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Time-Interval between Rectal Cancer Surgery and Reintervention for Anastomotic Leakage and the Effects of a Defunctioning Stoma: A Dutch Population-Based Study

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Abstract : Anastomotic leakage after colorectal cancer surgery remains a severe complication. Early diagnosis and treatment are essential to prevent further adverse outcomes. In the literature, it has been suggested that earlier reintervention is associated with better survival, but anastomotic leakage can occur with a highly variable time interval to index surgery. This study aims to evaluate the time-interval between rectal cancer resection with primary anastomosis creation and reoperation, in relation to short-term outcomes, stratified for the use of a defunctioning stoma. Methods: Data of all primary rectal cancer patients that underwent elective resection with primary anastomosis during 2013-2019 were extracted from the Dutch ColoRectal Audit. Analyses were stratified for defunctioning stoma. Anastomotic leakage was defined as a defect of the intestinal wall or abscess at the site of the colorectal anastomosis for which a reintervention was required within 30 days. Primary outcomes were new stoma construction, mortality, ICU admission, prolonged hospital stay and readmission. The association between time to reoperation and outcome was evaluated in three ways: Per 2 days, before versus on or after postoperative day 5 and during primary versus readmission. Results: In total 10,772 rectal cancer patients underwent resection with primary anastomosis. A defunctioning stoma was made in 46.6% of patients. These patients had a lower anastomotic leakage rate (8.2% vs. 11.6%, $p < 0.001$) and less often underwent a reoperation (45.3% vs. 88.7%, $p < 0.001$). Early reoperations (< 5 days) had the highest complication and mortality rate. Thereafter the distribution of adverse outcomes was more spread over the 30-day postoperative period for patients with a defunctioning stoma. Median time-interval from primary resection to reoperation for defunctioning stoma patients was 7 days (IQR 4-14) versus 5 days (IQR 3-13 days) for no-defunctioning stoma patients. The mortality rate after primary resection and reoperation were comparable (resp. for defunctioning vs. no-defunctioning stoma 1.0% vs. 0.7%, P=0.106 and 5.0% vs. 2.3%, P=0.107). Conclusion: This study demonstrated that early reinterventions after anastomotic leakage are associated with worse outcomes (i.e. mortality). Maybe the combination of a physiological dip in the cellular immune response and release of cytokines following surgery, as well as a release of endotoxins caused by the bacteremia originating from the leakage, leads to a more profound sepsis. Another explanation might be that early leaks are not contained to the pelvis, leading to a more profound sepsis requiring early reoperations. Leakage with or without defunctioning stoma resulted in a different type of reinterventions and time-interval between surgery and reoperation.

Keywords : rectal cancer surgery, defunctioning stoma, anastomotic leakage, time-interval to reoperation
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