



Sesiones Clínicas Multidisciplinares Hepato-Bilio-Pancreáticas 2022-2023



ABORDAJE DIAGNÓSTICO Y ESTUDIO DE LA FUNCIÓN HEPÁTICA EN EL HEPATOCARCINOMA

Sergio Vázquez Rodríguez. FEA Digestivo. Marzo 2023

ÍNDICE



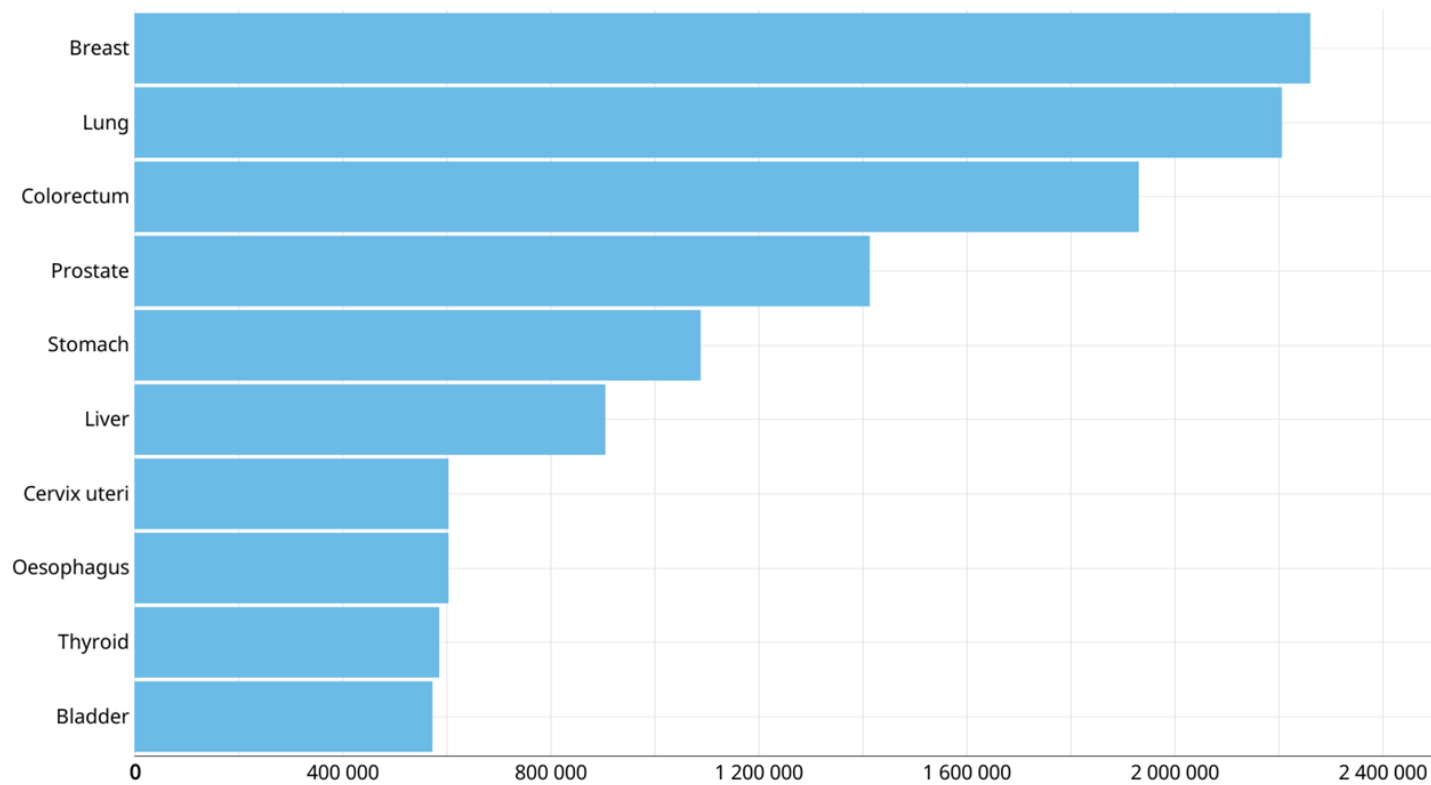
1. Abordaje diagnóstico

1. Prueba de imagen
2. Marcadores séricos
3. Papel de la histología
4. Guías

2. Estudio de función hepática

1. Importancia en opciones terapéuticas
2. Relevancia en opciones quirúrgicas
3. Papel específico de la hipertensión portal

Estimated number of incident cases World, both sexes, all ages (excl. NMSC)

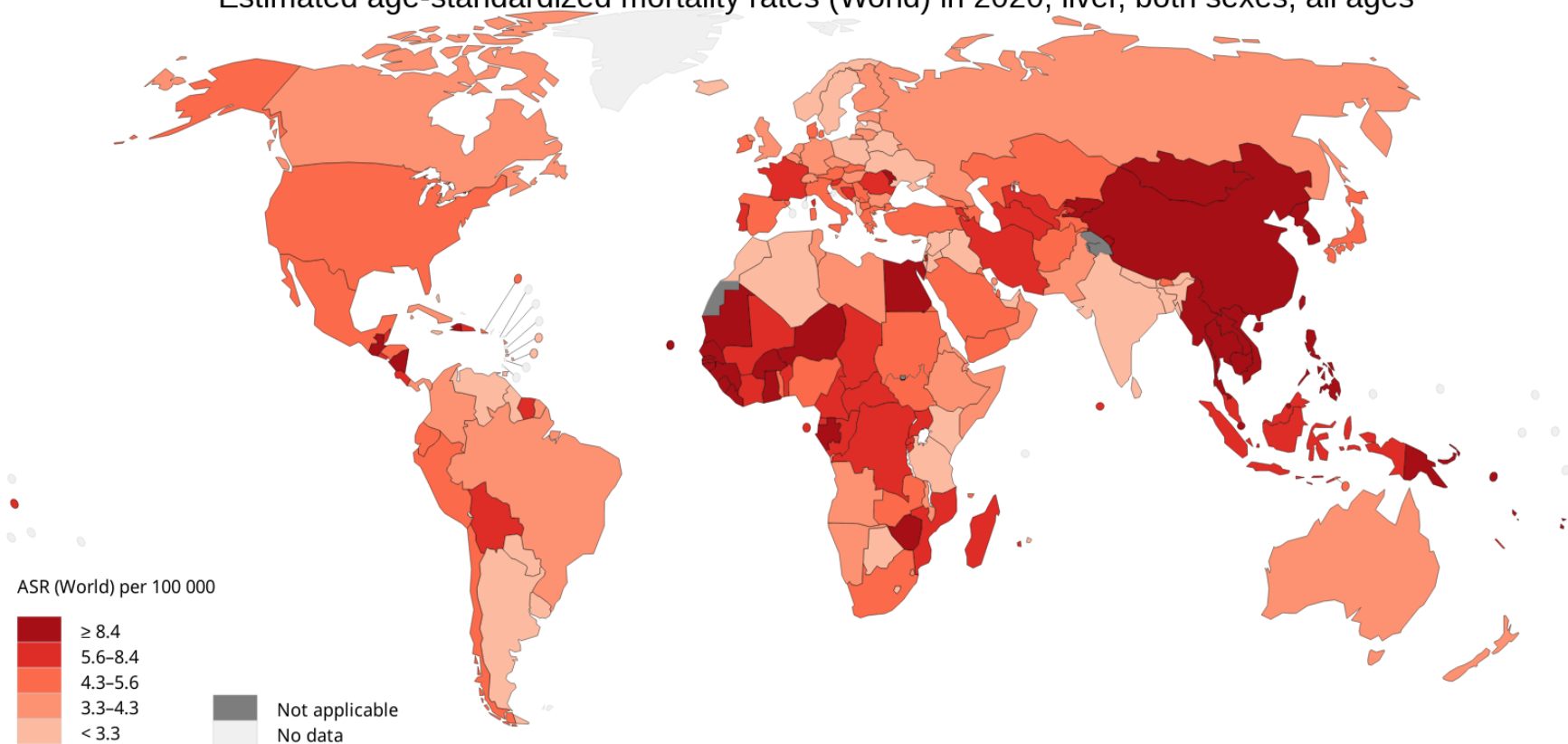


Data source: Globocan 2020
Graph production: Global Cancer
Observatory (<http://gco.iarc.fr>)

International Agency for Research on Cancer
World Health
Organization

<http://globocan.iarc.fr/Pages/>

Estimated age-standardized mortality rates (World) in 2020, liver, both sexes, all ages



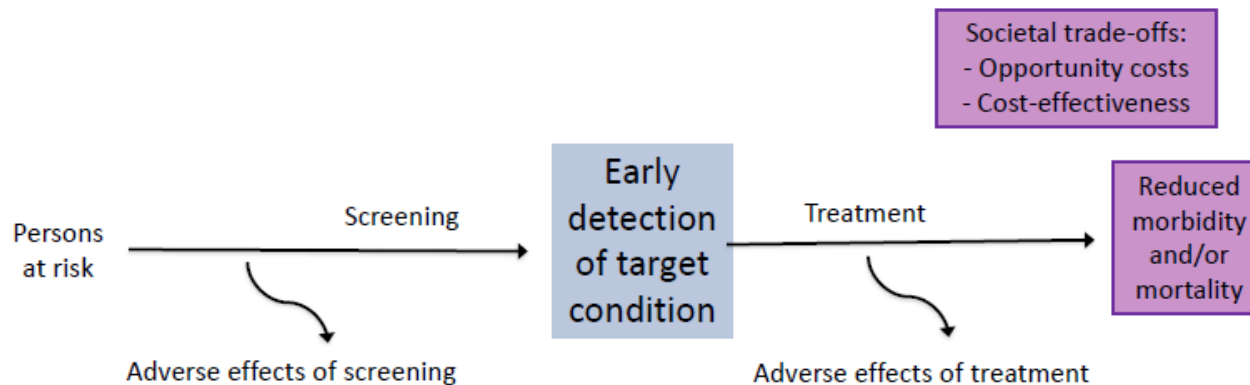
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Data source: GLOBOCAN 2020
Map production: IARC
(<http://gco.iarc.fr/today>)
World Health Organization



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ABORDAJE DIAGNÓSTICO DEL HEPATOCARCINOMA



- False positive results:
- Negative psychological consequences
 - Triggering of more invasive diagnostic procedures
 - Substantial economic burdens
- Complications of screening test

Se considera el cribado coste-eficaz cuando la incidencia estimada del CHC es de > 1.5% en pacientes cirróticos y > 0.2% en no cirróticos

No cirróticos: Aquellos con incidencia >0.2%

- Infección crónica VHB:
 - Asiáticos: varones > 40 años y mujeres >50 años
 - Historia familiar de CHC
 - Africanos raza negra > 20 años
- Fibrosis avanzada/en puentes por VHC

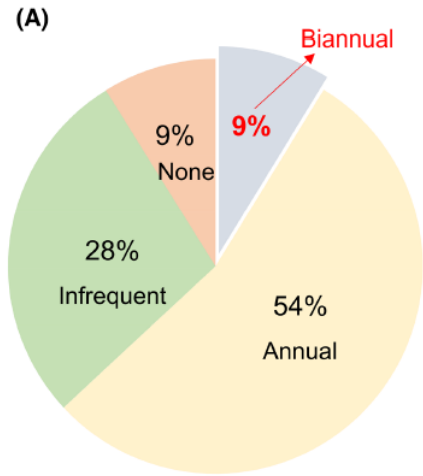
Cirróticos
(independientemente de la etiología)

Croswell J et al. Semin Oncol 2010;37:202-15.
Kramer B et al. Annu Rev Med 2009;60:125-37.
Singal A et al. J Hepatol. 2020 Feb; 72(2): 250-261.

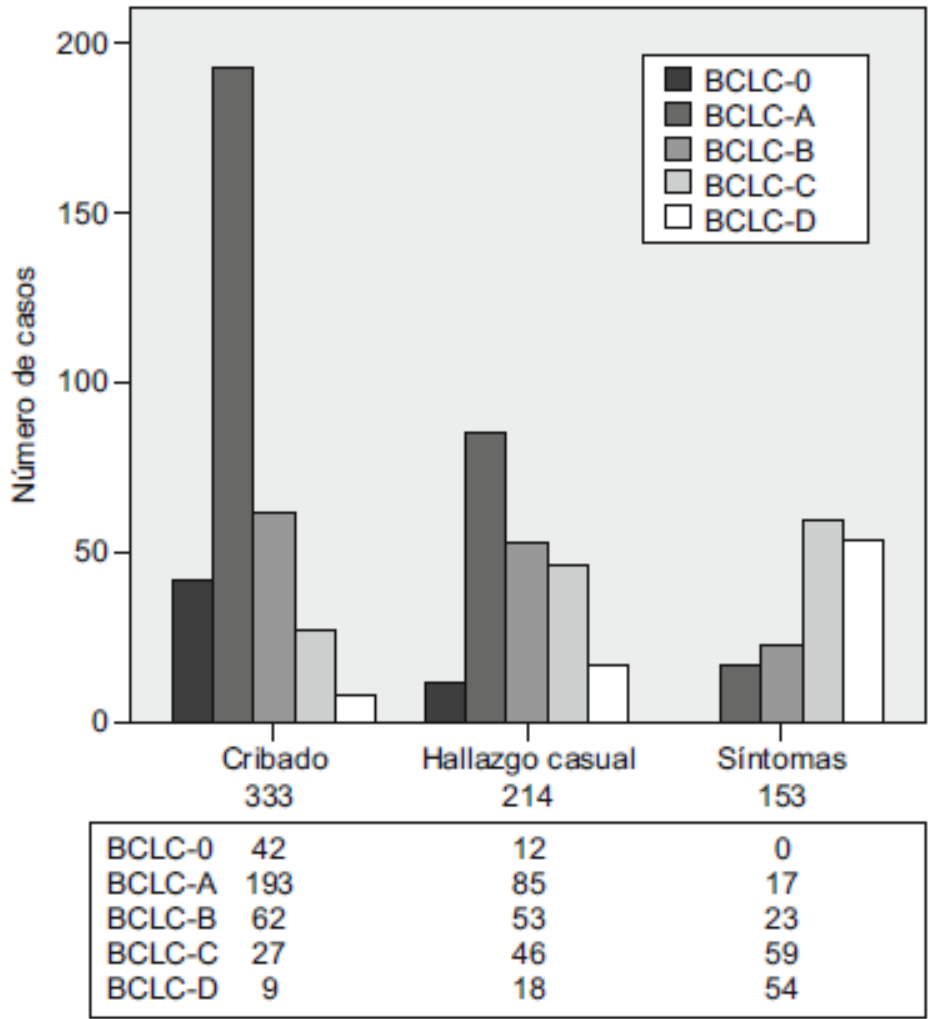
EASL CPG HCC. J Hepatol 2018; doi: 10.1016/j.jhep.2018.03.019
Reig M, et al. Med Clin (Barc). 2021. doi:10.1016/j.medcli.2020.09.022

- 18,816 pacientes de China VHB+
- Randomización:
 - Cribado mediante US/6 meses + AFP
 - No cribado
- Randomización en bloque
- Adherencia: 60%
- La mortalidad asociada a CHC fue reducida un 37% en el brazo cribado

Zhang BH et al. J Cancer Res Clin Oncol. 2004;130:417-22.



Hamill V et al. Liver Int. 2023;00:1-11.



Varela M et al. Med Clin (Barc). 2010 May 8;134(13):569-76.



EASL Clinical Practice Guidelines: Management of hepatocellular carcinoma[☆]

European Association for the Study of the Liver*

Journal of Hepatology 2018 vol. 69 | 182–236



MEDICINA CLINICA

www.elsevier.es/medicinaclinica




Conferencia de consenso

Diagnóstico y tratamiento del carcinoma hepatocelular. Actualización del documento de consenso de la AEEH, AEC, SEOM, SERAM, SERVEI y SETH

María Reig^{a,b}, Alejandro Forner^{a,b}, Matías A. Ávila^{b,c}, Carmen Ayuso^{b,d}, Beatriz Mínguez^{b,e},

PRACTICE GUIDANCE | HEPATOLOGY, VOL. 68, NO. 2, 2018

Diagnosis, Staging, and Management of Hepatocellular Carcinoma: 2018 Practice Guidance by the American Association for the Study of Liver Diseases

Jorge A. Marrero,¹ Laura M. Kulik,² Claude B. Sirlin,³ Andrew X. Zhu,⁴ Richard S. Finn,⁵ Michael M. Abecassis,²
Lewis R. Roberts,⁶  and Julie K. Heimbach⁶

Med Clin. 2021; 156:463.e1-e30

DIAGNÓSTICO POR IMAGEN



HEPATOCARCINOMA

- Vascularización arterial (neovascularización)
- Disminución de radicales portales

PARÉNQUIMA HEPÁTICO

- Vascularización mixta

Captación de contraste en fase arterial seguida de lavado en fase portal (y/o venosa si se trata de una TC o de una RM con contraste extracelular)

- Cirrótico (90%)
- Lesiones al menos 10 mm

DIAGNÓSTICO POR IMAGEN



	SENSIBILIDAD	ESPECIFICIDAD
TAC	77,5% (70,9-82,9)	91,3% (86,5-94,5)
RMN	84,3% (77,8-89,3)	92,9% (88,3-95,9)

Nadarevic T, Giljaca V, Colli A, Fraquelli M, Casazza G, Miletic D, et al. Computed tomography for the diagnosis of hepatocellular carcinoma in adults with chronic liver disease. Cochrane Database of Systematic Reviews 2021, Issue 10. Art. No: CD013362. [DOI: 10.1002/14651858.CD013362.pub2] Fraquelli M, Nadarevic T, Colli A, Manzotti C, Giljaca V, Miletic D, Štimac D, Casazza G. Contrast-enhanced ultrasound for the diagnosis of hepatocellular carcinoma in adults with chronic liver disease. Cochrane Database of Systematic Reviews 2022, Issue 9. Art. No.: CD013483. DOI: 10.1002/14651858.CD013483.pub2. <https://rdcu.be/c3s54>

Nadarevic T, Colli A, Giljaca V, Fraquelli M, Casazza G, Manzotti C, et al. Magnetic resonance imaging for the diagnosis of hepatocellular carcinoma in adults with chronic liver disease. Cochrane Database of Systematic Reviews 2022, Issue 5. Art. No: CD014798. [DOI: 10.1002/14651858.CD014798.pub2]

DIAGNÓSTICO POR IMAGEN



CEUS LI-RADS® v2017 CORE

(For CEUS with Pure Blood Pool Agents)

CEUS Diagnostic Table

Arterial phase hyperenhancement (APHE)	No APHE		APHE (not rim ^b , not peripheral discontinuous globular ^c)	
	< 20	≥ 20	< 10	≥ 10
Nodule size (mm)	< 20	≥ 20	< 10	≥ 10
No washout of any type	CEUS LR-3	CEUS LR-3	CEUS LR-3	CEUS LR-4
Late and mild washout	CEUS LR-3	CEUS LR-4	CEUS LR-4	CEUS LR-5

Los criterios CEUS para identificar **HCC** se definieron como:

- APHE (hiperrealce de fase arterial)
- Seguimiento de lavado leve y tardío (> **60 segundos**).

Phases	Pre	Arterial	Portal Venous	Late
Start		10-20 s	30-45 s	120 s
End		30-45 s	120 s	4-6 min

DIAGNÓSTICO POR IMAGEN



	SENSIBILIDAD	ESPECIFICIDAD
TAC	77,5% (70,9-82,9)	91,3% (86,5-94,5)
RMN	84,3% (77,8-89,3)	92,9% (88,3-95,9)
CEUS	77,8% (69,4-89,4)	93,8% (89,1-96,6)

Nadarevic T, Giljaca V, Colli A, Fraquelli M, Casazza G, Miletic D, et al. Computed tomography for the diagnosis of hepatocellular carcinoma in adults with chronic liver disease. Cochrane Database of Systematic Reviews 2021, Issue 10. Art. No: CD013362. [DOI: 10.1002/14651858.CD013362.pub2] Fraquelli M, Nadarevic T, Colli A, Manzotti C, Giljaca V, Miletic D, Štimac D, Casazza G. Contrast-enhanced ultrasound for the diagnosis of hepatocellular carcinoma in adults with chronic liver disease. Cochrane Database of Systematic Reviews 2022, Issue 9. Art. No.: CD013483. DOI: 10.1002/14651858.CD013483.pub2. <https://rdcu.be/c3s54>

Nadarevic T, Colli A, Giljaca V, Fraquelli M, Casazza G, Manzotti C, et al. Magnetic resonance imaging for the diagnosis of hepatocellular carcinoma in adults with chronic liver disease. Cochrane Database of Systematic Reviews 2022, Issue 5. Art. No: CD014798. [DOI: 10.1002/14651858.CD014798.pub2]

BIOMARCADORES SÉRICOS

AFP

6-8% detección
Vs.
Aumento FP

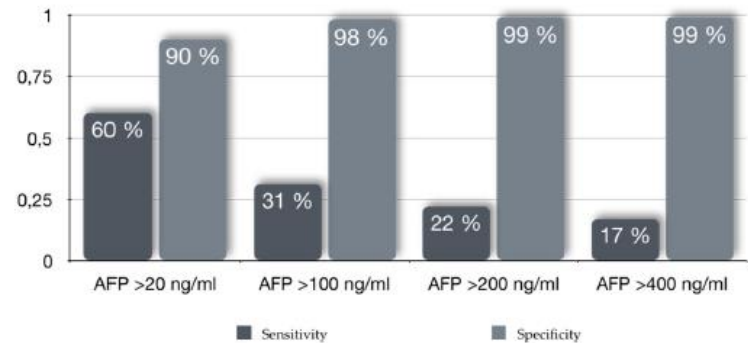


Figure 1. Sensitivities and specificities according to alpha-fetoprotein (AFP) cut-offs values for early hepatocellular carcinoma (HCC) diagnosis. ¹ Adapted from [34].

TABLE 3. Characteristics of Patients With and Without Explant Diagnosis of HCC

	HCC (n = 6)	No HCC (n = 17)	P value
Age (yr)	58 (53-69)	53 (40-61)	0.01
Male gender	4 (67%)	10 (59%)	NS
Ethnicity			NS
Caucasian	3 (50%)	13 (76%)	
Black	2 (33%)	2 (12%)	
Other	1 (17%)	2 (12%)	
<u>AFP (ng/mL)</u>	<u>527 (504-7836)</u>	<u>704 (511-2065)</u>	NS
Etiology of cirrhosis			NS
HCV	5 (83%)	14 (82%)	
Cryptogenic	1 (17%)	0	
PBC	0	2 (12%)	
HCV-HBV	0	1 (6%)	

Abbreviations: PBC, primary biliary cirrhosis; HCV, hepatitis C virus; HBV, hepatitis B virus; HCV-HBV, HCV and HBV coinfection; NS, not significant.

- fracción de AFP ligada a lectina
- des-gamma-carboxiprotrombina (DGCP)
- Golgi protein-73 (GP73)
- glypican-3
- Dickkopf-1 (DKK1)9

ESTUDIO HISTOPATOLÓGICO

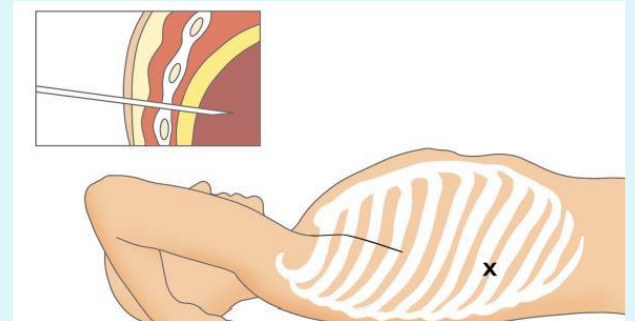


1. ¿CUÁNDO?

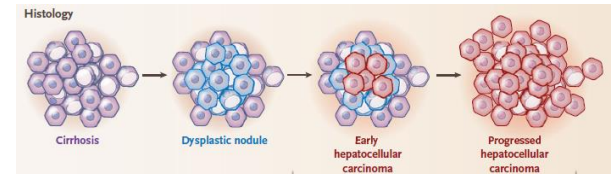
- Tumor primario hepático sobre hígado sano
- Diagnóstico no concluyente con procedimientos no invasivos (técnicas de imagen)

2. ¿CUÁNDO NO?

- Paciente no colaborador
- No visualización de la lesión
- Historia previa de sangrado importante sin causa aparente
- Obstrucción biliar extrahepática/ Colangitis bacteriana
- Ascitis/Obesidad/Embarazo
- Sospecha de amiloidosis
- Sospecha de enfermedad hematológica
- Coagulación $<50.000-70.000$ plaquetas/mm³ , INR $>1,5$.



ESTUDIO HISTOPATOLÓGICO BIOPSIA VS PAAF






No existe consenso. Se debe valorar según paciente, lesión y plan terapéutico.

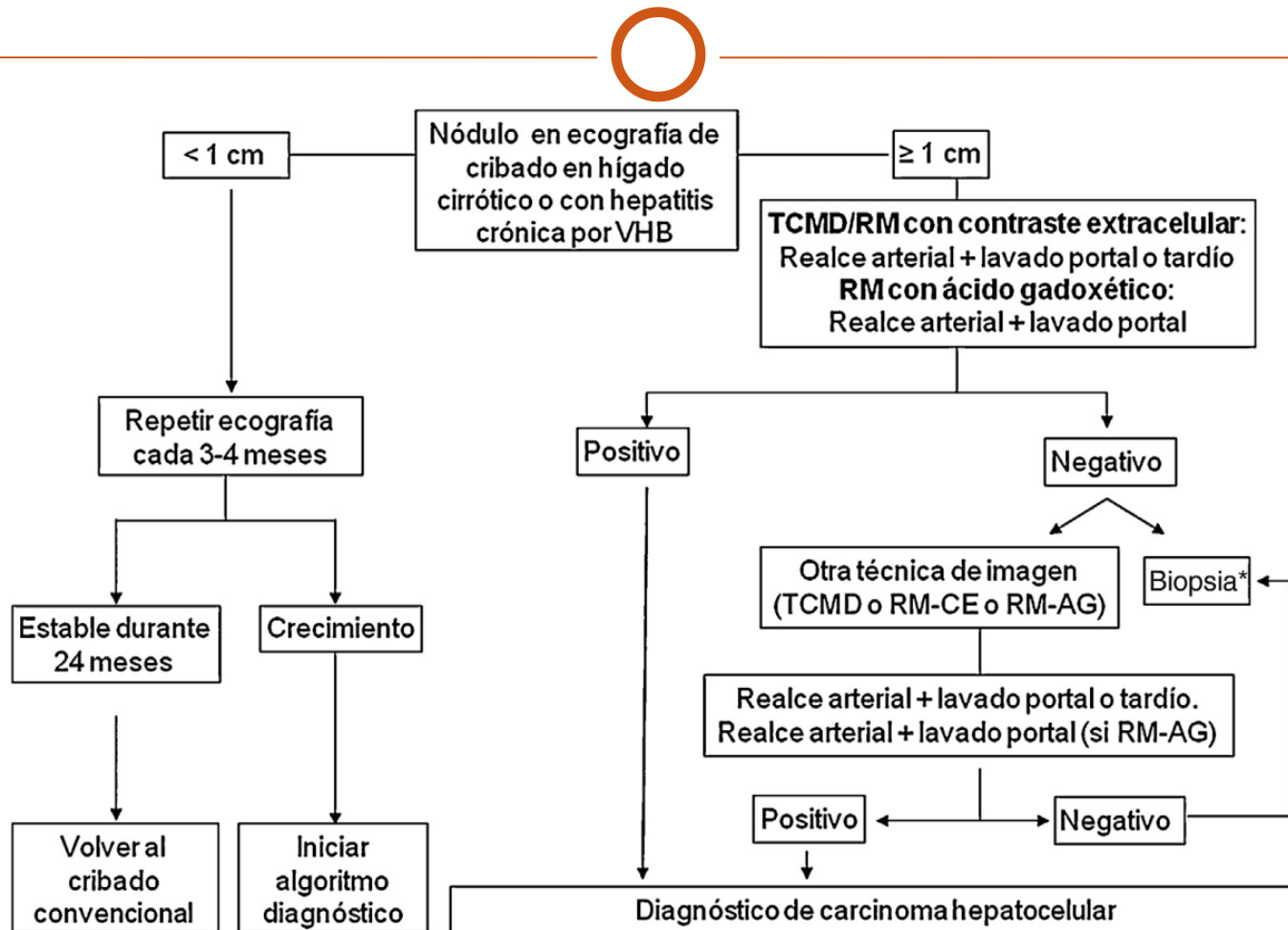
	BIOPSIA	PAAF	
✓	Mayor muestra de tejido	Menor muestra de tejido (¿rentabilidad diagnóstica en ciertas lesiones?)	✗
✓	Mayor sensibilidad	Menor sensibilidad	✗
✓	Técnica más difícil, menos control.	Técnica más sencilla, visualización y manipulación de la aguja, mayor control.	✓
✗	Más complicaciones	Menos complicaciones	✓
		Patólogo en sala (ROSE)	✓
		Barata	✓

ABORDAJE DIAGNÓSTICO. GUÍAS CLÍNICAS



			
PRUEBA IMAGEN CONFIRMAR DGX	TACMD/RMN	TACMD/RMN/CEUS	TACMD/RMN
HALLAZGO	captación de contraste en fase arterial/ lavado en fases venosas	captación de contraste en fase arterial/ lavado en fases venosas o tardías (En CEUS captación con lavado tardío de intensidad leve (>60 s))	captación de contraste en fase arterial/ lavado en fases venosas +/- cápsula +/- crecto
DGX NO INVASIVO	>1 cm Cirrótico	>1 cm Cirrótico	>1 cm cirrótico
MARCADORES SÉRICOS	no	no	+/- AFP
HISTOLOGIA	<ul style="list-style-type: none"> No imagen No cirrótico 	<ul style="list-style-type: none"> No imagen No cirrótico 	<ul style="list-style-type: none"> No imagen No cirrótico

ABORDAJE DIAGNÓSTICO. GUÍAS CLÍNICAS



Reig M, et al. Diagnóstico y tratamiento del carcinoma hepatocelular. Actualización del documento de consenso de la AEEH Med Clin (Barc). 2020

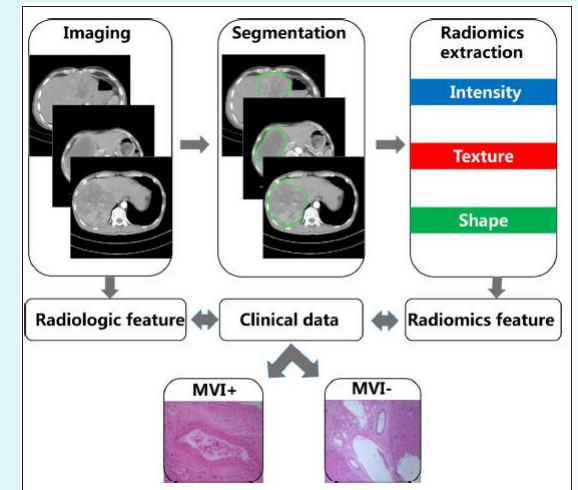
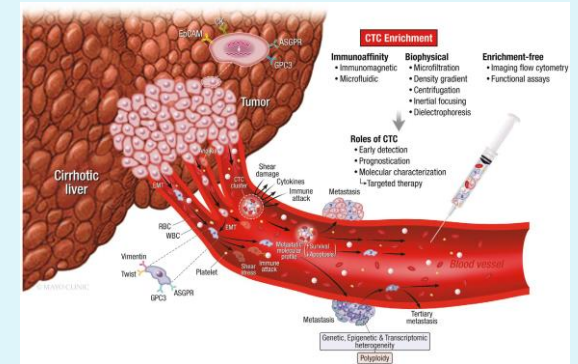
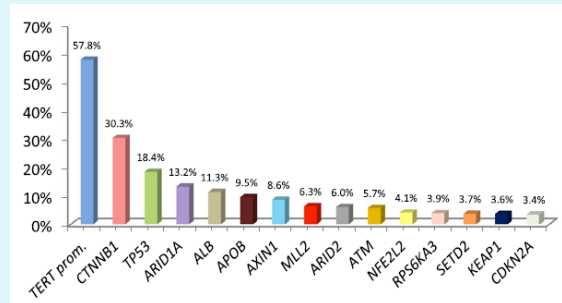
EL FUTURO...



• Biopsia líquida

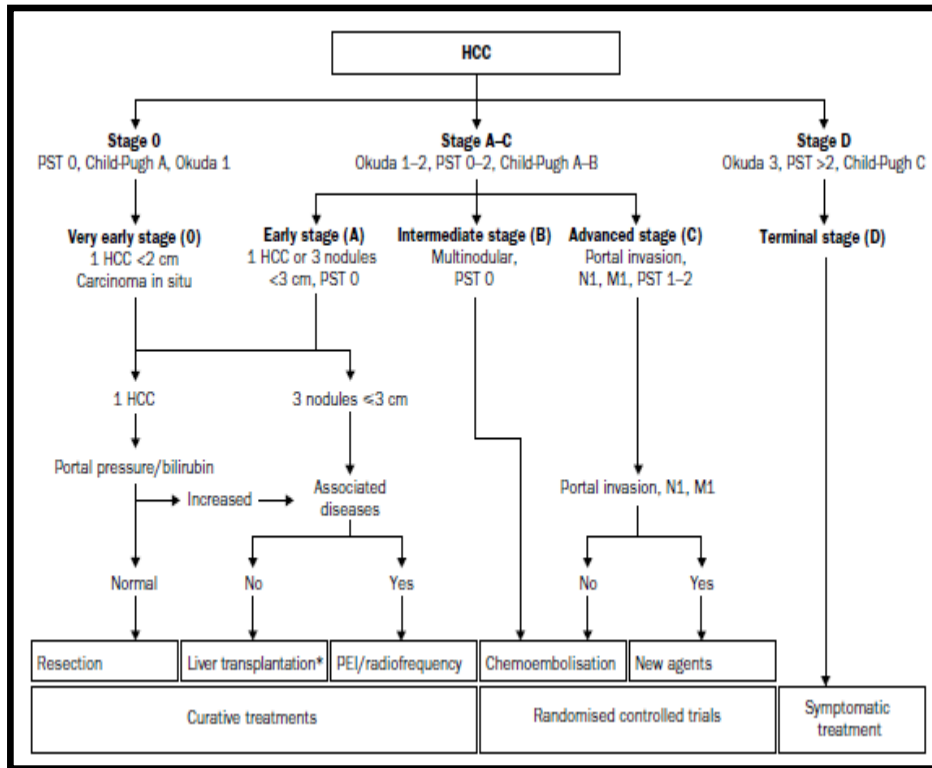
• Genómica

• Radiómica



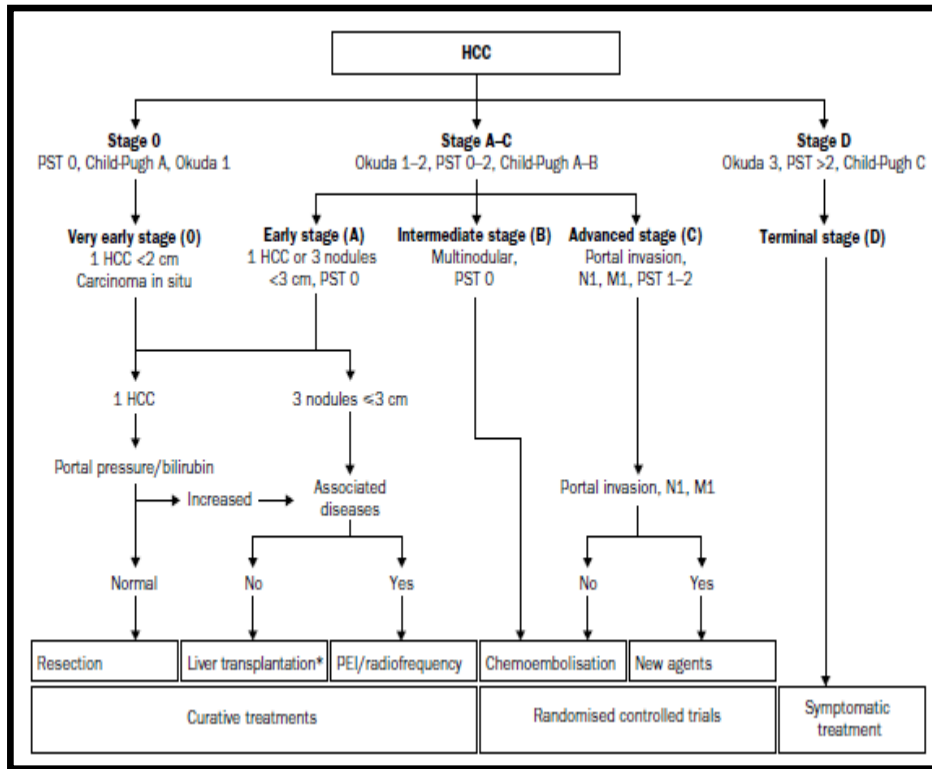
ESTUDIO FUNCIÓN HEPÁTICA

2003

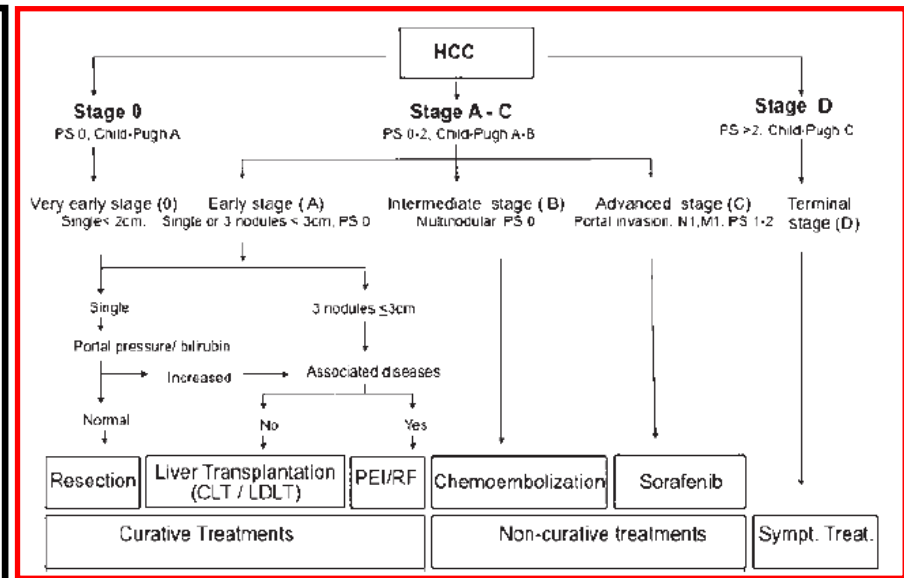


BCLC

2003



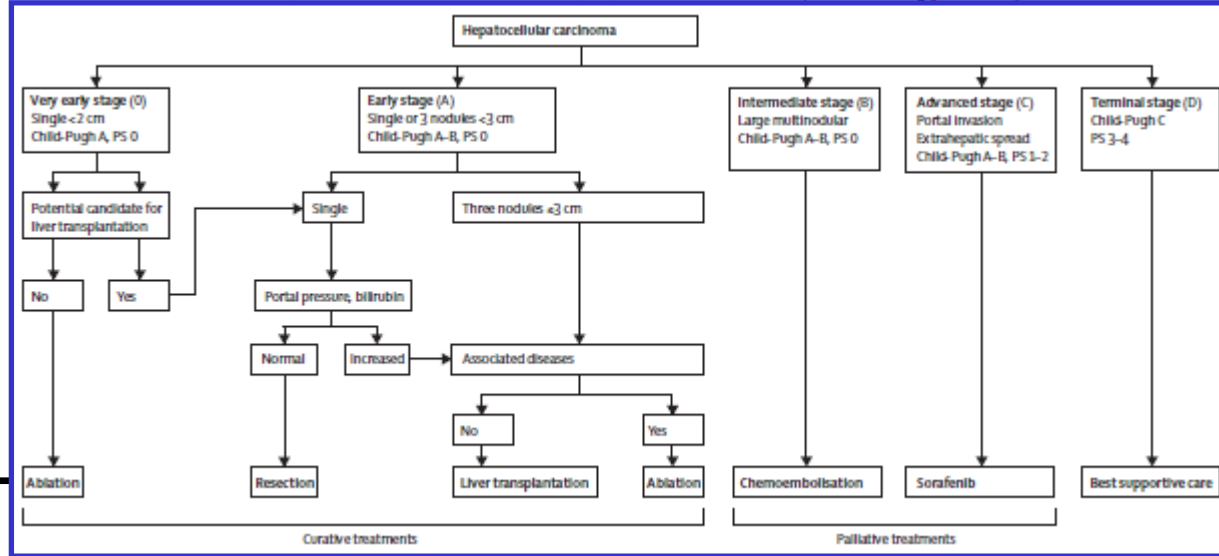
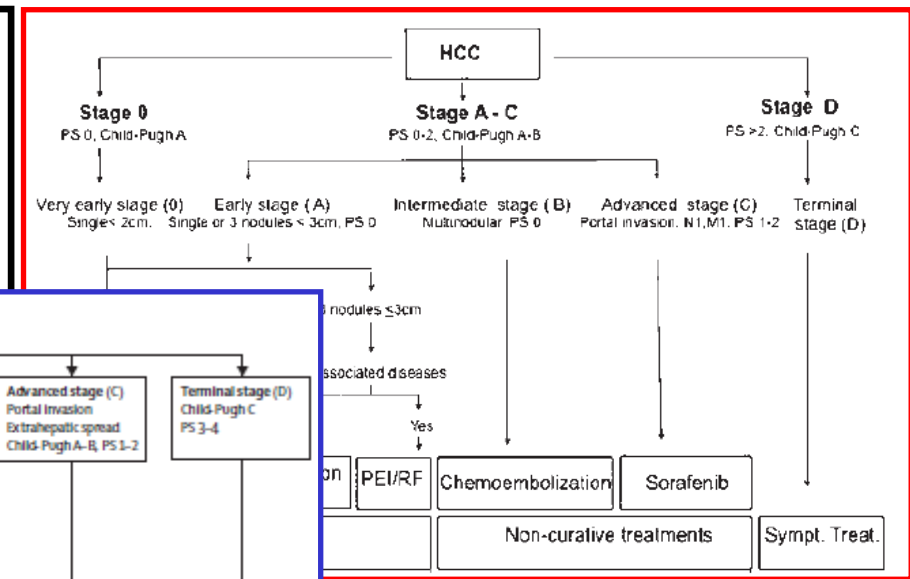
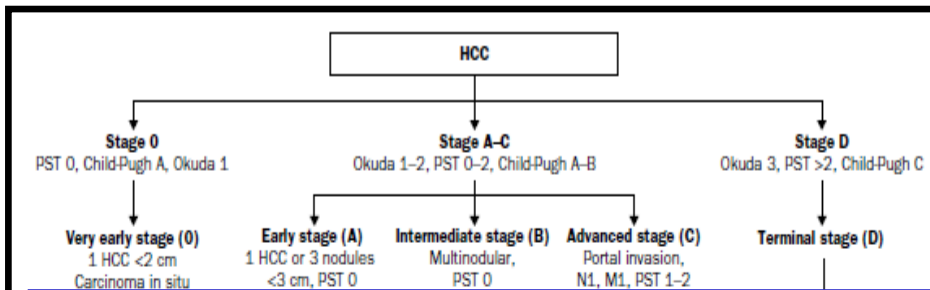
2010



BCLC

2003

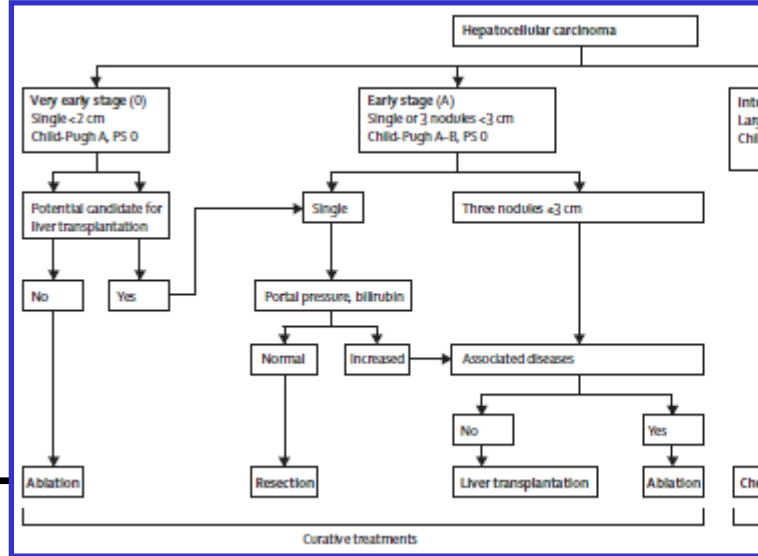
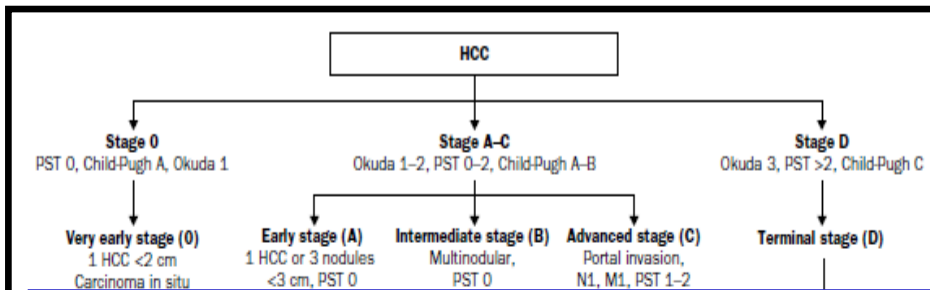
2010



2012

BCLC

2003

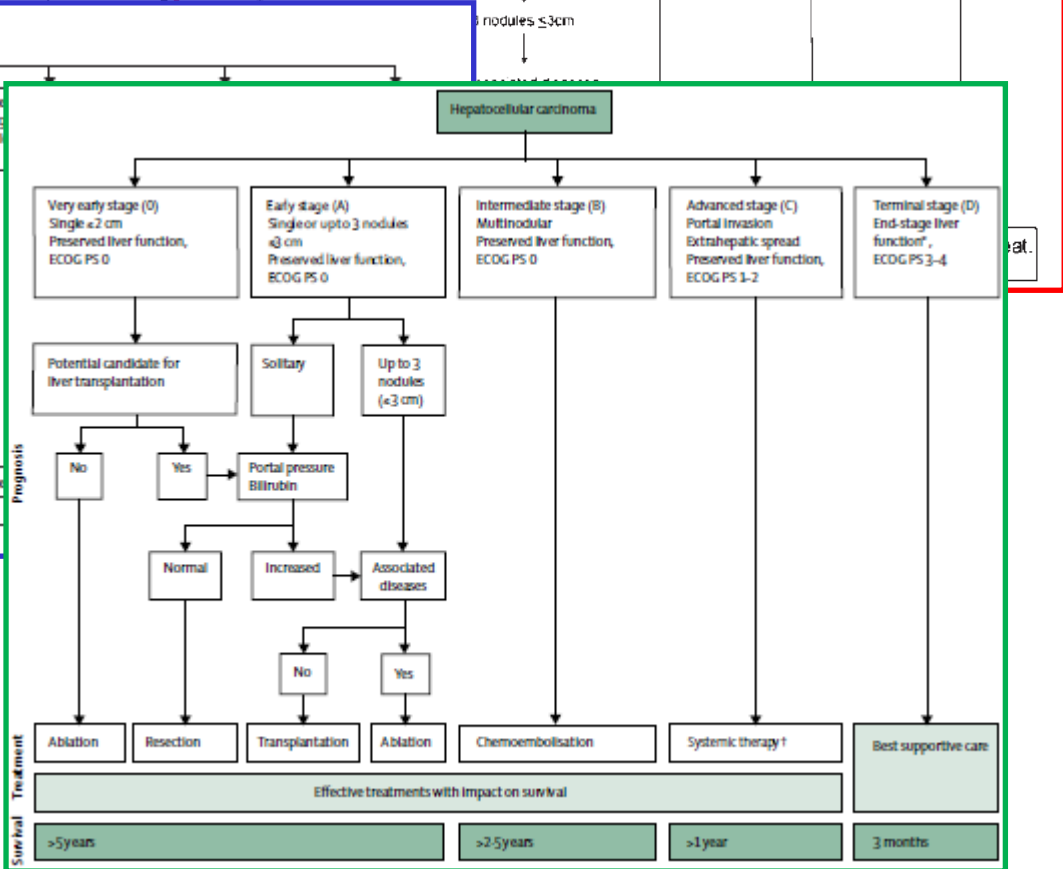
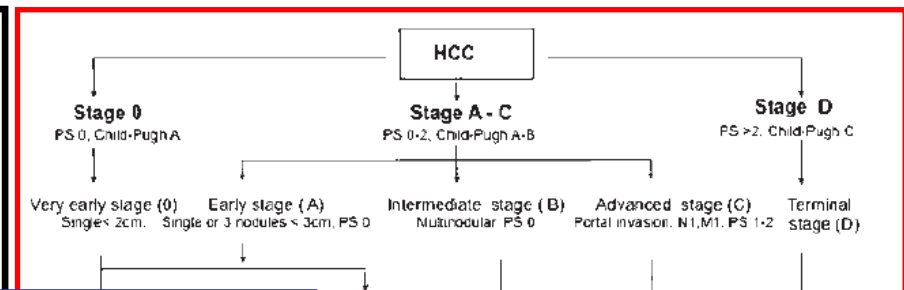


2012

BCLC

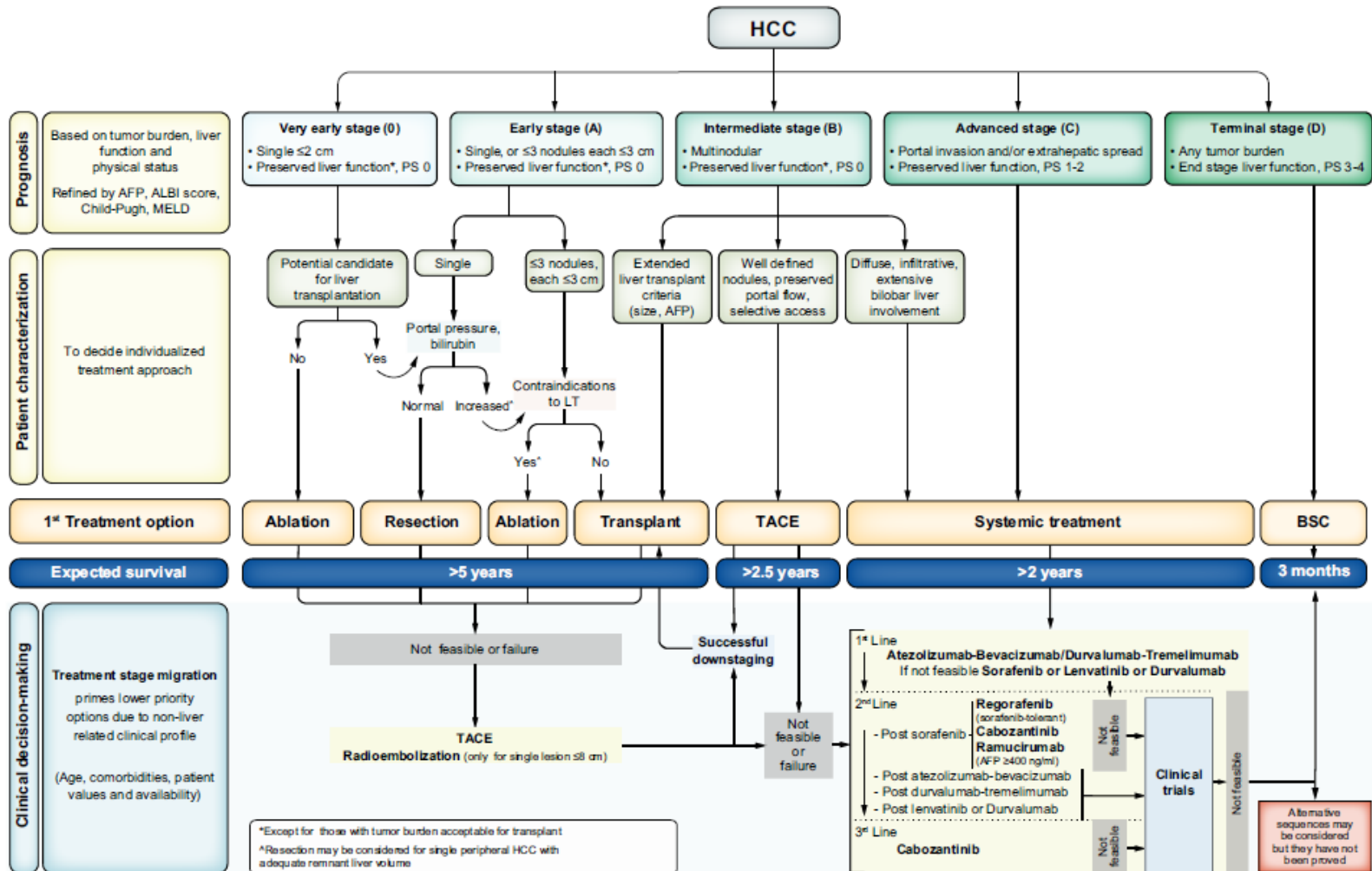
2018

2010

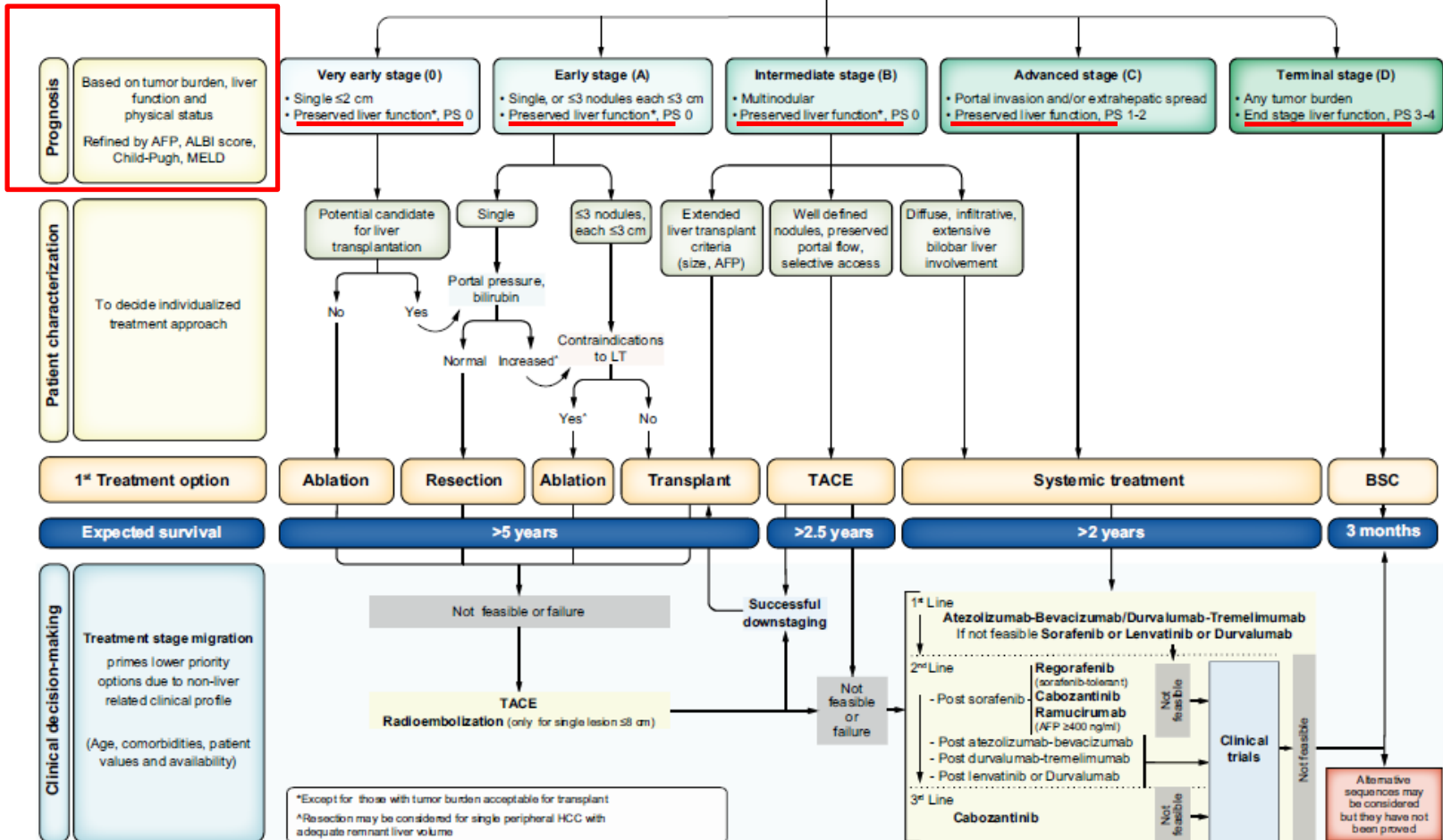


Prognosis	Effective treatments with impact on survival				
Survival	>5 years	>2.5 years	>1 year	3 months	

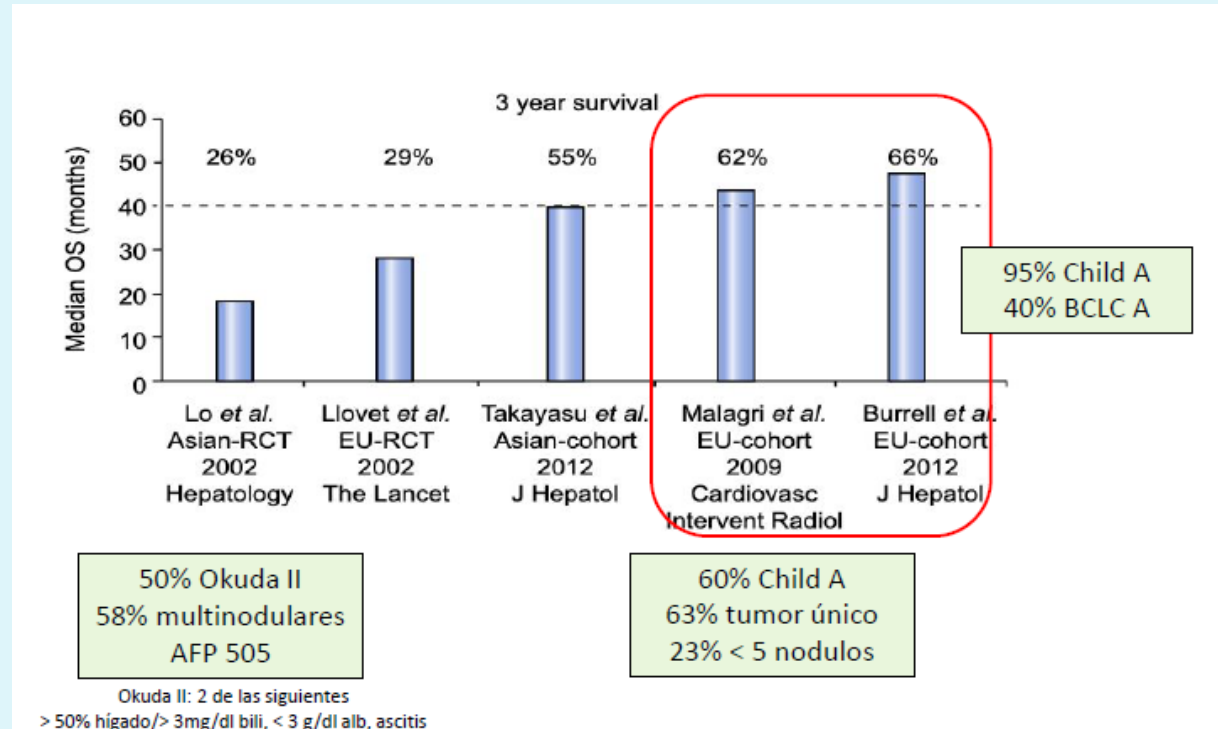
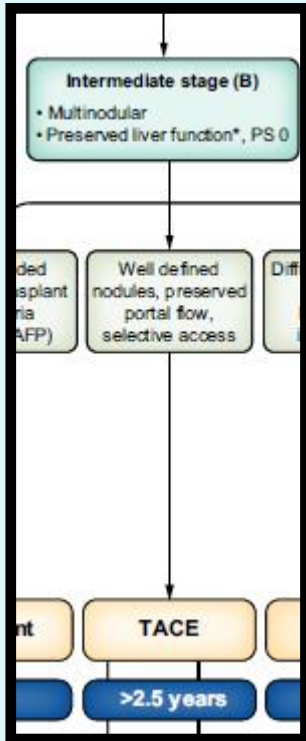
¿ES IMPORTANTE?...BCLC 2022



¿ES IMPORTANTE?...BCLLC 2022



TACE



- Baja carga tumoral: BCLC A o B en límite de Milán
- Buena función hepática

TACE



A

BCLC B subclassification	BCLC sub-stage	B1	B2	B3	B4
	Child-Pugh score	5-6-7	5-6	7	8-9
	Beyond Milan and within Up to 7	in	out	out	any
	ECOG-PS	0	0	0	0-1
	Portal vein thrombosis	no	no	no	no

B

HAP score			
	Albumin <36 g/dl	→ 1 point	HAP A 0 point
	AFP >400 ng/ml	→ 1 point	HAP B 1 point
	Bilirubin >17 µmol/L	→ 1 point	HAP C 2 points
	Max TU diameter >7 cm	→ 1 point	HAP D >2 points

C

STATE score	
	Albumin (mg/dl)
	- 12 (if CRP ≥1)
	- 12 (if up-to-seven out)

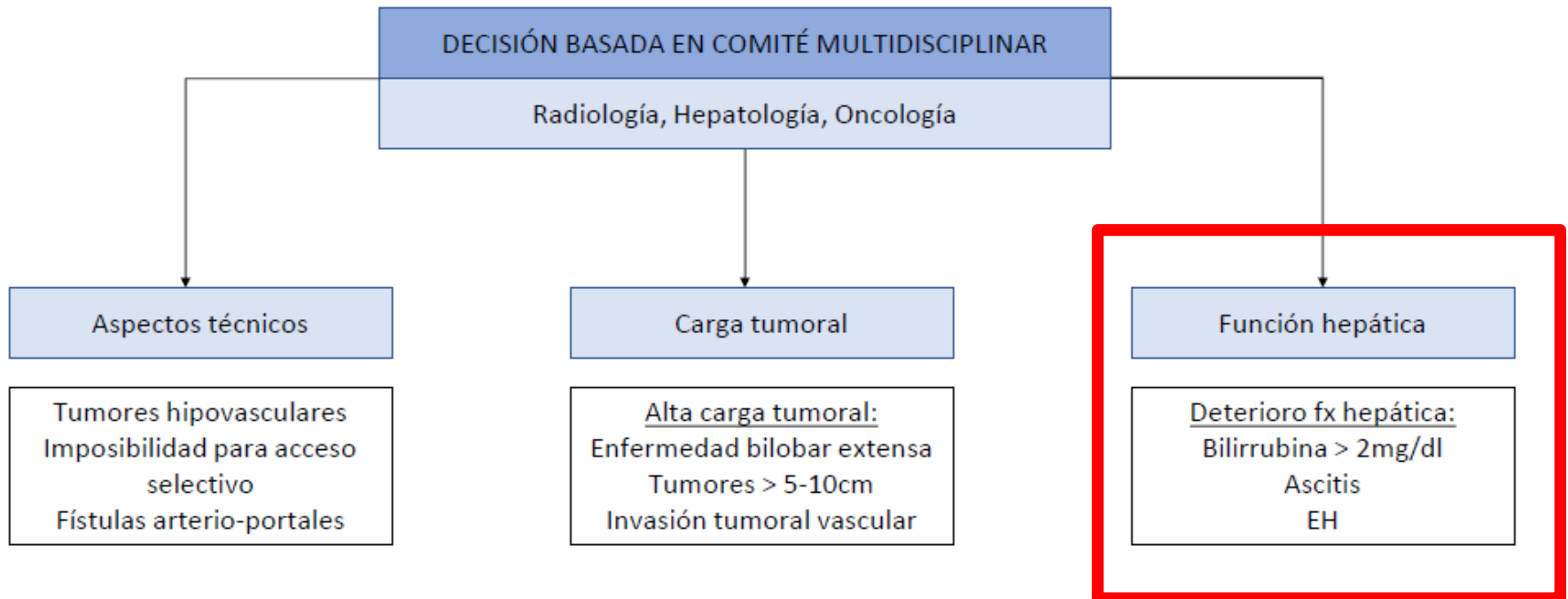
D

ART score	
	Absence of radiologic response → 1 point
	AST increase >25% → 4 points
	Child-Pugh increase: 1 point → 1.5 points
	≥2 points → 3 points

HAP A: OS 26 meses
 HAP B: OS 18,5 meses
 HAP C: OS 12,5 meses
 HAP D: OS 10 meses

STATE >18 OS: 19,5 meses
 STATE <18 OS: 5,3 meses

TACE. Malos candidatos



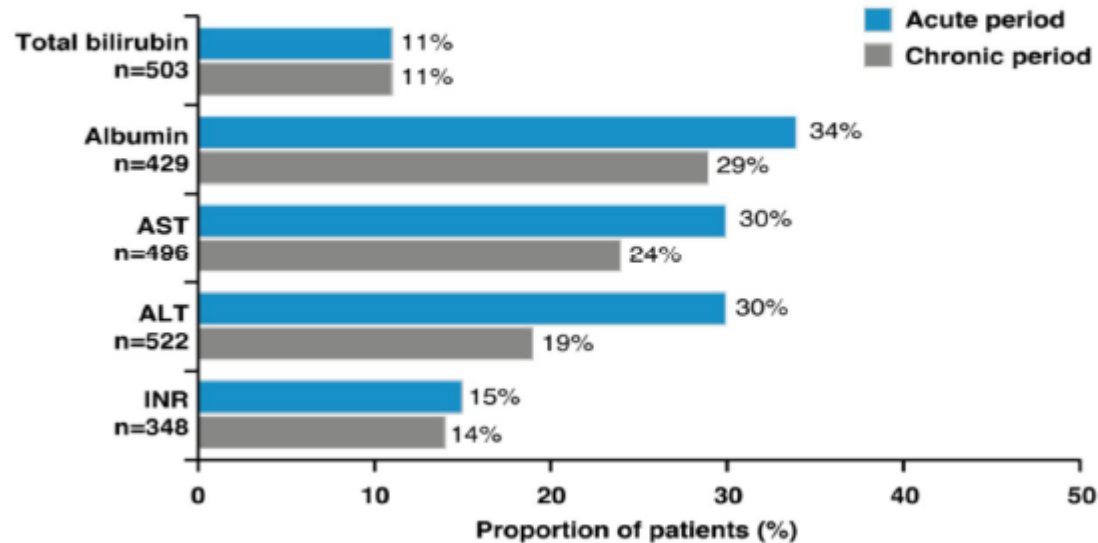
TACE. Malos candidatos



¿Qué peaje paga el paciente mal candidato o refractario?

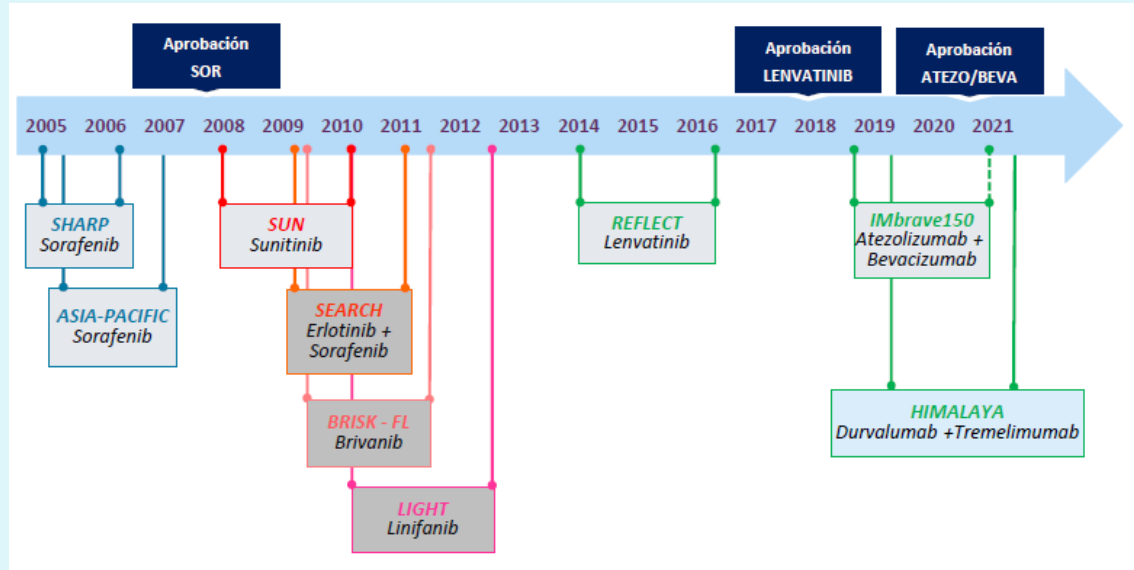
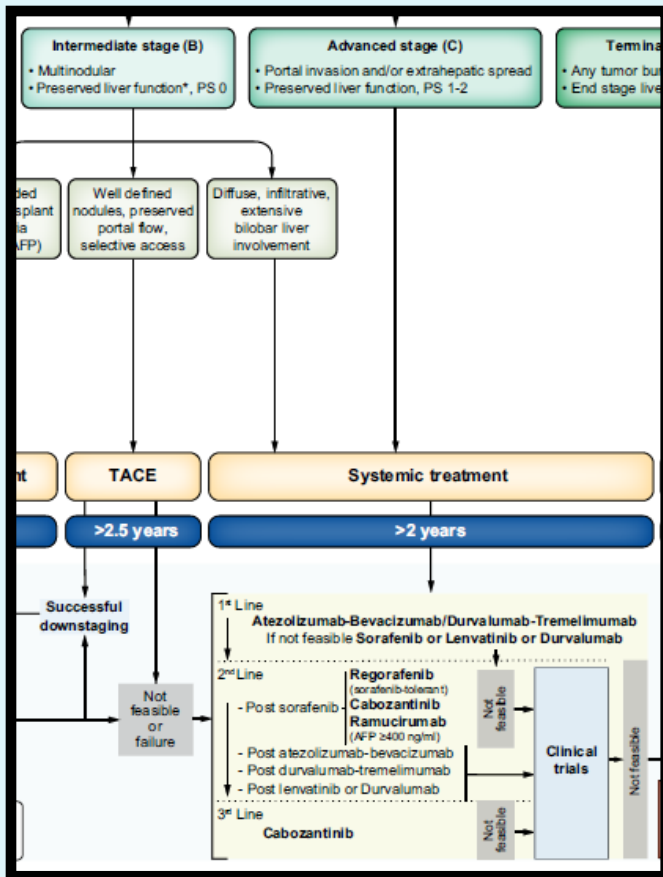
Más deterioro de función hepática

Menos supervivencia

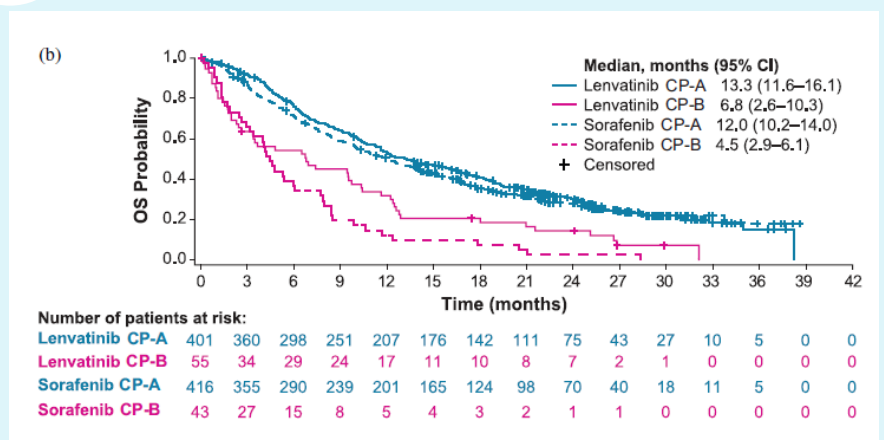
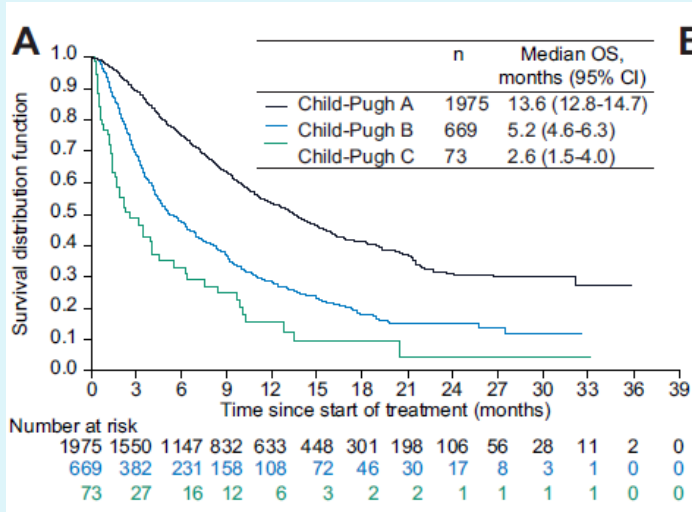


Pacientes con empeoramiento analítico tras primera TACE

TRATAMIENTO SISTÉMICO



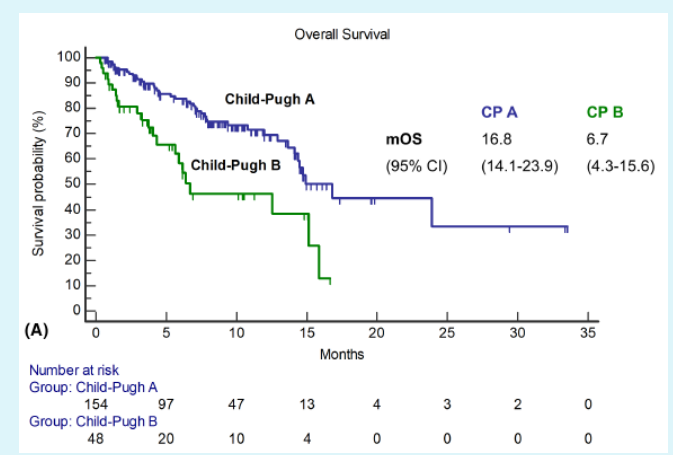
TRATAMIENTO SISTÉMICO



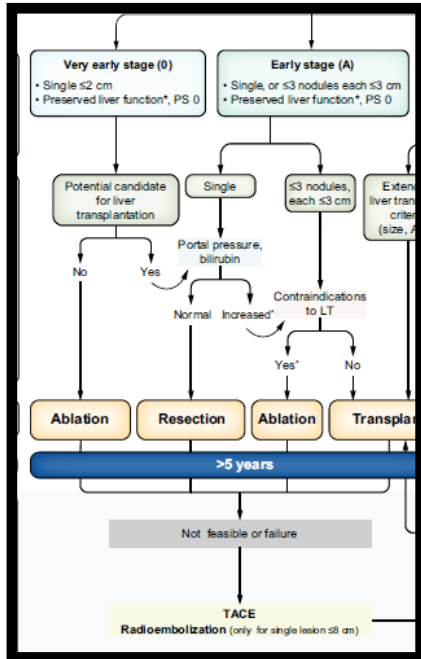
REFLECT (SORAFENIB vs. LENVATINIB)
A.Vogel ASCO 2020

GIDEON (observacional SORAFENIB)
J. Marrero. JHep 2016

ATEZO-BEVA
D`alessio. Hepatology 2022



CIRUGIA



Indicaciones quirúrgicas directamente relacionadas con la cirrosis



Pared abdominal
 ✓ Hemia umbilical



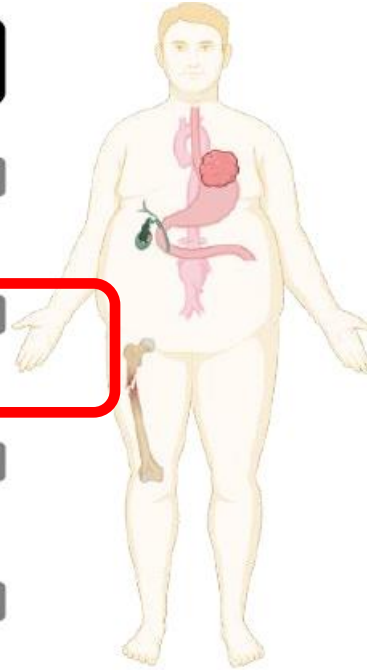
Hepática
 ✓ Carcinoma hepatocelular
 ✓ Derivativa
 ✓ Trasplante



Proctológica
 ✓ Hemorroidectomía



Piel y partes blandas
 ✓ Celulitis
 ✓ Hematomas intramusculares



Indicaciones quirúrgicas "aparentemente" no relacionadas con la cirrosis

Oncológica
 ✓ Neoplasias ORL (X5)
 ✓ Neoplasias de esófago (X3)



Bilio-pancreática
 ✓ Colectomía
 ✓ Pancreática



Cardiovascular
 ✓ Cardíaca (valvular)
 ✓ Vascular (aneurismas)



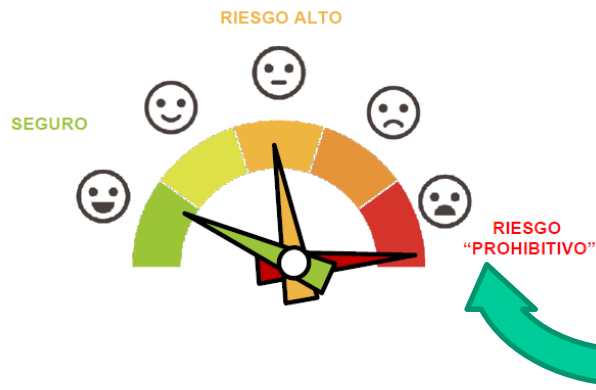
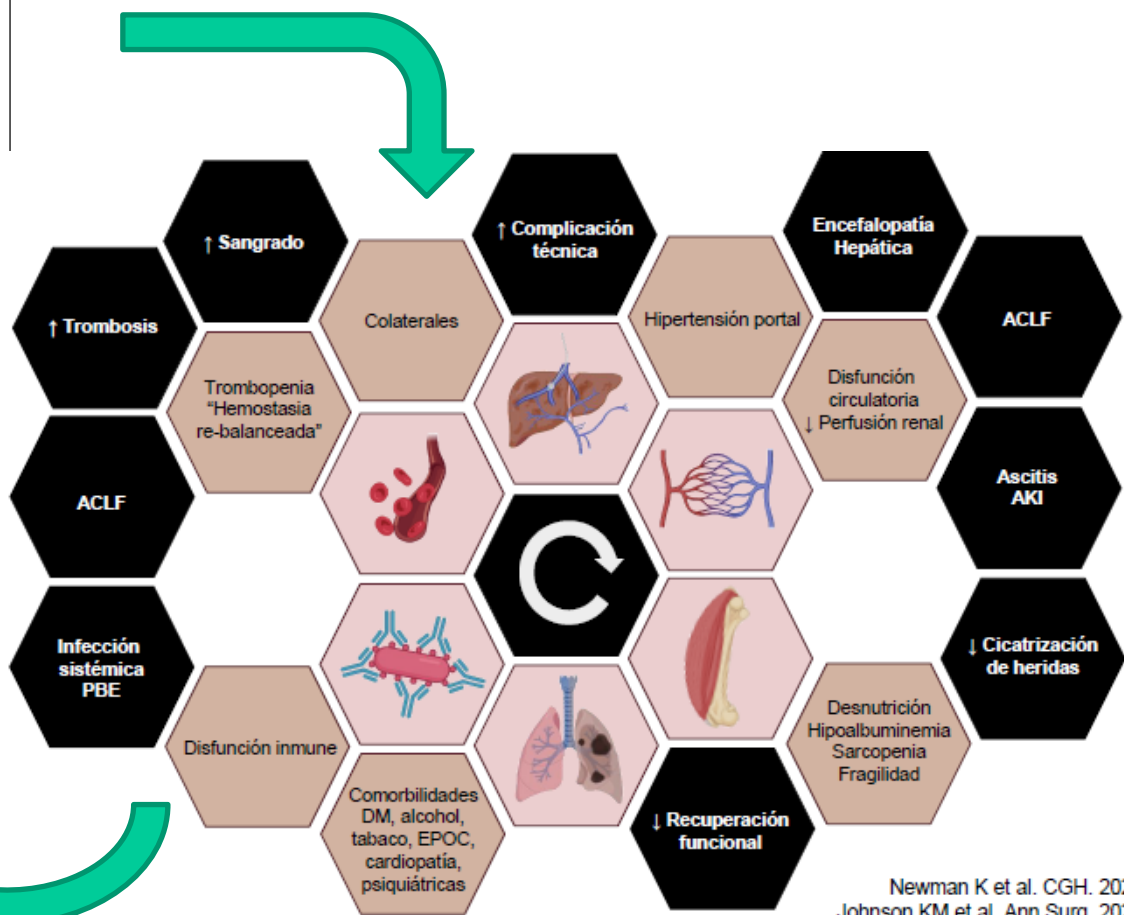
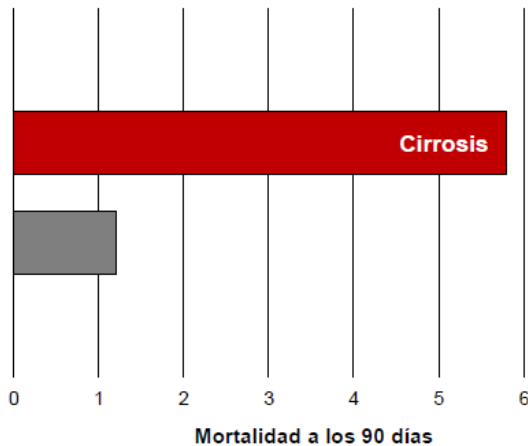
Traumatológica
 ✓ Fracturas patológicas (osteoporosis)



CIRUGIA

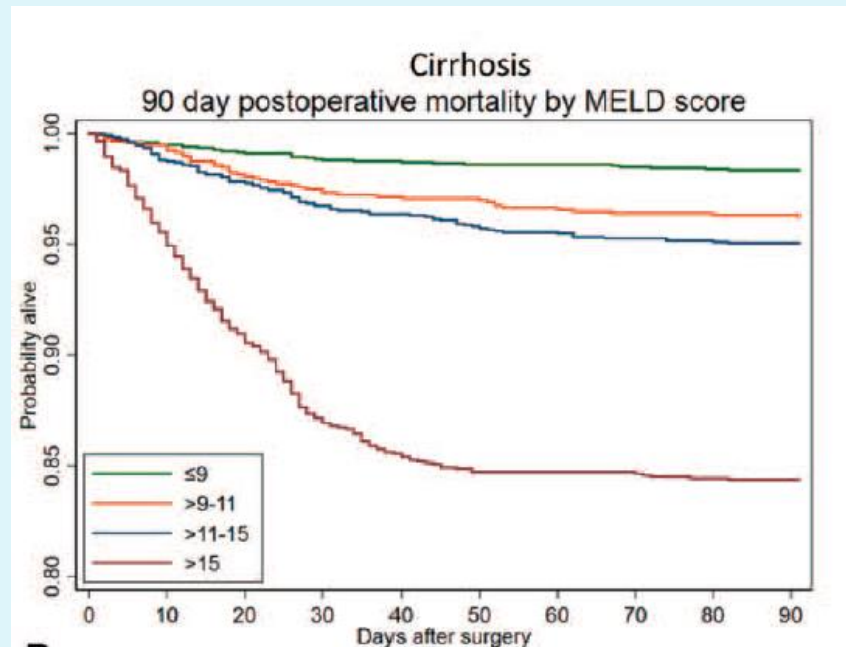
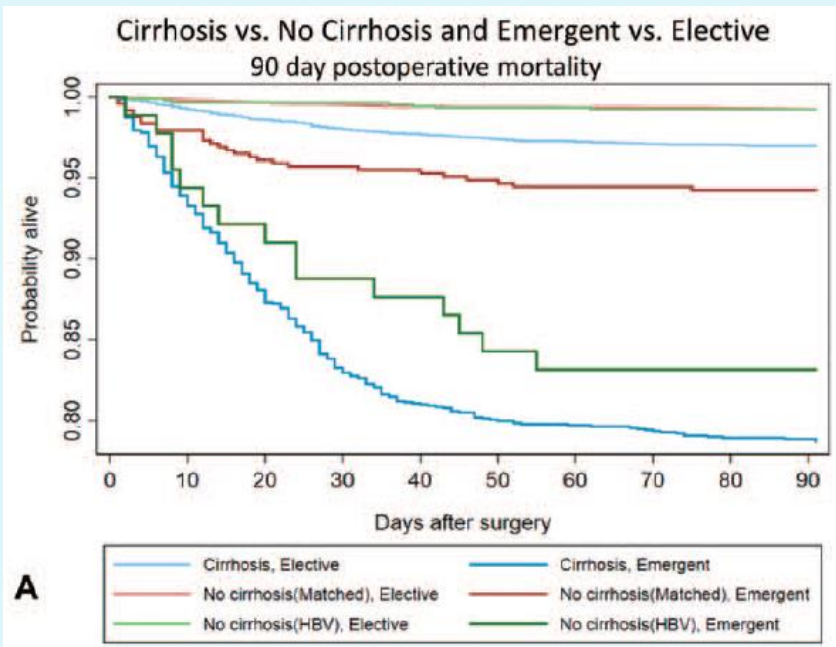


“La cirrosis multiplica **X2-10** el riesgo de muerte relacionado con una cirugía



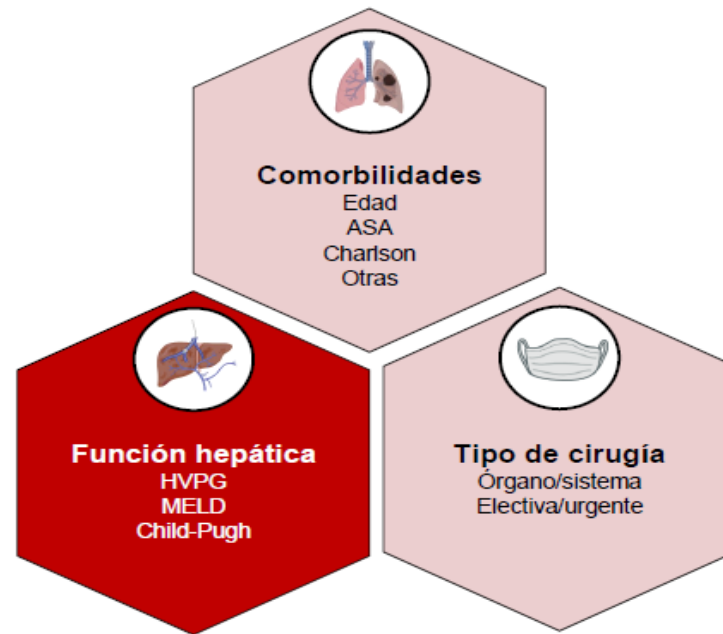
Newman K et al. CGH. 2020
Johnson KM et al. Ann Surg. 2021

RIESGO QUIRÚRGICO



Cirugía electiva NO cirrótico	1,1%
Cirugía electiva cirrótico	3%
Cirugía urgente NO cirrótico	4,9%
Cirugía urgente cirrótico	21,3%

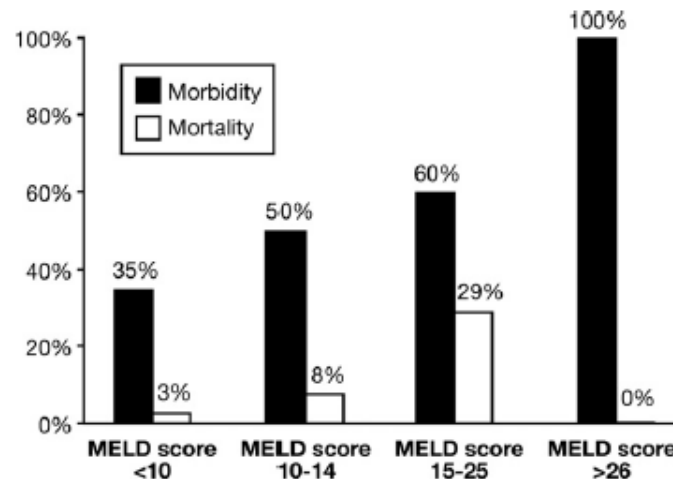
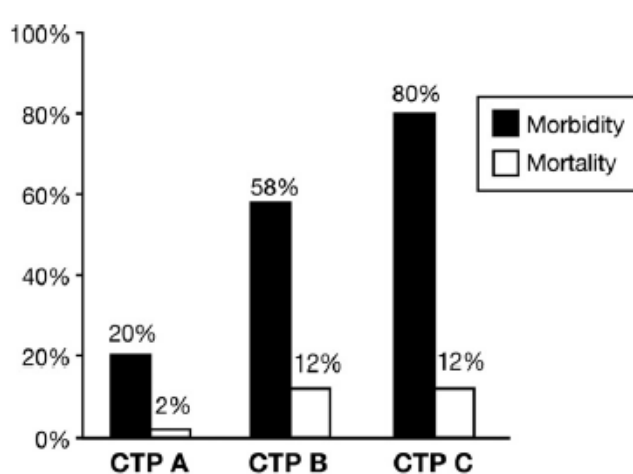
VALORACIÓN FUNCIÓN HEPÁTICA



VALORACIÓN FUNCIÓN HEPÁTICA



Modelo predictivo	Componentes	Puntos de corte sugeridos
Child-Pugh ^{1,2,3}	Encefalopatía, ascitis, albúmina, bilirrubina, INR	A: <5-10% B: 10-40% C: 20-100% → cirugía electiva contraindicada
MELD ^{2,3,4}	Creatinina, bilirrubina, INR	MELD ≥15 (c-index 0,72) <8: 5.7% >20: 50%



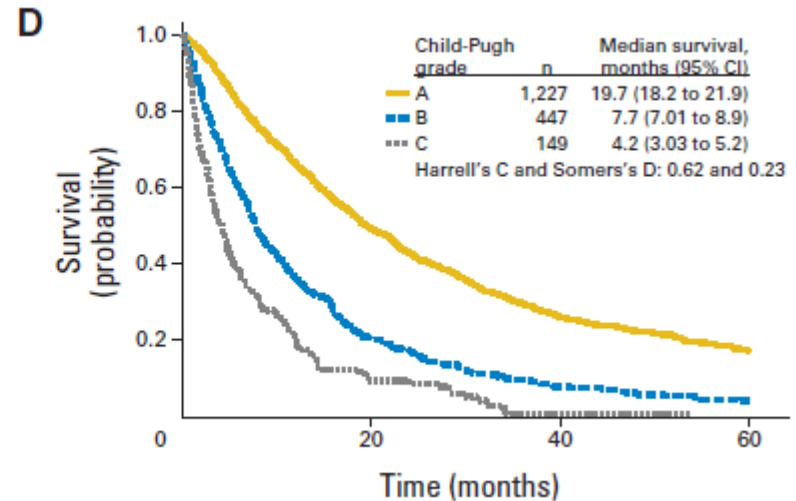
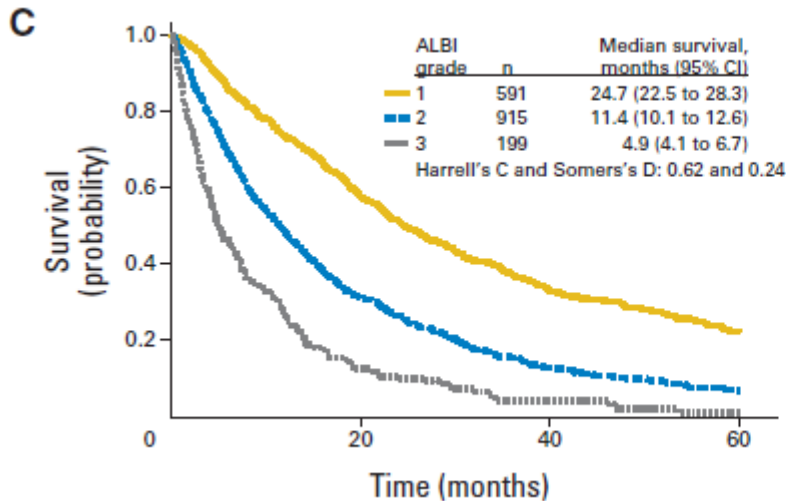
1. Zieser. Curr Opin Anest. 2001
2. Northup CGH 2019
3. Northup Ann Surg 2005
4. Teh Gastroenterology 2007
5. Telem CGH 2010

VALORACIÓN FUNCIÓN HEPÁTICA

ALBI SCORE



$$\text{ALBI score} = (\log_{10} \text{bilirubin } [\mu\text{mol/L}] \times 0.66) + (\text{albumin } [\text{g/L}] \times -0.085)$$



Grado 1: < - 2.6
 Grado 2: > -2.6 y < -1,39
 Grado 3: > -1,39

Johnson et al. J Clinical Oncol 2015; 33: 550-8

VALORACIÓN FUNCIÓN HEPÁTICA

ALBI SCORE



	ALBI grade/score	Child-Pugh grade/score
Assessment	Objective	Subjective (ascites and encephalopathy)
Confounding factor	None	Albumin and ascites
Factors, <i>n</i>	2 (Alb, Bil)	5
Frequency of data deficit	Low	High
Continuous variable	Yes	No
Easy to calculate	No (log scale)	Yes

ALBI, albumin-bilirubin.

SCORES PRONÓSTICOS COMBINADOS



Modelo predictivo	Componentes	Puntos de corte sugeridos/ características
ADOPT-LC score¹	Edad, Child-Pugh, Charlson, duración de anestesia	3,5 puntos, aunque es difícilmente aplicable (21 ítems incluidos, alguno dependiente de la propia cirugía)
Mayo Postoperative Mortality Risk Calculator²	ASA, MELD, etiología (alcohólica/ colestásica)	MELD >8 HR 1.12 ASA >4 HR 2.26 Edad HR 1.22
VOCAL-Penn³	ASA, tipo de cirugía, urgente/electiva, etiología, albúmina, plaquetas, bilirrubina, obesidad	Riesgo individualizado Predice mortalidad y descompensación

1. Sato M et al. Hepatol Res. 2017
2. Teh SH et al. Gastroenterology. 2007
3. Mahamud et al. Hepatology. 2021

SCORE MAYO



What is the age?

What is the ASA score?
Enter 3 for compensated cirrhosis
Enter 4 for decompensated cirrhosis

What is the bilirubin? (mg/dl)

What is the creatinine? (mg/dl)

What is the INR?

What is the etiology of cirrhosis?
 Alcoholic or Cholestatic
 Viral/Other

Compute <https://www.mayoclinic.org>

- No incluye tipo cirugía
- No todas etiologías (MAFLD...)
- Sobreestima mortalidad a largo plazo
- Cirugías en “otros tiempos”
1980-2004
Unicéntrico (prácticas locales)
Avances recientes?

Mortalidad (media)	Predicho (Mayo)	Real	P (<0.05)
30 días	7.5%	6.1%	0.13
1 año	22.6%	8.9%	<0.01

Teh Gastroenterology 2007
Mahamud Hepatology 2021
Johson KK Ann Surg 2021
Kim Liv Int 2010

SCORES PRONÓSTICOS COMBINADOS



Modelo predictivo	Componentes	Puntos de corte sugeridos/ características
ADOPT-LC score¹	Edad, Child-Pugh, Charlson, duración de anestesia	3,5 puntos, aunque es difícilmente aplicable (21 ítems incluidos, alguno dependiente de la propia cirugía)
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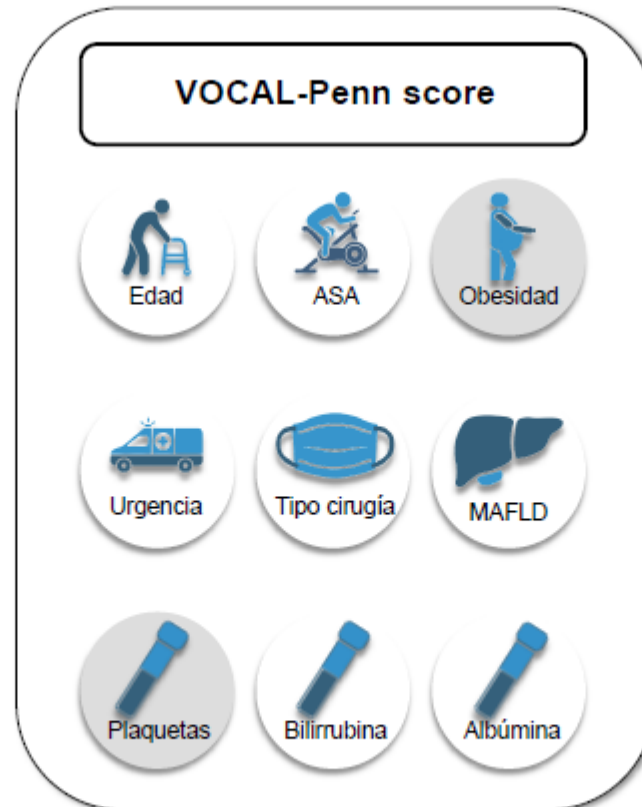
1. Sato M et al. Hepatol Res. 2017
2. Teh SH et al. Gastroenterology. 2007
3. Mahamud et al. Hepatology. 2021

SCORE VOCAL PENN



- ✓ N=4,721 cirugías
- ✓ Periodo: 2008-2019
- ✓ EEUU
- ✓ Etiologías:
 - VHC 13%
 - MAFLD 12%
 - VHB 1.5%
 - Alcohol 35%
 - Alcohol + VHC 29,5%

- ✓ Validación externa
- ✓ Predice mortalidad
- ✓ Predice descompensación
- ✓ Fácil de utilizar



- ✗ ¿Factores **modificables**?
 - Hipertensión portal
 - **Sarcopenia**
 - ¿Obesidad?
 - ¿Coagulopatía?
- ✗ **No válido para** ♀
 - ♂ (97%) blancos (63%)

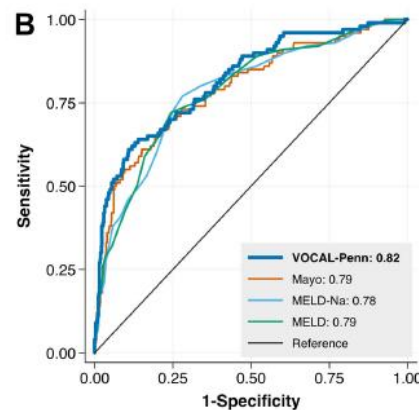
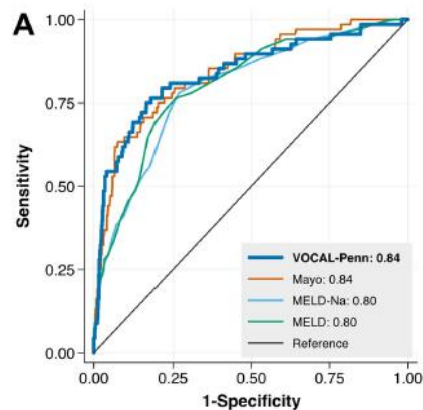
SCORE VOCAL PENN



- Predice mortalidad
- Predice descompensación
- Fácil de utilizar
- Validación externa

The screenshot shows the VOCAL-Penn Cirrhosis Surgical Risk Score calculator. The interface is divided into two main sections: data entry and predicted outcomes. The data entry section includes fields for Age (years), Albumin (g/dL), Total Bilirubin (mg/dL), Platelet Count (x1,000/ μ L), BMI \leq 30 (Yes/No), NAFLD (Yes/No), ASA Score (2, 3, 4), Emergency (Yes/No), and Surgery Type (dropdown menu). A 'Calculate' button is at the bottom. The predicted outcomes section shows 30-day mortality, 90-day mortality, 180-day mortality, and 90-day decompensation, each with an input field and a 'Copy' button. A disclaimer at the bottom states: "VOCAL-Penn predicts post-operative mortality for patients with cirrhosis. It incorporates the type and circumstance of surgery under consideration, and utilizes other important and readily available clinical data. Predictions may be used to risk-stratify patients for surgery and help inform decisions to pursue surgical or non-surgical management. **Disclaimer: note that VOCAL-Penn predictions should not substitute for clinical judgment. They are an adjunctive tool to be used in prognostic discussions between clinicians and patients.**"

<https://www.vocalpenscore.com/>



SCORE RAM



Risk factors for early mortality after hepatectomy for hepatocellular carcinoma

Chao-Wei Lee, MD^{a,b,c}, Hsin-I Tsai, MD^{c,d}, Chang-Mu Sung, MD^{a,e}, Chun-Wei Chen, MD^e, Shu-Wei Huang, MD^e, Wen-Juei Jeng, MD, PhD^e, Tsung-Han Wu, MD^a, Kun-Ming Chan, MD^{a,b}, Ming-Chin Yu, MD^{a,b,c,*}, Wei-Chen Lee, MD^{a,b}, Miin-Fu Chen, MD^{a,b}

Table 6

Risk Assessment for early Mortality (RAM) score for hepatectomy for hepatocellular carcinoma.

Variables	Score allocation*	Total score	No. (% of total)	6-mo mortality (%)	Total score	No. (% of total)	6-mo mortality (%)
Diabetes mellitus	1	0	36 (1.8)	1 (2.8)	6	203 (10.5)	27 (13.3)
Albumin \leq 3.5g/dL	2	1	36 (1.8)	2 (5.6)	7	112 (5.7)	21 (18.75)
α -fetoprotein $>$ 200ng/mL	2	2	532 (27.5)	11 (2.1)	8	76 (3.9)	12 (15.8)
Major resection [†]	1	3	308 (15.9)	10 (3.2)	9	39 (2.0)	9 (25.6)
Blood loss $>$ 800 mL	1	4	288 (14.9)	20 (6.9)	10	6 (0.3)	2 (33.3)
Major surgical complications [‡]	3	5	299 (15.5)	30 (10)	Total	1935 (100)	145 (7.5)
RAM score[§]		Score				6-mo mortality (%)	
Class I		0–6		101 (5.9)			<i>P</i> < 0.001
Class II		7–9		42 (18.5)			
Class III		10		2 (33.3)			

*The regression coefficients (β) were multiplied by 2 and rounded to integer in order to calculate the RAM score.

[†]Includes trisegmentectomy, right/left lobectomy, and extended right/left lobectomy.

[‡]Major surgical complications include grade III–IV surgical complications.

[§]AUC=0.725, *P* < 0.001. When cutoff score is 4.5, the sensitivity and specificity for 6-month mortality was 0.705 and 0.648, respectively.

SCORE RAM



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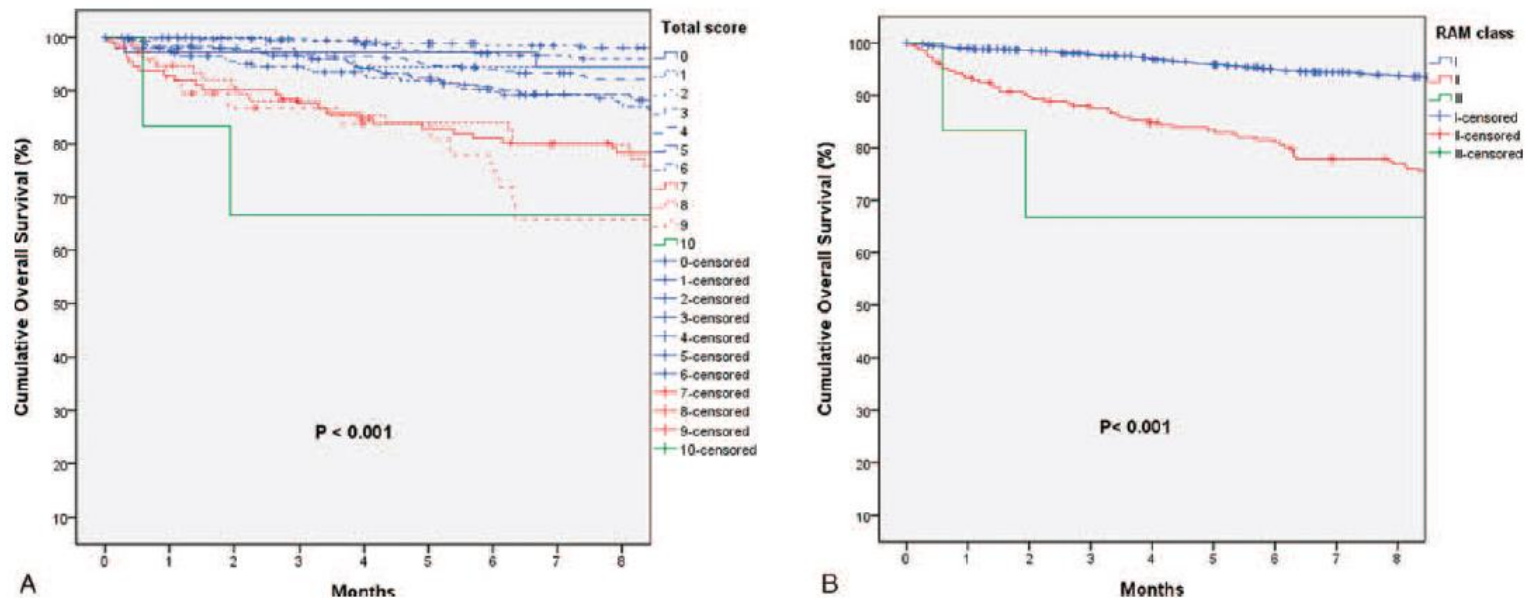


Figure 1. (A and B) Six-month Kaplan–Meier survival curves and predictive significance of the RAM score. (A) Predictive significance of the single point scores. The higher the individual RAM score, the higher the risk of 6-month mortality after hepatectomy for HCC. The development of a trichotomized RAM score was achieved by visual inspection of the Kaplan–Meier survival curves. Three groups of patients with distinct 6-month survival were identified, with score 0 to 6, 7 to 9, and 10 as 3 different groups. (B) Predictive significance of the RAM class. RAM class I had only 6% risk of early mortality, while one-third of patients died within 6 months after hepatectomy if they were RAM class III.

FALLO HEPÁTICO EN PACIENTE CIRRÓTICO TRAS HEPATECTOMIA



An ordinal model to predict the risk of symptomatic liver failure in patients with cirrhosis undergoing hepatectomy

Table 3. Predictors of ISGLS grades¹ after multivariate imputed analysis.

Variables	Odds ratio (95% CI)	p value
Preoperative model		
Intended laparoscopic liver resection	0.31 (0.18-0.53)	<0.001
RTL ²	1.45 (1.43-1.47)	<0.001
Platelet count ³	0.70 (0.56-0.89)	0.003
Postoperative model		
Non converted laparoscopic liver resection	0.25 (0.12-0.51)	<0.001
RTL ²	1.47 (1.44-1.49)	<0.001
Platelet count ³	0.75 (0.59-0.95)	0.012
Blood loss		
Linear term	$1.2 \cdot 10^3$ ($6.8 \cdot 10^1$ - $2.3 \cdot 10^5$)	
Quadratic term	$6.7 \cdot 10^{-2}$ ($3.9 \cdot 10^{-3}$ -1.2)	<0.001

ISGLS, International Study Group of Liver Surgery; RTL, remnant to total liver volume.

Multivariate analyses were performed using an ordinal logistic regression model with proportional odds ratio after handling missing data by multiple imputations.

¹ Post-hepatectomy liver failure was classified according to the International Study Group of Liver Surgery (Rahbari, Surgery 2011).

² Odds ratio per 25 units decrease.

³ Odds ratio per 10,000 units increase.

<https://prodeau.shinyapps.io/shiny/>

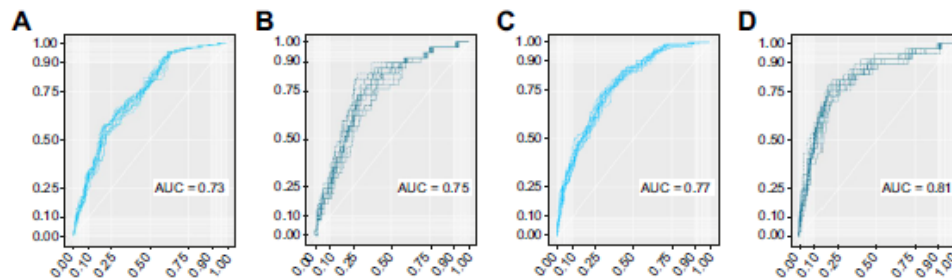
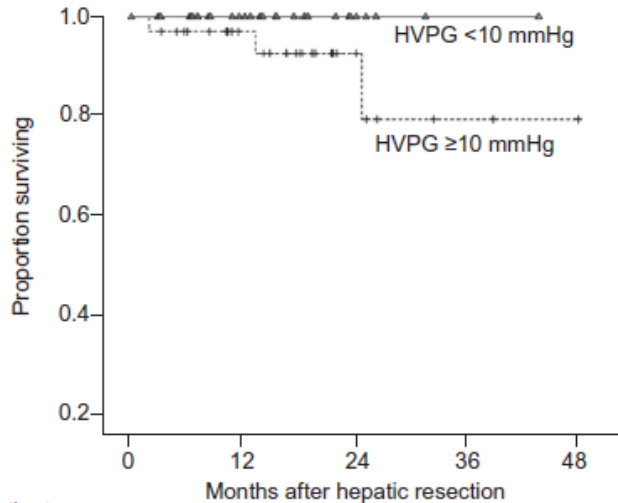
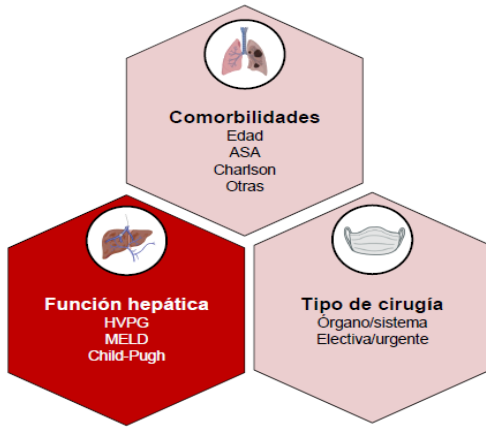


Fig. 2. Receiver-operating characteristic curves and AUC of the 2 predictive models of PHLF. (A) Preoperative model for PHLF grades B/C vs. 0/A; (B) preoperative model for PHLF grade C vs. 0/A/B; (C) postoperative model for PHLF grades B/C vs. 0/A; (D) postoperative model for PHLF grades C vs. 0/A/B. PHLF was graded according to the International Study Group of Liver Surgery. Each of the 4 plots represents the 20 receiver-operating characteristic curves corresponding to the 20 imputed datasets. The AUC values summarise the mean of the AUCs from each imputed dataset. AUC, area under the receiver-operating characteristic curve; PHLF, post-hepatectomy liver failure. (This figure appears in colour on the web.)

CIRUGIA. GPVH



At risk patients

HVPG <10 mmHg	36	21	5	2	0
HVPG ≥10 mmHg	34	22	8	3	2

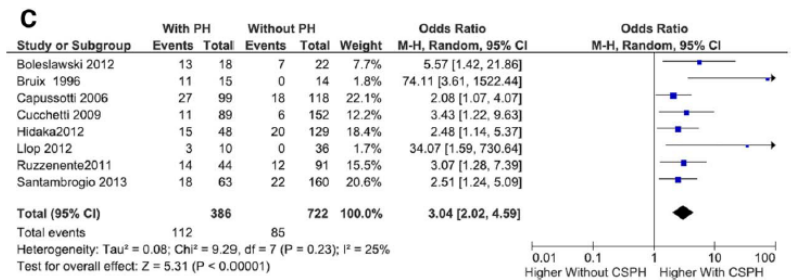
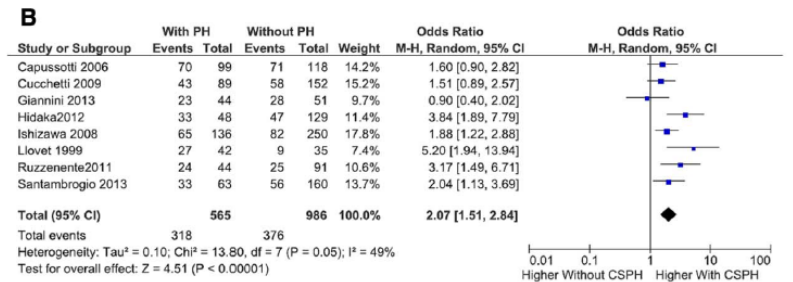
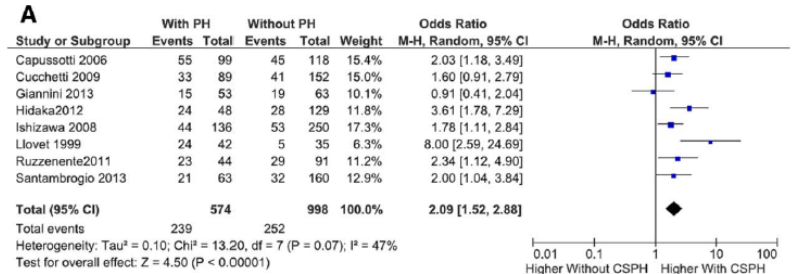
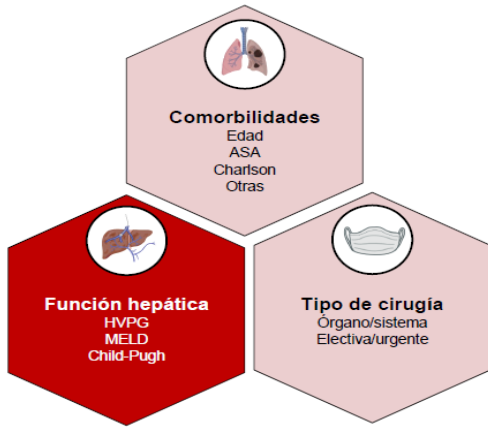


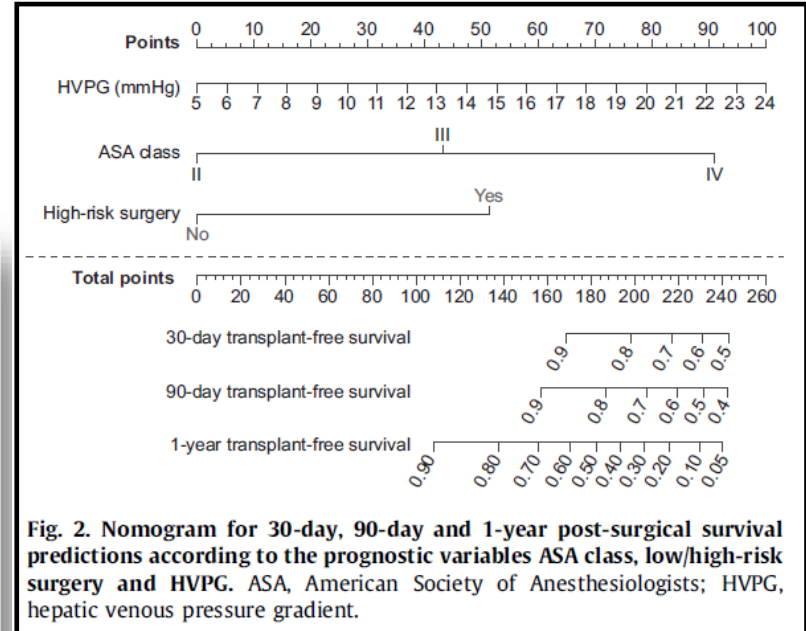
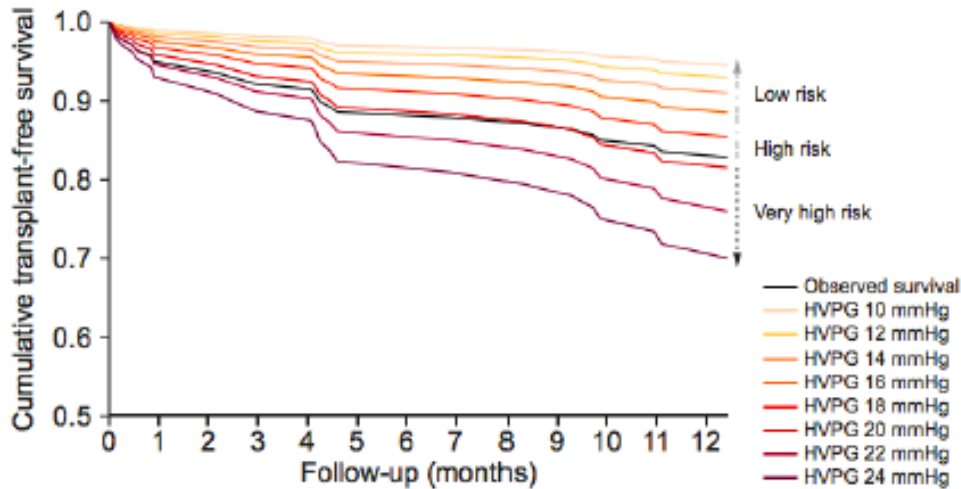
Fig. 2. Impact of CSPH on postoperative outcomes of patients with HCC and compensated cirrhosis in all the included studies. (A) Three-year mortality. (B) Five-year mortality. (C) Clinical decompensation.

Reverter E. et al. J Hepatol 2019
Cucchetti et al. J Hepatol 2016

CIRUGIA. GPVH



N=140
Cirugías electivas (la mayoría abdominales)



Reverter E. et al. J Hepatol 2019

- GPVH >16 mmHg -HR 2.5- (y especialmente ≥ 20 mmHg -HR 6.7-) se asocian a alta mortalidad
- Variables asociadas a mortalidad a 1 año: GPVH, ASA, cirugías de alto riesgo (no MELD ni Child-Pugh)
- Ningún caso con GPVH <10 mmHg se descompensó

CIRUGIA. GPVH



DATOS HTP	DIRECTOS	INDIRECTOS
	>10 mmHg	Varices
		<100.000 plaquetas
		Esplenomegalia
		Fibroscan > 23 Kpa

ELASTOGRAFÍA

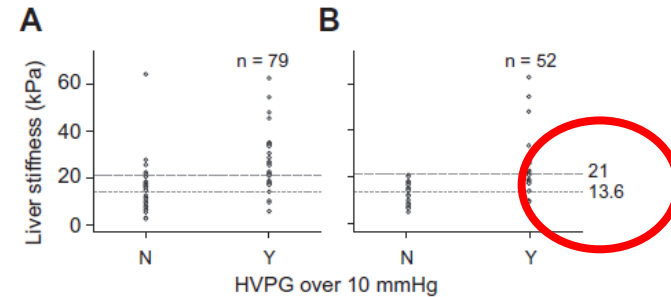
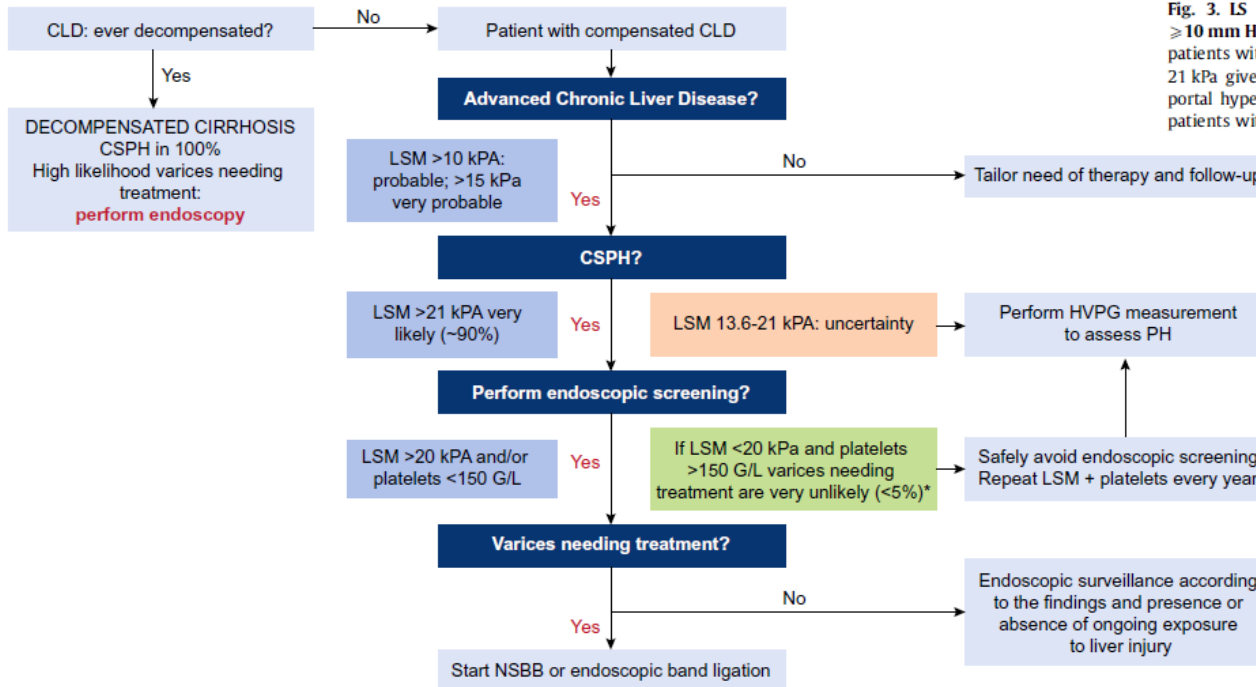


Fig. 3. LS values according to the presence or absence of CSPH (HVPG ≥ 10 mmHg). (A) In the whole population of the study (n = 97) and (B) in patients with HCV-related cirrhosis (n = 52). As shown, values between 13.6 and 21 kPa give no information on the presence or absence of clinically significant portal hypertension, therefore constituting a 'grey zone' for CSPH prediction in patients with potentially resectable hepatic nodules.



Berzigotti. JI of Hep 2017 vol. 67 -399–411
 Rajakannu J of Hep 2018 vol. 68.199–220
 Llop J of Hep 2012 Vol 56 103-108

CIRUGIA. TIPS



X No indicado de **rutina**

✓ En descompensados → TIPS (es posible que ya esté indicado)

? En compensados → Necesitamos **criterios de selección objetivos**

- ¿GPVH? → 16 mmHg (Reverter et al. J Hepatol. 2019)
- ¿Elastografía?
- ¿Marcadores serológicos?

? Preguntar las “**necesidades al cirujano**” → Campo quirúrgico (cx pélvica, colon...)

? ¿Cuánto **tiempo** hay que esperar para la cirugía?

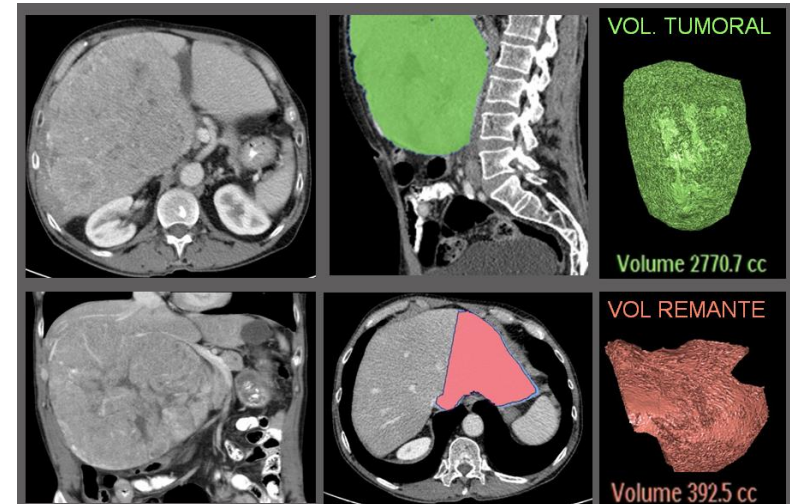
CIRUGIA.VOLUMETRÍA



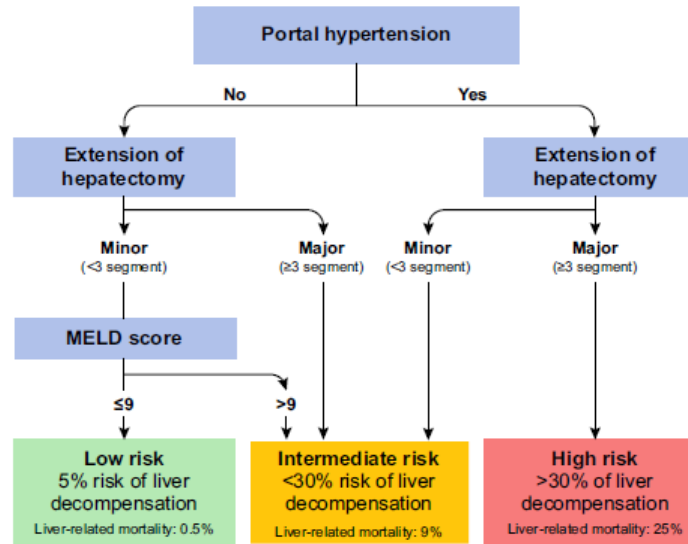
Tabla 1 Volumetría hepática residual y límites de resección recomendados

Condición hepática preoperatoria	VHR mínimo recomendado
<i>Hígado sano</i>	20-25%
<i>Esteatosis</i> Quimioterapia previa	30-60%
<i>Cirrosis</i>	40-70%

VHR: volumen hepático residual.



CIRUGIA. VALORACIÓN GLOBAL



		Extension of hepatectomy	
		Major	Minor
Portal hypertension	Yes	High risk	Intermediate risk
	No	Intermediate risk	Low risk (MELD score ≤9) Intermediate risk (MELD score >9)

PERFILAR EL PACIENTE



COMITÉ MULTIDISCIPLINAR



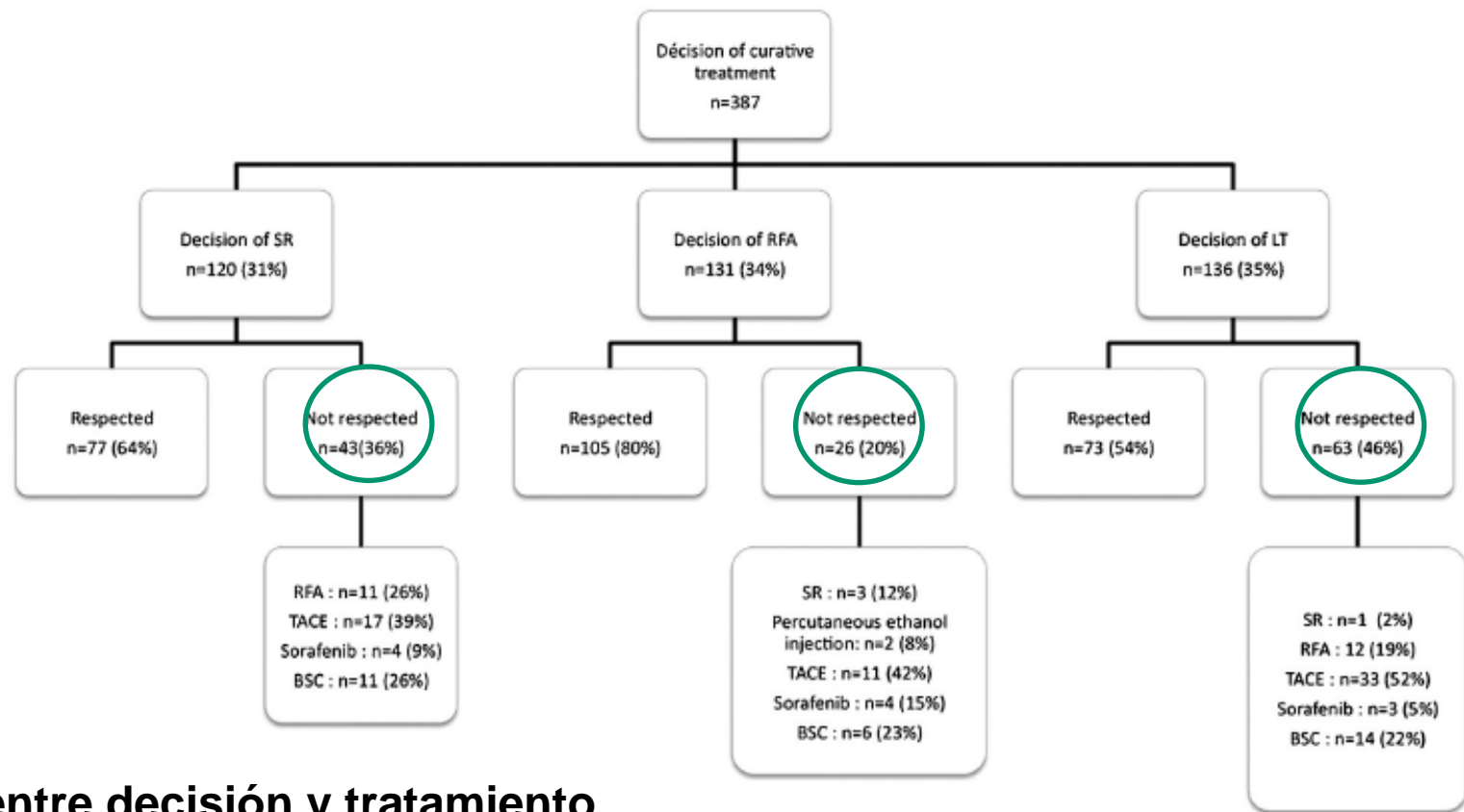
	Patient-related reasons			Physician-related reasons		Other ^c	Total ^b <i>n</i> (%)
	Patient did not follow up	Patient deteriorated	Patient preference	Patient not a candidate	Treating physician preferred alternative		
Child–Pugh class A, <i>n</i>	14	4	6	20	24	2	70 (48.3%)
Child–Pugh class B, <i>n</i>	5	4	3	12	12	3	39 (26.9%)
Child–Pugh class C, <i>n</i>	4	10	4	5	7	4	34 (23.4%)
Child–Pugh class unknown, <i>n</i>	1	1	0	0	0	0	2 (1.4%)
Total ^a , <i>n</i> (%)	24 (16.6%)	19 (13.1%)	13 (9.0%)	37 (25.5%)	43 (29.7%)	9 (6.2%)	145

Table 5 Recommendations not followed

Recommendation not followed	<i>n</i> (%) ^a
Imaging	25 (17.2%)
Biopsy	31 (21.4%)
Resection	9 (6.2%)
Transplant	9 (6.2%)
Radiofrequency ablation	31 (21.4%)
Transarterial chemoembolization	15 (10.3%)
Cyberknife	19 (13.1%)
Systemic therapy	16 (11.0%)
Other	8 (5.5%)

^aBecause of multiple recommendations per multidisciplinary tumour conference, sum may be greater than 100%.

COMITÉ MULTIDISCIPLINAR



<60 días entre decisión y tratamiento

Fig. 2. Treatments performed among patients eligible for a curative treatment. BSC, best supportive care; LT, liver transplantation; RFA, radiofrequency ablation; SR, surgical resection; TACE, trans-arterial chemo-embolization.

GRACIAS



Monumento al hígado

