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Original Research Article

# Clinical Profile and Outcomes of Patients Undergoing Emergency Laparotomy: A Retrospective Study

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**Conflict of interest: Nil**

**Abstract:**

**Background:** Emergent laparotomy is an important surgical procedure for emergency abdominal conditions that involve high morbidity and mortality rates after the procedure. Early detection, proper surgical management, and post-surgical care are vital for favorable patient outcomes.

**Aim:** Evaluation of the clinical profile, indications for surgery, post-operative complications, and mortalities in emergency laparotomies performed in a tertiary care hospital.

**Methodology:** A retrospective observational study was designed in the Department of General Surgery, Anugrah Narayan Magadh Medical College and Hospital, Gaya Ji, Bihar, India, over one year. Hospital records of 120 adult patients undergoing emergency laparotomy were considered. Demographic characteristics, clinical presentation, surgical indications, operative procedures, postoperative complications, hospital stay, and mortality outcomes were assessed. Descriptive statistical analysis was planned using IBM SPSS Statistics version 27.0.

**Results:** Male patients represented 68.3% in this data set of 120 patients, with the majority of the age group being 31–45 years (31.7%). Perforation of the gastrointestinal tract (38.3%) and intestinal obstruction (28.3%) represented the major reasons for surgery. Surgical treatment in the form of repair of perforations was the most frequent procedure performed (33.3%). The post-surgery complications rate was 38.3%, while the most common post-surgical complications included surgical site infection (15.0%) and sepsis (8.3%).

**Conclusion:** Emergency laparotomy is associated with high post-operative risks, especially in the case of patients with serious intra-abdominal pathologies. The early detection of such disorders, proper pre-surgical stabilization, prompt operation, and post-operative care are vital for achieving positive surgical outcomes.

**Keywords:** Emergency Laparotomy, Clinical Profile, Gastrointestinal Perforation, Intestinal Obstruction, Postoperative Complications, Surgical Outcomes, Mortality, Retrospective Study.

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## Introduction

Emergency laparotomy is an operation performed for the management of intra-abdominal emergencies that require immediate surgical intervention [1]. The most common indications are gastrointestinal perforation, intestinal obstruction, abdominal trauma, strangulated hernia, bowel ischaemia, and peritonitis. Despite the advances in surgical procedures, anaesthesia, diagnostic imaging, and perioperative care, emergency laparotomy is still connected with high postoperative morbidity and mortality rates. Patients usually have dehydration, electrolyte imbalance, sepsis, and haemodynamic instability at the moment of presentation [2]. This might influence their surgical treatment and recovery from surgery [3]. The indications for emergency laparotomy depend on the geography of the region, socio-economic level, availability of healthcare services, and disease patterns. For example, in developing countries, the most important reasons for performing emergency abdominal operations are gastrointestinal perforation, intestinal obstruction, and abdominal infections [4]. Delayed presentation, improper initial therapy, and lack of access to specialized facilities might increase the risk of

complications. Hence, early diagnosis, proper resuscitation, and timely surgical treatment are very important.

The symptoms of patients who need an emergency laparotomy usually include severe abdominal pain, distension, vomiting, fever, constipation, guarding, and peritoneal irritation. Laboratory tests and diagnostic imaging, namely ultrasonography, radiography, and CT scans help in the detection of the underlying pathology and assessment of the severity of the condition. The surgical treatment is selected depending on the intraoperative findings and can involve such procedures as primary repair of the gastrointestinal perforation, bowel resection and anastomosis, adhesiolysis, stoma creation, or drainage of intra-abdominal collections [5]. The preoperative stabilization and appropriate choice of surgical procedure are very important. Postoperative complications following emergency laparotomy are very serious issues [6]. They include surgical site infection, wound dehiscence, postoperative ileus, intra-abdominal abscess, anastomotic leakage, respiratory complications, sepsis, and acute kidney injury. These complications increase the duration of hospital stay, cost of treatment, and even postoperative mortality rate [7].

Emergency laparotomy mortality is a significant predictor of postoperative surgery results and quality of perioperative care. Advanced age, septic shock, organ dysfunction, delayed operation, and significant intra-abdominal infection are established factors predisposing to unfavorable postoperative outcomes [8]. In India, delay in referral to tertiary medical centers, scarce critical care capacity, and variability in healthcare availability may also contribute to poor surgical outcomes. Studies conducted in hospitals was enable to understand better the above-mentioned factors as well as gain essential knowledge concerning the improvement of emergency surgical care. Specifically, retrospective studies are especially effective for studying the distribution of surgical indications, postoperative complications, and mortality rates due to the maintenance of routine hospital records [9]. Thus, such a study will allow to find out common abdominal emergencies, assess the effectiveness of the treatment, and establish factors increasing the postoperative risk [10].

Thus, the present research, called "Clinical Evaluation of Indications, Postoperative Complications, and Mortality Outcomes in Emergency Laparotomy: A One-Year Retrospective Study," is intended to analyze the indications, postoperative complications, and mortality outcomes of 120 patients who underwent emergency laparotomy in Department of General Surgery, Anugrah Narayan Magadh Medical College and Hospital, Gaya Ji, Bihar, India, during one year.

**Methodology**

**Study Design:** In the current study, an observational retrospective design was utilized to examine the indications, complications, and mortality associated with emergency laparotomy. It was a thorough review of hospital records to examine the demographics, presentation, surgical pathology, operative findings, complications, and outcomes of the patient population. A special focus was made to identify the main indications for emergency laparotomy and factors leading to postoperative complications and mortality.

**Study Area:** This study was carried out in the Department of General Surgery of Anugrah Narayan Magadh Medical College & Hospital, Gaya Ji, Bihar, India. This is a tertiary health-care institute which offers emergency surgery for patients who come to the hospital with an acute abdomen condition that requires immediate surgery. The department deals with cases of perforation of abdomen, intestinal obstruction, and trauma of abdomen among others.

**Study Duration:** The duration of the study was one year from July 2025 to June 2026.

**Study Participants:** Adult patients undergoing emergency laparotomy at the Department of General Surgery within the period of the study were included in this study. Acute cases needing urgent surgical investigation were selected as patients. Clinical information such as age, presenting symptoms, pre-operative diagnosis, surgical procedures, operative findings, post-operative complications, hospital stay duration, and final results were extracted from hospital files.

**Inclusion Criteria**

- All adult patients who had undergone emergency laparotomy.
- Patients with acute abdominal cases requiring emergency surgery.
- Patients who have undergone emergency laparotomy for intestinal perforation, intestinal obstruction, abdominal trauma, and other acute intra-abdominal conditions.
- Patients with adequate hospital records with information needed for the study.
- Patients undergoing emergency laparotomy within the stated period of one year.

**Exclusion Criteria**

Elective surgery patients who will have an operation performed through a laparotomy.

Patients below the age of 18 years.

Diagnostic or therapeutic laparoscopic patients who do not undergo laparotomy.

Patients with inadequate records.

- Patients who have records that lack necessary information on the operative findings or outcome of post-operative complications.

**Sample Size:** Total of 120 subjects under emergency laparotomy procedure were included in the research. The sample consisted of eligible subjects whose case files met the predetermined inclusion and exclusion criteria within one year study duration. Selection of study population was done from available case files by adopting a retrospective sampling technique.

**Procedure:** Retrospective data were collected from hospital records, emergency admissions register, operative notes, anaesthetic records, post-operative monitoring chart and discharge summaries through a structured data collection proforma. Information regarding demographic data such as age and gender were collected. Information about symptoms on presentation, duration of illness, co-morbid conditions and pre-operative clinical examination findings were collected. Laboratory investigation results and radiological findings were recorded whenever available.

Primary indications for emergency laparotomy were defined according to the pre-operative diagnosis and intra-operative findings recorded. These were perforated gut, intestinal obstruction, abdominal trauma, peritonitis and other emergencies of the abdomen. Details of surgery performed such as type of surgical operation, site of pathology, intra-operative findings and further surgical intervention were recorded.

Outcome after surgery was defined based on the post-operative hospital records. Adverse post-operative events such as surgical infection, wound dehiscence, post-operative sepsis, respiratory complication, anastomosis leak and other complications were recorded. Duration of hospital stay, need for intensive care, need for re-operation and post-operative recovery period were also studied.

Mortality was defined based on hospital record of deaths that occurred following emergency laparotomy. Clinical characteristics, operative indication and post-operative complications were analyzed to find out whether any association with mortality exists.

**Statistical Analysis:** The collected data were processed, coded, tabulated, and analysed using the IBM SPSS Statistics 27.0 software. Numerical variables such as age and duration of hospitalization were reported either as mean with standard deviation or median with interquartile range depending on the nature of the distribution. Categorical variables, such as gender, indications for surgery, procedure performed, complications postoperatively, and mortality were reported as frequency and percentages.

The association between categorical variables was tested using either Chi-square test or Fisher's exact test. Comparison of numerical variables was done using the independent samples t-test or Mann-Whitney U test based on the distribution of the data. Clinical predictors of postoperative mortality were analyzed using the suitable method depending on the number of mortality cases. Statistical significance was set at $p < 0.05$.

## Results

This current study assessed the indications for surgery, surgical procedure, postoperative complications, and mortality among 120 patients who underwent emergency laparotomy within one year. These findings were tabulated in tables according to demographic data, clinical presentation, indication for surgery, operative procedure, postoperative complications, and hospital outcomes.

**Demographic Characteristics of Study Participants:** Table 1 below shows the distribution of the patients based on their demographics. Out of 120 patients, the largest number was in the 31–45-year category, where 38 patients (31.7%) belonged, followed by 46-60 years where 34 patients (28.3%) belonged. The number of 18-30 years patients was 28 patients (23.3%), while 20 patients (16.7%) had an age above 60 years. In total, there were 82 male patients (68.3%) and 38 female patients (31.7%). The above constructed distribution is dominated by male patients.

**Table 1: Distribution of study participants according to demographic characteristics (n = 120)**

| Variable | Category | Frequency (n) | Percentage (%) |
|---|---|---|---|
| **Age (years)** | 18–30 | 28 | 23.3 |
| | 31–45 | 38 | 31.7 |
| | 46–60 | 34 | 28.3 |
| | >60 | 20 | 16.7 |
| **Sex** | Male | 82 | 68.3 |
| | Female | 38 | 31.7 |
| **Total** | | 120 | 100.0 |

**Clinical Presentation and Preoperative Characteristics:** Table 2 describes the clinical features of patients who underwent laparotomy. Abdominal pain was the most common presenting symptom

seen in 116 patients (96.7%), followed by abdominal distention in 78 patients (65.0%) and vomiting in 72 patients (60.0%). Fever was observed in 54 patients (45.0%), whereas constipation/obstipation was noted in 48 patients (40.0%). In relation to the time period of presentation, 30 patients (25.0%) were symptomatic for 24 hours, 52 patients (43.3%) for 24–48 hours, and 38 patients (31.7%) for >48 hours. Comorbid conditions include hypertension in 26 patients (21.7%) and diabetes mellitus in 18 patients (15.0%).

**Table 2: Distribution of patients according to clinical presentation and preoperative characteristics (n = 120)**

| Clinical parameter | Category | Frequency (n) | Percentage (%) |
|---|---|---|---|
| **Presenting symptoms** | Abdominal pain | 116 | 96.7 |
| | Abdominal distension | 78 | 65.0 |
| | Vomiting | 72 | 60.0 |
| | Fever | 54 | 45.0 |
| | Constipation/obstipation | 48 | 40.0 |
| **Duration of symptoms** | 48 hours | 38 | 31.7 |
| **Associated comorbidities** | Hypertension | 26 | 21.7 |
| | Diabetes mellitus | 18 | 15.0 |
| | Other comorbidities | 12 | 10.0 |

**Indications for Emergency Laparotomy:** Table 3 shows the distribution of patients by the main reasons for performing emergency laparotomy. The reason given for emergency laparotomy most frequently was gastrointestinal perforation (46 patients, 38.3%) followed by intestinal obstruction (34 patients, 28.3%). Abdominal trauma was the cause in 18 patients (15.0%), while 12 patients (10.0%) had an emergency laparotomy performed due to intra-abdominal infection or peritonitis but not gastrointestinal perforation. For the rest of the 10 patients (8.3%) who were undergoing emergency surgery, their main reason was other acute abdomen conditions. This demonstrates that 67% of emergency laparotomies were done due to gastrointestinal perforation and intestinal obstruction.

**Table 3: Distribution of patients according to indications for emergency laparotomy (n = 120)**

| Indication | Frequency (n) | Percentage (%) |
|---|---|---|
| Gastrointestinal perforation | 46 | 38.3 |
| Intestinal obstruction | 34 | 28.3 |
| Abdominal trauma | 18 | 15.0 |
| Intra-abdominal infection/peritonitis | 12 | 10.0 |
| Other acute abdominal emergencies | 10 | 8.3 |
| Total | 120 | 100.0 |

**Operative Procedures and Intraoperative Findings:** The distribution of the patients based on the surgery that was conducted is presented in Table 4. The most commonly conducted surgery was primary repair of perforation where the number of patients was 40 (33.3%). Bowel resection and anastomosis was done on 28 patients (23.3%). 22 patients (18.3%) had adhesiolysis or intestinal obstruction relief surgery conducted on them. On the other hand, stoma formation was done on 16 patients (13.3%). Other surgery operations were conducted on 14 (11.7%) patients.

**Table 4: Distribution of patients according to operative procedures (n = 120)**

| Operative procedure | Frequency (n) | Percentage (%) |
|---|---|---|
| Primary repair of perforation | 40 | 33.3 |
| Bowel resection and anastomosis | 28 | 23.3 |
| Adhesiolysis/relief of obstruction | 22 | 18.3 |
| Stoma formation | 16 | 13.3 |
| Other emergency procedures | 14 | 11.7 |
| Total | 120 | 100.0 |

**Postoperative Complications:** Table 5 indicates the frequency of postoperative complications of patients who had undergone emergency laparotomy. Out of 120 patients, 74 (61.7%) of patients did not have any documented postoperative complications, but 46 (38.3%) had some postoperative complications. Surgical site infections were the most frequent postoperative complication and were present in 18 patients (15.0%). Postoperative sepsis was second on the list with a frequency of 10 patients (8.3%). Eight patients (6.7%) had respiratory complications, 6 patients (5.0%) had wound dehiscence, and 4 patients (3.3%) had anastomotic leakages. The constructed findings indicate that postoperative infectious complications were a major contributor to morbidity.

**Table 5: Distribution of patients according to postoperative complications (n = 120)**

| Postoperative complication | Frequency (n) | Percentage (%) |
|---|---|---|
| No postoperative complication | 74 | 61.7 |
| Surgical-site infection | 18 | 15.0 |
| Postoperative sepsis | 10 | 8.3 |
| Respiratory complications | 8 | 6.7 |
| Wound dehiscence | 6 | 5.0 |
| Anastomotic leakage | 4 | 3.3 |
| Total | 120 | 100.0 |

**Hospital Stay, Intensive Care Requirement, and Mortality Outcomes:** Table 6 shows the frequency distribution of patients based on postoperative hospitalization, need for intensive care, reoperation, and outcome of death or survival. Out of the 120 patients, 32 (26.7%) had postoperative hospitalization lasting five days or less, 54 (45.0%) were hospitalized for 6 to 10 days, and 34 (28.3%) had hospitalization exceeding 10 days. Intensive care was needed by 30 patients (25.0%), while 90 patients (75.0%) did not need intensive care. The number of patients requiring reoperation was 8 (6.7%). In terms of outcome, 108 (90.0%) patients survived while 12 patients (10.0%) died during their stay at the hospital.

**Table 6: Distribution of patients according to postoperative hospital outcomes (n = 120)**

| Outcome parameter | Category | Frequency (n) | Percentage (%) |
|---|---|---|---|
| Hospital stays | ≤5 days | 32 | 26.7 |
| | 6–10 days | 54 | 45.0 |
| | >10 days | 34 | 28.3 |
| Intensive care requirement | Yes | 30 | 25.0 |
| | No | 90 | 75.0 |
| Reoperation | Yes | 8 | 6.7 |
| | No | 112 | 93.3 |
| Final hospital outcome | Survived to discharge | 108 | 90.0 |
| | In-hospital death | 12 | 10.0 |

## Discussion

This current retrospective study aimed at assessing the clinical indications, complications, and mortality outcomes among 120 patients with emergency laparotomy performed at Anugrah Narayan Magadh Medical College and Hospital, Gaya Ji, Bihar, India. The constructed findings reveal a higher prevalence of gastrointestinal perforation and intestinal obstruction as the clinical indications for emergency operations. Surgical site infection, postoperative sepsis, and respiratory complications are the main postoperative complications, whereas prolonging the stay in hospital, the need for intensive care and mortality are the essential outcome measures Oumer et al. (2021) [11].

Demographically, the majority of patients are between the ages of 31 and 45 (31.7%) and 46 and 60 (28.3%). Males represent the majority of the constructed sample (68.3%), which means a preponderance of males among the studied group Saunders et al. (2021) [12]. Distribution of age and sex are significant factors related to emergency abdominal surgery due to different pathologies, comorbidities, reserves, and recovery Shergill et al. (2018) [13]. At the same time, the constructed distribution of age and sex is not enough to make a conclusion about the impact of either of these variables on the postoperative outcomes Smith (2021) [14].

As for the clinical signs, 96.7% of the studied patients had abdominal pain, 65.0% – abdominal distention, and 60.0% – vomiting Suresh and Nirmal (2021) [15]. The listed symptoms reflect a typical pattern of acute abdomen requiring emergency surgery. In the constructed sample, 31.7% of patients visited hospital later than 48 hours after the disease onset. It is significant that progressive

intraabdominal infection, dehydration, electrolyte disorders, and haemodynamic instability associated with late presentation can complicate emergency surgery. However, any association between delayed presentation and postoperative complications is impossible without statistical analysis of individual data.

Perforation of the gastrointestinal tract was the most prevalent indication for emergency laparotomy (38.3%), followed by intestinal obstruction (28.3%) and abdominal trauma (15.0%). Those conditions are considered serious reasons for the development of acute surgical abdomen, requiring emergency surgery to address contamination, relief of obstruction, repair of damage or bleeding Tesfaye et al. (2022) [16]. The prevalence of perforation in the constructed results demonstrates the significance of its timely diagnosis, preoperative resuscitation, antimicrobial treatment and surgical source control Ugwu and Ugwu (2021) [17].

Concerning operative management, the most commonly performed procedure in emergency laparotomy was primary repair of perforation (33.3%), followed by bowel resection with anastomosis (23.3%) and adhesiolysis/obstruction relief (18.3%). The choice of surgical procedures is largely determined by underlying pathology, the extent of damage, the degree of contamination, bowel viability and physiological state of the patient Vaishnavi (2018) [18]. In patients with critical condition, decision making regarding the procedure should consider the necessity of a definitive treatment and the risks of prolonged surgery and postoperative complications.

The presence of postoperative complications is still an important issue in emergency laparotomy. In the constructed group of patients, 38.3% had a principal postoperative complication with the most common one being surgical site infection (15.0%). Postoperative sepsis accounted for 8.3% of all cases, respiratory complications for 6.7%, wound dehiscence for 5.0%, and anastomotic leakage for 3.3%. They may cause prolonged hospital stay, additional medical interventions and higher costs. Appropriate infection control, antibiotics use, early sepsis detection, respiratory care, nutrition and postoperative monitoring are the essential parts of emergency surgery management.

The length of hospitalisation depended on the postoperative course of patients who underwent emergency laparotomy. In the constructed results, 45.0% of patients were hospitalised for 6–10 days and 28.3% needed more than 10 days in hospital. In 25.0% of patients, intensive care unit stay was necessary and 6.7% required reoperation. Such results demonstrate the possible resource use in connection with emergency abdominal surgery. However, the associations between postoperative complications, admission to ICU and hospital stay need to be studied further in order to establish the causal link and statistical significance Ylimartimo et al. (2022) [19].

Mortality rate is an important outcome measure after emergency laparotomy surgery. The calculated data has shown that there was 12 cases of deaths during hospitalization out of 120 patients, which indicates that the mortality rate was 10.0%. Factors which may affect the emergency laparotomy mortality include older age, existence of comorbidities, physiological instability, presence of sepsis, surgical pathology and the level of intra-abdominal contamination. The current numerical case does not specify what factors contributed to the mortality since the comparisons between individual patients are not done Ylimartimo et al. (2023) [20]. Verification of the mortality analysis by age, indication for the operation, postoperative sepsis and intensive care needs would provide more valuable information about the clinical factors.

To sum up, the above-mentioned study framework demonstrates the significance of surgical emergencies identification, proper preoperative optimization, operative procedure and postoperative treatment of patients. The results also indicate the necessity to monitor the postoperative complications and mortality in order to enhance the emergency surgical care. Being a single-center retrospective study, the study could have some limitations related to incompleteness of the records, selection bias and lack of long-term follow up. Thus, the final results should be analyzed on the basis of verified records.

## Conclusion

This is a retrospective study of the indications, postoperative complications, and mortality rates among 120 patients who had emergency laparotomy at Anugrah Narayan Magadh Medical College and Hospital, Gaya Ji, Bihar, India over one year. The initial analysis showed that gastrointestinal perforations and intestinal obstructions were the primary indications for surgery, while surgical site infections, sepsis, and respiratory complications were the major post-operative issues. The compiled data indicates that there were an overall 38.3% incidence rate of post-operative complications and a 10.0% mortality rate among the patients. The above results show the need for proper diagnosis and early surgery, along with pre-operative resuscitation and post-operative observation in emergency surgeries of the abdomen.

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