Geelong Emergency Laparotomy Audit

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Introduction

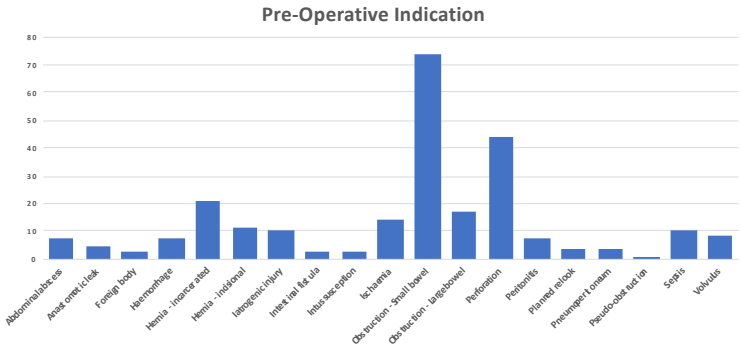
Emergency laparotomy allows for access into the abdominal cavity and are generally performed urgently on acutely unwell patients for a variety of reasons (sepsis, trauma, ischaemia). Emergency laparotomies are associated with a higher rate of morbidity and mortality, however identification of patients who are more likely to require Intensive Care admission post-operatively is often poorly identified and documented. One method of identify patients pre-operatively is using the National Emergency Laparotomy Audit (NELA) risk calculator[1], developed in the United Kingdom which estimates the risk of death within 30 days of emergency laparotomy.

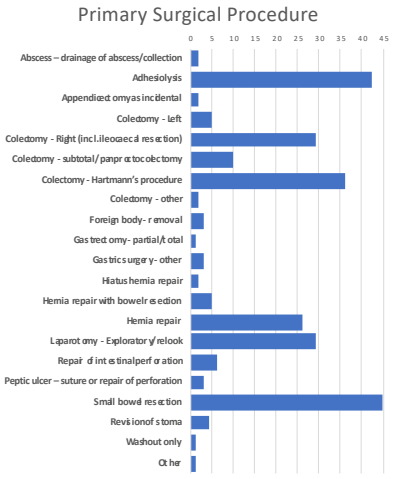
Aim

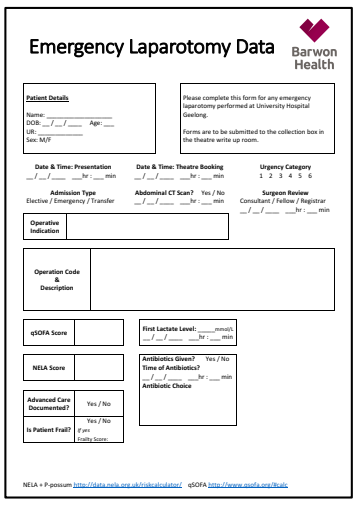
To perform an audit of emergency laparotomies performed at Barwon Health and to determine if the use of an 'Emergency Laparotomy Form' in the pre-operative setting improves the identification of patients undergoing emergency laparotomies who will require more intensive post-operative care, helping reduce morbidity & mortality in this patient population.

Methodology

All patients who underwent an emergency laparotomy under a general surgical team at Barwon health were included. Patients who underwent a non-elective laparoscopy that was converted to laparotomy were also included. The audit was divided into two parts, a retrospective audit and a prospective audit. The eight-month retrospective audit (August 2017 to February 2018) was performed using the Barwon Health Data Warehouse tool. A twenty-two-month prospective audit (March 2018 to December 2019) was conducted using data collected via an 'Emergency Laparotomy Form' filled in by the surgical team at the time of surgery. Data collected included patient demographics, time of presentation, theatre booking time, operation indication and time of surgery. Also required was the patients NELA, frailty score, Advanced Care Plan status, Antibiotics given and blood lactate level. Additional data was collected from medical records post-operatively to identify intensive care admissions, MET (Medical Emergency Team) Calls post-operatively and mortality.







Results

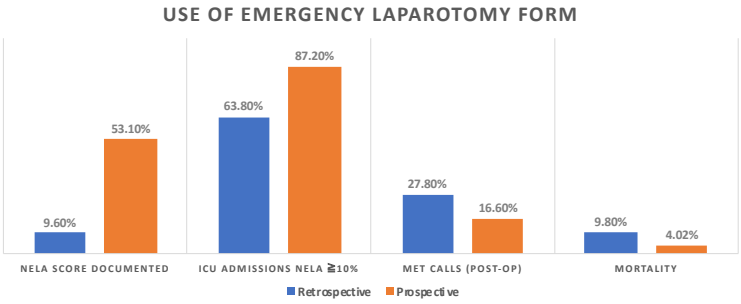
Emergency laparotomies for 257 patients (82 retrospective, 175 prospective) were identified. The average age of patients who underwent an emergency laparotomy at Barwon Health was 64 years old, with 67.3% of patients being greater than 60 years of age. Small bowel obstruction, Perforation and incarcerated hernia were the most common pre-operative indication for emergency laparotomy, while small bowel resection, adhesiolysis and Hartmann's procedure were the most common primary surgical procedure.

The overall 30-day mortality was 5.8%, with the retrospective group demonstrating at 30-day mortality of 9.9% (8 of 81), while the 30day mortality rate for the prospective group was 4.0% (7 of 175).

Pre-operative documentation of risk in the retrospective group was 9.8% (8 of 82), while the documentation with the use of the Emergency Laparotomy Form in the prospective group was 53.1% (93 of 175).

Of the retrospective group 43.9% (36 of 82) had a NELA score ≥10% with 63.8% (23 of 36) admitted to ICU post-operatively. Comparatively of the prospective patients 26.9% (47 of 175) had a NELA score ≥10%, of which 87.2% (41 of 47) were admitted to ICU post-operatively.

The prospective group had a lower number of MET calls, with 16.6% (29 of 175) of patients having a MET call compared to 27.8% (22 of 79) for the retrospective group. There was no significant difference between length of hospital stay between the prospective and retrospective groups, with an average length of stay of 13 days and median length of stay of 9 days.



Conclusion

The overall low 30-day mortality rate and short duration of patient length of stay by patients who underwent emergency laparotomies at Barwon Health between August 2017 & December 2019 is a reflection of Barwon Health's good clinical outcomes for this typically unwell patient group, with both performance indicators being lower than nationally and internationally reported figures[2-6].

The use of a 'Emergency Laparotomy Form' by the Surgical team at time of surgery helps early identification of patients who will likely require intensive care admission post-operatively based on their pre-operative risk analysis using the NELA tool, reducing morbidity and mortality in a high-risk group of patients. It is hypothesised that the higher rate of ICU admissions has a flow on effect in reducing the number of MET calls post-operatively, improving patient care and reducing workload for junior doctors on the wards, as well as improving the mortality rate.

References

1. NELA Risk Calculator [Internet]. https://data.nela.org.uk/riskcalculator/
2. Broughton KJ, Aitken RJ. Australia urgently needs a quality improvement approach to emergency laparotomy. Med J Aust. 2017 Nov 27;208(2):58–9.
3. Saunders DI, Murray D, Pichel AC, of SVS, 2013. Variations in Mortality After Emergency Laparotomy: The First Report of the UK Emergency Laparotomy Network.
4. Broughton KJ, Aldridge O, Pradhan S, Aitken RJ. The Perth Emergency Laparotomy Audit. Australian and New Zealand Journal of Surgery. John Wiley & Sons Australia, Ltd; 2017 Nov 1;87(11):893–7.
5. Benedetto U, Albanese A, Kattach H, Ruggiero D, De Robertis F, Amrani M, et al. Smoking cessation before coronary artery bypass grafting improves operative outcomes. J Thorac Cardiovasc Surg. 2014 Aug;148(2):468–74.
6. Burmas M, Aitken RJ, Broughton KJ. Outcomes following emergency laparotomy in Australian public hospitals. Australian and New Zealand Journal of Surgery. Wiley/Blackwell (10.1111); 2018 Oct 1;88(10):998–1002.

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