

Patterns and Outcomes of Surgical Management for Primary Colorectal Lymphoma: An Analysis of the National Cancer Data Base (NCDB)

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Word Count: 300

Introduction:

Primary colorectal lymphoma (CRL) is a rare subtype of gastrointestinal lymphoma (GIL), comprising <1% of colorectal cancers. While chemotherapy is standard, surgery is often performed for urgent presentations or diagnostic uncertainty. Large scale evaluations of this disease are lacking, and we sought to evaluate patterns of surgical care and outcomes of CRL in the US.

Methods:

Using the NCDB (2004–2021), we identified CRL cases excluding secondary involvement or incomplete data. Multivariable logistic and Cox regression analyses assessed demographic and clinical factors associated with treatment receipt and overall survival (OS), adjusting for demographic and clinical covariates.

Results:

Among 10,595 patients, 5,373 (50.7%) received surgery. Surgical patients were more likely to have early-stage disease (64% vs. 55%; $p<0.001$), lower comorbidity (Charlson Deyo <3 : 96.5% vs. 94.7%; $p<0.001$), and be treated at non-academic centers (64% vs. 55%; $p<0.001$). No differences were observed by age, sex, race, or insurance ($p>0.05$).

Among surgical patients, treatment included surgery alone (47.6%), surgery + chemotherapy (SC; 29.6%), SC + immunotherapy (SCI; 17.2%), and other combinations. Adjusting for age, sex, comorbidity burden, stage, insurance, facility and race, compared to chemotherapy alone, SC (HR 0.87; 95% CI: 0.78–0.96; $p=0.006$), SI (HR 0.65; 95% CI: 0.46–0.91; $p=0.012$), and SCI (HR 0.60; 95% CI: 0.51–0.69; $p<0.001$) were associated with improved OS.

Stage-stratified analysis showed that for early-stage disease ($n=3,718$), surgery alone (HR 0.81; $p=0.002$), SC (HR 0.82; $p=0.014$), SR (HR 0.57; $p=0.031$), and SCI (HR 0.58; $p<0.001$) improved OS. In late-stage disease ($n=1,833$), surgery alone was associated with worse OS (HR 1.62; $p<0.001$), while SCI was beneficial (HR 0.63; $p<0.001$).

Conclusion:

Although chemotherapy is the standard of care, half of CRL patients undergo surgery. Surgery-inclusive treatments improve OS in early-stage CRL but offer limited benefit or potential harm in late-stage disease. Surgical intervention may be valuable in appropriately selected CRL patients.

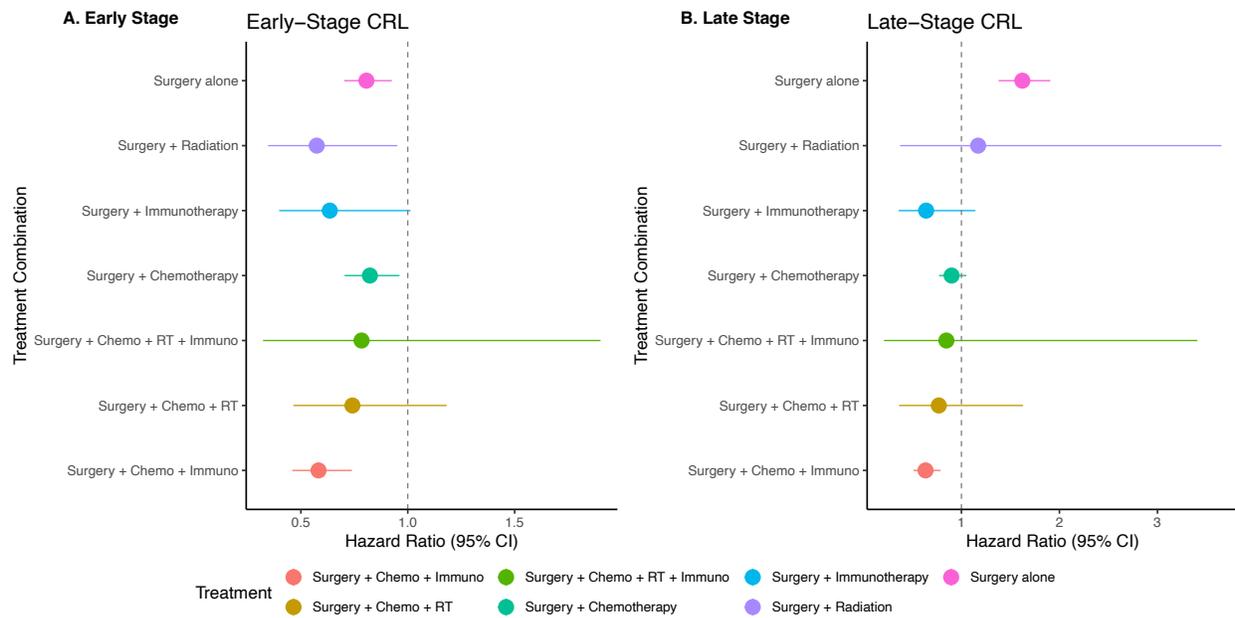


Figure 1: Adjusted hazard ratios for overall survival associated with surgery-containing treatment combinations versus chemotherapy alone, stratified by disease stage.

Multivariable Cox proportional hazards models were fit separately for early-stage (A) and late-stage (B) primary colorectal lymphoma. Models adjusted for age, sex, comorbidity score (Charlson-Deyo), insurance status, facility type, and race. Surgery-inclusive regimens were associated with improved survival in early-stage disease, while only surgery + chemotherapy + immunotherapy was beneficial in late-stage disease. Chemotherapy alone served as the reference category. Error bars represent 95% confidence intervals. Hazard ratios <1 indicate improved survival.