to the great development in surgical techniques, technology and many studies demonstrating the oncological efficiency of the laparoscopic approach. Aim of the present study is to analyze and compare the outcomes of laparoscopic and open liver resections for ICC in the modern era of minimally invasive liver surgery.

Methods: Patients undergoing laparoscopic and open liver resections for ICC in two European tertiary referral centers were included. Finally, 104 patients from the open group and 104 patients from the laparoscopic group were compared after propensity scores matching according to seven covariates representative of patients and disease characteristics. Indications to surgery, short- and long-terms outcomes were analyzed and compared.

Results: Operative time, median number of retrieved nodes, rate of negative resection margins, and depth of surgical margins were comparable between the two groups. Blood loss was lower in the MILS (150 ± 100 mL, mean ± SD) compared with the Open group (350 ± 250 mL, p=0.030). Postoperative complications occurred in 14.4% of patients in the MILS and in the 24% of patients in the Open group (p=0.02). There was no significant differences in long term outcomes between the two groups.

Conclusions: Our results confirm feasibility, safety and oncological efficiency of the laparoscopic approach in the management of ICC. However, this surgery is often complex and should be only considered in centers with large experience in laparoscopic liver surgery.

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HEPATECTOMY FOR INTRAHEPATIC CHOLANGIOCARCINOMA - THE GREEK EXPERIENCE

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Background: Despite the fact that intrahepatic cholangioncarcinoma (ICC) is uncommon, its incidence and associated mortality have been shown to escalate during the past decades. Surgical resection remains the sole potentially curative treatment option for patients with resectable disease. The long-term outcomes following hepatectomy for intrahepatic cholangiocarcinoma (ICC) in Greece are currently ill determined. The objective of our multicenter study was to evaluate the long-term outcomes after hepatectomy for ICC in Greece.

Materials and Methods: An invitation to participate in the present study was sent by the Greek Association of HPB Surgery. An Excel-database encompassing 27 parameters was constructed using centrally sampled data obtained from a national 5-center survey

Results: A total of 114 patients (60 males/54 females) with a median age of 66 years who underwent hepatectomy for ICC by 5 certified HPB surgeons during a 12-month period, were included in our retrospective analysis. Lesions were solitary in 78% of patients with a median diameter of 6.6cm, whereas macrovascular invasion was present in 68% of cases. Seventy-seven percent of patients underwent major liver resection. R0 resection was achieved in 88 patients. After a follow-up period of 19 months (range 1-80) 48 patients are alive with a median survival of 31 months. One-, 3- and 5-year overall survival rates were 86%, 47% and 25%, respectively.

Conclusions: The outcomes of our multicenter study are in line with those of previously reported international cohorts. Moreover, our study additionally confirms and highlights the need for these procedures to be performed by experienced HPB surgeons in high-volume centers in order to achieve best possible long-term survival.

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PREOPERATIVE RISK SCORE FOR PREDICTION OF LONG-TERM OUTCOMES AFTER HEPATECTOMY FOR INTRAHEPATIC CHOLANGIOCARCINOMA: REPORT OF A COLLABORATIVE, INTERNATIONAL-BASED, EXTERNAL VALIDATION STUDY

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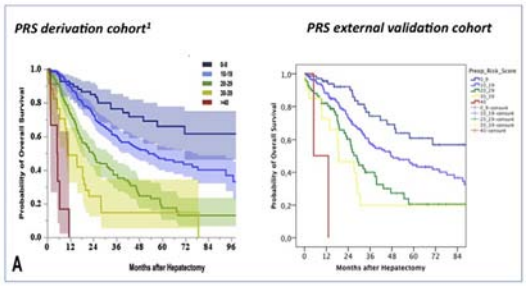
Purpose: To predict outcome of patients with intrahepatic cholangiocarcinoma (ICC) treated by liver surgery (LS), a preoperative risk score (PRS) could be clinically relevant. External validation on independent datasets is crucial for evaluating accuracy and generalizability of these models. The objective of the present study was to externally validate the preoperative PRS developed by Sasaki et al. on 250 patients for prediction of long-term overall survival (OS) after LS for ICC, and based on preoperative albumin, neutrophil-on-lymphocites-ratio (NLR), CA19-9 and tumor size.

Methods: Patients treated by LS for ICC from 9 international high-volume HPB centers from 2001 to 2018 were included in the external validation cohort. PRS survival probabilities from the original derivation cohort were compared with survival probabilities of this external-validation cohort. Area under the ROC (AUROC) and Hosmer-Lemeshow analyses were used for evaluating discrimination and calibration of the PRS. IRB00010254-2018-086

Results: A total of 335 patients with 164 deaths during the follow-up period were included in the external-validation cohort (median OS=26.2 months , IQR 13.7-50.6). Measures of discrimination estimated by the AUROC was 0,63 (95%CI:0,57-0,69), and the calibration Hosmer-Lemeshow p=0,027. The Kaplan-Meyer estimation showed reasonable discrimination across risk groups. After adjustment, variables associated to mortality in the cox model were preoperative albumin (HR:0,671, IC95%:0,461-0,976

p=0,04), NLR (HR: 1,091, IC95%:1,012- 1,176 p=0,02) and CA19-9 (HR :1, IC95%:1-1, p=0,015).

Conclusion: The PRS provides mild discrimination and poor calibration in the external validation cohort, similarly to the original publication. Predictors associated to mortality in the derivation and validation cohort were the same but tumor size (not confirmed in the external-validation cohort). Nevertheless, given the clinical relevance of such a score, re-fitting of the original derivation PRS could be interesting before the diffusion of the score.



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MAJOR HEPATECTOMY FOR INTRAHEPATIC CHOLANGIOCARCINOMA OR COLORECTAL LIVER METASTASES. ARE WE TALKING ABOUT THE SAME STORY?

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Introduction: Major hepatectomy (MH) is often needed in the curative management of intrahepatic cholangiocarcinoma (IHCC) and colorectal liver metastases (CRLM). While similar outcomes could be expected after MH for IHCC and CRLM, reported mortality and morbidity rates are worse after MH for IHCC. The lack of comprehensive analysis in the literature motivated the current study.

Methods: All patients undergoing MH with curative intent for IHCC or CRLM from 2003 to 2009 were included from two dedicated multi-institutional datasets. Preoperative management and short-term outcomes after MH for IHCC or CRLM were first compared. Independent predictors of postoperative mortality and morbidity were identified.

Results: Among 827 patients, 333 and 494 patients underwent MH for IHCC and CRLM, respectively. Preoperative portal vein embolization was significantly more performed in the CRLM group ($p<0.001$). MH in the IHCC group required more preoperative biliary drainage ($p=0.001$) and more extended resection ($p<0.001$). Postoperative mortality and severe morbidity rates were significantly higher in the IHCC group (7.2% vs. 1.2%, $p<0.001$and 29.7% vs. 11.1%, $p<0.001$, respectively). MH for IHCC was an independent risk factor for mortality ($p<0.001$) and severe morbidity ($p<0.001$). After matching (227 patients in each group) on demographics and resection extent, differences regarding preoperative management, underlying liver and postoperative outcomes remained statistically significant.

Conclusion: Mortality and morbidity were significantly higher in patients operated on for IHCC. These differences in outcomes might be related to a lack of preoperative planning underestimating the need for extended resection to the parenchyma, the vessels and the biliary tract.

Table 3. Descriptive data from matched patients who underwent major hepatectomy for IHCC (n=227) or CRLM (n=227)

		CRLM (n=227)	IHCC (n=227)	P
PREOPERATIVE DATA				
Age, years		62 (11.1)	63.4 (11.1)	0.192
Age>70 years		155 (68.3%)	168 (68.3%)	>0.999
Gender	Male	106 (46.7%)	106 (46.7%)	>0.999
	Female	121 (53.3%)	121 (53.3%)	
BMI kg/m²		25.2 (3.8)	25.7 (4.3)	0.268
ASA>2		26 (11.5%)	26 (11.5%)	>0.999
Total bilirubin, µmol/l		12.2 (15.7)	21.7 (52.2)	0.081
Prehepatectomy biliary drainage		2 (0.9%)	3 (1.3%)	>0.999
Prehepatectomy PVE		63 (27.8%)	24 (10.6%)	<0.001
Neoadjuvant therapy		121 (53.3%)	15 (6.6%)	<0.001
INTRAOPERATIVE DATA				
Repeat hepatectomy		48 (21.1%)	12 (5.3%)	<0.001
Extended hepatectomy		65 (28.6%)	65 (28.6%)	>0.999
Portal lymphadenectomy		18 (7.9%)	128 (56.4%)	<0.001
Combined biliary resection		7 (3.1%)	7 (3.1%)	>0.999
Combined vascular resection		9 (4%)	9 (4%)	>0.999
Operative time, minutes		277 (112)	293 (125)	0.221
Pedicle clamping		153 (67.4%)	180 (79.3%)	0.006
Intraoperative transfusion		49 (21.6%)	59 (26%)	0.321
POSTOPERATIVE DATA				
Length of stay, days		13.9 (9.6)	17.1 (12.3)	0.003
Postoperative mortality		3 (1.3%)	14 (6.2%)	0.011
Postoperative morbidity		100 (44.1%)	104 (45.8%)	0.777
Postoperative severe morbidity		29 (12.8%)	64 (28.2%)	<0.001
Morbidity details*				
Abdominal		48 (21.1%)	74 (32.6%)	0.008
Hepatic		39 (15.8%)	77 (31.2%)	<0.001
Biliary fistula		15 (6.1%)	34 (13.8%)	0.006
POLF		15 (6.6%)	25 (11%)	0.135
Haemorrhage		1 (0.4%)	16 (7%)	<0.001
Non hepatic		40 (17.6%)	64 (28.2%)	0.010
Deep SSI		27 (11.9%)	33 (14.5%)	0.489
Non Abdominal		48 (21.1%)	37 (16.3%)	0.229

Continuous variables are expressed as median (range); categorical variables are expressed as n (%).
ASA, American Society of Anaesthesiology; BMI, body mass index; POLF, postoperative liver failure; PVE, portal vein embolization; SSI, surgical site infection
* Patient may have more than one complication

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INTRAHEPATIC CHOLANGIOCARCINOMA - INFLUENCE OF RESECTION MARGINS ON LONG-TERM OUTCOME

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