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RESEARCH ARTICLE

Assessment of Postoperative Outcomes in Geriatric Patients Undergoing Emergency Abdominal Surgery: A Multicentric Observational Study

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Abstract

Background:

Elderly patients undergoing emergency abdominal surgery are more likely to have issues due to age-related physiological decline and pre-existing comorbidities. The short preoperative optimization period further complicates the issue. This study aims to assess postoperative outcomes in older patients from different centers in order to improve care plans and better understand hazards.

Aim: To evaluate postoperative results such as complications, recuperation term, and mortality in geriatric patients experiencing crisis stomach surgeries over different therapeutic centres.

Methods: This observational think about was conducted in three tertiary care clinic over two long time, including 250 patients matured 65 and over. Information was collected on socio economic, sort of surgery, postoperative complications, ICU affirmation, clinic remain and morality.

Results: Out of 250 patients, the foremost common surgeries were for intestinal hindrance (38%) and puncturing peritonitis (30%). Almost 42% experienced postoperative complications, and 17.6% required ICU bolster. Mortality rate was 12.4%, with higher chance seen in patients with preexisting conditions.

Conclusion: Emergency stomach surgery in elder patients carries noteworthy hazard. Way better preoperative optimization, early discovery, and multidisciplinary care can strict results.

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Keywords: Emergency abdominal surgery, Geriatric surgery, postoperative outcomes, Surgical risk

INTRODUCTION

As people live longer, the number of elderly patients requiring emergency surgery, particularly for abdominal conditions, continues to rise. Surgery can save lives, and older adults are more likely to require it than younger adults. However, their bodies often struggle to recover because they frequently have co-existing illnesses such as diabetes, cardiovascular disease, or impaired kidney function. Weakened immunity, slower wound healing, and reduced physiological reserve further compound the challenge. In emergencies, these risks are even greater. Surgeons have little time to perform comprehensive assessments, and the operations themselves are technically more demanding. Investigations show that elderly patients are usually more prone to post-operative complications, such as infections, acute respiratory failure, and death, than younger counterparts. The study also demonstrated that advanced age combined with pre-existing illnesses, rather than age alone, places patients at the highest risk [1].

Post-operative confusion in older adults is often a manifestation of delirium. Research indicates that many elderly surgical patients develop varying degrees of disorientation that can lead to further complications, longer hospital stays, and sometimes irreversible cognitive decline. Delirium can prolong hospitalization and may result in transfer to a long-term care facility rather than returning home [2]. Surgery may not only provide benefits; negative outcomes can also arise. Because of patients' post-operative complications, costs escalate, life expectancy diminishes, and hospital stays lengthen, burdens keenly felt by older patients and their families [3].

Emergency surgery therefore presents a unique ethical and clinical dilemma. Meticulous preparation is rarely possible, and doctors must work within strict time constraints to save life while balancing benefit and harm. Beyond probability of survival, physicians should also weigh quality-of-life considerations. Such considerations are especially pertinent in frail or otherwise vulnerable older adults [4].

Recent analyses of emergency abdominal procedures confirm that elderly patients are more likely to experience severe complications or death, underscoring the need for thorough planning, treatment, and follow-up for this population. Given these challenges, we designed a study to examine outcomes in elderly patients undergoing emergency abdominal surgery [5]. By reviewing real cases from several institutions, we sought to identify the most common complications, hospital-stay durations, and factors that influence recovery quality. Through this work, we believe we can provide useful information

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that will enable practitioners to make better decisions and improve peri-operative care for older adults.

MATERIALS AND METHODS

2.1 Study Design

Since this study was designed to be a prospective observational study, we followed up with patients in advance to see how they fared after surgery. It was conducted at several hospitals due to its multicentric nature. In this case, we looked at three important tertiary care institutions in Eastern India, including Katihar Medical College. The study was carried out over a two-year period, from January 2022 to December 2023. Our objective was to observe and record the recovery of older adults after emergency abdominal surgeries and the challenges they faced during and after their hospitalization.

2.2 Inclusion Criteria

Choosing the patient types for this investigation was a thorough process. Only participants who fulfilled the following requirements were included in the study.

- Patients 65 years of age or older who had emergency abdominal surgery (whether for appendicitis, intestinal obstruction, perforation, etc.)
- Assigned their consent to take part in the study, either directly or through a legal guardian or close relative if they were unable to make the decision for themselves.
- We were able to concentrate on the elderly population that was at high risk and in need of immediate surgical care because to these criteria.

2.3 Exclusion Criteria

- Some patients were not allowed to participate in the study for specific reasons: Those who had elective or planned surgery, as emergencies were our top priority.
- Individuals whose medical records lack important details that could impair the accuracy of our analysis
- Patients who had surgery at hospitals other than those listed because we couldn't ensure that data from other facilities was accurate and consistent.

We excluded these patients to ensure the accuracy and focus of the study.

2.4 Data Collected

For each patient involved in the study, we collected a range of data. This helped us understand the procedure they had and how their age and general health affected the outcome.

- The kind of emergency surgery (intestinal resection, closure of a perfration, etc.)
- The age and sex of the patient.

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- Additional present health conditions, including chronic obstructive pulmonary disease (COPD), diabetes, hypertension, heart disease, and renal illness.
- Postoperative complications, including surgical site infections, pneumonia, and wound breakdown.
- Did the patient need to be admitted to the intensive care unit following surgery?
- Whether the patient died within 30 days after surgery
- How long the patient stayed in the hospital, or how many days they spent there before being discharged or transferred.

This information gave us a complete picture of each patient's journey from surgery to recovery or, unfortunately, death in some cases.

2.5 Statistical Analysis

- Once the data was collected, it was meticulously entered into a computer program called SPSS (Statistical Package for the Social Sciences), which is commonly used in medical research. With the help of this software, we were able to identify patterns and connections in the data.
- Because categorical variables (e.g., gender, type of complications, ICU admission, etc.) were analyzed as percentages, we were able to compare the number of patients who had a particular feature or outcome.
- We presented continuous variables (e.g., age or number of hospital days) as mean ± standard deviation in order to calculate the average value and the degree of variation among different patients.

RESULTS

3.1 Patient Demographics: A total of 250 elderly patients who underwent emergency abdominal surgery were included in the study. Among them, 58% were male and 42% were female. The average age of the patients was 71.2 years, with a standard deviation of ±5.6 years. A significant majority, about 75.2%, had one or more pre-existing medical conditions, with hypertension being the most common (45.6%) showed in table 1.

Table no.1: Basic Demographic Details of Patients

Characteristic	Number (%)

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Total Patients	250
Male	145 (58%)
Female	105 (42%)
Mean Age	71.2 ± 5.6 years
Comorbidities Present	188 (75.2%)
Most Common Comorbidity	Hypertension (45.6%)

3.2 Type of Surgery Performed: The most common reason for emergency abdominal surgery was intestinal obstruction (38%), followed by perforation peritonitis (30%). Less common conditions included strangulated hernia (12%), appendicular abscess (8%), and other causes like volvulus or ischemic bowel (12%) showed in table 2.

Table no.2: Distribution of Surgical Indications

Surgical Indication	Number (%)
Intestinal Obstruction	95 (38%)
Perforation Peritonitis	75 (30%)
Strangulated Hernia	30 (12%)
Appendicular Abscess	20 (8%)
Others (e.g., volvulus)	30 (12%)

3.3 Postoperative Complications: Nearly one-fourth of the patients (24%) developed surgical site infections, making it the most common complication. Other complications included pneumonia (8.8%), acute kidney injury (6%), delirium (4%), and cardiac events (3.2%). About 17.6% of patients required ICU admission, and the 30-day mortality rate was 12.4% showed in table 3.

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Table no.3: Frequency of Postoperative Complications

Complication	Number (%)
Surgical Site Infection	60 (24%)
Pneumonia	22 (8.8%)
Acute Kidney Injury	15 (6%)
Cardiac Events	8 (3.2%)
Delirium	10 (4%)
ICU Admission	44 (17.6%)
30-day Mortality	31 (12.4%)

This bar graph illustrates the distribution of common postoperative complications observed among elderly patients. Surgical site infection was the most prevalent (24%, n=60), followed by pneumonia (8.8%, n=22), acute kidney injury (6%, n=15), delirium (4%, n=10), and cardiac events (3.2%, n=8) in Figure 1.

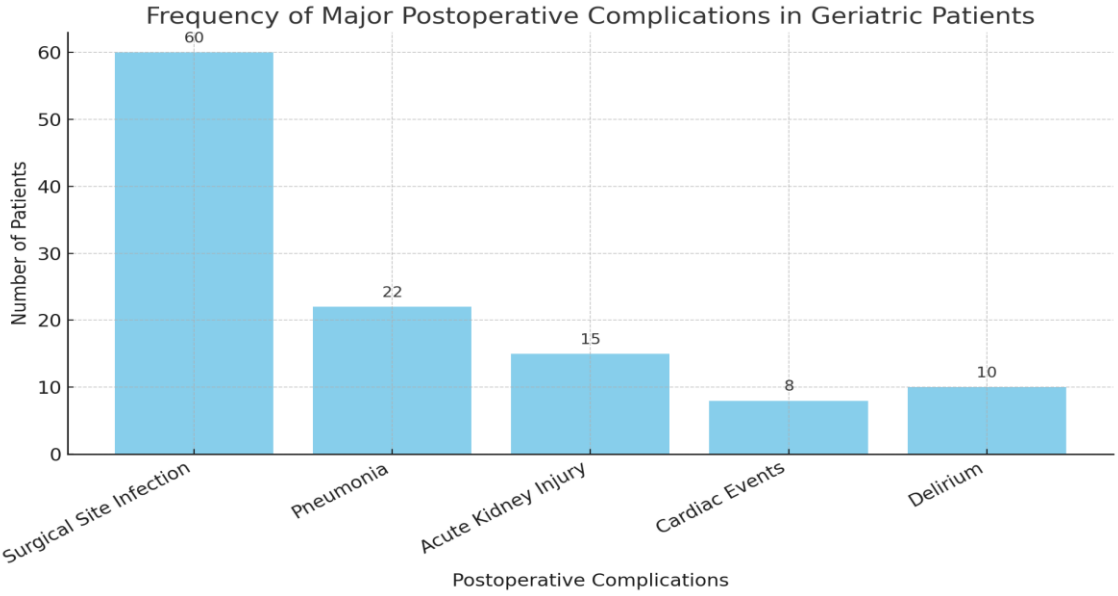

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Figure 1: Frequency of Major Postoperative Complications in Geriatric Patients Undergoing Emergency Abdominal Surgery

Length of Hospital Stay: The majority of patients (56.8%) stayed in the hospital for 5 to 10 days. A shorter stay (less than 5 days) was seen in 15.2% of patients, while 28% needed to stay for more than 10 days. On average, the hospital stay lasted around 9.2 days, with some variation depending on the severity of complications in table 4.

Table no. 4: Duration of Hospital Stay

Stay Duration (Days)	Number of Patients (%)
< 5 days	38 (15.2%)
5–10 days	142 (56.8%)
> 10 days	70 (28%)
Mean Stay Duration	9.2 ± 3.4 days

DISCUSSION

Our multi-centre analysis of emergency abdominal procedures in older patients clearly illustrates the risks associated with surgery and age-related challenges such as frailty, comorbid conditions, and delays in diagnosis, all of which can profoundly influence outcomes. High rates of postoperative complications were among the most striking findings. Surgical-site infection, pneumonia, and renal impairment were the complications we observed most frequently. This corroborates the findings of Panayi et al. (2019) [6], who showed that frailty undermines physical strength and resilience.

After surgery, older people are more likely to experience delirium, or confusion, according to Robinson et al. (2009) [7]. In our study, a significant percentage of patients showed signs of temporary cognitive decline, particularly those who had previously experienced memory problems or who had been hospitalized for a long period of time. Delirium increases the risk of needing long-term institutional care in addition to postponing recovery.

Early ICU intervention and accurate outcome prediction can significantly alter the treatment course for elderly surgical patients, as emphasised by Knettel et al. (2022) [8] and Zoog et al. (2017) [9]. The

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implementation of standardized treatment pathways and early-warning scoring systems may therefore be pivotal to survival.

We also found that many elderly patients required postoperative admission to the intensive care unit, particularly those with multiple co-morbidities. Heuer et al. (2024) [10] likewise reported poorer ICU recovery and higher mortality among the very elderly, especially after hip surgery. In our cohort, ICU admission signalled a more severe clinical course.

Partridge et al. (2014) [11] and Katz et al. (2019) [12] argue that pre-operative assessment of functional status improves the accuracy of outcome prediction by treating the patient as a whole rather than the disease in isolation. The GlobalSurg Collaborative (2016) [13] reminds us that geography and health-system resources are key determinants of outcome. Patients in low- and middle-income countries are even more vulnerable because they have limited access to timely care, advanced diagnostics, and trained personnel. Although our study centred on Indian institutions, the results probably reflect worldwide challenges. Crucially, frailty proved a stronger predictor of poor outcome than chronological age alone.

In some situations, particularly advanced age combined with terminal illness, the risks of surgery may outweigh its benefits. Soreide and Desserud (2015) [4] highlighted this delicate balance between aggressive treatment and preservation of quality of life, an issue that is especially important in emergencies where decisions must be made rapidly and family expectations are high. Many patients in our series had prolonged hospital stays. Besides delayed physical recovery, we identified non-medical factors such as financial hardship and limited home support that contributed to extended admission. Rosen et al. (2023) [14] propose “hospital-free days” as a patient-centred metric that shifts attention toward the quality of postoperative recovery.

Case reports such as Tocu et al. (2022) [15] underline the persistent problem of late presentation and late recognition of symptoms in the elderly, partly because seemingly mild complaints and a higher pain threshold can mask serious disease. Our data show that most patients presented late, often after serious complications had already developed.

Finally, communication is critical. Providing clear pre-operative information about risks, benefits, and possible complications helps elderly patients and their families form more realistic expectations and allows care to be adjusted to patient priorities, whether that is maximizing quality of life or prolonging survival. In summary, emergency abdominal surgery can be life-saving for elderly patients but carries substantial risk. Comorbid conditions, frailty, delayed diagnosis, and inadequate support systems all compound this complexity. A tailored approach that emphasises early risk identification, effective communication, and comprehensive geriatric care offers the best prospect

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of ensuring that elderly patients not only survive surgery but recover with dignity and strength.

CONCLUSION

Emergency abdominal surgery in older adults poses a formidable clinical challenge: advanced age, compounded by pre-existing conditions such as diabetes, cardiovascular disease, and chronic kidney impairment, greatly heightens the risk of surgical-site infection, pneumonia, renal failure, and 30-day mortality. Our findings underscore how the interplay of multiple comorbidities, age-related physiological decline, and diminished immune reserve complicates every stage of care, signalling an urgent need for a structured, multidisciplinary pathway that integrates early diagnosis, comprehensive frailty-focused pre-operative assessment, timely intervention, and vigilant postoperative monitoring, often in an intensive-care setting, to detect and address complications swiftly. In India, where geriatric surgery is still evolving, these results illuminate critical gaps and can catalyse the development of dedicated protocols and specialised training, ultimately fostering safer, more effective, and more compassionate surgical care for the nation's senior citizens.

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