

ANALYSIS OF SURGICAL APPROACH AND TUMOR DISTANCE TO MARGIN AFTER LIVER RESECTION FOR COLORECTAL LIVER METASTASES

Emanuel Shapera; Iswanto Sucandy; Kaitlyn Crespo; Cameron Syblis; Timothy Bourdeau; Valerie Przetocki; Sharona Ross; Alexander Rosemurgy

Introduction: This study was undertaken to compare tumor distance to margin after robotic vs. 'open' hepatectomy for colorectal liver metastases (CLM) and to determine the effect of preoperative variables on tumor distance to margin and determine the effect of tumor distance to margin on postoperative variables and survival.

Methods: With IRB approval, we prospectively followed 56 patients who underwent a robotic or 'open' hepatectomy for treatment of CLM. The relationships between the tumor distance to margin and perioperative data were determined using regression analyses. For illustrative purposes, and by convention, tumor distance to margin is presented in three cohorts, ≤ 1 mm, 1.1-9.9mm, and ≥ 10 mm, and then further stratified by approach (robotic or 'open'). Survival was determined for tumor distance to margin and operative approach. The data are presented as median(mean \pm SD).

Results: There was a significant difference in the frequency of tumor distance to margin for patients who underwent a robotic vs. 'open' hepatectomy; ≤ 1 mm (17% vs. 50%), 1.1-9.9mm (52% vs. 29%), and ≥ 10 mm (31% vs. 7%) ($p=0.04$). The robotic vs. 'open' approach had an operative duration of 375(358 \pm 130.5) vs. 269(279 \pm 113.3) minutes ($p=0.05$), ICU length of stay (LOS) of 0(0 \pm 0.8) vs. 0(1 \pm 2.0) days ($p=0.01$), and hospital LOS of 4(5 \pm 2.6) vs. 7(7 \pm 4.0) days ($p=0.04$).

There was a longer ICU LOS in patients who had a tumor distance to margin of ≤ 1 mm [0(1 \pm 2.0)] vs. 1.1-9.9mm [0(0 \pm 1.0)] and ≥ 10 mm [0(0 \pm 0.2) days] ($p=0.03$ for each). Patients with a tumor distance to margin of ≤ 1 mm and 1.1-9.9mm had a median survival of 49 months and 24 months, respectively. Median survival for patients with tumor distance to margin of ≥ 10 mm has not been reached but is >84 months.

Conclusions: The use of the robotic approach leads to greater tumor distance to margin as well as shorter ICU and hospital LOS, but with longer operations. Shortest tumor distance to margin led to longer ICU LOS. The robotic approach produces better short-term outcomes and greater tumor distance to margin, but the latter has an inconsistent effect on survival.

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Robotic vs. 'Open' Colorectal Liver Metastases			
	Robotic	'Open'	p-values
	n=42	n=14	
Sex(M/W)	26M/16W	6M/8W	p=0.23
Age(years)	63(61±13.5)	72(69±12.3)	p=0.06
BMI(kg/m ²)	28(28±5.7)	25(27±6.3)	p=0.58
Size of Lesion(cm)	2(3±1.9)	3(4±2.1)	p=0.10
Estimated Blood Loss(mL)	200(265±303.8)	200(372±629.1)	p=0.40
Clavien-Dindo Complications(n)	II(4), IVa(1)	II(1), IIIa(1), V(1)	p=0.15
30-Day Readmission(n)	6	2	p=1.00
In-Hospital Mortality(n)	0	1	p=1.00
90-Day Mortality(n)	2	1	p=1.00