MASLD / HCC

ΕΠΙΔΡΑΣΗ ΣΥΝΝΟΣΗΡΟΤΗΤΩΝ ΣΤΗΝ ΕΠΙΛΟΓΗ ΤΗΣ ΘΕΡΑΠΕΥΤΙΚΗΣ ΑΝΤΙΜΕΤΩΠΙΣΗΣ

Η ΧΕΙΡΟΥΡΓΙΚΗ ΑΠΟΨΗ

Δημήτρης Π. Κορκολής

Χειρουργός

Επιστημονικά Υπεύθυνος Διευθυντής Χειρουργικής Κλινικής

ΓΑΟΝΑ «Άγιος Σάββας»

MS – Μεταβολικό Σύνδρομο

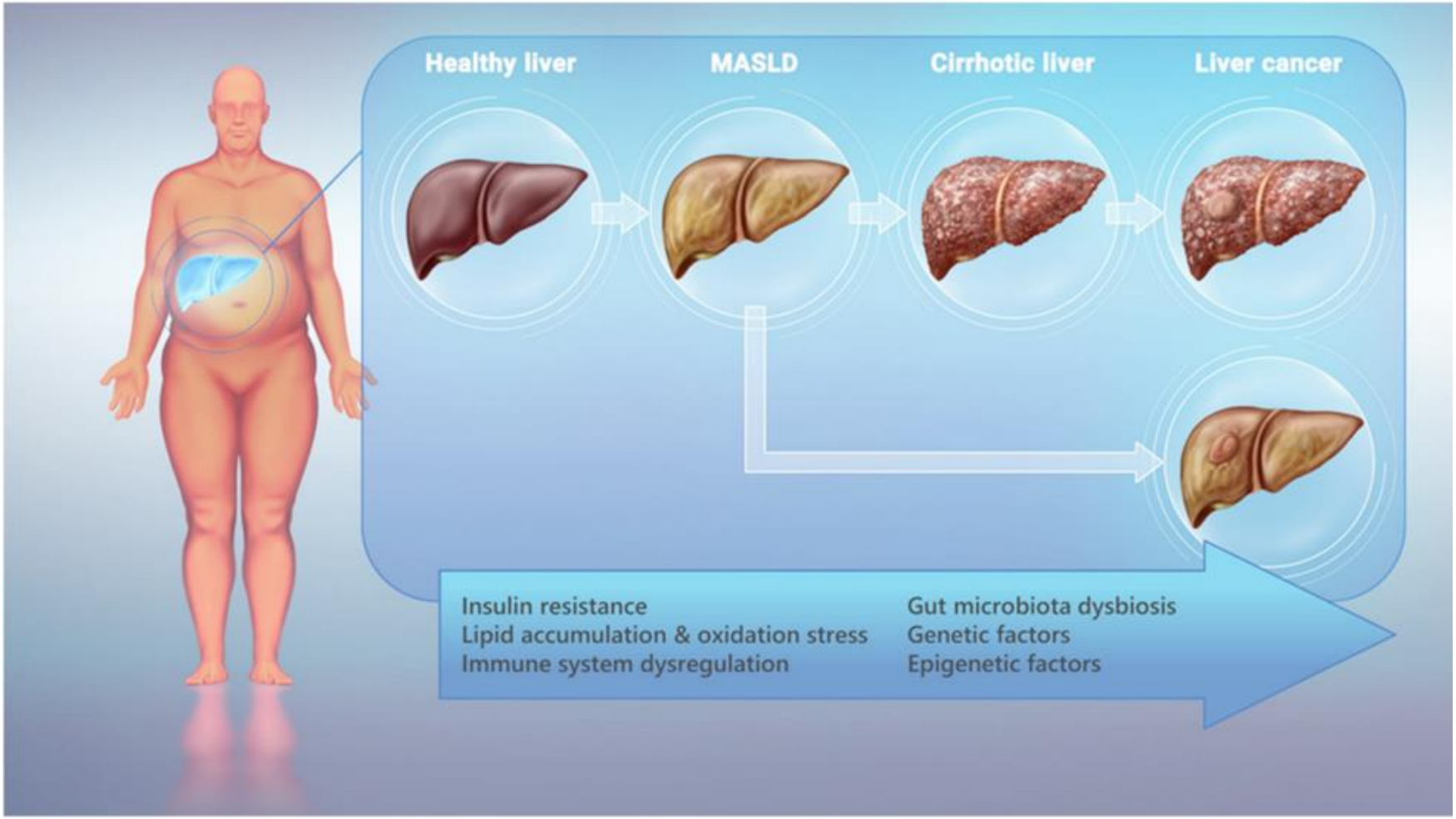
- Ενδημικές Διαστάσεις στο Δυτικό Κόσμο
- 25% στην Ευρώπη - 35% στις ΗΠΑ
- Μείζον Πρόβλημα της Δημόσιας Υγείας
- Ηπατική Εκδήλωση του MS: NAFLD/MASLD
- Συχνότερη Αιτία Χρονίας Ηπατοπάθειας
- Insuline Resistance → Fibrosis → Cirrhosis
- 15% - 30% → HCC
- 15% - 25% των Ηπατεκτομών για HCC έχουν MASLD
- Γυναίκες↑↑↑ - Older Age!
- Surveillance???

Eur J Prev Cardiol 2015

Cancer 2009

Br J Surg 2013

Mechanisms of nonalcoholic fatty liver disease and implications for surgery



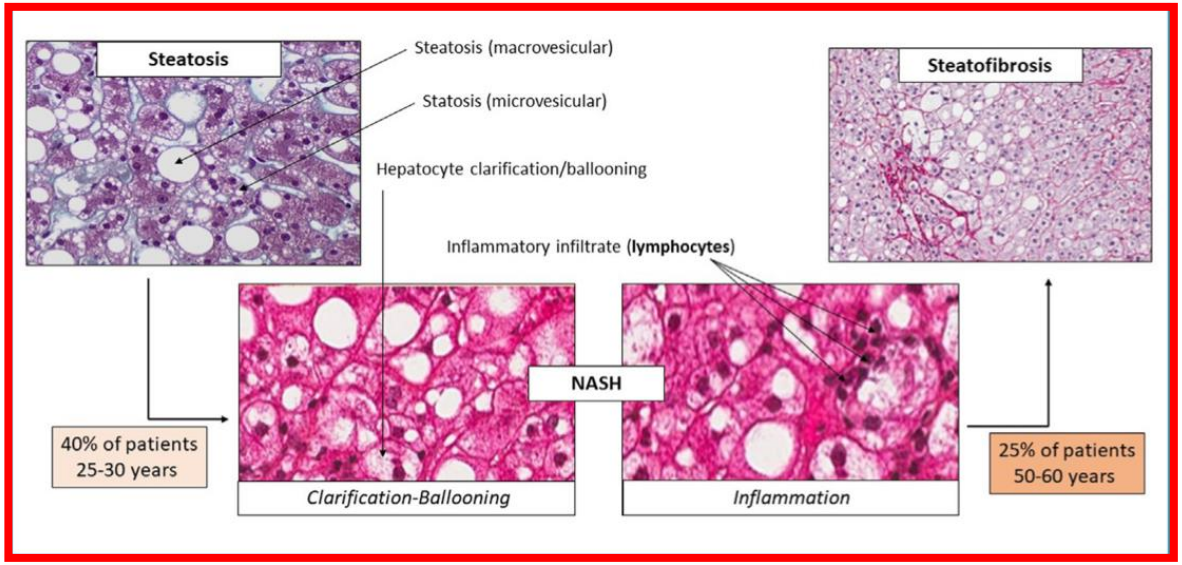
Curr Issues Molec Biol 2024

MS – Μεταβολικό Σύνδρομο

Table 1 Criteria for clinical diagnosis of metabolic syndrome.

Criteria	Threshold values
Abdominal perimeter	Definition specific to a population and to a concerned country (94 cm for men and 80 cm for women in Europe)
Triglycerides (or treatment for hypertriglyceridemia)	≥150 mg/dL (1.7 mmol/L)
HDL-c (or treatment for low HDL-c)	<40 mg/dL (1.0 mmol/L) for men; <50 mg/dL (1.3 mmol/L) for women
Arterial tension (or hypotension treatment	Systolic ≥ 130 and/or diastolic ≥ 85 mm Hg
Fasting blood glucose (or diabetes treatment)	≥ 100 mg/dL

HDL-c: High-density cholesterol-transporting lipoprotein.



J Visc Surg 2020

Surgical treatment of hepatocellular carcinoma associated with the metabolic syndrome

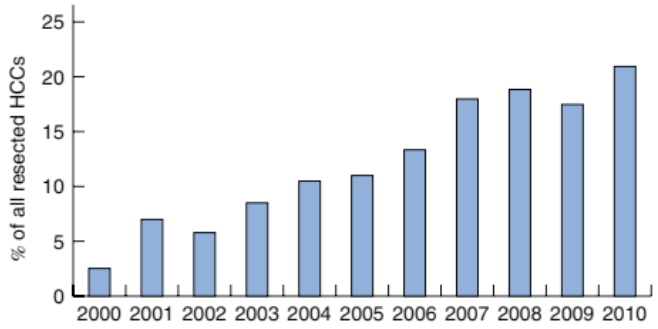
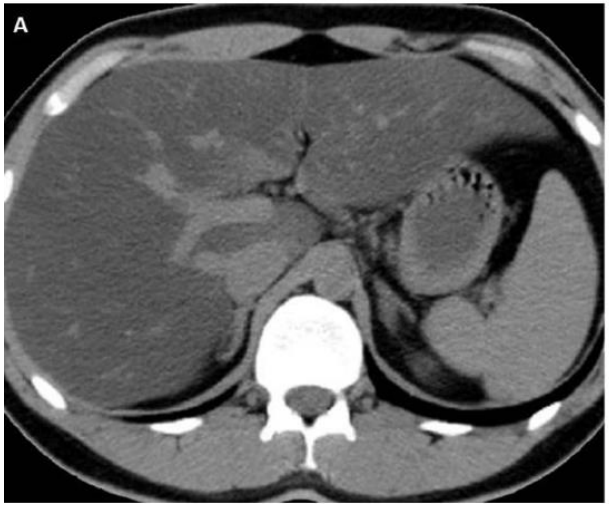
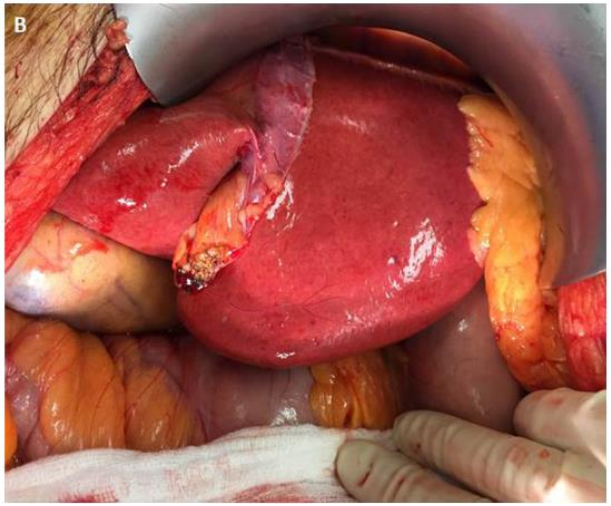


Fig. 1 Evolution of the proportion of resected hepatocellular carcinomas (HCCs) associated with the metabolic syndrome in the past decade





Br J Surg 2013

Surgical treatment of hepatocellular carcinoma associated with the metabolic syndrome

F. Cauchy[1], S. Zalinski[1], S. Dokmak[1], D. Fuks[1], O. Farges[1], L. Castera[2], V. Paradis[3] and J. Belghiti[1]

Table 3 Postoperative complications

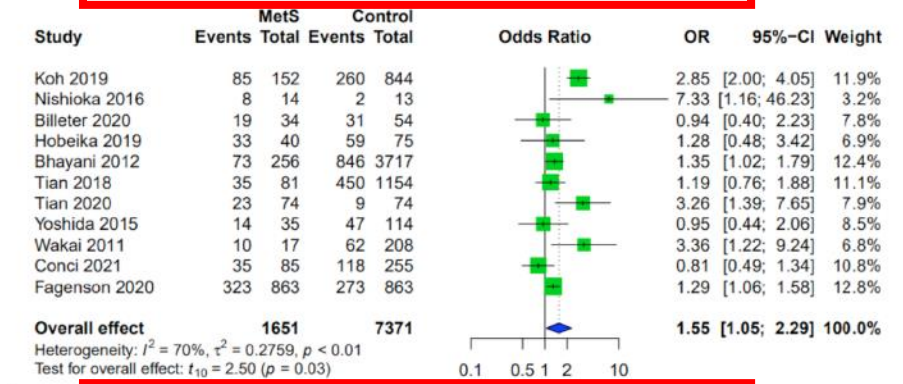
	Overall ($n = 62$)	Normal parenchyma ($n = 24$)	Abnormal parenchyma ($n = 38$)	P†
90-day mortality	7 (11)	0 (0)	7 (18)	0·026
Overall complications	36 (58)	11 (46)	25 (66)	0·120
Major complications	19 (31)	3 (13)	16 (42)	0·010
Liver-related major complications	13 (21)	1 (4)	12 (32)	0·014
Liver failure	7 (11)	0 (0)	7 (18)	0·026
Ascites	14 (23)	4 (17)	10 (26)	0·384
Biliary leakage	3 (5)	0 (0)	3 (8)	0·162
Haemorrhage	3 (5)	0 (0)	3 (8)	0·162
Cardiorespiratory major complications	17 (27)	3 (13)	14 (37)	0·036
Pulmonary embolism	4 (6)	1 (4)	3 (8)	0·567
Cardiac decompensation	3 (5)	0 (0)	3 (8)	0·162
Infectious complication	19 (31)	8 (33)	11 (29)	0·717
Duration of ICU stay (days)*	4 (1–68)	4 (1–68)	5 (1–54)	0·868‡
Duration of hospital stay (days)*	12 (3–84)	11 (3–84)	13 (4–57)	0·981‡

Br J Surg 2012

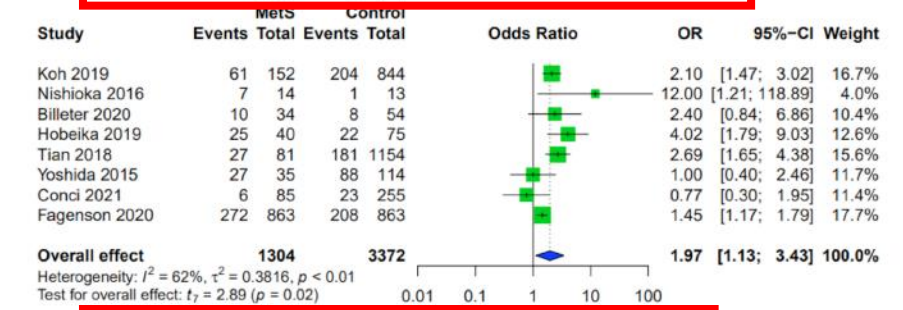
Is metabolic syndrome a risk factor in hepatectomy? A meta-analysis with subgroup analysis for histologically confirmed hepatic manifestations

BMC Medicine 2022

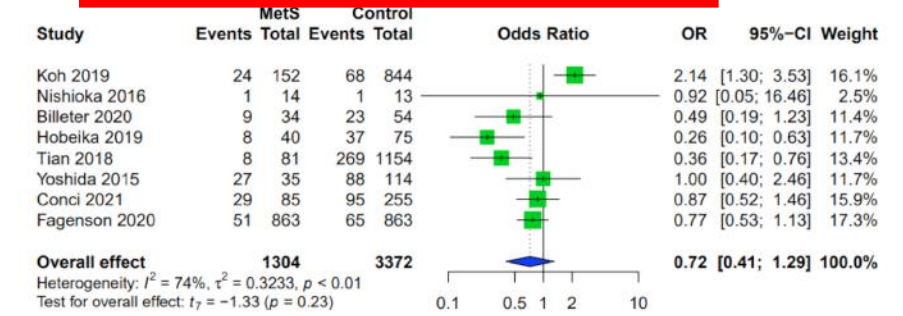
a *Forest plot for overall complications in MetS patients versus control after hepatectomy*



b *Forest plot for major complications in MetS patients versus control after hepatectomy*



c *Forest plot for minor complications in MetS patients versus control after hepatectomy*



Surgical treatment of hepatocellular carcinoma associated with the metabolic syndrome

Table 4 Univariable and multivariable analysis of predictive factors of major postoperative complications

	Major complications				
	Yes ($n = 19$)	No ($n = 43$)	P‡	Hazard ratio†	P
Age (years)*	73 (51–84)	68 (50–81)	0·063§	1·11 (1·00, 1·23)	0·043
Age > 70 years	12 (63)	15 (35)	0·038		
Body mass index (kg/m^2)*	30·1 (20·2–40·4)	30·4 (23·2–42·0)	0·557§		
ALT/AST*	1·2 (0·8–4·2)	1·1 (0·4–2·4)	0·118§		
Major resection	12 (63)	20 (47)	0·227		
Major right-sided resection	10 (53)	12 (28)	0·054	2·02 (0·48, 8·41)	0·342
Associated procedure	6 (32)	10 (23)	0·490		
Clamping	18 (95)	31 (72)	0·043	1·47 (1·24, 1·81)	0·021
Clamping time (min)*	41·5 (8–120)	40 (3–110)	0·300§		
Blood loss (ml)*	700 (100–2000)	300 (100–1500)	0·004§	1·00 (1·00, 1·00)	0·030
Transfusion	7 (37)	7 (16)	0·074		
Tumour size (mm)*	75 (35–220)	78 (20–350)	0·338§		
Abnormal underlying liver	16 (84)	22 (51)	0·014		
F0–F2 and NAS ≥ 2	9 (47)	11 (26)	0·091	5·66 (1·21, 26·52)	0·028
F3–F4	7 (37)	11 (26)	0·368		
NASH	8 (42)	8 (19)	0·051		

Br J Surg 2012

MASLD/HCC και Ηπατική Χειρουργική

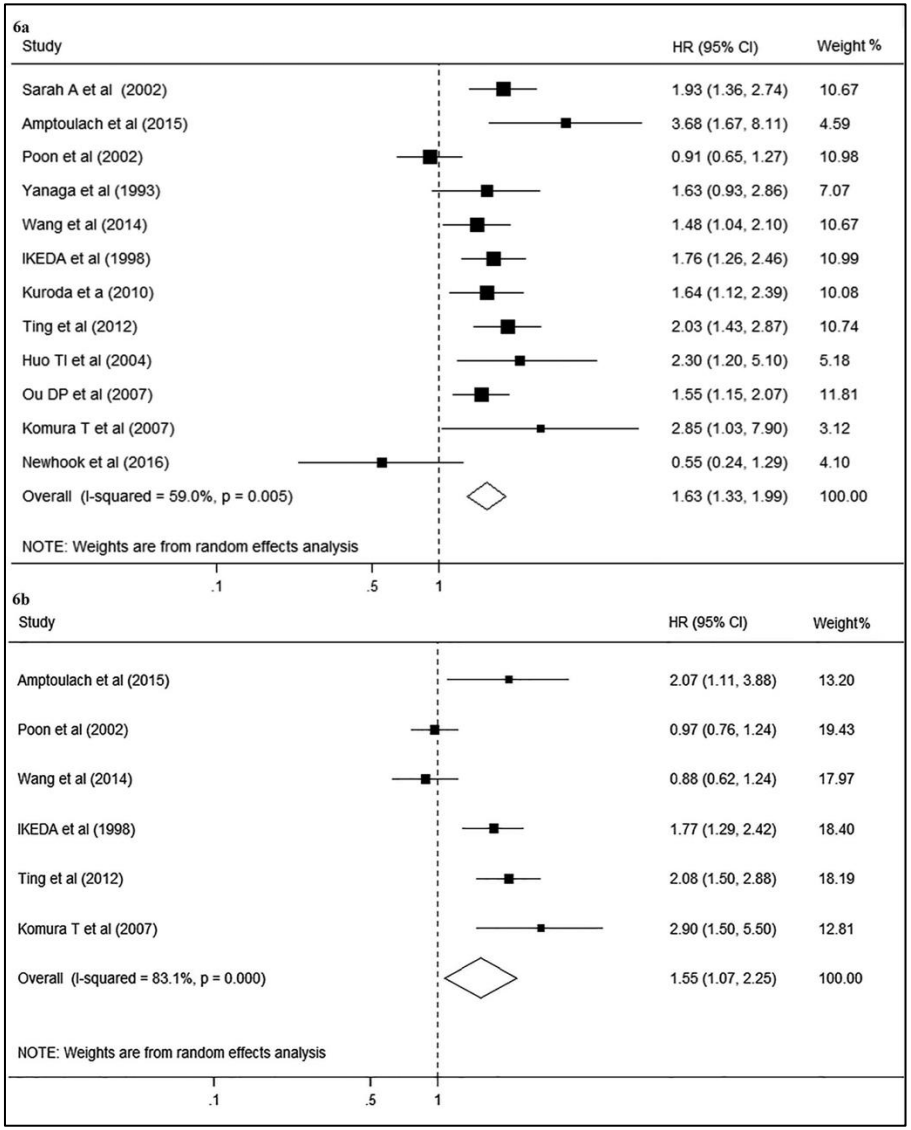
Σακχαρώδης Διαβήτης

- ΣΔ → Μειωμένη καρδιαγγειακή κυκλοφορία, ανοσολογική αντίδραση
- ΣΔ Αυξάνει τον Κίνδυνο ΜΤΧ Επιπλοκών μετά Ηπατεκτομή × 1.5
- Καρδιαγγειακά συμβάματα
- Οξεία Νεφρική Ανεπάρκεια
- Σηπτικές Επιπλοκές
- Αυξάνει τον Κίνδυνο ΜΤΧ Ηπατικής Ανεπάρκειας!!! × 2.0

J Visceral Surg 2021

RESEARCH ARTICLE

Clinical outcomes of patients with and without diabetes mellitus after hepatectomy: A systematic review and meta-analysis

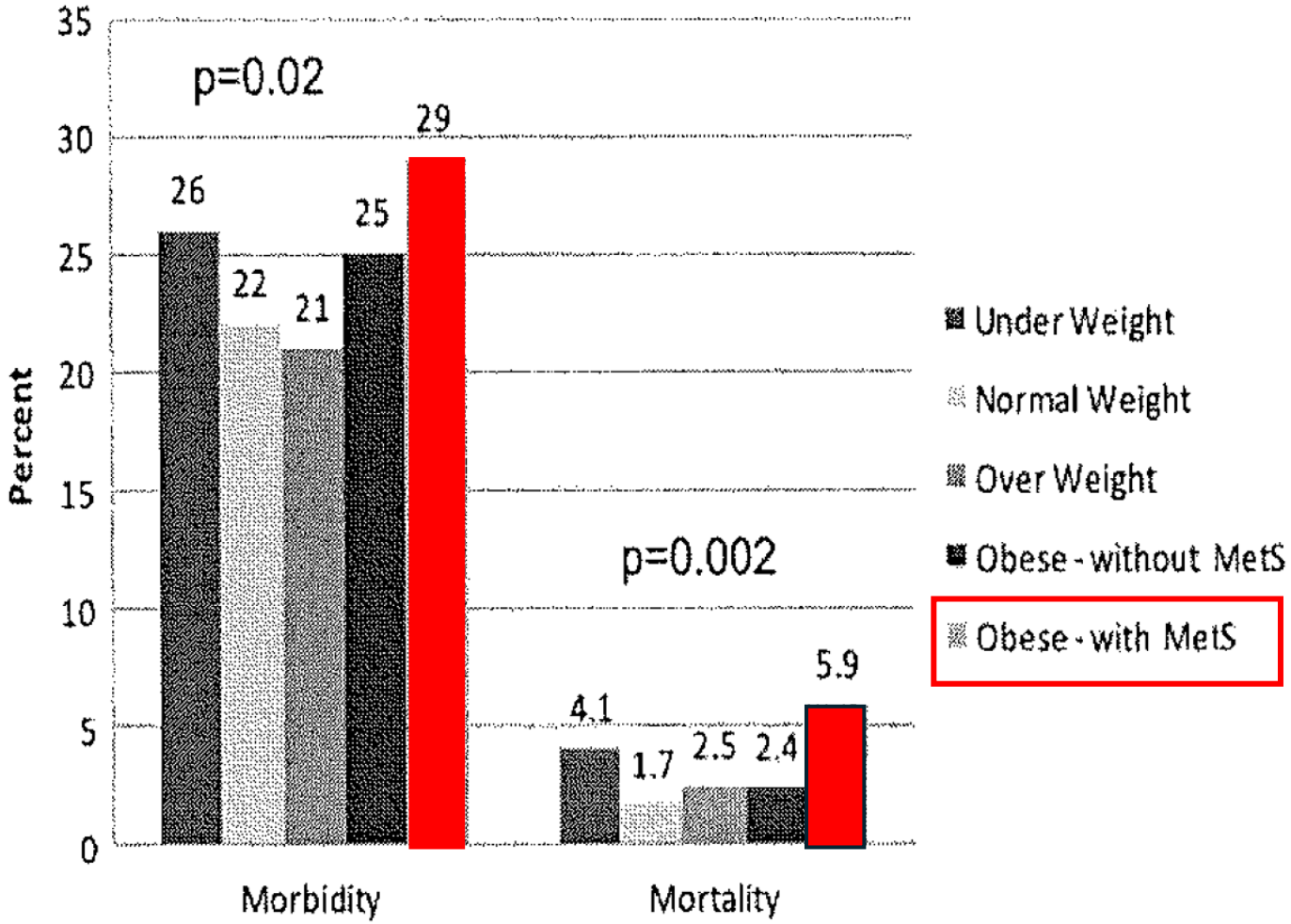


- OS After Liver Resection For HCC

- RFS After Liver Resection For HCC

PLOS One 2017

Effect of metabolic syndrome on perioperative outcomes after liver surgery: A National Surgical Quality Improvement Program (NSQIP) analysis



Surgery 2012

Safety of Liver Resections in Obese and Overweight Patients

Silvio Balzan · Ganesh Nagarajan · Olivier Farges · Claudio Zettler Galleano · Safi Dokmak · Catherine Paugam · Jacques Belghiti

Total no. of patients 423	Normal (A, $n = 245$) 58%	Overweight (B, $n = 138$) 33%	Obese (C, $n = 40$) 9%	*P* value A vs. B	*P* value A vs. C
Intraoperative data					
Duration of surgery, min	350 ± 100	371 ± 108	353 ± 91	ns	ns
Pedicular clamping	142 (58%)	85 (61%)	31 (77%)	ns	ns
Duration of clamping, min	46 ± 25	49 ± 25	56 ± 28	ns	<0.05
Patients transfused	60 (24%)	39 (28%)	18 (45%)	ns	<0.01
Postoperative data					
Mortality	6 (2.5%)	7 (5%)	1 (2.5%)	ns[a]	ns[a]
Morbidity	97 (39.5%)	74 (54%)	20 (50%)	ns	ns
Major (Clavien grade 3–5)	72 (29%)	60 (43%)	18 (45%)	<0.05	<0.05
Minor (Clavien grade 2)	25 (10%)	14 (10%)	2 (5%)	ns	ns
Respiratory	45 (18%)	34 (25%)	13 (32%)	ns	<0.05
Ascites	35 (15%)	25 (18%)	11 (27%)	ns	<0.05
Liver failure	11 (4.5%)	9 (6.5%)	2 (5%)	ns	ns[a]
Biliary leak	24 (9.8%)	18 (13%)	4 (10%)	ns	ns[a]
Abdominal collections	20 (8.2%)	10 (7.2%)	3 (7.5%)	ns	ns[a]
Reoperation	5 (2%)	5 (3.6%)	0 (0%)	ns[a]	ns[a]
Other	13 (5.3%)	14 (10%)	1 (2.5%)	ns	ns[a]
Hospital stay, days	10 ± 7	13 ± 9	14 ± 8	<0.001	<0.01
ICU stay ≥ 4 days	130 (53%)	80 (58%)	29 (72%)	ns	<0.05

World J Surg 2010

Στεάτωση – Στεατο-Ηπατίτις

- Μετά από μείζονα ηπατεκτομή, η Στεάτωση-Στεατοηπατίτις

1. Επιδεινώνει τη φλεγμονώδη αντίδραση
2. Αυξάνει την ηπατοκυτταρική βλάβη
3. Μειώνει την αναγεννητική ικανότητα του υπολλειπομένου ήπατος
4. Προκαλεί μικροαγγειακή δυσλειτουργία
5. Μικρότερη αντοχή σε μείζονες εκτομές
6. Αυξημένος κίνδυνος μτχ ηπατικής ανεπάρκειας
7. ↑↑ Μτχ Νοσηρότης - Θνητότης

Br J Surg 2010
J Gastrointest Surg 2012

Table 2 Summary of the mains studies pertaining to hepatic resection in a MS/NAFLD context.

Study	Study objective	Evaluation of MS parameters	Underlying parenchyma	Morbidity			Mortality
				Overall	Hepatic	Cardio-vascular	
Wakai, 2011[38]	HR for HCC with NAFLD	Obesity: $n=11$	NAFLD: 100% ($n=17$)	59%	47%	6%	12%
Reddy, 2012[34]	HR for NAFLD Steatosis vs. Normal NASH vs. normal	SM: $n=17$	Steatosis: 100% ($n=72$)	34.7%	19.4%	11.1%	4.2%
		MS: $n=36$	NASH: 100% ($n=102$)	56.9%	28.4%	26.2%	3.9%
Bhayani, 2012[39]	Hepatic resection with vs. without MS context	MS: $n=256$	NA	29%	–	22%	6%
		No MS: $n=3717$	NA	23%	–	15%	2%
Zarzavadjian Le Bian, 2012[40]	Right hepatectomy in MS context	>2 MS parameters: $n=30$	NAFLD ($n=27$)	60%	53%	NA	30%
		$\geq$ 3 MS parameters $n=13$		NA	NA	NA	54%
Cauchy, 2013[3]	HCC involving MS	MS: $n=62$	NASH ($n=16$)	58%	21%*	17%	11%
Vigano, 2015[16]	HCC involving MS vs. HCC involving HCV	MS: $n=96$	NASH: 25%	43.8%	31.2%	23.9%	1.0%
		HCV: $n=96$	NASH: 9.4%	38.5%	40.6%	15.6%	3.1%
Tian, 2018[41]	HCC involving MS vs. HCC involving MS + HBV vs. HCC involving HBV	MS: $n=81$	Steatosis: 45.7% Cirrhosis: 51.8%	33.3%	21.6%[a]	3.4%	2.5%
		MS + HBV: $n=117$	Steatosis: 41.9% Cirrhosis: 74.3%	21.4%	22.2%[a]	1.7%	2.6%
		HBV: $n=1154$	Steatosis: 17.9% Cirrhosis: 77.8%	15.7%	22.8%[a]	0.8%	2.2%
Hobeika, 2019[20]	ICC involving MS vs. ICC not involving MS	MS: $n=40$	NASH: 25.0% Cirrhosis: 30%	62.5%[a]	27.5%[a]	52.5%	17.5%
		No MS: $n=75$	NASH: 5.4% Cirrhosis: 17.3%	29.3%[a]	18.7%[a]	17.3%	8.0%

MASLD/NAFLD and
Liver Resection for HCC:

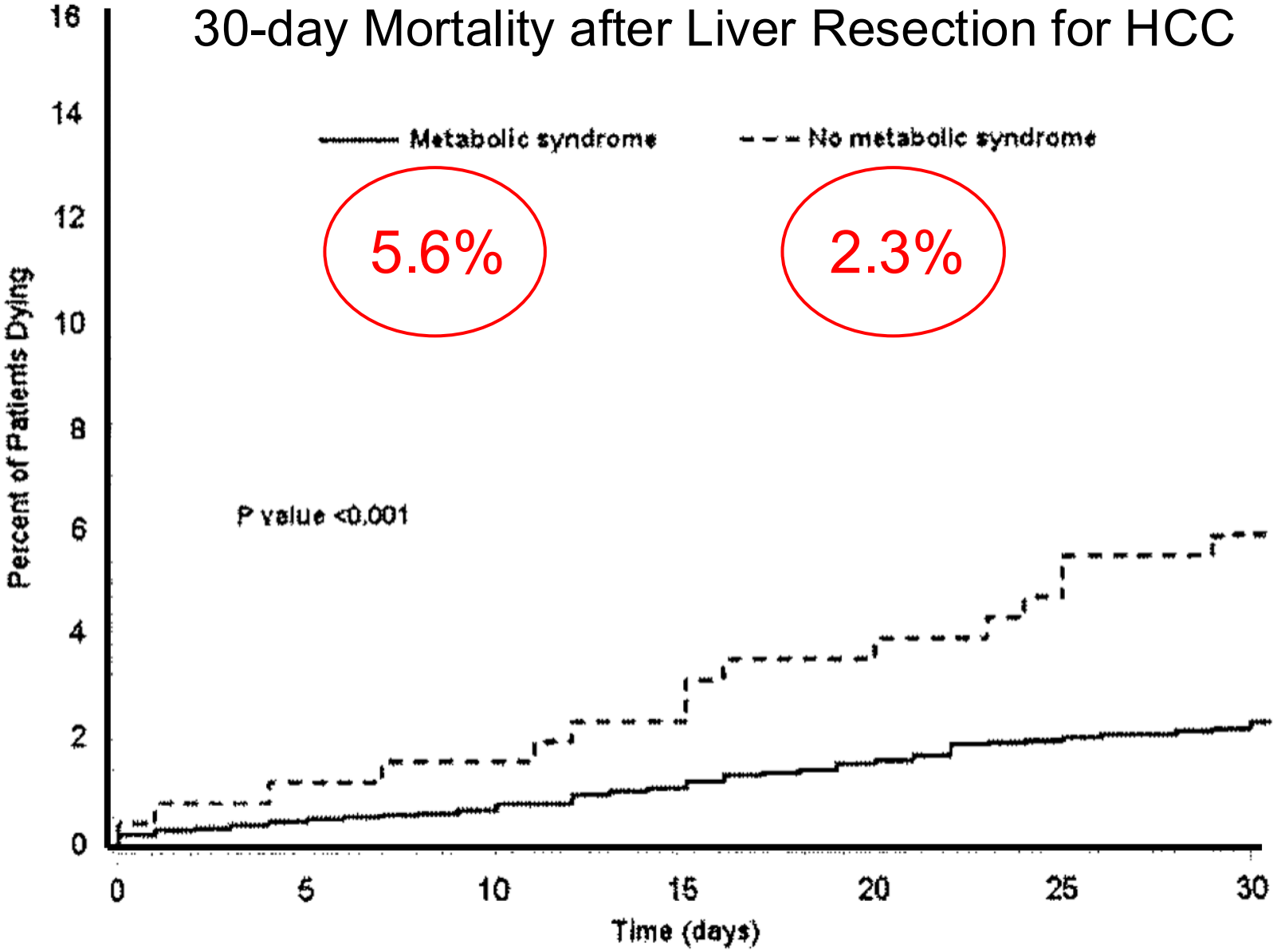
After hepatectomy the rate of major complications increases by 20-30%

>20% cardiorespiratory events

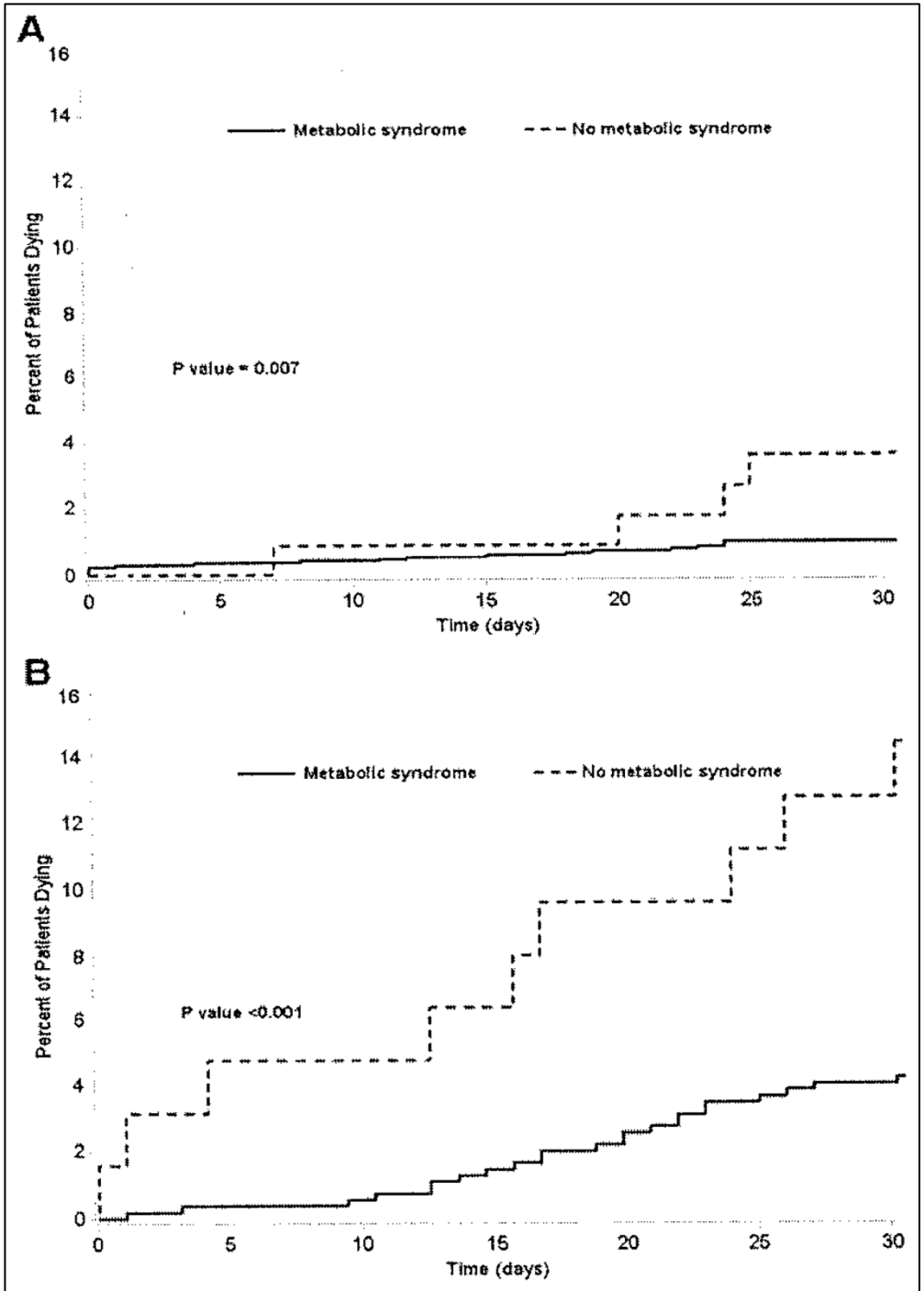
>25% complications involving the liver

Ann Surg 2012
J Gastrointest Surg 2013

30-day Mortality after Liver Resection for HCC



Surgery 2012



Recovery after Liver Resection

Colorectal Liver Mets

HCC

Surgery 2012

Metabolic Disorders, Non-Alcoholic Fatty Liver Disease and Major Liver Resection: An Underestimated Perioperative Risk

MS and Right Hepatectomy

Patients' group	Mortality [no.]	*p* value
Patients with≥2 metabolic disorders undergoing RH (studied population)	30 % [9/30]	<0.001[a]
Rest of the patients undergoing RH	3.3 % [4/121]	
Patients with Metabolic syndrome (≥ 3 metabolic disorders)	53.8 % [7/13]	<0.001[b]
Patients with 2 metabolic disorders	11.8 % [2/17]	
Rest of the patients undergoing RH	3.3 % [4/121]	

J Gastrointest Surg 2012

Metabolic Disorders, Non-Alcoholic Fatty Liver Disease and Major Liver Resection: An Underestimated Perioperative Risk

Criteria				Deaths [Total patients]	Mortality %	OR (C.I. 95 %)	*p* value
Preoperative criteria	Age (years)	≤65		4 [14]	28.6	1.14 (0.24–5.46)	0.873
		>65		5 [16]	31.3		
	ASA class[a]	ASA ≤2		6 [20]	30.0	1.60 (0.29–8.86)	0.590
		ASA 3		3 [8]	37.5		
	Metabolic syndrome criteria	Hypertension	Yes	1 [6]	16.7	2.50(0.25–25.15)	0.437
			No	8 [24]	33.3		
		Diabetes Mellitus	Yes	3 [18]	16.7	5.0(0.93–26.79)	0.060
			No	6 [12]	50.0		
		Dyslipidemia	Yes	2 [13]	15.4	3.85 (0.64–23.05)	0.140
			No	7 [17]	41.2		
		BMI	≤25	3 [9]	33.3	0.80 (0.15–4.29)	0.794
			>25	6 [21]	28.6		
		2 criteria		2 [17]	11.8	8.75 (1.40–54.80)	0.020
		3 or more criteria		7 [13]	53.8		
	ChemoTP	Yes		1 [9]	11.1	4.92 (0.52–47.07)	0.166
		No		8 [21]	38.1		
Operative criteria	Middle hepatic vein resection	No		4 [23]	17.4	11.87 (1.67–84.52)	0.013
		Yes		5 [7]	71.4		
	Bleeding (ml)	<1,000 ml		3 [19]	15.8	6.4 (1.16–35.44)	0.034
		≥1,000 ml		6 [11]	54.5		
Pathology criteria	Surgical indication	Secondary malignancies		3 [17]	17.6	7.0 (1.19–41.36)	0.032
		Primary malignancies		6 [10]	60.0		
	Liver parenchyma	Macrovesicular steatosis	No	8 [26]	30.8	0.75 (0.07–8.36)	0.815
			Yes	1 [4]	25.0		
		Macrovesicular steatosis	No	1 [12]	8.3	8.8 (0.93–83.35)	0.058
			Yes	8 [18]	44.4		

J Gastrointest Surg 2012

Metabolic dysfunction-associated fatty liver disease increases the risk of complications after radical resection in patients with hepatocellular carcinoma

Table 4 Comparison of complications between MAFLD group and non-MAFLD group

Variables	MAFLD ($n=201$)	non-MAFLD ($n=735$)	*P* value
Complications	55 (27.4%)	142 (19.3%)	0.013
Infectious complications	47 (23.4%)	99 (13.5%)	0.001
Major complications (CCI ≥ 26.2)	25 (12.4%)	55 (7.5%)	0.026
Pleural effusion	33 (16.4%)	75 (10.2%)	0.015
Ascites	29 (14.4%)	76 (10.3%)	0.104
Intra-abdominal infection	26 (12.9%)	52 (7.1%)	0.008
Pneumonia	21 (10.4%)	51 (6.9%)	0.098
Liver failure	10 (5.0%)	16 (2.2%)	0.032
Wound infection	8 (4.0%)	10 (1.4%)	0.017
Intra-abdominal hemorrhage	5 (2.5%)	9 (1.2%)	0.191
Hepatic encephalopathy	2 (1.0%)	8 (1.1%)	0.909
Bile leakage	2 (1.0%)	3 (0.4%)	0.312
Sepsis	2 (1.0%)	2 (0.3%)	0.164
Acute renal failure	0 (0)	2 (0.3%)	0.459
Cardiovascular event	1 (0.5%)	0 (0)	0.056
Death	6 (3.0%)	4 (0.5%)	0.009

World J Surg Oncol 2024

Metabolic dysfunction-associated fatty liver disease increases the risk of complications after radical resection in patients with hepatocellular carcinoma

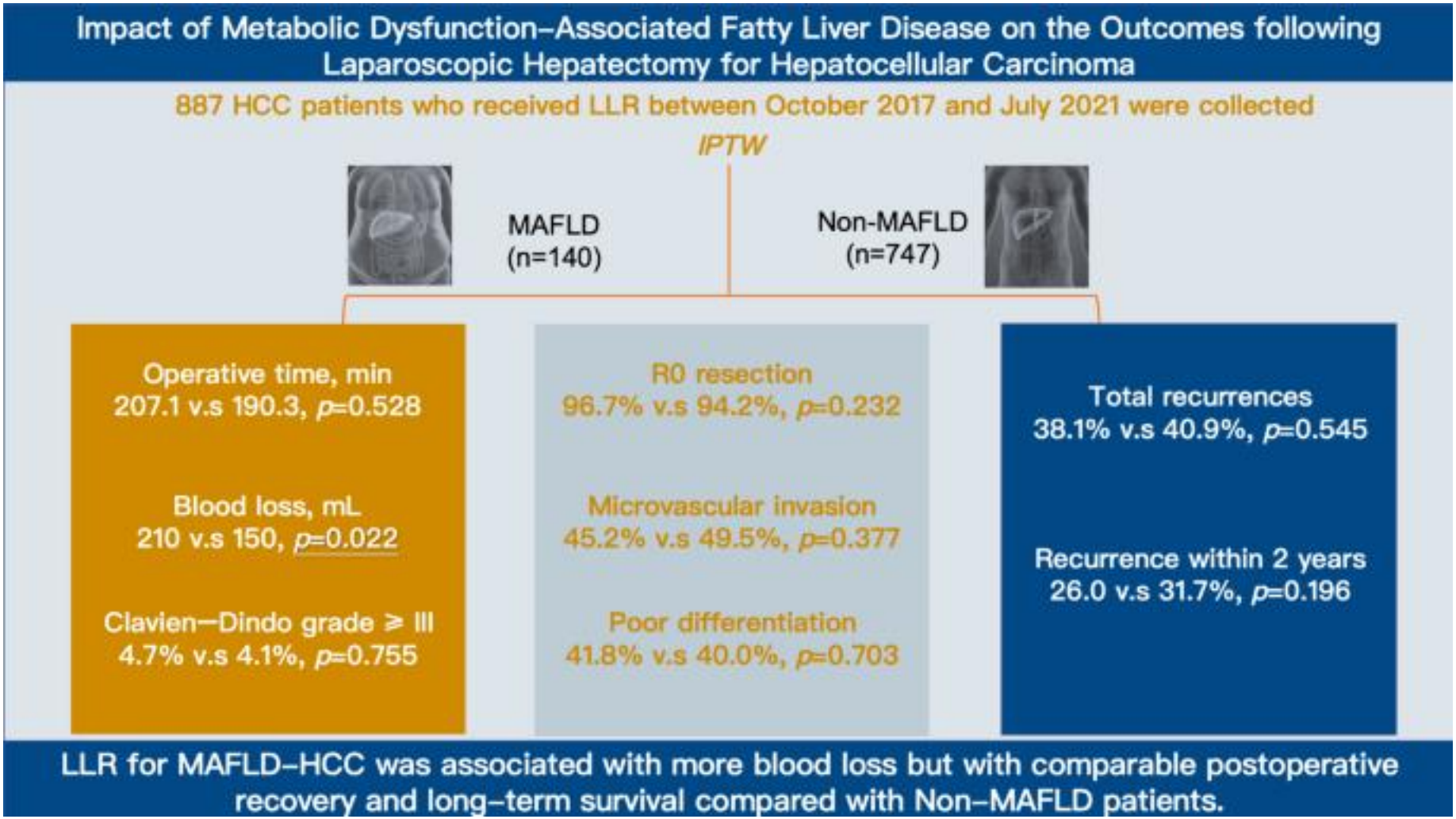
Table 7 Univariate and multivariate analysis of major complications after radical resection in HCC patients

Variables	Univariate		Multivariate	
	OR (95% CI)	*P* value	OR (95% CI)	OR (95% CI)
MAFLD	1.756 (1.064–2.898)	0.028	1.859 (1.106–3.124)	0.019
Age ≥ 60 years	1.828 (1.153–2.899)	0.010	2.038 (1.264–3.287)	0.004
Male	0.643 (0.376–1.098)	0.106		
BMI ≥ 23 kg/m^2	0.582 (0.364–0.930)	0.024	NA[a]	
T2DM	2.372 (1.399–4.022)	0.001	NA[a]	
MD	0.845 (0.516–1.384)	0.504		
Alcohol consumed	0.759 (0.340–1.696)	0.502		
HBV DNA ≥ 500 IU/mL	1.464 (0.758–2.830)	0.257		
AFP ≥ 400 μg/L	1.033 (0.626–1.704)	0.899		
Cirrhosis	0.966 (0.537–1.738)	0.907		
Maximum tumor diameter ≥ 5 cm	1.701 (1.074–2.693)	0.024	2.665 (1.526–4.656)	0.001
Tumor number ≥ 2	1.388 (0.741–2.601)	0.307		
Tumor cell differentiation (well or moderate vs. poor)	1.310 (0.821–2.089)	0.258		
Tumor capsule (complete or incomplete vs. no)	1.569 (0.766–3.212)	0.218		
Microvascular invasion	1.803 (1.646–2.772)	< 0.001	1.136 (0.691–1.867)	0.616
Microsatellite lesions	1.261 (0.740–2.147)	0.394		
BCLC stage B	1.264 (0.608–2.628)	0.530		
Child–Pugh B	2.918 (1.546–5.509)	0.001	2.633 (1.342–5.165)	0.005
Open surgery	2.281 (1.402–3.710)	0.001	1.918 (1.150–3.201)	0.013

World J Surg Oncol 2024

Impact of metabolic dysfunction-associated fatty liver disease on the outcomes following laparoscopic hepatectomy for hepatocellular carcinoma

Surgical Endoscopy 2024



Outcomes after laparoscopic or open liver resection for nonalcoholic fatty liver disease–associated hepatocellular carcinoma: a propensity score–matching study

Surg Endosc 2024

210 patients who underwent surgical resection for non-alcoholic fatty liver disease (NAFLD)-related hepatocellular carcinoma (HCC) from 2007 to 2022

Propensity score matching

OLR

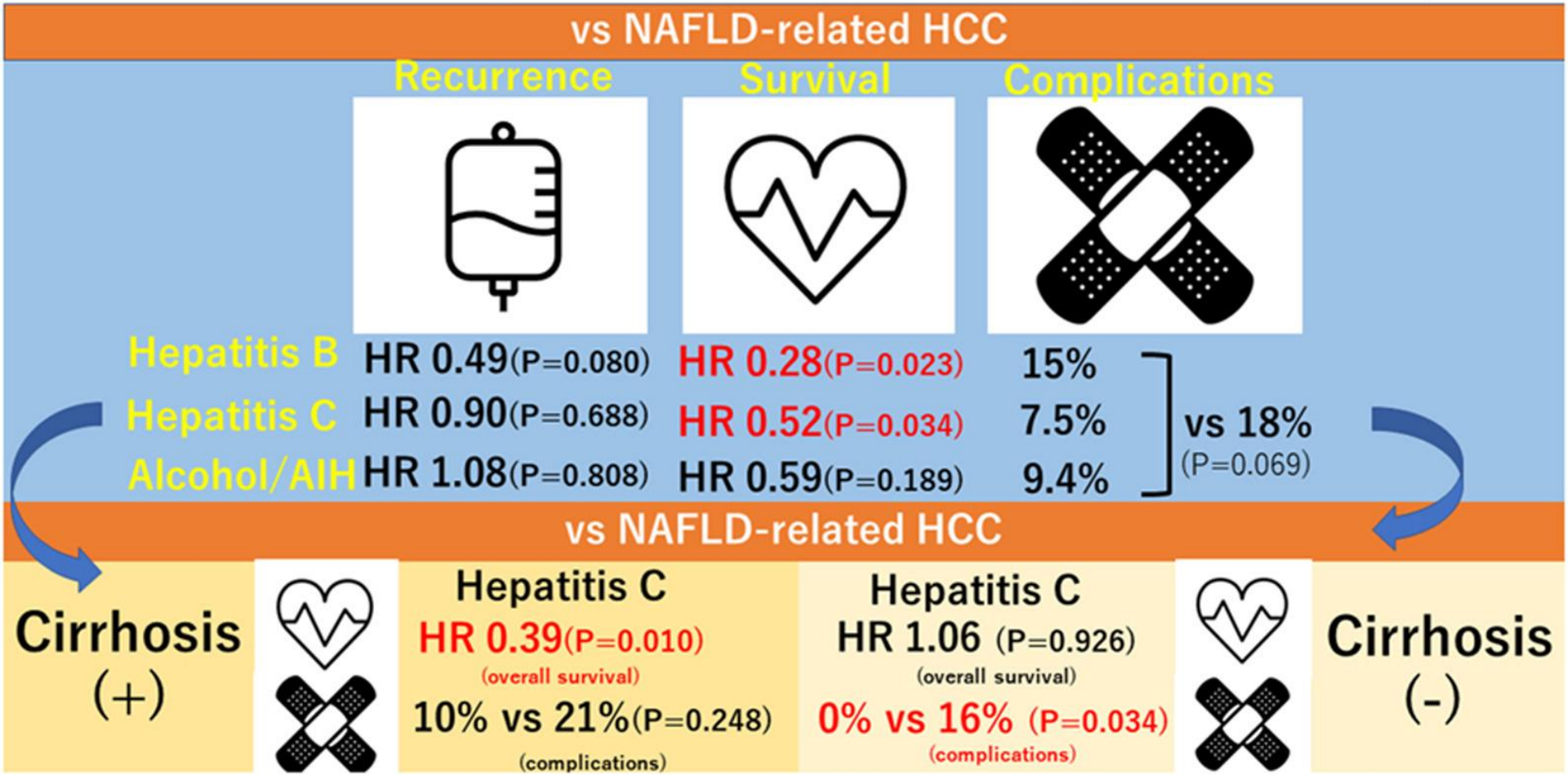
Outcomes compared between open liver resection (OLR, n=46) and laparoscopic liver resection (LLR, n=46)

LLR

	OLR	LLR
Overall postoperative complications	28%	11%
Major morbidities	15%	8.7%
Duration of surgery	199 min	189 min
Blood loss	415 ml	54 ml
Incidence of blood transfusion	22%	4.4%
Length of stay	9 days	6 days
Recurrence-free survival	1-year: 66%	1-year: 75%
	3-year: 37%	3-year: 60%
Overall survival	1-year: 91%	1-year: 95%
	3-year: 81%	3-year: 78%

LLR can be regarded as a first-line approach for NAFLD-HCC among eligible patients. It may reduce healthcare costs through shorter lengths of stay.

Short- and long-term outcomes of laparoscopic liver resection for non-alcoholic fatty liver disease-associated hepatocellular carcinoma: A retrospective cohort study



Patients with NAFLD-HCC have some disadvantages after LLR. In patients with cirrhosis, LLR is safe, but survival is poor. In patients without cirrhosis, the complication risk is high.

HPB 2023

Model to predict major complications following liver resection for HCC in patients with metabolic syndrome

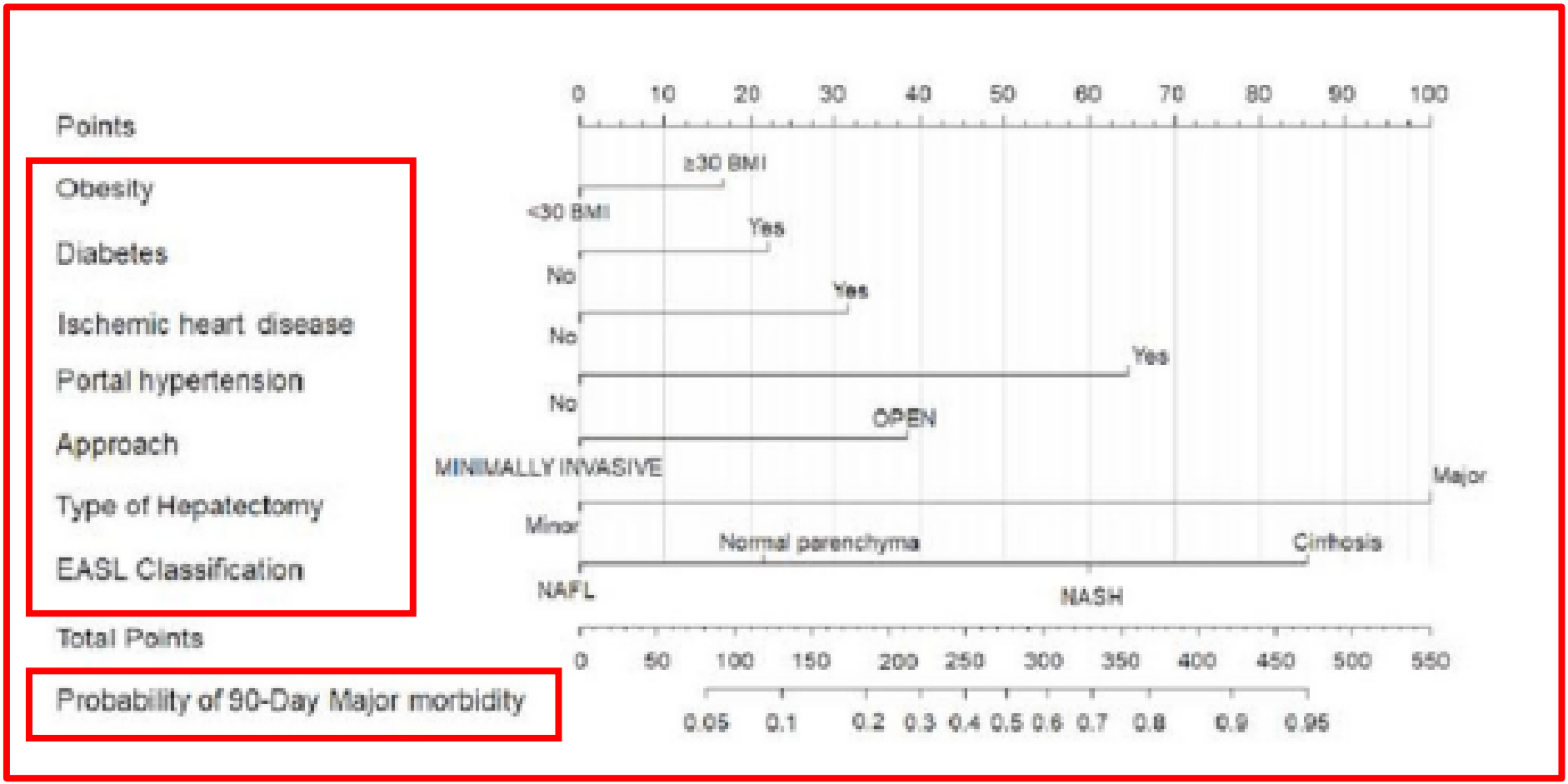
Logistic regression analysis for 90-day major morbidity

	90 D major morbidity (%, n/N)	Univariable analysis			Multivariable analysis		
	13.4 (95/713)	OR	95% CI	*P*	OR	95% CI	*P*
Gender							
Female	11.7 (25/214)		Reference				
Male	14.1 (70/499)	1.23	0.83–1.84	0.303			
Age							
Years		1.00	0.98–1.03	0.895			
Obesity (BMI ≥ 30)							
No	10.7 (44/413)		Reference			Reference	
Yes	17.0 (51/300)	1.72	1.07–2.76	0.025	1.29	0.75–2.23	0.355
Hypertension							
No	11.6 (18/158)		Reference				
Yes	13.8 (77/556)	1.22	0.84–1.78	0.304			
Diabetes							
No	9.9 (31/312)		Reference			Reference	
Yes	16.0 (64/401)	1.72	1.109–2.69	0.017	1.40	0.91–2.16	0.128
Respiratory disease							
No	12.8 (77/601)		Reference				
Yes	16.1 (18/112)	1.30	0.75–2.26	0.344			
Ischemic heart disease							
No	12.3 (71/579)		Reference			Reference	
Yes	17.9 (24/134)	1.56	0.99–2.46	0.054	1.62	0.94–2.78	0.082
Dyslipidemia							
No	13.0 (39/299)		Reference				
Yes	13.5 (56/414)	1.04	0.60–1.80	0.880			
Previous surgery							
No	12.9 (77/599)		Reference				
Yes	15.8 (18/114)	1.27	0.50–3.25	0.617			
Portal hypertension							
No	12.3 (79/640)		Reference			Reference	
Yes	21.9 (16/73)	1.99	1.11–3.59	0.021	2.65	1.36–5.16	0.004
MELD score							
< 9	12.0 (58/485)		Reference				
≥ 9	16.2 (37/228)	1.43	0.74–2.75	0.289			
Approach							
Open	17.9 (68/380)		Reference			Reference	
Minimally invasive	8.1 (27/333)	0.4	0.22–0.73	0.003	0.56	0.33–0.93	0.026
Type hepatectomy							
Minor	8.3 (40/483)		Reference			Reference	
Major	23.9 (55/230)	3.48	1.97–6.16	< 0.001	4.56	2.55–8.15	< 0.001
Nontumoral parenchyma							
Normal parenchyma NAFL	10.5 (31/294)		Reference			Reference	
	7.3 (6/82)	0.67	0.24–1.90	0.451	0.72	0.28–1.89	0.507
NASH	14.7 (19/129)	1.47	0.70–3.06	0.309	1.79	1.00–3.19	0.048
Cirrhosis	18.8 (39/208)	1.96	1.27–3.02	0.002	2.64	1.36–5.14	0.004

90-days major morbidity nomogram!!!

Hepatology 2023

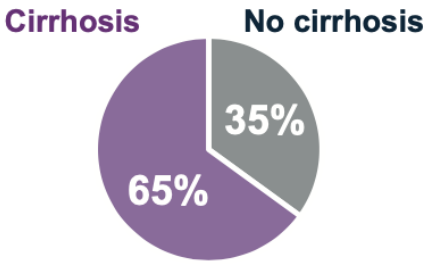
Model to predict major complications following liver resection for HCC in patients with metabolic syndrome



Hepatology 2023

MASLD-related HCC: Multicenter study comparing patients with and without cirrhosis

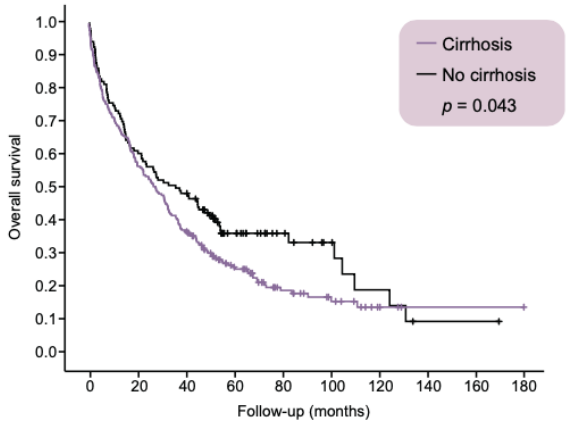
354 patients
with MASLD-related HCC
from4 tertiary care centers



HCC diagnosis

Cirrhosis	No cirrhosis
60%	**72%**
via screening	incidentally

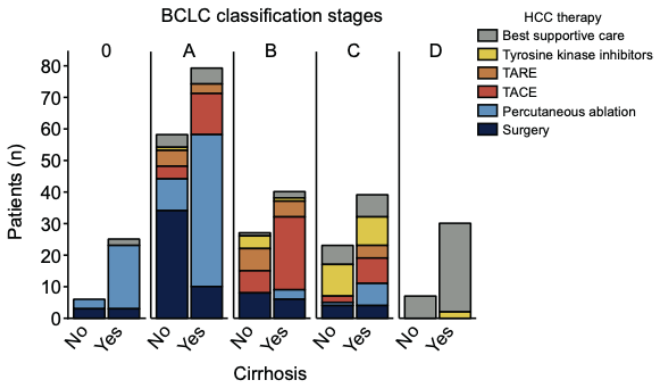
Prognostic factors



INDEPENDENT PREDICTORS OF SURVIVAL

Age, liver function (bilirubin, prothrombintime),
BCLC stage/tumor burden (alpha-foetoprotein, number of lesions, size of the largest lesion, portal vein tumor thrombosis)

Management

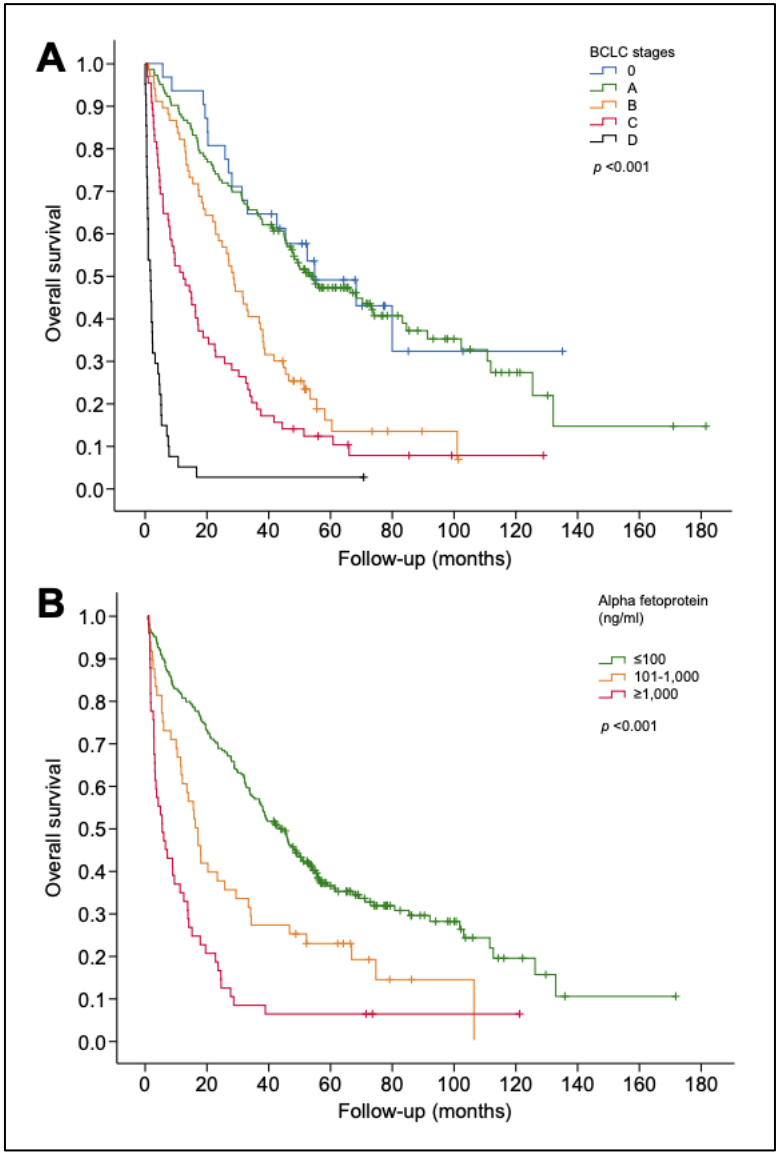


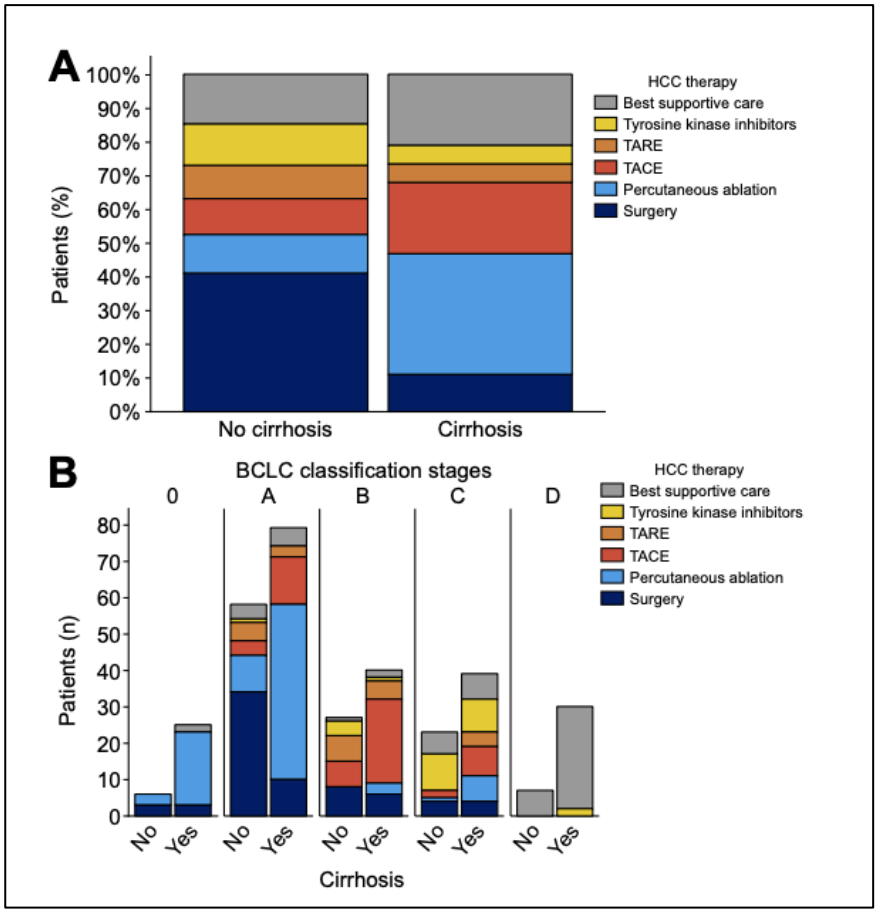
SURGERY in patients with cirrhosis *vs.* those without

Patient group	No cirrhosis	Cirrhosis	*p*
All patients	41%	11%	<0.001
Largest tumors ≥5 cm	42%	14%	0.002
≥4 lesions	19%	2%	0.024

JHEP Reports 2023

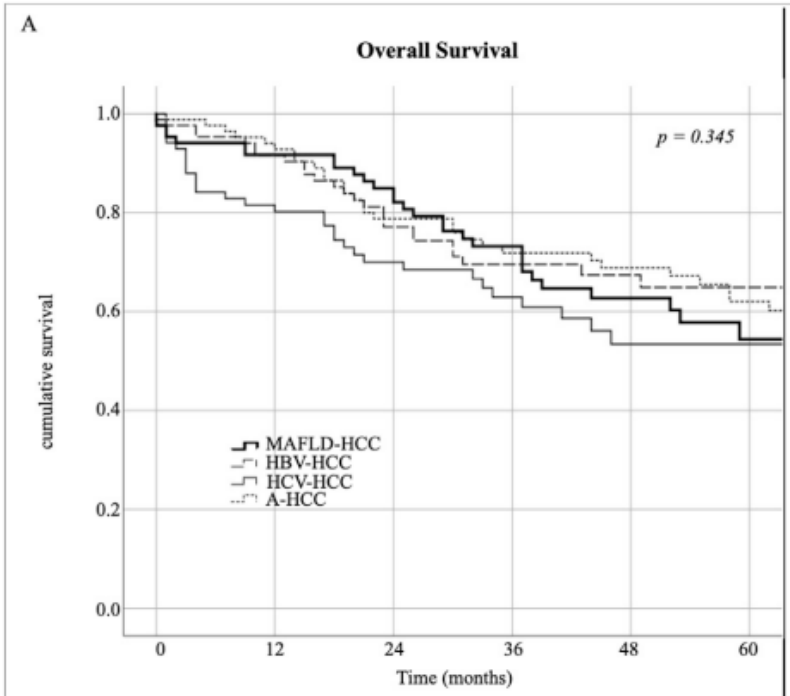
MASLD-related HCC: Multicenter study comparing patients with and without cirrhosis





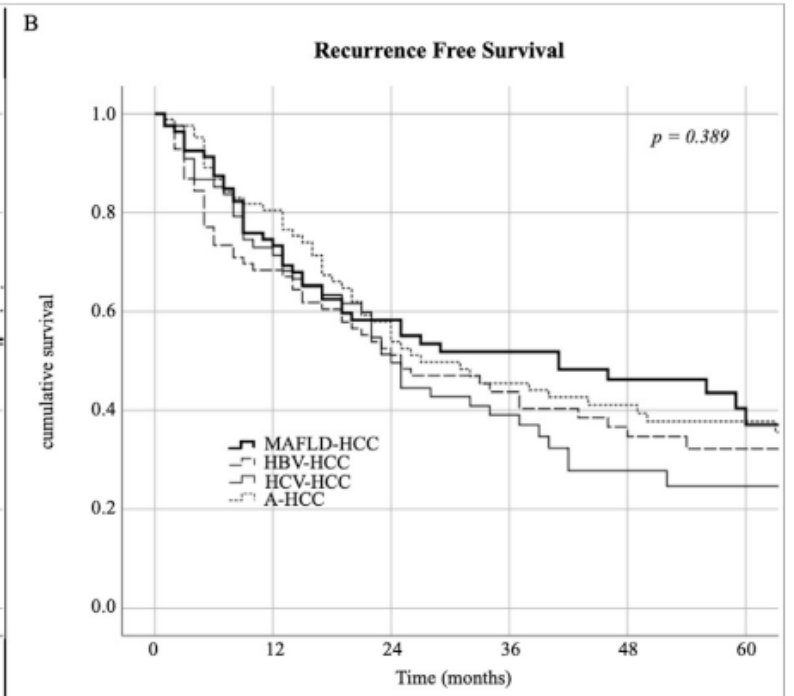
JHEP Reports 2023

Hepatectomy for Metabolic Associated Fatty Liver Disease (MAFLD) related HCC: Propensity case-matched analysis with viral- and alcohol-related HCC



Number at risk

MAFLD-HCC	85	75	59	44	30	14
HBV-HCC	85	72	56	36	27	16
HCV-HCC	85	60	46	31	18	12
A-HCC	85	76	60	52	42	33

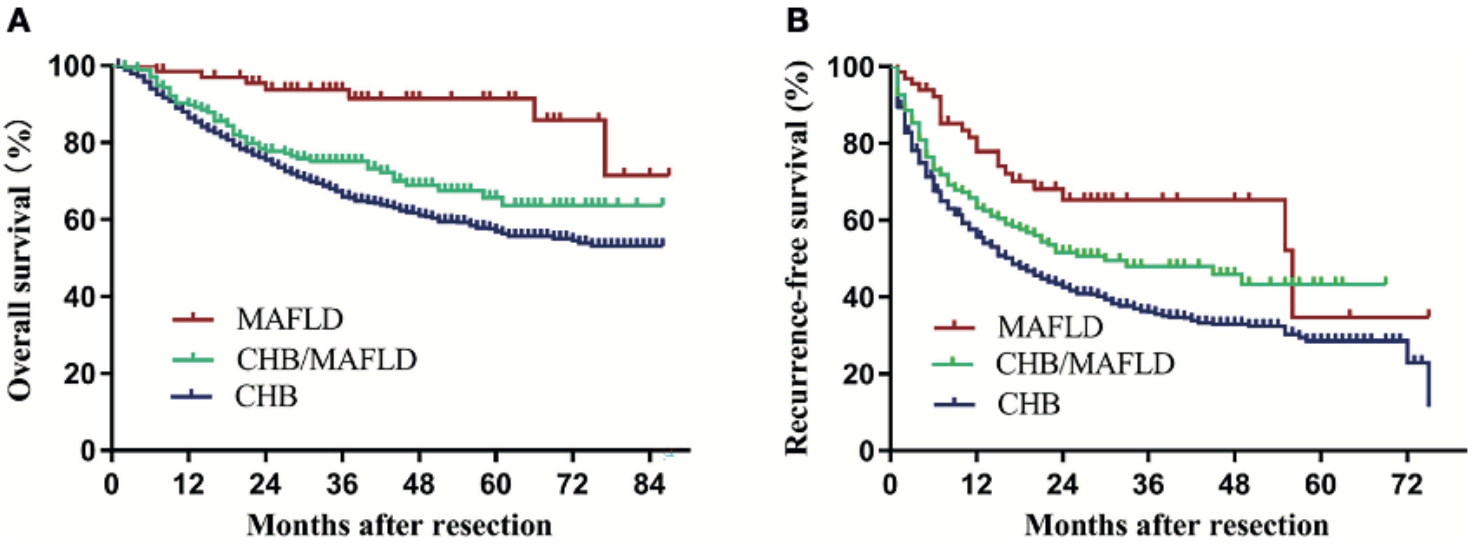


Number at risk

MAFLD-HCC	85	57	37	29	23	11
HBV-HCC	85	53	38	26	18	12
HCV-HCC	85	45	29	19	10	7
A-HCC	85	62	42	32	25	17

Eur J Surg Oncol 2021

Outcomes of Liver Resection for Metabolic Dysfunction-Associated Fatty Liver Disease or Chronic Hepatitis B-Related HCC

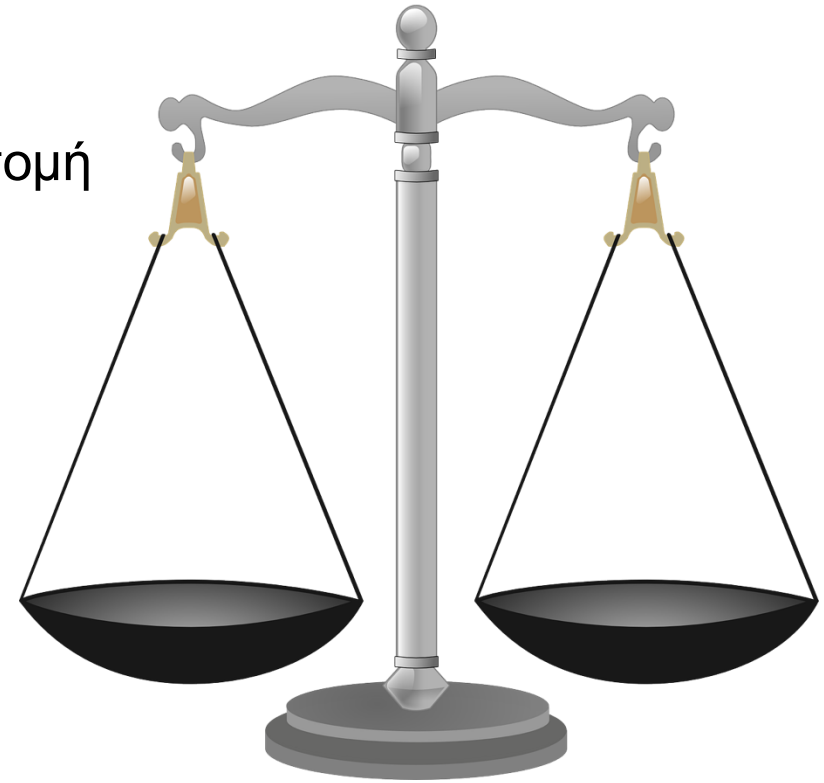


Frontiers in Oncology 2022

Liver resection for HCC: Patient's selection and controversial scenarios

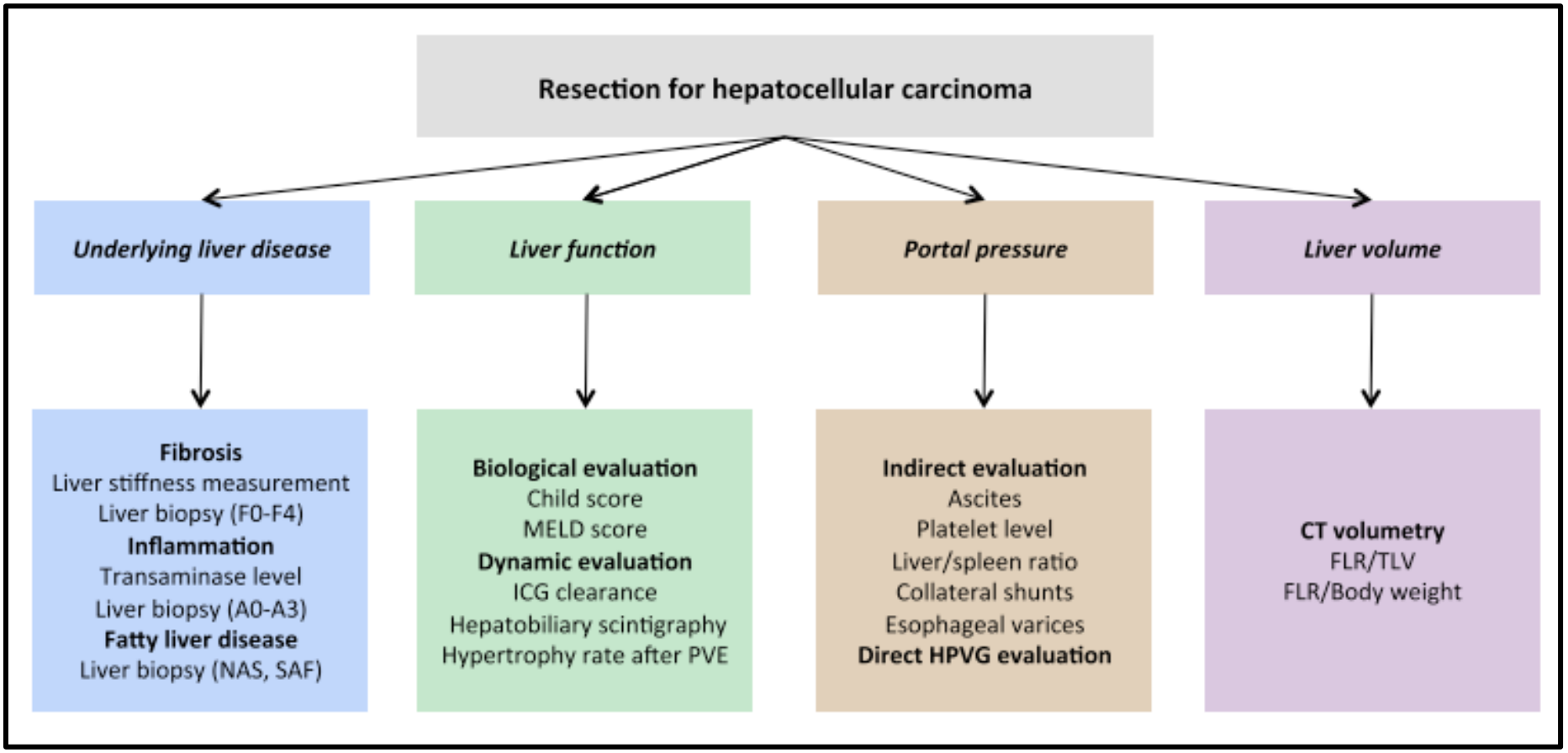
MS and HCC

Ριζική Ογκολογική Εκτομή
Με Υγιή όρια R0



Διατήρηση Ικανού
όγκου
Λειτουργικού
Ηπατικού
Παρεγχύματος

Liver resection for HCC: Patient's selection and controversial scenarios

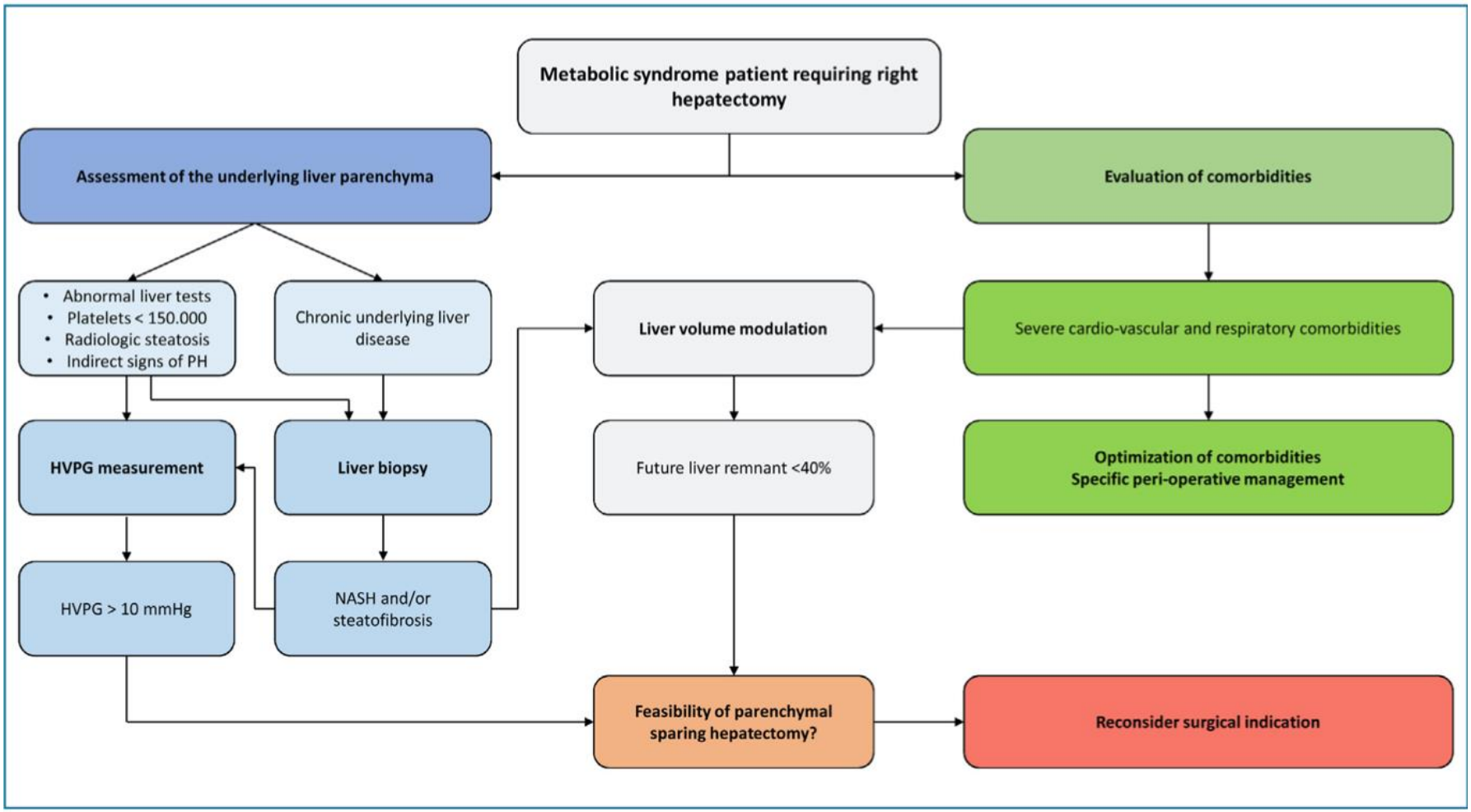


Best Practice and Clinical Res Gastroenterol 2014

REVIEW

Metabolic syndrome and hepatic surgery

C. Hobeika[a], M. Ronot[b], A. Beaufrere[c], V. Paradis[c], O. Soubrane[a], F. Cauchy[a,*]



J Visceral Surg 2020

Συμπεράσματα

- Ακριβής προεγχειρητικός χαρακτηρισμός του υποκείμενου ήπατος
- Steatosis vs Steatohepatitis vs Fibrosis
- Συννοσηρότητες προβλέπουν μτχ επιπλοκές
- Προεγχειρητική αντιμετώπιση και βελτίωση:
    - Α. BMI (διατροφή, bariatric sx)
    - Β. Καρδιοαναπνευστικό status (preconditioning)
    - Γ. Λιπιδαιμικό προφίλ (στατίνες)
    - Δ. ΣΔ
- <u>Εγχειρητική Στρατηγική</u>
    - A. Parenchyma-sparing Hepatectomy
    - B. Preop Liver Volumetry (>40%)
    - C. PVE $\pm$ RHVE
    - D. Preop Sequential TACE-PVE
    - D. MIS