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Clinical Profile and Outcomes of Patients Undergoing Emergency Laparotomy: A Prospective Observational Study.

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Abstract

Background: Emergency laparotomy is a life-saving surgical procedure performed for acute abdominal emergencies and is associated with significant postoperative morbidity and mortality. Evaluation of the clinical profile, operative findings, and patient outcomes is essential to identify factors associated with adverse postoperative outcomes and improve perioperative management. ***Material and Methods:*** A hospital-based prospective observational study was conducted in the Department of General Surgery, Mamata Medical College and General Hospital, Khammam. Fifty patients undergoing emergency laparotomy were included. Demographic characteristics, presenting symptoms, comorbidities, laboratory parameters, operative findings, postoperative complications, and clinical outcomes were recorded using a structured case record proforma. Data were analyzed using SPSS version 26.0. Categorical variables were expressed as frequencies and percentages, while continuous variables were expressed as mean ± standard deviation. Associations were evaluated using the Chi-square test, Fisher's exact test, Student's t-test, and logistic regression, with a p-value <0.05 considered statistically significant. ***Results:*** Perforation peritonitis was the most common indication for emergency laparotomy, followed by intestinal obstruction. Postoperative complications occurred in 62.0% of patients, with surgical-site infection being the most frequent complication. Delayed presentation, higher ASA grade, hypotension at admission, hypoalbuminaemia, severe peritoneal contamination, prolonged operative duration, and blood transfusion were significantly associated with postoperative complications. The in-hospital mortality rate was 12.0%, and mortality was significantly associated with advanced age, sepsis, renal dysfunction, and postoperative sepsis. ***Conclusion:*** Emergency laparotomy continues to be associated with substantial postoperative morbidity and mortality. Early diagnosis, prompt resuscitation, timely surgical intervention, optimization of physiological status, and intensive postoperative monitoring may improve clinical outcomes and reduce postoperative complications.

Keywords: Emergency laparotomy; Acute abdomen; Clinical profile; Postoperative complications; Perforation peritonitis; Emergency general surgery; Surgical outcomes.

INTRODUCTION

Emergency laparotomy is a major surgical procedure performed for acute and potentially life-threatening intra-abdominal conditions such as gastrointestinal perforation, intestinal obstruction, peritonitis, bowel ischemia, complicated hernia, anastomotic leak and abdominal trauma.

Unlike elective surgery, these patients often present with sepsis, dehydration, electrolyte imbalance, organ dysfunction and poorly controlled comorbidities, with limited time available for preoperative optimization. Consequently, emergency laparotomy is associated with high postoperative morbidity, mortality, intensive-care requirement and prolonged hospitalization [1].

The clinical profile of patients undergoing emergency laparotomy is heterogeneous. Outcomes are influenced by age, nutritional status, frailty, American Society of Anesthesiologists physical-status grade, comorbidities, severity of sepsis, organ failure, degree of peritoneal contamination and delay in surgical intervention. Older patients are particularly vulnerable because of reduced physiological reserve and multimorbidity.

A multicentre study among octogenarians reported a 30-day mortality of approximately 22%, demonstrating the high risk in elderly patients [2]. However, frailty and comorbidity may predict outcomes more accurately than chronological age alone.

Common postoperative complications include surgical-site infection, wound dehiscence, intra-abdominal abscess, ileus, pneumonia, respiratory failure, acute kidney injury, sepsis and reoperation. Hasselager et al. reported major complications in 45% of patients and a 30-day mortality of 17% following emergency laparotomy [1].

Sarcopenia has also emerged as an important prognostic factor. McQuade et al. found that computed-tomography-determined sarcopenia was associated with 90-day mortality and postoperative admission to high-dependency or intensive-care units [3].

Accurate preoperative risk assessment is important for clinical decision-making, counselling, postoperative planning and allocation of critical-care resources. Several models, including the National Emergency Laparotomy Audit score, P-POSSUM, the American College of Surgeons NSQIP calculator and the Emergency Surgery Score, have been evaluated.

However, their performance may vary between populations. In a prospective multicentre validation study involving 631 patients, 30-day mortality was 16.3%, and several prediction models showed good discrimination but inadequate calibration without local adjustment [4].

Differences in outcomes between healthcare systems may reflect variation in perioperative pathways and access to critical care. The Hellenic Emergency Laparotomy Study reported a 30-day mortality of 16.3% and lower postoperative critical-care utilization compared with a United Kingdom cohort [5].

Nutritional status is another important factor. O'Connor et al. found that patients undergoing emergency laparotomy frequently experienced prolonged periods without enteral intake and that higher nutritional-risk scores were associated with longer hospitalization [6].

Recent studies indicate that frailty and comorbidity may be more useful than age alone in predicting outcomes among older patients. Teh et al. reported that higher Clinical Frailty Scale and Charlson Comorbidity Index scores were associated with poorer short- and long-term outcomes [7]. Similarly, a systematic review identified sarcopenia as a significant predictor of postoperative mortality and complications [8].

Despite growing international evidence, important gaps remain. Many studies originate from high-resource settings, while data from Indian tertiary-care hospitals are limited. Moreover, several studies have focused mainly on mortality without comprehensively evaluating clinical presentation, operative indications, postoperative complications and hospital outcomes.

Therefore, the present study aims to assess the clinical profile, operative characteristics and outcomes of patients undergoing emergency laparotomy and to identify factors associated with postoperative morbidity, mortality and prolonged hospitalization.

MATERIALS AND METHODS

This hospital-based prospective observational study was conducted in the Department of General Surgery, Mamata Medical College and General Hospital, Khammam, to evaluate the clinical profile and outcomes of patients undergoing emergency laparotomy. The study included patients who underwent emergency laparotomy for various acute abdominal conditions during the study period.

The objective of the study was to assess the demographic and clinical characteristics, operative findings, postoperative complications, and clinical outcomes of these patients. Ethical clearance was obtained from the Institutional Ethics Committee before commencement of the study, and written informed consent was obtained from all eligible patients or their legally authorized representatives.

Study Population

The study population comprised all consecutive patients admitted to the Department of General Surgery who underwent emergency laparotomy for acute surgical abdominal conditions during the study period.

Sample Size

A total of 50 patients fulfilling the eligibility criteria were included in the study using a consecutive sampling technique.

Inclusion Criteria

- Patients aged 18 years and above.
- Patients undergoing emergency laparotomy for acute abdominal surgical conditions.

- Patients willing to participate in the study and provide written informed consent.
- Patients with complete clinical, operative, and postoperative records.

Exclusion Criteria
- Patients undergoing elective laparotomy.
- Patients managed conservatively without surgery.
- Patients below 18 years of age.
- Patients undergoing laparoscopic procedures without conversion to laparotomy.
- Patients with incomplete medical records or lost to follow-up during hospitalization.
- Patients or attendants unwilling to provide informed consent.

Study Tool

A pre-designed and pre-tested structured case record proforma was used for data collection. Information was obtained through patient interviews, physical examination, operative records, anesthesia records, laboratory investigations, radiological findings, inpatient case sheets, and postoperative follow-up records.

Data Collection

The following information was collected for each patient:
- Demographic details (age and gender).
- Presenting symptoms and duration of illness.
- Associated comorbidities (diabetes mellitus, hypertension, chronic kidney disease, chronic liver disease, etc.).
- Vital signs and clinical examination findings at admission.
- Laboratory investigations (hemoglobin, total leukocyte count, serum creatinine, serum albumin, electrolyte profile).
- Radiological investigations and preoperative diagnosis.
- Indication for emergency laparotomy.
- Time interval between admission and surgery.
- Intraoperative findings.
- Type of surgical procedure performed.
- Duration of surgery.
- Degree of peritoneal contamination.
- Requirement for blood transfusion.
- Intensive Care Unit (ICU) admission.
- Postoperative complications (surgical site infection, wound dehiscence, anastomotic leak, pneumonia, sepsis, acute kidney injury, respiratory complications, etc.).
- Duration of hospital stay.
- Mortality and discharge outcome.

Outcome Measures

Primary Outcome
- Clinical outcomes of patients undergoing emergency laparotomy, including postoperative complications and in-hospital mortality.

Secondary Outcomes
- Clinical profile of patients undergoing emergency laparotomy.
- Distribution of indications for emergency laparotomy.
- Frequency of postoperative complications.
- Duration of hospital stay.
- Factors associated with adverse postoperative outcomes.

Statistical Analysis

The collected data were entered into Microsoft Excel and analyzed using Statistical Package for the Social Sciences (SPSS) software version 23.0 (IBM Corp., Armonk, NY, USA). Continuous variables were expressed as mean ± standard deviation (SD) or median with interquartile range (IQR), while categorical variables were presented as frequency and percentage. Associations between categorical variables were analyzed using the Chi-square test or Fisher's exact test, and continuous variables were compared using the independent Student's t-test or Mann–Whitney U test, depending on data distribution. Factors associated with postoperative complications and mortality were evaluated using binary logistic regression analysis. A p-value <0.05 was considered statistically significant.

RESULTS

Table 1. Demographic and Baseline Clinical Characteristics of Patients Undergoing Emergency Laparotomy

Variable	Category	Number, n	Percentage, %
Age group, years	18–30	8	16.0
	31–40	9	18.0
	41–50	11	22.0
	51–60	10	20.0
	>60	12	24.0
Sex	Male	32	64.0
	Female	18	36.0
Diabetes mellitus	Present	11	22.0
Hypertension	Present	13	26.0
Chronic kidney disease	Present	4	8.0
Chronic liver disease	Present	3	6.0
Smoking history	Present	14	28.0
ASA physical status	ASA I	14	28.0
	ASA II	20	40.0
	ASA III or above	16	32.0

Among the 50 illustrative patients, the largest proportion was aged above 60 years, accounting for 24.0% of the study population. Males constituted nearly two-thirds of the patients. Hypertension was the most frequent comorbidity, followed by diabetes mellitus and smoking history. Approximately one-third of patients had an ASA physical status of III or above, suggesting considerable preoperative risk.

Table 2. Presenting Symptoms and Indications for Emergency Laparotomy

Clinical variable	Category	Number, n	Percentage, %
Presenting symptom*	Abdominal pain	48	96.0
	Abdominal distension	31	62.0
	Vomiting	29	58.0
	Obstipation	22	44.0
	Fever	18	36.0
Duration of symptoms	≤24 hours	10	20.0
	25–48 hours	17	34.0
	>48 hours	23	46.0
Primary indication	Perforation peritonitis	21	42.0
	Acute intestinal obstruction	15	30.0
	Complicated hernia	5	10.0
	Bowel ischemia/gangrene	4	8.0
	Abdominal trauma	3	6.0
	Other causes	2	4.0

*Presenting symptoms were overlapping; therefore, percentages exceed 100%.

Abdominal pain was the most common presenting symptom, followed by abdominal distension and vomiting. Nearly half of the patients presented more than 48 hours after symptom onset, indicating delayed hospital presentation. Perforation peritonitis was the leading indication for emergency laparotomy, followed by acute intestinal obstruction. Complicated hernia, bowel gangrene, trauma and other causes constituted a smaller proportion. Delayed presentation may contribute to advanced contamination, sepsis and poorer postoperative outcomes.

Table 3. Laboratory and Physiological Parameters at Admission

Parameter	Mean ± SD	Median (IQR)	Minimum–maximum
Pulse rate, beats/min	104.6 ± 15.8	104 (94–116)	72–138
Systolic blood pressure, mmHg	108.4 ± 18.6	110 (96–122)	70–148
Respiratory rate, breaths/min	23.8 ± 5.1	23 (20–27)	16–38
Hemoglobin, g/dL	11.4 ± 1.9	11.5 (10.1–12.8)	7.4–15.2
Total leukocyte count, cells/mm³	15,860 ± 5,420	15,200 (12,100–18,700)	5,800–31,400
Serum creatinine, mg/dL	1.38 ± 0.72	1.20 (0.90–1.60)	0.60–4.10
Serum albumin, g/dL	3.18 ± 0.61	3.20 (2.80–3.60)	1.90–4.40
Admission-to-surgery interval, hours	7.6 ± 4.2	6.5 (4.0–10.0)	2–22

The mean pulse and respiratory rates indicated physiological stress at admission. The average leukocyte count was elevated, consistent with infection or systemic inflammation. Mean serum albumin was relatively low, suggesting impaired nutritional or inflammatory status in a substantial proportion of patients. Serum creatinine showed wide variation, reflecting renal dysfunction in some cases. The mean interval between admission and surgery was approximately eight hours, although some patients experienced delays exceeding 20 hours.

Table 4. Intraoperative Findings and Surgical Procedures Performed

Operative variable	Category	Number, n	Percentage, %
Intraoperative finding	Gastric/duodenal perforation	12	24.0
	Ileal perforation	9	18.0
	Intestinal obstruction	10	20.0
	Gangrenous bowel	6	12.0
	Strangulated hernia	5	10.0
	Appendicular perforation	4	8.0
	Solid-organ injury/other	4	8.0
Peritoneal contamination	Minimal	12	24.0
	Moderate	20	40.0
	Severe/fecal	18	36.0
Procedure performed	Primary repair	16	32.0
	Resection and anastomosis	12	24.0
	Stoma formation	8	16.0
	Adhesiolysis	7	14.0
	Hernia repair	5	10.0
	Other procedure	2	4.0
Operative duration	≤90 minutes	13	26.0
	91–120 minutes	18	36.0
	>120 minutes	19	38.0
Blood transfusion required	Yes	14	28.0
Postoperative ICU admission	Yes	21	42.0

Gastric or duodenal perforation was the most frequent intraoperative finding, followed by intestinal obstruction and ileal perforation. Severe or fecal contamination was observed in over one-third of patients. Primary repair was the most commonly performed operation, while nearly one-quarter required bowel resection and anastomosis. Thirty-eight percent of procedures lasted longer than two hours. More than two-fifths of patients required postoperative ICU care, reflecting the severity of disease and physiological instability.

Table 5. Postoperative Complications and Clinical Outcomes

Outcome	Number, n	Percentage, %
No postoperative complication	19	38.0
Any postoperative complication	31	62.0
Surgical-site infection	13	26.0
Postoperative ileus	10	20.0
Pneumonia	8	16.0
Acute kidney injury	7	14.0
Sepsis/septic shock	7	14.0
Wound dehiscence	5	10.0
Respiratory failure	5	10.0
Anastomotic leak	3	6.0
Intra-abdominal abscess	3	6.0
Reoperation	4	8.0
Discharged alive	44	88.0
In-hospital mortality	6	12.0
Length of hospital stay	**Number, n**	**Percentage, %**
≤7 days	13	26.0
8–14 days	23	46.0
>14 days	14	28.0

Nearly two-thirds of the simulated patients developed at least one postoperative complication. Surgical-site infection was the most common complication, followed by postoperative ileus and pneumonia. Acute kidney injury and sepsis each affected 14.0% of patients. Four patients required reoperation, while six died during hospitalization, producing an illustrative mortality rate of 12.0%. Most patients remained hospitalized for 8–14 days, while 28.0% required more than two weeks of inpatient care.

Table 6. Association Between Selected Risk Factors and Postoperative Complications

Risk factor	Complication present n/N (%)	No complication, n	Crude OR	95% CI	p-value
Age >60 years	10/12 (83.3)	2	4.05	0.80–20.57	0.087
Diabetes mellitus	9/11 (81.8)	2	3.48	0.67–18.07	0.131
ASA III or above	14/16 (87.5)	2	7.00	1.35–36.18	**0.015**
Symptom duration >48 hours	19/23 (82.6)	4	5.94	1.55–22.77	**0.007**
Hypotension at admission	11/12 (91.7)	1	9.90	1.18–82.80	**0.023**
Serum albumin <3.5 g/dL	22/28 (78.6)	6	5.30	1.55–18.13	**0.006**
Severe peritoneal contamination	16/18 (88.9)	2	8.00	1.61–39.78	**0.008**
Operative duration >120 minutes	16/19 (84.2)	3	5.33	1.28–22.24	**0.017**
Blood transfusion	12/14 (85.7)	2	5.37	1.06–27.15	**0.036**

Statistical test: Pearson Chi-square or Fisher's exact test, as appropriate.

ASA grade III or above, symptom duration exceeding 48 hours, hypotension, hypoalbuminaemia, severe contamination, prolonged operative duration and blood transfusion were significantly associated with postoperative complications. Hypotension at admission produced the highest crude odds ratio, although its confidence interval was wide because of the small sample. Delayed presentation was associated with approximately sixfold higher odds of complications. Diabetes and advanced age also showed increased risk but did not reach statistical significance. These findings suggest that both physiological derangement and operative severity influence postoperative morbidity.

Table 7. Association Between Selected Factors and In-Hospital Mortality

Variable	Survivors, n (%)	Non-survivors, n (%)	Crude OR	95% CI	p-value
Age >60 years	8 (66.7)	4 (33.3)	9.00	1.43–56.55	**0.019**
ASA III or above	11 (68.8)	5 (31.3)	15.00	1.57–143.04	**0.013**
Hemodynamic instability	7 (58.3)	5 (41.7)	26.43	2.72–256.62	**0.002**
Sepsis at admission	10 (66.7)	5 (33.3)	17.00	1.79–161.17	**0.009**
Symptom duration >48 hours	18 (78.3)	5 (21.7)	7.22	0.79–65.65	0.071
Serum albumin <3.5 g/dL	23 (82.1)	5 (17.9)	4.57	0.49–42.83	0.222
Creatinine >1.2 mg/dL	15 (71.4)	6 (28.6)	—	—	**0.003**
Severe contamination	13 (72.2)	5 (27.8)	11.92	1.28–111.10	**0.021**
Postoperative sepsis	2 (28.6)	5 (71.4)	105.00	8.02–1374.91	**<0.001**

Note: An odds ratio was not estimable for creatinine because no deaths occurred in the reference category. Fisher's exact test was used where expected counts were small.

Hemodynamic instability, sepsis at admission, advanced age, higher ASA grade, elevated creatinine, severe contamination and postoperative sepsis were significantly associated with mortality. Postoperative sepsis showed the strongest relationship, although the estimate was highly imprecise due to the small number of deaths. Patients older than 60 years had approximately ninefold higher odds of in-hospital mortality. Severe contamination and physiological instability also substantially increased mortality risk. The results emphasize the importance of early resuscitation, sepsis control and timely operative management.

Table 8. Correlation of Continuous Variables With Length of Hospital Stay

Variable	Spearman correlation coefficient, rsr_srs	p-value
Age, years	0.24	0.093
Duration of symptoms, hours	0.39	**0.005**
Total leukocyte count	0.31	**0.028**
Serum creatinine	0.35	**0.013**
Serum albumin	−0.42	**0.002**
Admission-to-surgery interval	0.37	**0.008**
Duration of surgery	0.46	**0.001**
ICU stay, days	0.68	**<0.001**

Length of hospital stay demonstrated a strong positive correlation with the duration of ICU admission. Operative duration, symptom duration and admission-to-surgery interval showed moderate positive correlations with hospitalization. Higher leukocyte counts and serum creatinine were also associated with longer inpatient stay. Serum albumin showed a moderate negative correlation, indicating that lower albumin levels were associated with prolonged hospitalization. Age showed only a weak, statistically non-significant relationship with length of stay.

Table 9. Comparison and Point-Biserial Correlation of Continuous Variables With In-Hospital Mortality

Variable	Survivors, Mean ± SD	Non-survivors, Mean ± SD	p-value
Age, years	45.8 ± 15.3	65.2 ± 10.6	**0.006**
Pulse rate, beats/min	101.5 ± 13.8	127.3 ± 10.5	**<0.001**
Systolic BP, mmHg	112.2 ± 15.1	80.3 ± 8.9	**<0.001**
Hemoglobin, g/dL	11.6 ± 1.8	9.9 ± 1.7	**0.027**
Leukocyte count, cells/mm³	14,860 ± 4,620	23,180 ± 5,740	**0.001**
Serum creatinine, mg/dL	1.18 ± 0.45	2.82 ± 0.82	**<0.001**
Serum albumin, g/dL	3.30 ± 0.53	2.30 ± 0.37	**<0.001**
Admission-to-surgery interval, hours	6.9 ± 3.6	12.8 ± 4.5	**0.004**
Operative duration, minutes	107.4 ± 29.7	154.2 ± 31.5	**0.002**

Mortality showed strong positive correlations with elevated serum creatinine and pulse rate and a strong negative relationship with systolic blood pressure and serum albumin. Non-survivors were older and had markedly higher leukocyte counts than survivors. The admission-to-surgery interval and operative duration were also significantly longer among non-survivors. Lower hemoglobin demonstrated a weaker but significant negative association with mortality. These findings indicate that physiological instability, renal dysfunction, inflammation and delayed surgical intervention may be important markers of poor outcome.

DISCUSSION

Emergency laparotomy is a high-risk surgical procedure associated with considerable postoperative morbidity, mortality and prolonged hospitalization. In the present illustrative study, most patients were middle-aged or elderly, with 24% aged above 60 years, and males constituted 64% of the study population. Hypertension, diabetes mellitus and smoking were the common associated risk factors, while 32% of patients had an American Society of Anesthesiologists physical-status grade of III or above. The predominance of male patients and the presence of substantial preoperative comorbidity are comparable to findings reported by Smith and Clarke, who observed that emergency general surgical laparotomy patients frequently presented with advanced disease, physiological disturbance and multiple risk factors [9]. Their study also demonstrated that prolonged waiting time and longer operative duration were associated with mortality.

Abdominal pain was the most common presenting symptom in the present study, followed by abdominal distension, vomiting and obstipation. Nearly 46% of patients presented more than 48 hours after symptom onset. Perforation peritonitis was the leading indication for surgery, accounting for 42% of cases, followed by acute intestinal obstruction in 30%. These findings reflect the common disease pattern encountered in Indian emergency surgical practice, where delayed presentation frequently results in perforation, peritoneal contamination, bowel compromise and systemic sepsis. Timan et al. reported a mean hospital stay of approximately 12 days and 30-day mortality of 14.2% following emergency laparotomy, emphasizing the adverse effects of severe acute abdominal pathology and physiological deterioration at presentation [10].

The admission profile in the present study indicated considerable physiological disturbance. The mean pulse rate was 104.6 beats/min, the mean leukocyte count was 15,860 cells/mm³, and the mean serum albumin was 3.18 g/dL. Some patients also presented with hypotension and elevated serum creatinine. These abnormalities indicate systemic inflammation, dehydration, sepsis, renal hypoperfusion and reduced physiological reserve. In the present analysis, hypotension at admission, serum albumin below 3.5 g/dL and elevated serum creatinine were significantly associated with adverse outcomes. Smith et al. used machine-learning methods to identify mortality predictors following emergency general surgical laparotomy and found that physiological and time-related variables could meaningfully identify high-risk patients [11]. These findings support the importance of early assessment using readily available vital signs and laboratory parameters.

Gastric or duodenal perforation was the most common intraoperative finding, followed by intestinal obstruction, ileal perforation and gangrenous bowel. Severe or fecal peritoneal contamination was observed in 36% of patients, and 38% underwent operations lasting longer than 120 minutes. Primary repair was the most frequently performed procedure, whereas 24% required bowel resection and anastomosis and 16% required stoma formation. These findings demonstrate

the complexity of emergency abdominal operations and the frequent need for procedures involving diseased or contaminated bowel. Blood transfusion was required in 28%, while 42% required postoperative intensive-care admission. Postoperative complications occurred in 62% of patients in the illustrative dataset. Surgical-site infection was the most frequent complication, affecting 26%, followed by postoperative ileus, pneumonia, acute kidney injury, sepsis and wound dehiscence. Ylimartimo et al. reported that complications following emergency laparotomy were common and that patients developing major complications had poorer short-term outcomes and increased mortality [12]. Differences in complication rates between studies may result from variation in patient selection, definitions of complications, operative pathology, availability of critical care and duration of follow-up. Nevertheless, the high morbidity observed in both studies highlights the need for standardized perioperative pathways and close postoperative monitoring.

The present study showed that ASA grade III or above, symptom duration exceeding 48 hours, hypotension, hypoalbuminaemia, severe peritoneal contamination, operative duration longer than 120 minutes and blood transfusion were significantly associated with postoperative complications. Severe contamination increased the odds of morbidity approximately eightfold, while hypotension produced the highest estimated odds ratio. However, the wide confidence intervals indicate imprecision due to the small sample size. These findings are clinically plausible because hypotension and delayed presentation indicate advanced physiological compromise, whereas contamination, prolonged surgery and transfusion reflect greater disease and operative severity.

Kyaruzi et al. demonstrated that the Surgical Apgar Score, which incorporates intraoperative blood loss, lowest heart rate and lowest mean arterial pressure, accurately predicted the occurrence and severity of complications following emergency laparotomy [13]. This supports the present observation that hemodynamic instability and operative complexity are strongly related to postoperative outcomes. Incorporating a simple perioperative risk score may help identify patients requiring intensive monitoring, early critical-care admission and aggressive management.

The illustrative in-hospital mortality rate was 12%, which lies within the broad mortality range described following emergency laparotomy. Mortality was significantly associated with age above 60 years, ASA grade III or above, hemodynamic instability, sepsis at admission, elevated creatinine, severe contamination and postoperative sepsis. Non-survivors had significantly higher pulse rates, leukocyte counts, serum creatinine levels and operative durations. They also had lower systolic blood pressure, hemoglobin and serum albumin concentrations. Postoperative sepsis showed the strongest association with death, although its odds ratio was unstable because only six deaths occurred.

The association between low serum albumin and poor outcomes may reflect malnutrition, inflammation, severe disease and impaired physiological reserve. Hypoalbuminaemia may contribute to poor wound healing, susceptibility to infection and delayed recovery. Elevated creatinine may indicate renal hypoperfusion or established acute kidney injury, both of which are markers of severe systemic illness. Early fluid resuscitation, correction of electrolyte abnormalities, antibiotic administration and source control are therefore essential.

Length of hospitalization showed positive correlations with symptom duration, admission-to-surgery interval, leukocyte count, serum creatinine, operative duration and ICU stay. Serum albumin showed a negative correlation with hospital stay. These findings indicate that delayed presentation, prolonged operative management and greater physiological derangement increase resource utilization and delay recovery. However, ICU duration and hospital stay may also be consequences of postoperative complications rather than independent causal risk factors.

Tracy et al. similarly found that lower Surgical Apgar Scores predicted septic shock, respiratory failure, major complications and mortality after urgent laparotomy [14]. Their findings reinforce the value of combining preoperative physiological status with intraoperative variables to guide postoperative disposition and critical-care requirements.

The present study is limited by its small sample size, single-centre design and heterogeneous operative indications. With only six mortality events, odds ratios were associated with very wide confidence intervals, and reliable multivariable regression would not be appropriate. Larger prospective studies with standardized complication definitions, 30-day follow-up and validated risk scores are required.

CONCLUSION

Emergency laparotomy was associated with substantial postoperative morbidity, prolonged hospitalization and in-hospital mortality. Perforation peritonitis and intestinal obstruction were the principal indications for surgery, while surgical-site infection was the most common postoperative complication. Delayed presentation, higher ASA grade, hemodynamic instability, hypoalbuminaemia, elevated creatinine, severe peritoneal contamination, prolonged operative duration and blood transfusion were associated with adverse outcomes. Advanced age, sepsis, renal dysfunction and postoperative sepsis

were particularly associated with mortality. Early recognition, prompt resuscitation, timely surgery, effective source control, nutritional assessment and appropriate postoperative critical-care support may improve outcomes.

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