

Table S1. Summary of grade III or more Clavien-Dindo post-operative complications stratified by aortic calcification

Type of complication (management)	All cases (n=127)	No calcification (n=65)	With calcification (n=62)
Grade IIIa			
Bile leak (drainage)	17 (13.4)	8 (12.3)	9 (14.5)
Intra-abdominal infection (drainage)	13 (10.2)	4 (6.2)	9 (14.5)
Pleural effusion (drainage)	5 (3.9)	3 (4.6)	2 (3.2)
Pneumothorax (drainage)	1 (0.8)	1 (1.5)	0
Post-operative bleeding (intervention)	1 (0.8)	0	1 (1.6)
Grade IIIb			
Small intestinal perforation (Surgery)	2 (1.6)	0	2 (3.2)
Deep incisional SSI (Surgery)	1 (0.8)	1 (1.5)	0
Small intestinal obstruction (Surgery)	1 (0.8)	1 (1.5)	0
Grade IVa			
Hyperkalemia, renal failure (ICU readmission)	1 (0.8)	0	1 (1.6)
Postoperative bleeding (Surgery, ICU re-admission)	1 (0.8)	0	1 (1.6)
Pneumonia, sepsis (ICU re-admission)	1 (0.8)	0	1 (1.6)
Grade IVb			
Heart, renal and respiratory failure (ICU re-admission)	1 (0.8)	0	1 (1.6)
Grade V			
Death from sepsis	1 (0.8)	0	1 (1.6)
Death from liver failure	1 (0.8)	0	1 (1.6)

Note: Data are expressed as number (percentage)

Abbreviations: SSI; Surgical site infection, ICU; Intensive care unit

Table S2. Comparing perioperative factors and patient outcomes based on posthepatectomy liver failure

Variables	No PHLF (n=92)	PHLF (n=35)	p value
Age (years)	70 (63-75)	71 (66-78)	0.091
BMI (kg/ m ²)	22.9 (20.8-25.4)	22.8 (21.0-24.7)	0.854
Sex (F/M)	34 / 58	9 / 26	0.232
Indication of hepatectomy			
HCC	31 (33.7)	13 (37.1)	0.470
ICC	14 (15.2)	2 (5.7)	
PHC	24 (26.1)	11 (31.4)	
Metastatic liver tumor	6 (6.5)	4 (11.4)	
Intra-hepatic stones	5 (5.4)	3 (8.6)	
Others	12 (13.0)	2 (5.7)	
Hepatic viral infection			
HCV	8 (8.7)	4 (11.4)	0.736
HBV	8 (8.7)	3 (8.6)	>0.999
Comorbidity			
Hypertension	46 (50.0)	22 (61.8)	0.194
Diabetes	19 (20.7)	10 (28.6)	0.342
Dyslipidemia	18 (19.6)	9 (25.7)	0.449
Coronary artery disease	6 (6.5)	1 (2.9)	0.673
Aortic disease	2 (2.2)	1 (2.9)	>0.999
Cerebrovascular accident	7 (7.6)	1 (2.9)	0.443
Social history			
Smoking	58 (63.0)	23 (65.7)	0.780
Alcohol	61 (65.6)	18 (52.9)	0.219
Preoperative laboratory data			
Albumin (g/dl)	4.0 (3.8-4.3)	3.8 (3.5-4.2)	0.053
Bilirubin (mg/dl)	0.7 (0.6-0.9)	0.7 (0.5-0.9)	0.525
INR	0.99 (0.95-1.04)	1.01 (0.97-1.07)	0.120
AST (U/l)	27 (23-38)	31 (23-39)	0.273
ALT (U/l)	23 (16-38)	27 (18-37)	0.270
Liver function test			
ICGR15 (%)	9.7 (7.5-14.6)	12.6 (9.9-17.0)	0.014
ICGK	0.145 (0.121-0.168)	0.127 (0.105-0.158)	0.026
LHL15	0.95 (0.94-0.97)	0.95 (0.94-0.96)	0.771
Surgical procedure			
Right hepatectomy	30 (32.6)	18 (51.4)	0.030
Left hepatectomy	54 (58.7)	10 (28.6)	
Right trisectionectomy	2 (2.2)	3 (8.6)	

Left trisectionectomy	2 (2.2)	2 (5.7)	
Others	4 (4.3)	2 (5.7)	
Trisectionectomy	4 (4.3)	5 (14.7)	0.113
Biliary reconstruction	33 (35.9)	17 (48.6)	0.191
Operation time (min)	403 (342-500)	474 (405-605)	0.013
Blood loss (mL)	730 (335-1631)	1200 (572-2330)	0.088
Aortic calcification	37 (40.2)	25 (71.4)	0.002
CA stenosis rate (%)	16 (5-36)	34 (19-42)	0.003
Histological steatosis	8 (8.7)	5 (14.3)	0.353

Note: Data are expressed as number (percentage), median (range)

Abbreviations: BMI; Body-mass index, HCC; Hepatocellular carcinoma, ICC; Intrahepatic cholangiocarcinoma, PHC; Perihilar cholangiocarcinoma, HCV; Viral hepatitis C, HBV; Viral hepatitis B, INR; International Normalized Ratio, AST; Aspartate aminotransferase, ALT; alanine transaminase, ICGR; Indocyanine green retention, ICGK; Indocyanine green elimination rate constant, LHL 15; Liver-to-heart-plus-liver ratio at 15 minutes (on a liver scan technetium-99m-diethylenetriaminepenta-acetic acid-galactosyl-human serum albumin ((99m)Tc-GSA) , CA; Celiac artery

Table S3. Multivariable analysis to identify risk factors for post-hepatectomy liver failure

Variables	Odd ratio (95% CI)	p value
ICGK (per 0.01point)	0.89 (0.78-1.01)	0.074
Operation time (per hour)	1.20 (1.01-1.41)	0.034
CA stenosis rate (per percent)	1.03 (1.00-1.05)	0.024

Abbreviations: KICG; Indocyanine green elimination rate constant

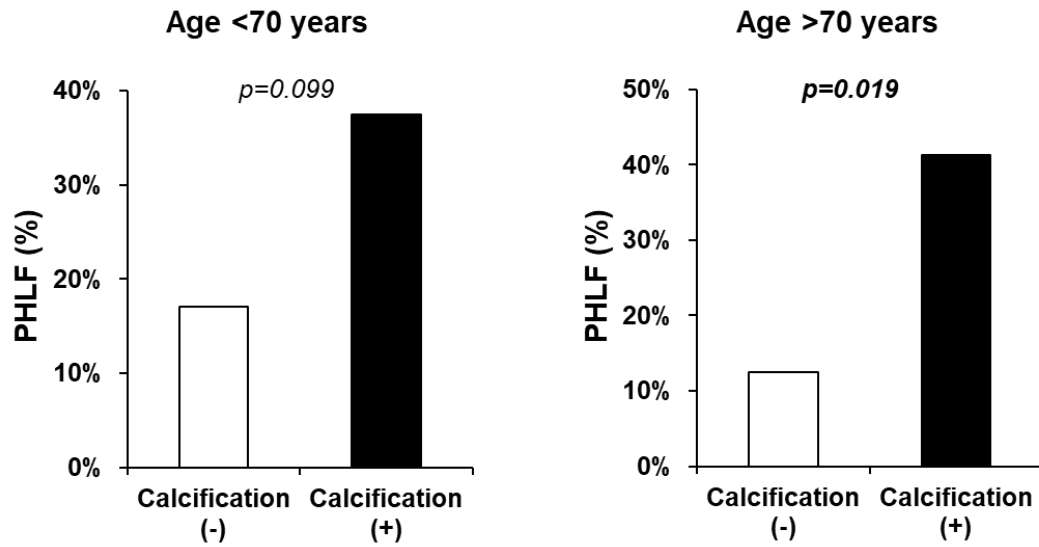


Figure S1. Comparing the incidences of posthepatectomy liver failure based on aortic calcification and stratified by age.

Even though there was a tendency towards higher rates of PHLF among patients with aortic calcification compared to those without, the incidences of PHLF were statistically comparable for the relatively young patients below 70 (n=57) years, 37.5% vs 17.1%, $p=0.099$. However, among the older patients above 70 (n=70) years, those with aortic calcification had a significantly higher incidence of PHLF; 41.3% vs 12.5%, $p=0.016$