Invited Commentary

Rethinking Failure to Rescue After Anastomotic Leak

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Death after major complications or failure to rescue (FTR) is an important quality safety metric used to measure hospital surgical care, and it affects hospital reimbursement. Anastomotic leak is a severe complication of colorectal surgery that has been linked to increased FTR.[1] In this issue of *JAMA Surgery*, Savitch et al[2] evaluate FTR after anastomotic leak in 39 175 patients selected from the Veterans Affairs Surgical Quality Improvement Program retrospective database. Organ space surgical site infection (OSSI) is used as a surrogate for anastomotic leak. The authors conclude that late diagnosis of anastomotic leak is associated with FTR, highlighting the importance of early detection and treatment to improve outcomes.

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Early (before the development of sepsis) vs late (sepsis diagnosis same day or after) designation of an anastomotic leak through OSSI differs from the classical grading system for anastomotic leaks described by Rahbari et al.[3] A grade A anastomotic leak demonstrates no change in the patient's management, whereas grade B requires active therapeutic intervention and grade C requires re-laparotomy. The presence or absence of sepsis might be equivalent to the severity of the anastomotic leak, with sepsis being equivalent to grade C, and thus, it may not necessarily correlate with the timing of anastomotic leak. In this study by Savitch et al,[2] OSSI is not statistically different between the 2 groups and is identified as 10.2 days for the early OSSI group and 11.4 days for the delayed OSSI group.

Risk factors for anastomotic leak have been classified as distinct causations with technical errors of anastomosis creation predisposing to early anastomotic leak and patient-related risk factors, including increased comorbidities, that lead to compromised tissue healing driving late anastomotic leak.[4-6] While there are no prospective or randomized clinical trials to evaluate FTR after anastomotic leak, retrospective national databases have shown that early anastomotic leak is found to have a higher FTR than late anastomotic leak.[5,6] These results contradict that of Savitch et al[2] and may be due to differences in study population demographics and how anastomotic leaks were defined in the study populations—OSSI for Savitch et al[2] vs anastomotic leak in other studies.

Intentional decision-making in the operating room to prevent technical errors, such as the approach to anastomosis creation when performing an emergency surgery, particularly in patients with multiple risk factors for FTR (such as advanced age, comorbidities), as well as careful postoperative monitoring to detect anastomotic leak at its early stages, is vital in preventing FTR after anastomotic leak. As artificial intelligence rapidly evolves within the health care system, machine learning has shown great potential in the creation of predictive metamodels that may create improvements in perioperative surgical care.[7] The clinical utility of these predictive models will require external validation, indicating a need for future prospective clinical trials.

ARTICLE INFORMATION

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REFERENCES

1. Tevis SE, Carchman EH, Foley EF, Heise CP, Harms BA, Kennedy GD. Does anastomotic leak contribute to high failure-to-rescue rates? *Ann Surg*. 2016;263(6):1148-1151. doi:10.1097/SLA.0000000000001409

2. Savitch SL, Lagisetty KH, Suwanabol PA. Delayed diagnosis of anastomotic leak and failure to rescue after colon resection. *JAMA Surg*. Published online February 11, 2026. doi:10.1001/jamasurg.2025.6551

3. Rahbari NN, Weitz J, Hohenberger W, et al. Definition and grading of anastomotic leakage following anterior resection of the rectum: a proposal by the International Study Group of Rectal Cancer. *Surgery*. 2010;147(3):339-351. doi:10.1016/j.surg.2009.10.012

4. Sparreboom CL, van Groningen JT, Lingsma HF, et al; Dutch ColoRectal Audit group. Different risk factors for early and late colorectal anastomotic leakage in a nationwide audit. *Dis Colon Rectum*. 2018;61(11):1258-1266. doi:10.1097/DCR.0000000000001202

5. Grönroos-Korhonen MT, Koskenvuo L, Mentula PJ, Sallinen VJ. Failure to rescue in early versus late severe anastomotic leakage after colorectal surgery: a population-based multicenter study. *Ann Surg*. Published online August 4, 2025. doi:10.1097/SLA.0000000000006864

6. Spence RT, Hirpara DH, Doshi S, Quereshy FA, Chadi SA. Anastomotic leak after colorectal surgery: does timing affect failure to rescue? *Surg Endosc*. 2022;36(1):771-777. doi:10.1007/s00464-020-08270-4

7. Wang J, Tozzi F, Ashraf Ganjouei A, et al. Machine learning improves prediction of postoperative outcomes after gastrointestinal surgery: a systematic review and meta-analysis. *J Gastrointest Surg*. 2024;28(6):956-965. doi:10.1016/j.gassur.2024.03.006