

Research Article**A PROSPECTIVE OBSERVATIONAL STUDY TO ASSESS FACTORS INFLUENCING MORBIDITY AND MORTALITY FOLLOWING EMERGENCY ABDOMINAL SURGERY IN A TERTIARY CARE HOSPITAL****Choban Venkatesh Muthu Rajan¹, Mokaan Raj², Sharmila Venkatachalapathy^{3*}**

¹Assistant Professor, Department of General Surgery, Government Thiruvapur Medical College and Hospital, Thiruvapur, Tamil Nadu, India
{0009-0005-1922-0817}

²Assistant Professor, Department of General Surgery, Government Thiruvapur Medical College and Hospital, Thiruvapur, Tamil Nadu, India
{0009-0003-1677-0851}

³Assistant Professor, Department of Community Medicine, Government Thiruvapur Medical College and Hospital, Thiruvapur, Tamil Nadu, India
{0009-0009-2220-5318}

Corresponding author: Sharmila Venkatachalapathy

Assistant Professor, Department of Community Medicine, Government Thiruvapur Medical College and Hospital, Thiruvapur, Tamil Nadu, India. {0009-0009-2220-5318}, Email:
drsharmilapv@gmail.com

Received date: 20-07-2026, Date of Acceptance: 29-07-2026, Date of Publication: 29-07-2026

Abstract

Background: Emergency abdominal surgery constitutes a major component of surgical practice and is associated with significantly higher morbidity and mortality compared to elective procedures. Rapid clinical deterioration, delayed presentation, and the presence of underlying comorbidities contribute to poor outcomes in these patients. Identifying factors that influence postoperative morbidity and mortality is essential for improving surgical decision-making, perioperative management, and patient outcomes, particularly in resource-limited settings.

Aim: To study the factors influencing morbidity and mortality following emergency abdominal surgery at Government Thiruvapur Medical College and Hospital.

Methods: This prospective observational study was conducted at Government Thiruvapur Medical College and Hospital from February 2025 to June 2025. A total of 100 patients aged ≥ 12 years, who underwent emergency abdominal surgery within 24 hours of admission were included. Data were collected using a pre-tested semi-structured questionnaire and clinical records which included socio-demographic details, comorbidities, perioperative factors, postoperative

complications, and 30-day mortality. Data were analysed using SPSS software. Categorical variables were expressed as percentages, and Chi-square test or Fisher's exact test was applied, with $p < 0.05$ considered statistically significant.

Results: Among the 100 patients studied, the majority were aged 31–60 years (43%), and males constituted 67% of the study population. Appendicular pathology (37%) was the most common indication for surgery, followed by abdominal trauma (17%) and duodenal perforation (12%). The most frequent postoperative complication was surgical site infection (68%), followed by postoperative ileus (55%). The overall 30-day mortality rate was 8%. Significant factors associated with mortality included higher ASA score, poor performance score, presence of diabetes mellitus and COPD, hypotension on admission, abnormal leukocyte count, intraoperative vasopressor requirement, and difficulty in postoperative glycemic control ($p < 0.05$).

Conclusion: Emergency abdominal surgery carries a considerable risk of postoperative complications and mortality. Preoperative physiological instability, higher ASA status, comorbid conditions such as diabetes and COPD, and intraoperative hemodynamic support were identified as significant predictors of mortality. Early recognition of high-risk patients, prompt surgical intervention, and meticulous perioperative management may help reduce morbidity and mortality associated with emergency abdominal surgery.

Keywords: Emergency abdominal surgery; Postoperative complications; Mortality;

Emergency laparotomy; Risk factors; Surgical outcomes.

INTRODUCTION

Initiating appropriate and timely care with a surgical blade, weighed against the risk of delayed or negligent care by choosing observation or non-operative treatment is the common clinical dilemma for any surgeon on call. Surgery has an indivisible, indispensable and vital part of health care all over the World (1). Surgical care imparts solution to many diseases ranging from old threats and new challenges and it forms a crucial component of a functional, responsive, and resilient health system.

Surgical services are embedded with indisputable and cross cutting role for the full attainment of Local and Global Health Goals in areas as diverse as cancer, injury, cardiovascular disease, infection, and reproductive, maternal, neonatal, and child health. Universal Health Coverage and attaining Sustainable Development Goals will be impossible to achieve without ensuring that surgical and anesthesia care is available, accessible, safe, timely, and affordable.

Emergency Surgical Care deals with acutely life-threatening conditions caused by external trauma, acute disease processes or surgical complications. Irrespective of etiology, these patients need urgent decision-making. Often the degree of physiological derangement determines the type and urgency of intervention, and delays of hours or even minutes are critical determinants of outcome

Globally, 313 million Emergency Surgeries are performed every year (1). The need for

quality surgical care will continue to increase till 2030 in Low- and middle-income countries as these nations are facing rapid population growth, industrialization, urbanization which in turn increases the risk of road traffic accident, cancer, and metabolic disease.

In low and middle income countries, Emergency surgeries account for 60%, among the total surgeries performed.(2)Global burden of disease study stated that, 8,96,000 deaths occur every year due to Common general surgical emergencies. It also accounts for 20 million years of life lost and 25 million disability-adjusted life-years.

The major causes of abdominal emergencies vary from region to region, and even within the same region it differs due to huge variations in socioeconomic, cultural, and geographical factors prevailing in India. Indications for Emergency Abdominal Surgery include small bowel disease, pancreatic and colonic emergencies, and trauma to abdomen.(3) The post operative mortality following abdominal emergencies is nearly 10 times higher (14 to 20 %) against elective surgeries which is only 2%.(4)

As emergency surgery is considered a high-risk approach, there are numerous factors which influence the morbidity and mortality following surgery. The factors like age, sex, presence of comorbidities, history of chronic drug intake, preoperative hemodynamic instability, duration of surgery, intra operative blood transfusion, need for intra op vasopressor use, appropriate post-operative care are recognized as major contributors to

postoperative morbidity and mortality (4,5).

Despite the high burden of emergency abdominal surgical conditions, data on factors influencing postoperative morbidity and mortality in tertiary care centres in Tamil Nadu remain limited. Understanding the clinical characteristics, risk factors, and outcomes associated with emergency abdominal surgery is essential for improving perioperative management and reducing complications. Therefore, the present study was undertaken to evaluate the clinical profile, postoperative outcomes, and factors influencing mortality among patients undergoing emergency abdominal surgery at Government Thiruvavur Medical College and Hospital.

AIM

To study the factors influencing the mortality and morbidity following emergency abdominal surgery in Government Thiruvavur Medical College and Hospital.

OBJECTIVES

To determine the factors that influence morbidity and mortality following emergency abdominal surgery.

METHODOLOGY

This prospective observational study was conducted in the post-operative ward and Surgical Intensive Care Unit (SICU) of Government Thiruvavur Medical College and Hospital (GTMCH). The study was carried out over a period of 6 months, from February 2025 to July 2025. Inclusion criteria comprised of patients aged 12 years and above, who underwent emergency abdominal surgery for acute abdominal condition within 24 hours of admission to

GTMCH. Patients below 12 years of age, those not willing to participate in the study, patients undergoing emergency abdominal surgery for obstetric and gynecological causes and patients who had undergone abdominal surgery within the previous one month were excluded from the study.

The sample size was calculated based on 5.4% prevalence of postoperative wound infection in a study done by Manoj et al. (6). Using this prevalence, with a 95% confidence level and 5% absolute precision, the sample size was calculated using the formula $N = Z^2pq / d^2$, where $Z = 1.96$, $p = 5.4\%$, $q = 94.6\%$, and $d = 5\%$. The calculated sample size was 80. After adding 20% to account for non-response, the final sample size was 100 participants. A Consecutive sampling method was used, and all patients who met the inclusion criteria were enrolled into the study after obtaining informed consent, until the required sample size of 100 was reached.

Data collection tool:

Data were collected using a semi-structured proforma through the interview method, review of clinical record and relevant clinical examination. The proforma included socio-demographic details, addictive habits such as alcohol consumption and smoking, and pre-existing co-morbidities including diabetes, hypertension, malignancy, as well as medications such as statins and beta blockers and any previous history of surgery. Pre-operative variables such as hypotension on admission, abnormal leukocyte count, anaemia, and perioperative blood transfusion were recorded. Intra-operative findings including vasopressor use, intraoperative bleeding, and surgical contamination were

documented. Post-operative surgery related complications such as bleeding, surgical site infection, anastomosis leakage, difficulty in initiating early nutrition, poor glycemic control, and 30-day mortality were documented.

Statistical analysis:

Data was entered in excel sheet. All results were analyzed using SPSS software. Categorical variables were represented in frequencies and expressed as percentages. Chi square test and Fischer's exact test were used to analyze the factors influencing morbidity and mortality and p value of < 0.05 is considered as statistically significant.

ETHICAL CONSIDERATIONS:

The study was commenced after the approval from Institutional Ethics Committee, GTMCH. Informed consent was obtained from all participants. Strict confidentiality was maintained while analyzing and presenting the data.

OPERATIONAL DEFINITION:

Emergency abdominal surgery:

Emergency surgery due to traumatic or non-traumatic causes requiring exploration of the abdomen within 24 hours of admission by open laparotomy or by laparoscopy.

Postoperative mortality: Defined as death within 30 days after primary emergency laparotomy.

Postoperative morbidity: Defined as surgery related complications that occurred within 10 days after surgery. It includes surgical complications like wound infection, Post-operative ileus, Intra-

abdominal abscess, Wound dehiscence and anastomotic leakage

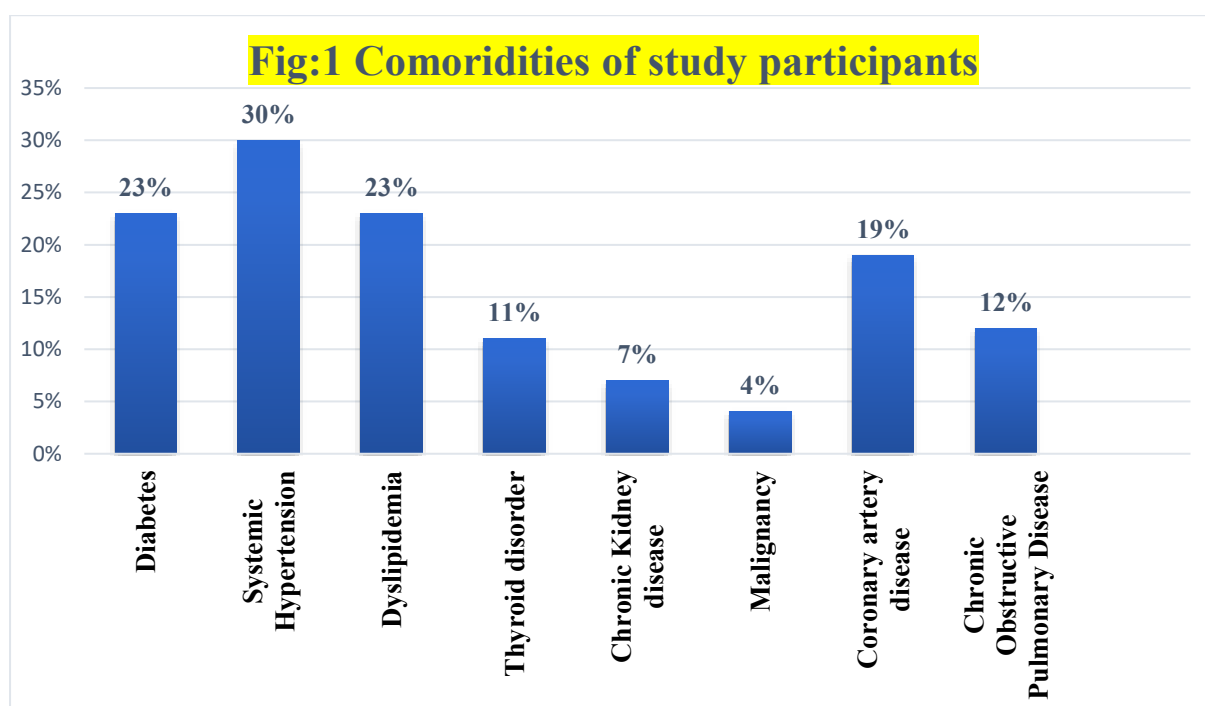
RESULTS

This cross-sectional study conducted in Tertiary Care Centre included 100 patients operated for emergency abdominal surgery. Patient's demographic data, addictive habits, co-morbidities, medications, and indication for surgery were documented.

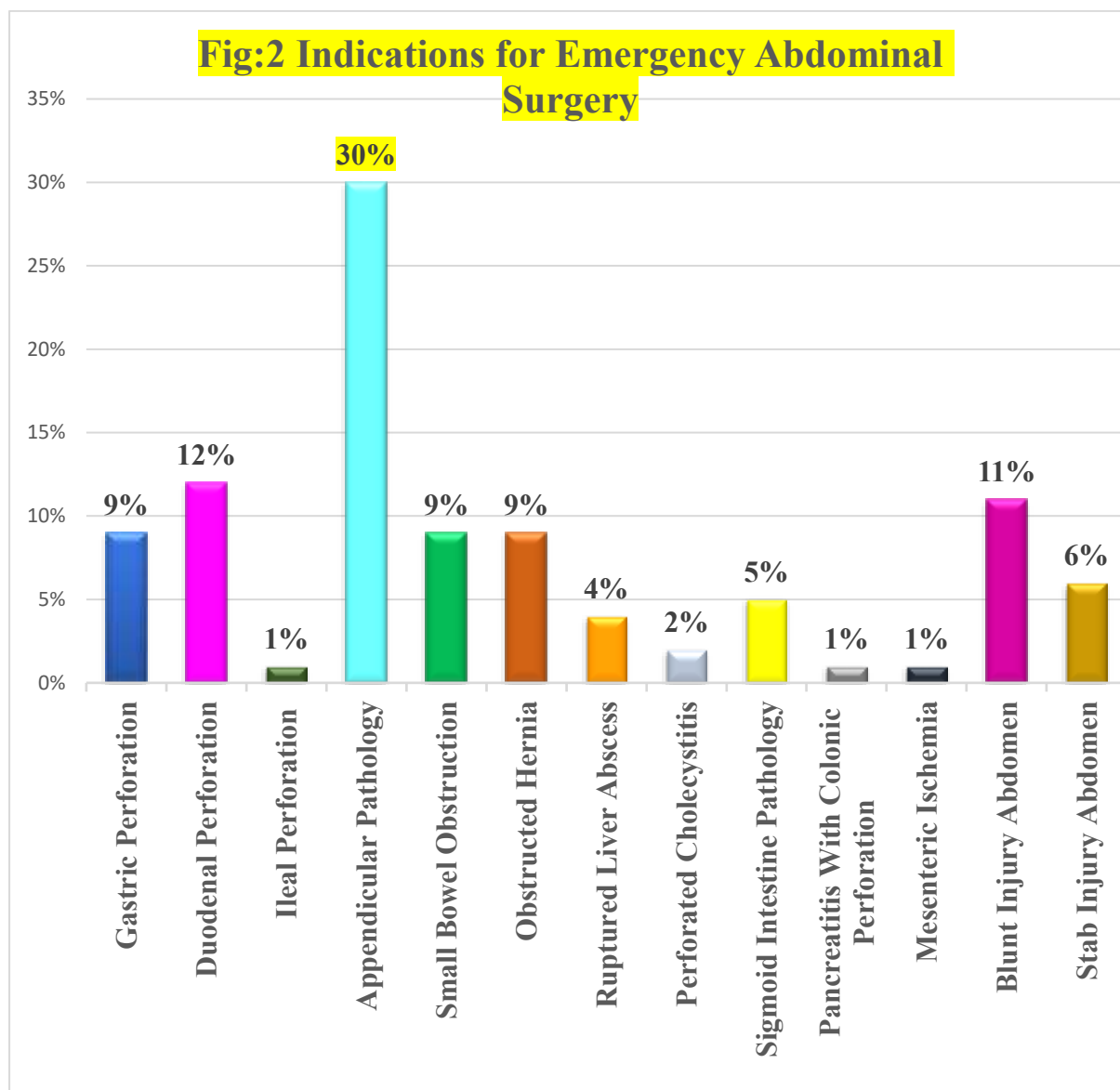
The majority of participants were aged 31–60 years (43%), followed by 14–30 years (32%), while 22% were elderly (>60 years). Males constituted 67% of the study population. Nearly 49% of the participants

had normal BMI, while 37% were pre-obese. These findings reflect the baseline socio-demographic and clinical profile of the study population (Table 1). Most patients had good functional status with Performance score 0 (50%), and the majority belonged to ASA class I (56%) and ASA class II (33%). (Table 2)

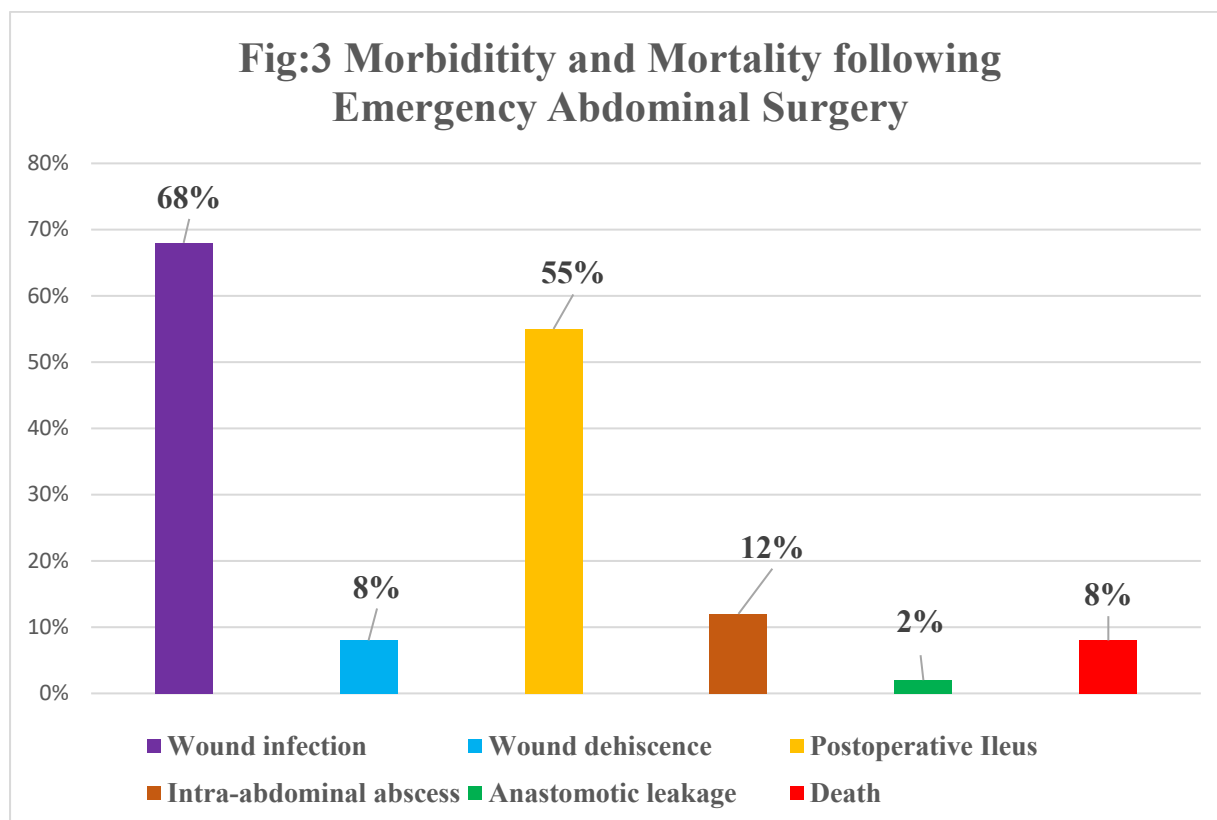
Among the evaluated comorbid conditions, systemic hypertension (30%) was the most common, followed by diabetes mellitus (23%) and dyslipidaemia (23%), while coronary artery and COPD were also observed in 19% and 12% of individuals respectively (Fig:1)



Regarding indications for surgery, the most common cause for emergency abdominal surgery was appendicular pathology (30%), followed by abdominal injury (blunt injury 11% and stab injury 6%), duodenal perforation (12%), and gastric perforation (9%). (Fig:2)



Postoperative complications were wound infection (68%) being the most common complication, followed by post-operative ileus (55%), intra-abdominal abscess (12%), and wound dehiscence (8%). The overall 30-day mortality rate was 8%, while 92% of patients survived following surgery.



The association between sociodemographic factors and mortality showed that higher mortality was observed among patients aged above 60 years and among male patients, although these associations were not statistically significant. Similarly, factors such as obesity, smoking, and alcoholism did not demonstrate a significant association with mortality in this study (Table 3).

Analysis of ASA score and performance score revealed a statistically significant association with mortality. As the ASA score increased, the proportion of mortality also increased, indicating that patients with poorer preoperative physical status had a higher risk of death. Similarly, increasing performance score was significantly associated with increased mortality among the study participants (Table 4).

Among the evaluated comorbid conditions, diabetes mellitus and COPD demonstrated

higher mortality proportions compared to other comorbidities and showed statistically significant associations with mortality. Other conditions such as hypertension, dyslipidemia, thyroid disorder, liver cirrhosis, coronary heart disease, chronic kidney disease, and malignancy did not show significant differences in mortality (Table 5).

The analysis of preoperative medication use showed that mortality distribution among patients receiving medications such as anticoagulants, steroids, statins, beta blockers, NSAIDs, oncological treatment, and paracetamol was relatively similar to those not receiving these medications. No statistically significant association was observed between medication use and mortality (Table 6).

Similarly, the history of previous abdominal surgery, including previous laparoscopy and laparotomy, did not show

a significant association with mortality, as the proportion of deaths was comparable among patients with and without previous surgical history (Table 7).

Among preoperative clinical risk factors, hypotension on admission and abnormal leukocyte count showed a strong and statistically significant association with mortality. Patients presenting with hypotension or abnormal leukocyte count had a higher likelihood of mortality compared to those without these conditions. Other factors such as history of injury, perioperative blood transfusion, and anaemia on admission did not show a statistically significant association with mortality (Table 8).

Analysis of intraoperative risk factors revealed that patients who required vasopressor support during surgery had significantly higher mortality compared to those who did not require vasopressors. However, intraoperative bleeding and surgical contamination did not demonstrate a statistically significant association with mortality (Table 9).

In the postoperative period, mortality was significantly higher among patients who experienced difficulty in achieving glycemic control, whereas difficulty in early nutrition did not show a statistically significant association with mortality among the study participants (Table 10).

Table 1: Socio-Demographic Characteristics of Study Participants (n = 100)

Variable	Category	Frequency (n)	Percentage (%)
Age Group	<13 years	3	3
	14–30 years	32	32
	31–60 years	43	43
	>60 years	22	22
Sex	Male	67	67
	Female	33	33
BMI	Normal (19.5–24.9)	49	49
	Pre-obese	37	37
	Obese (>30)	4	4
Previous Surgery	Laparoscopy	4	4
	Laparotomy	6	6

Table:2 Performance and ASA score of study participants

Variable	Category	Frequency (n)	Percentage (%)
Performance Score	Score 0	50	50
	Score 1	32	32
	≥2	18	18
ASA Score	ASA 1	56	56
	ASA 2	33	33
	ASA 3	9	9
	ASA 4	2	2

Table:3 Cross tabulation between Sociodemographic details and Mortality

Factors		Alive Frequency (%)	Death Frequency (%)	p- value
Age	<13 years	3	0	0.190
	14 to 30 years	32	0	
	31 to 60 years	38	5	
	>60 years	19	3	
Sex	Female	26	1	0.679
	Male	66	7	
Obesity	Yes	38	3	1.00
	No	54	5	
Smoking	Yes	25	3	0.683
	No	67	5	
Alcoholism	Yes	27	4	0.249

**Choban Venkatesh Muthu Rajan et al / A PROSPECTIVE OBSERVATIONAL STUDY TO ASSESS FACTORS
INFLUENCING MORBIDITY AND MORTALITY FOLLOWING EMERGENCY ABDOMINAL SURGERY IN A TERTIARY
CARE HOSPITAL**

	No	65	4	
--	----	----	---	--

Table:4 Cross tabulation between ASA and Performance scores and Mortality

Score		Alive Frequency (%)	Death Frequency (%)	p-value
ASA Score	0	2	0	0.03*
	1	56	1	
	2	27	3	
	3	6	3	
	4	1	1	
Performance score	0	51	1	0.00*
	1	30	2	
	2	11	4	
	3	0	1	

(* - p value <0.05 – Statistically significant)

**Table 5: Association between Patient Comorbidities and Mortality Among Study
Participants (n = 100)**

Comorbidity	Status	Alive (n)	Death (n)	p-value
Diabetes Mellitus	Present	18	5	0.015*
	Absent	74	3	
Systemic Hypertension	Present	18	5	0.694
	Absent	74	3	
Dyslipidemia	Present	20	3	0.380
	Absent	72	5	
Thyroid Disorder	Present	11	0	0.593

**Choban Venkatesh Muthu Rajan et al / A PROSPECTIVE OBSERVATIONAL STUDY TO ASSESS FACTORS
INFLUENCING MORBIDITY AND MORTALITY FOLLOWING EMERGENCY ABDOMINAL SURGERY IN A TERTIARY
CARE HOSPITAL**

	Absent	81	8	
Liver Cirrhosis	Present	1	1	0.514
	Absent	91	7	
Coronary Heart Disease	Present	17	2	0.645
	Absent	75	6	
COPD	Present	8	4	0.007*
	Absent	84	4	
Chronic Kidney Disease	Present	5	2	0.096
	Absent	87	6	
Malignancy	Present	3	1	0.287
	Absent	89	7	

(* - p value <0.05 – Statistically significant)

Table 6: Association Between Preoperative Medication Use and Mortality

Medication	Status	Alive (n)	Death (n)	p-value
Anticoagulants	Present	14	1	1.00
	Absent	78	7	
Steroids	Present	5	2	0.096
	Absent	87	6	
Statins	Present	32	6	0.051
	Absent	60	2	
Beta Blockers	Present	21	2	1.00
	Absent	71	6	
NSAIDs	Present	5	2	0.096
	Absent	87	6	
Oncological Treatment	Present	1	1	0.154
	Absent	91	7	
Paracetamol	Present	18	2	0.659
	Absent	74	6	

Table 7: Association Between Previous Abdominal Surgery and Mortality

Previous Surgery	Status	Alive (n)	Death (n)	p-value
Previous Laparoscopy	Present	3	1	0.287
	Absent	89	7	
Previous Laparotomy	Present	5	1	0.402
	Absent	87	7	

Table 8: Association between Preoperative Clinical Risk Factors and Mortality

Preoperative Risk Factor	Status	Alive (n)	Death (n)	p-value
History of Injury	Present	15	2	0.621
	Absent	77	6	
Perioperative Blood Transfusion	Present	39	6	0.135
	Absent	53	2	
Hypotension on Admission	Present	17	7	<0.001
	Absent	75	1	
Abnormal Leukocyte Count	Present	28	8	<0.001
	Absent	64	0	
Anaemia on Admission	Present	41	5	0.465
	Absent	51	3	

(* - p value <0.05 – Statistically significant)

Table 9: Association Between Intraoperative Risk Factors and Mortality

Intraoperative Risk Factor	Status	Alive (n)	Death (n)	p-value
Vasopressor Use	Present	15	7	<0.001
	Absent	77	1	

Choban Venkatesh Muthu Rajan et al / A PROSPECTIVE OBSERVATIONAL STUDY TO ASSESS FACTORS INFLUENCING MORBIDITY AND MORTALITY FOLLOWING EMERGENCY ABDOMINAL SURGERY IN A TERTIARY CARE HOSPITAL

Intraoperative Bleeding	Present	14	2	0.611
	Absent	78	6	
Surgical Contamination	Present	55	7	0.151
	Absent	37	1	

(* - p value <0.05 – Statistically significant)

Table 10: Association Between Postoperative Clinical Factors and Mortality

Postoperative Risk Factor	Status	Alive (n)	Death (n)	p-value
Difficulty in Early Nutrition	Present	53	7	0.140
	Absent	39	1	
Difficult Glycemic Control	Present	15	5	0.008
	Absent	77	3	

(* - p value <0.05 – Statistically significant)

Factors influencing Morbidity following Emergency Abdominal Surgery:

In this study, morbidity was considered as having any one of the post-operative surgical complications like Wound dehiscence, post-operative ileus, Wound infection, Intra-abdominal abscess, and anastomotic leakage. To determine factors influencing morbidity, age, obesity, smoking, alcoholism, diabetes mellitus, systemic hypertension, dyslipidemia, thyroid disorder, liver cirrhosis, Coronary artery disease, Chronic obstructive pulmonary disease, chronic kidney disease, malignancy, anticoagulants, steroid, statins, beta blockers, immune modulators, NSAIDs, oncological treatment, paracetamol consumption, previous surgeries, history of injury, and surgical contamination were cross tabulated with all the five morbidities considered in this study. Those factors which are statistically significant are shown in following tables.

Table: 11 Cross tabulation between various factors and Wound dehiscence

Risk factors	Wound dehiscence	Wound dehiscence	Fischer's Exact test	Degrees of Freedom	p-value
	Present Frequency (%)	Absent Frequency (%)			

Choban Venkatesh Muthu Rajan et al / A PROSPECTIVE OBSERVATIONAL STUDY TO ASSESS FACTORS INFLUENCING MORBIDITY AND MORTALITY FOLLOWING EMERGENCY ABDOMINAL SURGERY IN A TERTIARY CARE HOSPITAL

Statins	Present	31	7	9.044	1	0.004*
	Absent	61	1			
COPD	Present	8	5	5.354	1	0.04*
	Absent	83	4			
Surgical contamination	Present	54	8	5.330	1	0.023*
	Absent	38	0			

(* - pvalue <0.05 – Statistically significant)

The patients who consumed statins, suffered from COPD, and had surgical contamination are at risk of developing post operative wound dehiscence and it was found to be statistically significant

Table:12 Cross tabulation between various factors and Post operative Ileus

Factors		Post op ileus Present Frequency (%)	Post op ileus Absent Frequency (%)	Fischer's Exact test	Degrees of Freedom	p-value
Age	<13 years	3	0	12.586	3	0.000*
	14 to 30 years	10	22			
	31 to 60 years	29	14			
	>60 years	13	9			
Diabetes mellitus	Yes	36	41	9.199\$	1	0.004*
	No	19	4			
Statins	Yes	28	34	6.381\$	1	0.014*
	No	27	11			
NSAIDS	Yes	48	45	6.158	1	0.016*
	No	7	0			

Choban Venkatesh Muthu Rajan et al / A PROSPECTIVE OBSERVATIONAL STUDY TO ASSESS FACTORS INFLUENCING MORBIDITY AND MORTALITY FOLLOWING EMERGENCY ABDOMINAL SURGERY IN A TERTIARY CARE HOSPITAL

Previous laparotomy	Yes	49	45	5.222	1	0.031*
	No	6	0			
Surgical contamination	Yes	8	30	28.538 ^{\$}	1	0.000*
	No	47	15			

(* - p value <0.05 – Statistically significant, ^{\$} Chi square test)

Factors like increasing age, diabetes mellitus, statins, NSAIDS, previous laparotomy, surgical contamination are found to be statistically significant risk factors for post operative ileus.

Table: 13 Cross tabulation between various factors and wound infection

Risk factors		Wound infection Present Frequency (%)	Wound infection Absent Frequency (%)	Fischer's Exact test	Degrees of Freedom	p-value
Diabetes Mellitus	Present	48	29	4.933 ^{\$}	1	0.040*
	Absent	20	3			
COPD	Present	56	32	6.417	1	0.008*
	Absent	12	0			
Statins	Present	37	25	5.194 ^{\$}	1	0.028*
	Absent	31	7			
Surgical contamination	Present	15	23	22.921 ^{\$}	1	0.000*
	Absent	53	9			

(* - pvalue <0.05 – Statistically significant, ^{\$} Chi square test)

From the above table, it was evident that factors like diabetes mellitus, Steroids, surgical contamination were found to be statistically significant risk factors for wound infection.

For anastomotic leakage none of the factors were found to be significant.

DISCUSSION

Emergency surgical intervention is a life saving measure, which plays a crucial role in the patient survival. So timely intervention and appropriate procedure with meticulous post operative monitoring are the important factors in the prognosis of the severely ill patient who needs urgent surgical intervention.

In this Hospital based study, conducted in Thiruvavur Medical College 100 patients had undergone emergency abdominal surgery during the study period. The Mean age of study participants is 43.91 with Standard deviation of 20.13. 73% of the participants were male and remaining was female. This age and sex distribution of participants are similar to the study conducted by Manoj et al in Karnataka.(6)

Systemic hypertension is the most common morbidity (30%) among these patients followed by Diabetes mellitus and dyslipidemia in 23 % of individuals. Among addictive habits, smoking and alcohol consumption is present in nearly 1/3 of the individuals. Alcoholism, presence of hypertension are slightly higher in this study compared to study done to asses Mortality and morbidity rates in patients undergoing emergency laparotomy: an analysis in a tertiary care hospital in Mysore.(6)

Among the indications for Emergency abdominal surgery, appendicular pathology (30%) is the common cause followed by duodenal perforation in 12 % of participants. Study conducted by Manoj et al also stated that, the common indications were appendicular pathology in 30% of participants followed by duodenal perforation in 30 percent of individuals.(6) The above findings are also similar to indications for emergency surgery shown in

a study conducted in Himachal Pradesh which showed the common indication for emergency surgery are appendicular pathology, duodenal perforation.(7).

The mortality rate in this study is 8% and morbidity rate is 72%. Outcomes and associated factors among patients undergone emergency laparotomy: A retrospective study conducted by Kedar et al also had 8% mortality and 70% morbidity which is identical to the findings in this study.(8)

A retrospective cohort study done to assess the risk factors affecting morbidity and mortality following emergency laparotomy for small bowel obstruction showed the overall 30-day morbidity and mortality rates were 28% and 13%, respectively (9). Mortality is high when compared to current study attributing to the relatively efficient quality of surgical care delivery systems in developed settings. Another study conducted by Ahmed et al also showed overall 30 days mortality as 13% which is comparable with current study.(10)

To asses physical status on admission, ASA score and performance score are used in this study. Higher scores in the above-mentioned scoring system are significantly associated with mortality in this study. Similar findings have been observed in various studies conducted globally in turn strengthening the efficacy of these scores in predicting the outcomes. (6,8-11)

Comorbidities which influence morbidity in this study are presence of Diabetes and Chronic Obstructive Pulmonary Disease. The same effect was seen in a study conducted Manoj et al (6) and Maha et al which showed statistically significant relationship between diabetes and mortality

in patients undergoing emergency abdominal surgery. (12)

Factors like presence of hypotension on admission, abnormal leucocyte count, intra operative vasopressor use, and difficult glycaemic control are found to be predictors of mortality in this study. Similar finding had been observed in various studies conducted globally. (8,9,13)

The most common morbidity noted in this study is wound infection which is seen in 68% of the patients followed by post operative ileus in 55% of study participants. Study conducted by Manoj et al, Megbar et al, Nesmiye et al showed the most common complication following emergency abdominal surgery as wound infection. (8,9,12).

Factors like DM, COPD, statins, surgical contamination have been found to significantly associated with wound infection. In addition to factors mentioned above age, use of NSAIDS, previous laparotomy are found to be significantly associated with post-operative ileus (14,15)

CONCLUSION

This prospective observational study conducted among 100 patients undergoing emergency abdominal surgery highlights several important clinical factors associated with postoperative outcomes. The overall mortality rate was 8%, while postoperative morbidity occurred in 72% of patients, with wound infection being the most common complication. Patient-related factors such as higher ASA score, poor performance status, and comorbid conditions like diabetes mellitus and COPD were associated with increased mortality. Preoperative clinical parameters including hypotension on admission and abnormal leukocyte count, as well as intraoperative

vasopressor requirement and difficulty in postoperative glycemic control, were also associated with poorer outcomes. Postoperative complications such as wound infection, postoperative ileus, wound dehiscence, and intra-abdominal abscess were influenced by factors including diabetes, statin use, surgical contamination, previous laparotomy, steroid use, and increasing age. These findings emphasize the importance of early identification of high-risk patients, careful perioperative monitoring, and optimal management of comorbidities and infection risk. Recognizing these predictors in clinical practice may help surgeons implement timely preventive strategies, improve perioperative care, and ultimately reduce postoperative morbidity and mortality in patients undergoing emergency abdominal surgery.

Acknowledgments: The authors express their gratitude to the Dean and HOD of Surgery Government Medical College and Hospital in Thiruvavur, Tamil Nadu, India for granting permission to conduct this study and for providing access to the institutional facilities. Additionally, the authors extend their thanks to all the medical and non-medical staff members whose assistance was instrumental in the successful completion of this study.

Funding: Nil

Conflict of interest: The authors wish to confirm that there is no conflict of interest associated with this paper and there has been no significant financial support for this study.

REFERENCES

1. Meara JG, Leather AJM, Hagander L, Alkire BC, Alonso N, Ameh EA, et al. Global Surgery 2030: evidence and

- solutions for achieving health, welfare, and economic development. **Lancet.** 2015;386(9993):569-624.
2. Debas HT, Donkor P, Gawande A, Jamison DT, Kruk ME, Mock CN, editors. General surgical emergencies. In: **Disease Control Priorities, Third Edition (Volume 1): Essential Surgery.** Washington (DC): World Bank; 2015. Available from: https://elibrary.worldbank.org/doi/10.1596/978-1-4648-0346-8_ch4
 3. Al-Temimi MH, Griffiee M, Enniss TM, Preston R, Vargo D, Overton S, et al. When is death inevitable after emergency laparotomy? Analysis of the American College of Surgeons National Surgical Quality Improvement Program database. **J Am Coll Surg.** 2012;215(4):503-511.
 4. Parray AM, Mwendwa P, Mehrotra S, Mangla V, Lalwani S, Mehta N, et al. A review of 2255 emergency abdominal operations performed over 17 years (1996-2013) in a gastrointestinal surgery unit in India. **Indian J Surg.** 2018;80(3):221-226.
 5. Ahmed A, Azim A. Emergency laparotomies: causes, pathophysiology, and outcomes. **Indian J Crit Care Med.** 2020;24(Suppl 4):S183-S189. doi:10.5005/jp-journals-10071-23612.
 6. Manoj P, Shashikumar HB, Shihana F. Mortality and morbidity rates in patients undergoing emergency laparotomy: an analysis in a tertiary care hospital. **Asian J Med Sci.** 2022;13(3):132-138. doi:10.3126/ajms.v13i3.40381.
 7. Kumar S, Tanwar P, Trivedi S, Sood R, Sharma P, Sharma M. An assessment of the etiologies associated with acute abdomen subjected to exploratory laparotomy: a study from a rural area of Himachal Pradesh. **Cureus.** 2023;15(1):e33285. doi:10.7759/cureus.33285.
 8. Kedar A, et al. Outcomes and associated factors among patients undergoing emergency laparotomy: a retrospective study. **Int J Surg Open.** 2021;36:100413.
 9. Barazanchi AWH, Xia W, MacFater W, Bhat S, MacFater H, Taneja A, Hill AG. Risk factors for mortality after emergency laparotomy: scoping systematic review. **ANZ J Surg.** 2020;90(10):1895-1902. doi:10.1111/ans.16082.
 10. Ahmed M, Garry E, Moynihan A, Rehman W, Griffin J, Buggy DJ. Perioperative factors associated with postoperative morbidity after emergency laparotomy: a retrospective analysis in a university teaching hospital. **Sci Rep.** 2020;10:16999. doi:10.1038/s41598-020-74079-3.
 11. Ay N, Derbent A, Şahin AS, Yalcin N, Çelik M. Variables affecting mortality rates in patients undergoing emergency abdominal surgery: a retrospective cross-sectional study. **Ulus Travma Acil Cerrahi Derg.** 2023;29(4):505-513. doi:10.14744/tjtes.2022.01264.
 12. Jeppesen MH, Tolstrup MB, Kehlet Watt S, Gögenur I. Risk factors affecting morbidity and mortality following emergency laparotomy for small bowel obstruction: a retrospective cohort study. **Int J Surg.** 2016;28:63-68. doi:10.1016/j.ijso.2016.02.059.
 13. Dessalegn M, Negesse A, Deresse T, Birhanu MY, Agedew E, Dires G. Perioperative mortality rate and its predictors after emergency laparotomy at Debre Markos Comprehensive Specialized Hospital: a retrospective follow-up study. **BMC Surg.** 2024;24:114.
 14. Bansal AR, Mallick MR, Jena S. A study of postoperative complications following emergency laparotomy in a tertiary care hospital. **Int Surg J.** 2019;6(6):2056-2061.

15. Tolstrup MB, Kehlet Watt S, Gögenur I. Morbidity and mortality rates after emergency abdominal surgery: an analysis of 4346 patients scheduled for emergency laparotomy or laparoscopy. **Langenbecks Arch Surg.** 2017;402(4):615-623.