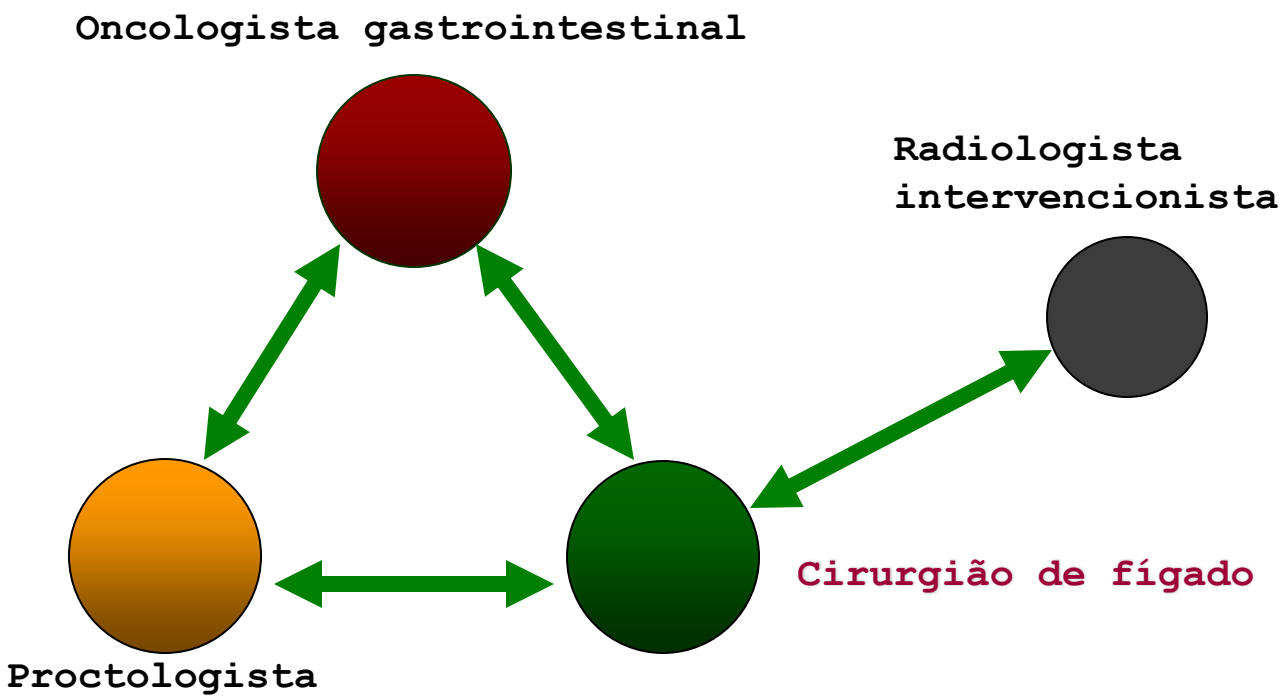
QUAIS OS LIMITES PARA RESSECABILIDADE EM METÁSTASE HEPÁTICA DE ORIGEM COLORETAL

Orlando Jorge M. Torres
Department of Gastrointestinal Surgery
Hepatopancreatobiliary and Liver Transplant Unit
Universidade Federal do Maranhão - Brazil

SIMPÓSIO eLora de Oncologia e Hematologia

REALIZAÇÃO: GRUPO eLora

EQUIPE MULTIDISCIPLINAR



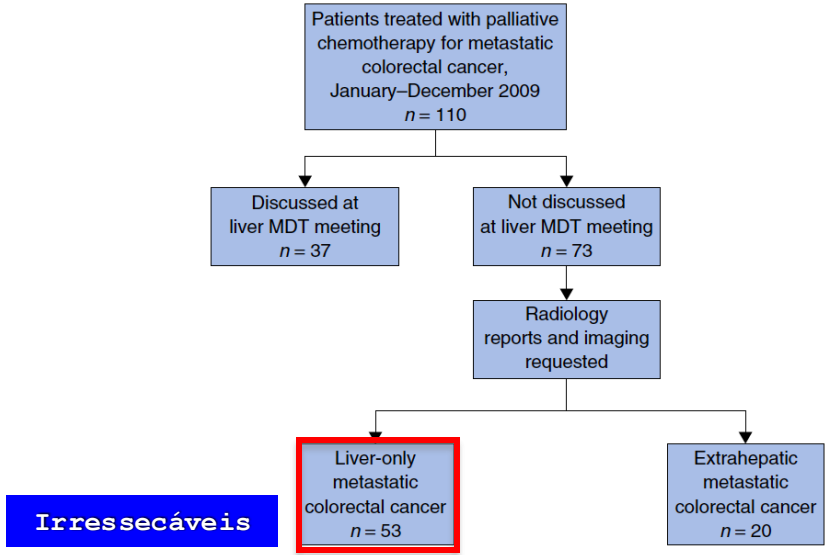
Petrowsky H, et al. Nat Rev Gastroenterol Hepatol 2020

RESSECABILIDADE

Original article

Effect of specialist decision-making on treatment strategies for colorectal liver metastases

R. P. Jones[1,3], J.-N. Vauthey[6], R. Adam[7], M. Rees[4], D. Berry[5], R. Jackson[2], N. Grimes[3], S. W. Fenwick[3], G. J. Poston[3] and H. Z. Malik[3]



52 pacientes

6 cirurgiões de fígado

33 (63%)

5 (10%)

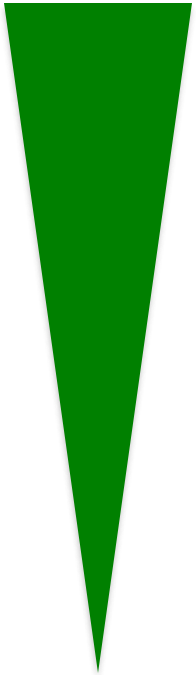
Irressecáveis

RESSECÁVEIS

Jones RP, et al – Br J Surg 2012;99:1263–9

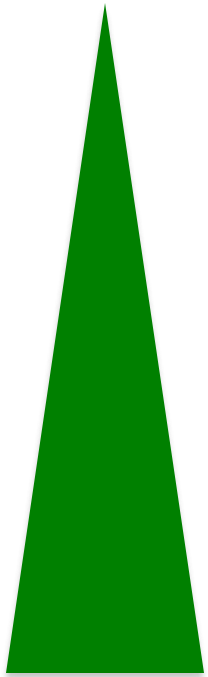
REMANESCENTE HEPÁTICO FUTURO

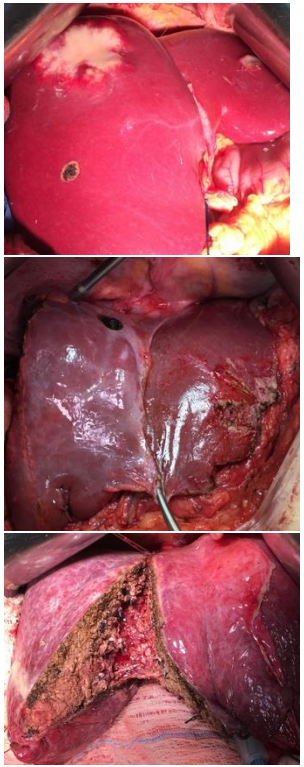
Qualidade



Normal	20-25%
Quimioterapia **Esteatose**	>30%
Cirrose	>40%

Volume





Vauthey JN et al. Ann Surg 2004

RESSECABILIDADE

- **Técnica**
  - Margem negativa
  - Remanescente hepático futuro
- **Oncológica**
  - Doença extra-hepática
  - Resposta à quimioterapia

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Adams RB, et al – HPB 2013;15:91-103

RESSECABILIDADE

ESA PAPER

Choices of Therapeutic Strategies for Colorectal Liver Metastases Among Expert Liver Surgeons

A Throw of the Dice?

Povilas Ignatavicius, MD, Christian E. Oberkofler, MD,* William C. Chapman, MD,†*
Ronald P. DeMatteo, MD,‡ Bryan M. Clary, MD,§ Michael I. D'Angelica, MD,¶ Kenneth K. Tanabe, MD,‖
*Johnny C. Hong, MD,** Thomas A. Aloia, MD,†† Timothy M. Pawlik, MD, MPH, PhD,‡‡*
Roberto Hernandez-Alejandro, MD,§§ Shimul A. Shah, MD,¶¶ Jean-Nicolas Vauthey, MD,††
*Guido Torzilli, MD,‖‖ Hauke Lang, MD,*** Pål-Dag Line, MD, PhD,††† Olivier Soubrane, MD,‡‡‡*
Hugo Pinto-Marques, MD,§§§ Ricardo Robles-Campos, MD,¶¶¶ Karim Boudjema, MD,‖‖‖
*Peter Lodge, MD,**** René Adam, MD,†††† Christian Toso, MD,‡‡‡‡ Alejandro Serrablo, MD, PhD,§§§§*
Luca Aldrighetti, MD,¶¶¶¶ Michelle L. DeOliveira, MD, Philipp Dutkowski, MD,* Henrik Petrowsky, MD,**
Michael Linecker, MD, Cäcilia S. Reiner, MD,‖‖‖‖ Julia Braun, PhD,***** Ruslan Alikhanov, MD,†††††*
Giedrius Barauskas, MD,‡‡‡‡‡ Albert C. Y. Chan, MS,§§§§§ Jiahong Dong, MD,¶¶¶¶¶
*Norihiro Kokudo, MD,‖‖‖‖‖ Masakazu Yamamoto, MD,****** Koo Jeong Kang, MD,††††††*
Yuman Fong, MD,‡‡‡‡‡‡ Mohamed Rela, MD,§§§§§§ Xabier De Aretxabala, MD,¶¶¶¶¶¶
*Eduardo De Santibañes, MD, PhD,‖‖‖‖‖‖ Miguel Ángel Mercado, MD,******* Oscar C. Andriani, MD,†††††††*
Orlando Jorge M. Torres, MD,‡‡‡‡‡‡‡ Antonio D. Pinna, MD,§§§§§§§ and Pierre-Alain Clavien, MD, PhD✉*

Ignatavicius P, et al – Ann Surg 2020;41:729–41

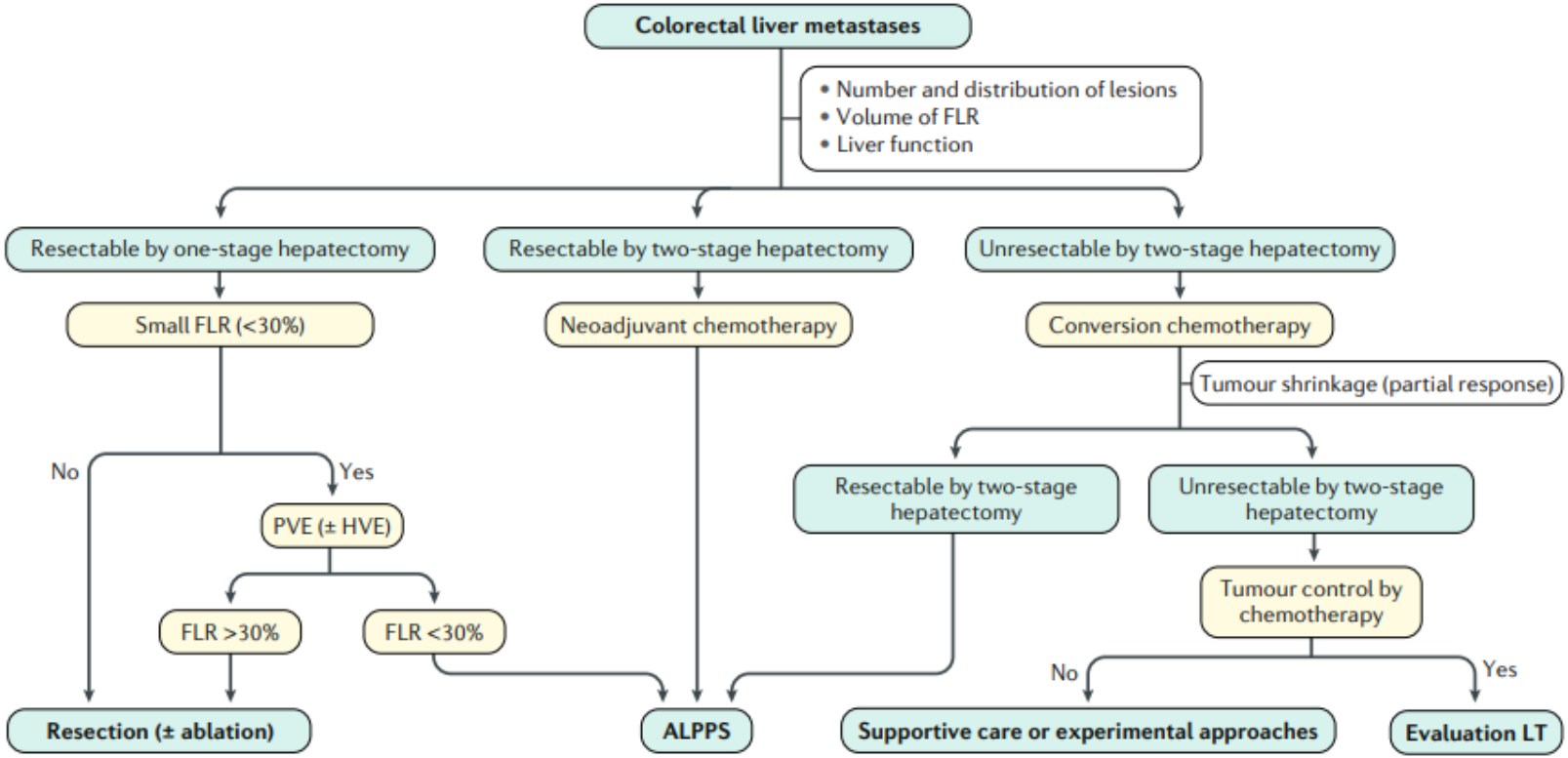
RESSECABILIDADE

TABLE 1. Agreement (Percentage) Among Experts for Each Clinical Case

	1*	2*	3*	4*	5	6	7	8	9	10
Resectability (Yes/No)	100	100	100	100	95	95	97	84	89	63
Initial treatment (surgery, chemotherapy)	53	84	97	97	82	86	58	83	86	68
Approach (open, minimally invasive)	71	63	58	46	92	89	95	94	100	96
Portal vein embolization (Yes/No)	92	100	79	100	89	68	95	75	57	52
Preoperative volumetry (Yes/No)	71	97	66	95	79	57	84	56	81	67
Type of surgery (2-stage, 1-stage)	100	100	95	100	89	62	92	62	44	44
Type of resection (anatomical, parenchyma sparing)	47	82	47	61	81	49	51	56	79	60
Ablation in combination with resection (Yes/No)	97	97	76	92	50	62	55	51	65	56

*Low complexity cases.

Ignatavicius P, et al – Ann Surg 2020;41:729–41



Petrowsky H, et al. Nat Rev Gastroenterol Hepatol 2020

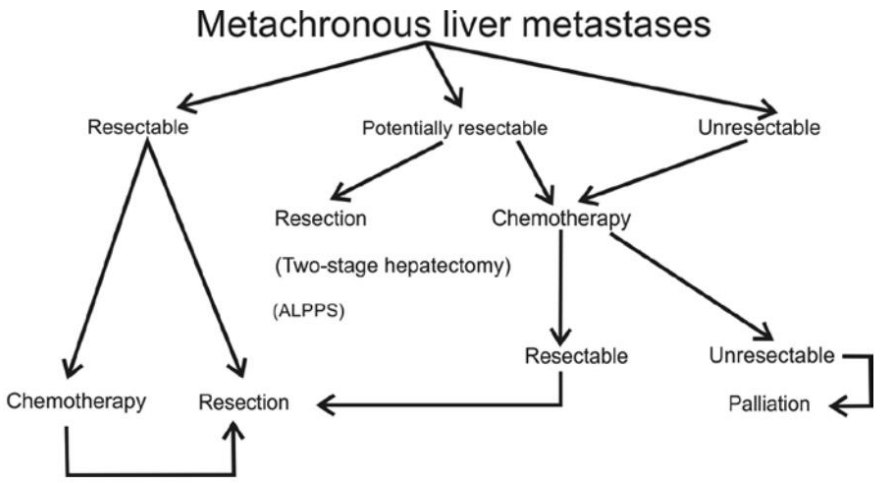
ESTRATÉGIAS

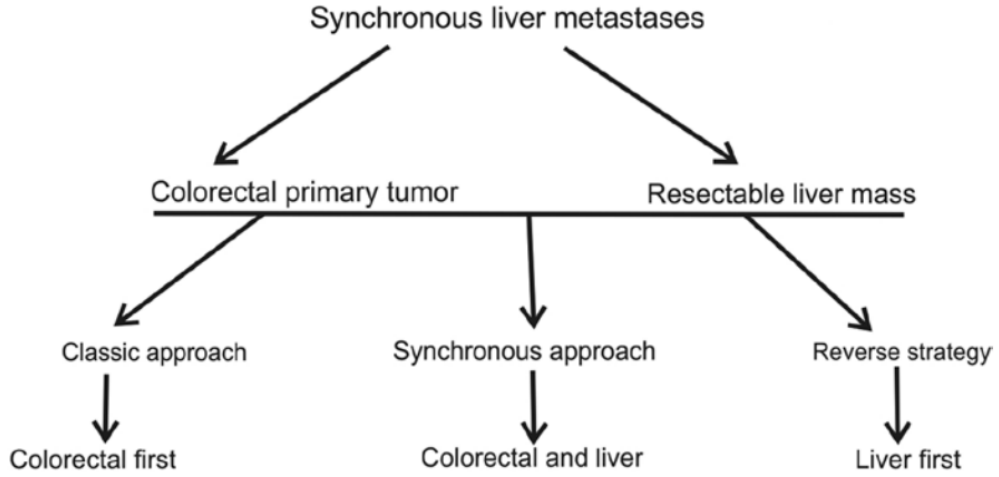
- Clínica:
- Quimioterapia/Imunoterapia
- Radiointervenção
- Embolização da veia porta
- Deprivação venosa hepática
- Ablação
  - Radiofrequência
  - Microondas
- Cirúrgica
- Hepatectomia com preservação de parênquima
- Hepatectomia em dois tempos
- Hepatectomias repetidas
- ALPPS (e variantes)
- Procedimentos associados
- Transplante
- RAPID

Algorithms for Patients with Colorectal Liver Metastasis

12

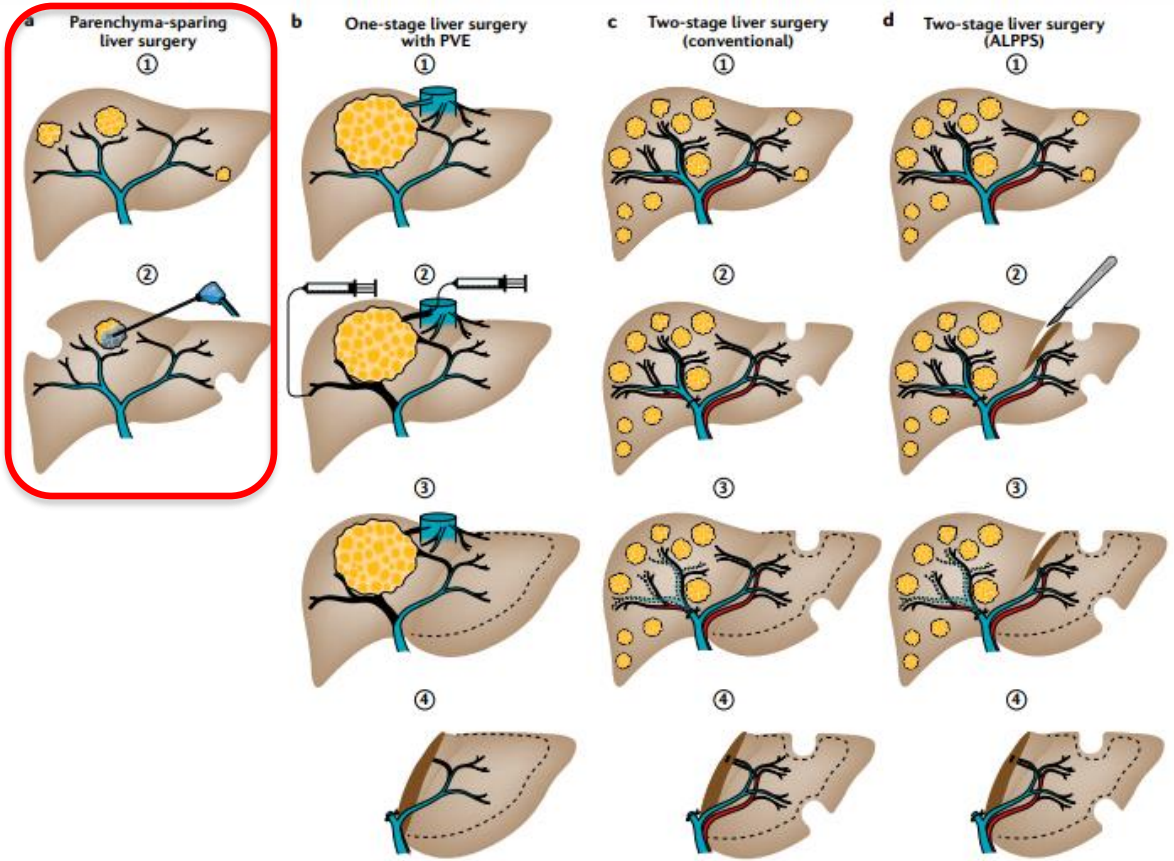
Orlando Jorge Martins Torres, Marcos Belotto de Oliveira, Paulo Cezar Galvão do Amaral, Eliza Dalsasso Ricardo, Agnaldo Soares Lima, Alexandre Prado de Resende, and Renata D'Alpino Peixoto





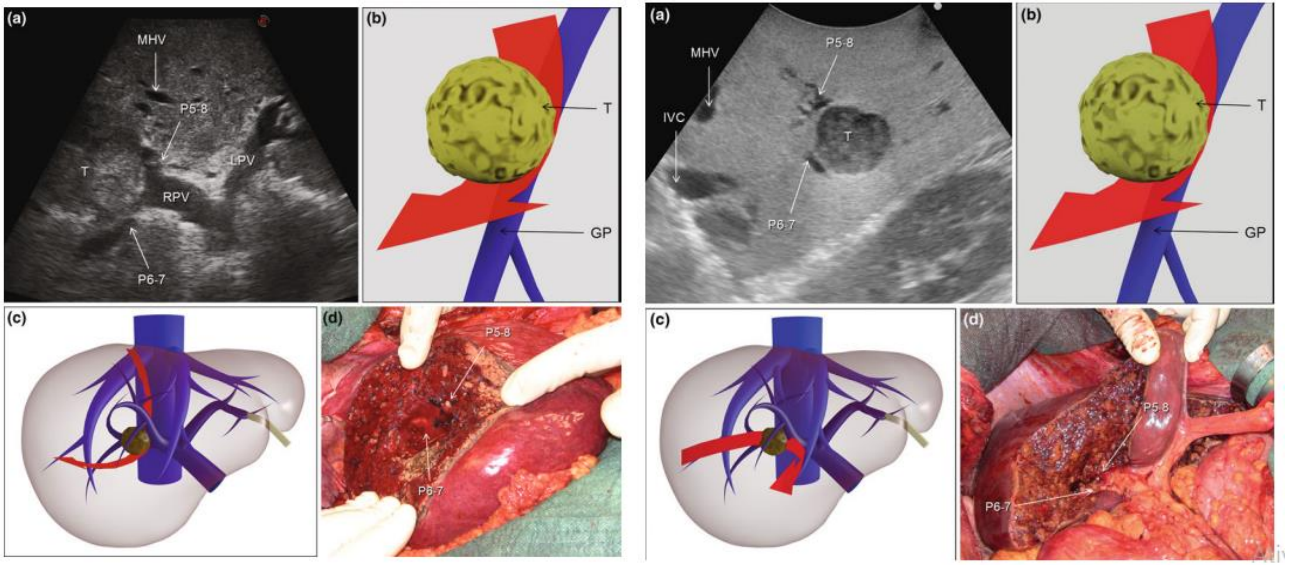
Torres OJ, et al. In: Correa MM, Springer 2020

ESTRATÉGIAS



Petrowsky H, et al. Nat Rev Gastroenterol Hepatol 2020

PARENCHYMA-SPARING



Courtesy: Prof. Guido Torzilli (Milan – Italy)

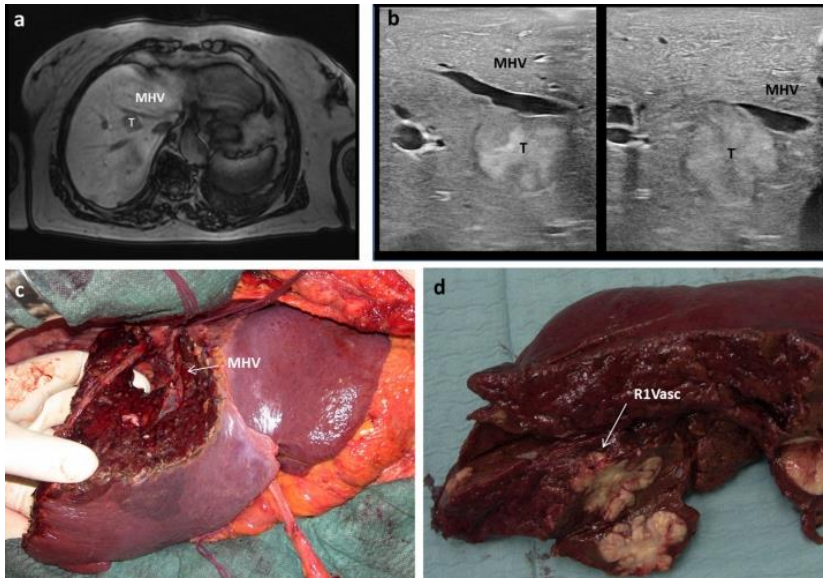
Torzilli G, et al. HPB 2017;259:543-8

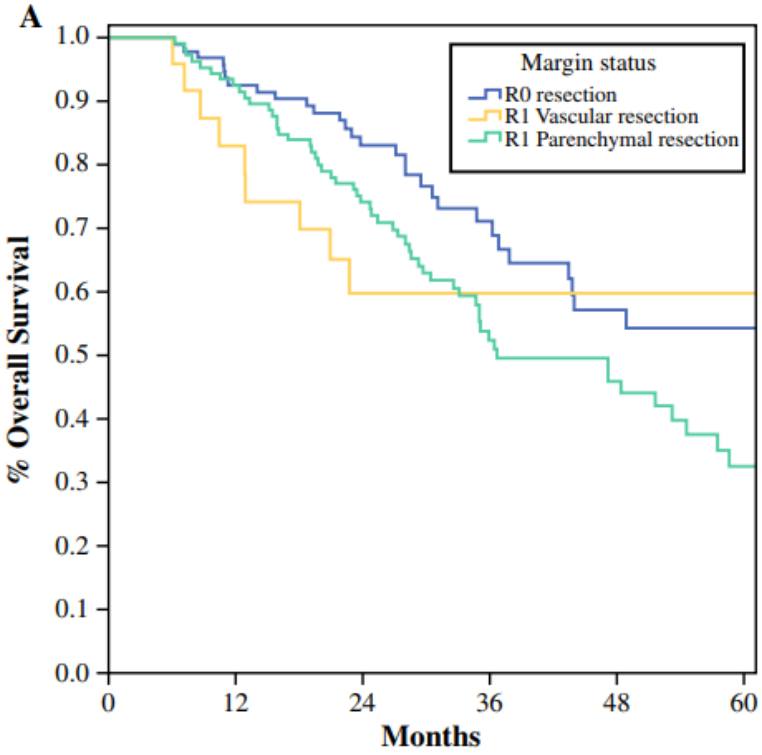
PARENCHYMA-SPARING

http://dx.doi.org/10.1016/j.hpb.2017.05.006 HPB

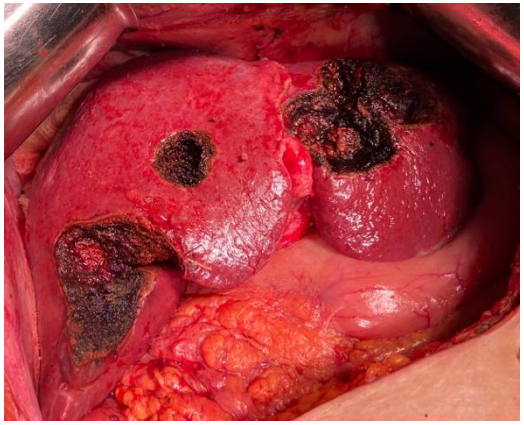
ORIGINAL ARTICLE

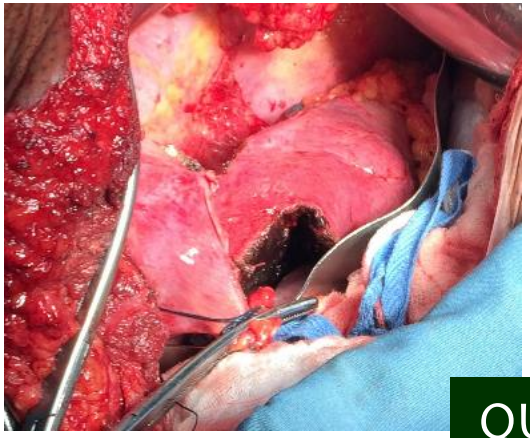
Twelve-year experience of "radical but conservative" liver surgery for colorectal metastases: impact on surgical practice and oncologic efficacy

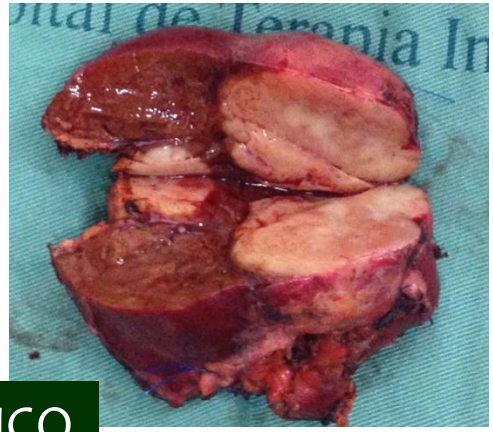




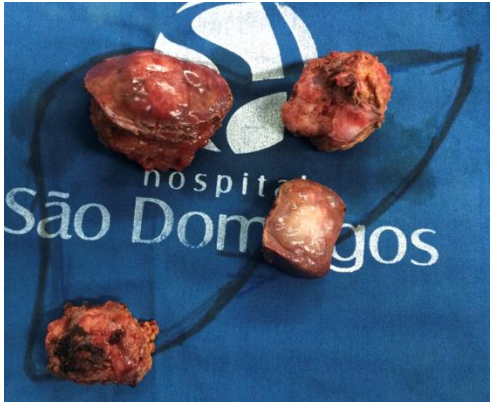
Torzilli G, et al. HPB 2017;259:543-8

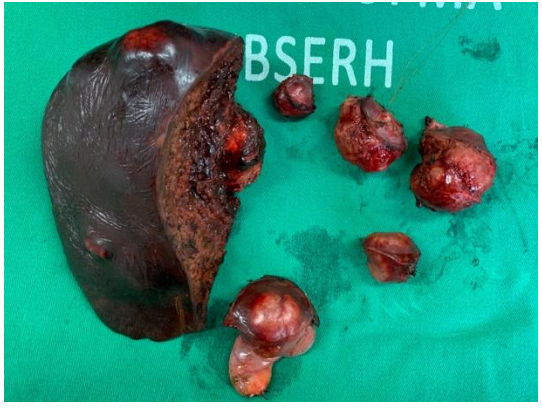


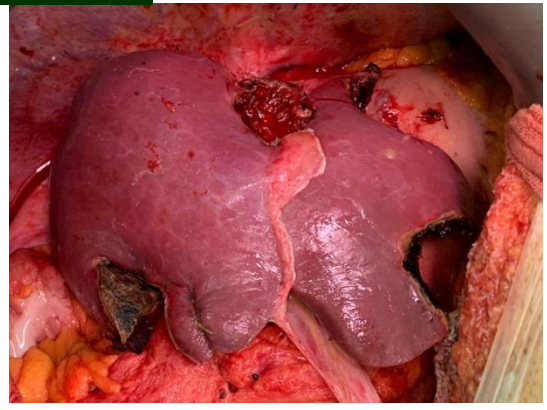




QUEIJO SUIÇO





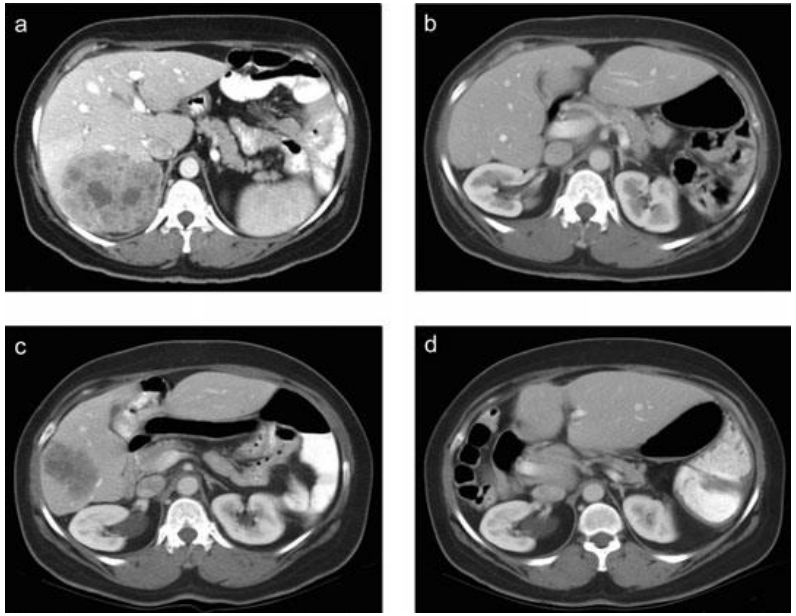


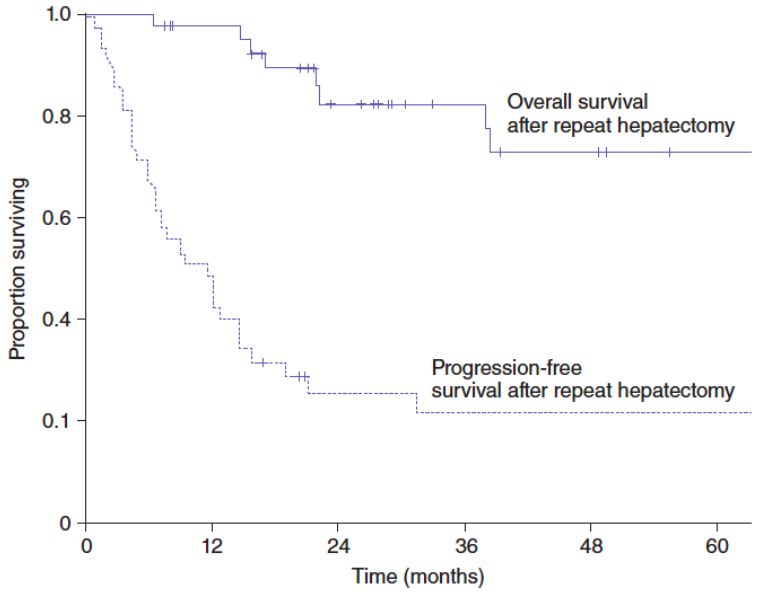
DOI:10.1111/j.1477-2574.2011.00370.x HPB

HEPATECTOMIA REPETIDA

ORIGINAL ARTICLE

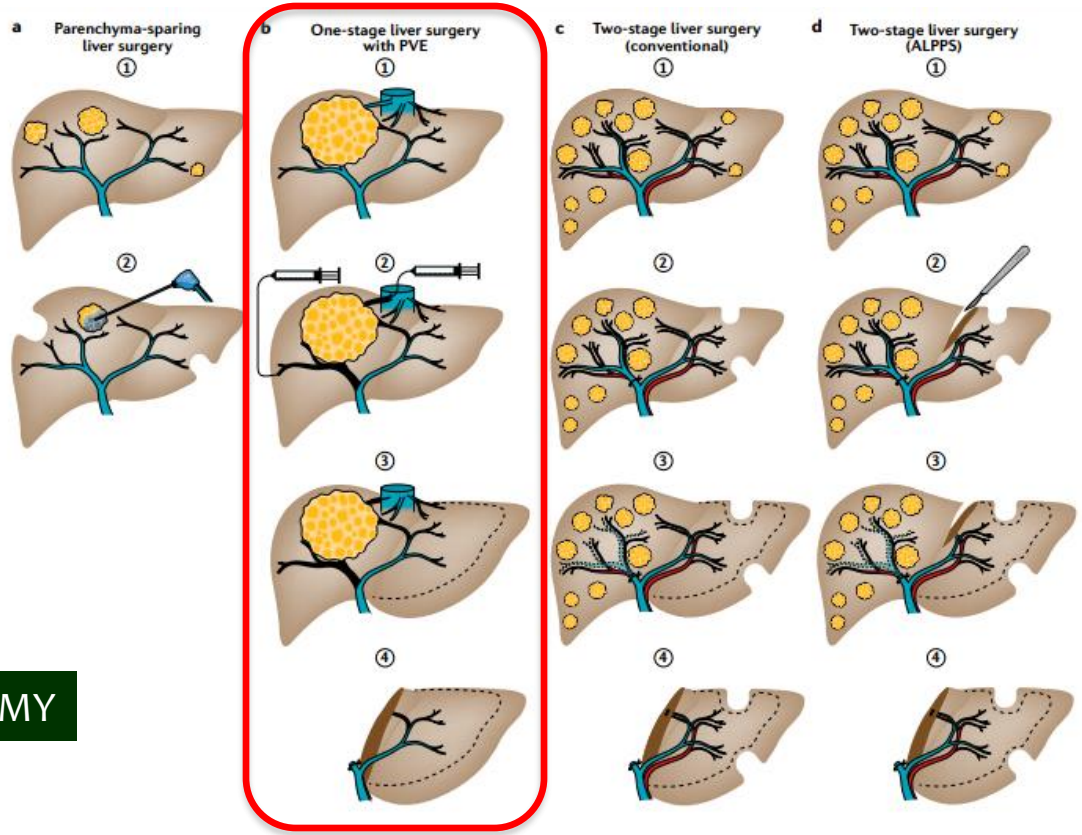
Repeat hepatectomy for recurrent colorectal liver metastases is associated with a high survival rate





Andreou A, et al. HPB 2011;13:774-82

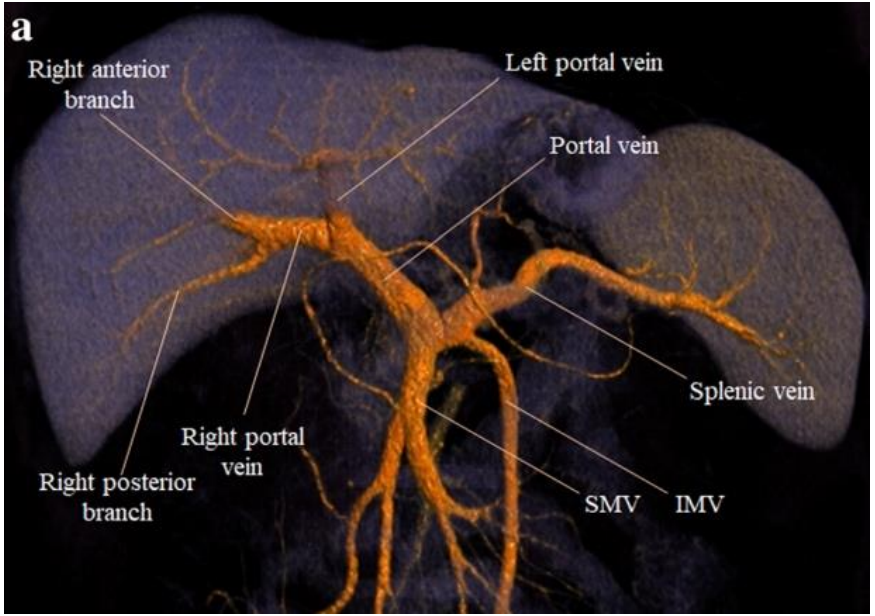
ESTRATÉGIAS

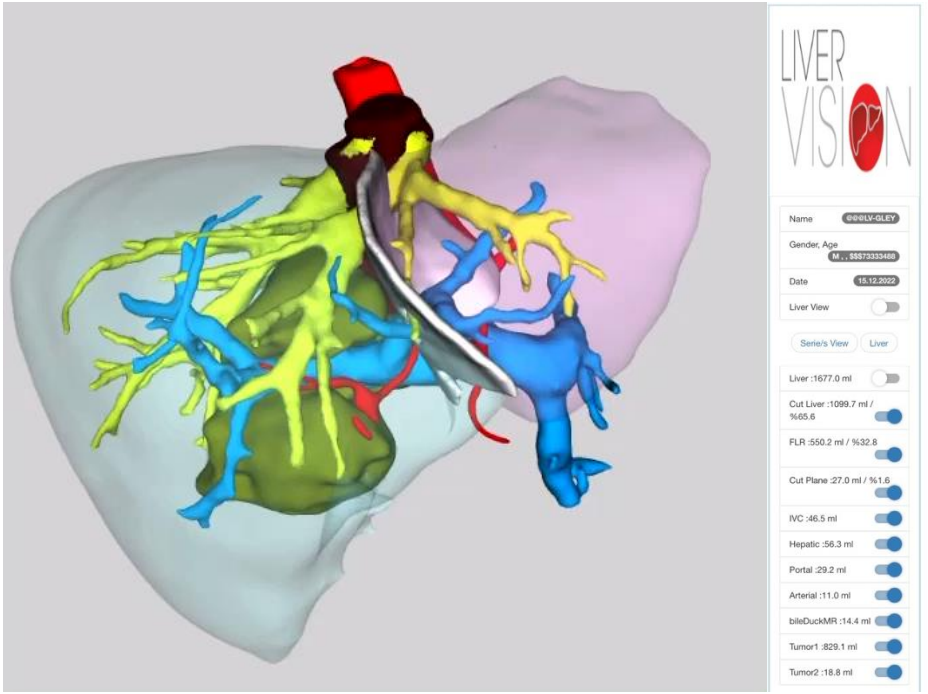


ONE-STAGE HEPATECTOMY

Petrowsky H, et al. Nat Rev Gastroenterol Hepatol 2020

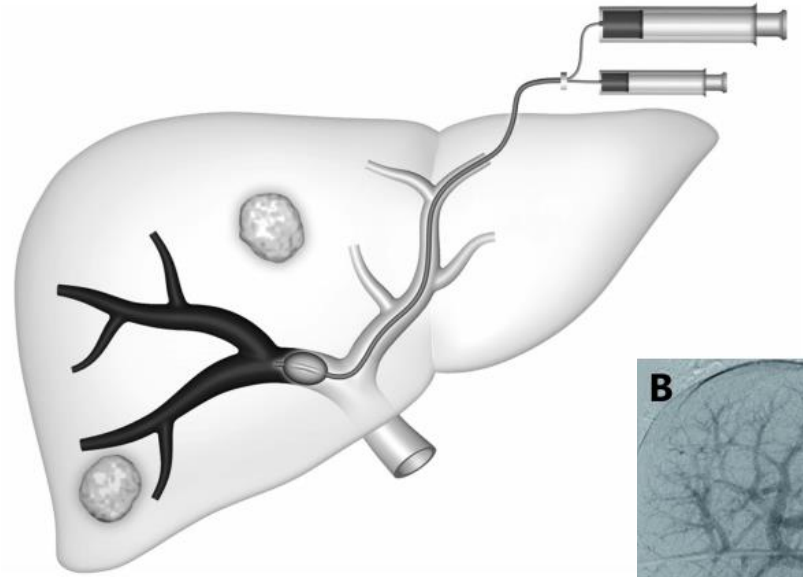
EMBOLIZAÇÃO DA VEIA PORTA

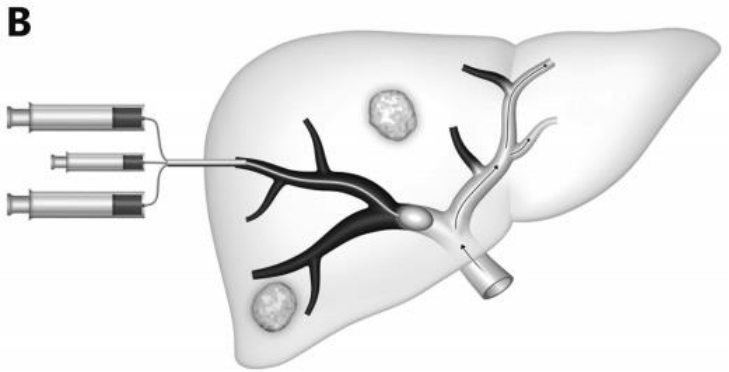


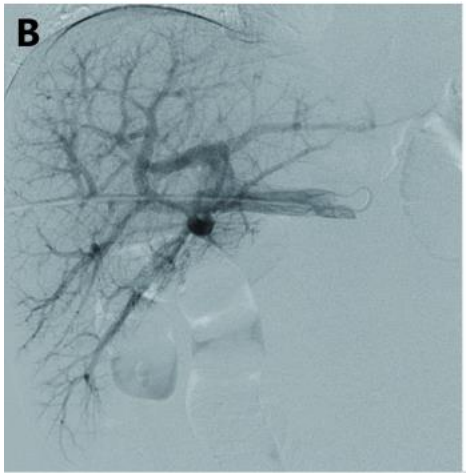


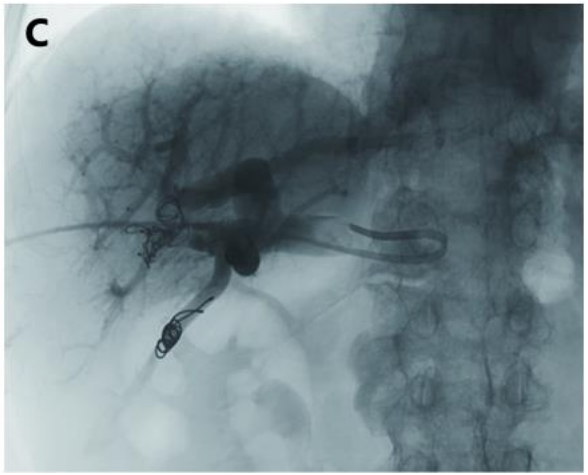
Courtesy: Prof. Deniz Balci (Istanbul – Turkey)

EMBOLIZAÇÃO DA VEIA PORTA



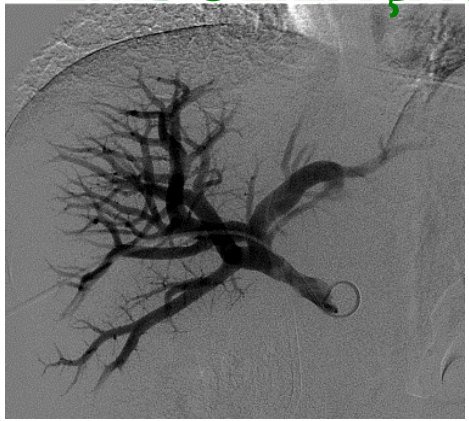


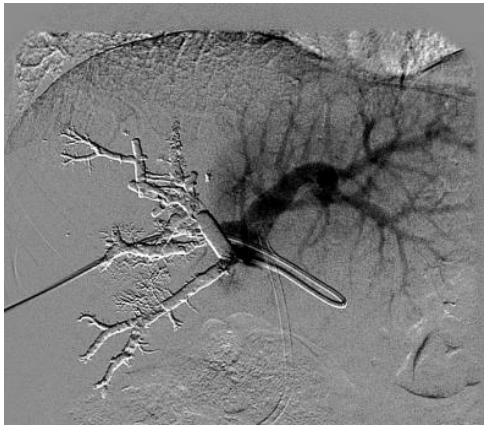


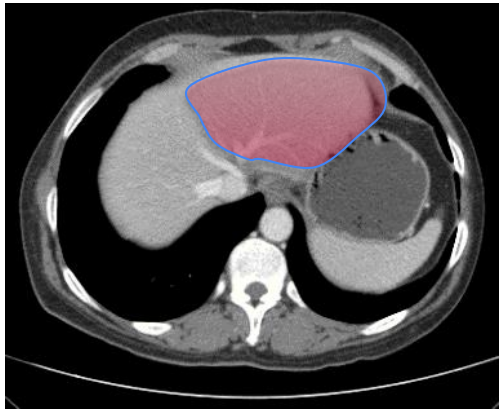


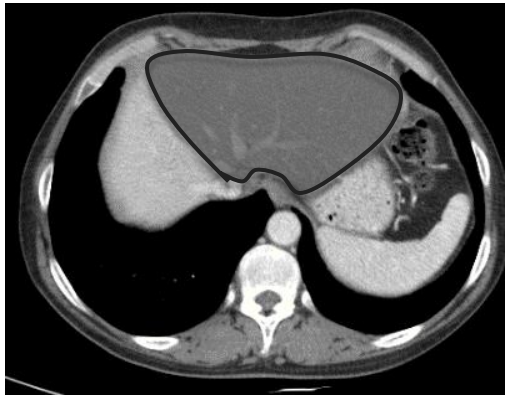
Li D, Maddof DC. Cancer Biol Med 2016

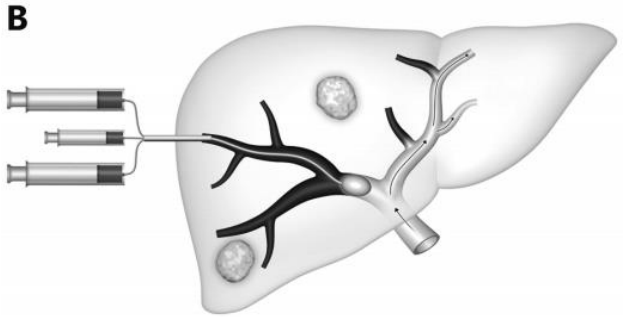
EMBOLIZAÇÃO DA VEIA PORTA

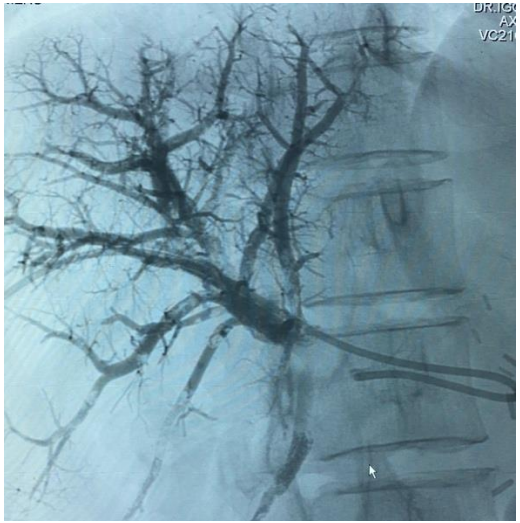












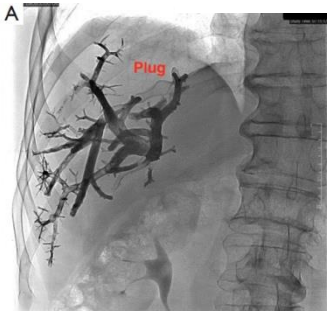
Carnevalle F, et al. In Torres OJ. Ed. Rubio 2019

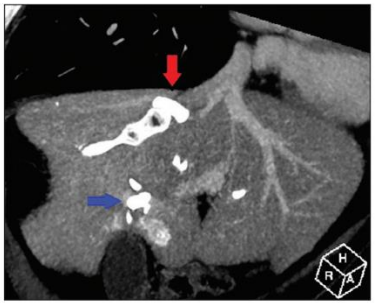
DEPRIVAÇÃO VENOSA HEPÁTICA

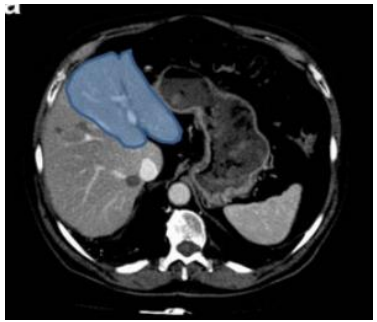
Eur Radiol
DOI 10.1007/s00330-016-4291-9

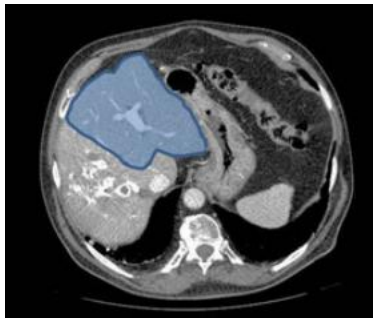
INTERVENTIONAL

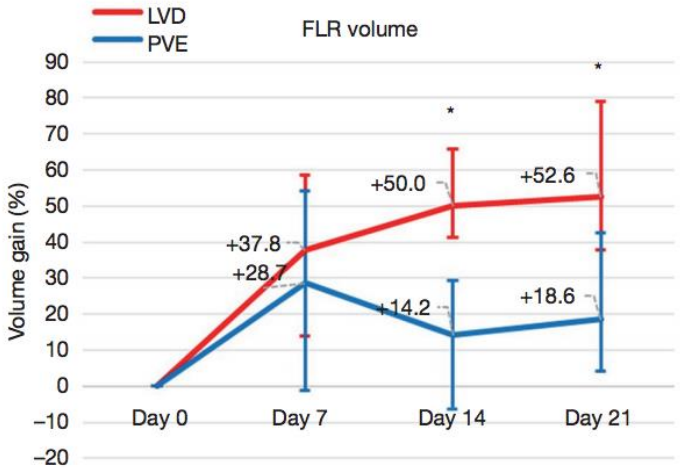
Simultaneous trans-hepatic portal and hepatic vein embolization before major hepatectomy: the liver venous deprivation technique





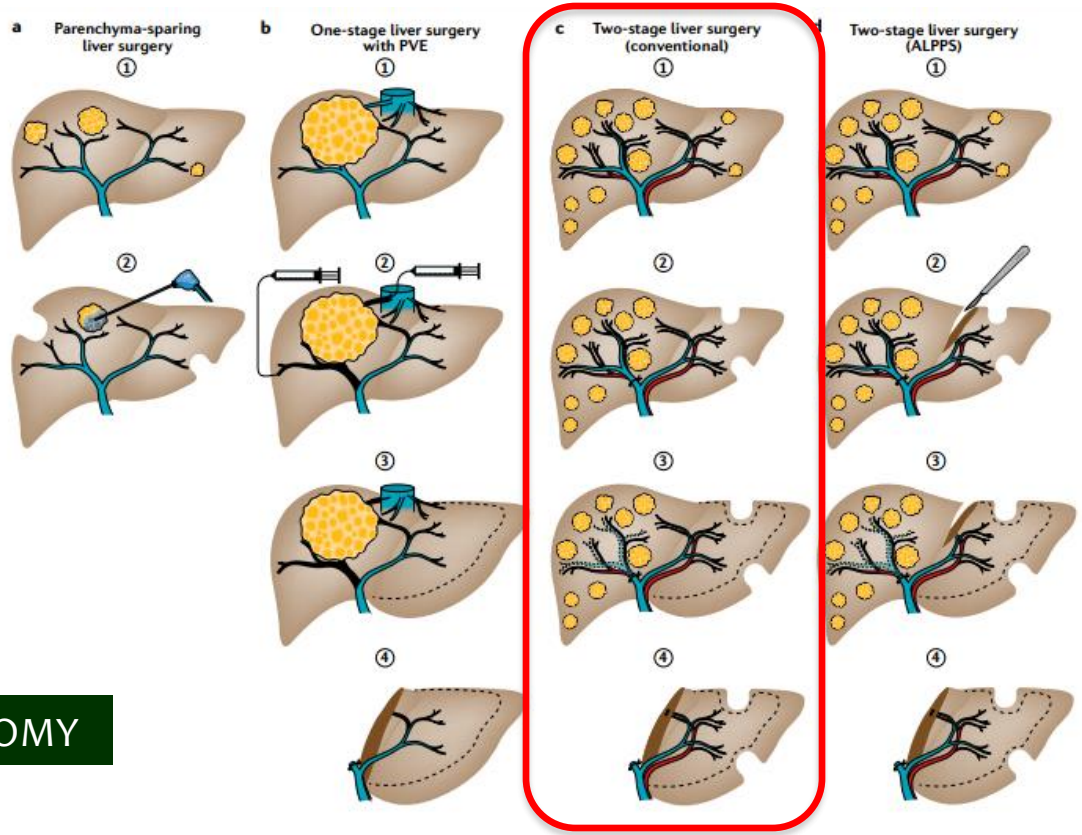






Guiu B, et al. Hepatobiliary Surg Nutr 2020;9:564-76

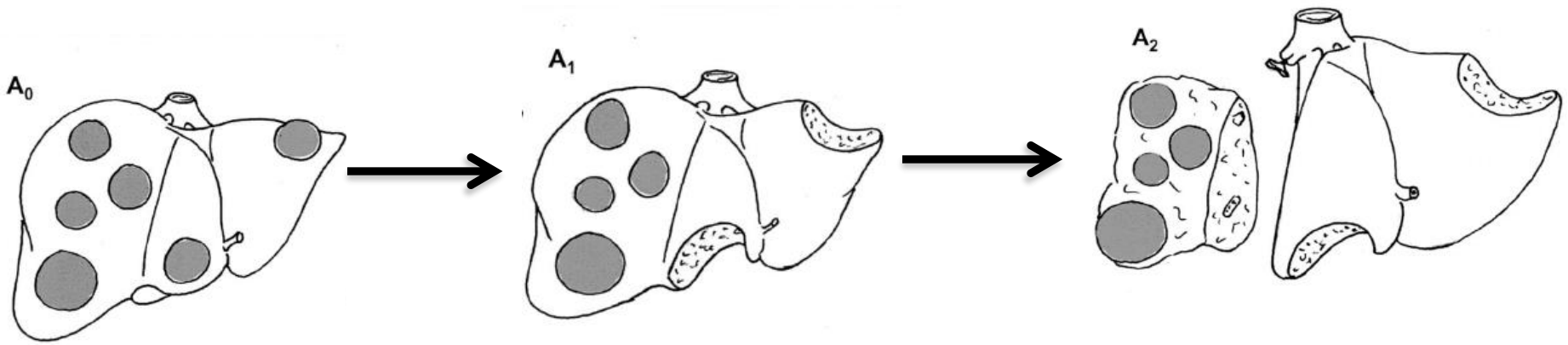
ESTRATÉGIAS



TWO-STAGE HEPATECTOMY

Petrowsky H, et al. Nat Rev Gastroenterol Hepatol 2020

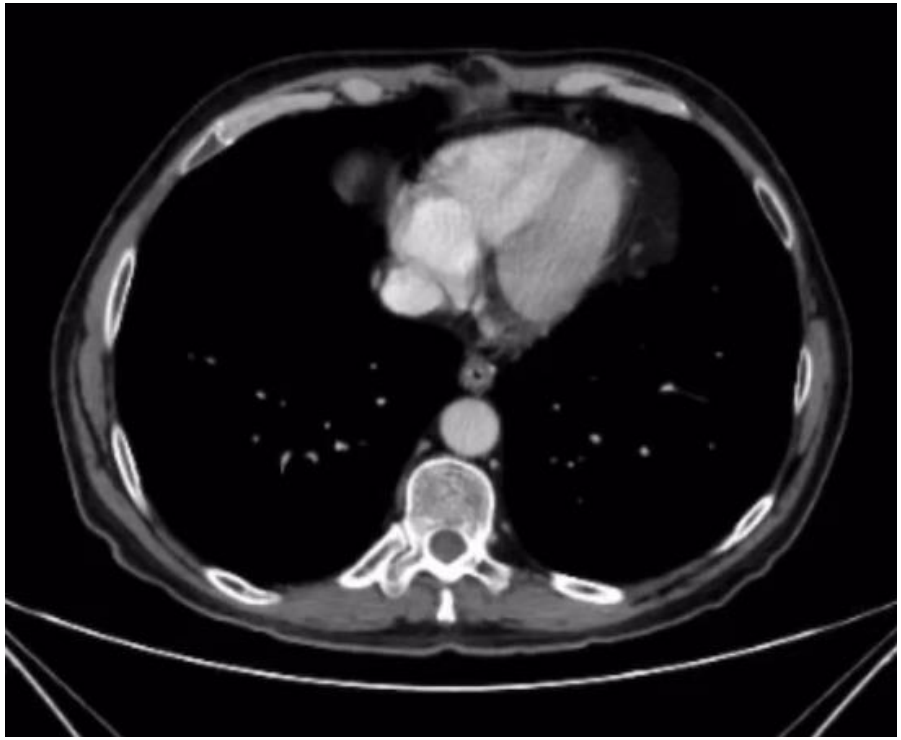
A Two-Stage Hepatectomy Procedure Combined With Portal Vein Embolization to Achieve Curative Resection for Initially Unresectable Multiple and Bilobar Colorectal Liver Metastases



Jaeck D, et al. Ann Surg 2004; 240:1037-51

HEPATECTOMIA EM DOIS TEMPOS

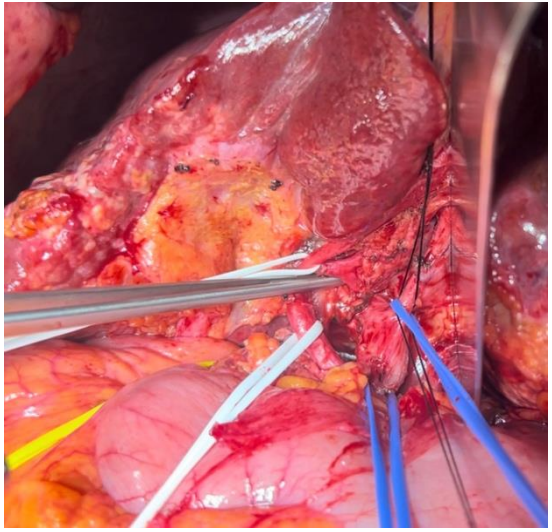
Masculino, 62 anos médico.
Neoplasia de colon
Metástase hepática sincrônica
Quimioterapia
Tomografia: lesão extensa em segmentos II/III/IVa. Outras lesões nos segmentos IVb, V,VI

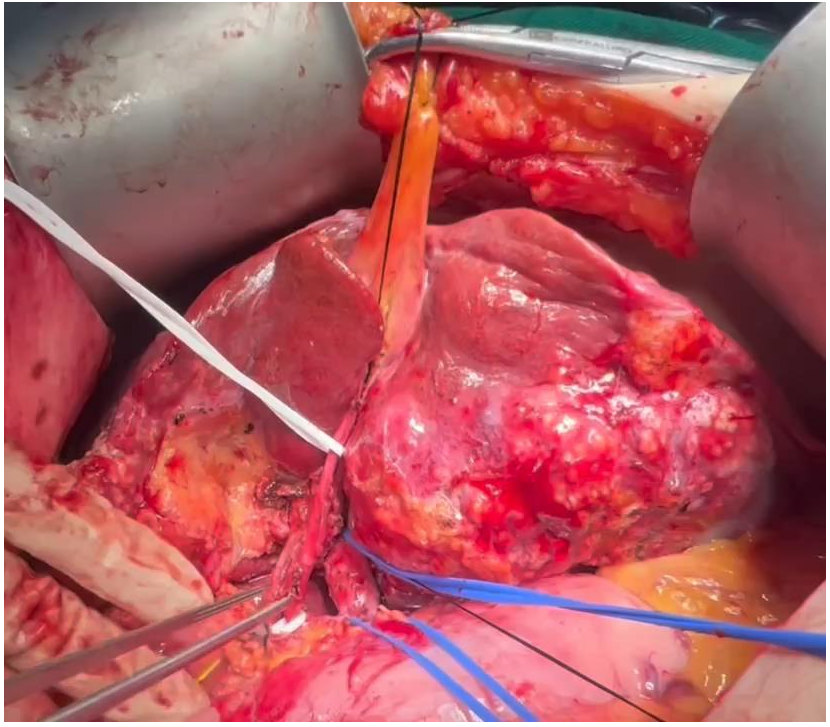


HEPATECTOMIA EM DOIS TEMPOS

Retirada das lesões dos segmentos V/VI
Ligadura do ramo portal E

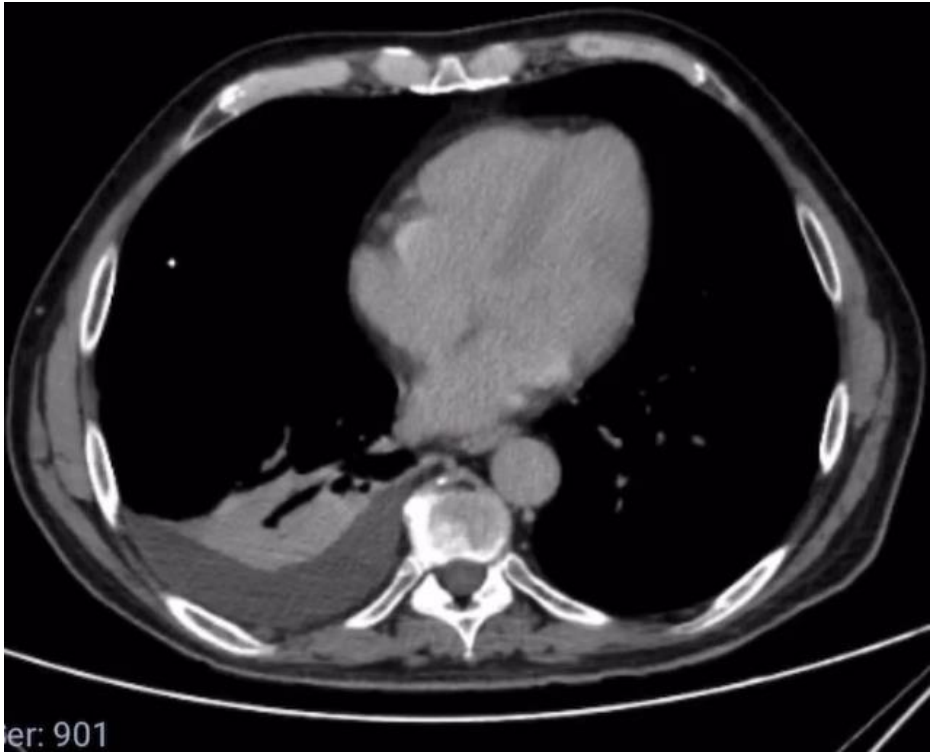
II/III/IVa. Outras lesões nos segmentos IVb, V,VI





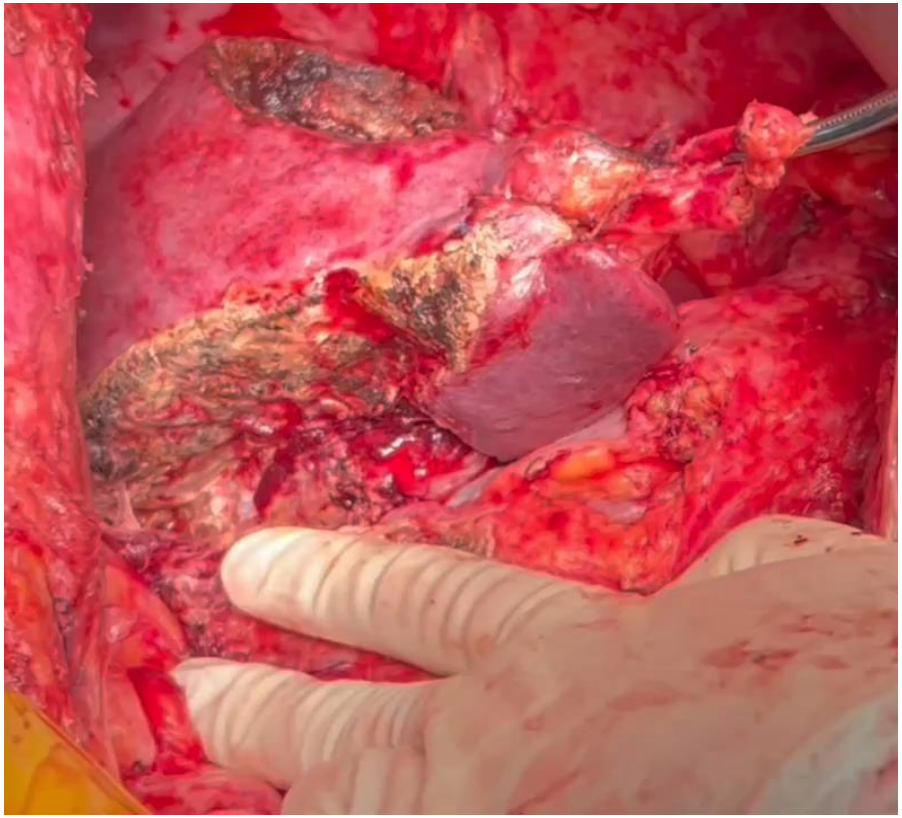
HEPATECTOMIA EM DOIS TEMPOS

Realizou tomografia após 35 dias do primeiro procedimento:

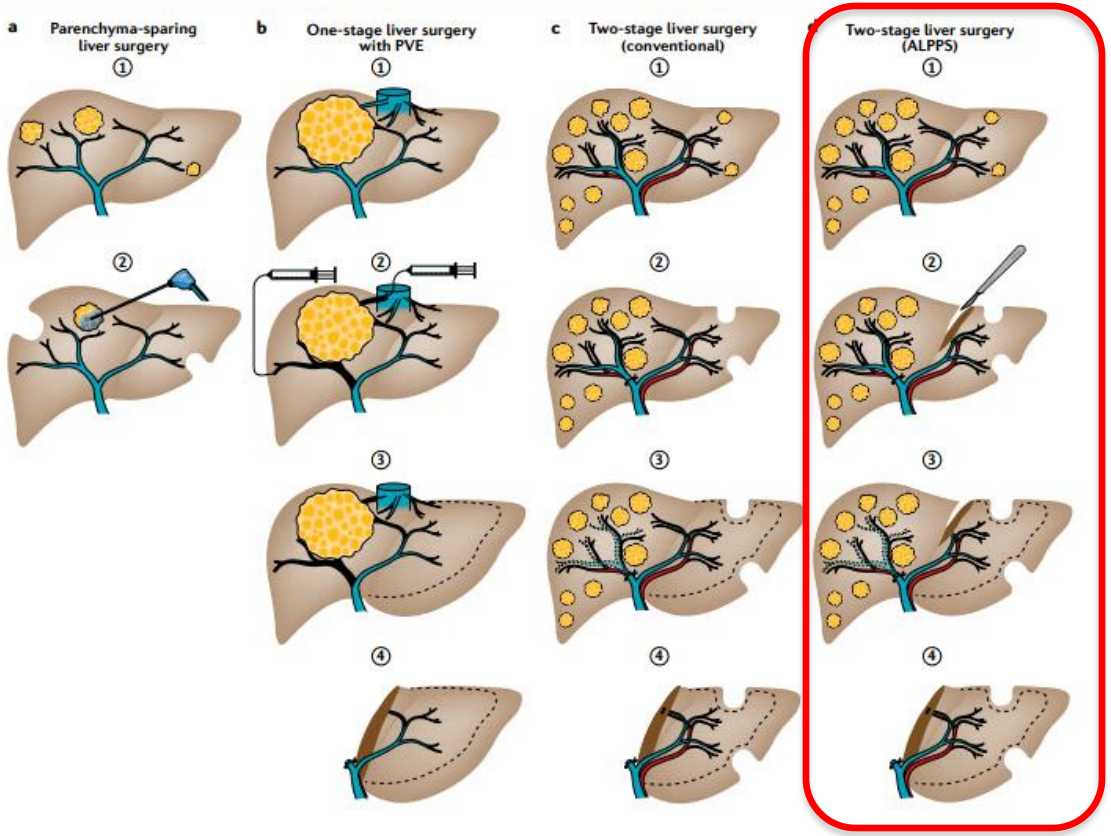


HEPATECTOMIA EM DOIS TEMPOS

Segundo tempo: hepatectomia esquerda



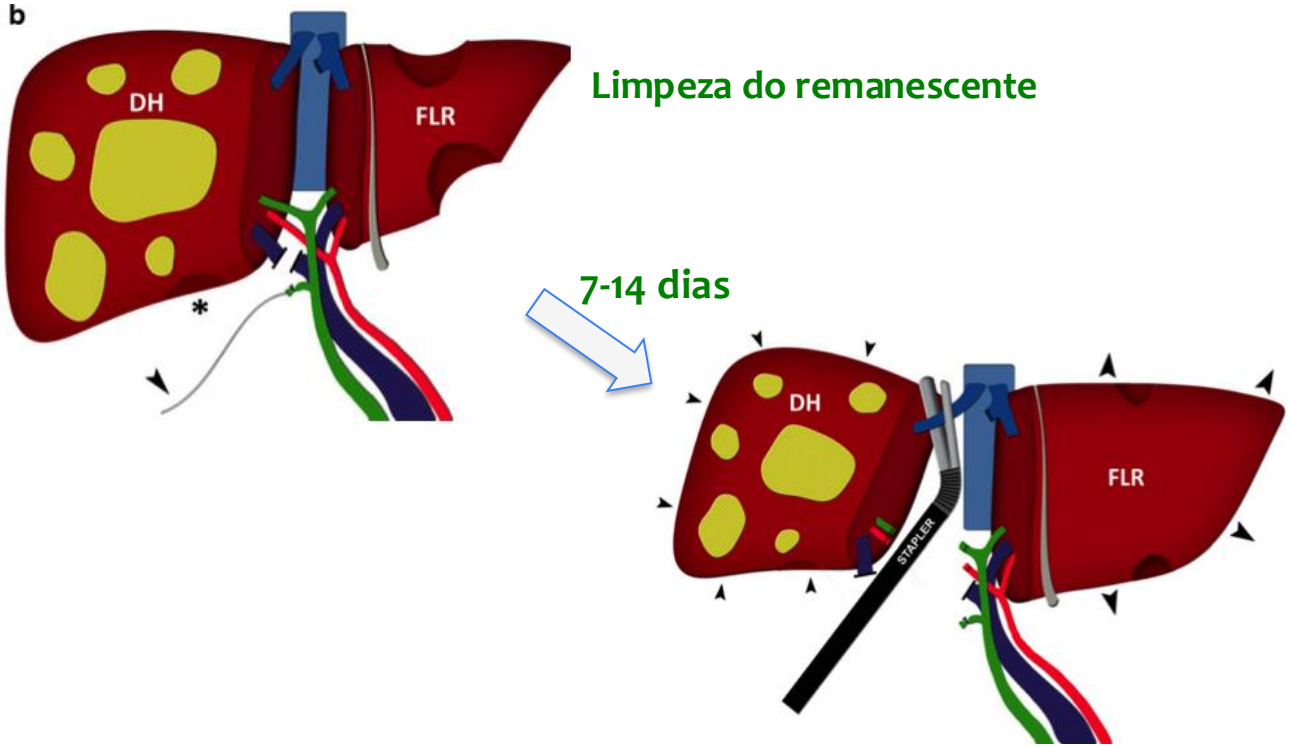
ALPPS



ALPPS

Petrowsky H, et al. Nat Rev Gastroenterol Hepatol 2020

EQUIPE MULTIDISCIPLINAR



ABCD Arq Bras Cir Dig
2012;25(4):290-292

ASSOCIATING LIVER PARTITION AND PORTAL VEIN LIGATION FOR STAGED HEPATECTOMY (ALPPS): A NEW APPROACH IN LIVER RESECTIONS

Ligadura da veia porta associada à transecção para hepatectomia em dois estágios (ALPPS): uma nova abordagem nas ressecções hepáticas

Orlando Jorge Martins **TORRES**, José Maria Assunção **MORAES-JUNIOR**, Nádia Caroline Lima e **LIMA**, Anmara Moura **MORAES**

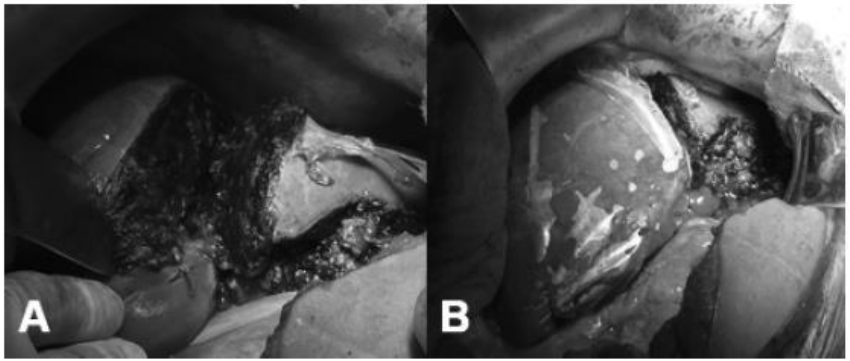


FIGURE 1 - A - Transection of the liver; B - protection with sterile bag

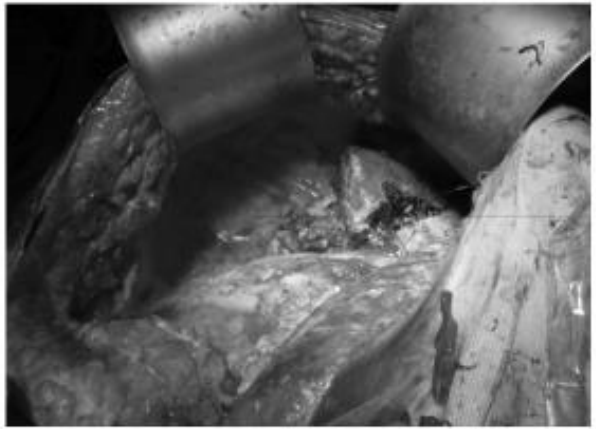


FIGURE 2 - Final aspect of the surgical procedure

ABCDDV/898

ABCD Arq Bras Cir Dig
2013;26(1):40-43

Original Article

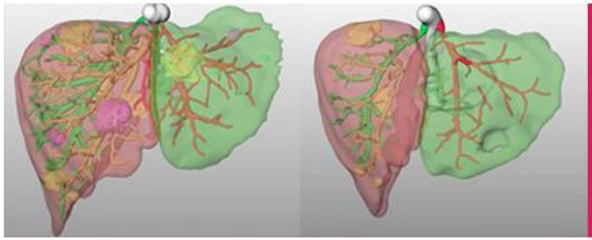
ASSOCIATING LIVER PARTITION AND PORTAL VEIN LIGATION FOR STAGED HEPATECTOMY (ALPPS): THE BRAZILIAN EXPERIENCE

Ligadura da veia porta associada à bipartição do fígado para hepatectomia em dois estágios (ALPPS): experiência Brasileira

Orlando Jorge Martins **TORRES**[1], Eduardo de Souza Martins **FERNANDES**[2] Cassio Virgilio Cavalcante **OLIVEIRA**[3], Cristiano Xavier **LIMA**[4], Fabio Luiz **WAECHTER**[5], Jose Maria Assunção **MORAES-JUNIOR**[1], Marcelo Moura **LINHARES**[6], Rinaldo Danese **PINTO**[7], Paulo **HERMAN**[8], Marcel Autran Cesar **MACHADO**[9]

- 59 and 64% - Morbidity
- 12 and 12.8% - Mortality

Torres OJ, et al. Arq Bras Cir Dig 2013;26:40-3



1 st International Consensus Meeting on ALPPS

February 27th and 28th 2015, Hamburg, Germany

ABCDDV/1112

ABCD Arq Bras Cir Dig
2015;28(3):155-156
DOI: /10.1590/S0102-67202015000300001

Editorial

ALPPS: PAST, PRESENT AND FUTURE

ALPPS: passado, presente e futuro

Orlando Jorge M **TORRES**[1], Eduardo S M **FERNANDES**[2], Paulo **HERMAN**[3]

[1]Universidade Federal do Maranhão (Federal University of Maranhão), São Luís, MA; [2] Hospital Adventista Silvestre, Rio de Janeiro, RJ, Brazil; [3]Universidade de São Paulo (University of São Paulo), São Paulo, SP, Brazil.

Complete tumor resection in the liver is the only chance to obtain long-term survival in patients with hepatic tumor or metastasis from other primary cancers. In patients with a large load of tumor within the liver, multiple strategies have been employed to improve resection, especially when a small liver remnant is expected. Staged hepatectomies, in which the surgeon perform partial resection in one side of the liver, and after four to six weeks proceed with the resection of the other side, and strategies to induce hypertrophy of the future liver remnant that include percutaneous portal vein embolization or intraoperative portal vein ligation, have also been largely employed by specialized liver surgery teams.

Hans Schlitt from Regensburg, Germany developed a new procedure, called liver bi-partition, for the first time by chance, in 2007. Planning to perform an extended right hepatectomy in a patient with hilar cholangiocarcinoma - being the future cholestatic liver remnant too small to sustain the patient postoperatively - he decided to perform intraoperatively only a selective hepatico-jejunostomy on the left biliary system, dividing the liver parenchyma along the falciform ligament, thereby completely devascularizing segment 4. Finally, the right portal vein was ligated to induce hypertrophy on segments 2 and 3. On the 8th

Case

ALPPS

- 52-year-old female patient
  - Synchronous liver metastases
  - Left sided colon tumor
- The primary was asymptomatic.
- She underwent:
  - Left colectomy
  - Lymphadenectomy
  - Colostomy
- No chemotherapy

KRAS wild-type

ALPPS

MRI before chemotherapy

ALPPS

MRI

- Liver metastases:
  - Segment: I
    - Involving the vena cava
  - Segments: II,III, IVa, V, VII, VIII

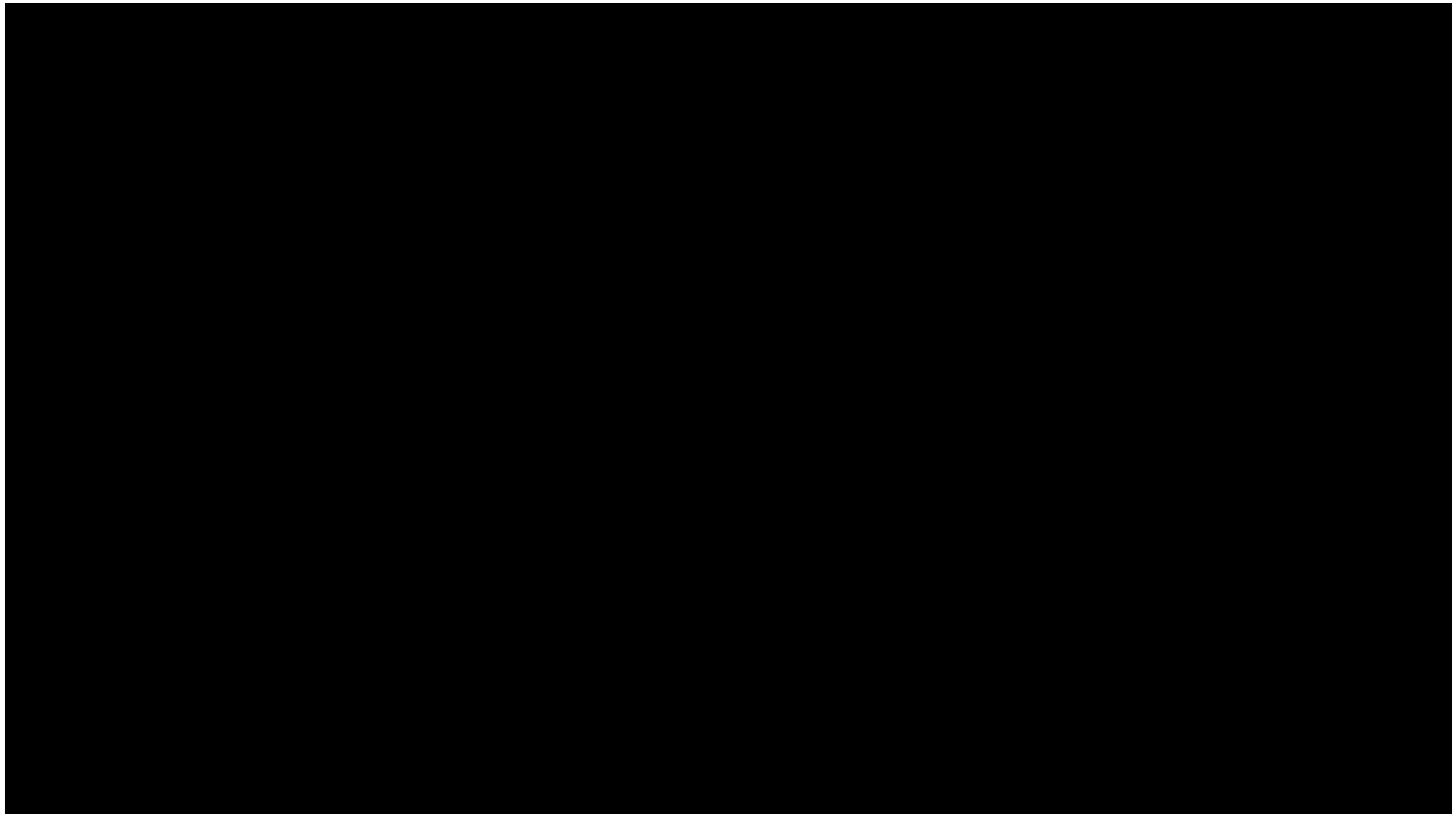
Chemotherapy

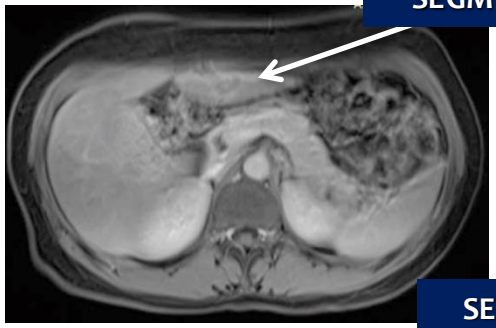
- Nine cicles of FOLFIRI

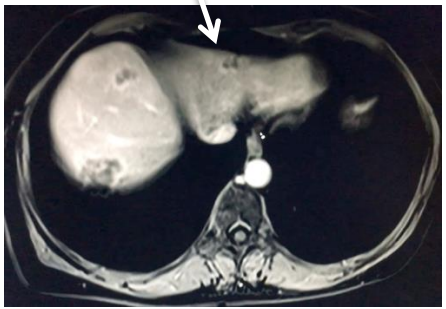
MRI

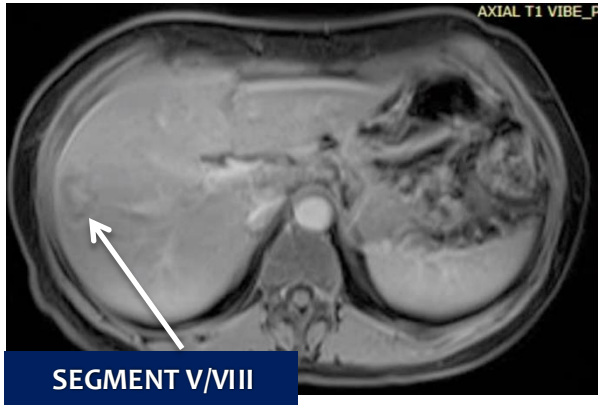
- After 8 months

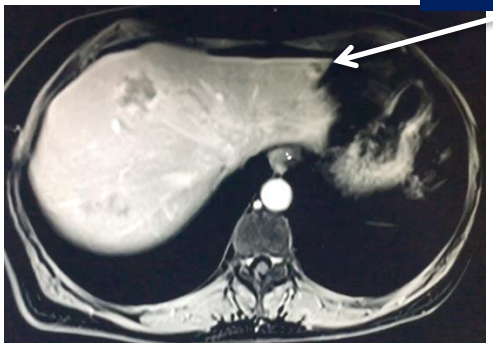
ALPPS




SEGMENT III


SEGMENT IVa


AXIAL T1 VIBE_P
SEGMENT V/VIII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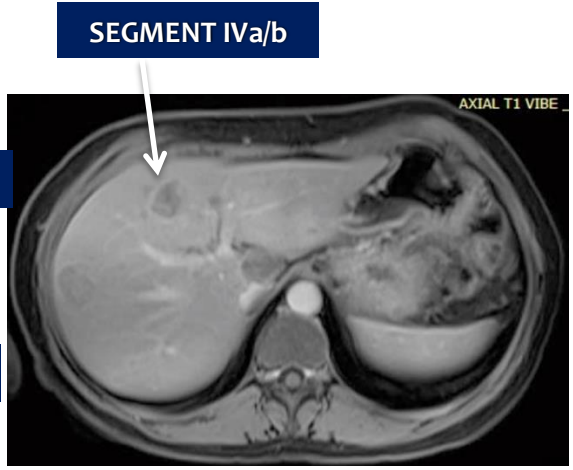
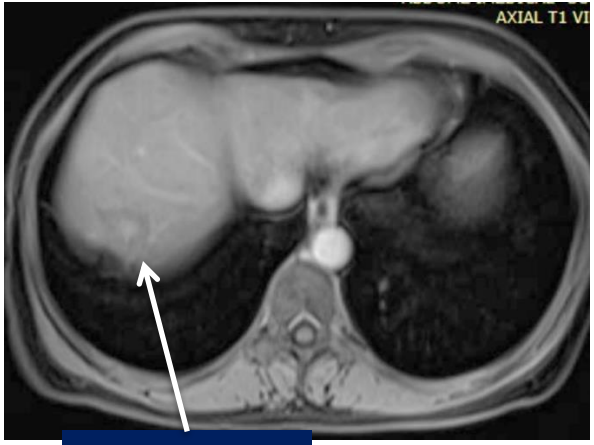
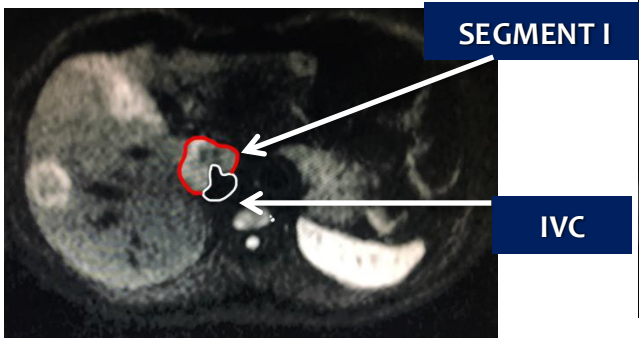

SEGMENT IVa/b
AXIAL T1 VIBE _


AXIAL T1 VI
SEGMENT VII


SEGMENT I
IVC

ALPPS

MRI

Stable disease

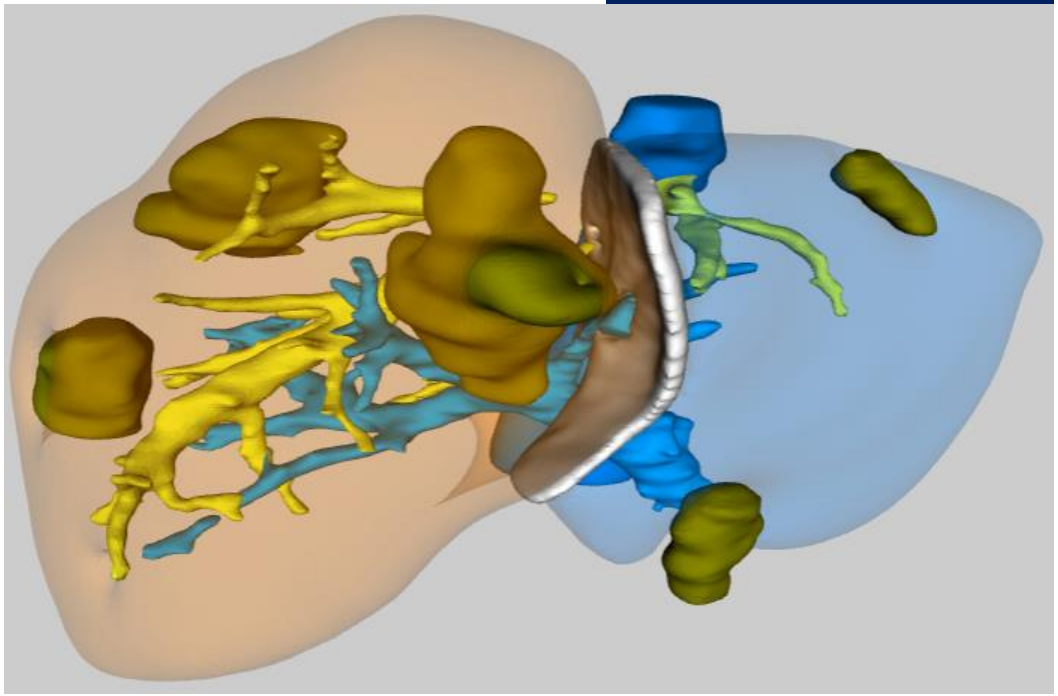
CEA

- ❑ Before chemotherapy
  - CEA – 142 ng/L
- ❑ After chemotherapy
  - CEA – 3.2 ng/L

ALPPS

VOLUMETRY

- ❑ Liver 865.5 ml
- ❑ FLR 204.2 ml



Segments 2/3

FLR 23.6%

LIVER VISION

Name
ANTONIA HELENA DE SOUZA BARBOSA

Gender, Age F , 052Y, 14373556

Date 30.11.2019

Liver View

Serie/s View | Liver

Liver :865.5 ml

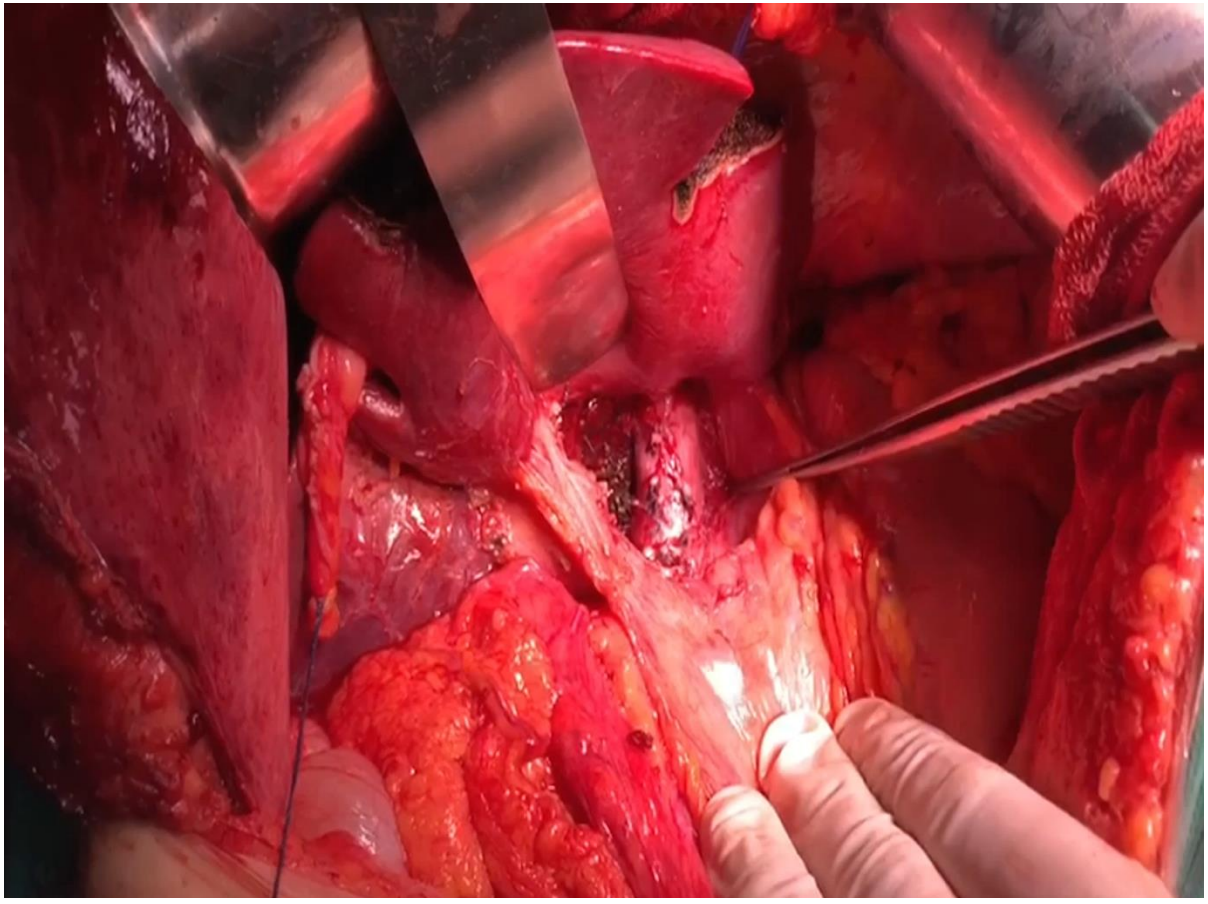
Cut Liver :649.4 ml / %75.0

FLR :204.2 ml / %23.6

Courtesy: Prof. Deniz Balci (Ankara – Turkey)

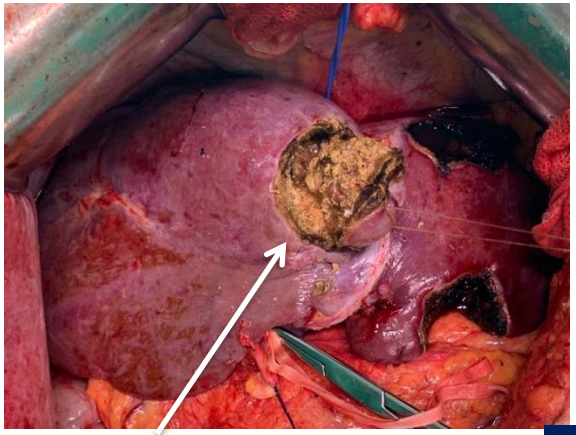
Caudate

- ❑ Resected
- ❑ IVC

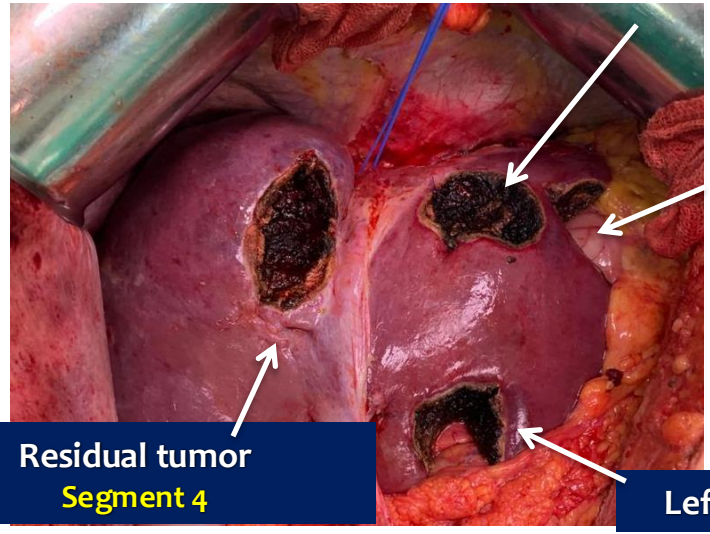


ALPPS

ALPPS

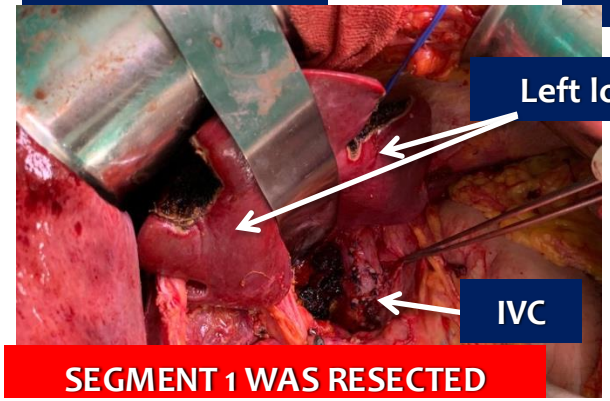


Segment 4



Residual tumor
Segment 4

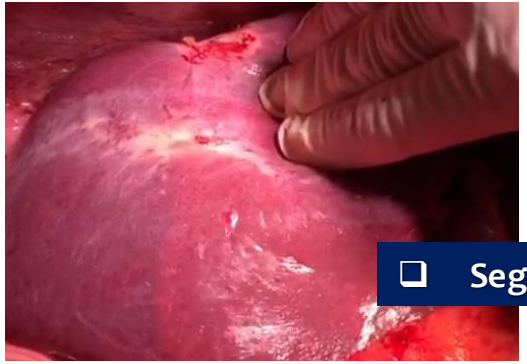
Left lobe



Left lobe

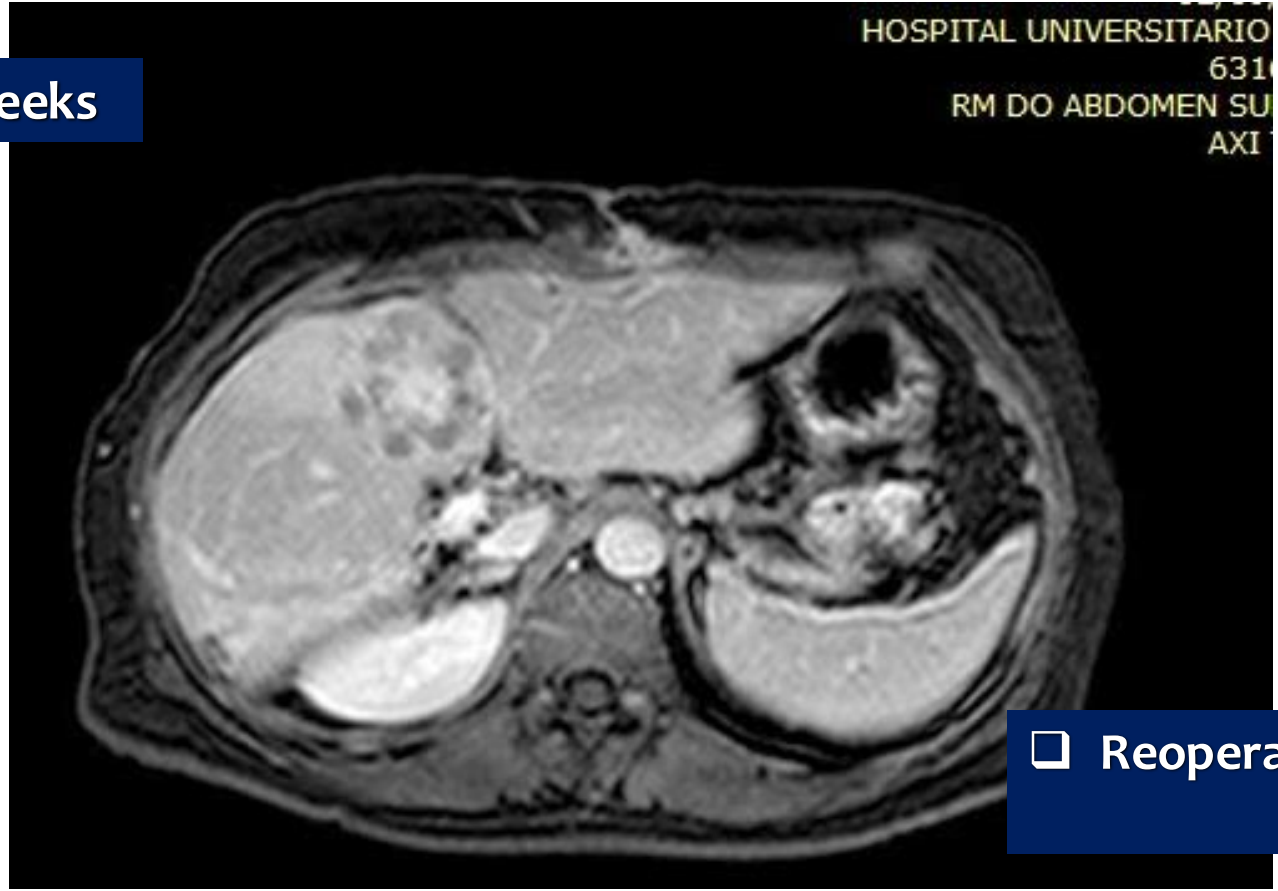
IVC

SEGMENT 1 WAS RESECTED



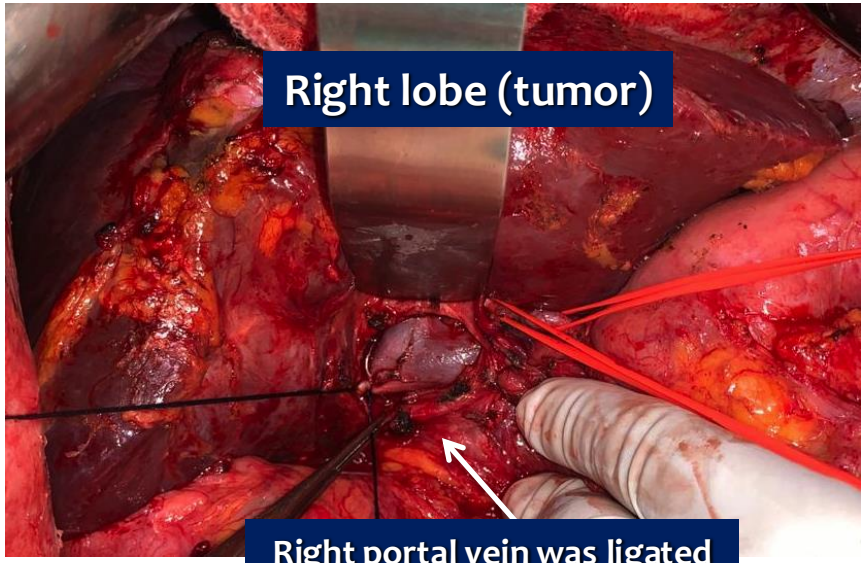
❑ Segment 6,7 Ligated

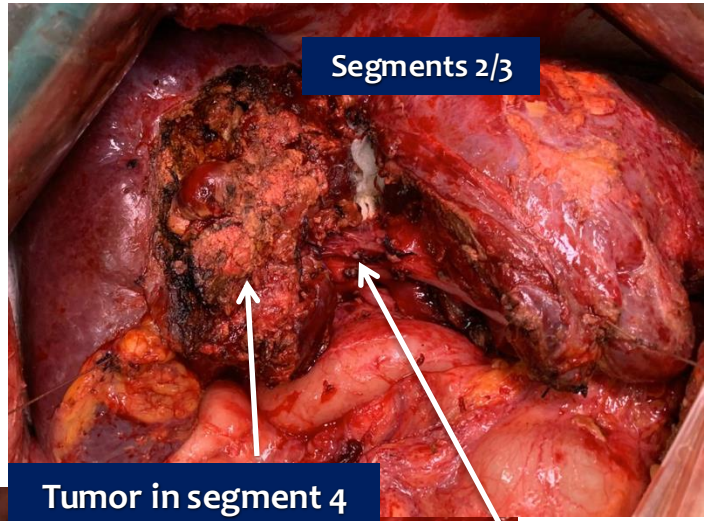
After 4 weeks

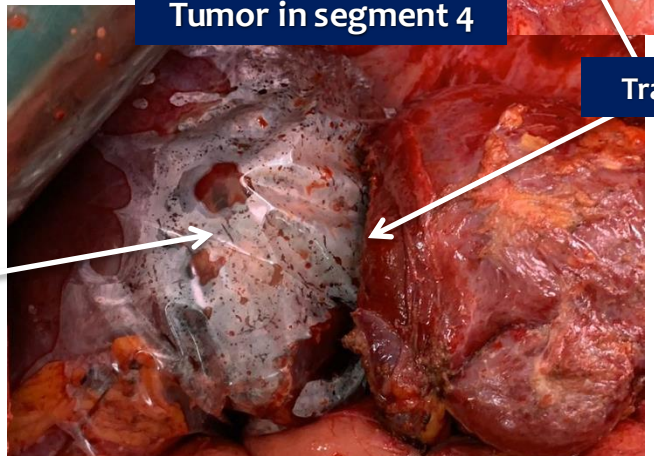


ALPPS

- Reoperation
  ALPPS


Right lobe (tumor)
Right portal vein was ligated


Segments 2/3
Tumor in segment 4
Transection line


Plastic bag (tumor)

ALPPS

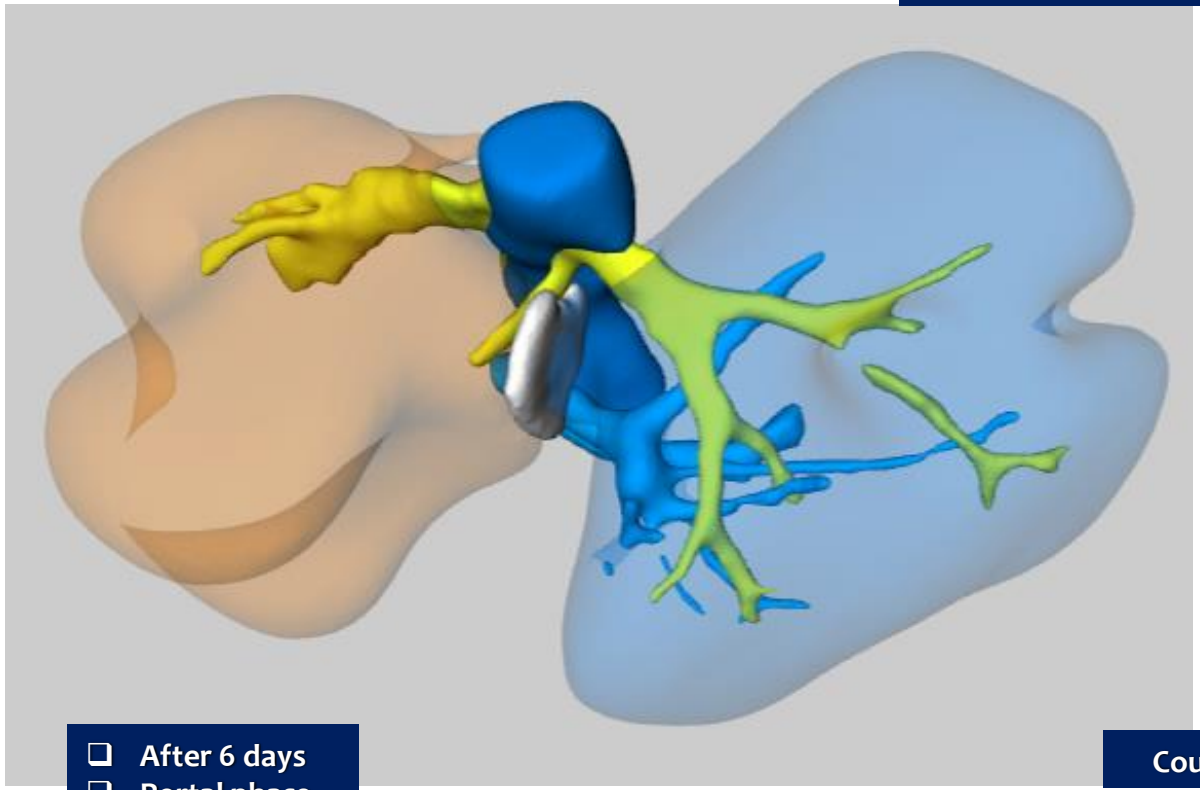
ALPPS

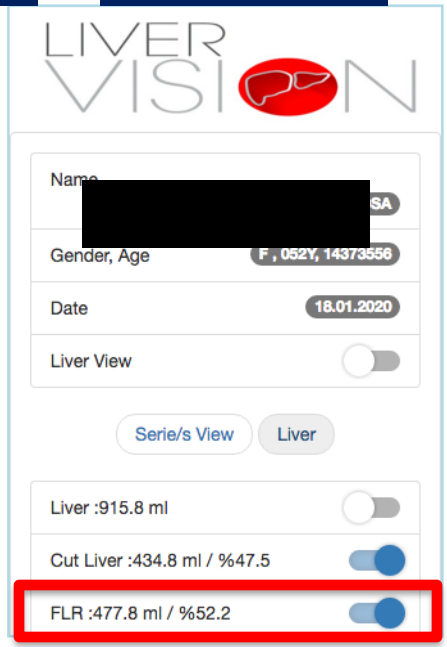
VOLUMETRY

- Liver 915.8 ml
- FLR 477.8 ml

Segments 2/3

FLR 52.2%

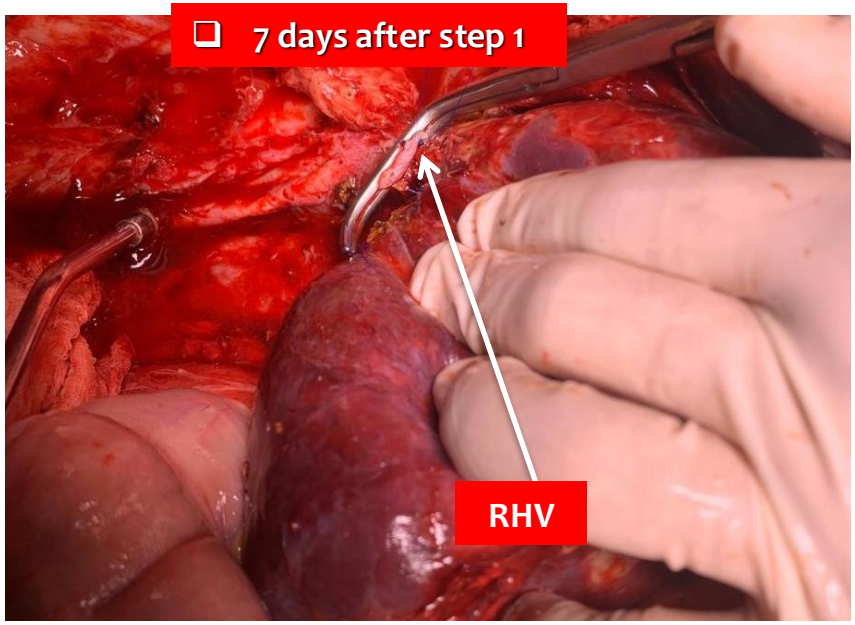


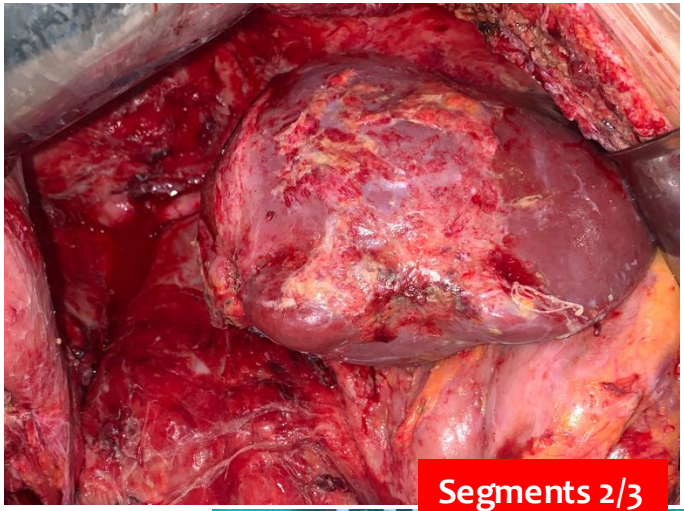


- After 6 days
- Portal phase

Courtesy: Prof. Deniz Balci (Ankara – Turkey)

ALPPS





2nd STEP

- ICU 3 days
- No complications ≥ 3b (clavien-dindo)
- Lenght of stay 12 days

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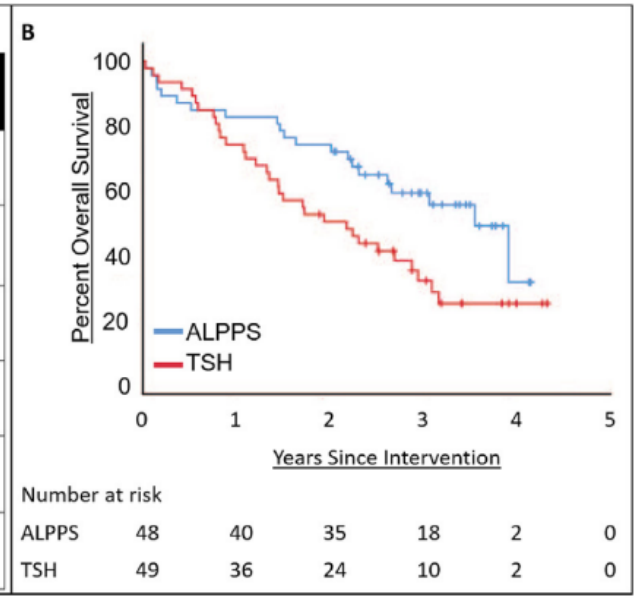
journal homepage: www.elsevier.com/locate/ijsu

Associating Liver Partition and Portal Vein Ligation for Staged Hepatectomy (ALPPS) procedure for colorectal liver metastasis

Roberto Hernandez-Alejandro[a,**], Luis I. Ruffolo[a,1], Ruslan Alikhanov[b], Bergthor Björnsson[c], Orlando Jorge M. Torres[d], Alejandro Serrablo[e]

Perioperative Outcome	ALPPS (n=48)	TSH (n=49)
Resection Rate	98%	57%
R0 Resection	77%	57%
90-day mortality	8%	6%
Liver-first approach	40%	37%
Clavien-Dindo Grade 3a or greater complication	43%	43%
1 year recurrence-free-survival	46%	45%



Hernandez-Alejandro R, et al. Int J Surg 2020

TABLE 108D.1 Degree of Hypertrophy After Stage 1 of ALPPS Procedure

Series	No. Patients	Interval Stage (mean days)	Degree of Hypertrophy (%)
Schnitzbauer et al, 2012	25	9	74
Knoefel et al, 2013	7	6	63
Li et al, 2013	9	13	87.20
Nadalin et al, 2014	15	10	87.2
Torres et al, 2013	39	14.1	83
Robles Campos et al, 2014	22*	7	61
Alvarez et al, 2015	30	6	89.7
Hernandez-Alejandro et al, 2015	14	8	93

*Associating liver tourniquet and portal ligation for staged hepatectomy (ALTPS).

ALPPS, Associating liver partition and portal vein ligation for staged hepatectomy.

Oldhafer KJ, et al. In Blumgart LH. 6th Edition, 2017

https://doi.org/10.1016/j.hpb.2018.10.003 HPB

ORIGINAL ARTICLE

Performance validation of the ALPPS risk model

Michael Linecker[1], Christoph Kuemmerli[1], Patryk Kambakamba[1], Andrea Schlegel[2], Paolo Muiesan[2], Ivan Capobianco[3], Silvio Nadalin[3], Orlando J. Torres[4], Arianeb Mehrabi[5], Gregor A. Stavrou[6,7], Karl J. Oldhafer[7,8], Georg Lurje[9], Deniz Balci[10], Hauke Lang[11], Ricardo Robles-Campos[12], Roberto Hernandez-Alejandro[13,14], Massimo Malago[15], Eduardo De Santibanes[16], Pierre-Alain Clavien[1] & Henrik Petrowsky[1]

Table 4 Specific characteristics of risk categories

Variable	Development cohort (n = 528)				Validation cohort (n = 258)			
	Low*	Intermediate*	High*	*P*	Low**	Intermediate**	High**	*P*
Pre-stage 1 model								
No. of patients, n (%)	308 (63)	127 (26)	52 (11)		146 (64)	58 (25)	24 (11)	
Age, years	57 (48–62)	69 (65–73)	73 (69–76)	<0.001	55 (47–61)	68 (60–72)	72 (69–74)	<0.001
Tumor entity								
CRLM, n (%)	255 (76)	82 (24)	0 (0)	<0.001	121 (80)	31 (20)	0 (0)	<0.001
Biliary tumors, n (%)	0 (0)	45 (59)	31 (41)	<0.001	0 (0)	27 (63)	16 (37)	<0.001
Non-CRLM/non-biliary, n (%)	53 (72)	0 (0)	21 (28)	<0.001	25 (74)	1 (3)	8 (24)	0.001
Pre-stage 2 model								
No. of patients, n (%)	224 (60)	124 (33)	28 (7)		133 (64)	63 (30)	12 (6)	
Complications ≥3b, n (%)	7 (18)	22 (58)	9 (24)	<0.001	4 (29)	9 (64)	1 (7)	0.013
Bilirubin pre-stage-2, mg/dl	0.68 (0.40–1.10)	0.71 (0.50–1.45)	1.55 (0.89–4.34)	<0.001	0.53 (0.34–0.80)	0.80 (0.53–1.60)	3.05 (1.15–9.30)	<0.001
Creatinine pre-stage 2 mg/dl	0.70 (0.60–0.80)	0.79 (0.65–1.00)	0.97 (0.70–1.30)	<0.001	0.69 (0.55–0.80)	0.78 (0.60–0.95)	1.12 (0.76–1.51)	<0.001

Linecker M, et al. HPB 2019

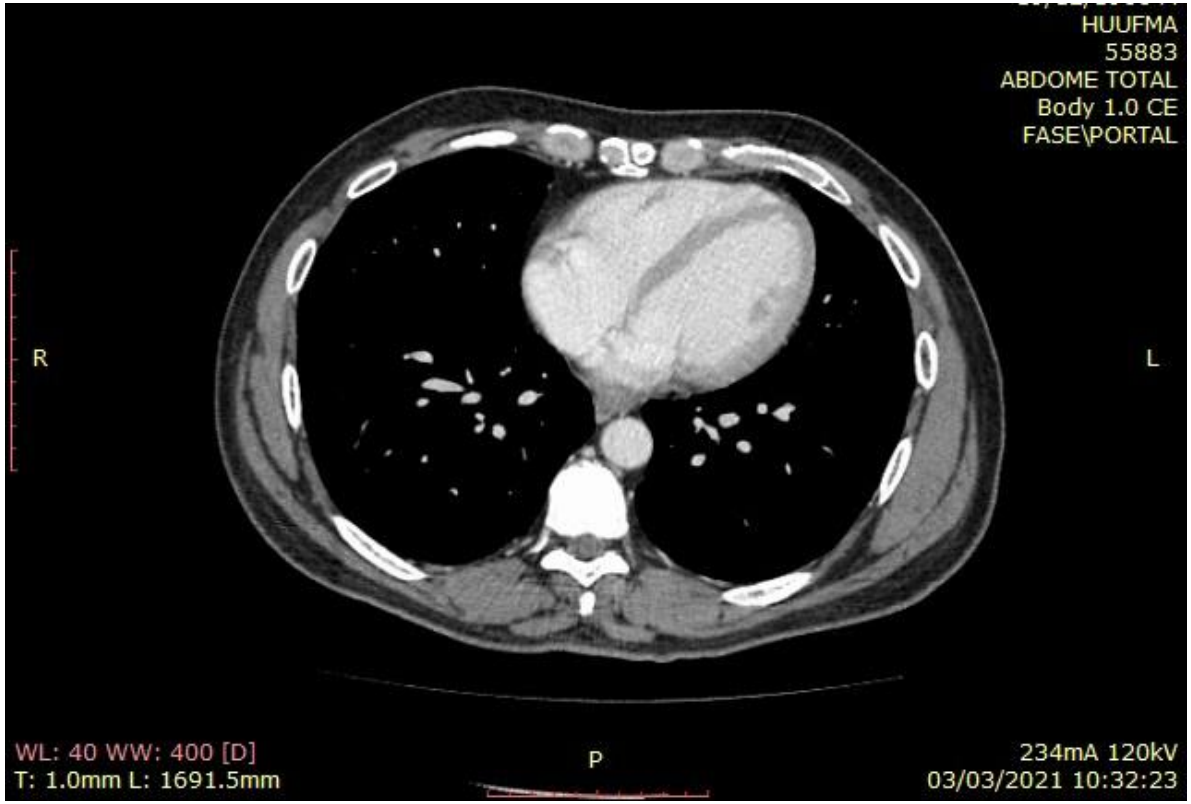
Monosegment ALPPS

- 54-year-old male patient
  - Synchronous liver metastases
  - Left sided colon tumor
- Primary resected previously
  - Colostomy
- Chemotherapy
  - FOLFOX 12 cicles

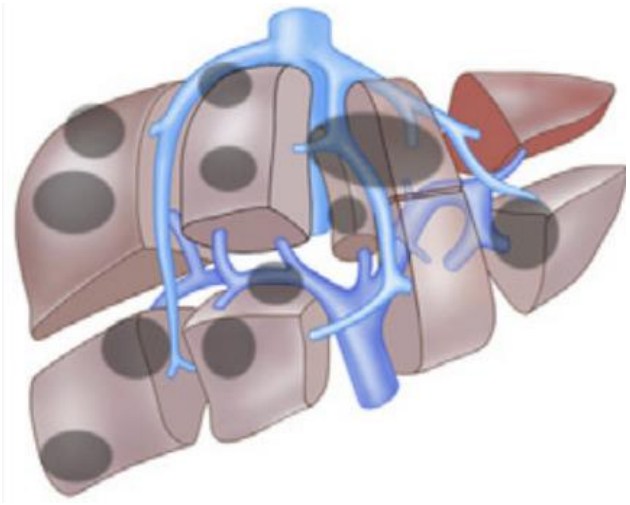
- KRAS Wild-type

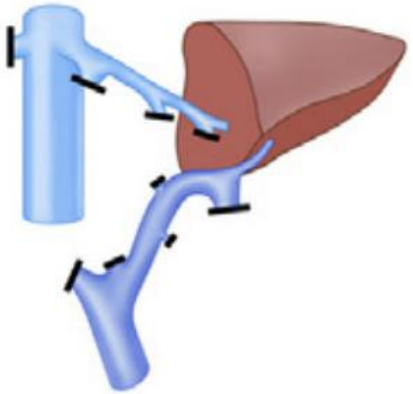
CT

Liver metastases:
Segment II preserved



Monosegment ALPPS



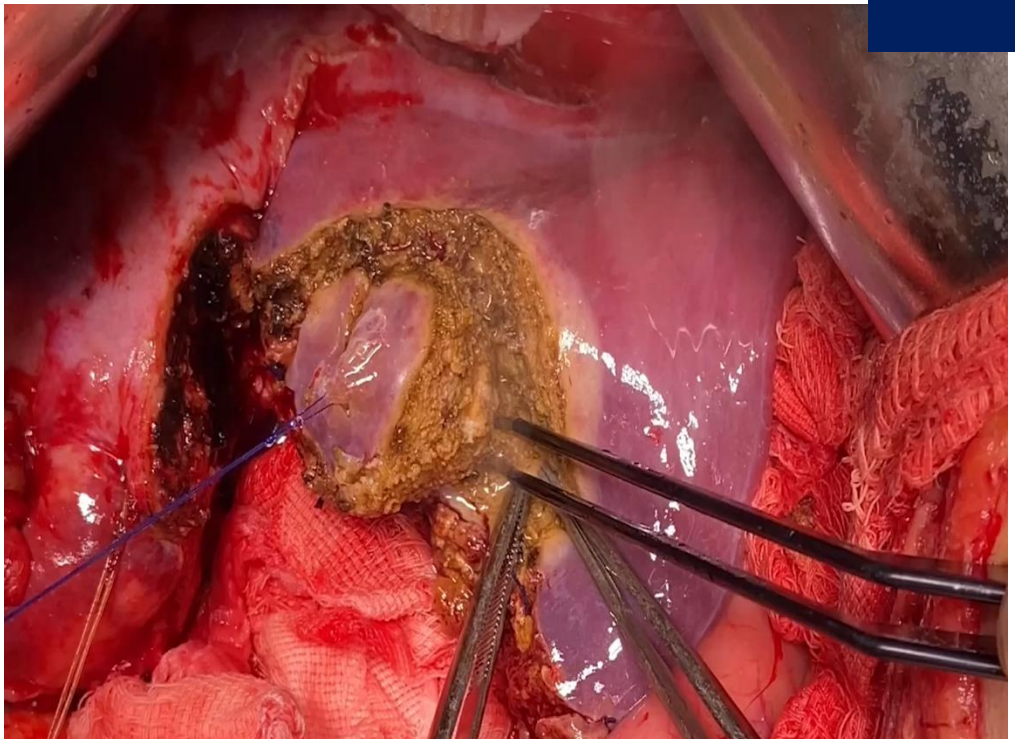


Schadde E, et al. Surgery 2015;157:676-89.

Monosegment ALPPS

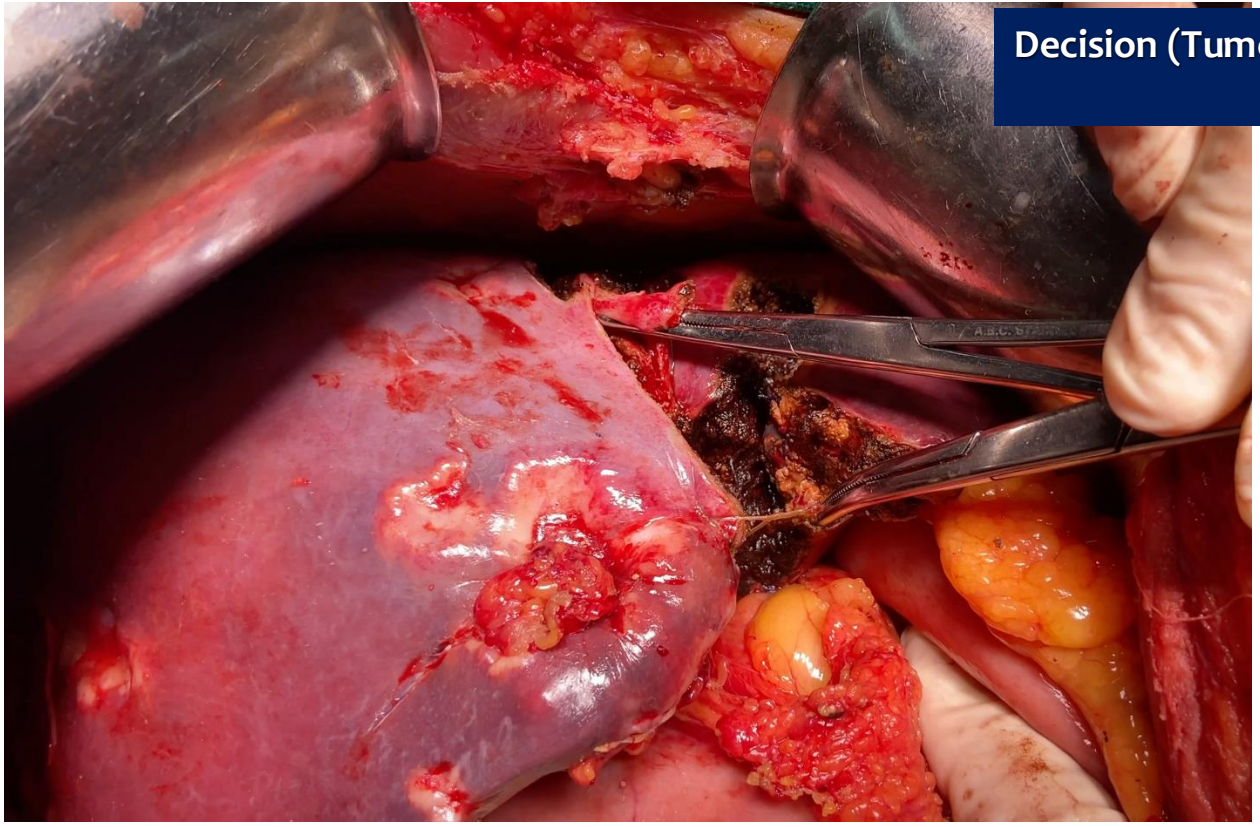
Decision (Tumor board)
ALPPS

1st step



Monosegment ALPPS

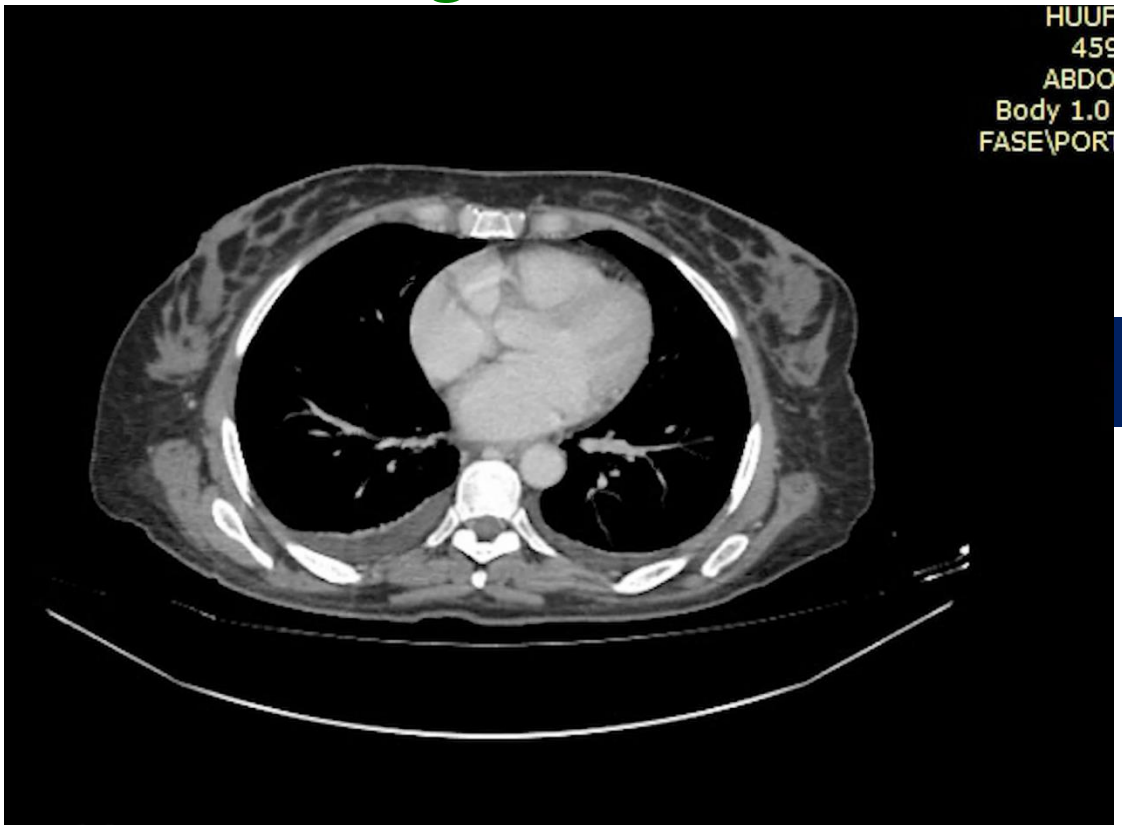
1st step



Decision (Tumor board)
ALPPS

Monosegment ALPPS

CT scan

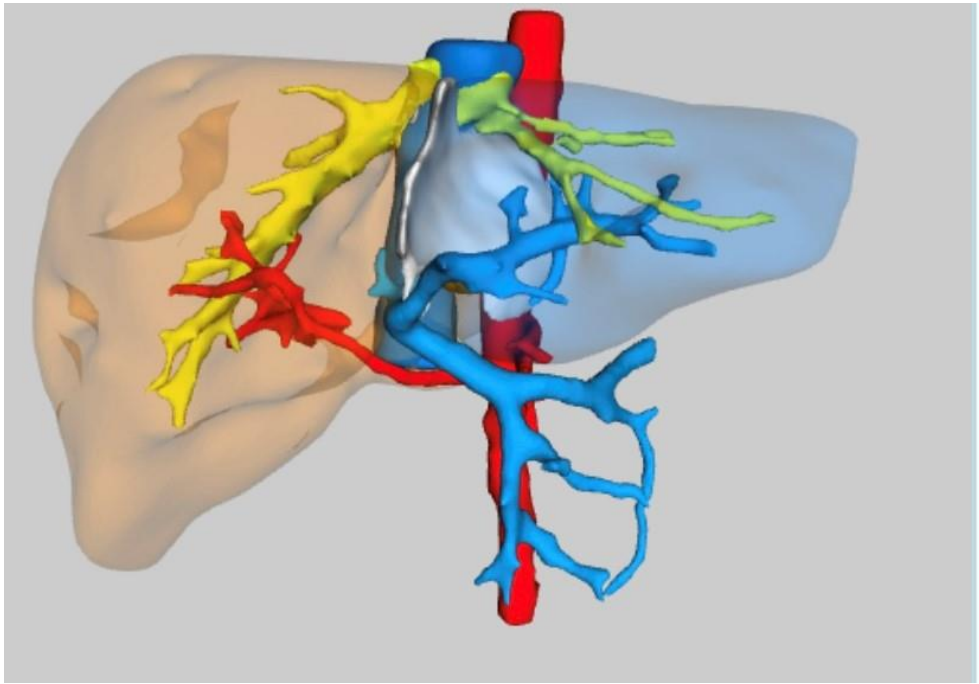


- After 3 weeks
- Portal phase

VOLUMETRY

Segment 2

FLR 32.7%



LIVER VISION

Name

[redacted]

Gender, Age

[redacted]

Date 27.03.2021

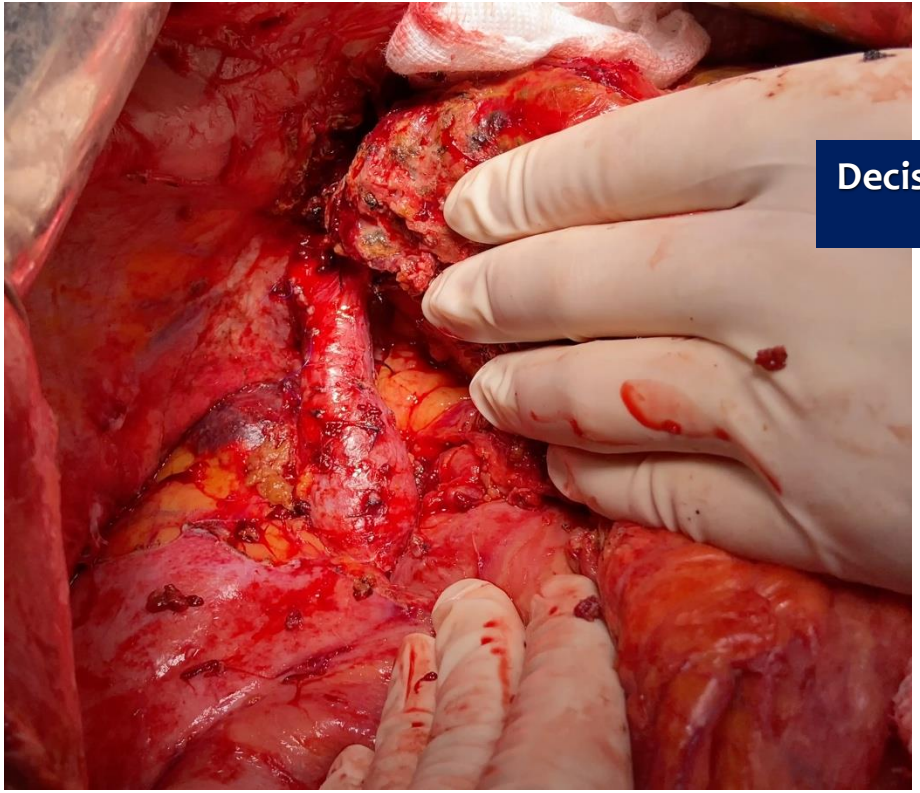
Liver View

Serie/s View | Liver

Courtesy: Prof. Deniz Balci (Ankara – Turkey)

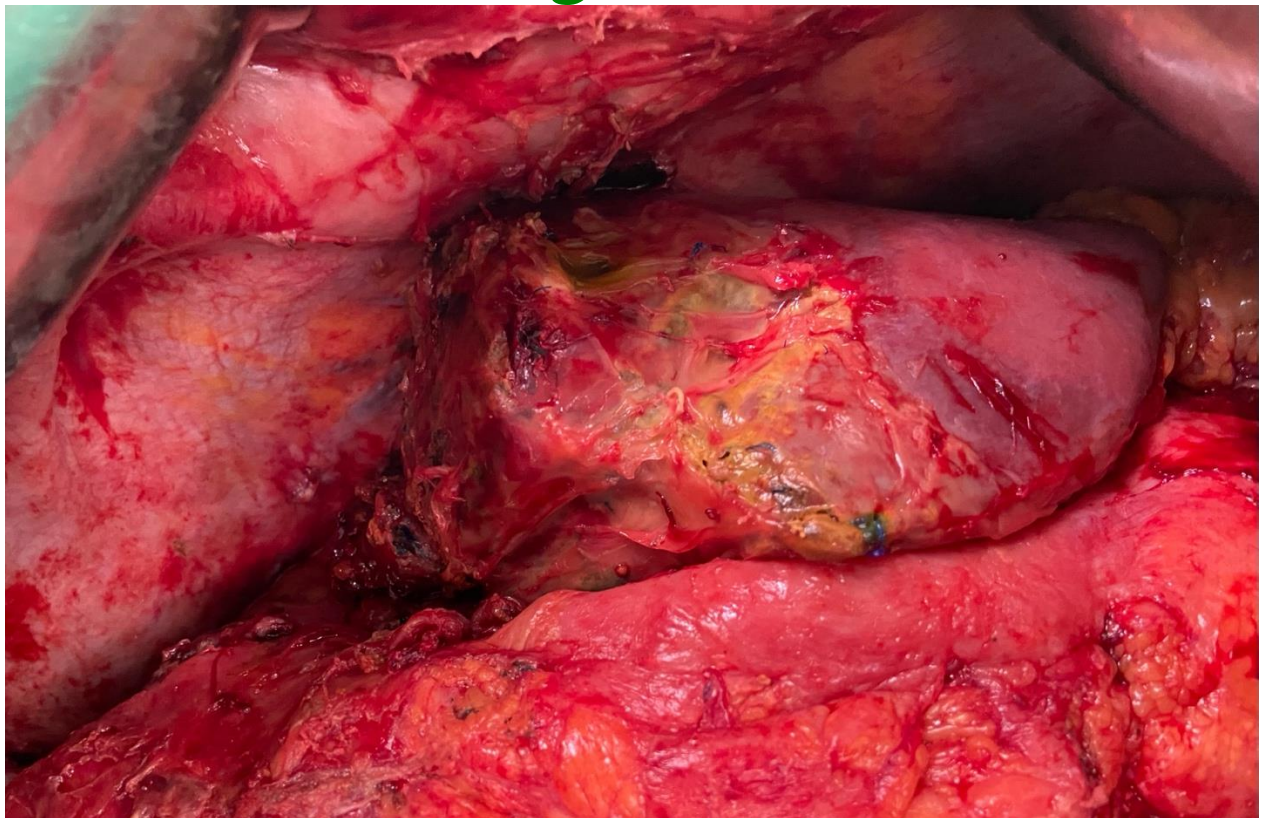
Monosegment ALPPS

2nd step

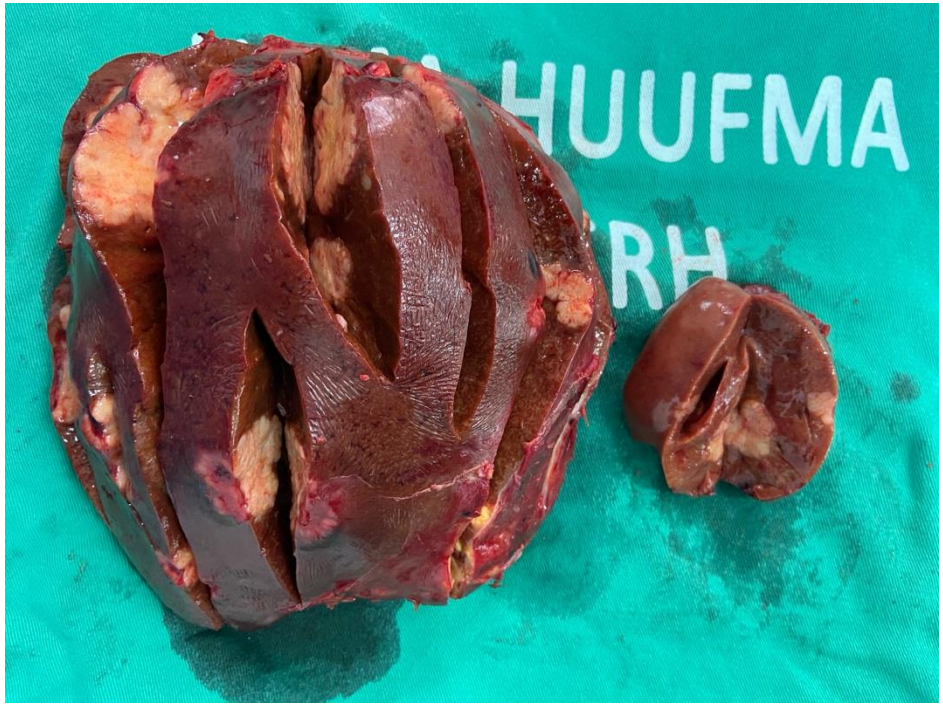


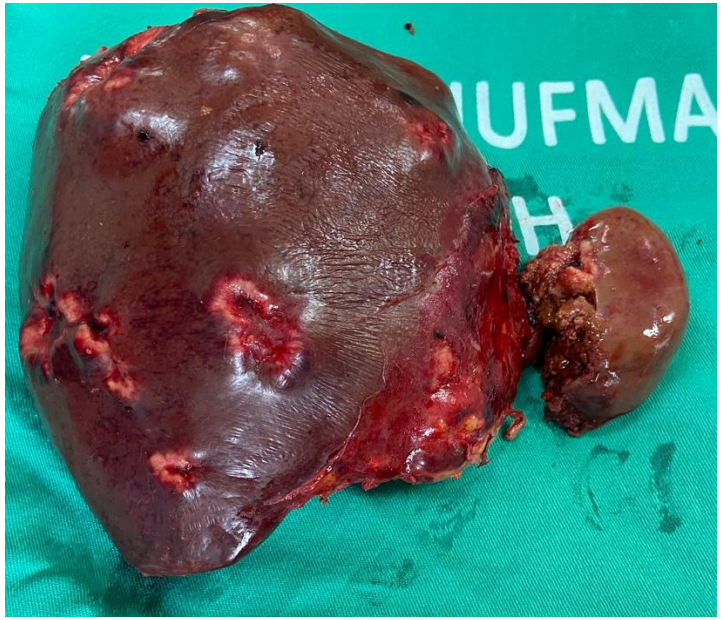
Decision:
Wait two more weeks

Monosegment ALPPS



Monosegment ALPPS





SPECIMEN

Monosegment ALPPS

POSTOPERATIVE COURSE

- ICU 9 days
- Complications ≥ 3b (clavien-dindo)
  - Reoperation (intestinal occlusion)
- Lenght of stay 43 days

CHEMOTHERAPY

LIVER TRANSPLANT

SECA-I

Original article

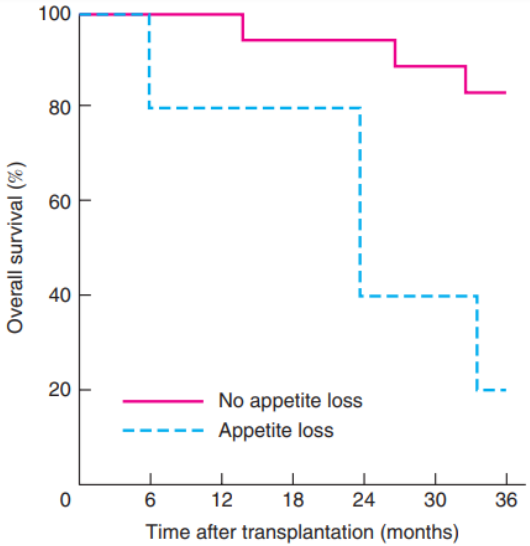
BJS Open Open Access

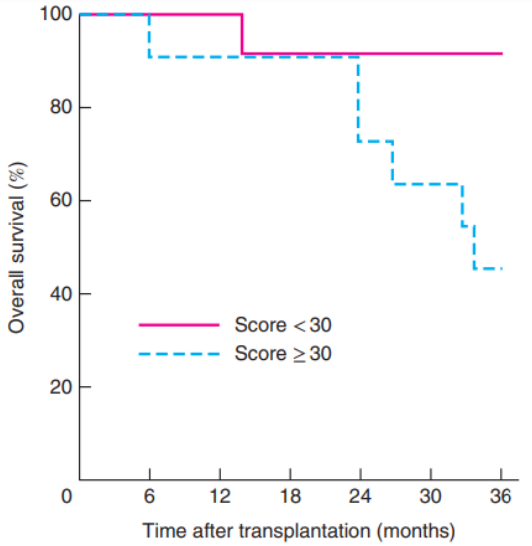
Long-term quality of life after liver transplantation for non-resectable colorectal metastases confined to the liver

Table 1 Baseline characteristics of patients in SECA-1 trial

	No. of patients* ($n = 23$)
Age (years)†	54·7 (44·5–64·7)
Sex ratio (F : M)	10 : 13
Tumour site	
Colon	13
Rectum	10
Timing of metastasis	
Synchronous	19
Metachronous	4
Liver resection before LT	4
Chemotherapy before LT (no. of lines)	
1	10
2	9
3	4
> 10 liver metastases	8
Largest lesion > 5 cm	10
CEA > 5 µg/l	14

*Unless indicated otherwise. †Values are median (range). LT, liver transplantation; CEA, carcinoembryonic antigen.

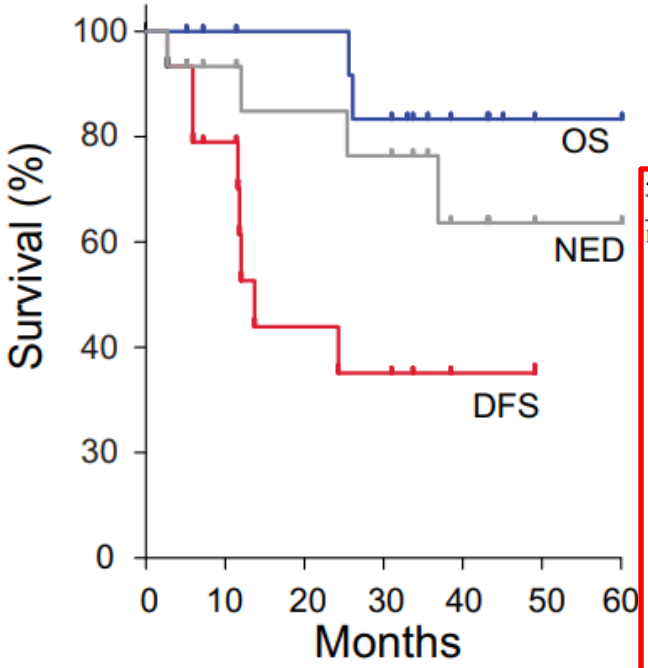




Dueland S, et al. Br J Surg Open 2019; 3: 180–185

LIVER TRANSPLANT

SECA-II



ORIGINAL ARTICLE

Survival Following Liver Transplantation for Patients With Nonresectable Liver-only Colorectal Metastases

Svein Dueland, MD,✉ Trygve Syversveen, MD,† Jon Magnus Solheim, MD,‡ Steinar Solberg, MD,§ Harald Grut, MD,† Bjørn Atle Bjørnbeth, MD,¶ Morten Hagness, MD,‡ and Pål-Dag Line, MD‡||*

TABLE 1. Inclusion-exclusion Criteria SECA-II Study

Inclusion Criteria

- Histologically verified adenocarcinoma in colon or rectum
- No signs of extra hepatic metastatic disease or local recurrence according to PET/CT scan
- No signs of extra hepatic metastatic disease or local recurrence according to CT or MR (thorax/abdomen/pelvis) scan within 4 wks before the faculty meeting at the transplant unit
- No signs of local recurrence judged by colonoscopy/CT colography within 12 mo before the faculty meeting at the transplant unit
- Good performance status, ECOG 0 or 1
- Satisfactory blood tests Hb >10 g/dL, neutrophiles >1.0 (after any G-CSF), TRC >75, Bilirubin <2 x upper normal level, ASAT, ALAT <5 x upper normal level, Creatinine <1.25 x upper normal level. Albumin above lower normal level.
- Standard surgical resection procedure of primary tumor with adequate resection margins, including circumferential resection margins (CRM) of at least ≥2 mm for rectal cancer patients
- Signed informed consent and expected cooperation of the patients for the treatment and follow-up must be obtained and documented according to GCP, and national/local regulations.
- Relapse of liver metastases after second liver resection or liver metastases not eligible for curative liver resection
- Received first-line treatment
- Before start of chemotherapy, no lesion should be larger than 10 cm, if more than 30 lesions all should be less than 5 cm and the patients should have at least 30% response by RECIST-criteria.
- At least 10% response (RECIST-criteria) on chemotherapy. Patients must be accepted for transplantation before progressive disease on ongoing chemotherapy.
- Patients with less than 10% response on chemotherapy may be included if they obtain at least 20% response after TACE (DEB-IRI) or by ^{90}Y-spheres.
- At least 1-year time span from CRC diagnosis and date of being listed on the transplantation list.

Exclusion Criteria

Dueland S, et al. Ann Surg 2019

LIVER TRANSPLANT

OSLO

Contents lists available at ScienceDirect

International Journal of Surgery

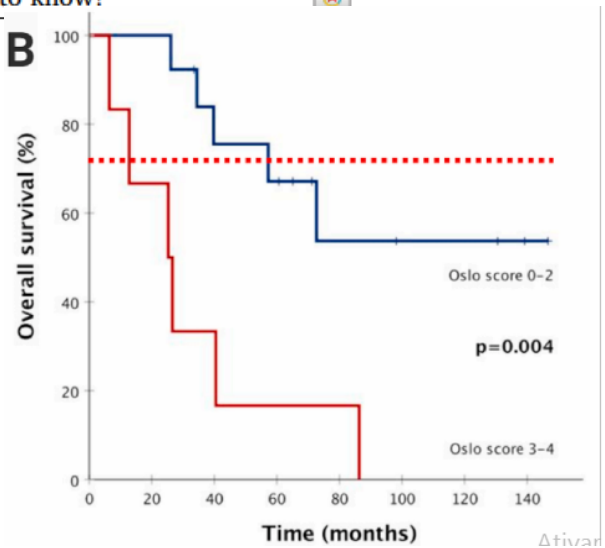
journal homepage: www.elsevier.com/locate/ijsu

Perspective

Liver transplantation for colorectal liver metastases: What do we need to know?

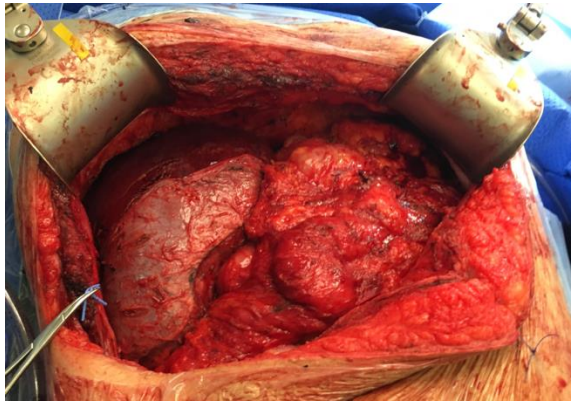
Oslo Score (0–4)

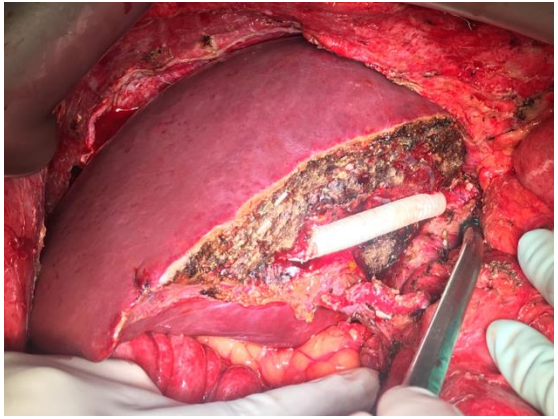
Tumor Diameter > 5.5 cm
CEA > 80 µg/L
Less than 2 year interval between primary resection and LT
Progressive disease at time of LT

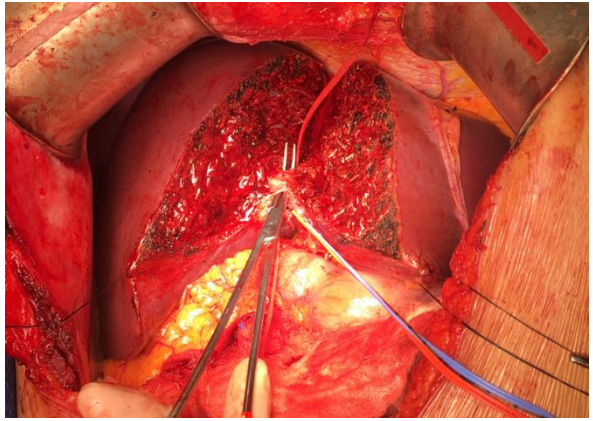


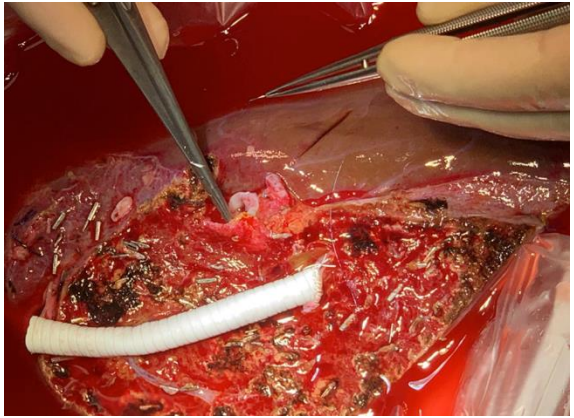
Line PD, et al. Int J Surg 2020

LIVER TRANSPLANT

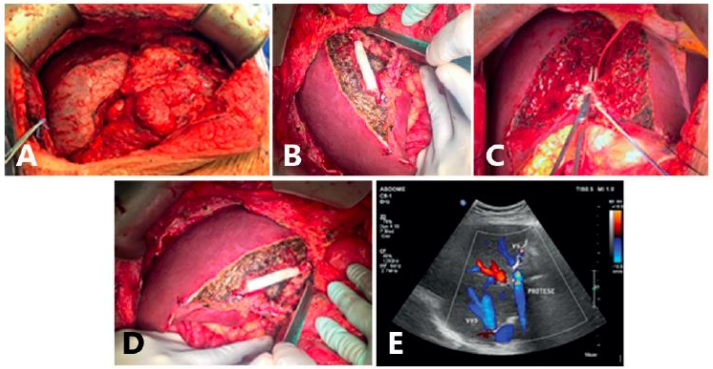








LIVER TRANSPLANT



ABCD Arq Bras Cir Dig
2019;32(4):e1468
DOI: /10.1590/0102-672020180001e1468

Letter to the Editor

LIVING DONOR LIVER TRANSPLANT FOR COLORECTAL LIVER METASTASIS: THE FIRST CASE IN LATIN AMERICA

Transplante hepático intervivos para metástase hepática de origem colorretal: primeiro caso na América Latina

Eduardo de Souza M **FERNANDES**[1], Pal-Dag **LINE**[2], Felipe Pedreira de **MELLO**[1], Ronaldo Oliveira **ANDRADE**[1], Camila Liberato **GIRÃO**[1] Leandro Savattone **PIMENTEL**[1], Camilla **CÉSAR**[1], Tarik Soares **SULEIMAN**[1], Fabio Luís **WAECHTER**[3], Antonio Talvane T **OLIVEIRA**[4], Orlando Jorge M **TORRES**[5]

liver transplant for patients with colorectal liver metastases (SECA I study). The inclusion criteria were R0 primary colorectal resection, unresectable liver metastases, no extrahepatic disease, at least six weeks of chemotherapy and an Eastern Cooperative Oncology Group (ECOG) performance status 0–1[2,3]. Twenty-one patients with unresectable colorectal liver metastases (u-CRLM) were included. The overall survival rate at five years was 60% with a median survival time of 27 months. Notwithstanding the disease free survival rate was 35% at one year and all patients got relapse if observed up to three years, mainly in the form of lung metastases which were slow growing and most often resectable. Some factors were identified as related to worse prognosis (the Oslo Criteria) and include: 1) time from primary cancer surgery <2 years; 2) progressive disease on chemotherapy; 3) maximum tumor diameter >5.5 cm; and 4) CEA levels >80 µg/l. Beside Norway, liver transplant for colorectal liver metastasis have been performed in Japan, France, Canada, Portugal, Turkey, and Germany[2,4,5]. Very recently the Oslo group reported the preliminary results of SECA II trial, indicating that a five year overall survival of about 80% may be obtained if stricter selection criteria for liver transplant in this patient cohort are used[6]. Nowadays, the majority of liver

Fernandes ES, et al. Arq Bras Cir Dig 2019

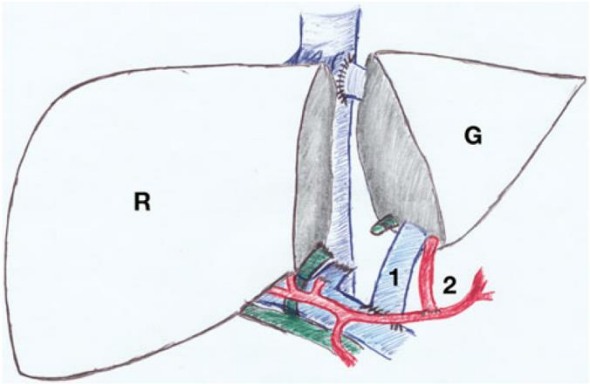
The RAPID concept

LETTER-PRELIMINARY REPORT/TECHNIQUE

A Novel Concept for Partial Liver Transplantation in Nonresectable Colorectal Liver Metastases

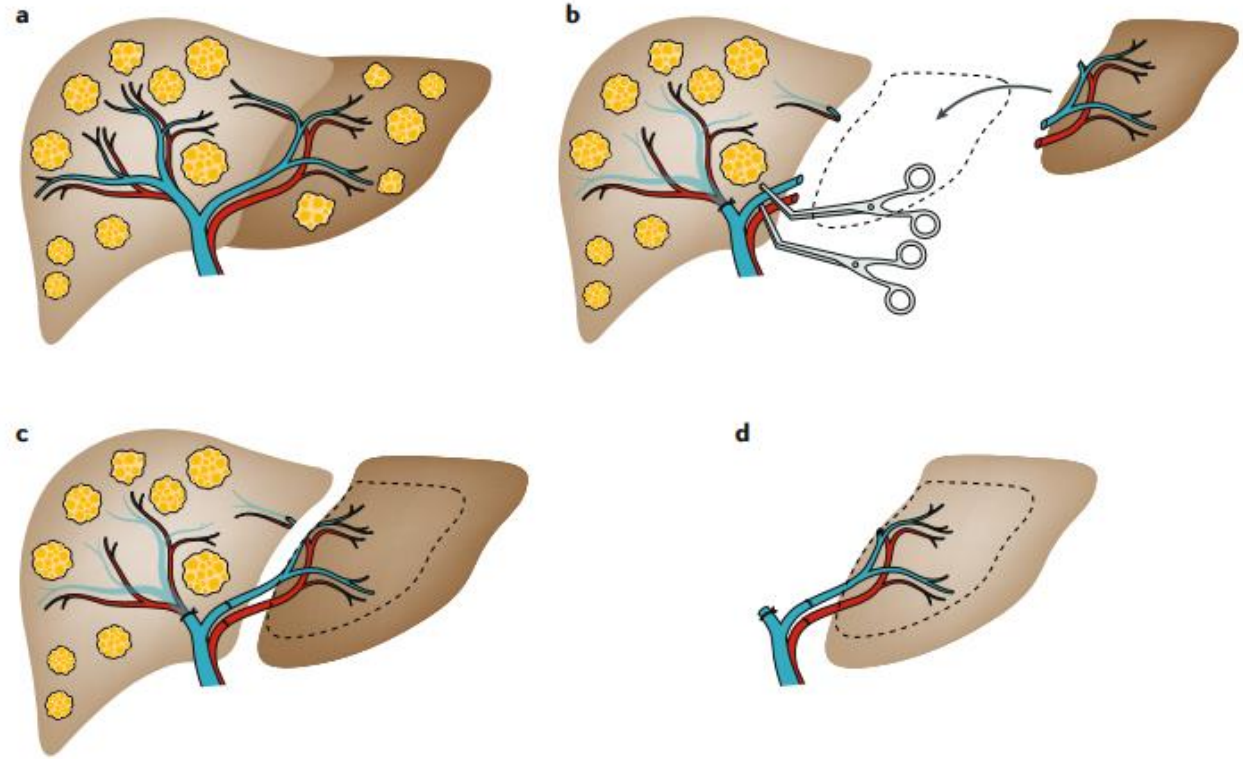
The RAPID Concept

Pål-Dag Line, MD, PhD, Morten Hagness, MD, PhD,* Audun Elnaes Berstad, MD, PhD,† Aksel Foss, MD, PhD,*§ and Svein Dueland, MD, PhD‡*



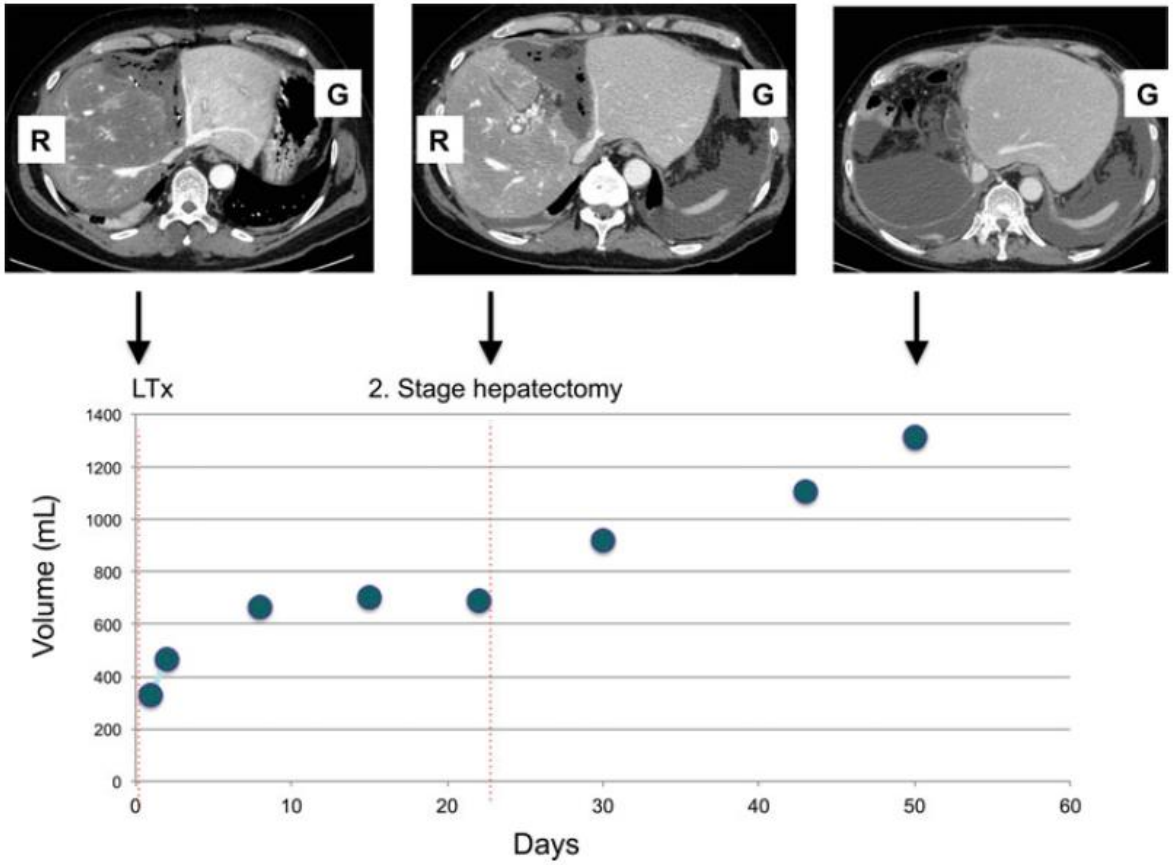
Line PD, et al. Ann Surg 2015;262:e5-e9

The RAPID concept



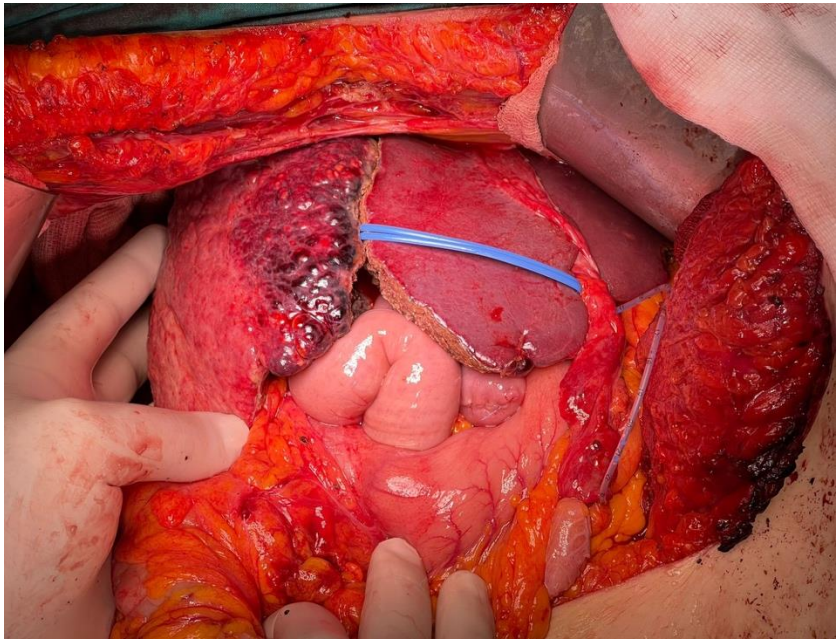
Petrowsky H, et al. Nat Rev Gastroenterol Hepatol 2020

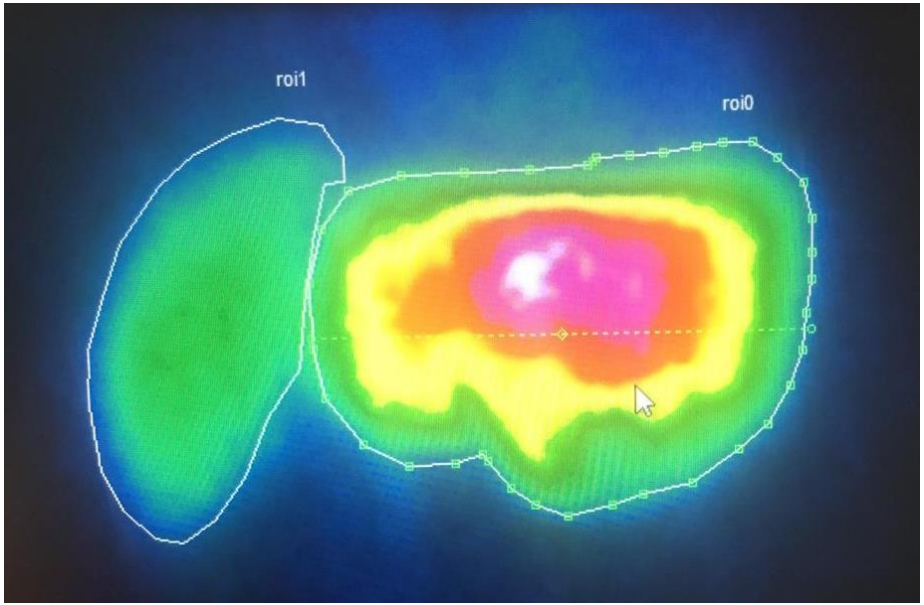
The RAPID concept



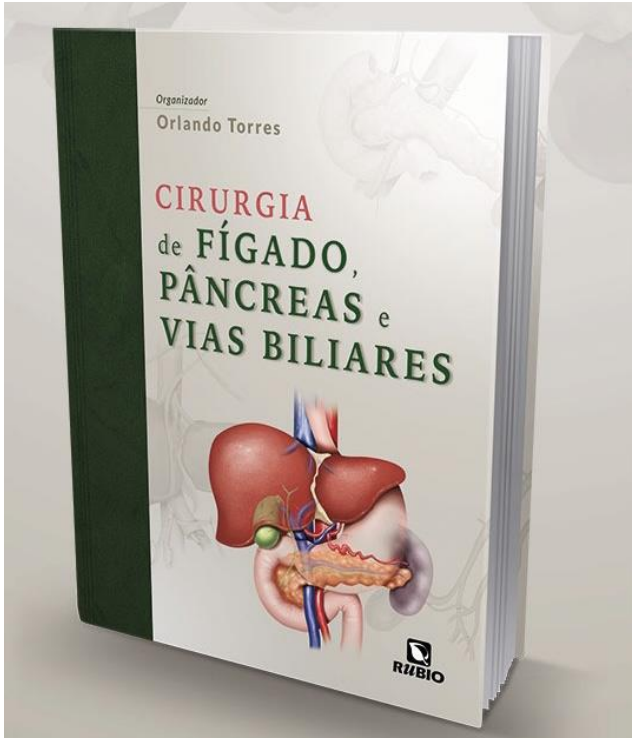
Line PD, et al. Ann Surg 2015;262:e5-e9

The APOLT concept





Courtesy: Prof. Deniz Balci (Ankara – Turkey)



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Lençóis Maranhenses

Obrigado!

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