

Nationwide outcomes of simultaneous resection of primary colorectal cancer and synchronous liver metastases

Kara Bowers¹; Allison Rice¹, Joshua Parreco² ; Alvaro Castillo¹

¹ Department of General Surgery, University of Miami Palm Beach Regional Campus, Atlantis, Florida

² Florida State University

Abstract

Background

There are few studies comparing simultaneous versus separate admission resection of primary colorectal cancer and synchronous liver metastases. These studies have been limited to resections performed at the same center. The purpose of this study was to compare outcomes of simultaneous versus separate admission resection of primary colorectal cancer and synchronous liver metastases including resections performed at a different center.

Methods

The Nationwide Readmissions Database was queried for all patients undergoing colorectal cancer and metastatic liver resections in the US from 2010 to 2014. Patients undergoing resections simultaneously during the same admission were compared to patients who underwent liver and colon resections on separate admissions, both liver first and colon first. The outcomes of interest were in-hospital mortality, complications, and total cost. Univariable comparison was performed and significant variables ($p < 0.05$) were used for multivariable logistic regression for each outcome. Results were weighted for national estimates.

Results

During the study period, there were 6,219 patients undergoing resection of primary colorectal cancer and synchronous liver metastases. Simultaneous resection was performed in 63.6%, colon resection was performed first in 30.7%, and liver resection was performed first in 5.7%. Separate admission resection was performed at a different hospital in 45.8%. The overall in-hospital mortality rate was 2.0%. Compared to simultaneous resection, there was a reduced risk for mortality in patients undergoing colon first (OR 0.28, $p < 0.01$) and there was no significant difference in performing liver resection first (OR 0.30, $p = 0.05$). The overall rate of complications was 26.8% and an increased risk for complications was found in patients undergoing liver resection first (OR 1.42, $p < 0.01$) and there was no difference in patients undergoing colon resection first ($p = 0.08$). Simultaneous resection was associated with a decreased mean total cost of admissions compared to separate admission resection ($\$37,278 \pm \$34,353$ versus $\$47,985 \pm \$28,342$, $p < 0.01$). Patients were at increased risk for being in the highest total cost quartile if they underwent colon resection first (OR 2.45, $p < 0.01$) or liver resection first (3.32, $p < 0.01$).

Conclusions

Nearly half of separate admission resections of primary colorectal cancer and liver metastases are performed at different hospitals and likely missed by single-center studies. Undergoing colon resection first on a separate admission is costlier, yet patients have more favorable outcomes. These findings have implications for surgical planning and further studies are needed to reveal the underlying factors responsible for these improved outcomes.