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Emergency versus elective resection for small intestine neuroendocrine tumors: a population-based analysis of short-term post-operative outcomes.

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BACKGROUND

There is much debate over whether small bowel neuroendocrine tumors should be resected when asymptomatic. Delaying surgery runs the risk of the need for emergency intervention. The consequences of emergency surgery remain uncertain compared with elective surgery. We described the use of emergency surgery and compared post-operative outcomes between emergency and elective surgery for resection for siNETs.

METHODS

We conducted a population-level retrospective cohort study of adults (≥18 years) undergoing small bowel resection for siNETs (2000–2024), using linked administrative health data. The incidence rate ratio of emergency surgery over years was computed. The primary outcome for comparison was 90-day major morbidity; secondary outcomes were 90-day mortality and prolonged length of stay (LOS; ≥75th percentile days). Multivariable logistic regression models 1) identified factors independently associated with receipt of emergency surgery and 2) estimated the association between emergency surgery and each outcome, adjusting for age, sex, comorbidity, metastatic status, hospital and surgeon procedure volume, and year. Sensitivity analyses incorporated elevated 24-hour urinary 5-hydroxyindoleacetic acid (u5-HIAA) for those with these data available.

RESULTS

Among 2,218 patients (median age 64 years old), 750 (33.8%) underwent emergency surgery. This proportion declined from 58.5% in 2000 to 26% in 2024 (incidence rate ratio 0.96/year, 95%CI 0.95–0.97). Advancing age, high comorbidity burden, and lower socioeconomic status were independently associated with higher odds of emergency surgery, while female sex, metastases at diagnosis, rural residence, care at an academic hospital, and higher surgeon volume were independently associated with lower odds of

emergency surgery. 90-day major morbidity was more than twice as frequent after emergency surgery (31.2% vs 14.8%; p<0.001), as was 90-day mortality (6.3% vs 1.8%); 64.4% of all deaths followed emergency surgery. Median LOS was longer after emergency surgery (8 vs 6 days; p<0.001), and prolonged LOS (≥ 75th percentile of 9 days) more common (39.6% vs 15.3%; p<0.001). After adjustment, emergency surgery was independently associated with higher odds of 90-day major morbidity (OR 2.21, 95%CI 1.76–2.78) and prolonged LOS (OR 2.80, 95%CI 2.24–3.50). Results were not altered when adjusting for elevated u5-HIAA.

CONCLUSIONS

Though less common over the last two decades, emergency small bowel resection for siNETs was independently associated with over double the odds of 90-day major morbidity and prolonged LOS, compared to elective resection. These findings support care strategies designed to avoid emergency surgery for siNETs when appropriate.

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