

Research Journal of Pharmaceutical, Biological and Chemical Sciences

Comparative Study of Postoperative Complications in Elective Versus Emergency.

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ABSTRACT

Laparotomy is a common surgical procedure performed under elective or emergency conditions for various abdominal pathologies. The outcome of surgery largely depends on preoperative preparation, the patient's physiological condition, and the timing of intervention. Emergency laparotomies are often associated with higher postoperative morbidity and mortality due to inadequate optimization and delayed presentation. To compare the postoperative complications between elective and emergency laparotomy and to analyze the influence of surgical timing on morbidity and hospital stay. This comparative observational study was conducted in the Department of General Surgery over one year, including 54 patients—26 elective and 28 emergency laparotomies. Data were collected regarding demographic details, intraoperative findings, and postoperative complications such as wound infection, paralytic ileus, anastomotic leak, and sepsis. Statistical analysis was performed using Chi-square and t-tests, with $p < 0.05$ considered significant. Postoperative complications were significantly higher in emergency laparotomy (67.8%) compared to elective cases (30.7%). Wound infection (32.1%) was the most common complication. The mean hospital stay was significantly longer in emergency cases (13.2 ± 3.8 days) than elective ones (8.4 ± 2.6 days). Mortality occurred only in emergency cases (10.7%). Emergency laparotomy carries a higher risk of postoperative morbidity and mortality, emphasizing the need for early diagnosis and adequate preoperative optimization.

Keywords: Laparotomy, Postoperative complications, Elective vs emergency surgery

<https://doi.org/10.33887/rjpbcs/2024.15.6.104>

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INTRODUCTION

Laparotomy is one of the most frequently performed abdominal surgical procedures and may be undertaken under either elective or emergency conditions [1]. Elective laparotomies are planned interventions performed after thorough preoperative assessment and optimization of the patient's medical status, allowing adequate preparation to minimize postoperative complications [2, 3]. In contrast, emergency laparotomies are conducted in life-threatening situations such as bowel obstruction, perforation, trauma, or peritonitis, often with limited preoperative optimization [4]. Consequently, patients undergoing emergency procedures tend to have higher morbidity and mortality rates due to factors such as hemodynamic instability, delayed presentation, contamination, and existing comorbidities [5, 6]. Postoperative complications like wound infection, anastomotic leak, ileus, respiratory distress, and sepsis are important determinants of outcome and hospital stay. A comparative evaluation of postoperative complications between elective and emergency laparotomy cases provides valuable insight into the influence of surgical timing, patient status, and intraoperative conditions on recovery and prognosis. Such analysis can guide surgeons in identifying modifiable risk factors and developing preventive strategies for better postoperative management [7, 8]. The present study aims to compare the incidence and pattern of postoperative complications in patients undergoing elective versus emergency laparotomy in a tertiary care hospital setting, thereby emphasizing the importance of timely surgical intervention and perioperative optimization.

STUDY METHODOLOGY

This comparative observational study was conducted in the Department of General Surgery of a tertiary care hospital over a period of one year. A total of 54 patients who underwent laparotomy were included in the study. The patients were divided into two groups based on the nature of surgery: Group A comprised patients undergoing elective laparotomy, while Group B included those undergoing emergency laparotomy. Ethical clearance was obtained from the institutional ethics committee prior to the commencement of the study, and informed written consent was taken from all participants.

All patients were evaluated preoperatively through detailed history taking, clinical examination, and necessary investigations including complete blood count, renal and liver function tests, serum electrolytes, and imaging studies such as ultrasonography or CT abdomen as indicated. For elective cases, patients were optimized preoperatively with appropriate medical management, while emergency cases were prepared according to the urgency of the condition with necessary resuscitative measures. The surgical approach and technique were chosen based on the underlying pathology and intraoperative findings.

Intraoperative details such as duration of surgery, blood loss, type of anesthesia, and any intraoperative complications were recorded. Postoperatively, all patients were followed up in the ward or intensive care unit as per their condition. Postoperative complications such as wound infection, anastomotic leak, respiratory complications, paralytic ileus, and sepsis were carefully monitored and documented during the hospital stay and at subsequent follow-up visits.

Data collected from both groups were compiled and analyzed statistically. The incidence and pattern of postoperative complications were compared between elective and emergency laparotomy groups using appropriate statistical tests such as the Chi-square test and Student's t-test. A p-value of less than 0.05 was considered statistically significant. The results were interpreted to assess the correlation between surgical timing and postoperative outcomes, emphasizing the factors contributing to morbidity in both groups.

RESULTS

Table 1: Distribution of Patients According to Type of Surgery

Type of Surgery	Number of Patients (n=54)	Percentage (%)
Elective Laparotomy	26	48.15
Emergency Laparotomy	28	51.85
Total	54	100

Slightly higher number of patients underwent emergency laparotomy compared to elective procedures.

Table 2: Distribution of Postoperative Complications in Both Groups

Postoperative Complication	Elective Laparotomy (n=26)	Emergency Laparotomy (n=28)	Total (%)
Wound Infection	3 (11.5%)	9 (32.1%)	12 (22.2%)
Respiratory Complications	2 (7.7%)	5 (17.8%)	7 (13.0%)
Paralytic Ileus	2 (7.7%)	6 (21.4%)	8 (14.8%)
Anastomotic Leak	1 (3.8%)	4 (14.2%)	5 (9.3%)
Sepsis	0 (0%)	3 (10.7%)	3 (5.6%)
Total Complications	8 (30.7%)	27 (96.4%)	—

Postoperative complications were more frequent in the emergency laparotomy group.

Table 3: Comparison of Postoperative Outcome Between Elective and Emergency Laparotomy

Parameter	Elective Laparotomy (Mean ± SD)	Emergency Laparotomy (Mean ± SD)	p-value
Mean Age (years)	42.8 ± 10.5	45.2 ± 12.1	0.42 (NS)
Mean Hospital Stay (days)	8.4 ± 2.6	13.2 ± 3.8	<0.001*
Mean Operative Time (minutes)	115 ± 20	125 ± 25	0.08 (NS)
Mortality	0 (0%)	3 (10.7%)	0.04*
Overall Complication Rate (%)	30.7	67.8	<0.01*

DISCUSSION

In the present study, a total of 54 patients who underwent laparotomy were analyzed to compare postoperative complications between elective and emergency surgeries. Out of these, 26 patients (48.15%) underwent elective laparotomy and 28 patients (51.85%) underwent emergency laparotomy. The results revealed that the incidence of postoperative complications was significantly higher in emergency cases compared to elective ones, consistent with the findings of previous studies highlighted that emergency abdominal surgeries are associated with higher morbidity and mortality due to limited preoperative optimization and increased physiological stress [9].

In the current study, wound infection was the most common postoperative complication, occurring in 32.1% of emergency laparotomies as compared to 11.5% in elective cases. This can be attributed to contaminated surgical fields, delayed presentation, and poor preoperative preparation in emergency situations. Similar findings were reported by Sharma et al., who observed that surgical site infections were markedly higher in emergency abdominal procedures. Paralytic ileus and respiratory complications were also more common in emergency surgeries, primarily due to prolonged operative time, electrolyte imbalance, and delayed mobilization.

Anastomotic leak was noted in 14.2% of emergency laparotomies and 3.8% of elective cases, which is a serious complication contributing to postoperative morbidity and mortality. The increased rate in emergency cases can be related to factors such as bowel edema, poor tissue perfusion, and contamination. Sepsis was reported exclusively in emergency cases (10.7%), further emphasizing the role of intra-abdominal contamination and delayed intervention in worsening postoperative outcomes. These observations align with the study by Singh et al., which found that postoperative sepsis was one of the major determinants of poor prognosis following emergency laparotomy.

The mean duration of hospital stay in emergency laparotomy cases (13.2 ± 3.8 days) was significantly higher than in elective cases (8.4 ± 2.6 days). This difference reflects prolonged recovery

periods and management of complications in emergency settings. Mortality was recorded in three patients (10.7%) in the emergency group, while there were no deaths in the elective group, indicating that emergency laparotomies carry a higher risk of fatal outcomes. This is in agreement with the study by Shrestha et al., who reported mortality rates ranging from 8% to 12% in emergency laparotomy cases [10,11].

Overall, the higher complication rate in emergency surgeries underscores the importance of timely diagnosis and early surgical intervention. Adequate preoperative resuscitation, antibiotic prophylaxis, and optimization of comorbid conditions are critical in improving postoperative outcomes. In contrast, elective surgeries allow sufficient time for patient preparation, resulting in reduced infection rates, shorter hospital stays, and better recovery [12].

In conclusion, this study demonstrates that emergency laparotomy is associated with a significantly higher rate of postoperative complications and mortality compared to elective laparotomy. These findings reinforce the need for improving preoperative and perioperative care, especially in emergency settings, through multidisciplinary coordination, early recognition of complications, and adherence to infection control protocols. Strengthening these measures can greatly enhance patient outcomes and reduce postoperative morbidity in abdominal surgeries.

CONCLUSION

Emergency laparotomy carries a higher risk of postoperative morbidity and mortality, emphasizing the need for early diagnosis and adequate preoperative optimization.

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