

Complications of Diverting Loop Ileostomy after Low Anterior Resection from 2012 to 2017:

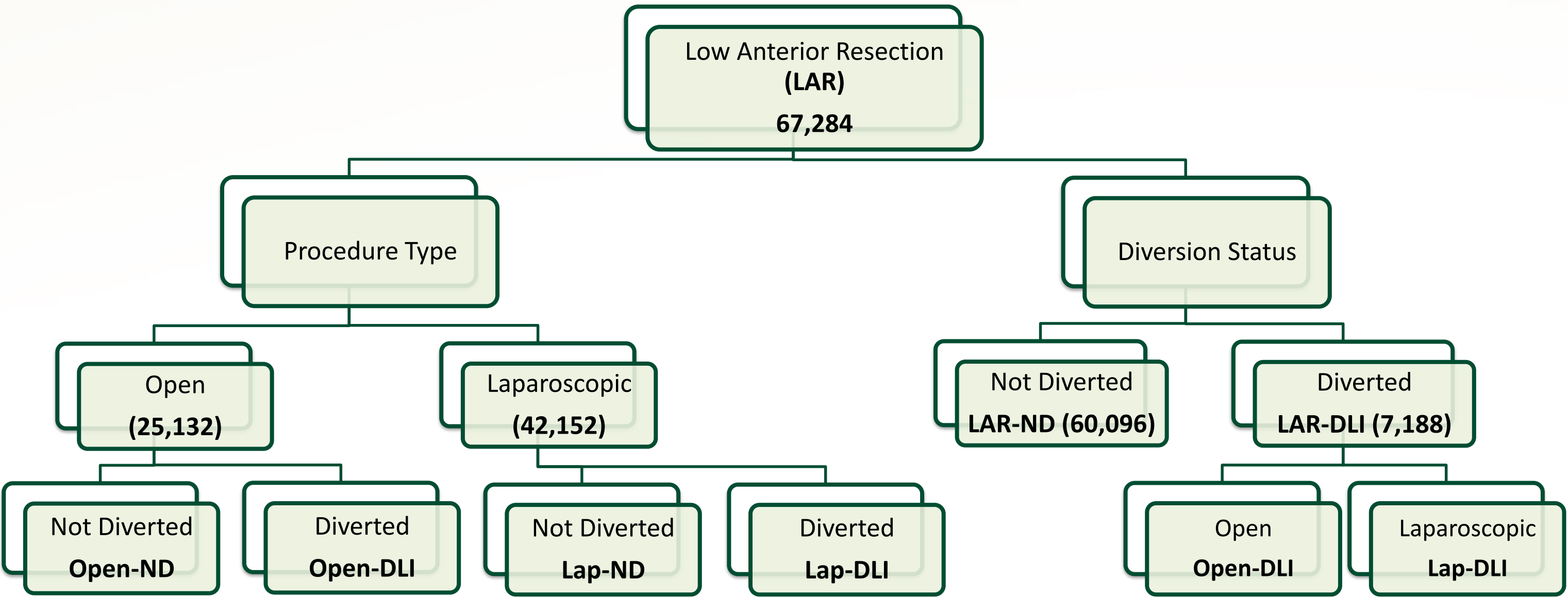
Have We Improved Care?

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Introduction:

Diverting loop ileostomy (DLI) after low anterior resection (LAR) has been thought to decrease the risk of significant morbidity and mortality associated with a low pelvic anastomotic leak. Risk of associated complications independent of the primary surgery for DLI may include dehydration, renal insufficiency, surgical site infection (SSI), reoperation, and readmission. Recent implementation of standardized pathways in colorectal surgery has aimed to reduce readmissions and complications. The objective of this study was to evaluate the rate of select complications associated with DLI after LAR between 2012 and 2017 using a large national database.

Methods:



Using the American College of Surgeons National Surgical Quality Improvement Program database, analysis was performed of patients that underwent Open or Laparoscopic LAR with and without ileostomy from 2012-2017. Analysis of patient demographics, pre-operative characteristics, and 10 common surgical outcomes was performed. Surgical outcomes included: wound complications, progressive renal insufficiency, acute renal failure, sepsis, septic shock, reoperation, and readmission. Stepwise, multivariate logistic regression was used to evaluate the associations of diverted (DLI) versus non-diverted (ND) groups: all diverted cases (LAR-DLI) vs all non-diverted cases (LAR-ND); Open diverted cases (Open-DLI) vs Open non-diverted cases (Open-ND); Laparoscopic diverted cases (Lap-DLI) vs Laparoscopic non-diverted cases (Lap-ND); and all diverted cases that were open (Open-DLI) vs all diverted cases that were laparoscopic (Lap-DLI).

Results:

During the 5-year period, 67,284 patients underwent LAR for any specified diagnosis. The LAR-DLI group included 7,188 patients (10.68%), and the LAR-ND group included 60,096 patients (89.32%). There were 25,132 (37.35%) open cases and 42,152 (62.65%) laparoscopic cases. Among the open and laparoscopic diverted groups, 51.38% of cases were for cancer of the rectum, rectosigmoid junction, or sigmoid colon. Rates for all 10 complications studied were significantly higher for the diverted patients compared to the non-diverted patients. However, this changed when the groups were stratified by surgical approach. A DLI, as compared to non-diversion, in the open and laparoscopic LAR groups was associated with higher odds of organ space SSI, sepsis, septic shock, and readmission within 30-days of surgery. Open-DLI patients had higher odds of acute renal failure than Open-ND patients (adj OR: 1.5, 95%CI: 1.03-2.19), and Lap-DLI patients had significantly higher odds of progressive renal insufficiency than Lap-ND patients (adj OR: 2.24, 95%CI: 1.62-3.11).

Odds Ratios of post-operative complications by surgical approach

	LAR-DLI vs LAR-ND		Open-DLI vs Open-ND		Lap-DLI vs Lap-ND		Lap-DLI vs Open-DLI	
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Organ Space SSI	1.60	1.45-1.76	1.49	1.32-1.68	1.54	1.31-1.81	0.72	0.60-0.87
progressive renal insufficiency	1.49	1.20-1.84	NA*	NA*	2.24	1.62-3.11	NA*	NA*
acute renal failure	1.59	1.16-2.17	1.5	1.03-2.19	NA*	NA*	0.49	0.26-0.93
Sepsis	1.61	1.45-1.80	1.36	1.20-1.56	1.70	1.40-2.06	0.68	0.54-0.85
Septic Shock	1.95	1.67-2.28	1.69	1.41-2.03	1.69	1.21-2.35	0.45	0.32-0.63
Return to OR	1.24	1.12-1.38	1.11	0.96-1.27	1.36	1.15-1.59	NA*	NA*
Readmission	1.63	1.52-1.75	1.26	1.14-1.38	2.02	1.82-2.24	NA*	NA*

*DLI status was not found to be a predictor of the listed complication

Conclusion:

Diverting Ileostomy, whether done during an open or laparoscopic procedure, was associated with increased odds of post-operative complications, notably sepsis and septic shock. DLI was also associated with increased rates of renal insufficiency and failure. This data challenges the protective benefit of DLI in LAR, suggesting that we may be trading one set of complications for another. Our study highlights the importance of patient selection in reducing surgical risk. Further studies are needed to evaluate these differences for malignant and benign conditions to better determine the benefit versus risk of DLI.



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