

## Background

Anastomotic leakage (AL) is a serious complication following colorectal surgery, occurring in **up to 30% of cases**.

AL can result in a cascade of secondary postoperative complications, including **sepsis, abscess formation, and multi-organ failure**, thereby necessitating **surgical intervention, prolonging the length of stay (LOS), and increasing the associated cost of care**.

This review summarizes the clinical and economic burden imposed by AL based on existing literature.



## Methods

A comprehensive non-systematic review of recent literature on AL after colorectal surgery was conducted, focusing on publications from 2014 to 2022.

The clinical outcomes of interest included morbidity and mortality, rates of secondary complications, reoperation rates, ICU admissions, permanent stoma formation, oncological outcomes, and health-related quality of life (HRQoL).

The economic parameters studied included length of stay, cost of hospitalization, and readmission rates.

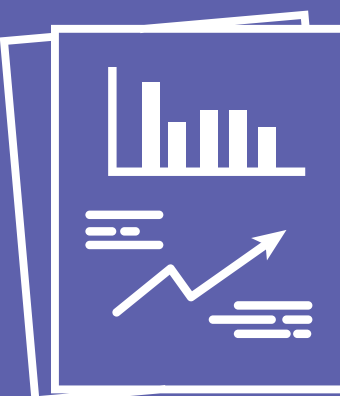


## RESULTS: Clinical Consequences of Colorectal AL



### Morbidity & Mortality

- The mortality rates for patients with AL ranged from **10.6% to 18.3%**, while patients without leaks had rates of **1.6% to 3.9%**.
- Anastomotic leakage was found to have a **significant negative impact on overall survival** (Hazard Ratio 1.14, 95% CI: 1.09 – 1.20) ( $p < 0.001$ ).



### Rate of Secondary Complications

- Postoperative complication rates were **62.7% in AL group vs. 19.9% in non-AL group** ( $p < 0.05$ ).
- AL patients had a **higher postoperative infection rate** (0.8–1.9 times increase) compared with patients without leaks ( $p < 0.001$ ).
- The overall complication rate was **significantly higher in those with leakage (93.3% vs. 28.5%,  $p < 0.001$ )**, and **more common with more than three complications (70% vs. 1.5%,  $p < 0.001$ )**.



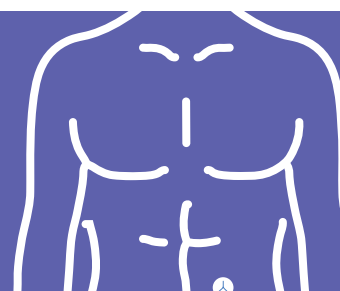
### Reoperation Rate

- AL increased the risk of reoperation by **more than 10-fold**, with reoperation more common in AL groups compared to non-AL groups (91.7% vs. 5.4%,  $p < 0.001$ ).



### ICU Admission

- ICU admission was required in **22.9%-30.3%** of patients presenting with leakage.



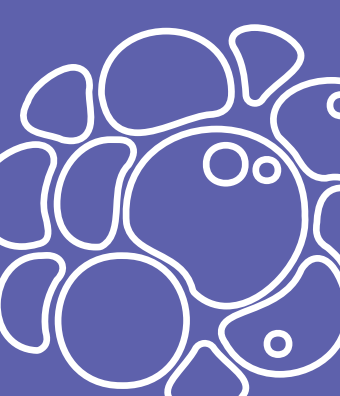
### Permanent Stoma

- Risk of permanent stoma after clinical leakage is reported in literature to vary between **10%-100%**.



### Health Related Quality of Life (HRQoL)

- Physical function of AL patients was significantly worse at all postoperative assessment time points. At 6 and 12 months, their **emotional function, social function, and overall quality of life** scores were significantly decreased in comparison with the patients with an uncomplicated course. AL patients experienced significantly more stoma-related problems and sore skin around the stoma site.
- AL patients showed **reduced neorectal capacity (120 vs 180 ml,  $p = 0.04$ )**, **more evacuation problems ( $p = 0.02$ )**, and a trend towards more faecal urgency ( $p = 0.09$ ) and incontinence ( $p = 0.06$ ) than control patients.



### Oncological Outcomes

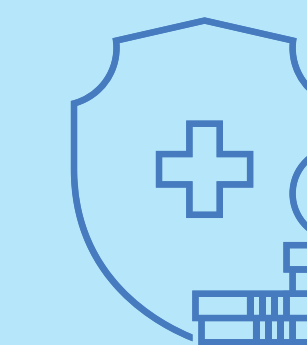
- Studies have found the incidence of **local recurrence** to be significantly higher in AL groups compared to non-AL groups (**4.7%-19% in AL patients vs. 1.9%-9.8% in non-AL patients**).
- The adjusted relative hazard ratios, for AL compared to non-AL group were 1.99 (95% CI: 1.42 to 2.79) ( $p < 0.001$ ) for cancer-specific survival.

## RESULTS: Economic Consequences



### Length of Stay (LOS)

- Mean LOS** is consistently higher, on average, for AL patients than non-AL patients (**2.4-5.3 times higher**,  $p < 0.001$ ).



### Cost of Hospitalization

- AL is regarded as one of the **most expensive** postoperative complications as shown in a single-center randomized trial.
- The mean cost of AL in the US was calculated at over \$72,905 per patient. The difference in cost of AL and non-AL per 1,000 patients was equivalent to **\$28.6 million**.



### Hospital Readmission

- 30-day readmission rate of AL patients was equivalent to 29% whereas the readmission rate in non-AL patients was 13% (**1.3-fold increase**,  $p < 0.001$ ).
- Overall readmission cost and LOS upon readmission was **1.9 times and 1.8 times higher** respectively for AL patients vs. non-AL patients ( $p < 0.0001$ ).

## Conclusion

Anastomotic leaks are a major complication with both clinical and economic impact.

This review summarizes these consequences and demonstrates the urgent need for strategies to combat the negative consequences of AL, such as early detection techniques.

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