

The value of frailty assessments in older surgical patients undergoing emergency laparotomies in Singapore

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Mortality in emergency laparotomy (EL) far exceeds that of elective bowel surgery, and standards for the National Emergency Laparotomy Audit (NELA) in the UK were introduced due to the high mortality within 1 month of EL.¹ In Singapore, 30-day mortality varies between 5.4% and 14.7% after EL.^{2,3} However, 30-day mortality in older patients has been reported to be as high as 31.5%.³

Frailty is defined as a dynamic state of health that involves the gradual loss of physiological in-built reserves, leading to losses in 1 or more domains of human function (physical, cognitive, psychological and/or social), and increases the vulnerability of older adults to adverse health-related outcomes.⁴ There is burgeoning evidence that frailty is a better predictor of postoperative morbidity and mortality than chronological age alone.⁵ Although the benefit of frailty assessment has been established in other countries, a recent study has established the importance of frailty assessment in older patients (age ≥ 65 years) and identified frailty as a pivotal factor in the postoperative trajectory of patients undergoing EL in Singapore. The study reported 1 in 4 (26%) older patients as frail,⁶ which is considerably higher than the NELA cohort where only 1 in 5 patients were frail.

Among the multiple tools developed to assess the multidimensional construct of frailty, the Clinical Frailty Scale (CFS) has been recommended in many international guidelines^{5,7} as a clinically feasible and validated tool for screening frailty. Specifically, large multicentre trials, such as the UK emergency laparotomy frailty (ELF) study⁸ which utilises the CFS as the primary measure of frailty, has demonstrated its strong association with 30-day and 90-day mortality, postoperative complications, length of intensive care unit (ICU) and overall hospital stay. Both the ELF study and Goh et al. defined those CFS 5 and above as frail. Although this cut-off does exclude patients who are very mildly frail, both studies have been able to identify those at highest risk of adverse outcomes. In fact, a frailty score of CFS 5 and above was an independent predictor of 90-day mortality, with frail patients experiencing a 3-fold higher 90-day mortality.⁵

Undertaking frailty assessments in older surgical patients can be challenging, as measures such as gait speed or grip strength may not be feasible, whereas the CFS is relatively easy to score. Introducing a standardised methodology across Singapore would improve benchmarking of surgical outcomes for frail older patients and reduce confusion among healthcare professionals regarding when to screen for frailty. Benchmarking can also be achieved with retrospective frailty screening tools such as the Hospital Frailty Risk Score (HFRS), which is derived from routinely collected electronic healthcare data.

While frailty addresses risk from the vantage point of an individual's characteristics, overall risk also needs to consider the specifics of the surgery and current physiological parameters. The Physiological and Operative Severity Score for the enumeration of Mortality and Morbidity (POSSUM) had been recommended as a tool to predict mortality and morbidity in the initial 30 postoperative days.⁹ However, studies have shown that POSSUM can overestimate mortality particularly in low-risk patients, leading to the development of the Portsmouth-POSSUM (P-POSSUM) score.¹⁰ In the study by Goh et al., a high proportion of frail patients had P-POSSUM mortality risk $\geq 10\%$ (65.6%), and the combination of frailty and high P-POSSUM mortality $>10\%$ was more predictive of 90-day mortality. This was reflected in the mortality rate of 1 in 5 (21.3%) for frail patients, compared to 1 in 20 (6.4%) for non-frail patients.⁶

The American Society of Anesthesiologist (ASA) Physical Status Classification System also helps to categorise a patient's physiological status and predict operative risk. However, frailty assessment has not been routinely incorporated into operative risk scores. It is unsurprising that frail patients had poorer preoperative physical status, with 91.8% classified as ASA grades 3–5.⁶ Frailty increases with age, and both advanced age and higher ASA scores were independent predictors of ICU or high dependency unit (HDU) utilisation, with frail patients typically having longer ICU/HDU stays (2 days compared to 1 day for non-frail patients).

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Advanced age is an independent predictor for prolonged length of stay (LOS) of more than 14 days, and Goh et al. highlighted the lack of consistency in definitions of long LOS.⁶ This inconsistency complicates the comparison of surgical cohorts. Although LOS is typically reported for the acute hospital stay, overall LOS, including time spent in acute sub-acute or rehabilitation settings, may be helpful. Advanced age was also an independent predictor of 30-day readmission,⁶ and a recent multinational systematic review also supports the association of frailty with increased risk of 30-day readmission.¹¹

The time and effort invested in frailty screening can provide better risk stratification preoperatively, improving predictive accuracy when frailty assessment is combined with P-POSSUM scoring risk.⁶ The decision for EL presents an ethical dilemma particularly in frail older patients, who are 3-fold higher risk of postoperative complications compared to non-frail patients.⁶ Identifying patients at increased risks allows clinicians to provide targeted interventions and individualised care plans to optimise their surgical outcomes.

Comprehensive geriatric assessment is well established as beneficial in hip fracture care pathways and more recently in vascular surgical cohorts.¹² Older patients present with more cognitive impairment, sarcopenia and age-related physiological impairment,² making an integrated approach to their care imperative. One common challenge in cognitively impaired patients is their higher likelihood to suffer from delirium, and early planning of acute postoperative care can include the use of delirium care bundles or initiatives such as the Hospital Elder Life Programme (HELP).¹² The study by Goh et al. suggested that the lack of geriatric assessment was an independent predictor of ICU/HDU utilisation, likely reflecting unrecognised frailty syndromes requiring intensivist interventions.

Postoperative geriatric assessments are low overall in those undergoing EL, although higher in frail patients. Achieving postoperative geriatric assessment has clear benefits, but the greater challenge lies in initiating this preoperatively. Early frailty screening would allow interventions at the point of admission, given the limited time for preoperative assessment in EL. Frailty screening could be triggered during emergency department admission, anaesthetic review or initial geriatric assessment. Incorporating frailty into perioperative care should extend beyond a medicalised model to include the multidisciplinary team, with EL care bundles initiating standardised frailty interventions beyond the current delivery of intermittent

comprehensive geriatric assessment and medical stabilisation.

With an ageing population, surgical interventions in older and more frail patients present significant challenges. Evidence supports the value of frailty screening, and integrating it into surgical services alongside geriatric and rehabilitation services to improve outcomes for older complex surgical patients. Future work is needed to determine whether frailty interventions during the perioperative period can further impact recovery, and which components are most beneficial.

Declaration

The authors declare no conflicts of interest.

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