

A Nomogram to Predict Prolonged Total Length of Stay Following Curative Intent Cytoreductive Surgery

Introduction: Cytoreductive surgery (CRS) with or without heated intraperitoneal chemotherapy (HIPEC) is associated with significant morbidity and unplanned readmissions. Enhanced recovery after surgery protocols have been shown to decrease initial postoperative length of stay (LOS) without evidence of decreasing readmission rates among this patient population. The purpose of this study was to evaluate preoperative and intraoperative factors associated with a prolonged total (initial + readmission) LOS > 14 days and to create a nomogram to predict the probability of prolonged hospital stay.

Methods: Patients who underwent curative intent CRS with or without HIPEC at a large academic medical center from January 2017-January 2020 were included. A multivariable logistic regression model was used to examine factors associated with a total LOS >14 days, and a nomogram predicting a total LOS >14 days was created. The performance of the nomogram was evaluated using a receiver operating curve and the area under the curve.

Results: We identified 159 patients who underwent curative intent CRS. The mean total LOS was 13.8 days and 40 patients had a total LOS > 14 days. Of the patients who experienced a total LOS > 14 days, 22 patients had one or more unplanned 90-day readmissions. On multivariate analysis age >60 (Odds Ratio (OR)=3.5, peritoneal cancer index >20 (OR=2.3), ileostomy (OR=3.7, gastrectomy with gastrojejunostomy (OR=2.8), colonic anastomosis (OR=3.5), and enterocolic anastomosis (OR=2.3) were significantly associated with a LOS>14 days. These variables were used to create a nomogram to predict the risk of prolonged total LOS. The area under the receiver operating curve was 0.83.

Conclusions: This nomogram allows for the early postoperative identification of high-risk patients for a prolonged total LOS. These patients can be targeted with early inpatient and home parenteral nutrition support, aggressive physical therapy, and routine screening for intraabdominal infection to prevent common causes for prolonged hospital stay and readmission.