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## ESTIMATED GLOMERULAR FILTRATION RATE IMPACTS ON COLORECTAL SURGERY OUTCOMES: A NATIONAL DATABASE ANALYSIS.

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**Purpose/Background:** The effect of chronic kidney disease (CKD) on the outcomes of colorectal surgery is remained unknown. We sought to identify the impacts of estimated glomerular filtration rate (eGFR) on colectomy outcomes.

**Methods/Interventions:** The study population consisted of all colectomy cases in the American College of Surgeons National Surgical Quality Improvement Program colectomy targeted participant use data file from 2012 to 2014. Emergent cases, patients on current dialysis, disseminated cancer cases, and patients with preoperative wound infections were excluded from the study. Preoperative serum creatinine concentrations, age, sex, and race were used to calculate eGFR based on the Chronic Kidney Disease Epidemiology Collaboration (CKD-EPI) formula. Patients were divided into five groups including patients with eGFR  $\geq 120$ , CKD I or normal ( $90 \leq \text{eGFR} < 120$ ), CKD II ( $60 \leq \text{eGFR} < 90$ ), CKD III a and b ( $30 \leq \text{eGFR} < 60$ ), and CKD IV or V ( $\text{eGFR} < 30 \text{ mL/min/1.73m}^2$ ). CKD I or Normal group was set as reference group. Multivariate logistic regression model was used to analyze the outcomes.

**Results/Outcome(s):** The cohort included 4283 patients. Of these 427 (10%) had eGFR  $\geq 120$ , 1685 (39.3%) were CKD I or normal, 1615 (37.7%) were CKD II, 500 (11.7%) were CKD III, and 56 (1.3%) were CKD IV or V. The median body mass index was 27.26, 27.61, 27.8, 28.6, and 29 for the groups as described above. The mean length of hospital stay (LOS) were  $7.32 \pm 8.34$  days in eGFR  $\geq 120$  group,  $7.54 \pm 7.89$  in CKD III group and  $9.27 \pm 8.22$  in CKD IV or V group, that were significantly longer than  $6.39 \pm 6.38$  in reference group ( $P < 0.05$ ). There was no significant difference in LOS between CKD II group ( $6.21 \pm 5.60$ ) and reference group. Following risk adjustment, no significant difference in in-hospital mortality rate or anastomotic leak was observed. However, serious morbidity rate was significantly higher in patients with eGFR  $\geq 120$ , CKD III,

and CKD IV or V groups compare to the reference group (18.5%, 20.4%, 41.1% vs. 13.4%, AOR: 1.63, 1.49, 3.39,  $P < 0.05$ , respectively). CKD II patients had lower serious morbidity rate compared to the reference group, but it was not significant (12.9% vs. 13.4%,  $P = 0.33$ ).

**Conclusions/Discussion:** As expected, our results of this study showed that decreased eGFR level ( $< 60$ ) significantly impacts morbidity rate and increases length of stay (LOS) in the hospital following elective colectomy. Interestingly, patients with very high eGFR (eGFR  $\geq 120$ ) also have significantly higher complications and longer LOS compared to the reference group. eGFR is well known to overestimate actual kidney function in patients with low muscle mass, which may explain the higher complication rate in patients with very high eGFR. eGFR may be considered as a useful parameter to predict the outcome of colorectal surgery in CKD patients.