

An Observational Study of Profile and Outcome in Cases of Emergency Abdominal Surgeries in SMS Hospital, JaipurAviral Nagar^{*1}, Shahid Hussain¹, Varsha Nagar², Prem Dayal³¹Senior Resident, Department of General Surgery, Government Medical College, Kota, Rajasthan, India.²Junior Resident, Department of Biochemistry, Government Medical College, Kota, Rajasthan, India.³Junior Resident, Department of General Surgery, Government Medical College, Kota, Rajasthan, India.

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Conflict of interest: Nil

Abstract:**Background:** Emergency laparotomy is a common procedure which is associated with substantial postoperative morbidity and mortality. Perforation peritonitis, acute intestinal obstruction and ruptured appendix, blunt and penetrating abdominal injuries either due to road traffic accident, fall from height or gun shot or stab injuries are few major indications for an emergency laparotomy.**Aims:** To determine the socio demographic pattern at presentation, identify the spectrum of disease, indications for surgery and identify post-operative complication of emergency laparotomies.**Methods and Material:** It was a hospital based prospective observational study. Total 303 patients undergoing emergency abdominal surgeries in SMS hospital Jaipur from May, 2019-May, 2020 were included. In present study, socio-demographic profile, initial diagnosis in the emergency room, final diagnosis, organ system involved and outcome of treatment (discharge, morbidity and mortality) and duration of hospital stay were recorded.**Results:** In this study, mean age of 303 patients was 40.36 ± 18.35 years (range 10 to 81 years) and male to female ratio was 2.93:1. Perforation peritonitis was most common cause of emergency abdominal surgery (149, 49.17%). The most common organ involved was ileum (107, 35.31%) followed by appendix (73, 24.09%) and stomach (70, 23.10%). Surgical site infection was most common complication encountered in study (53, 17.49%). Mortality seen in 49 (16.17%) patients and perforation peritonitis carried the highest mortality. Mean duration of hospital stay was 6.03 ± 3.92 days.**Conclusions:** Most commonly affected population was age group between 21-30 years old, male gender with ileal perforation. Wound infection was most common post-operative complication.**Keywords:** Emergency Abdominal Surgeries, Perforation Peritonitis, Surgical Site Infection, Mortality.This is an Open Access article that uses a funding model which does not charge readers or their institutions for access and distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>) and the Budapest Open Access Initiative (<http://www.budapestopenaccessinitiative.org/read>), which permit unrestricted use, distribution, and reproduction in any medium, provided original work is properly credited.**Introduction**

Emergency laparotomy is an intensive surgical procedure with a high morbidity and mortality rates even in the best healthcare system. In developed countries, improvement in quality of healthcare has become the primary area of focus [1]. While, in middle- and low-income countries perioperative management along with managing higher rates of 30-days postoperative morbidity and mortality still remains the biggest challenge. [2, 3]

In India, perforation peritonitis is the most common emergency in general surgical departments and despite advances in surgical techniques, antimicrobial therapy and intensive care support, the management of peritonitis continues to be extremely demanding, tough and sophisticated, the causes of perforation are different from those of western countries. [4] The variations may be based on socio-demographic, socioeconomic, cultural or

geographical factors. It is therefore important to know the common causes in each region and also review from time to time to assist quick decision taking, appropriate management and improvement of outcome.

Although being one of the most common urgent surgical procedures in India, there is a scarcity of data concerning indications and postoperative mortality rates after emergency laparotomy. Studies continue to show that an emergency status contributes significantly to morbidity and mortality in patients undergoing abdominal surgery. [5]

The aim of the study was to decide profile and outcome of cases who require emergency abdominal surgery.

Methods

This was a hospital based prospective observational study of 303 patients undergoing emergency abdominal surgeries after applying inclusion and exclusion criteria, in SMS hospital Jaipur from May 2019 to May 2020. This study was approved with ethical committee of our institute (235/MC/EC/2020). Informed and written consent was taken from the patient.

Inclusion Criteria:

1. Patients having emergency abdominal surgery during the study period.
2. Patients who had given consent.

Exclusion Criteria:

1. Reoperations during the same admission.

In study, after history and an X-ray abdomen upright position and/or ultrasound abdomen was obtained to confirm the diagnosis. After resuscitation, the patient underwent exploratory laparotomy and during post-operative period, morbidity and mortality were analyzed. Age, sex, initial diagnosis in the emergency room, final diagnosis, organ system involved, operation performed and duration of hospital stay were recorded.

Statistics

For statistical analysis Microsoft Excel was used and the categorical data was expressed in the form of percentage and presented in the form of tables and charts.

Results

Table 1: Age group wise distribution

Age group	Male	Female	Number of patients Percentage (%)
≤ 20	32	16	48 (15.84%)
21-30	53	13	66 (21.78%)
31-40	34	16	50 (16.50%)
41-50	32	11	43 (14.19%)
51-60	38	8	46 (15.18%)
61-70	25	10	35 (11.55%)
71-80	11	3	14 (4.62%)
81-90	1	0	1 (0.33%)
Total	226	77	303 (100%)

This study maximum number of cases are from 3rd and 4th decade with mean age is 40.36 ± 18.35 years. Out of 303 total cases 77 cases (25.41%) are female and 226 cases (74.58%) are male. Male to female ratio is 2.93:1 (Table- 1)

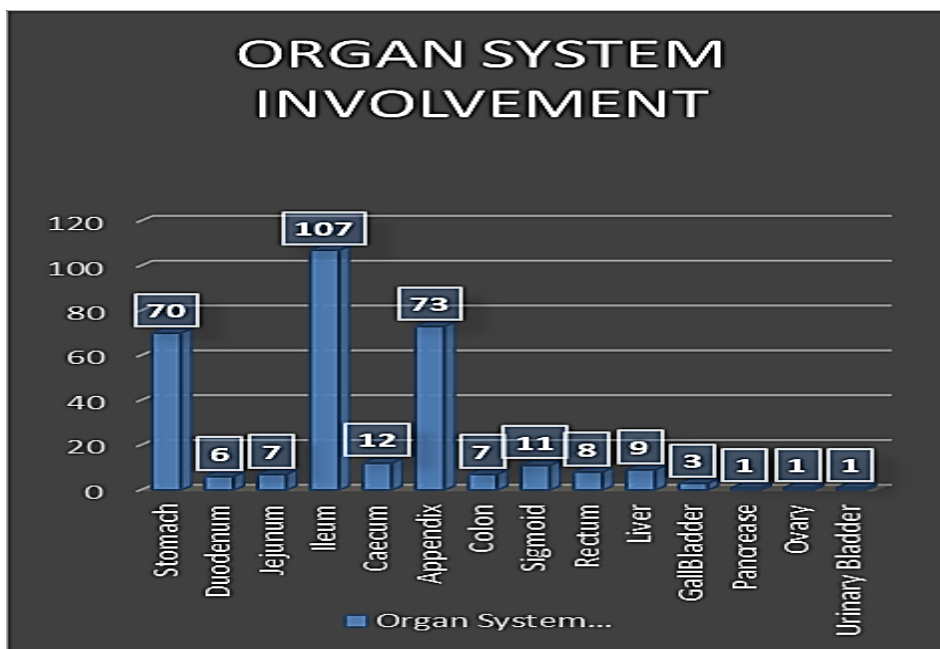


Figure. 1: Pattern of organ system involvement

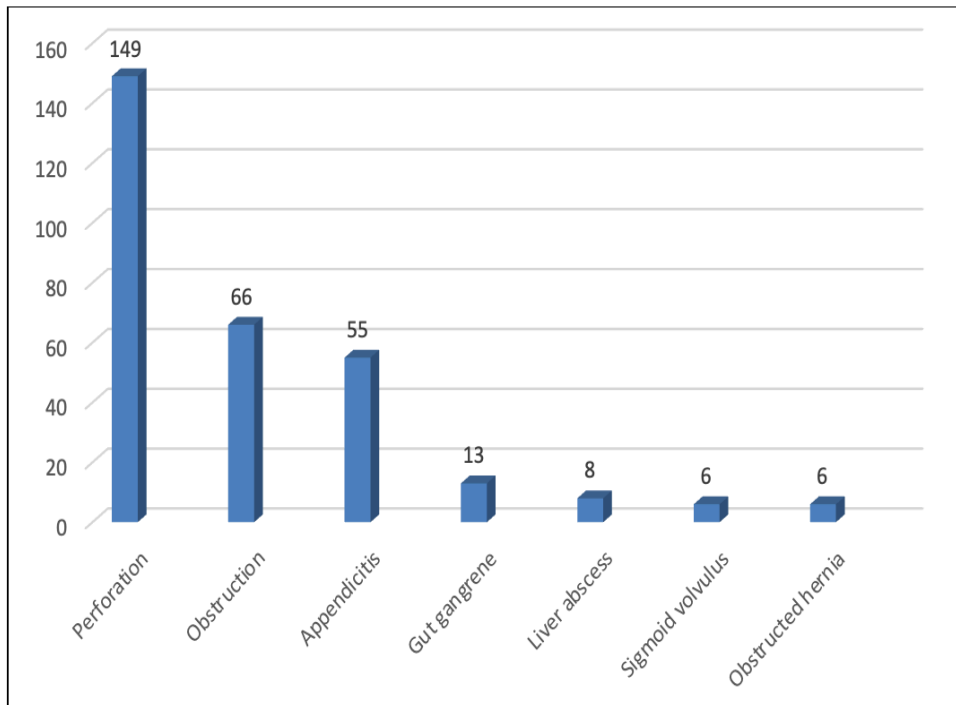


Figure. 2: Diagnosis which lead to emergency surgery

Ileal pathology (107, 35.31%) was the most common cause for emergency abdominal surgery followed by appendix (73, 24.09%) and stomach (70, 23.10%). (Figure. 1) Perforation (149, 49.17%) was the most common disease which led emergency abdominal surgery followed by obstruction (66, 21.78%) and appendicitis (55, 18.15%). (Figure. 2) Ileal perforation (47) and obstruction (47) were almost equal and out of 114 cases of small intestinal pathology, ileum was involved in 107 cases.

Most common operation perform in emergency was Appendicectomy 73 (24.09%) out of 303 patients followed by Modified graham patch repair 68 (22.44%) patients, exploratory laparotomy with ileostomy (either diversion/double barrel) in 53 (17.49%), exploratory laparotomy with resection anastomosis in 14 (4.62%) patients and Hartman procedure in 6 (1.98%) patients.

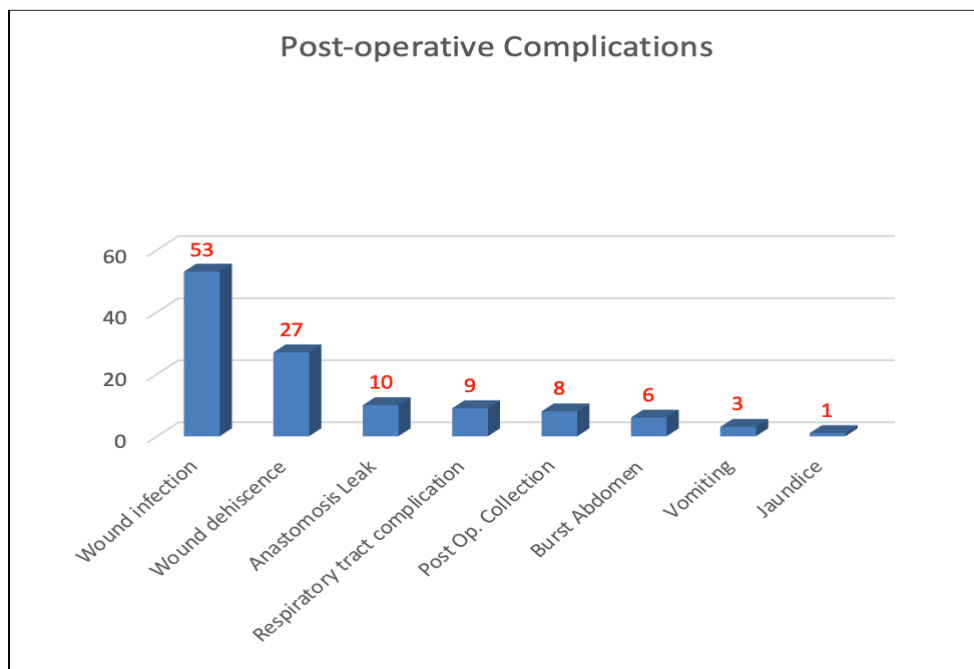


Figure 3: Post-operative Complications

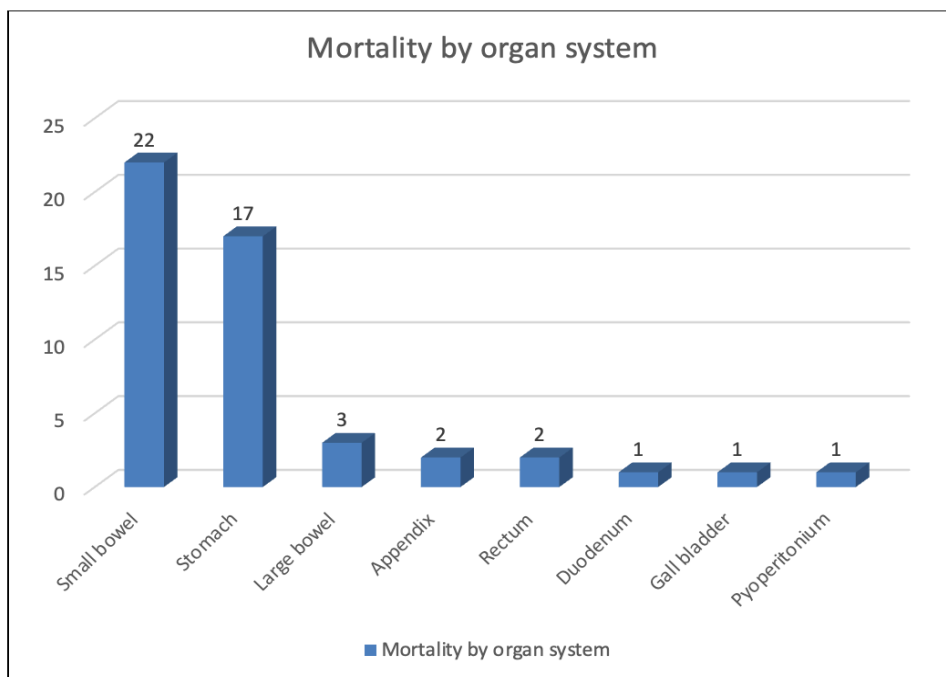


Figure 4: Mortality by organ system

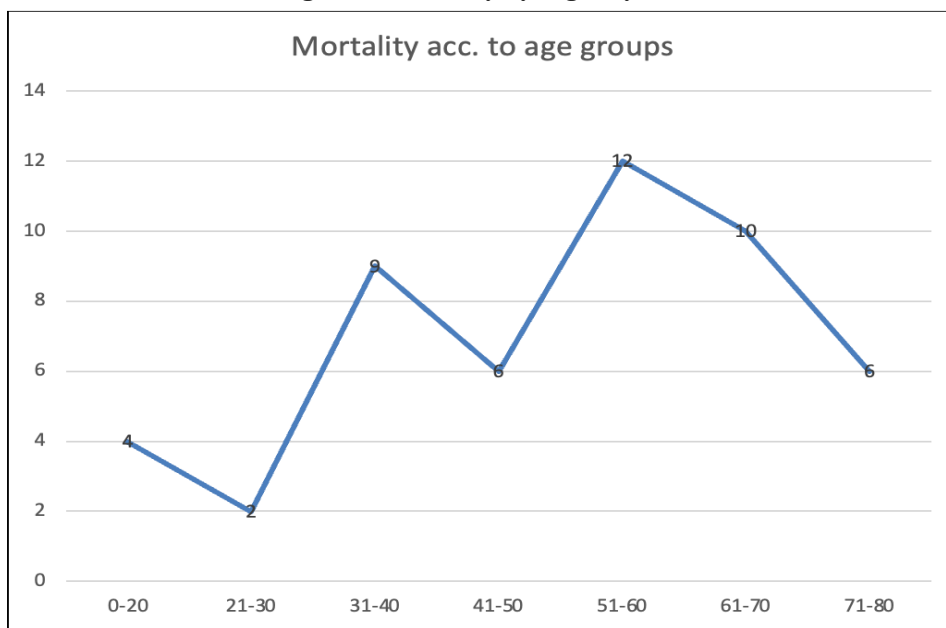


Figure. 5 Mortality acc. to age groups

Table 2: Duration of Hospital stay

Number of Days	Number of Patients	Number of Days	Number of Patients
1	12	12	4
2	27	13	2
3	32	14	1
4	32	15	2
5	49	16	1
6	54	17	2
7	42	18	4
8	13	20	1
9	5	22	1
10	8	23	2
11	8	30	1

Surgical site infection is most common post-operative complication, 53 cases (17.49%) out of 303 cases followed by wound dehiscence 27 cases (8.91%). (Figure. 3)

Maximum mortality was found in small bowel pathology, having deaths in 22 cases out of 49 total cases of mortality which is approx. 44.89% of total mortality (Figure. 4) Maximum mortality was seen in 5th and 6th decade of life. (Figure. 5)

Mean duration of hospital stay \pm SD: 6.03 ± 3.92 days with minimum duration of stay 1 days and maximum duration of stay 30 days. (Table. 2)

Discussion

In this study, ileum was most common organ involved 107 (35.31%) out of 303 patients which was in agreement with the study conducted by Parry A et al which showed most common indications for emergency abdominal surgeries were small bowel emergencies (598, 26.5%), followed by pancreatic (417, 18.5%) and colonic (281, 12.5%) emergencies.[5]

In this study, perforation peritonitis was the most common etiopathology which required emergency abdominal surgery 149 (49.17%) out of 303 patients. Similar study was conducted by Ohene-Yeboah M et al where most common causes were acute appendicitis 698 (22.4%), typhoid ileal perforation (506) 16.2%, acute intestinal obstruction 391 (12.6%), gastro duodenal perforations 342 (11.0%) [6]. In a study conducted in PGIMS Rohtak, perforation peritonitis (45%) was the most common cause for emergency laparotomy followed by Intestinal obstruction (25%), abdominal trauma (19%) and burst appendix (5%). [7] Another study was conducted in Bundelkhand Medical College which shows that peptic perforation peritonitis constituted maximum cases (30.89%) followed by typhoid perforation peritonitis (23.87%), intestinal obstruction (21.23%), blunt and penetrating trauma abdomen (7.82%) and appendicular perforation (4.75%). [8]

In this study, most common operation performed in emergency was Appendicectomy 73 (24.09%) out of 303 patients followed by Modified graham patch repair 68 (22.44%) patients. Similar results were obtained in a study conducted in Komfo Anokye Teaching hospital in Kumasi, Ghana which showed appendicectomy was a common operation [6] and another study was conducted in Ahmadu Bello University Teaching Hospital, Zaria, Nigeria also showed appendicectomy (903, 50.5%) was the most common operation. [9]

In this study, surgical site infection was most common post-operative complication which developed in 17.49% of study population, which is similar to study done by Bugalia RP et al stating that

most common complications were chest infections and surgical site infections.[10] Incidence of postoperative morbidity were 117 in present study, similar findings was seen in a study conducted by Gebremedhna et al showing incidences of postoperative morbidity were 39.2% [11] whereas one study was conducted in Pakistan Institute of Medical Sciences, Islamabad [12] and another study was conducted in Mekelle Hospital [13] also showed surgical site infection was most common post-operative complication.

In this study, mean duration of stay was found to be 6.03 days, minimum duration of stay 1 days and maximum duration of stay 30 days.

In this study, mortality rate was 16.17% whereas in a study conducted by Parry A et al postoperative mortality after emergencies was 12.6% [5] and another study was conducted in Gondar College of Medicine and Health Sciences which showed incidence of mortality were 3.5%.[11] This difference occurs due to late presentation of patients at tertiary center.

Study is limited on the account of limited number of patients, which require further either study with larger number of case or multiple studies. Neither all patients were able to reach hospital due to grave nature of disease nor all gave consent for surgery.

Conclusion

Our study on emergency abdominal surgeries done at single tertiary care center showed that the most common indications were perforation, obstruction and appendicitis. Most affected patient profile was 3rd of 4th decade with male preponderance. Surgical site infection remains the most common cause of morbidity and most mortality were recorded in 5th and 6th decade of life.

Based on our findings, we hope that the patient profile and outcome will become clear and help in the better management of emergency abdominal surgery, thereby reducing mortality and long-term morbidity. We intend to extend this study further by collecting data on the follow up of the progress of the same patients with time.

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