

Background

- **Rectal adenocarcinoma** is a common malignancy and abdominoperineal resection (APR) is the standard surgical treatment for tumors in the distal rectum invading the sphincter complex.
- **APR** is associated with significant postoperative morbidity and mortality, particularly among elderly patients and those with comorbidities.
- **Ninety-day mortality** is an emerging quality metric in colorectal surgery that captures both surgical complications and systemic oncologic factors, but predictors of 90-day mortality after APR are not well defined.

Objective

The goal of this study was to identify patient, tumor, and treatment factors associated with 90-day mortality after abdominoperineal resection for rectal adenocarcinoma.

Methods

Study Design & Reporting:

Retrospective case–control study of patients with rectal adenocarcinoma undergoing APR from 2010–2021

Data Source:

Data were obtained from the National Cancer Database.

Study Population:

Adult patients with rectal adenocarcinoma who underwent APR; non-adenocarcinoma histology, unknown procedures, or missing 90-day mortality data were excluded.

Variables & Outcomes:

Demographic, tumor, treatment, and facility variables were analyzed. Primary outcome was 90-day postoperative mortality, with length of stay as a secondary outcome.

Statistical Analysis:

Univariable comparisons were performed using Mann–Whitney U and χ^2 /Fisher exact tests; multivariable logistic regression identified independent predictors of 90-day mortality.

Results

- **Cohort & Mortality:** 21,957 APR patients; 90-day mortality 2.2% (n=477).
- **Patient Factors:** Mortality was associated with older age, higher comorbidity burden, Medicare insurance, and treatment at comprehensive community programs.
- **Tumor Factors:** Mortality cases had larger, higher-grade tumors, more advanced stage disease, signet-ring histology, and elevated CEA.
- **Treatment Factors:** Mortality was associated with less neoadjuvant therapy, open or converted surgery, and longer hospital stay.

Conclusion

Older age, higher comorbidity burden, high tumor grade, and prolonged hospital stay independently predicted 90-day mortality after APR, highlighting the importance of risk stratification and tailored perioperative care.

References



Multivariable Analysis

Older age

OR 1.04
per year

95% CI: 1.01–1.08
 $p=0.008$

High tumor grade

OR 2.60

95% CI: 1.42–4.77
 $p=0.002$

Charlson–Deyo comorbidity score of 1

OR 1.95

95% CI: 1.08–3.50
 $p=0.026$

Prolonged hospital stay (length of stay in days)

OR 1.03
per day

95% CI: 1.00–1.05
 $p=0.020$