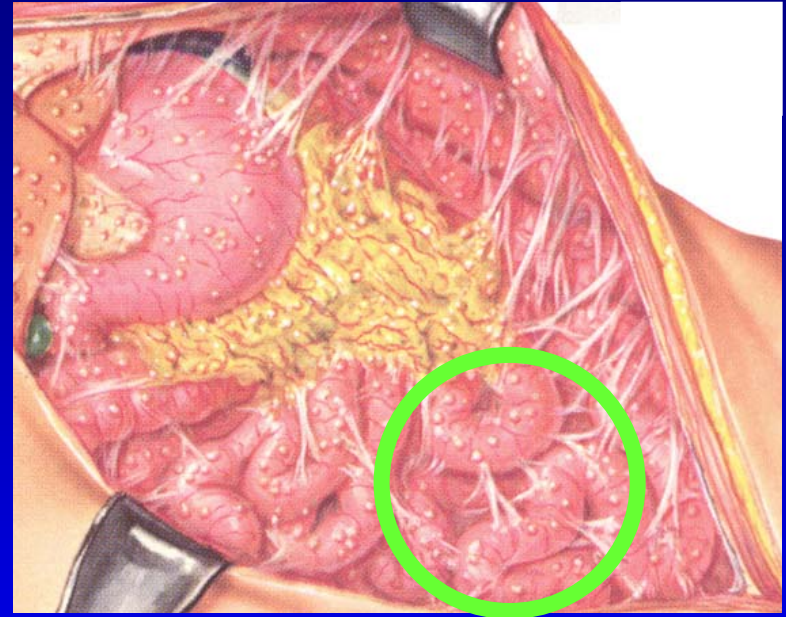
16



2. Resecabiliteit? (1)



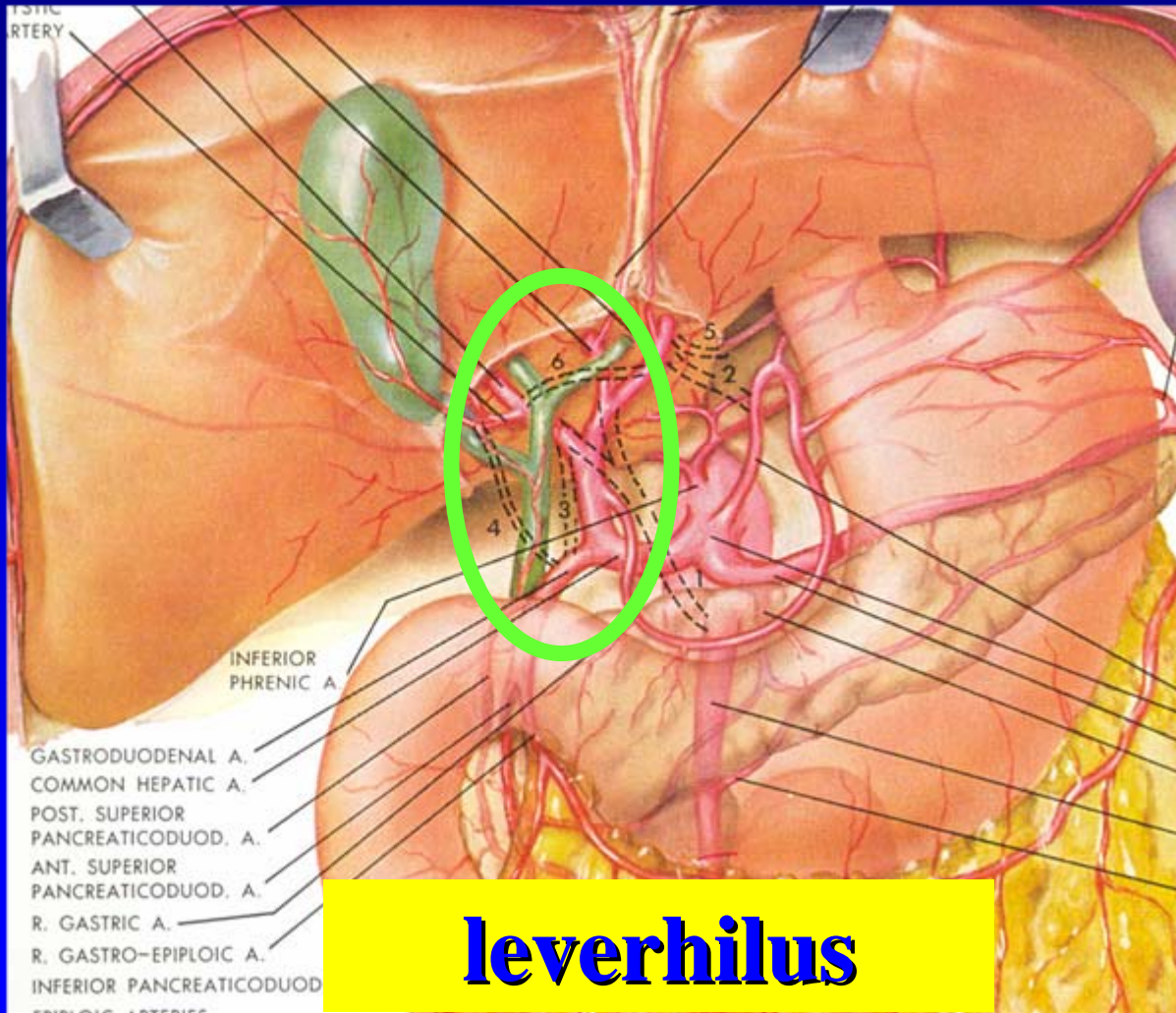
resecabel



niet resecabel

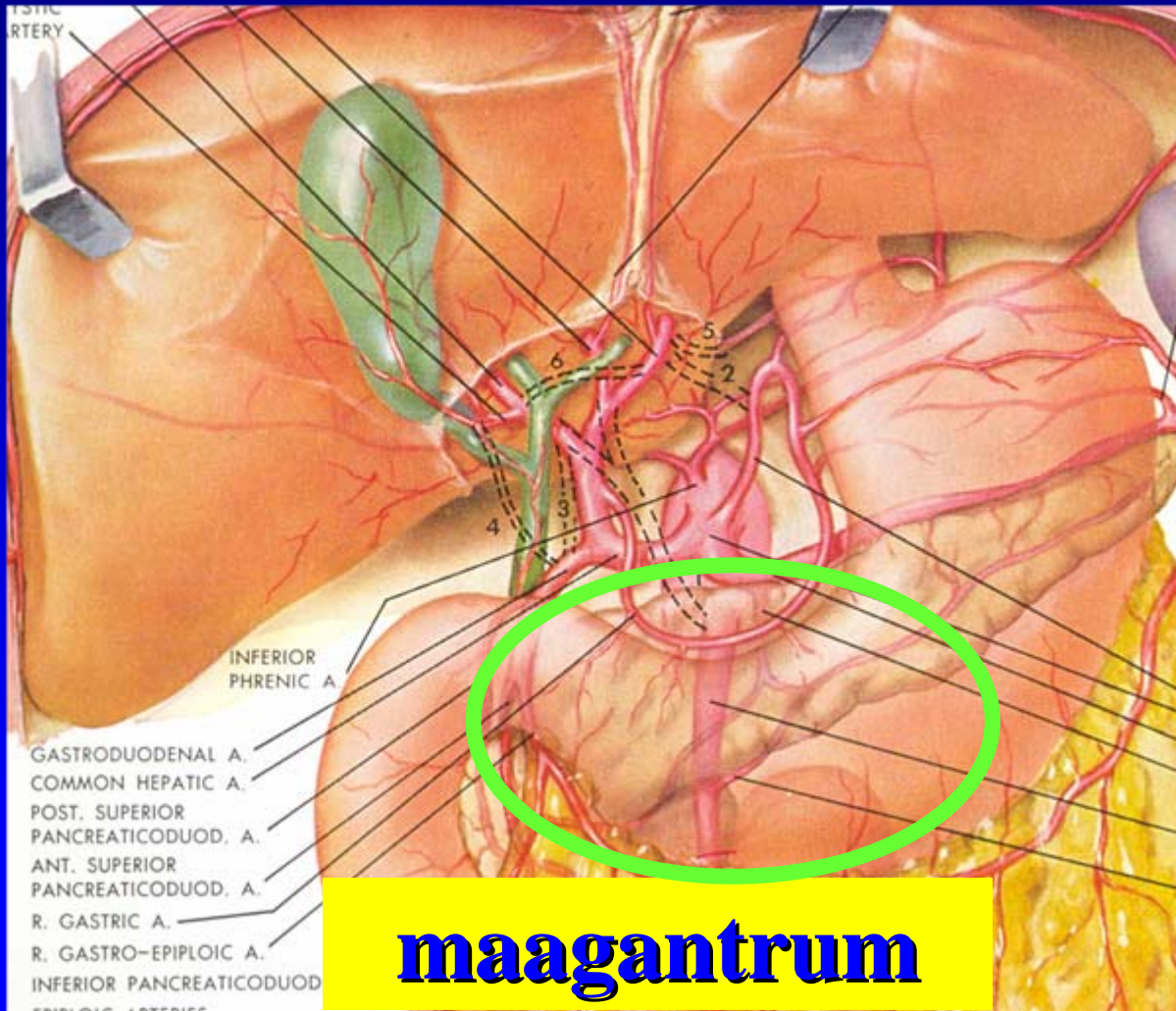
1.5 m residuele **dundarm**

2. Resecabiliteit? (2)

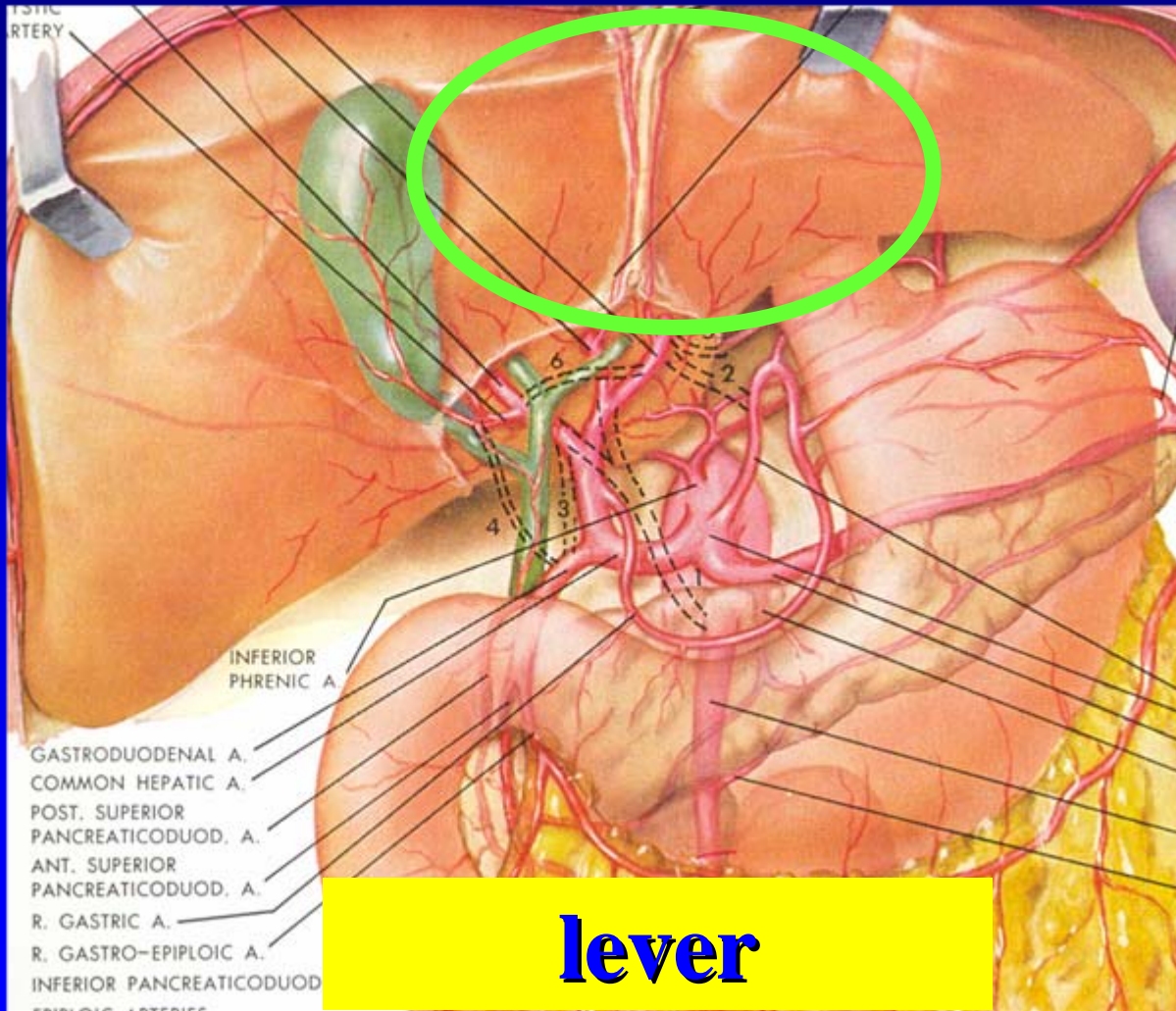


leverhilus

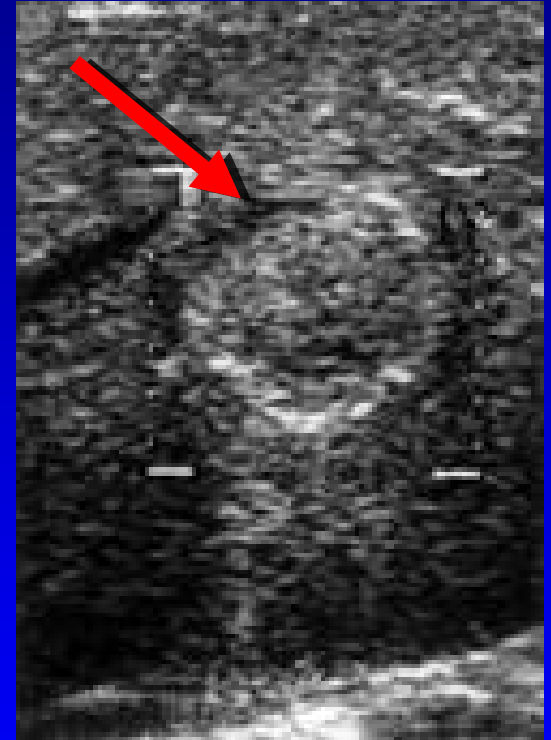
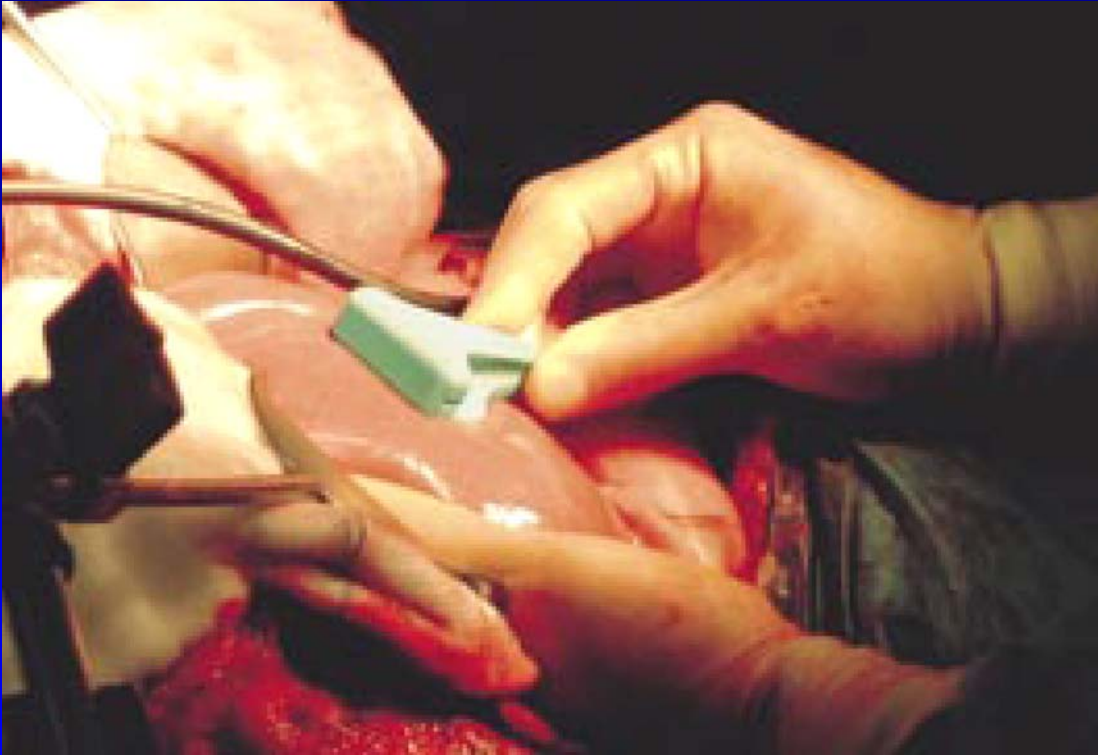
2. Resecabiliteit? (3)



3. Levermetastasen?



3. Levermetastasen?



echografie perop

HIPEC: technieken

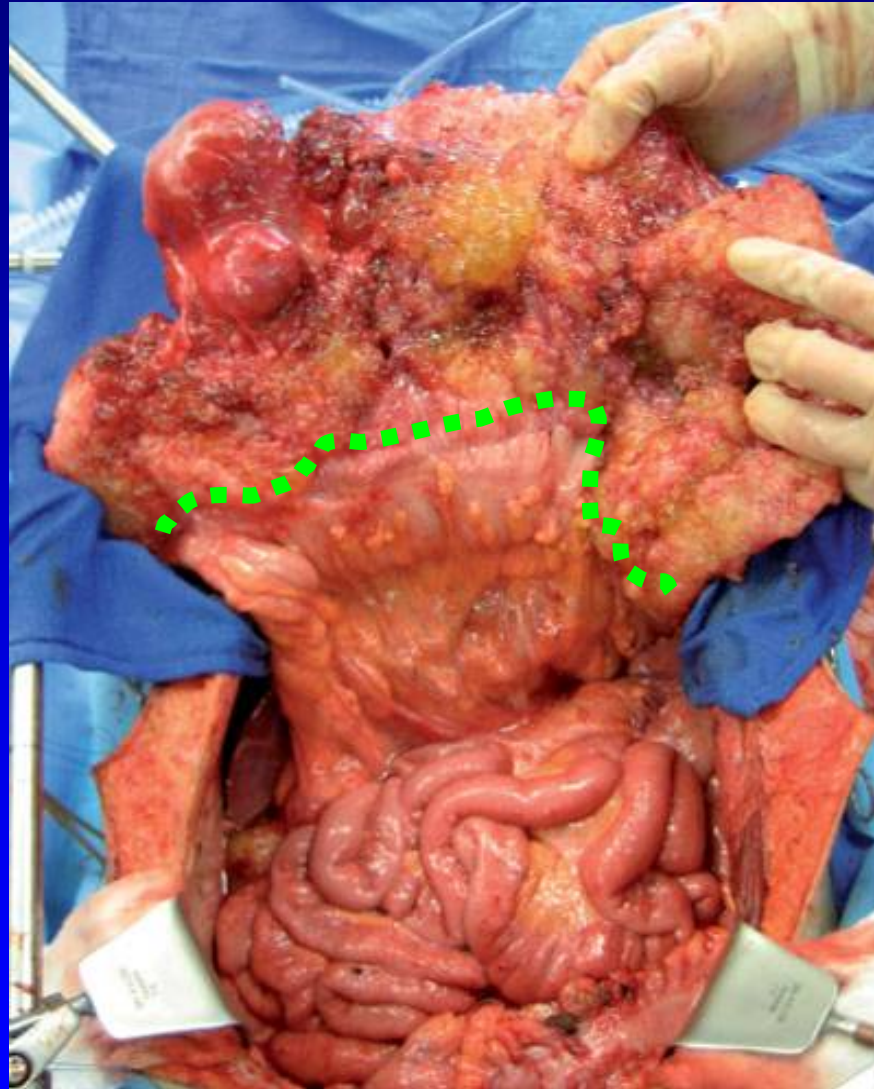
1. installatie
2. exploratie
3. cytoreductie
4. peroperatieve chemo
5. reconstructie
6. drains

xyphopubische incisie



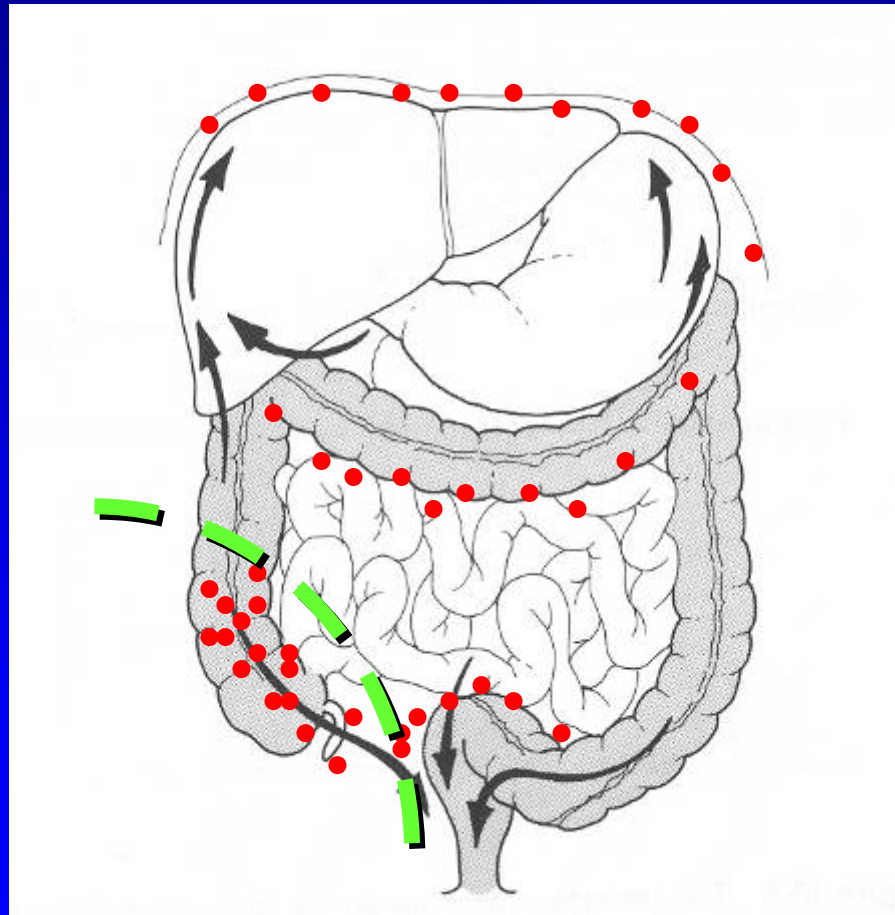
Sugarbaker, Surg Clin N Am 2003

omentum resectie

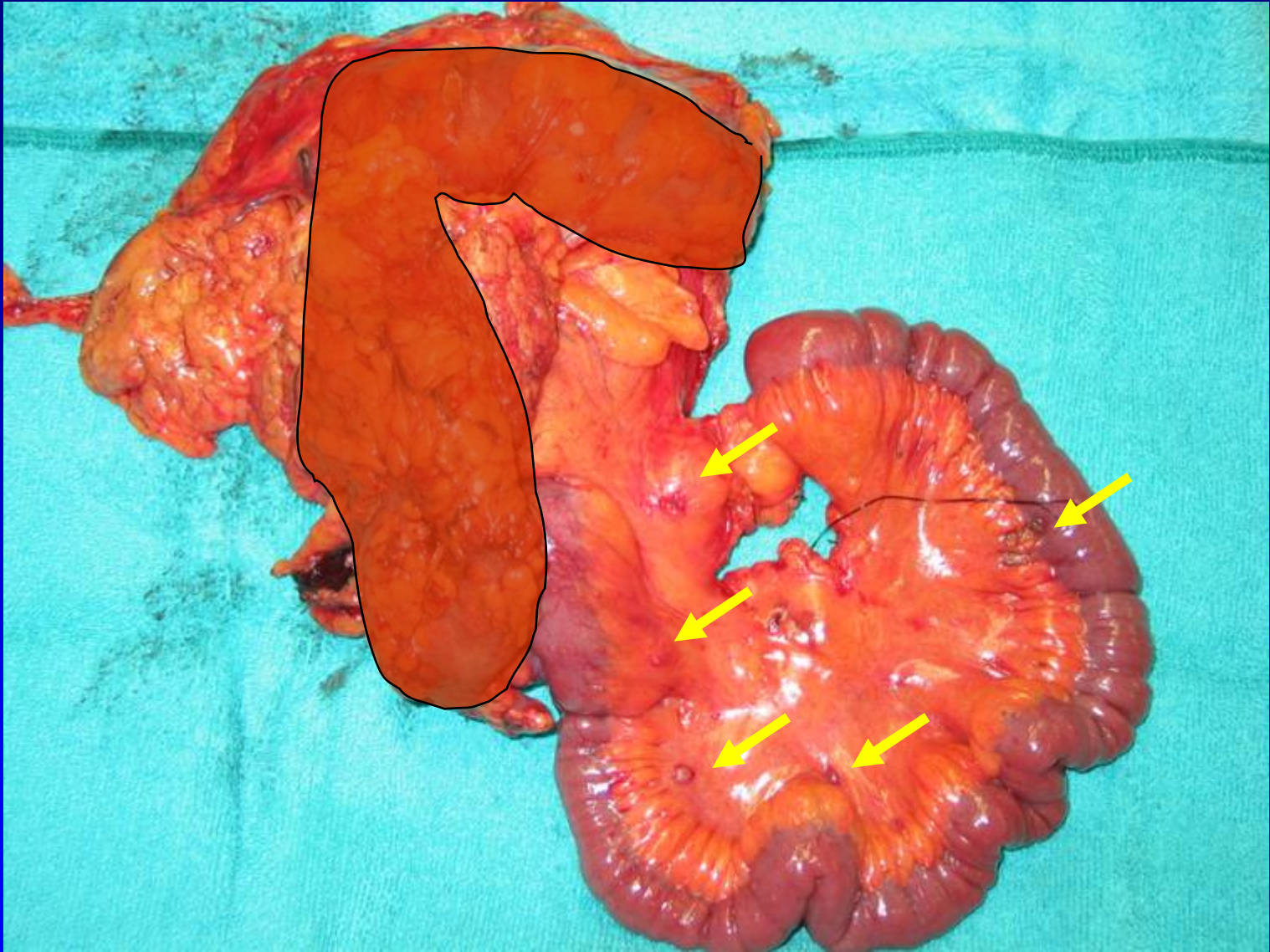


Sugarbaker, J Surg Oncol 2007

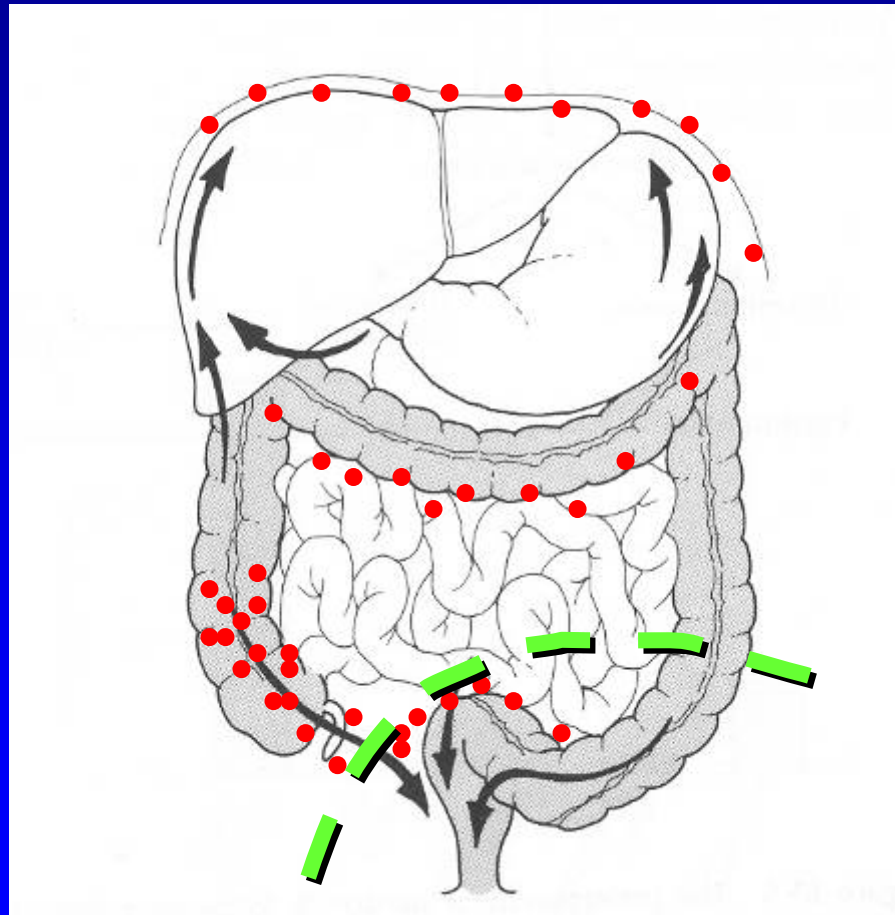
resectie rechter colon en dundarm



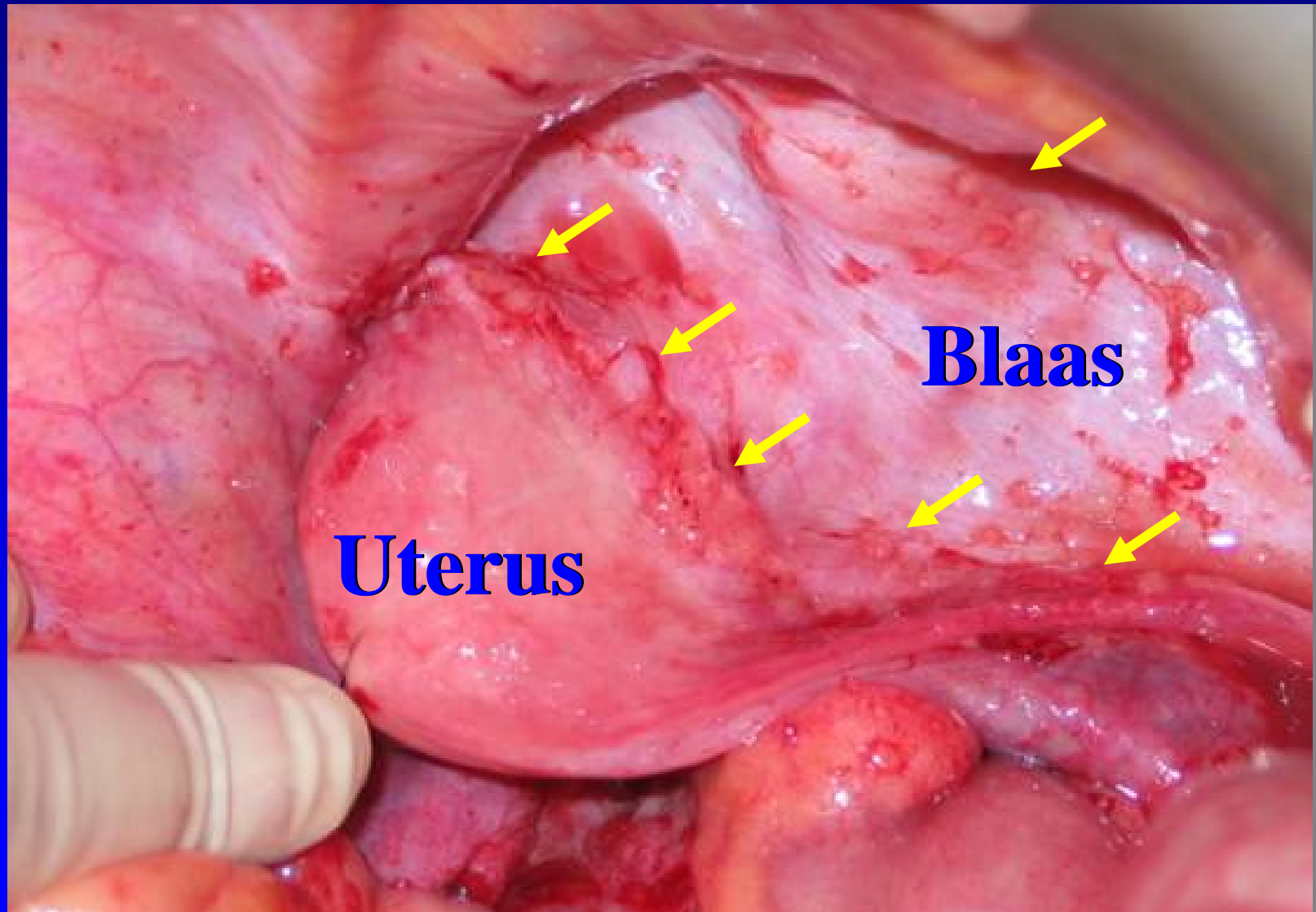
resectie rechter colon en dundarm



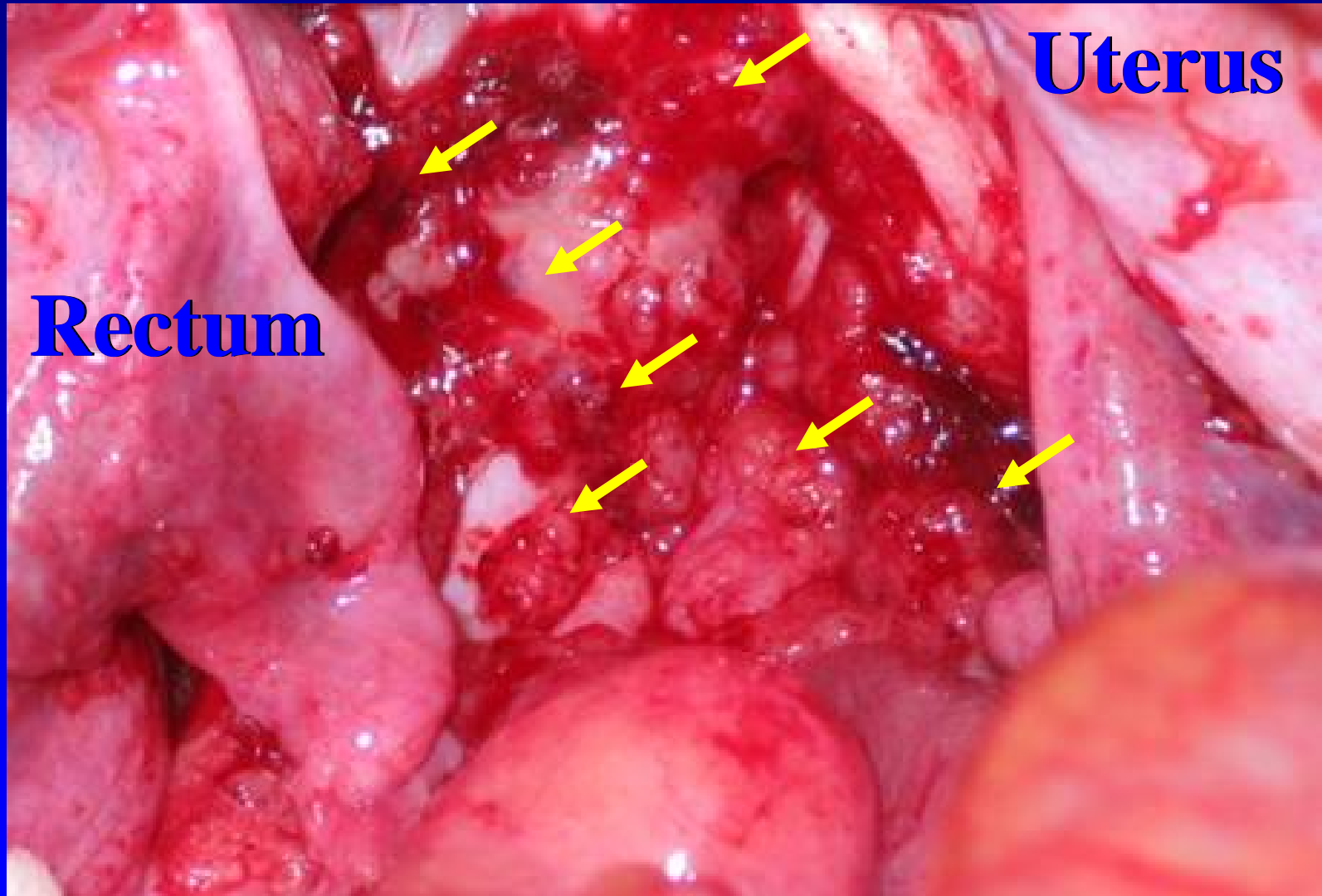
rectosigmoidresectie + hysterectomie



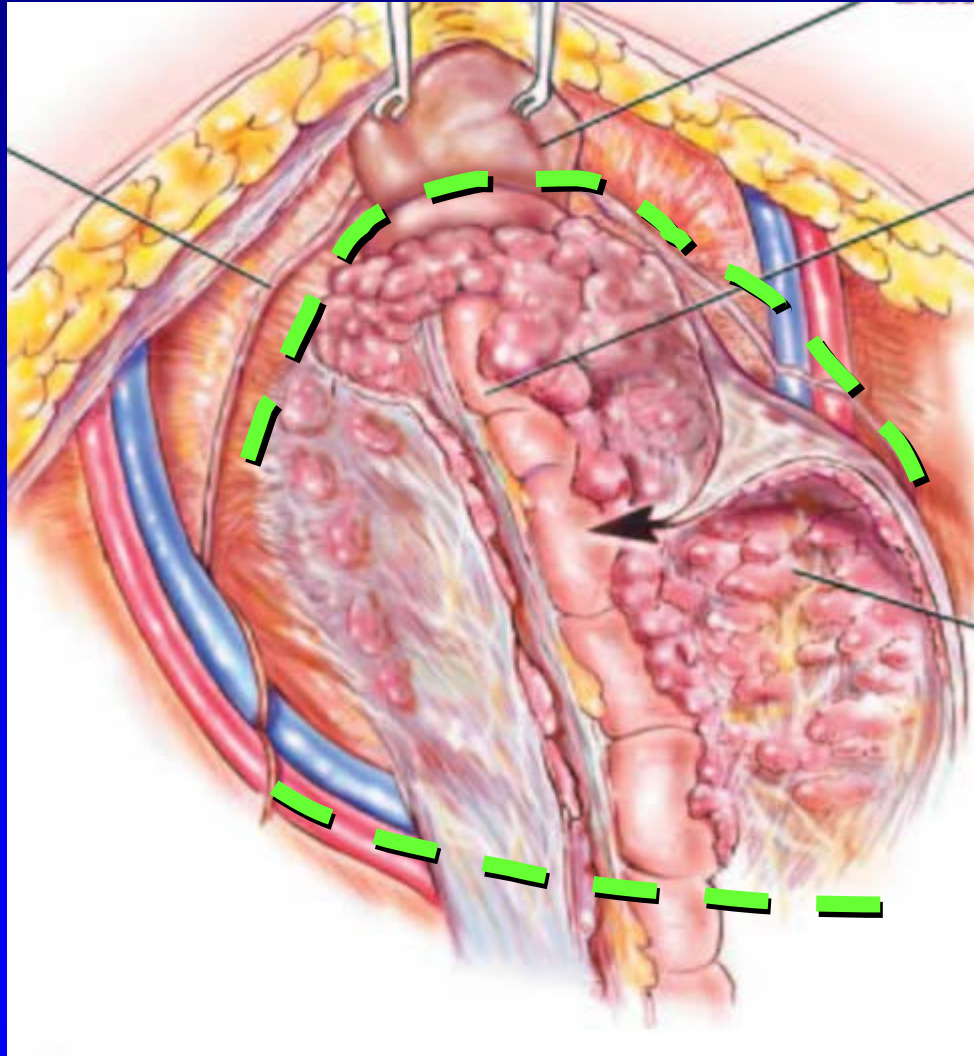
carcinomatose voor uterus



carcinomatose achter uterus

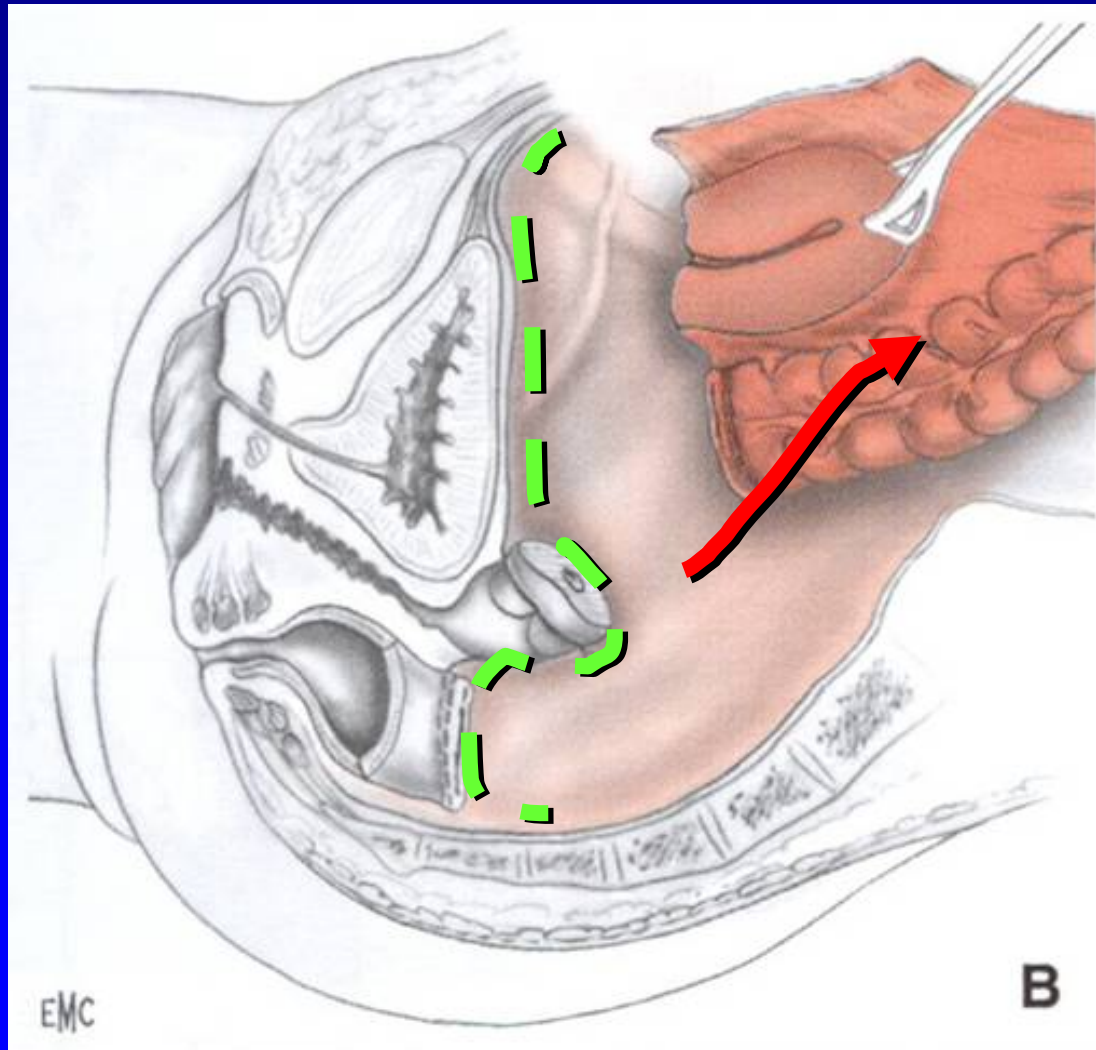


rectosigmoidresectie + hysterectomie

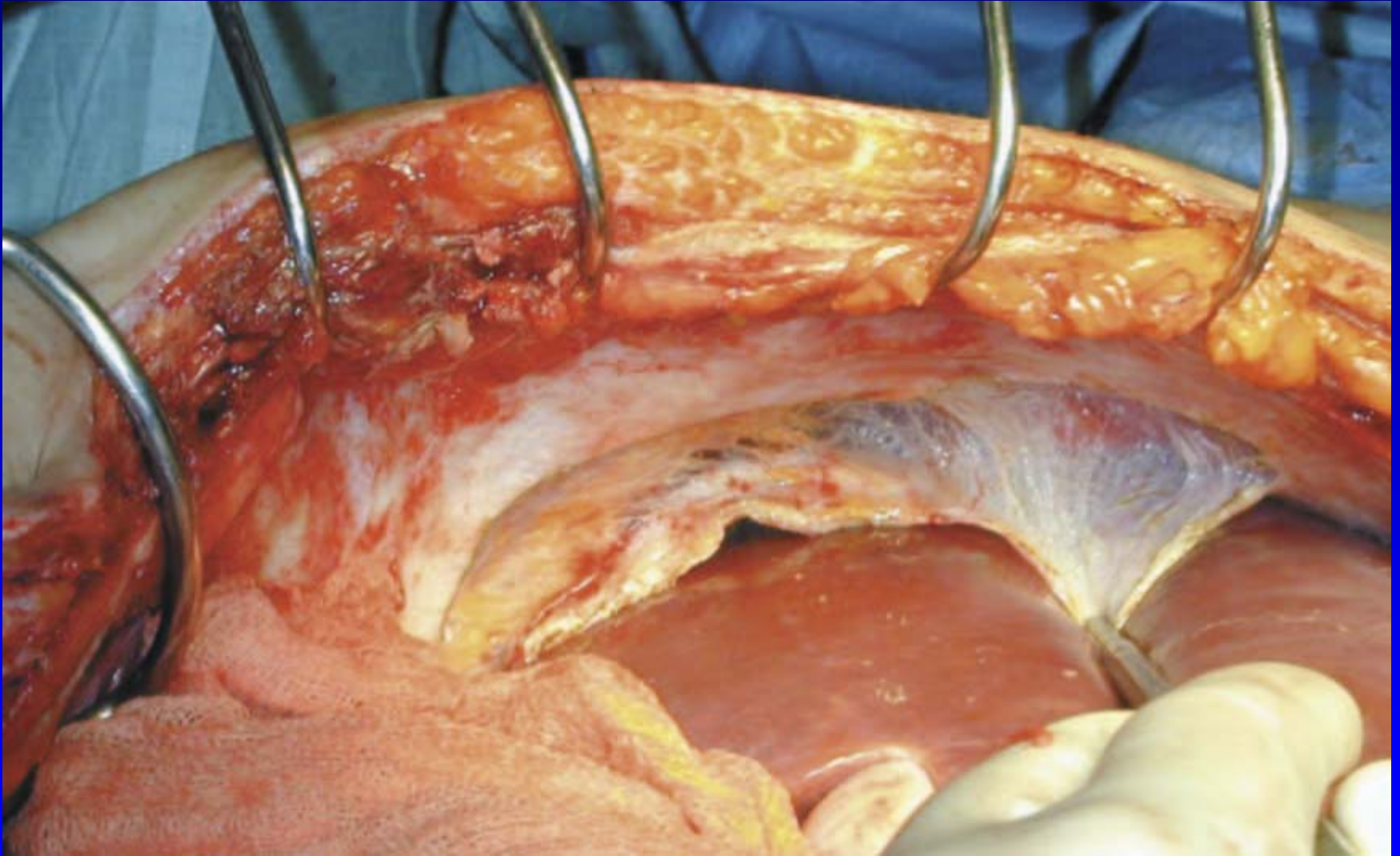


Sugarbaker, Surg Clin N Am 2003

rectosigmoidresectie + hysterectomie

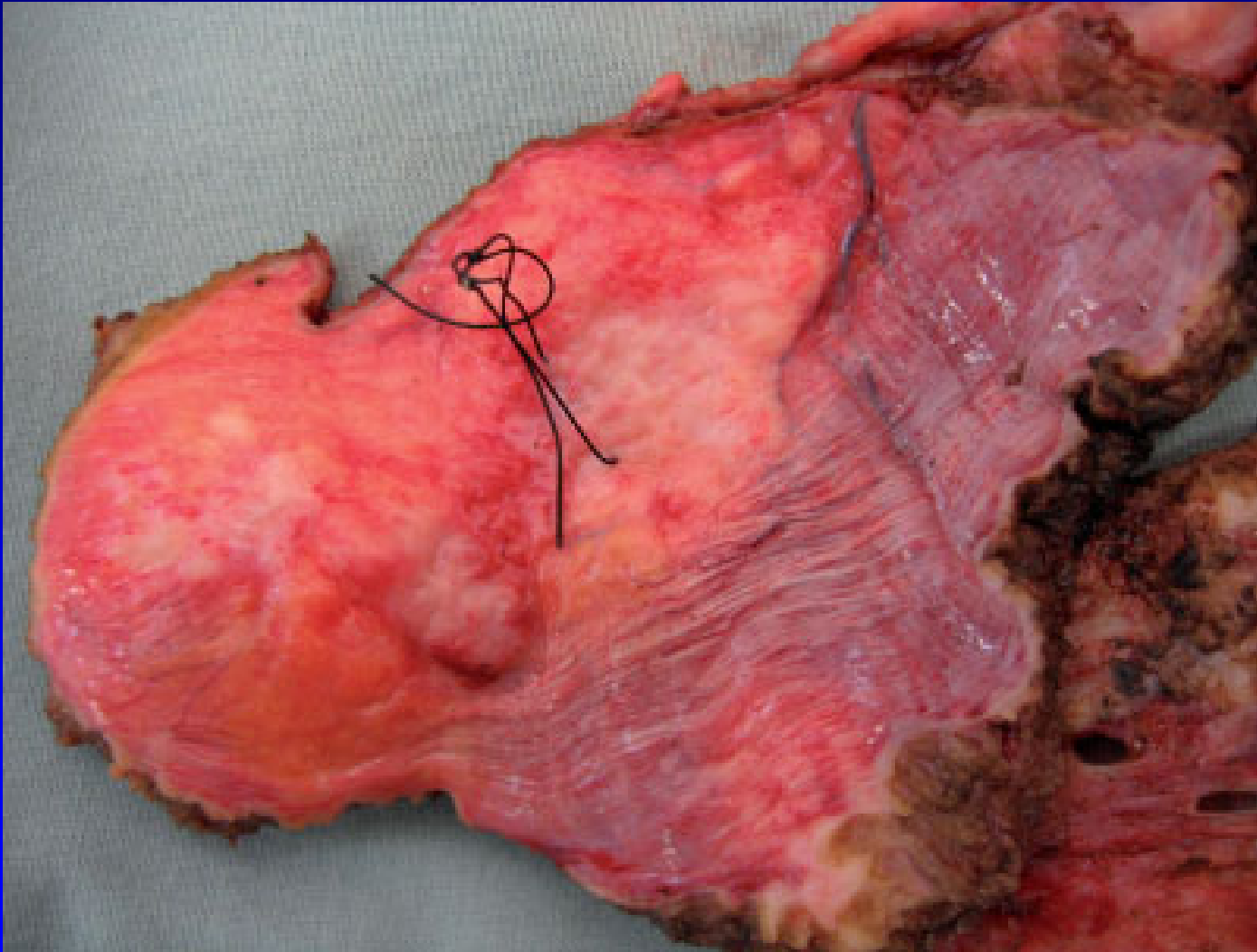


decollement peritoneum diafragma



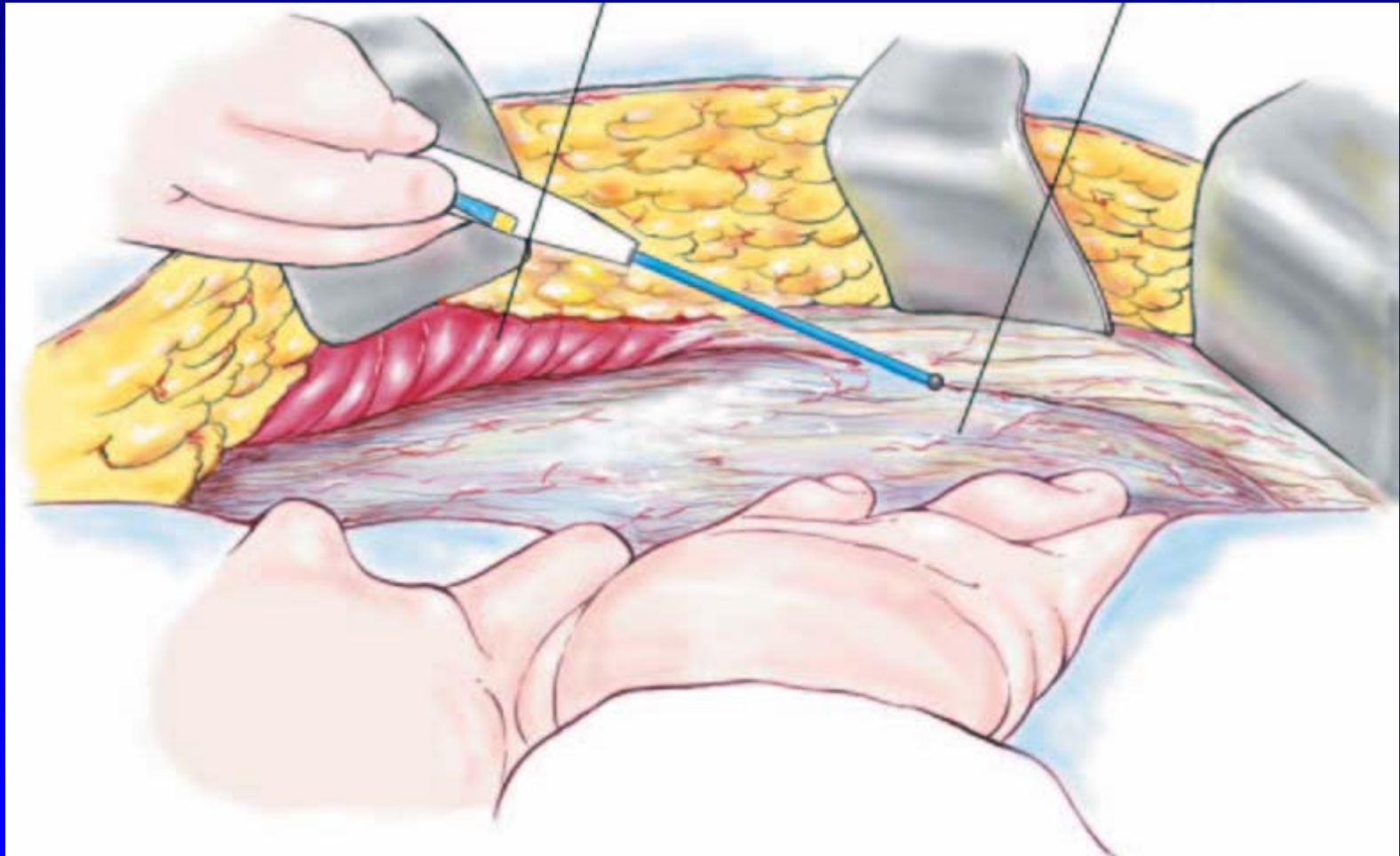
Glehen, Lancet 2004

resectie diafragma



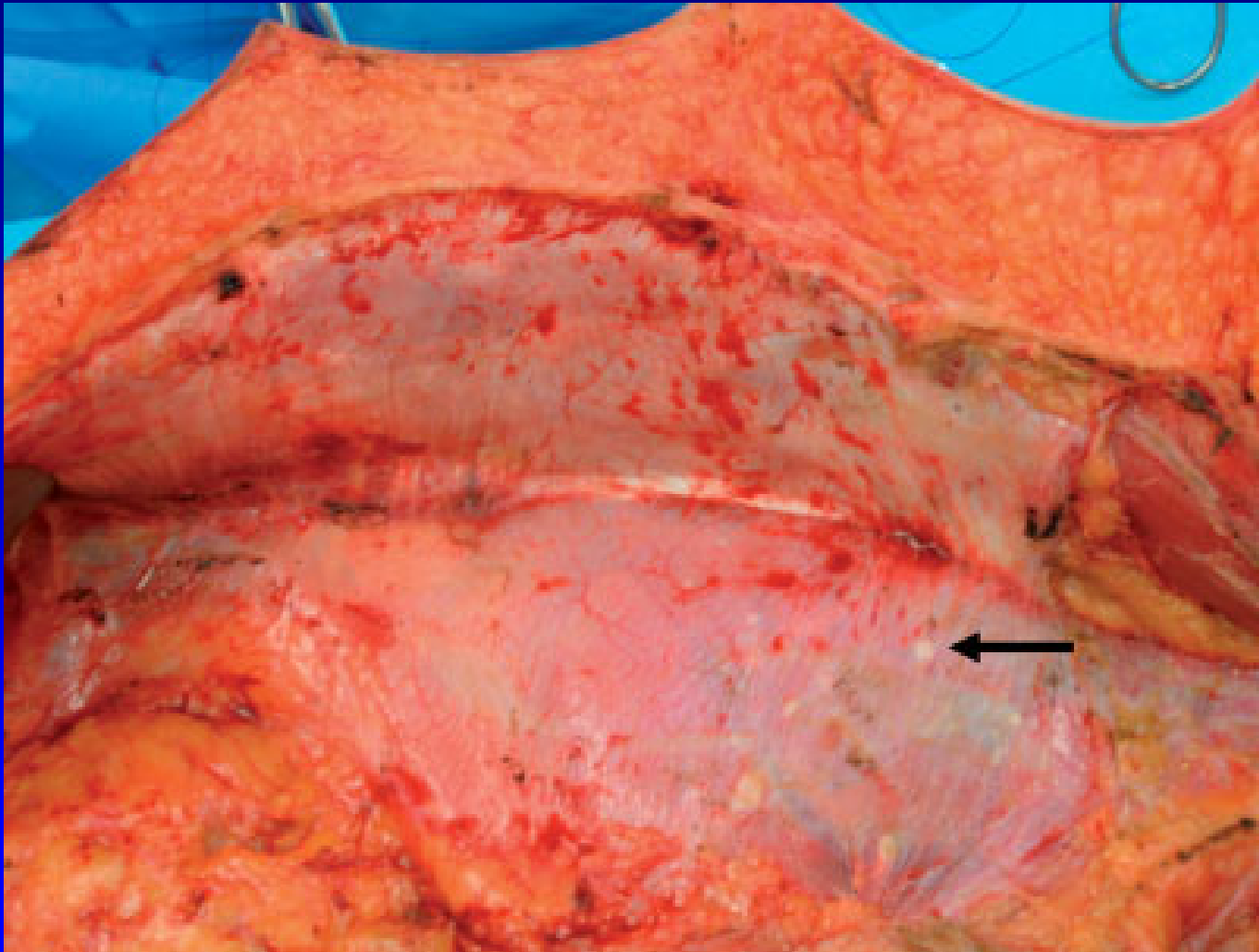
Sugarbaker, J Surg Oncol 2007

resectie parietaal peritoneum



Sugarbaker, Surg Clin N Am 2003

resectie parietaal peritoneum



Sugarbaker, J Surg Oncol 2007

andere mogelijke resecties

- cholecystectomie
- splenectomie
- partiele cystectomie
- ...

HIPEC: technieken

1. installatie
2. exploratie
3. cytoreductie
4. peroperatieve chemo
5. reconstructie
6. drains

plaatsen kader



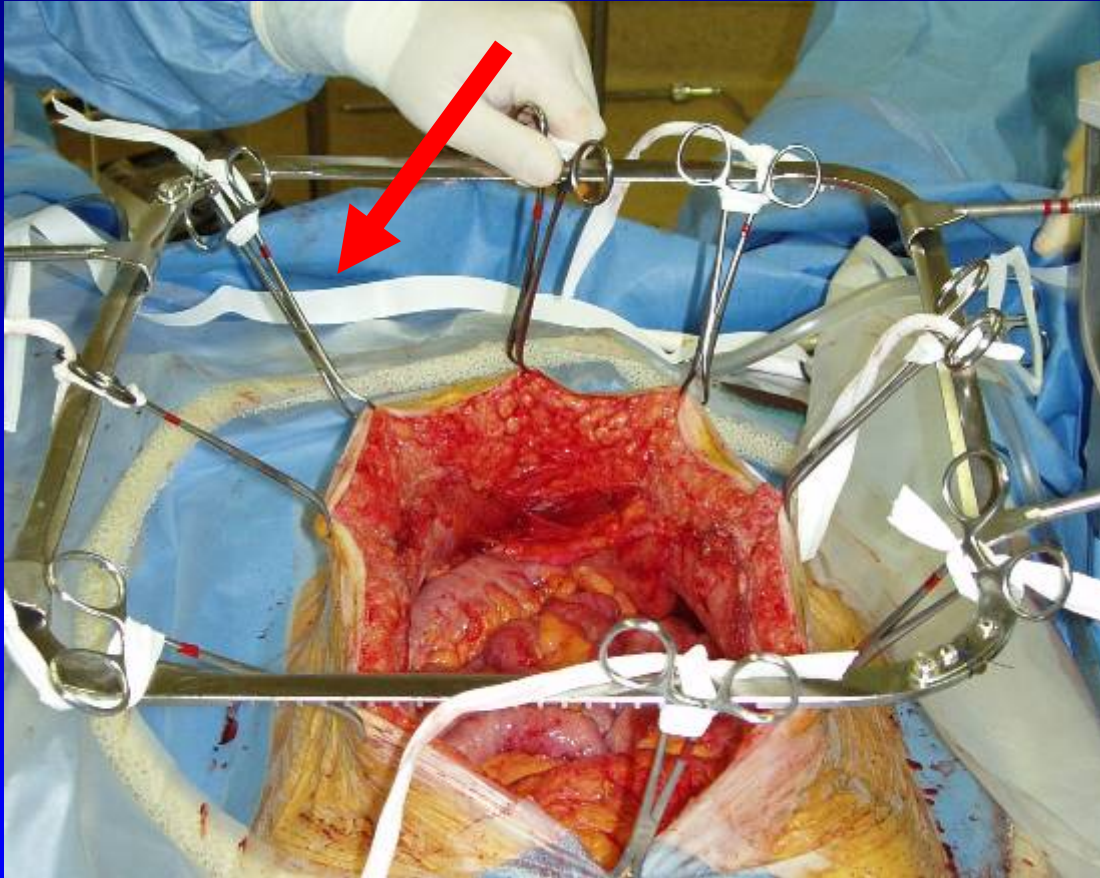
ophangen van de buikwand



Coliseum



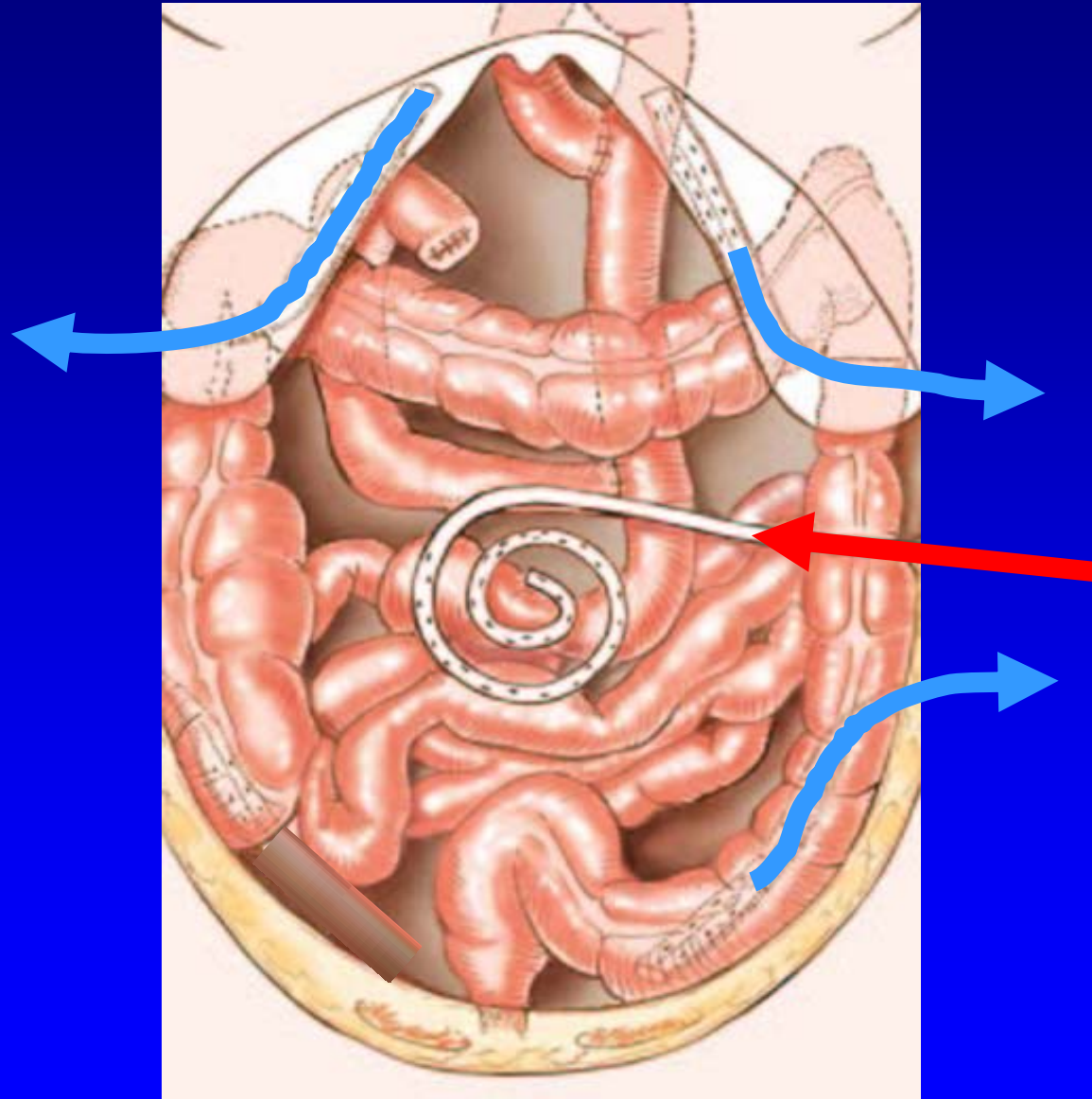
ophangen van de buikwand



Coliseum

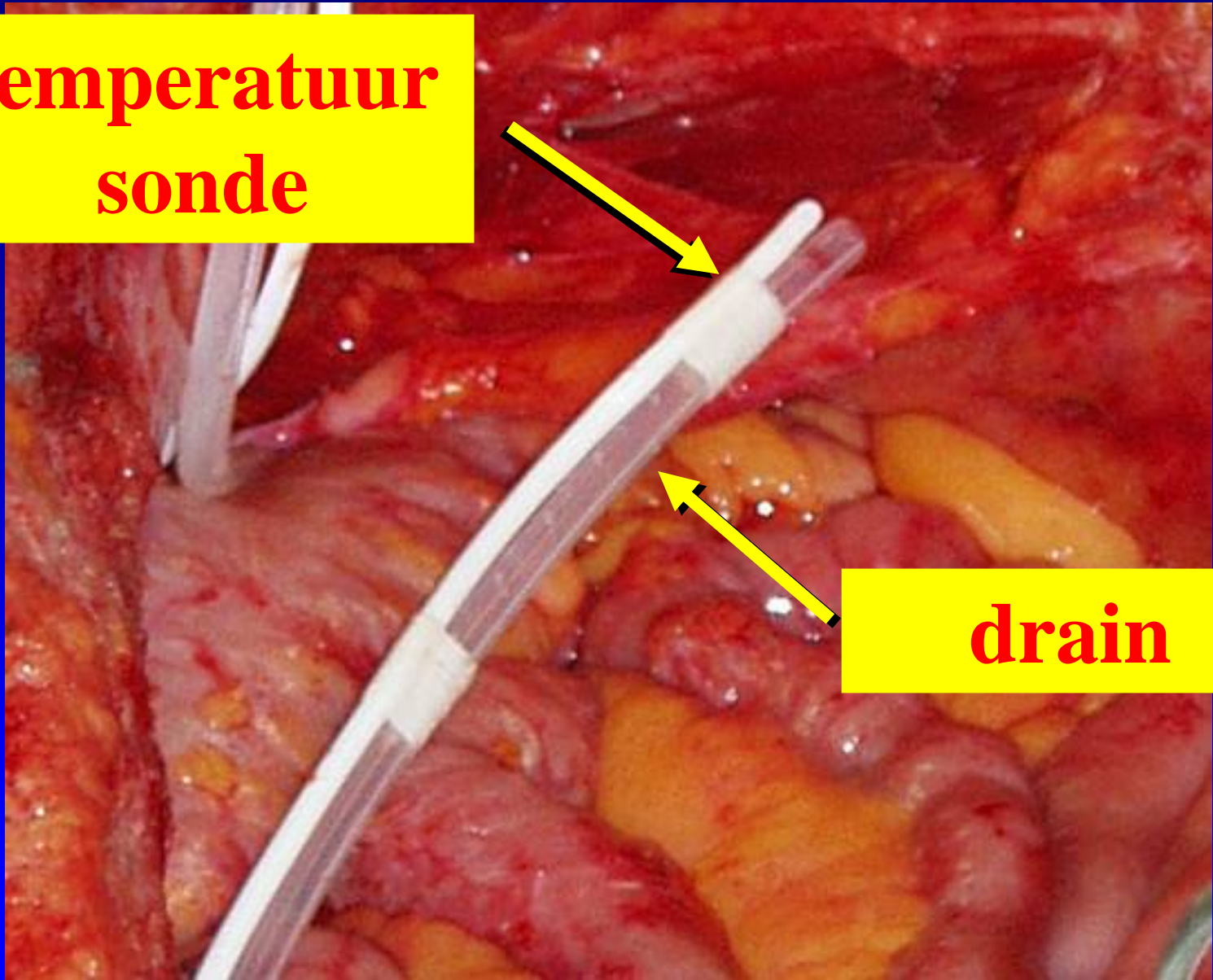


plaatsing drains



Sugarbaker, Surg Clin N Am 2003

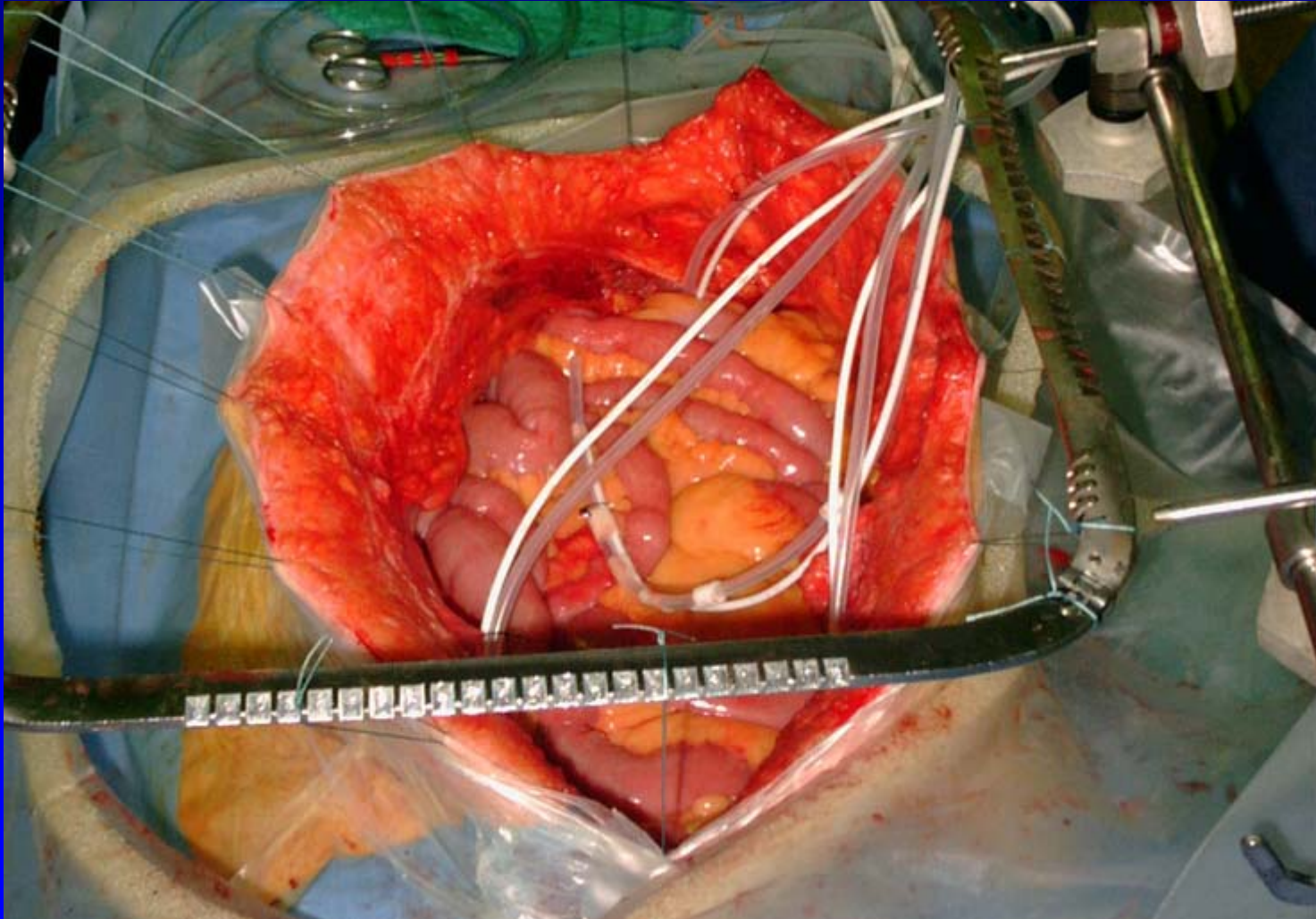
**temperatuur
sonde**



drain

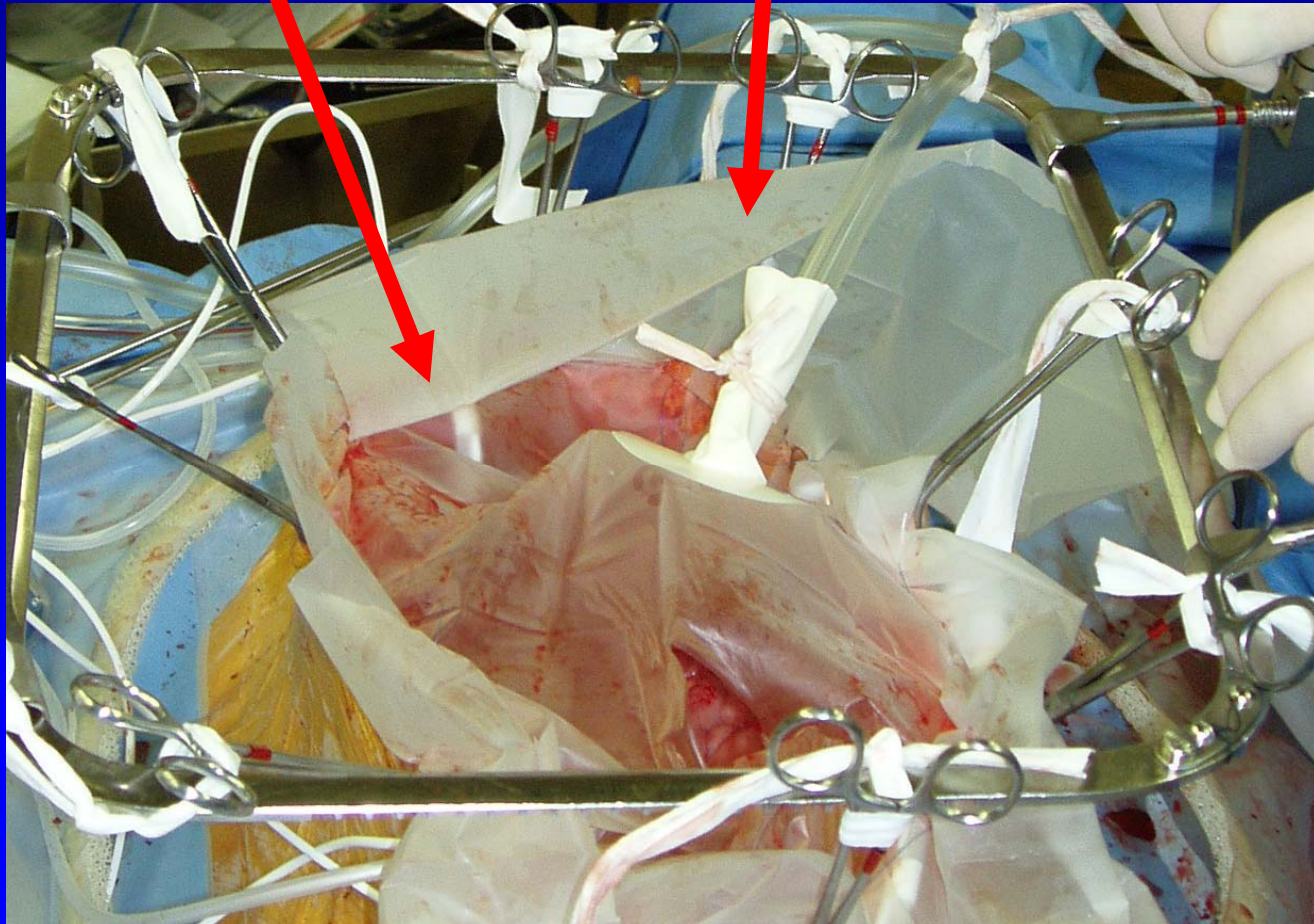


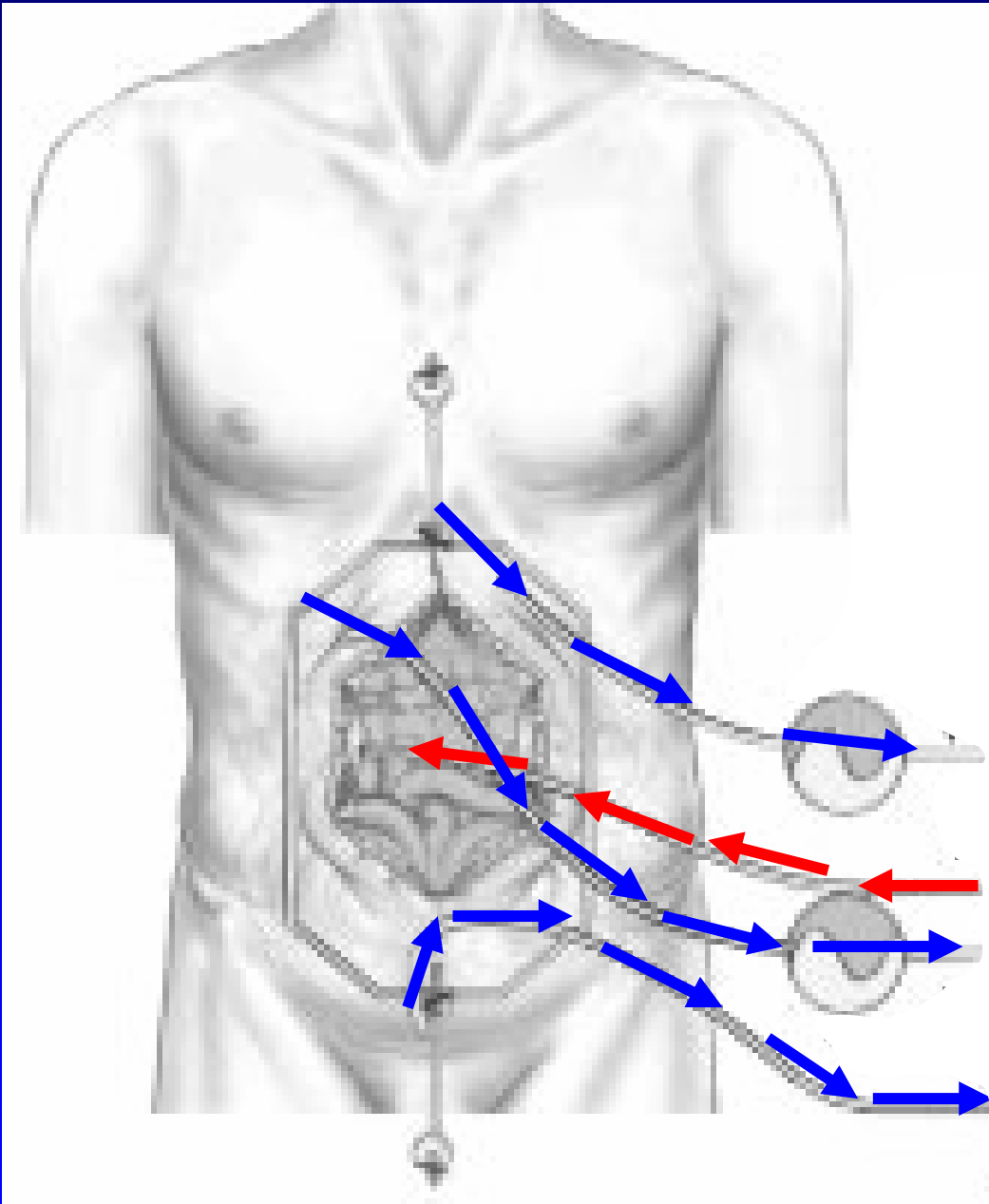
plaatsing drains



veld

afzuigslang damp



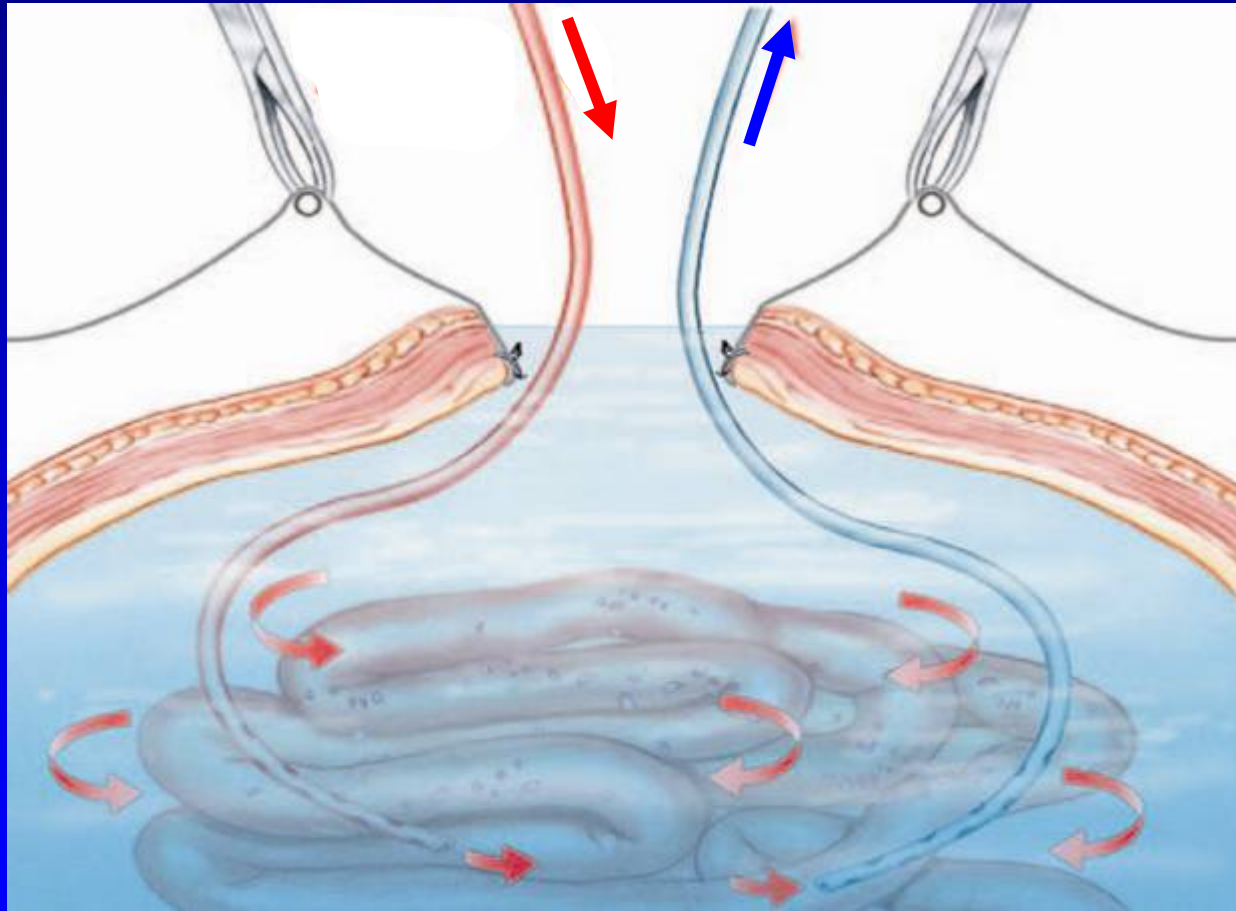


extracorporele
circulatie

extracorporele circulatie



extracorporele circulatie



manuele homogenisatie



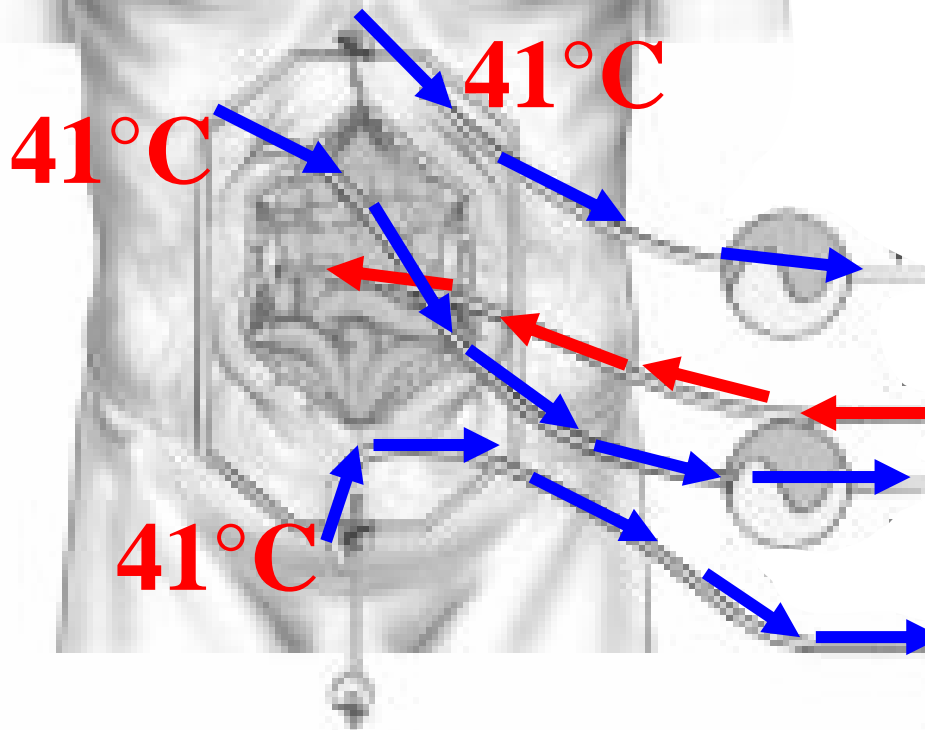
STOCKERT
GENERATOR

40.9

°C



Mitomycine C



0 min: 1/2 dosis

30 min: 1/4

60 min: 1/4

veiligheidsrisico's van HIPEC

- spatten van chemotherapie op:
 - huid
 - ogen
- (inhalatie van chemotherapiedampen)

veiligheidsmaatregelen

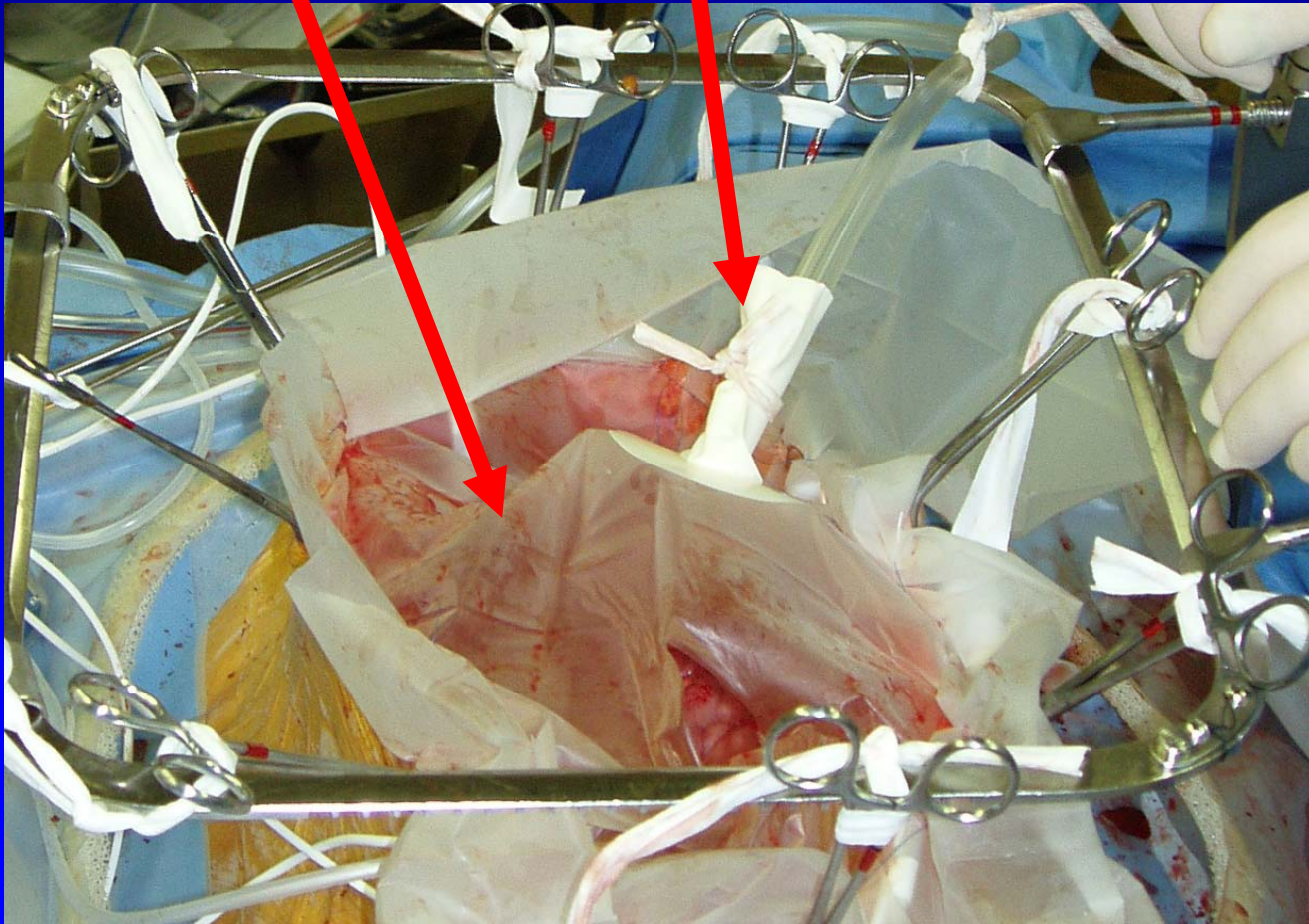
- operatieveld
- personeel
- operatiezaal
- veiligheidsprotocol

veiligheidsmaatregelen
operatieveld
keizersnee afdekset



veiligheidsmaatregelen operatieveld

plastic afdekking afzuigen dampen



veiligheidsmaatregelen

personeel

- iedereen verlaat de operatiezaal
- geen zwangeren
- geen moeders borstvoeding

veiligheidsmaatregelen

personeel

ondoordringbare:



- hoofd en schouder afdekking
- masker met filter en scherm
- dubbele handschoenen
- schort
- schoenovertrekken

veiligheidsmaatregelen

operatiezaal

deur gesloten

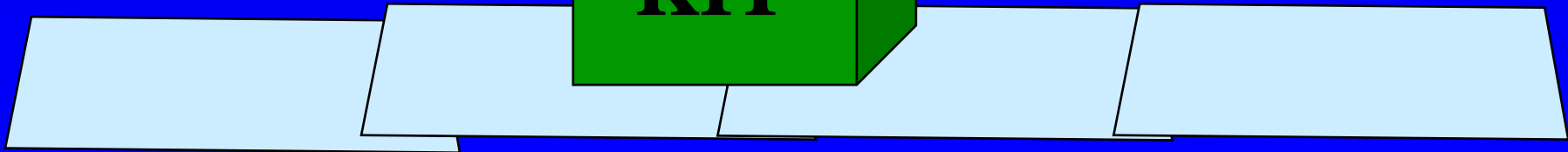
negatieve druk

HIPEC



veiligheidsmaatregelen

operatiezaal



veiligheidsmaatregelen

veiligheidsprotocol



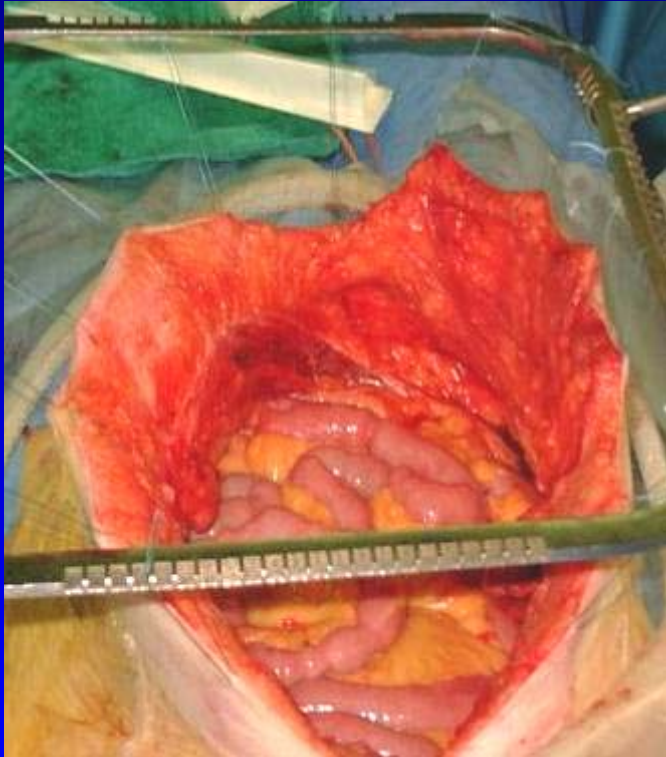
Clinique du Parc Léopold

Debulking et HIPEC: matériel et procédures

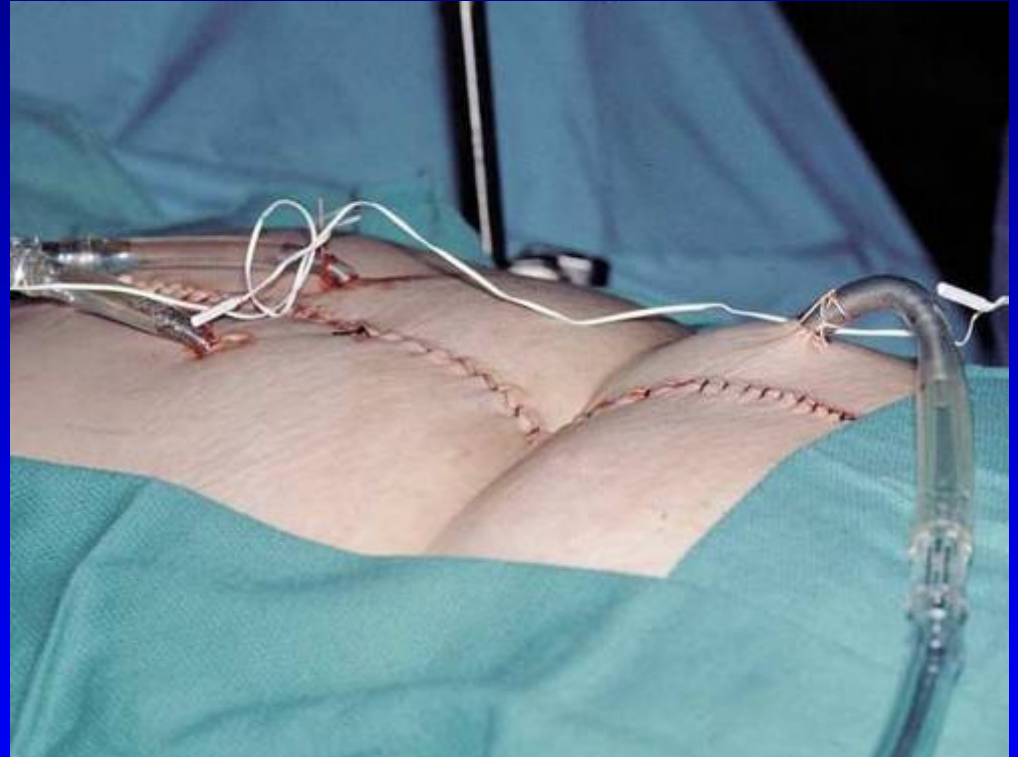
Dr. Stefaan Mulier
en collaboration avec:

Mme Bertrand, Corine
Mr. Bouche, Jean-Marc
Mme Carpintero, Reyes
Mr. Chaval, Olivier
Dr. Claes, Jean-Pierre

technische varianten



open



gesloten

technische varianten



gesloten

Sugarbaker 1998

technische varianten

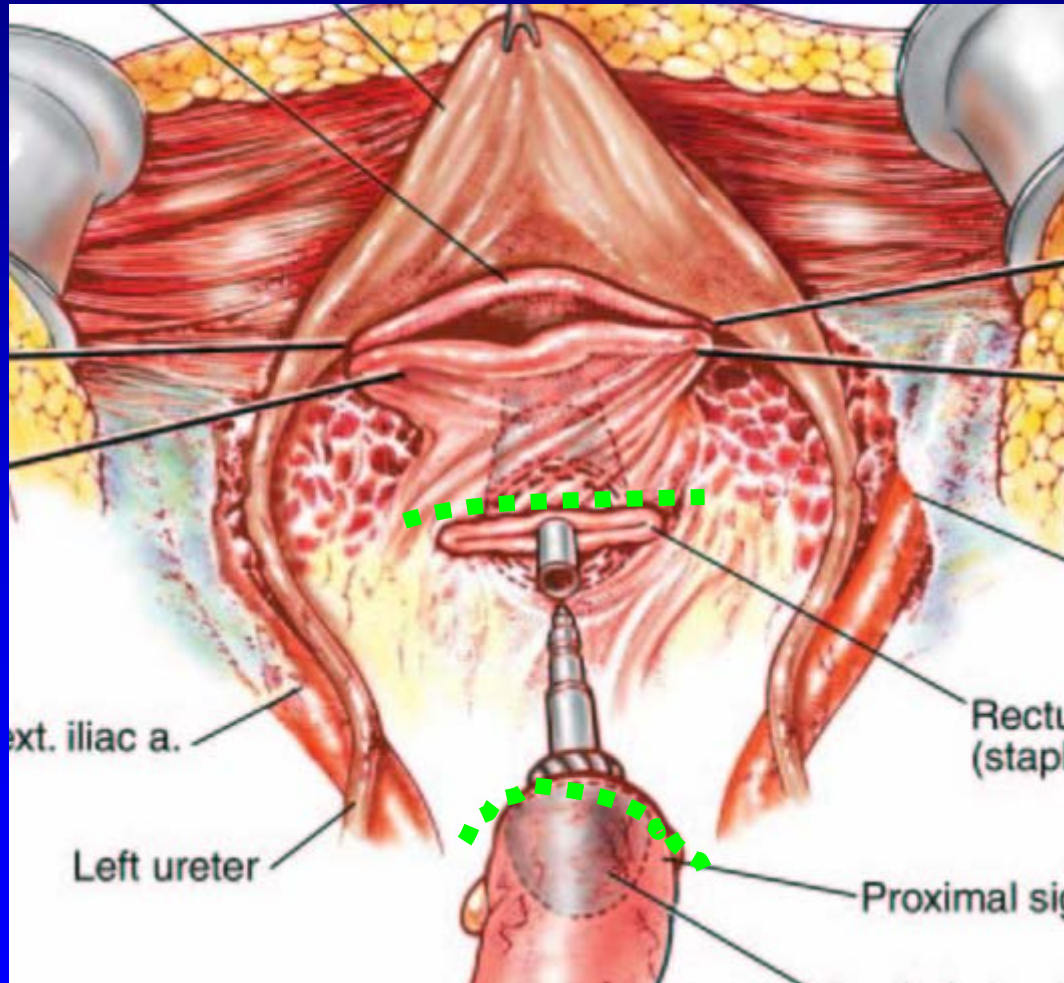


postoperatief

HIPEC: technieken

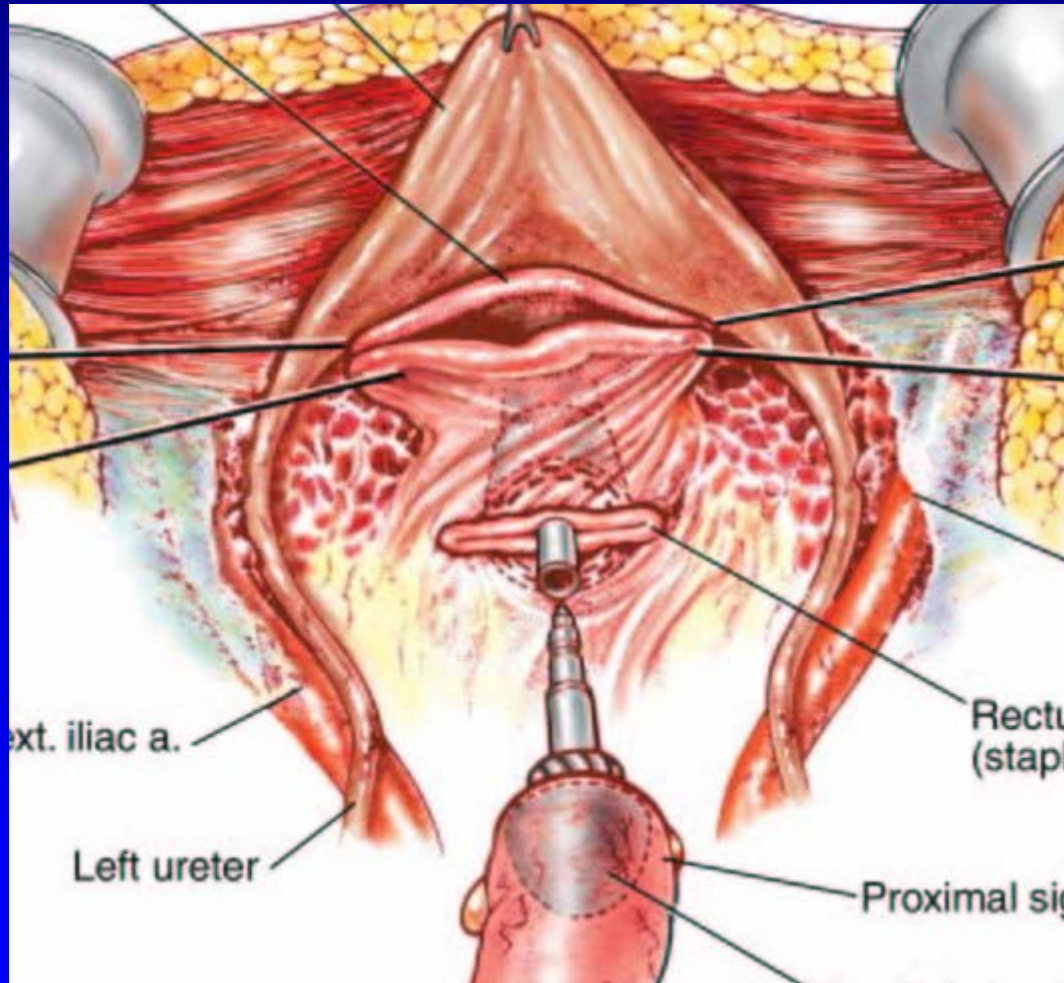
1. installatie
2. exploratie
3. cytoreductie
4. peroperatieve chemo
5. reconstructie
6. drains

recoupe sectievlakken

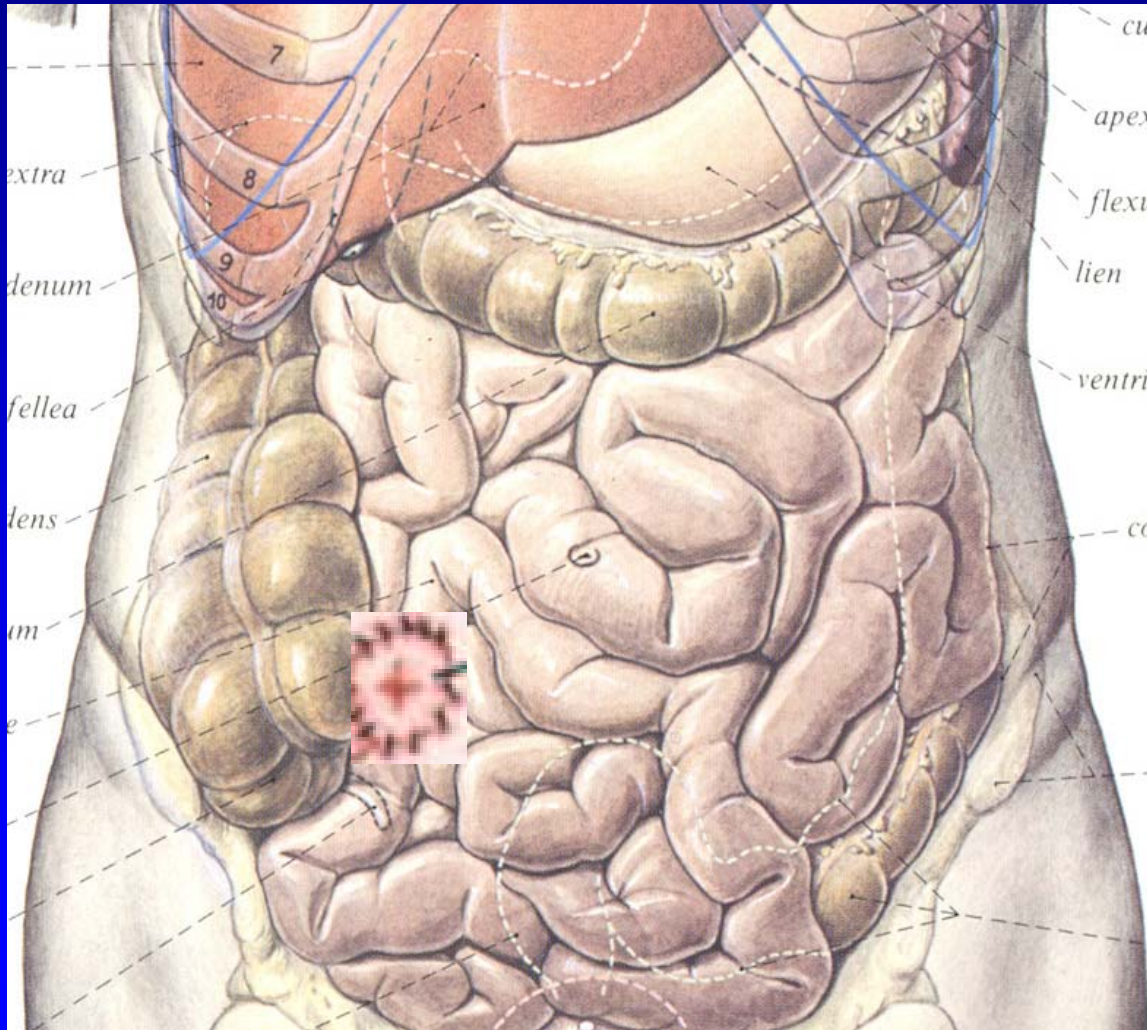


Sugarbaker, Surg Clin N Am 2003

reanastomose



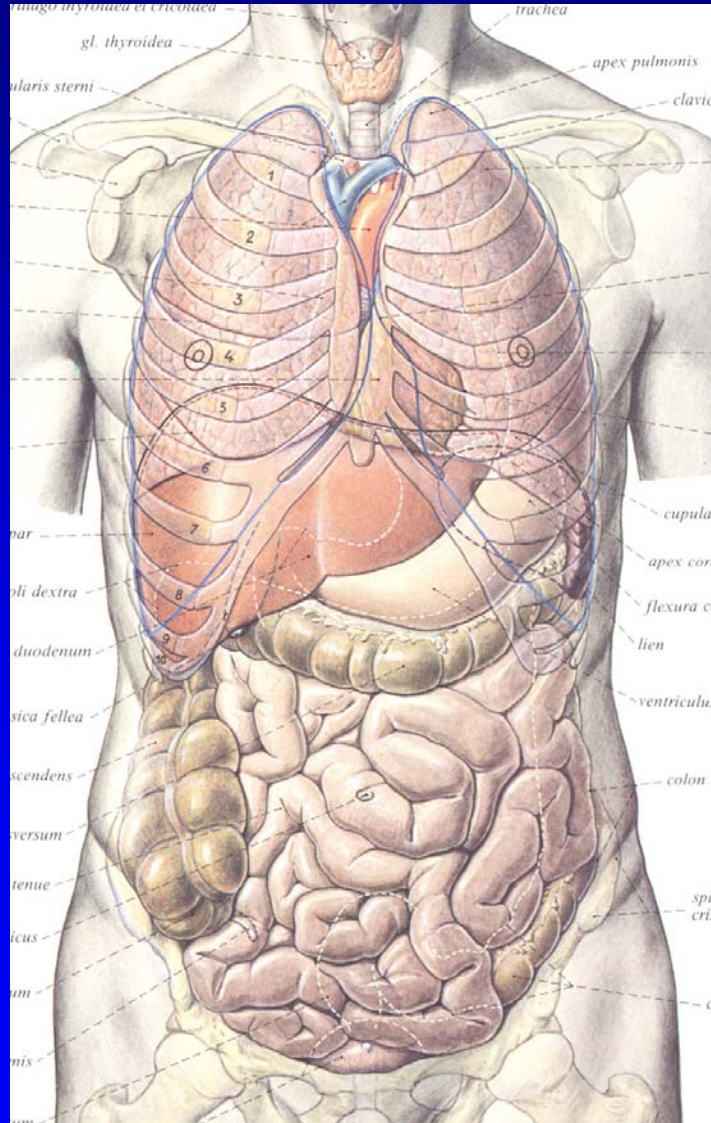
beschermende ileostomie



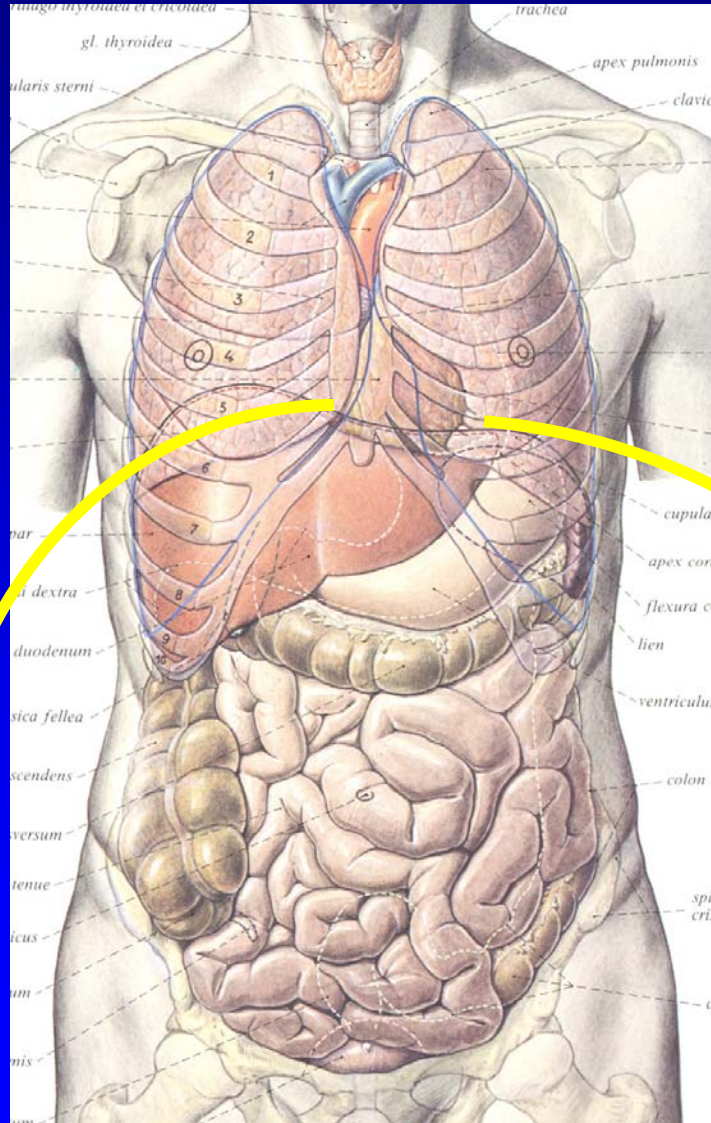
HIPEC: technieken

1. installatie
2. exploratie
3. cytoreductie
4. peroperatieve chemo
5. reconstructie
6. drains

drains



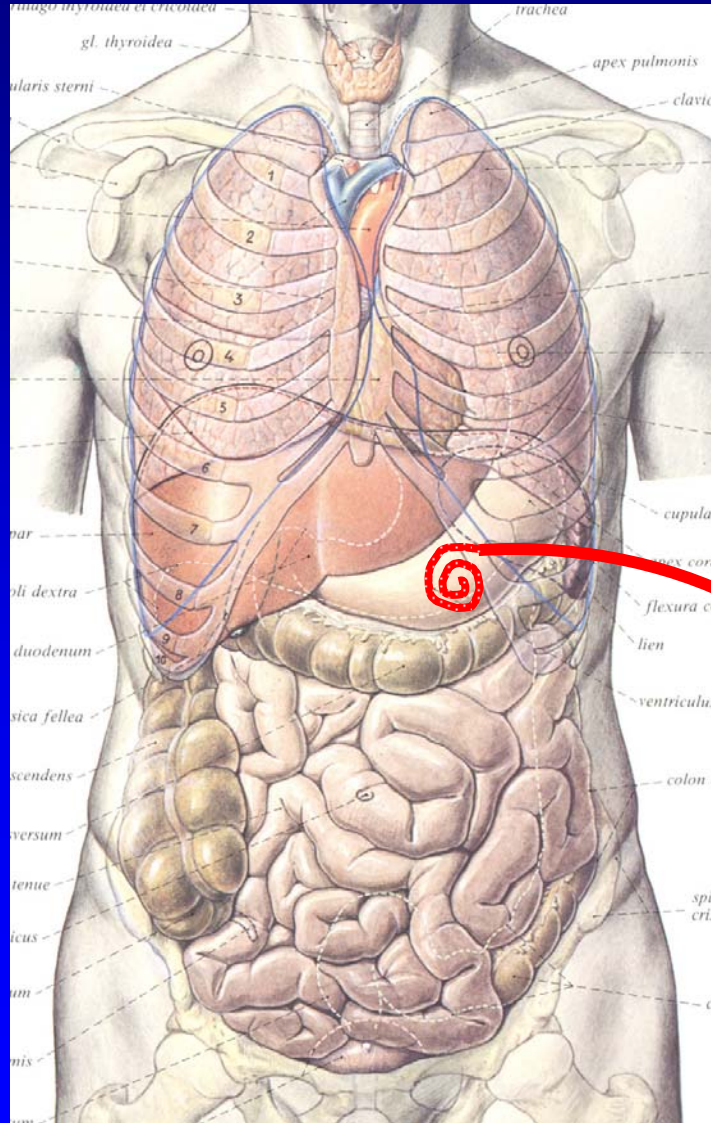
two thoraxdrains



**vacu-
tainer**

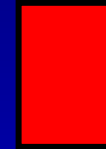
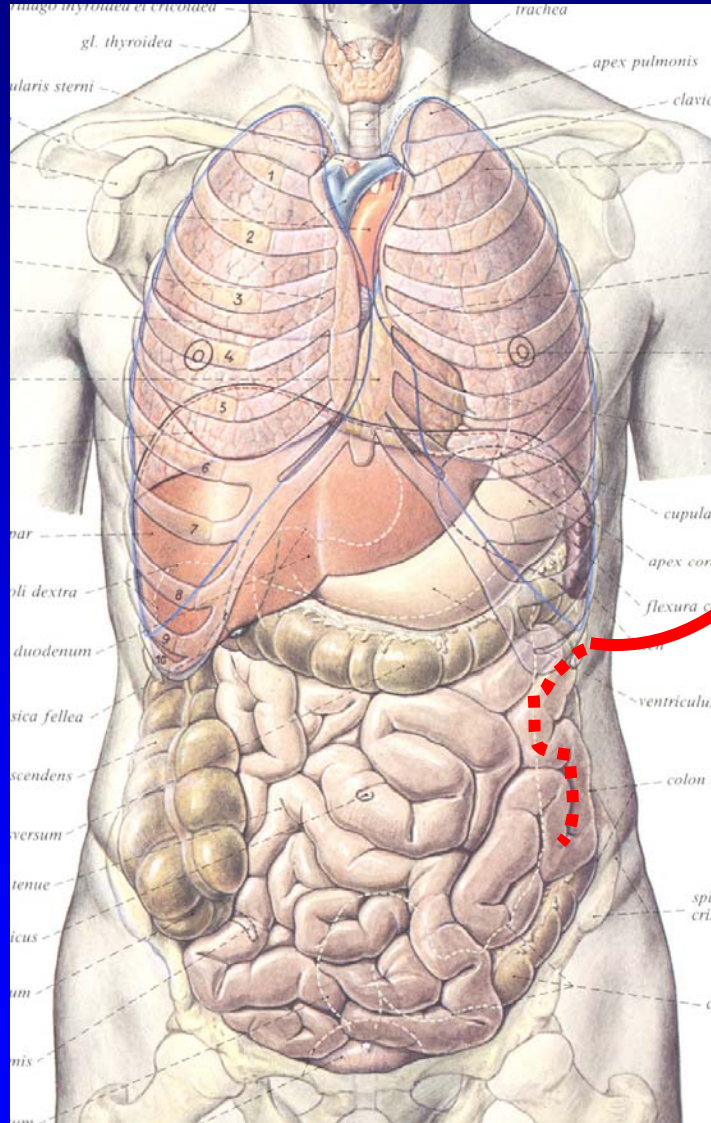
**vacu-
tainer**

gastrostomie

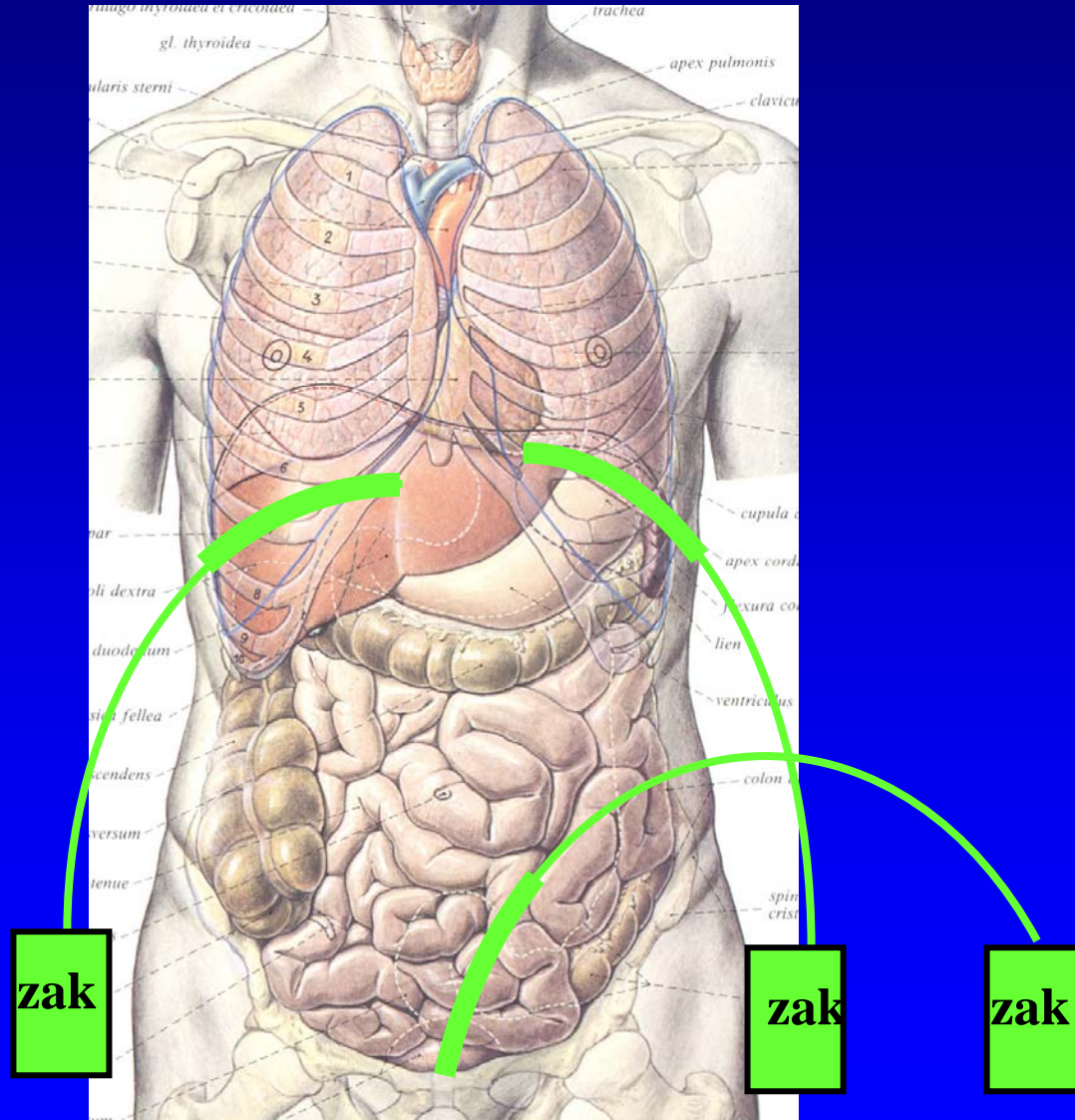


zak

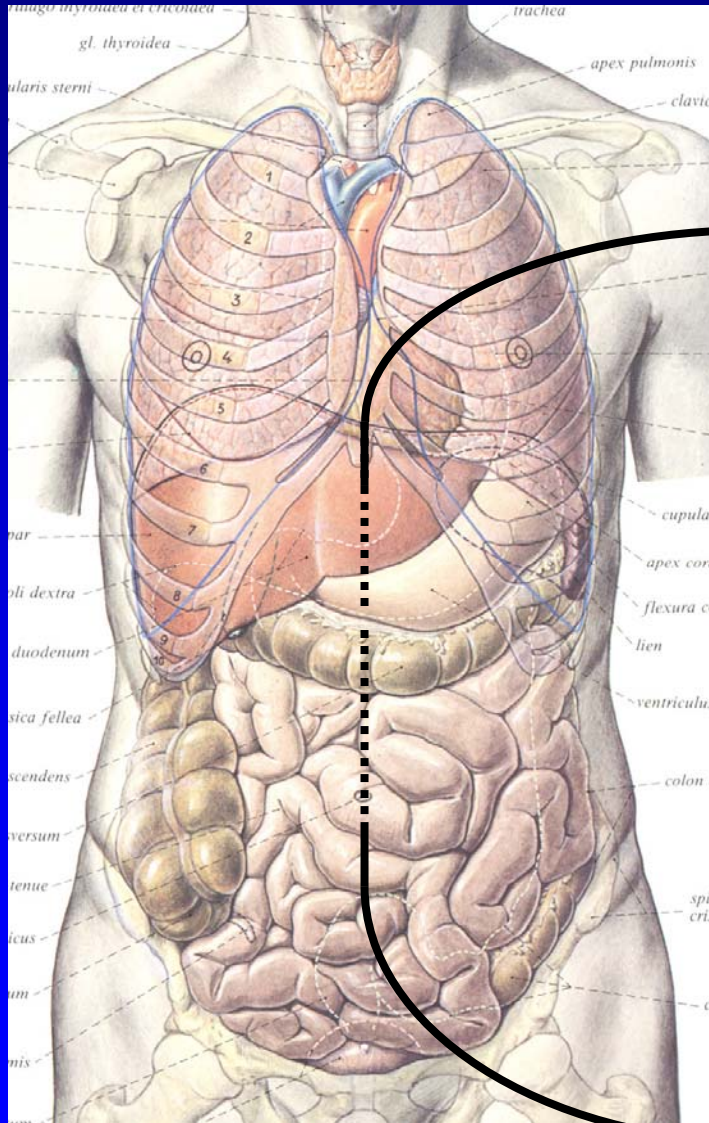
voedingsjejunostomie



drie abdominale drains

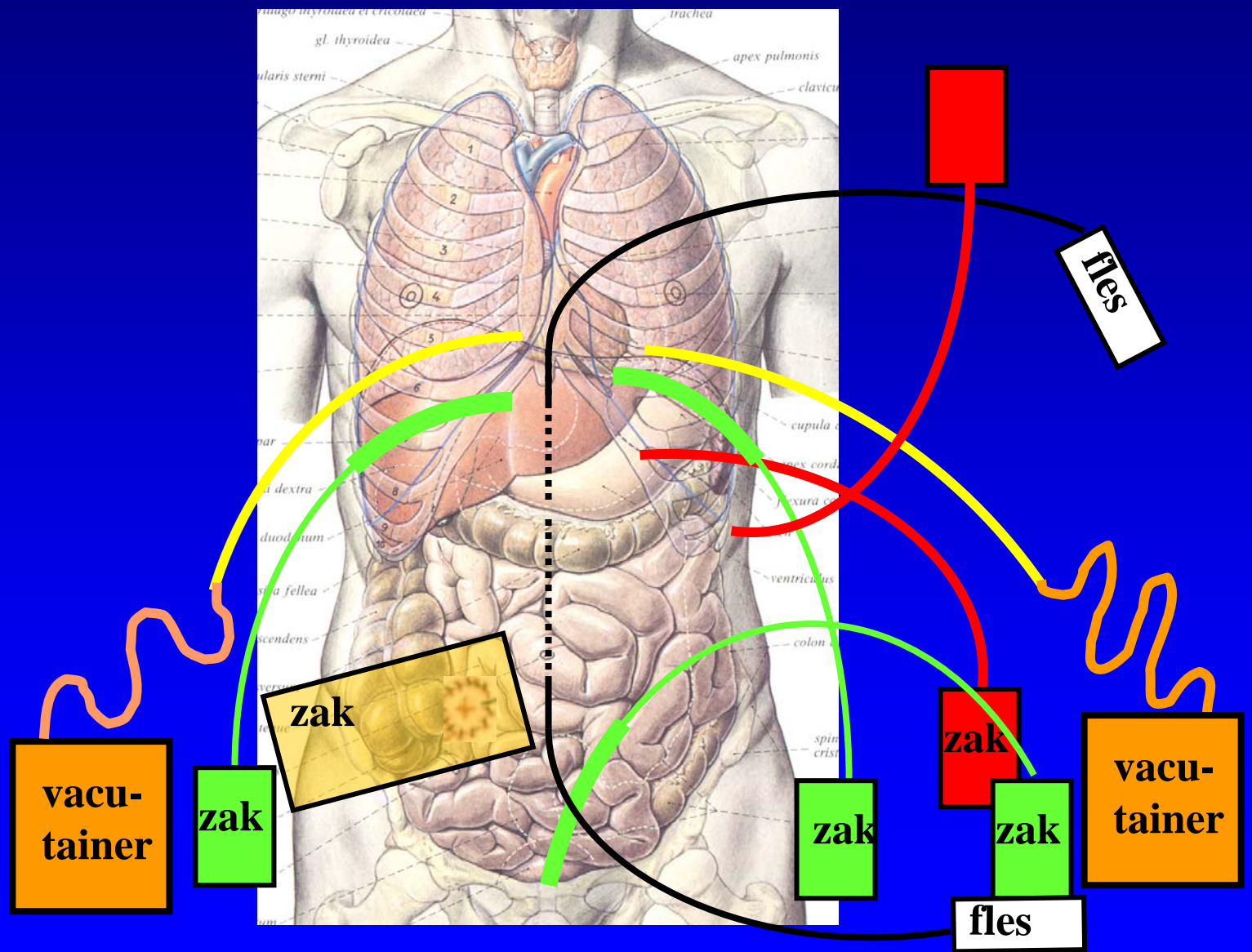


two subcutane redons



fles

fles





HIPEC: intensive care

- 3 dagen
- monitoring hydro-ionisch evenwicht (brandwondenpatiënt)
- correctie hypoalbuminemie
- correctie stollingsfactoren
- monitoring pijnbehandeling (epidurale)

HIPEC: afdeling

- 2-6 weken
- gastroparese:
 - evacuerende gastrostomie
 - voedingsjejunostomie
- revalidatie kinesitherapie

HIPEC: ambulant

- revalidatie kinesitherapie
- regelmatige follow-up consultatie
- adjuverende chemotherapie 6 maanden

Cytoreductie en HIPEC voor colorectale carcinomatose

- inleiding
- techniek
- resultaten
- indicaties

HIPEC voor colorectal carcinomatose: resultaten

- complicaties
- overleving
- quality of life

HIPEC: complicaties

~ chemotherapie: niet specifiek

- neutropenie
- trombopenie

HIPEC: complicaties

~ chemotherapie: specifiek

oxaliplatin:

- hyperglycemie/ electrolietenstoornissen
(frequent)
- herhaalde onverklaarde bloeding
(zeldzaam)

HIPEC: complicaties

~ operatie: niet specifiek

–bloeding

–infectie

–...

HIPEC: complicaties

~ operatie: specifiek

- naadlekkage
- compressie van zenuwen/spieren/huid
- pleura uitstorting

HIPEC: complicaties

- morbiditeit: 25-66%
- mortaliteit: 2-15%

HIPEC: complicaties

- uitgebreidheid van de resectie
- risicofactoren

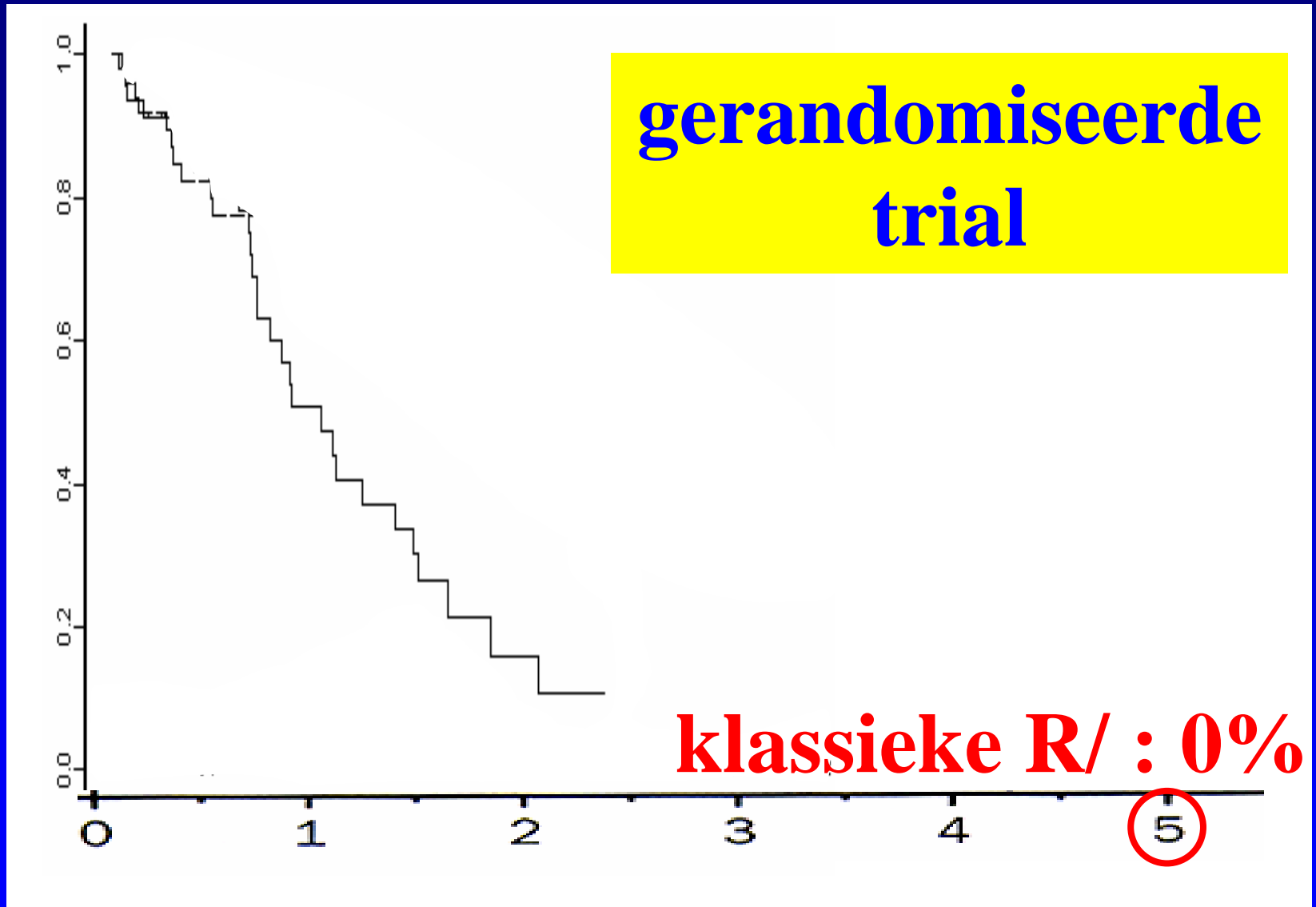
HIPEC: complicaties

- obstructie, ascites en/of slechte algemene toestand: † 15%
- geen obstruction, geen ascites, goede alg. toestand: † 4%

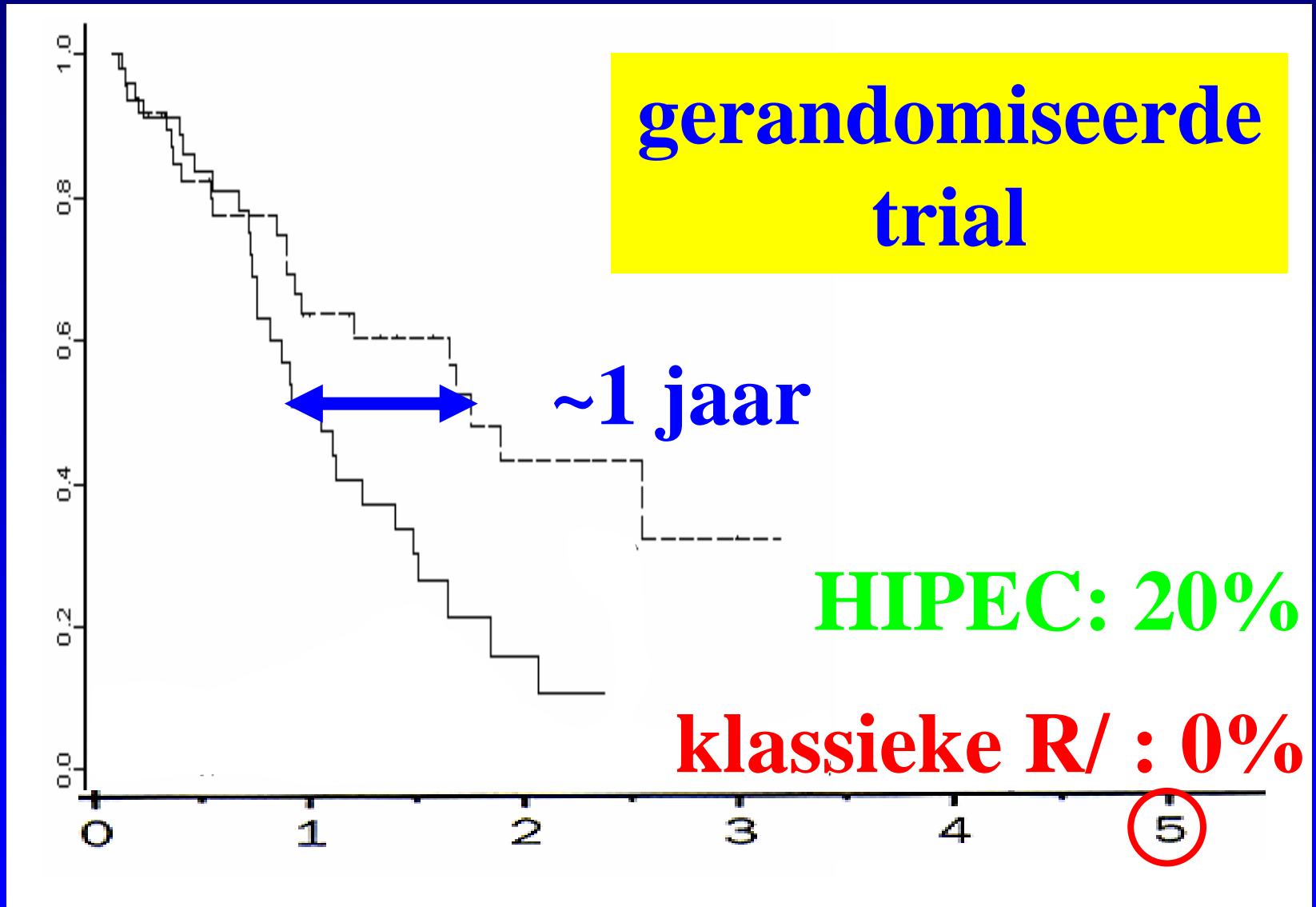
HIPEC voor colorectal carcinosomatose: resultaten

- complicaties
- overleving
- quality of life

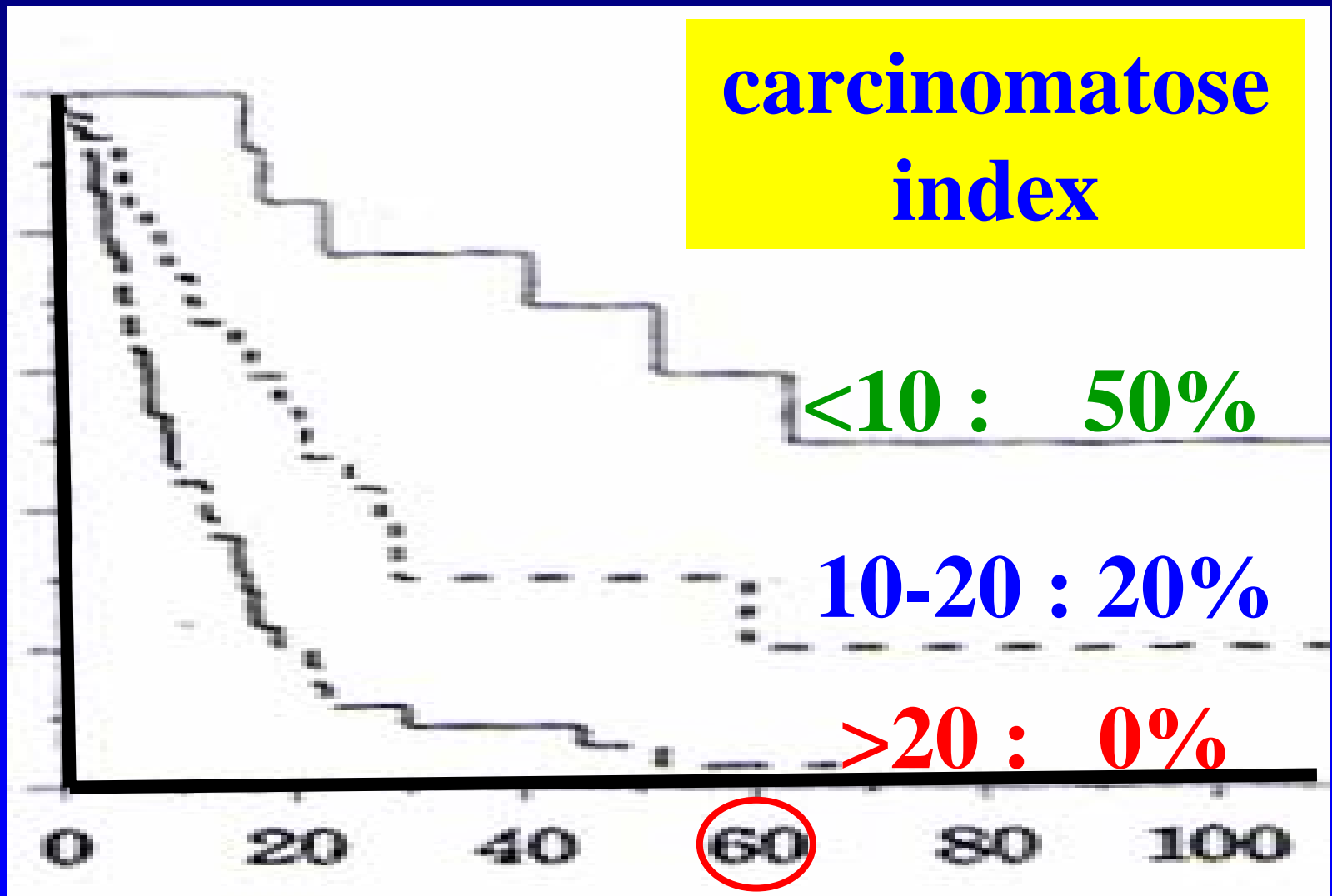
HIPEC: 5 jaars overleving



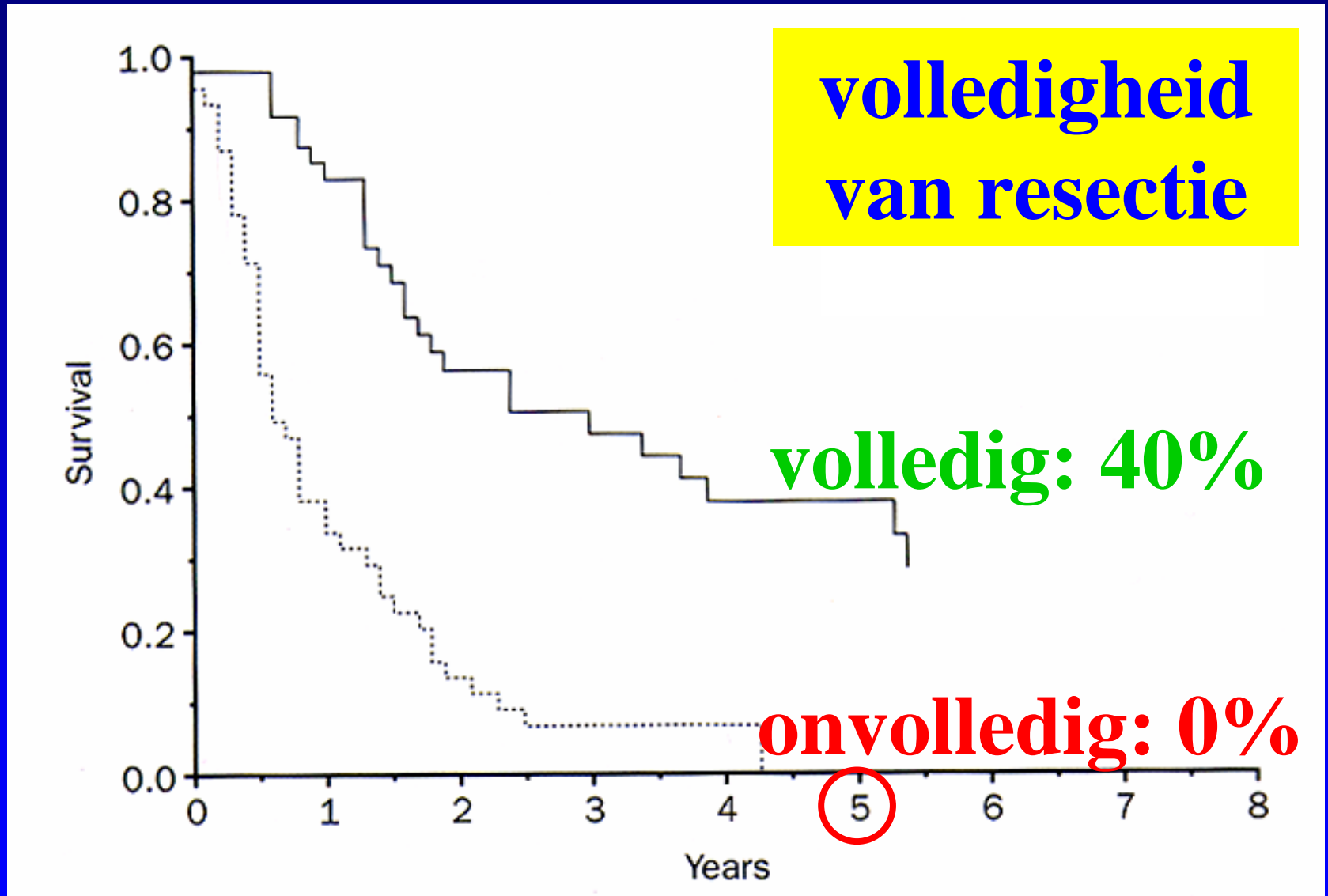
HIPEC: 5 jaars overleving



HIPEC: 5 jaars overleving



HIPEC: 5 jaars overleving



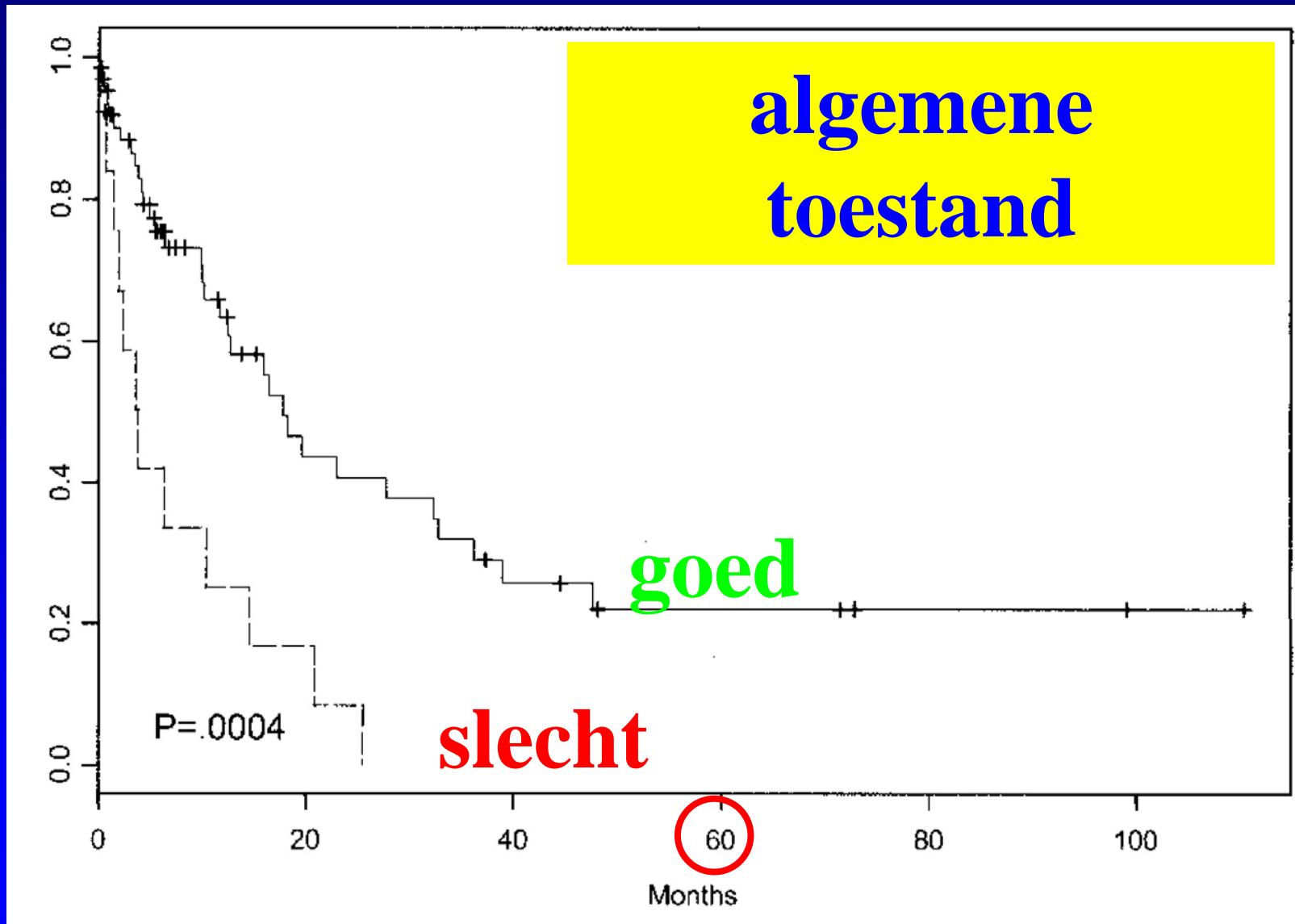
**volledigheid
van resectie**

volledig: 40%

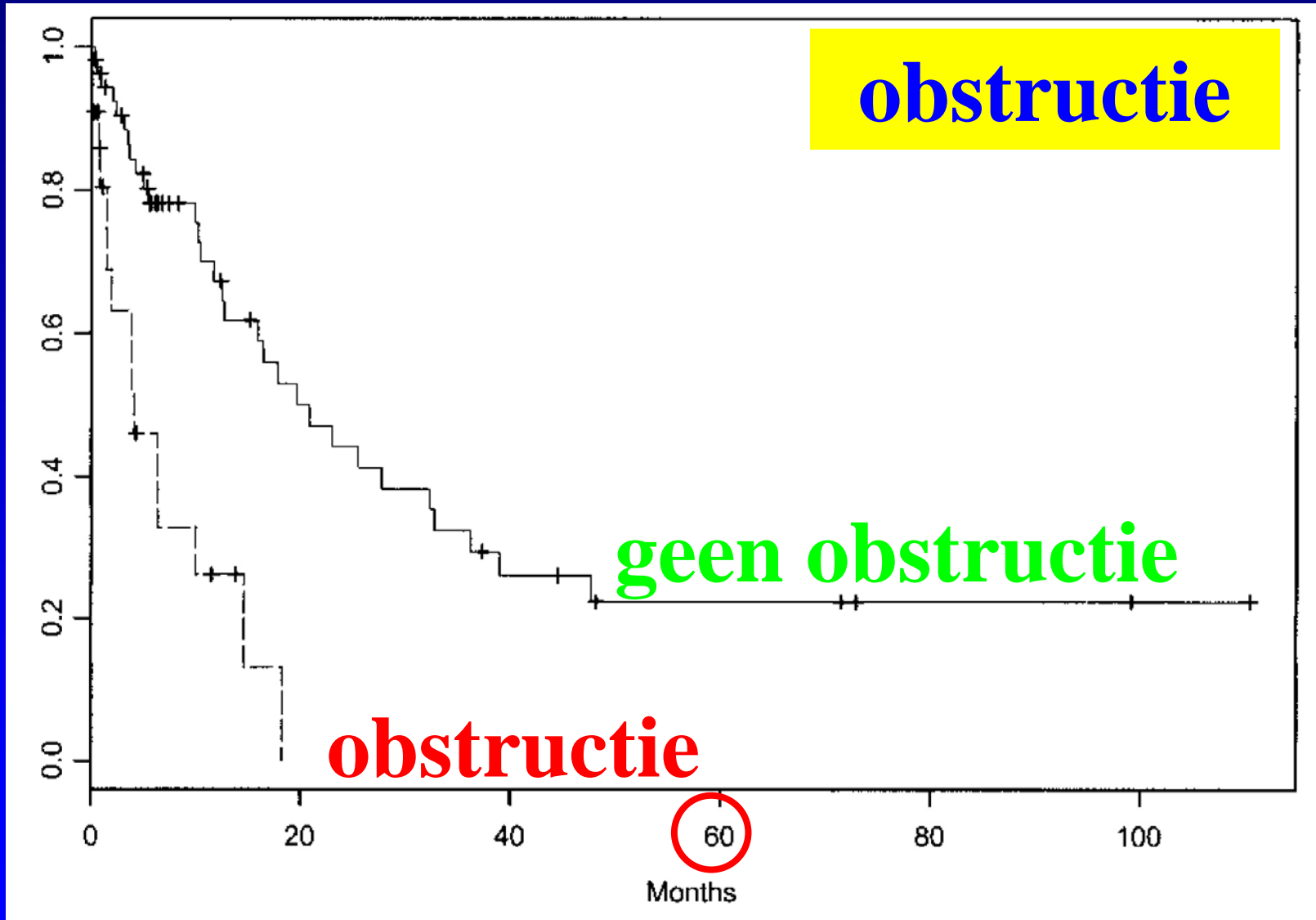
onvolledig: 0%

Years

HIPEC: 5 jaars overleving

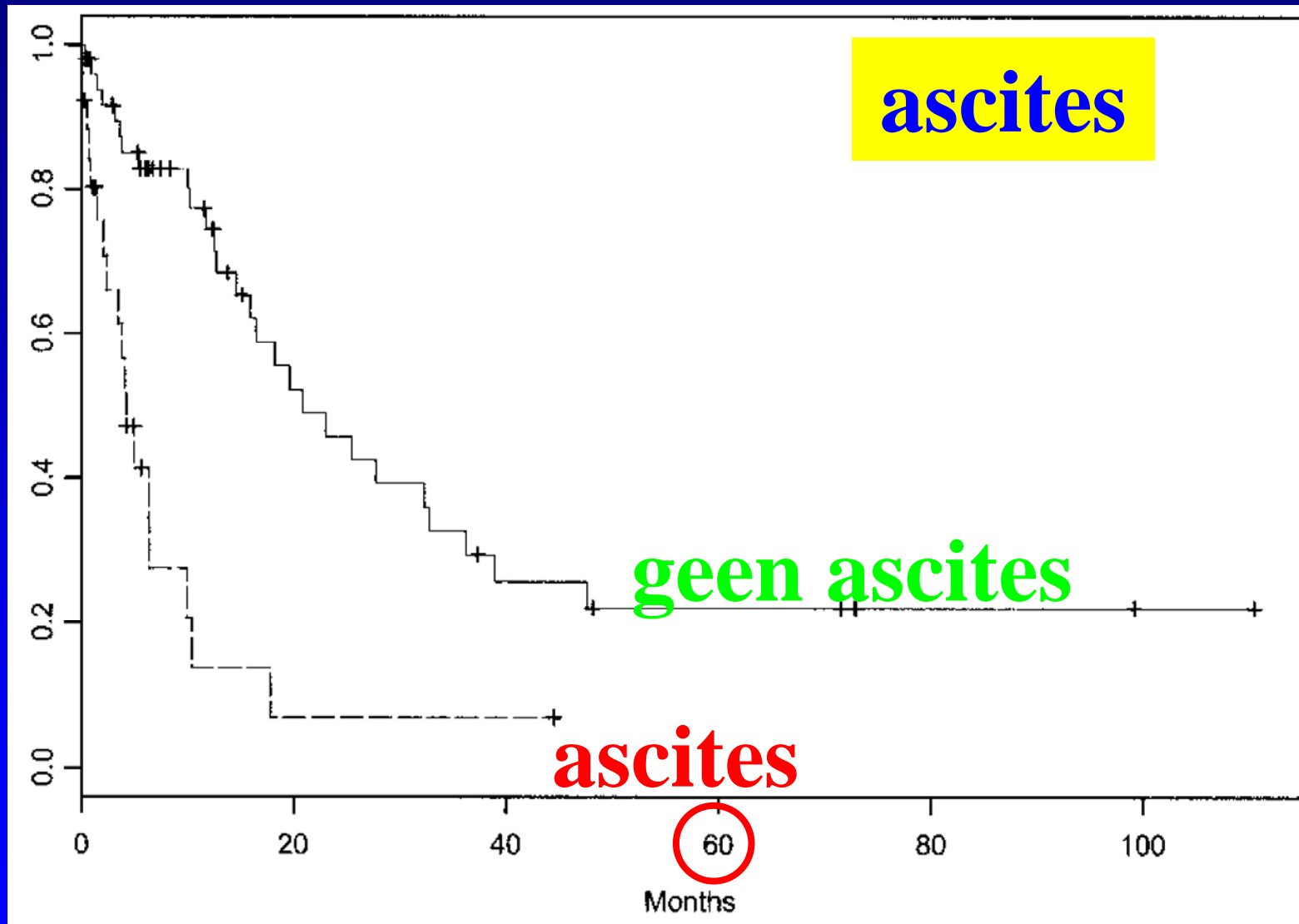


HIPEC: 5 jaars overleving

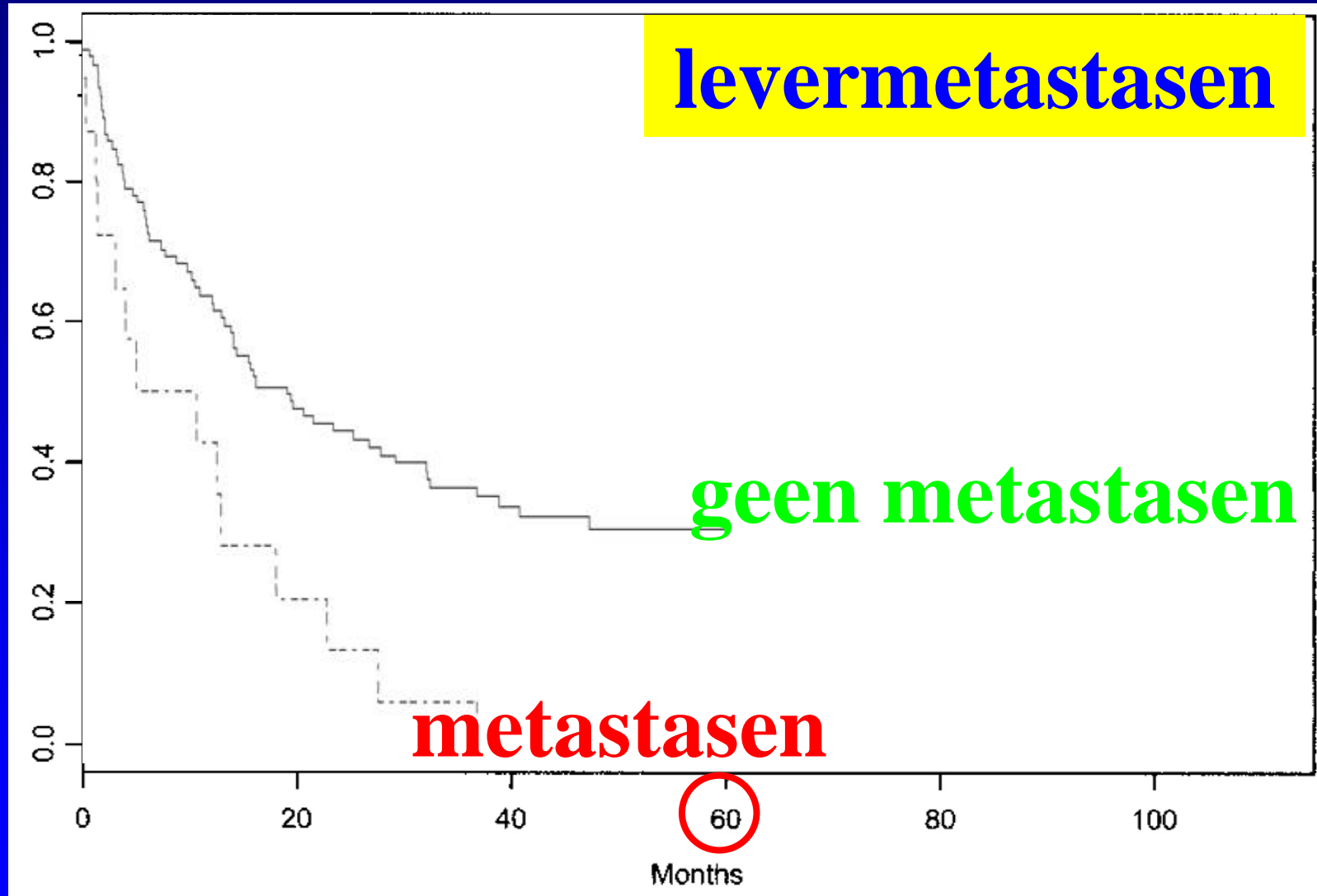


Shen, Ann Surg Oncol 2004

HIPEC: 5 jaars overleving

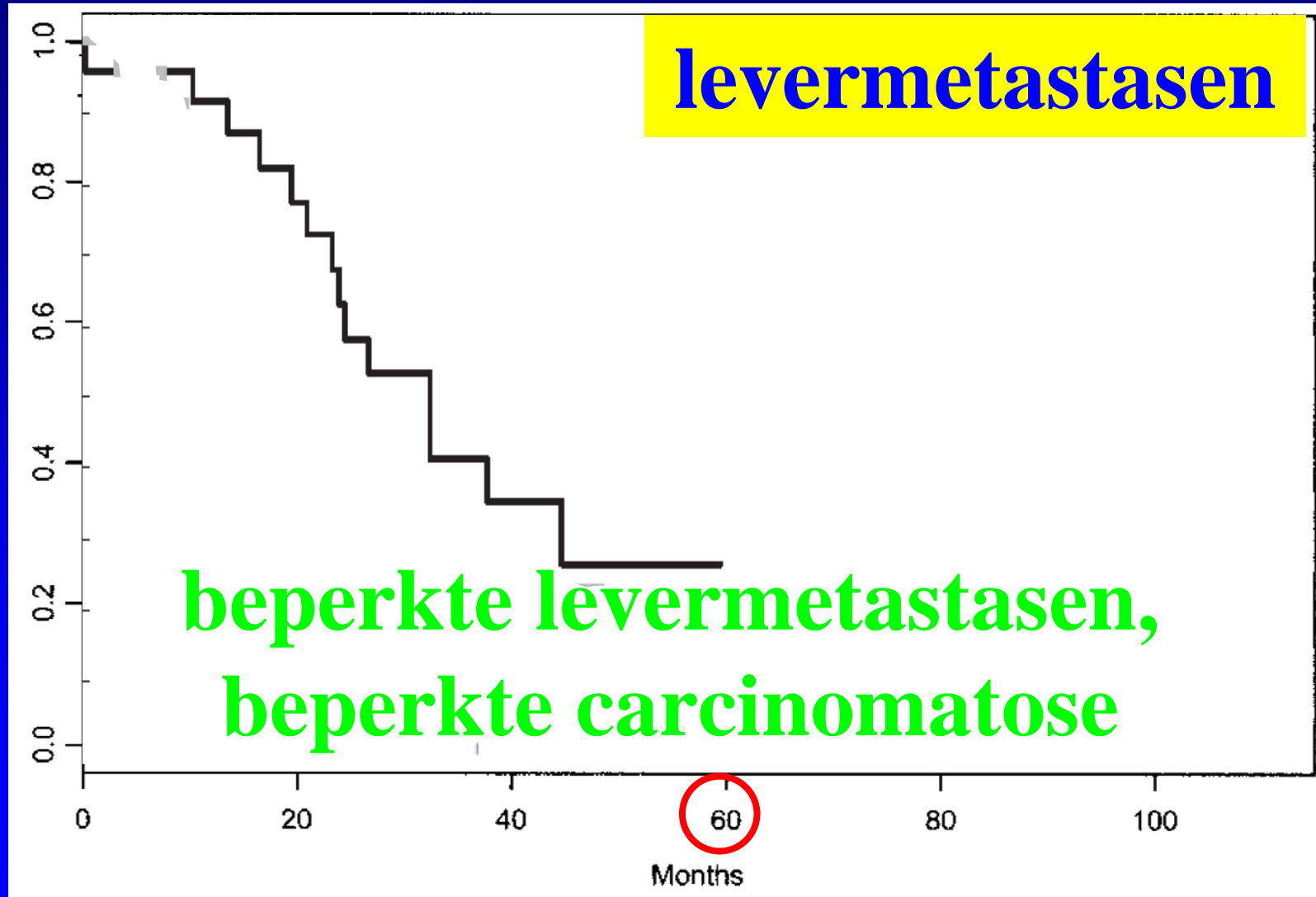


HIPEC: 5 jaars overleving



Shen, Arch Surg 2003

HIPEC: 5 jaars overleving



HIPEC voor colorectal carcinomatose: resultaten

- complicaties
- overleving
- quality of life

HIPEC: quality of life

- quality of life verminderd gedurende 3 maanden
- 87% van long-time survivors: goede/excellente quality of life

Cytoreductie en HIPEC voor colorectale carcinomatose

- inleiding
- techniek
- resultaten
- indicaties

HIPEC for colorectal carcinomatosis: indicaties

- goede algemene toestand
- biologische leeftijd < 70 jaar
- geen ascites
- geen obstructie
- geen/beperkte levermetastasen
- motivatie !

HIPEC for colorectal carcinomatosis: indications

- Eindbeslissing peroperatief!
- beperkte carcinomatose (index < 20)
- volledige resectie mogelijk

Cytoreductie en HIPEC voor colorectale carcinomatose conclusies

- zware ingreep, morbiditeit en mortaliteit
- overlevingsvoordeel bewezen in gerandomiseerde trial
- aangewezen in geselecteerde patiënten



Dr. Stefaan Mulier
Park Leopold Ziekenhuis, Brussel
<http://www.drmulier.com/>

