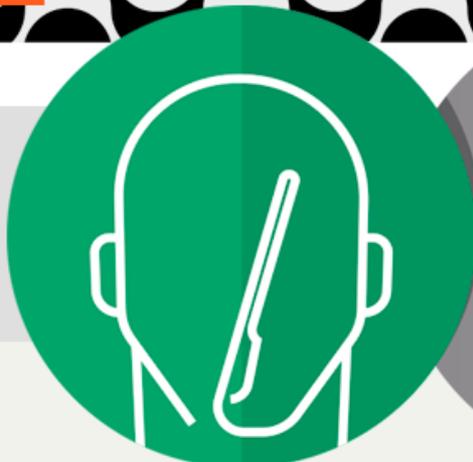


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XIII

CONGRESSO
BRASILEIRO
DE CIRURGIA
ONCOLÓGICA

III

SIMPÓSIO
NUMACO



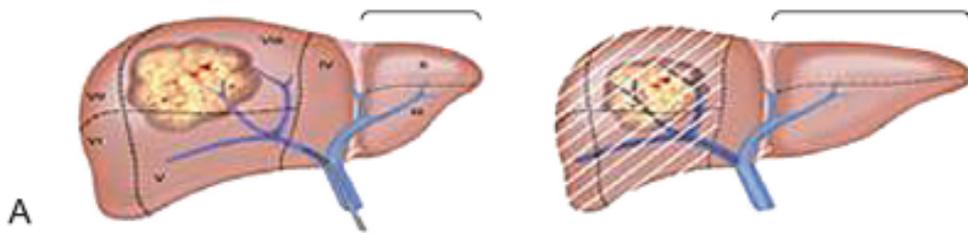
ALPPS, p-ALPPS e Mini-ALPPS: como e para quem

Orlando Jorge M. Torres

Professor Titular e Chefe do Serviço de
Cirurgia do Aparelho Digestivo
Universidade Federal do Maranhão - Brazil

Porcutaneous portal vein embolization

Hepatectomy



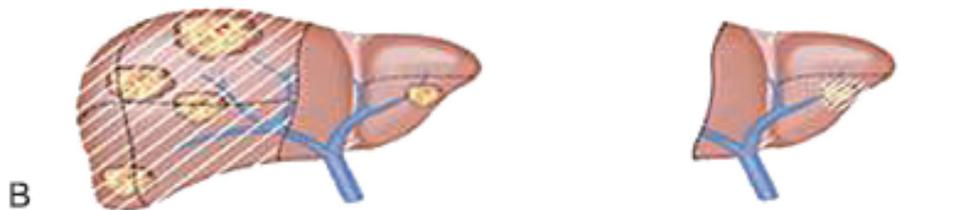
Percutaneous embolization

40-50% hypertrophy
Period: 6-12 weeks

A

1st Hepatectomy

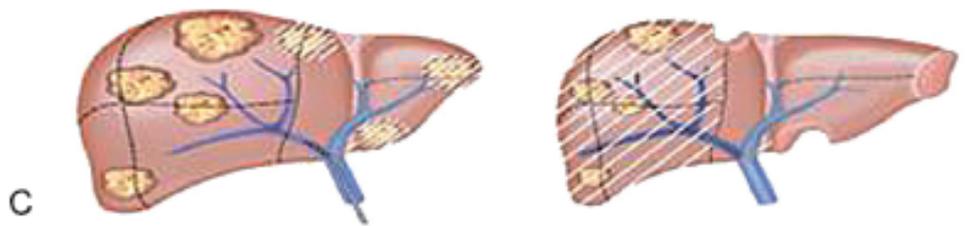
2nd Hepatectomy



2-staged hepatectomy

30-40% hypertrophy
Period: 6-10 weeks

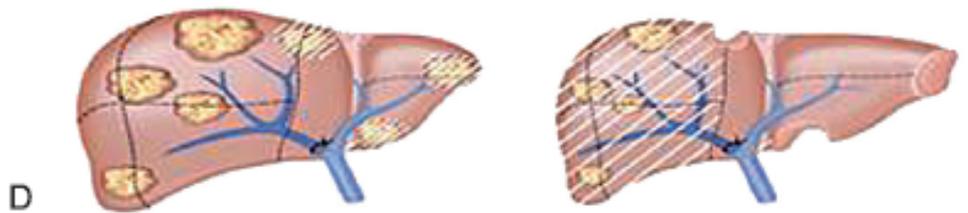
B



2-staged hepatectomy + portal vein embolization

40-60% hypertrophy
Period: 12-16 weeks

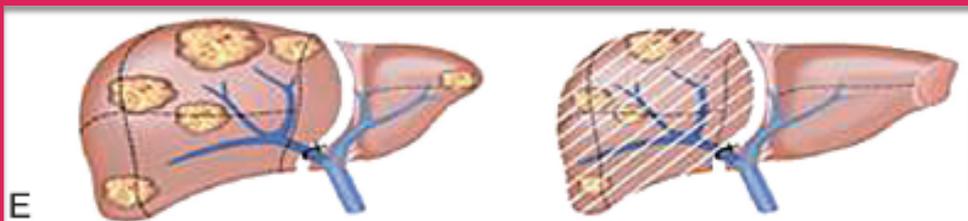
C



2-staged hepatectomy + portal vein ligation

40-50% hypertrophy
Period: 4-6 weeks

D

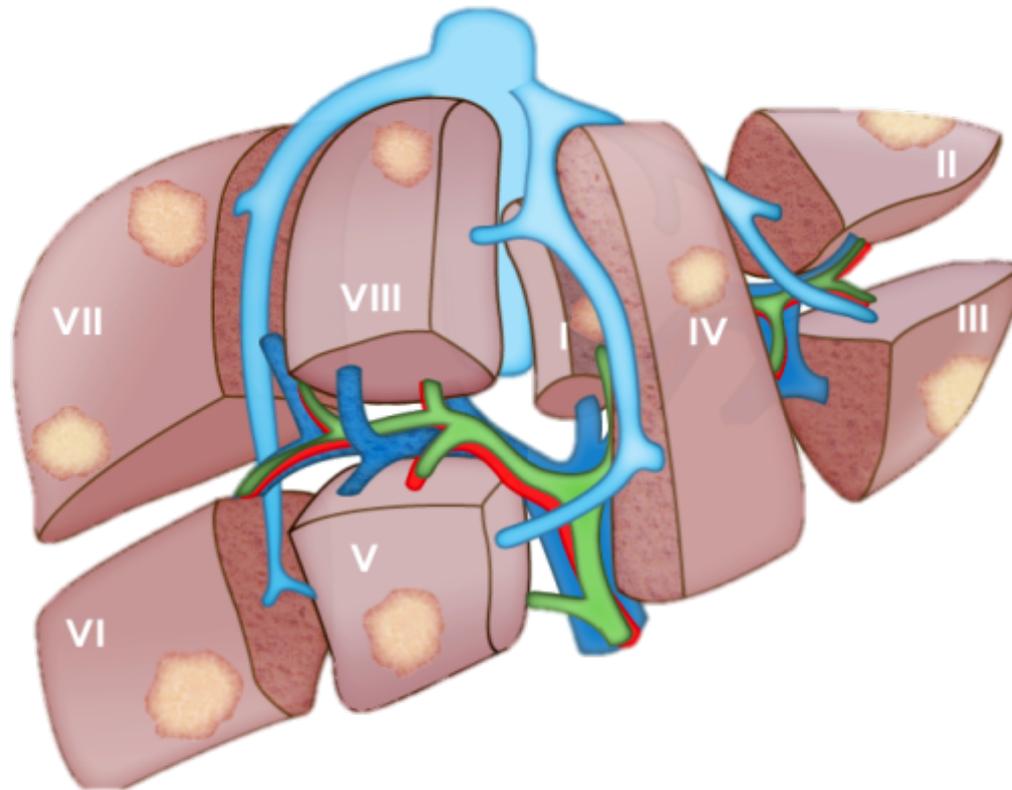
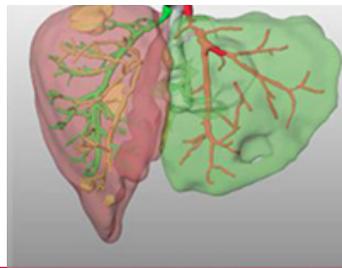


ALPPS

80-120% hypertrophy
Period: 1-2 weeks

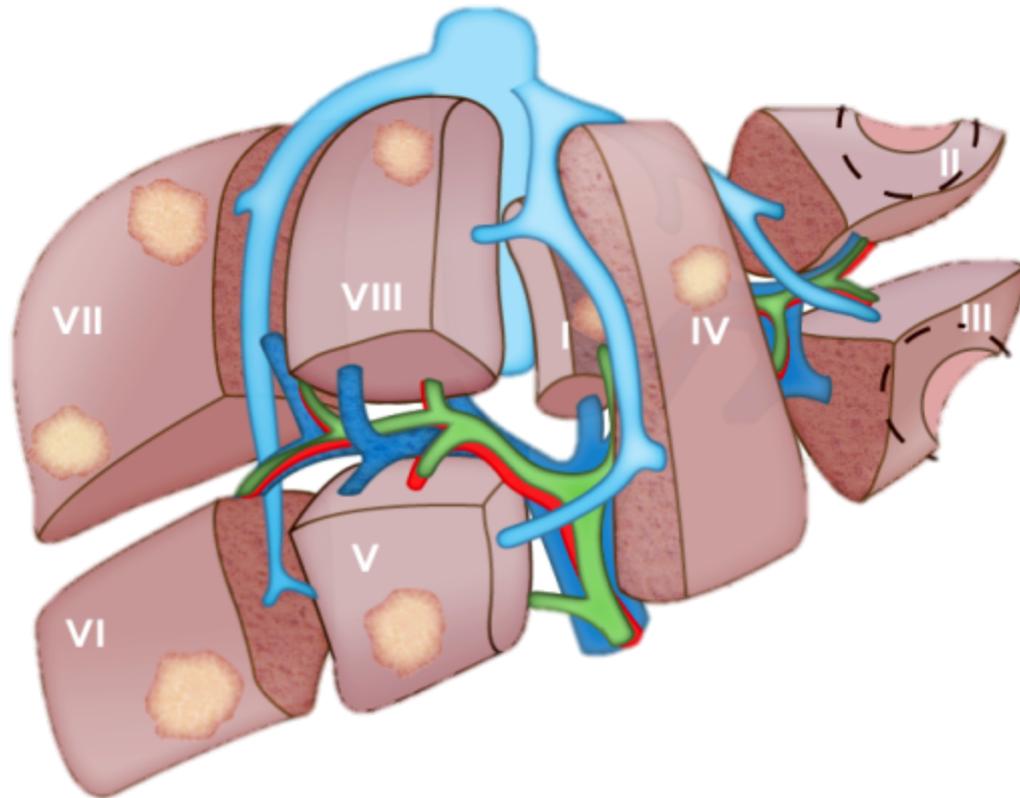
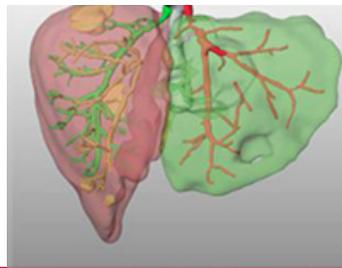
E

ALPPS

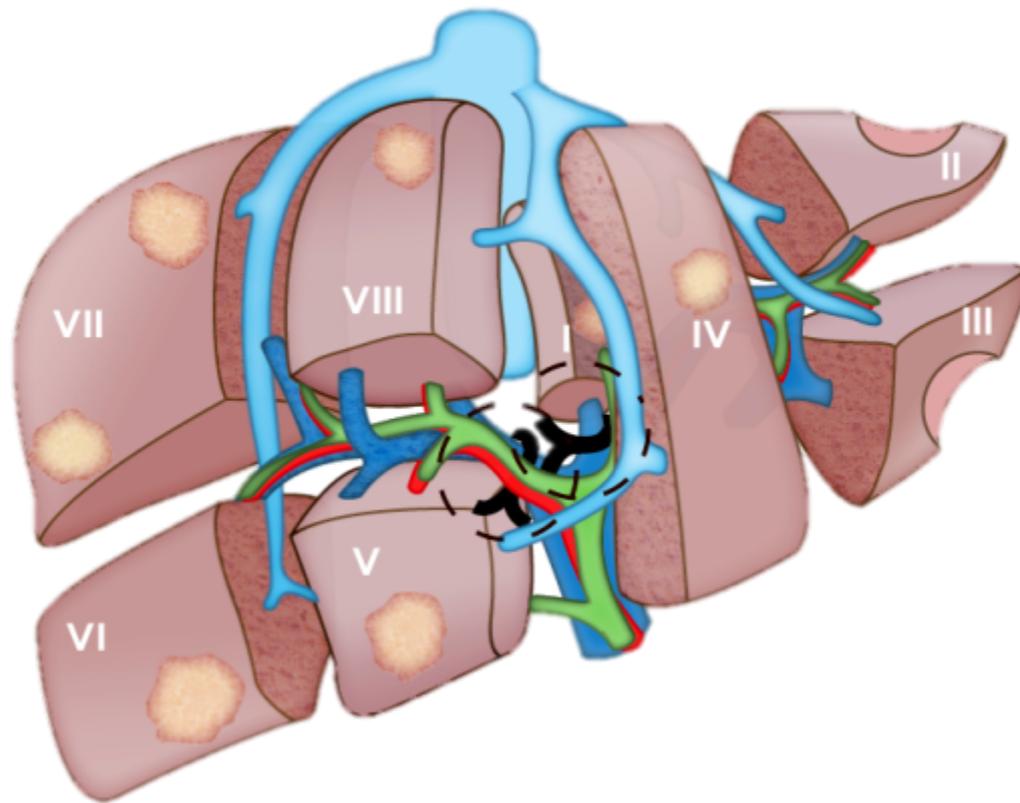
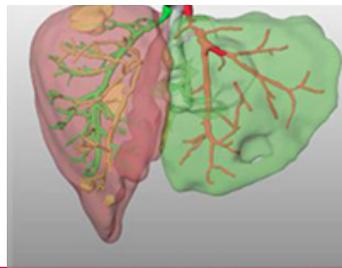


ALPPS, p-ALPPS e Mini-ALPPS:
como e para quem

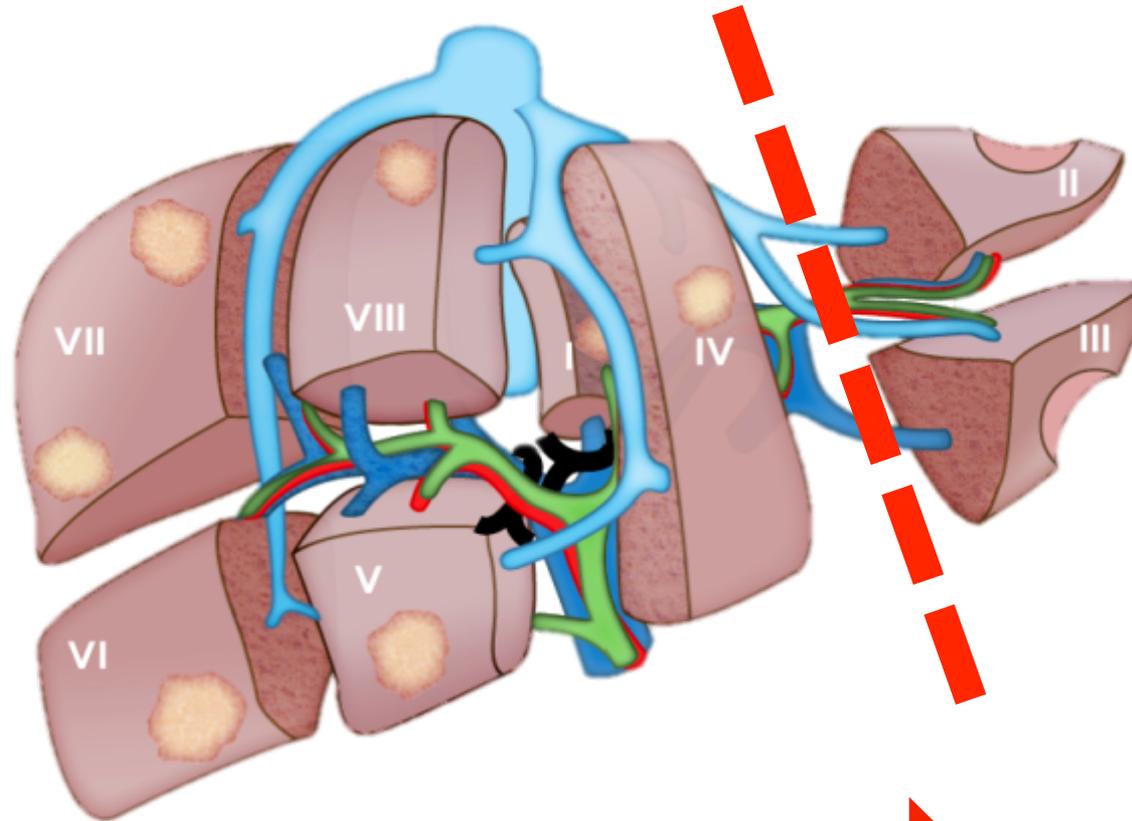
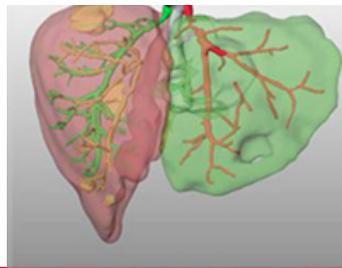
ALPPS



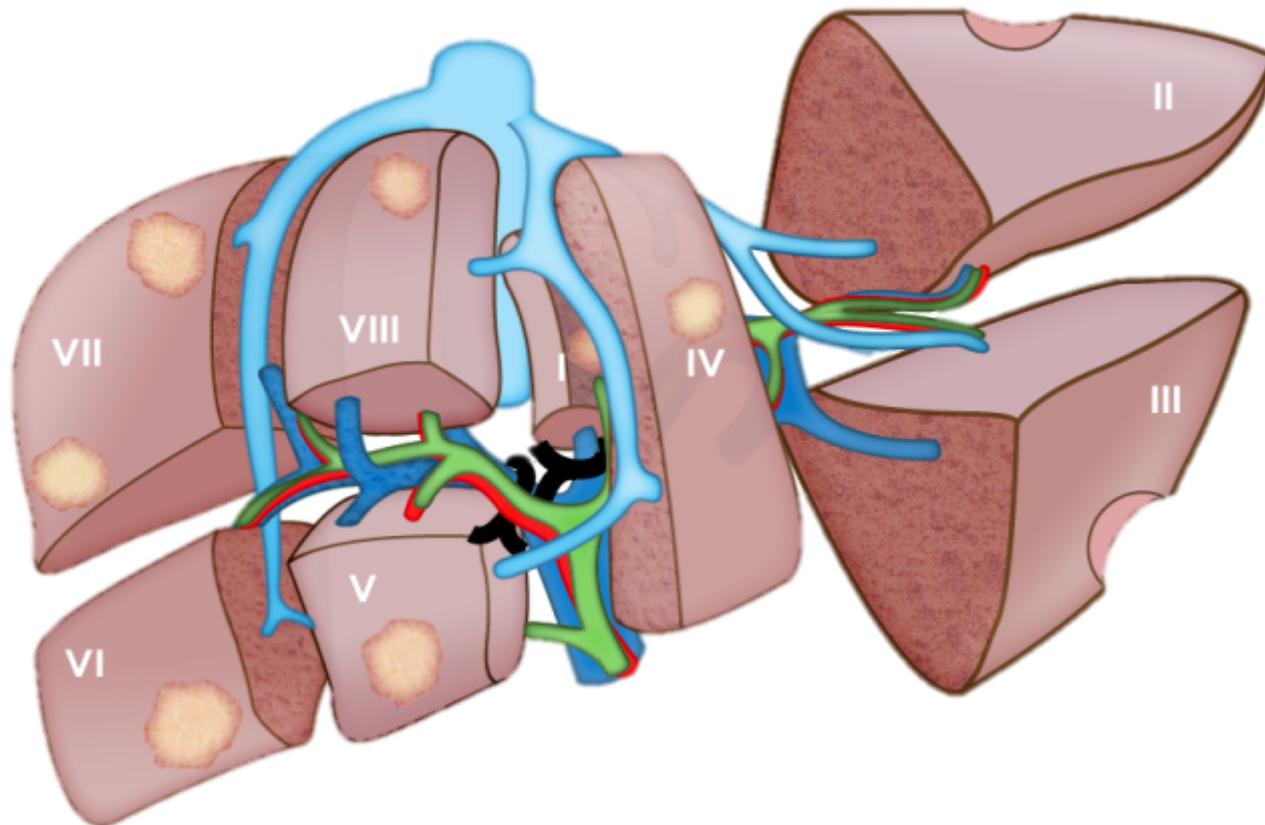
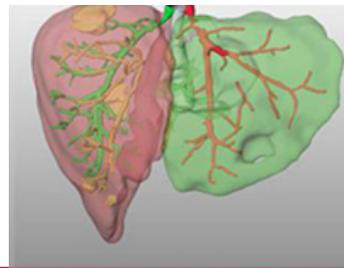
ALPPS



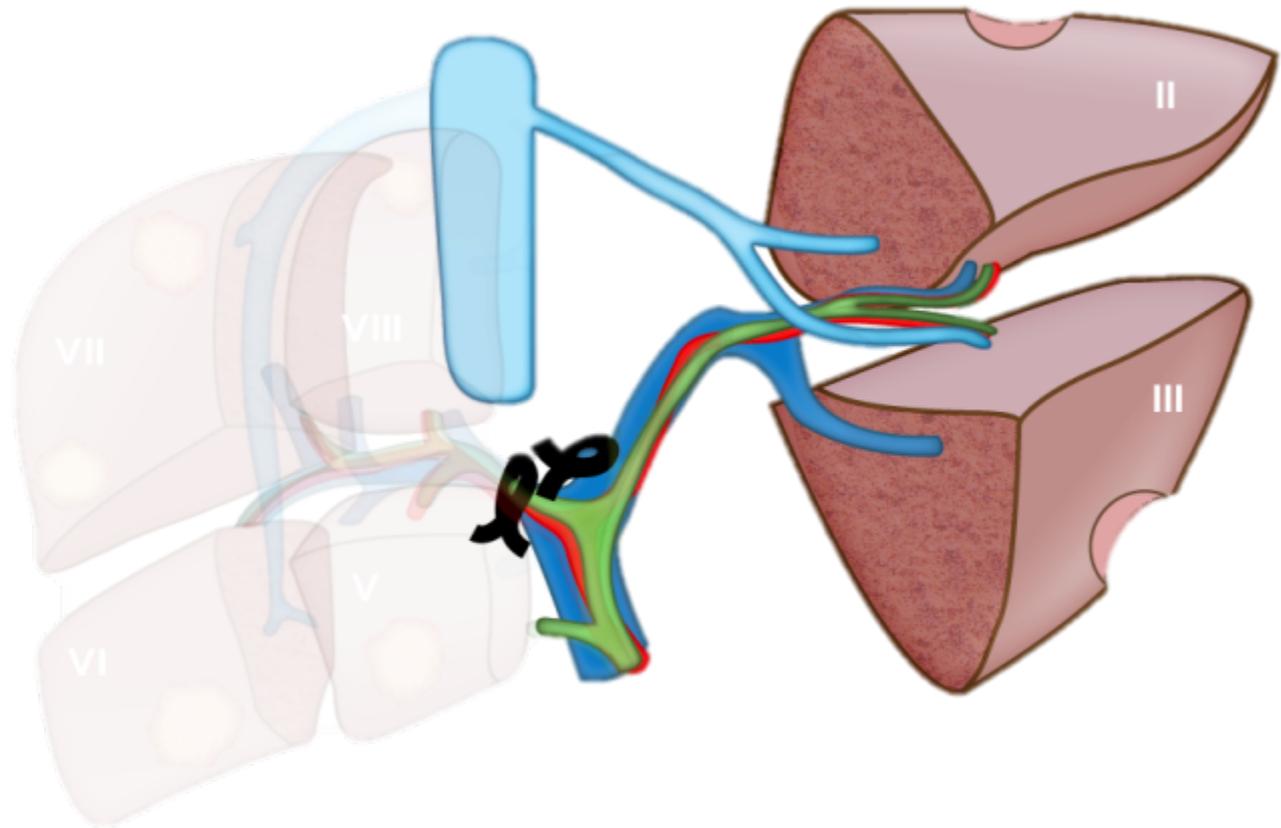
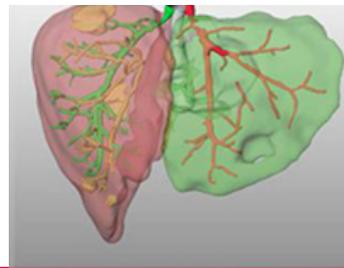
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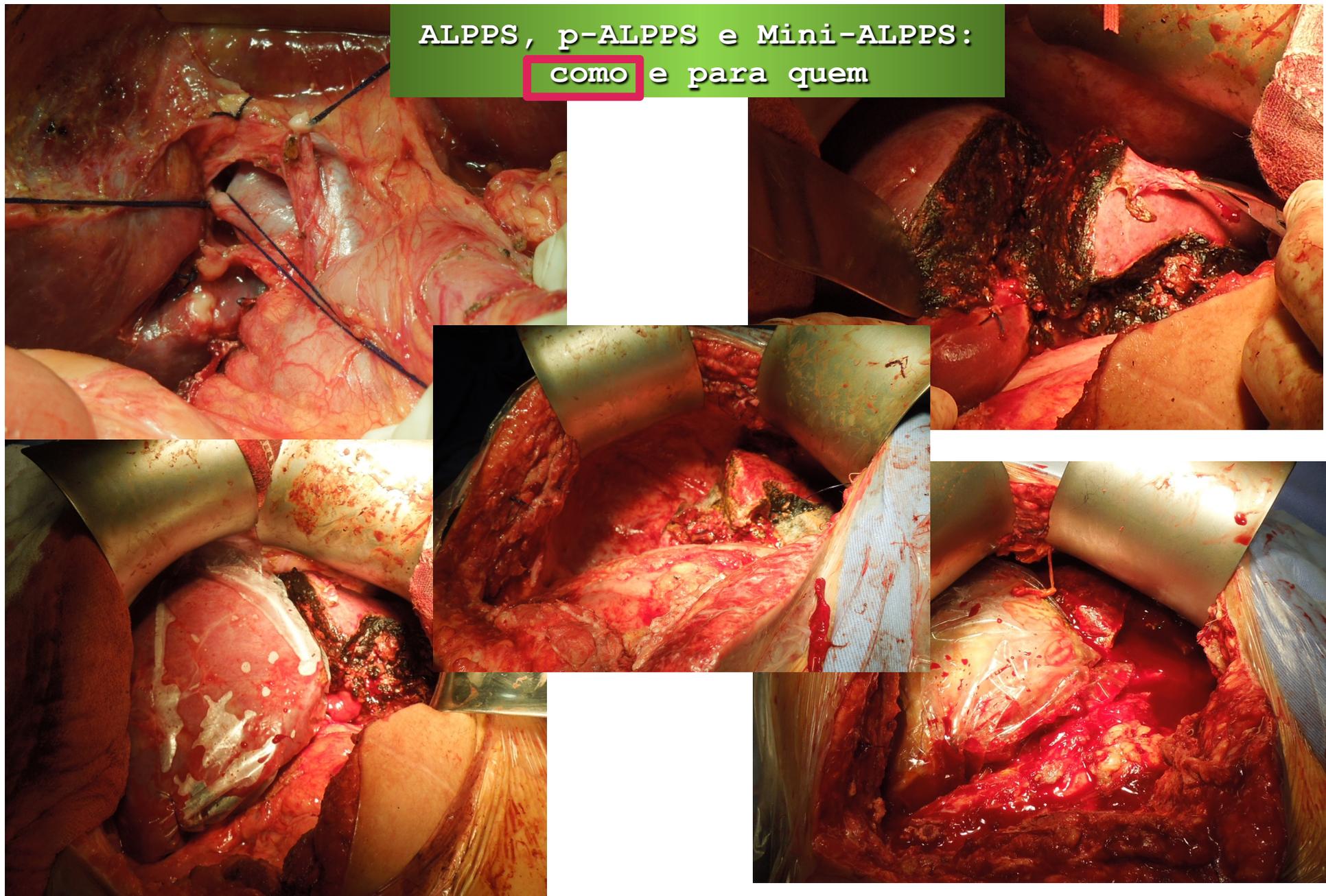
ALPPS

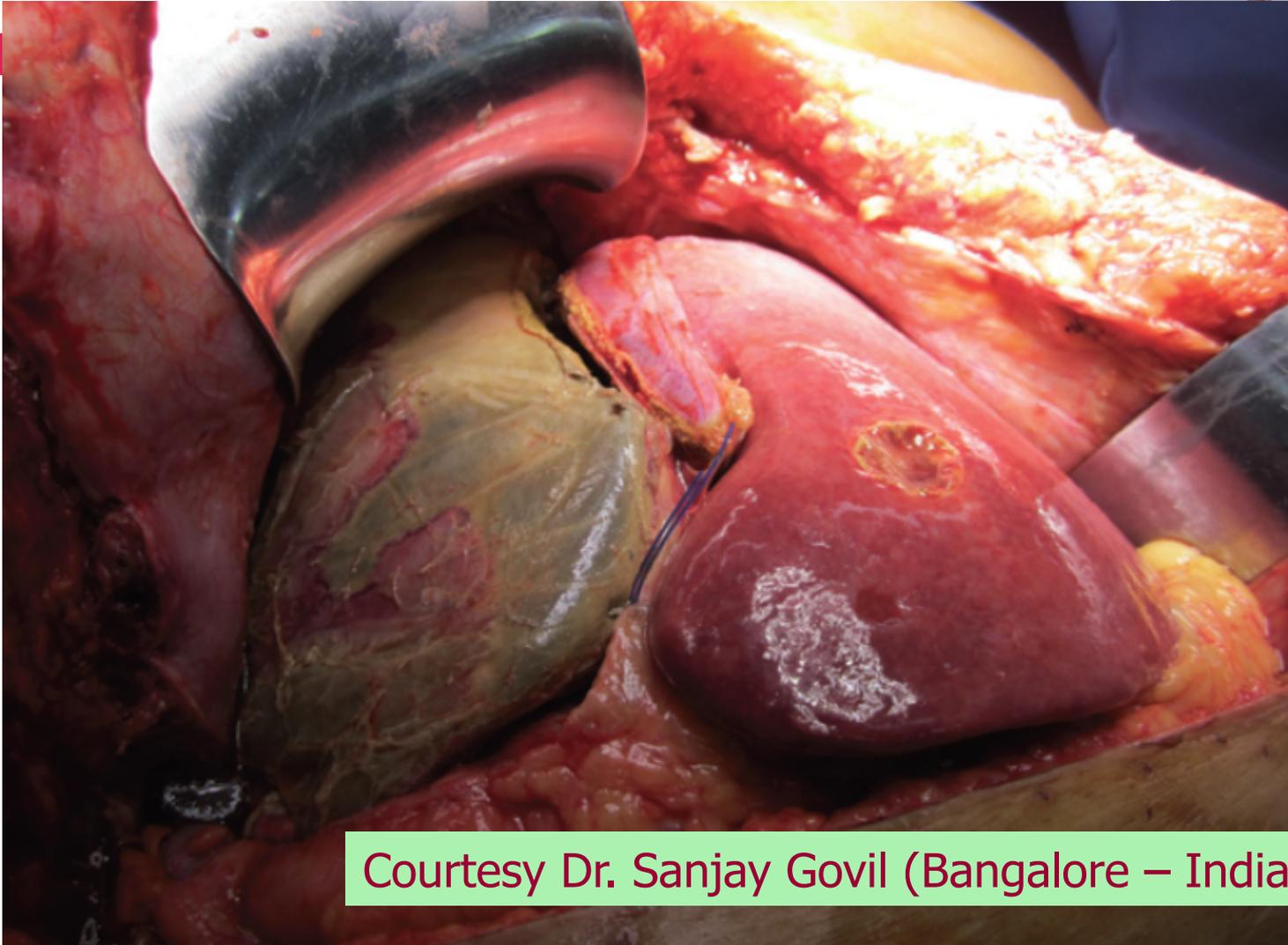
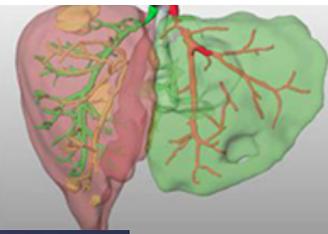


ALPPS

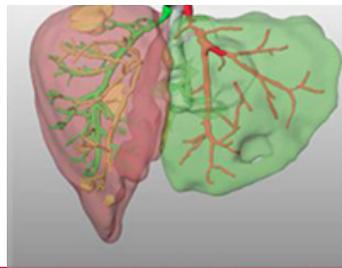


ALPPS, p-ALPPS e Mini-ALPPS:
como e para quem





Courtesy Dr. Sanjay Govil (Bangalore – India)



EDITORIAL

Playing Play-Doh to Prevent Postoperative Liver Failure

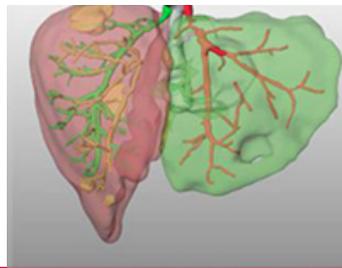
The "ALPPS" approach

Eduardo de Santibañes, MD, PhD, and Pierre-Alain Clavien, MD, PhD†*

The safe removal of extensive tumor load in the liver has been one of the main focuses of laboratory and clinical research for hepato-biliary surgeons over the past 3 decades.¹ The first breakthrough is credited to Masatoshi Makuuchi, who in 1980s, introduced the concept of the portal vein embolization (PVE) of the right portal branch to induce hypertrophy of the left side of the liver, enabling a safer removal of large or multiple tumors, mostly located in the right hemiliver and segment IV/2. This technique was rapidly adopted by many to prevent liver failure after a variety of extensive

Associating Liver Partition and Portal Vein Ligation for Staged Hepatectomy

ALPPS



- ❑ Hipertrofia do RHF superior EVP/LVP. Possibilidade de ressecção R0
- ❑ Adequada estratificação da doença no 1º procedimento.
- ❑ Permite limpeza agressiva do RHF.
- ❑ Ressecção simultânea na primeira operação em doença sincrônica.
- ❑ O intervalo curto torna pouco provável a progressão tumoral.
- ❑ Na progressão tumoral no hemifígado doente, não há invasão por contiguidade.
- ❑ Alternativa naqueles que não alcançaram hipertrofia suficiente após a E/LVP.

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**, Nádía Caroline Lima e **LIMA**, Anmara Moura **MORAES**

From the Department of Digestive Surgery,
UDI Hospital, São Luis, MA, Brazil.

ABSTRACT – Background - Postoperative liver failure consequent to insufficiency of remnant liver is a feared complication in patients who underwent extensive liver

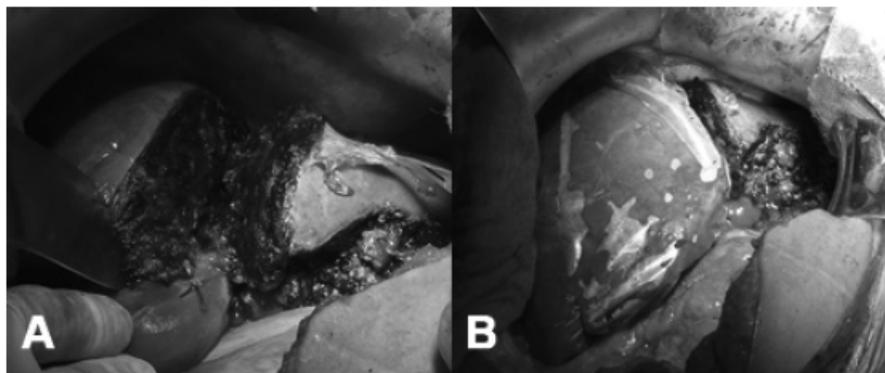


FIGURE 1 - A - Transection of the liver; B - protection with sterile bag

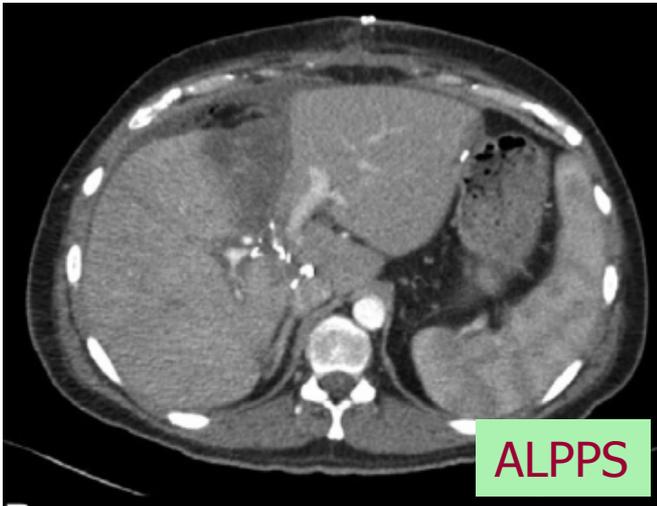


FIGURE 2 - Final aspect of the surgical procedure

Is Partial-ALPPS Safer Than ALPPS?

A Single-Center Experience

Henrik Petrowsky, MD, FACS,* Georg Györi, MD,* Michelle de Oliveira, MD, FACS,* Mickaël Lesurtel, MD, PhD,*
and Pierre-Alain Clavien, MD, PhD, FACS†



- ❑ 50- 80% transecção
- ❑ Nível das veias hepáticas
- ❑ Utilizar abordagem anterior
- ❑ Tumor localizado dentro ou próximo da linha de transecção

ALPPS, p-ALPPS e Mini-ALPPS:
como e para quem

Is Partial-ALPPS Safer Than ALPPS?

A Single-Center Experience

Henrik Petrowsky, MD, FACS, Georg Györi, MD,* Michelle de Oliveira, MD, FACS,* Mickaël Lesurtel, MD, PhD,*
and Pierre-Alain Clavien, MD, PhD, FACS†*

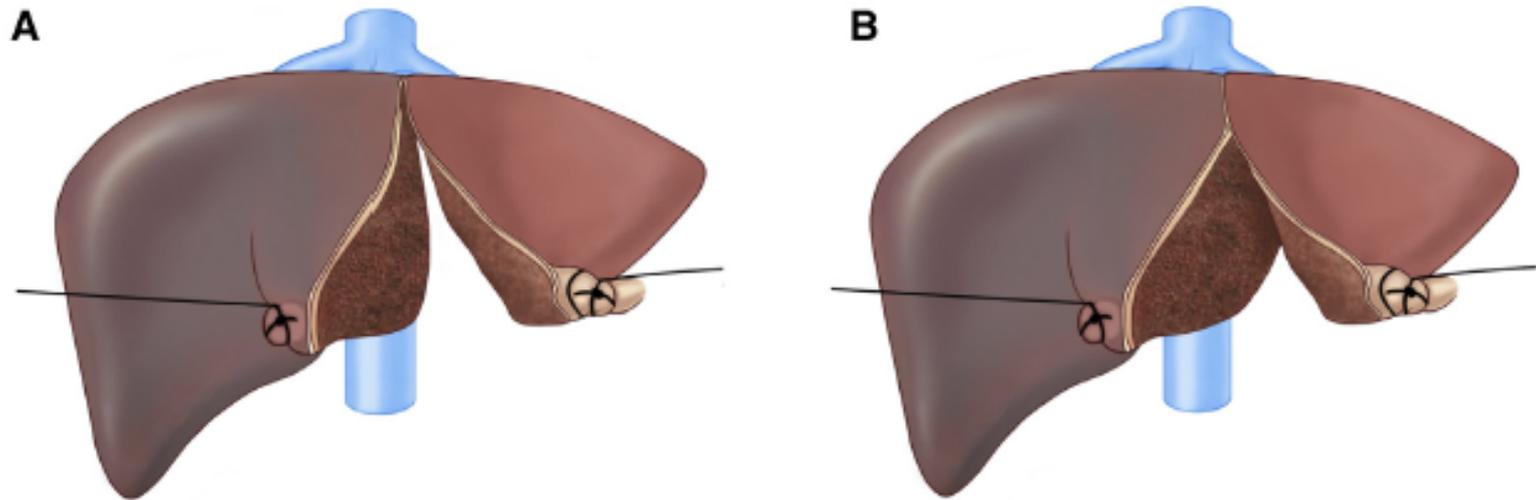
	p-ALPPS (%)	ALPPS (%)
Hipertrophy	60	61
Severe complications	0	33
Mortality	0	22

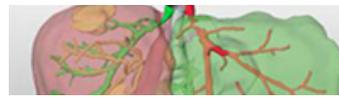
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How much liver needs to be transected in ALPPS?

A translational study investigating the concept of less invasiveness

Michael Linecker, MD,^{a,†} Patryk Kambakamba, MD,^{a,†} Cécilia S. Reiner, MD,^b
Thi Dan Linh Nguyen-Kim, MD,^b Gregor A. Stavrou, MD,^{c,d} Robert M. Jenner, MD,^c
Karl J. Oldhafer, MD,^{c,d} Bergthor Björnsson, MD, PhD,^e Andrea Schlegel, MD,^a Georg Györi, MD,^a
Marcel André Schneider, MD,^a Mickael Lesurtel, MD, PhD,^{a,f} Pierre-Alain Clavien, MD, PhD,^a and
Henrik Petrowsky, MD,^a *Zurich, Switzerland, Hamburg, Germany, and Linköping, Sweden*





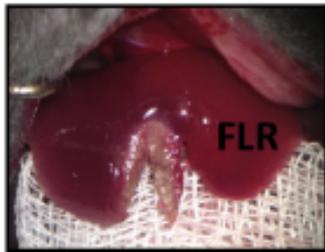
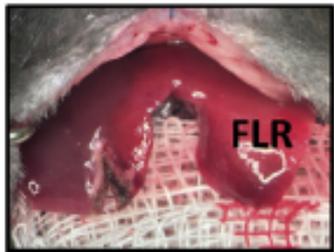
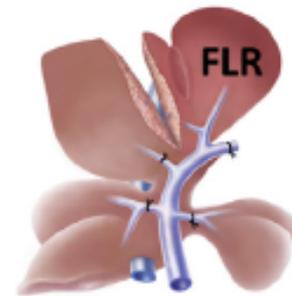
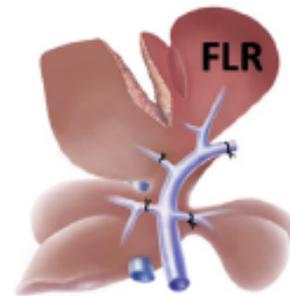
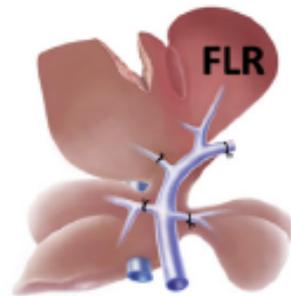
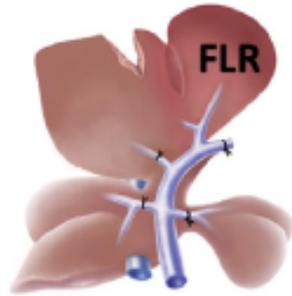
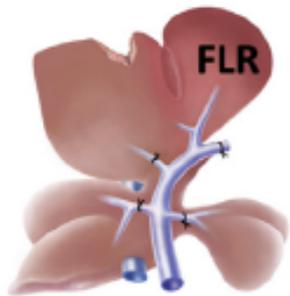
10% transection

25% transection

50% transection

80% transection

100% transection

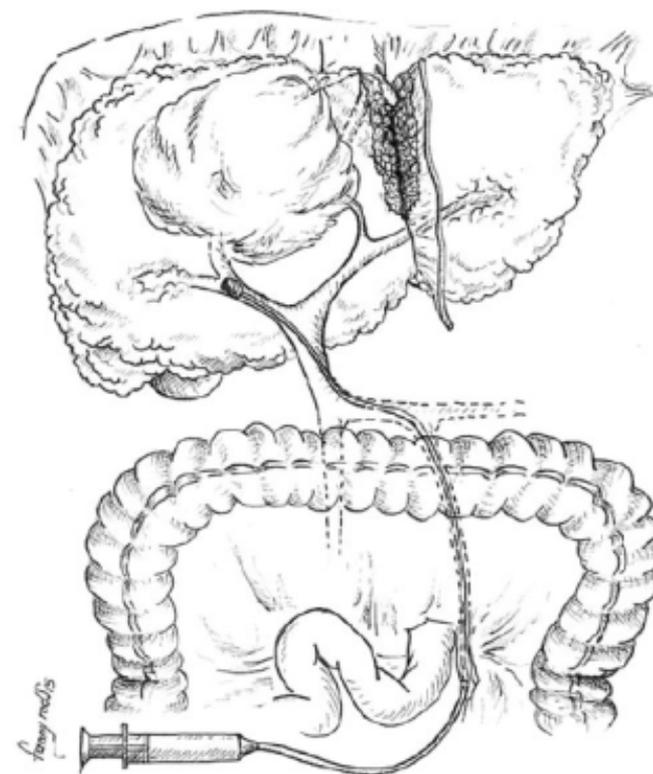
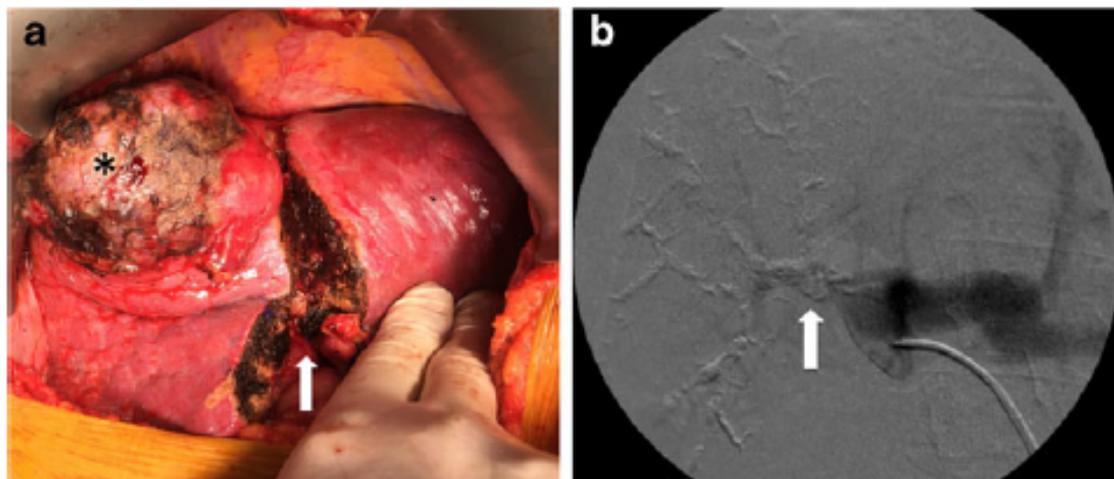


□ $\geq 50\%$

□ Less invasive surgery

Inverting the ALPPS paradigm by minimizing first stage impact: the Mini-ALPPS technique

Eduardo de Santibañes^{1,2} • Fernando A. Alvarez¹ • Victoria Ardiles¹ • Juan Pekolj¹ •
Martin de Santibañes¹



ALPPS, p-ALPPS e Mini-ALPPS:
como e para quem

HOW-I-DO-IT ARTICLES

Inverting the ALPPS paradigm by minimizing first stage impact: the Mini-ALPPS technique

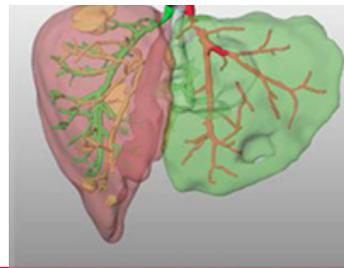
Eduardo de Santibañes^{1,2} · Fernando A. Alvarez¹ · Victoria Ardiles¹ · Juan Pekolj¹ · Martin de Santibañes¹

Table 1 Patients characteristics and volumetric data

Patient	Sex	Age	Diagnosis	Preop chemotherapy (cycles)	Hepatectomy type	FLR/TLV (%) pre	FLR pre (cc)	FLR post (cc)	Hypertrophy (%)	KGR (cc/day)	Interval (days) ^a
1	Female	66	HCC	–	RTS	40	510	778	52.5	26.8	10
2	Female	71	CRLM	FOLFOX (6)	RTS+FLR clean-up	23	235	420	78.7	12.3	15
3	Female	44	CRLM	FOLFOX+BEV (6)	RTS+FLR clean-up	27	300	427	70	9.8	13
4	Male	61	CRLM	FOLFOX (4)/ FOLFIRI+BEV (3)	RH+FLR clean-up	28	530	792	49.4	43.6	6

HCC hepatocellular carcinoma, CRLM colorectal liver metastases, BEV bevacizumab, RTS right trisectionectomy, RH right hepatectomy, FLR future liver remnant, KGR Kinetic growth rate

^a Internal between the first stage and the last volumetric evaluation before the second stage



Right Portal Vein Ligation Combined With In Situ Splitting Induces Rapid Left Lateral Liver Lobe Hypertrophy Enabling 2-Stage Extended Right Hepatic Resection in Small-for-Size Settings

Andreas A. Schnitzbauer, MD, Sven A. Lang, MD,* Holger Goessmann, MD,† Silvio Nadalin, MD,§
Janine Baumgart, MD,|| Stefan A. Farkas, MD,* Stefan Fichtner-Feigl, MD,* Thomas Lorf, MD,¶
Armin Goralcyk, MD,¶ Rüdiger Hörbelt, MD,# Alexander Kroemer, MD,* Martin Loss, MD,* Petra Rümmele, MD,‡
Marcus N. Scherer, MD,* Winfried Padberg, MD,# Alfred Königsrainer, MD,§ Hauke Lang, MD,||
Aiman Obed, MD,¶ and Hans J. Schlitt, MD**

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 TORRES¹, Eduardo de Souza Martins **FERNANDES**², Cassio Virgilio Cavalcante **OLIV**
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 **MACHAD**

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



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.

Table 1. Surgical outcomes of ALPPS

Studies	<i>n</i>	Overall morbidity (%)	Overall mortality (%)	Success complete resection (%)	Interval (d, mean/median)	FLR regeneration rate (%; mean/median)	R0 resection (%)
Schnitzbauer et al (2012) ^[3]	25	68	12	100	9	74	96
Sala et al (2012) ^[9]	10	40	0	100	7	82	100
Torres et al (2013) ^[10]	39	59	13	95	14	83	100
Li et al (2013) ^[11]	9	66	22	100	13	87	100
Ielpo et al (2013) ^[12]	6	50	17	100	15	110	/
Troja et al (2014) ^[13]	5	100	20	100	16.4	/	100
Oldhafer et al (2014) ^[14]	7	86	0	100	13	65	100
Nadalin et al (2014) ^[15]	15	67	29	100	13	87	87
Robles et al (2014) ^[16]	22	63	9	100	7	61	100
Schadde et al (2014) ^[17]	202	>grade 3a: 40 >grade 3b: 28	9	98	10	86	91
Kremer et al (2015) ^[18]	19	68	16	100	8	74	100
Hernandez-Alejandro et al (2015) ^[19]	14	36	0	100	8	93	86
Truant et al (2015) ^[20]	62	80.6	12.9	95	8	48	/
Alvarez et al (2015) ^[21]	30	53	6.6	97	6	89.7	93.1
Lang et al (2015) ^[22]	16	64	12.5	100	9	86	100
Vivarelli (2015) ^[23]	9	66.7	11.1	96	10.8	96	/
Chan et al (2016) ^[24]	13	15.3	7.7	100	8	53	100
Røsok et al (2016) ^[25]	36	92	0	100	6	67	71
Serenari et al (2016) ^[26]	50	54	20	96	/	/	/
Björnsson et al (2016) ^[27]	10	100	0	100	8	64.2	90

FLR: future liver remnant; ALPPS: associating liver partition and portal vein ligation for staged hepatectomy.

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BRAZILIAN CONSENSUS FOR MULTIMODAL TREATMENT OF COLORECTAL LIVER METASTASES. MODULE 3: CONTROVERSIES AND UNRESECTABLE METASTASES

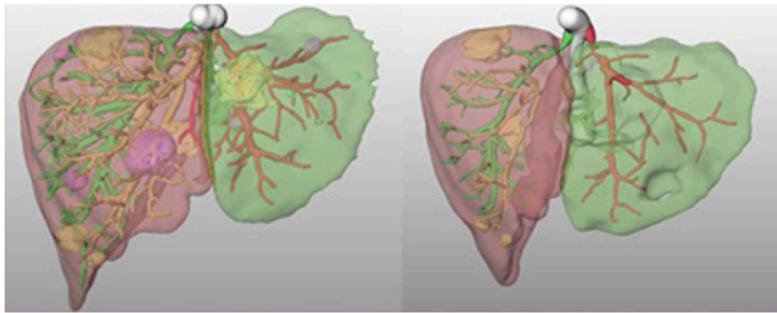
*Consenso brasileiro de tratamento multidisciplinar de metástase hepática de origem colorretal
Módulo 3: Controvérsias e metástases irresssecáveis*

Orlando Jorge Martins TORRES^{1,2,6}, Márcio Carmona **MARQUES**^{2,6}, Fabio Nasser **SANTOS**¹, Igor Correia de **FARIAS**^{2,6},
Anelisa Kruschewsky **COUTINHO**³, Cássio Virgílio Cavalcante de **OLIVEIRA**^{1,4,5}, Antonio Nocchi **KALIL**^{1,2,4,6},
Celso Abdon Lopes de **MELLO**³, Jaime Arthur Pirola **KRUGER**^{1,4,5,6}, Gustavo dos Santos **FERNANDES**³,
Claudemiro **QUIREZE JR**^{1,4,5,6}, André M. **MURAD**³, Milton José de **BARROS E SILVA**³,
Charles Edouard **ZURSTRASSEN**¹, Helano Carioca **FREITAS**³, Marcelo Rocha **CRUZ**³, Rui **WESCHENFELDER**³,
Marcelo Moura **LINHARES**^{1,4,5,6}, Leonaldson dos Santos **CASTRO**^{1,2,6}, Charles **VOLLMER**⁶,
Elijah **DIXON**⁶, Héber Salvador de Castro **RIBEIRO**^{1,2,6}, Felipe José Fernandez **COIMBRA**^{1,2,5,6}

ALPPS

- ❑ Alternative for two-stage hepatectomy
- ❑ Rescue surgery – after PVE

ALPPS, p-ALPPS e Mini-ALPPS:
como e **para quem**



1 st International Consensus Meeting on ALPPS

February 27th and 28th 2015, Hamburg, Germany

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Karl J. Oldhafer



Thomas van Gulik

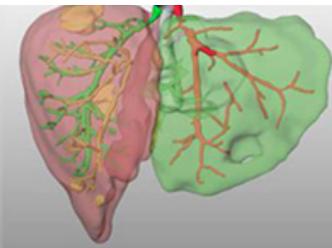


European-African Hepato-Pancreato-Biliary Association

Supported with a grant of DFG

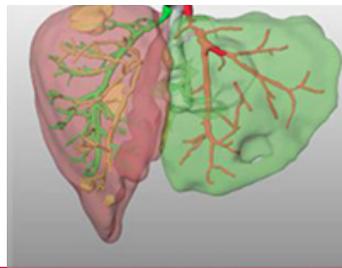


Brazilians in Hamburg





INDICAÇÕES / SELEÇÃO



- Metástase hepática colo-retal extensa
- ALPPS de resgate (fracasso da EVP)
- Doença bilobar (contra-indicação para EVP)
- Extensão tumoral inesperada (decisão intra-operatória)
- Remanescente hepático $< 30\%$ (ou $< 0,5\%$ do peso corporal)
- Hepatectomia direita ampliada
- Necessidade de grande hipertrofia
- Idade ≤ 60 anos
- Margem do tumor próximo ao remanescente

ALPPS, p-ALPPS e Mini-ALPPS:
como e para quem

ORIGINAL ARTICLE

ALPPS as a salvage procedure after insufficient future liver remnant hypertrophy following portal vein occlusion

Marcelo Enne¹, Erik Schadde^{2,3}, Bergthór Björnsson⁴, Roberto Hernandez Alejandro⁵, Klaus Steinbruck⁶, Eduardo Viana¹, Ricardo Robles Campos⁷, Massimo Malago⁸, Pierre-Alain Clavien⁹, Eduardo De Santibanes¹⁰, Brice Gayet¹¹ & On Behalf of ALPPS Registry Group

¹Ipanema Federal Hospital, Brazil, ²Cantonal Hospital Winterthur, Canton of Zu USA, ⁴Linköping University, Sweden, ⁵Department of Surgery, University of Roc Hospital, Brazil, ⁷Virgen de la Arrixaca University Hospital, Spain, ⁸Royal Free H Switzerland, ¹⁰Hospital Italiano, Argentina, and ¹¹Institut Mutualiste Montsouris,

Table 3 Volumetric findings after PVO and Salvage ALPPS

FLR before PVO, ml, median (range) n = 15	339 (158–637)
FLR/SLV ratio before PVO, %, median (range) n = 15	20 (10–37)
Growth of FLR after PVO, %, median (range) n = 15	15 (–2–107)
Days from PVO to CT, median (range) n = 15	30 (15–56)
FLR before ALPPS, ml, median (range) n = 20	400 (183–707)
FLR/SLV ratio before ALPPS, %, median (range) n = 20	23 (10–41)
FLR before stage 2, ml, median (range) n = 20	786 (380–1008)
FLR/SLV ratio before stage 2, %, median (range) n = 20	41 (24–67)
Growth of FLR between stage 1 and 2, %, median (range) n = 20	88 (23–115)

ALPPS, p-ALPPS e Mini-ALPPS: como e **para quem**

During liver regeneration following right portal embolization the growth rate of liver metastases is more rapid than that of the liver parenchyma

D. Elias, T. de Baere, A. Roche, M. Ducreux, J. Leclere and P. Lasser

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Correspondence to: Dr D. Elias

□ Liver volume – 59-127%

□ Tumor volume – 60-970%

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 Virgílio 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

Morbidity – 59%

Cholangiocarcinoma

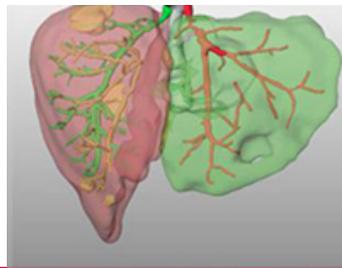
Other:

- Colectomy

- Pancreatoduodenectomy

Mortality – 12.8%

Risk score



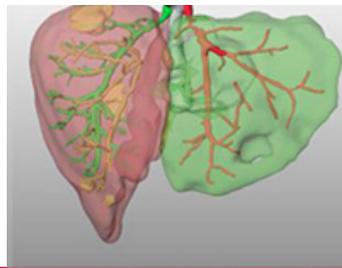
ORIGINAL ARTICLE

Associating Liver Partition and Portal Vein Ligation for Staged Hepatectomy Offers High Oncological Feasibility With Adequate Patient Safety

A Prospective Study at a Single Center

*Fernando A. Alvarez, MD, Victoria Ardiles, MD, Martin de Santibañes, MD, Juan Pekolj, MD, PhD,
and Eduardo de Santibañes, MD, PhD*

- ❑ 53% Morbidity
- ❑ 6.6% Mortality



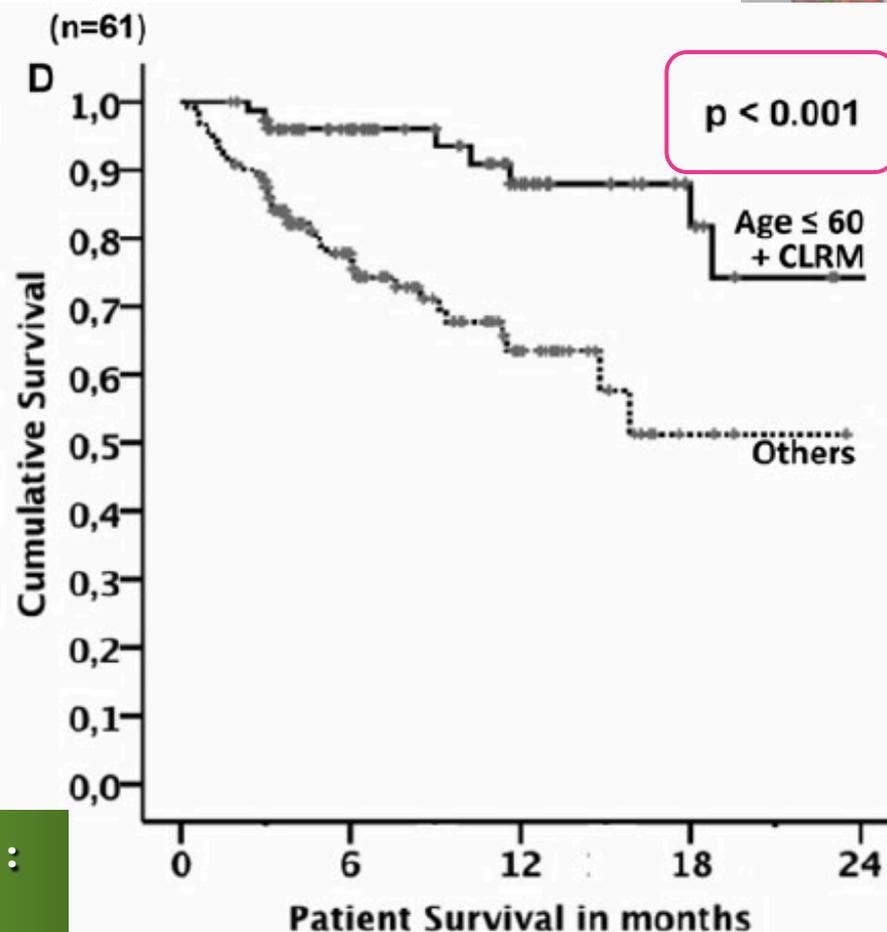
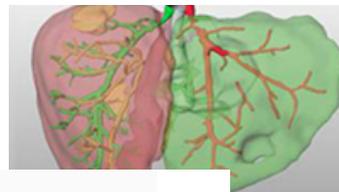
PAPER OF THE 21ST ANNUAL ESA MEETING

Early Survival and Safety of ALPPS *First Report of the International ALPPS Registry*

Erik Schadde, MD, FACS, Victoria Ardiles, MD,† Ricardo Robles-Campos, MD,‡ Massimo Malago, MD, FACS,§
Marcel Machado, MD,¶ Roberto Hernandez-Alejandro, MD,|| Olivier Soubrane, MD,**
Andreas A. Schnitzbauer, MD,†† Dimitri Raptis, MD,* Christoph Tschuor, MD,* Henrik Petrowsky, MD, FACS,*
Eduardo De Santibanes, MD, PhD, FACS,† and Pierre-Alain Clavien, MD, PhD, FACS*§§; On behalf of the ALPPS
Registry Group*

- 40 % Morbidity
- 9 % Mortality

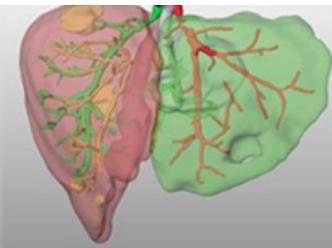
ALPPS Registry



ALPPS, p-ALPPS e Mini-ALPPS:
como e **para quem**

Numbers at risk				
Age ≤ 60 + CLRM (n=78)	71	30	13	10
Others (n=121)	72	29	8	0

ALPPS, p-ALPPS e Mini-ALPPS:
como e **para quem**

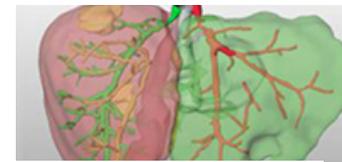


Can we improve the morbidity and mortality associated with the associating liver partition with portal vein ligation for staged hepatectomy (ALPPS) procedure in the management of colorectal liver metastases?

Roberto Hernandez-Alejandro, MD,^a Kimberly A. Bertens, MD, MPH,^a Karen Pineda-Solis, MD,^a and Kristopher P. Croome, MD, MS,^{a,b} *London, Ontario, Canada, and Rochester, MN*

- 36 % Morbidity
- 0 % Mortality

ALPPS, p-ALPPS e Mini-ALPPS: como e para quem



J Gastrointest Canc
DOI 10.1007/s12029-015-9691-6

MGMT. OF COMPLEX CASES IN GI ONCOLOGY

High Mortality Rates After ALPPS: the Devil Is the Indication

Paulo Herman • Jaime Arthur Pirola Krüger •
Marcos Vinicius Perini • Fabrício Ferreira Coelho •
Ivan Ceconello

0 % Mortality

Table 1 Operative results

	Gender, age, date of first OR	Diagnosis	Indication for ALPPS	Time between first and second OR (days)	Time from second OR to discharge (days)	Complications	FLR hypertrophy (%)
Case 1	M 48 17/11/11	MCRC	Multiple mets and small FLR	7	20	Liver failure Pulmonary sepsis	81
Case 2	M 58 16/02/12	MCRC	Multiple mets and intraoperative decision	7	6	None	78
Case 3	M 58 23/05/12	iCCC	Proximity to the hepatic vein and small FLR	7	8	None	82
Case 4	M 58 07/11/12	MCRC	Multiple mets and small FLR	7	7	None	75
Case 5	F 38 10/04/13	MCRC	Multiple mets and small FLR	7	7		67
Case 6	M 52 17/06/13	MCRC	Multiple mets and small FLR	8	30	Biliary fistula Hepatic insufficiency	37
Case 7	F 55 15/11/13	MCRC	Multiple mets and small FLR	14	8	None	61

ALPPS: PAST, PRESENT AND FUTURE

ALPPS: passado, presente e futuro

Orlando Jorge M TORRES¹, Eduardo S M FERNANDES², Paulo HERMAN³

¹Universidade Federal do Maranhão (Federal University of Maranhão), São Luís, MA; ²Hospital Adventista Silvestre, Rio de Janeiro, RJ, Brazil;

³Universidade 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

- Discutir em reunião multidisciplinar
- Remanescente < 30%
- Resgate após falha na embolização de veia porta
- Evitar em colangiocarcinoma
- Reduzir morbidade e mortalidade

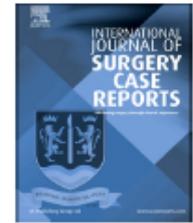
ALPPS, p-ALPPS e Mini-ALPPS:
como e para quem



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The ALPPS procedure for **hepatocellular carcinoma** larger than 10 centimeters



Orlando Jorge M. Torres*, Rodrigo Rodrigues Vasques, Thiago Henrique S. Silva, Miguel Eugenio L. Castelo-Branco, Camila Cristina S. Torres

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ABSTRACT

INTRODUCTION: The only means of achieving long-term survival in hepatocellular carcinoma is complete tumor resection or liver transplantation. Patients with large hepatocellular carcinomas are currently

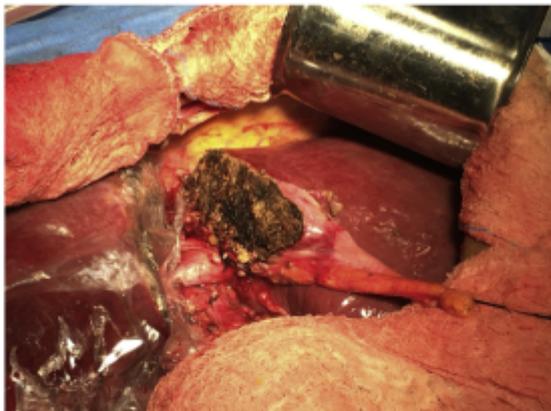


Fig. 2. ALPPS first procedure with plastic bag.



Fig. 3. CT 15 days after the first procedure.



Fig. 4. Final aspect of the liver remnant.

The ALPPS Risk Score

Avoiding Futile Use of ALPPS

Michael Linecker, MD, Gregor A. Stavrou, MD,†‡ Karl J. Oldhafer, MD,†‡ Robert M. Jenner, MD,†
Burkhardt Seifert, PhD,§ Georg Lurje, MD,¶|| Jan Bednarsch, MD,¶|| Ulf Neumann, MD,¶||
Ivan Capobianco, MD,|| Silvio Nadalin, MD,|| Ricardo Robles-Campos, MD,**
Eduardo de Santibañes, MD, PhD, FACS,†† Massimo Malagó, MD,†‡ Mickael Lesurtel, MD, PhD,*
Pierre-Alain Clavien, MD, PhD, FACS,* and Henrik Petrowsky, MD, FACS**

Objectives: To create a prediction model identifying futile outcome in

Conclusions: Both models have an excellent prediction to assess the individual risk of futile outcome after ALPPS surgery and can be used to avoid

TABLE 3. Risk Modeling

	Risk Points	Regression Coefficient	Odds Ratio (95% CI)	<i>P</i>
Pre-stage 1 variables*				
Tumor type [†]				
CRLM (reference)	0	0.000	1.000	
Non-CRLM/nonbiliary	1	0.655	1.925 (0.808–4.585)	0.139
Biliary	2	1.326	3.767 (1.800–7.882)	<0.001
Age ≥67 yr	3	1.735	5.668 (2.843–11.30)	<0.001
Intercept pre-stage 1		–5.3		
Pre-stage 2 variables[‡]				
Pre-stage 1 score, per point	0.66	0.665	1.925 (1.527–2.426)	<0.001
Interstage complications ≥3b	1.2	1.209	3.350 (1.280–8.769)	0.014
Pre-stage 2 bilirubin [§]	1.5	1.496	4.439 (1.699–11.60)	0.002
Pre-stage 2 creatinine	1.7	1.696	5.454 (1.606–18.52)	0.007
Intercept pre-stage 2		–6.8		

Pre-stage I

Ponto

Não coloretal/biliar

1

Biliary surgery (Cholangiocarcinoma)

2

Age ≥ 67 yr

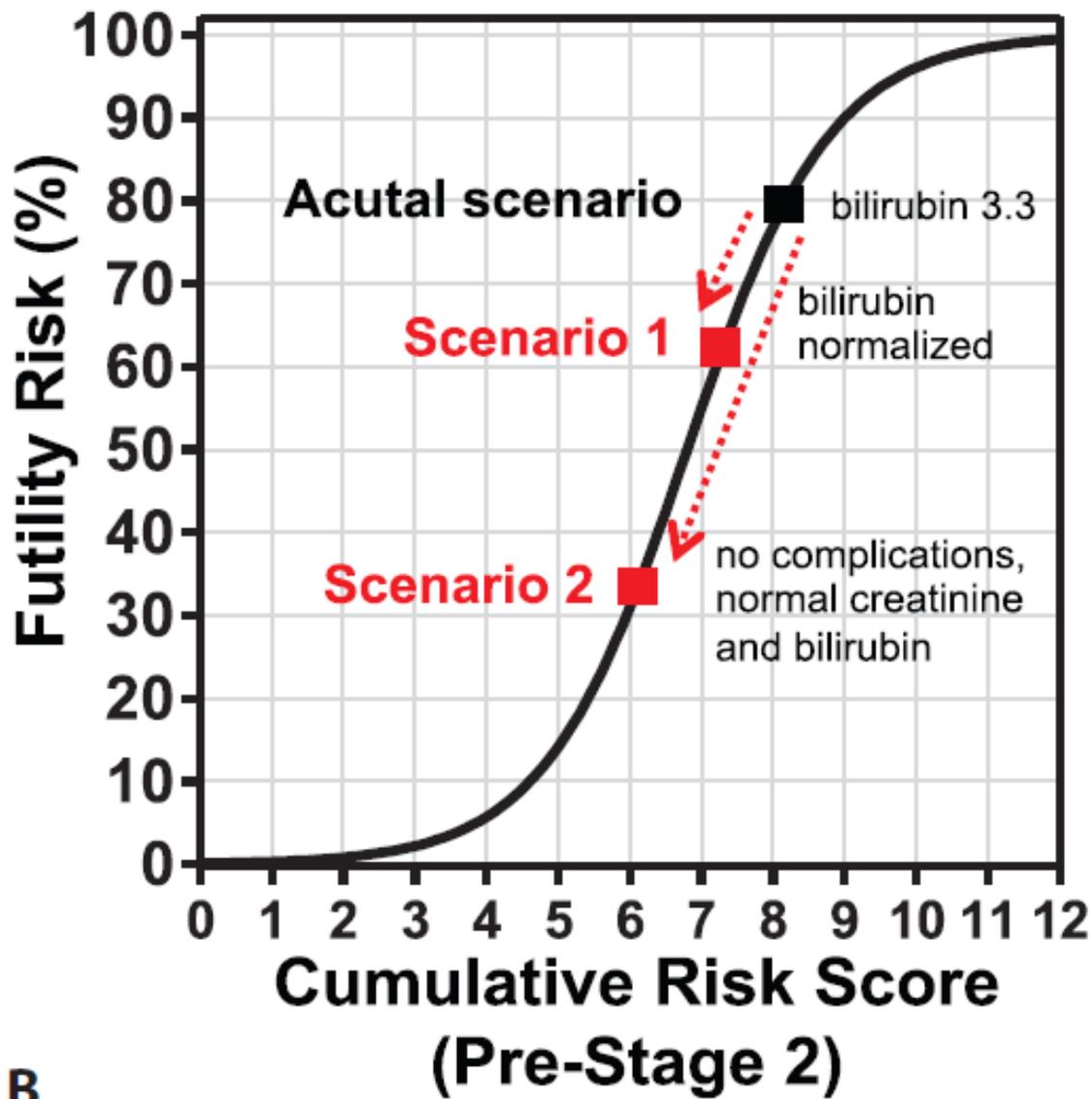
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Pre-stage II

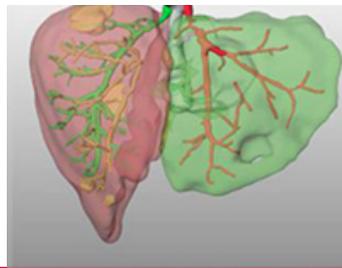
Complications ≥ 3b

Bilirubin

Creatinine



B



Risk	Score
5%	3.9
10%	4.7
20%	5.5
50%	6.9

ALPPS, p-ALPPS e Mini-ALPPS:
como e **para quem**



Liver surgery: Clinical

FP26.08

Performance Validation of the ALPPS Risk Model

M. Linecker¹, P. Kambakamba¹, A. Schlegel², P. Muiesan², I. Capobianco³, S. Nadalin³, O. Torres⁴, A. Mehrabi⁵, G.A. Stavrou^{6,7}, K.J. Oldhafer^{6,7}, G. Lurje⁸, U. Neumann⁸, R. Robles-Campos⁹, R. Hernandez-Alejandro^{10,11}, M. Malago¹², E. De Santibanes¹³, P.-A. Clavien¹, H. Petrowsky¹

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Autores de 8 países (1 Brasileiro)

Estratégia para tornar o procedimento mais seguro

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❑ 83 yr

❑ Sarcoma

❑ Additional surgery:

- Colectomy

Pancreatoduodenectomy

❑ 12.8 % Mortality

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TABLE 1 - Complications after ALPPS approach

Complications	n	%
Surgical site infection	8	20.5
Ascites	5	12.8
Biliary fistula	4	10.2
Pneumonia	4	10.2
Abdominal hernia	4	10.2
Sepsis	3	7.7
Acute renal failure	2	5.1
Bile duct injury	1	2.5
Hepatic artery thrombosis	1	2.5
Acute liver failure	1	2.5
Others	9	23.0

❑ High risk score

❑ 4 patients

❑ 35 pacientes

❑ 1 óbito

❑ Mortal 2,86%



Lençóis Maranhenses

