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Assessment of Mortality and Morbidity in Emergency Laparotomy in Tertiary Care Hospital - A Retrospective Study

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Abstract: ***Background: Laparotomies are one of the most commonly performed surgeries on an emergency basis for hollow viscus perforation, intestinal obstruction, trauma with blunt & penetrating abdominal injuries. But it carries significant mortality and morbidity. Evaluation of factors responsible for mortality and morbidity will provide good outcome of patient and will reduce mortality and morbidity. Aim: To determine & evaluation of factors responsible for mortality and morbidity in emergency laparotomy in tertiary care hospital. Methods: A retrospective analysis of 300 patients between 2017 to 2022 by describing quantitative measures which was expressed as mean, median standard deviation and Qualitative type of data was expressed as percentage or proportion by using preoperative and intraoperative, postoperative factors. Results: Our study shows Post operative septic shock was major cause of mortality. Statistical significance was seen for systolic blood pressure, diastolic blood pressure, urine output and site of perforation as compared with mortality and morbidity. [p <0.001] Higher the grade of claviendiendo classification greater is the mortality and morbidity.***

Keywords: Emergency, Laparotomy, Mortality, Morbidity

1. Introduction

Laparotomies are one of the most commonly performed surgeries on an emergency basis for hollow viscus perforation, intestinal obstruction, trauma with blunt & penetrating abdominal injuries. Emergency laparotomy is a resource-intensive surgical procedure with a high morbidity and mortality rates even in the best healthcare systems and remain an area of focus for quality improvement in developed nations. But it carries significant mortality and morbidity. Evaluation of factors responsible for mortality and morbidity will provide good outcome of patient and will reduce mortality and morbidity.

Patients undergoing emergency laparotomy have a disproportionately higher mortality both in younger as well as in an older sick patient. Emergency laparotomy is a resource intensive surgical procedure with a high morbidity and mortality rates even in the best healthcare systems and remain an area of focus for quality improvement. Perioperative management of patients undergoing emergency laparotomy with middle and low income is extremely challenging, and causes high postoperative patient morbidity and mortality as well as imposes a high healthcare cost burden. In addition, in developing countries, like India there are large volumes of emergency patients who need surgical care and patient to surgeon ratio is also very less. However, infrastructures such as operation rooms, advanced equipment, skilled human resources, investigation modalities including Computerized tomography (CT) scan, Magnetic Resonance Imaging (MRI), Ultrasound (US) and drugs are limited. Moreover, even with the available resources, there are variations in the preoperative patient optimization, surgical/anesthetic quality care provision and utilization of the available resources all of which could negatively impact on postoperative patient outcome.

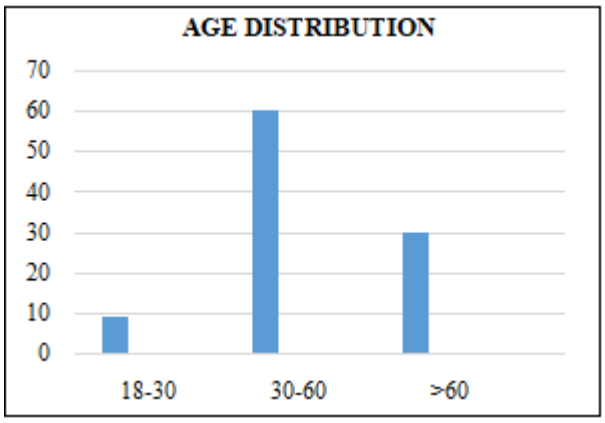
2. Material and Methods

Present study was a retrospective observational study carried out under surgery department at a tertiary care center during a period of 5 years from 2017 to 2022.Total 300 patients included in study. All Admitted patients with age> 18 years of perforation peritonitis, Intestinal obstruction, abdominal trauma, under department of surgery. We collected case record of all operated cases of emergency exploratory laparotomy from medical record section with following Investigation like complete blood count, urea, creatinine, bilirubin, serum electrolyte, random blood sugar and radiological investigation like USG abdomen + pelvis CECT abdomen. Morbidity factors in preoperative evaluation like age, sex, blood pressure, urine output, ASA grade etc & post operative complication like infectious complication, pulmonary complication, gastrointestinal complication, cardiovascular complication, renal complication, hematological complication evaluated

3. Results

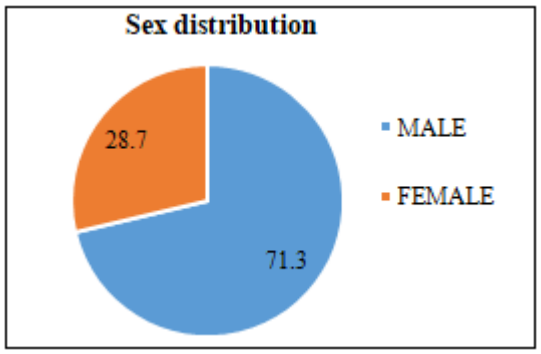
1) Age Distribution

60.3% were in the age group of 30 to 60 years, 30.3% were above 60 years old. 9.3% were in the age group of 18 to 30 years Mean age was 46.22±10years.



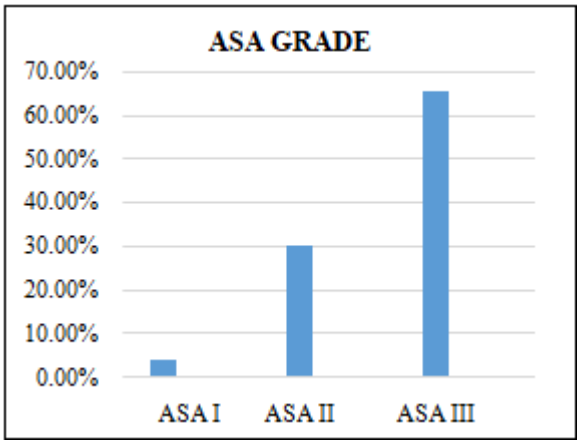
2) Sex Distribution

Our results demonstrated that 71.3% were male and 28.7% were female.



3) ASA Grade

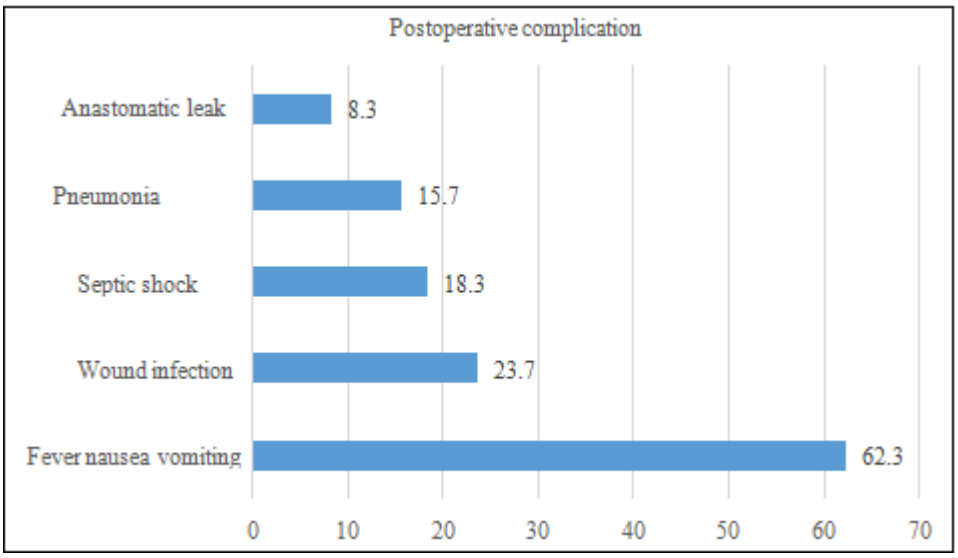
Our results demonstrated that i. e. 65.3% were classified as ASA grade III, 30.3% were ASA grade II, while 4.3% were ASA grade I.



4) Post operative Complication

On postoperative complications, majority 62.3% had fever nausea and vomiting, 23.7% had wound infection, 15.7% had pneumonia and 8.3% anastomatic leak

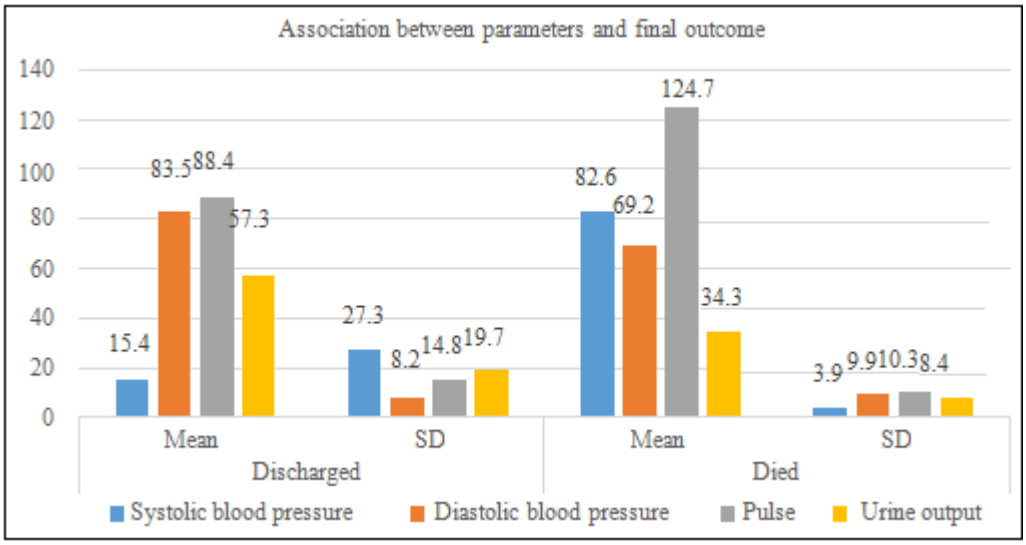
Complication	Frequency	Percentage
Fever nausea vomiting	187	62.3
Wound infection	71	23.7
Septic shock	55	18.3
Pneumonia	47	15.7
Anastomatic leak	25	8.3



5) Association between parameters and final outcome

On association between parameters and final outcome, statistical significance was seen for blood pressure, pulse rate and urine output.

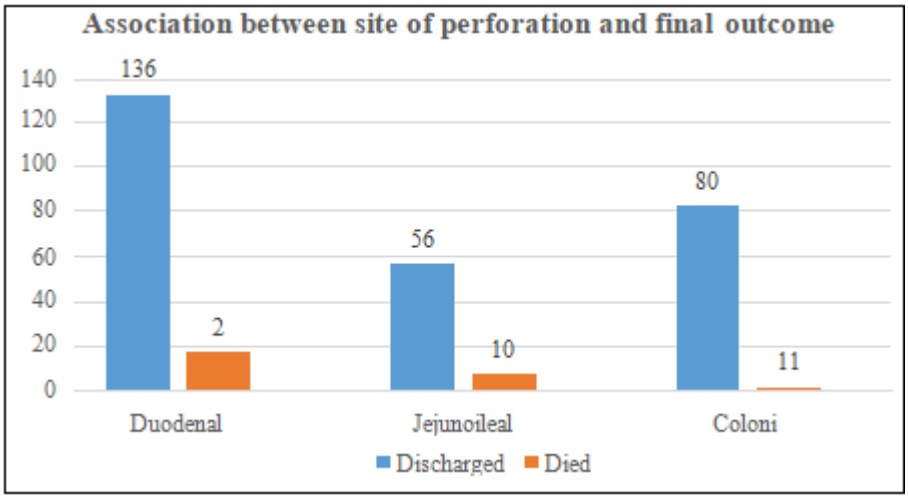
Parameter	Discharged		Died		P value
	Mean	SD	Mean	SD	
Systolic blood pressure	15.4	27.3	82.6	3.9	<0.001
Diastolic Blood pressure	83.5	8.2	69.2	9.9	<0.001
Pulse	88.4	14.8	124.7	10.3	<0.001
Urine output	57.3	19.7	34.3	8.4	<0.001



6) Association between site of perforation and final outcome

On Association between site of perforation and final outcome, majority cases had duodenal perforation followed by colonic and jejunoileal. 5 cases had intestinal obstruction only no perforation was noted in them. All cases those died majority had colonic and jejuniileal perforation. P value 0.03, shows statistical significance.

Site of perforation	Discharged	Died	Total
Duodenal	136	2	138
Jejunoileal	56	10	66
Colonic	80	11	91
Total	272	23	295

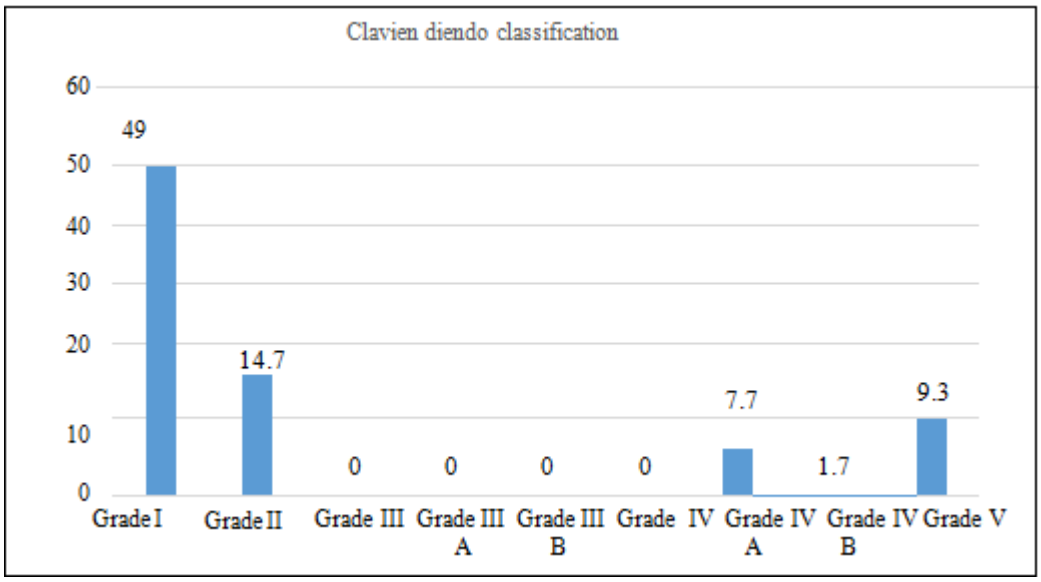


Claviendiendo Classification

Study shows 147 (49%) patients belong to grade I (post operative complication like wound infection). 44(14.7%) patients belong to grade II (post operative higher antibiotics and blood transfusion). 23 (7.7%) patients belong to grade IV A (single organd ys function). 5 (1.7%) patients belongs to grade IV B (multiorgan failure). 28(9.3%) patients belong to grade V (death).

Thus higher the grade of clavien diendo classification greater is the mortality and morbidity.

Clavien Diendo Classification	Frequency	Percentage
Grade I	147	49.0
GradeII	44	14.7
GradeIII	00	0.0
GradeIIIA	00	0.0
GradeIIIB	00	0.0
Grade IV	00	0.0
Grade IVA	23	7.7
Grade IVB	05	1.7
Grade V	28	9.3



Association between duration of hospital stay and final outcome

Our study shows that 30 days mortality was more than those who had duration of hospital stay for less than 10 days. On association between duration of hospital stay and final outcome showed statistical significance. P <0.0001*.

Duration in days	Discharged	Died	Total
<10	123	1	124
10-30	149	27	176
Total	272	28	300

4. Discussion

Mean age of participants in our study was 46.22±10 years. In a similar study conducted by T E Howes et al [(4)] showed that 114 cases were < 80 years old, and 30 cases were > 80 years old. There age distribution was similar to our study.In another study by Gejoe et al [(5)] it was seen that age-specific mortality was maximum in patients with age more than 80 years..In our study, 15.3% cases has septic shock during post operative period, 10.3% developed ARDS, 8.3% developed Anastomotic leak, 3.7% had postoperative electrolyte imbalance, while 1.7% developed Leucocytosis. In a Study by Chauhan S et al [(8)] showed that 36.57% patients developed complications following emergency laparotomy like pyrexia which was most common (18.2%) followed by nausea and vomiting (12%), wound infection (11.4%), respiratory tract infection (6.85%), urinary tract infection (2.28%), gastrointestinal complications (3.71%), toxemia and septicaemia (8%). The spectrum of complications mentioned was different from our study. A Study by Gejoe et al [(5)] showed that 54.5 % of patients did not develop any complication and most common complication encountered was wound infection (26.6 %). after abdominal surgery in the elderly, and up to a threefold increase in pulmonary complications has been reported in patients ≥85 years. [9]In our study, majority i.e. 90.7% cases had successful recovery, while 9.3% cases succumbed to death. In a study by Aakre EK et al [(10)], one year mortality rate was 44% and 26% died in 30 days. Study conducted in UK [(11)] also showed 18% mortality and by [12] had mortality of 6%. In 2017, Norwegian patients with hip fracture had a 30-day and 1-year mortality rate of 8% and 24%, respectively. [13] In Denmark, a multidisciplinary care bundle has shown a reduction in 30-day mortality from 21.8% to 15.5%.[14] significant. On Association between site of perforation and final outcome, majority cases had duodenal perforation followed by colonic and jejunoileal. All cases those died majority had colonic perforation. P value 0.03, shows statistical significance. Study by Byakodi KG et al [15] showed that thirty-one (72.1%) patients had pre-pyloric perforation and 12(27.9%) patients had duodenal perforation. All the 4 patients who expired in post-operative period had pre-pyloric perforation, but site of perforation had no effect on outcome of the patient.

5. Conclusion

Post operative septic shock was major cause of mortality. 8% mortality rate was found. Statistical significance was seen for systolic blood pressure, diastolic blood pressure, urine output and site of perforation as compared with mortality and morbidity. Higher the grade of claviendiendo classification greater is the mortality and morbidity. Present study showed that majority cases were in age group 30 to 60 years which being the productive age group. Thus mortality occurring in this age group will further hamper the economic condition.

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