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Original Research Article

Evaluation of Post-Operative Complications in Emergency Laparotomy in A Tertiary Care Centre

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Abstract:

Background: An emergency laparotomy is a life-saving treatment that is typically performed in urgent situations with little to no patient preparation. Despite being one of the most common urgent surgical procedures, it still proves to be a challenge for the surgeons of the world.

Methods: From April 2023 to September 2023, 100 patients who had emergency laparotomies at SKMCH, Muzaffarpur, and Bihar, participated in this prospective study to assess the various reasons for laparotomy as well as the morbidity and mortality related to it.

Results: The majority of the circumstances for which emergency laparotomy was performed were perforation peritonitis. Other causes included intestinal blockage (25%), abdominal trauma (19%), and appendix rupture (5%), and so forth. Post-operative fever (68%) was the most common complication followed by nausea and vomiting(56%),chest infection(38%), wound complications (33%) and paralytic ileus (26%) to name a few. The study mortality rate was 4%.

Conclusion: Compared to elective laparotomies, emergency laparotomies are more likely to result in post-operative problems. Patients who presented later or who had any related co-morbidities experienced the most difficulties. Therefore, postoperative problems can be minimized by early detection, prompt intervention, and improved postoperative care.

Keywords: Laparotomy, Complications, morbidities.

Introduction

General surgeons frequently conduct emergency laparotomies, which involve opening the abdomen and inspecting its organs for injury or diseases [1]. Perforation peritonitis, acute intestinal blockage, ruptured appendix, and traumatic or piercing abdominal injuries from traffic accidents, falls, gunshot wounds, or stab wounds are some of the main reasons for an emergency laparotomy.

The underlying pathology, such as fulminant abdominal TB, fecal peritonitis, or mesenteric thrombosis, directly affects the outcome of any emergency laparotomy. Nevertheless, post-operative care, surgical skill, and co-morbid illnesses all have a significant role in the final outcomes. Pneumonia, wound problems, fever, and in severe cases, death, are all possible post-operative sequelae. Emergency laparotomies have a disproportionately high morbidity and death rate, as well as a longer hospital stay, when compared to elective laparotomies. Effective post-operative care following an emergency laparotomy to prevent complications is not widely standardized, despite the bundles of care [2].

The study was conducted to identify postoperative complications in the form of outcome in emergency laparotomy so that effective measures could be suggested to reduce them.

Materials and Methods

From April 2023 to September 2023, 100 patients who fulfilled the inclusion and exclusion criteria in the Department of General Surgery at Sri Krishna Medical College and Hospital in Muzaffarpur, Bihar, received emergency laparotomy as part of this prospective study. Patients aged 15 or more than fifteen who present to emergency rooms are eligible to be included, while patients under the age of 15, emergency laparotomies for ileostomy or

colostomy closure, and cases where laparotomy was performed for reasons other than abdominal pathology are excluded.

A comprehensive history of smoking, alcohol consumption, intravenous drug use, and any co-morbidities such as diabetes, tuberculosis, chronic obstructive pulmonary disease, and acquired immune deficiency syndrome was taken, along with all biochemical tests necessary for the pre-anesthesia checkup and other tests necessary for diagnosis. Patients of various ages and sexes were tallied, and the potential causes of laparotomy were noted. All patients were resuscitated as needed, and an exploratory laparotomy was performed through a midline incision.

Post-operative problems such as fever, nausea, vomiting, thrombophlebitis, and urinary tract and respiratory infections were continuously evaluated and recorded for each patient. On the first postoperative day, the examination of wound-related problems began. Redness, oedema, and serous/pus discharge from the primary wound were observed as clinical symptoms. They were monitored further for complications such as abdominal rupture and wound gapping. Paralytic ileus, intestinal blockage, enterocutaneous fistula, and anastomotic leak were among the gastrointestinal issues noted during the post-operative phase. Every patient received instruction on chest physical therapy and was urged to use a respirometer. Additionally, early post-operative ambulation was advised. Complications such as incisional hernia, subacute intestinal blockage, and stoma-related issues including prolapse or retraction were monitored in the patients.

Results

One hundred cases that had emergency laparotomies were included in this study. There were 29 (29%) females and 71 (71%) males. They ranged in age from 15 to 80. Perforation peritonitis accounted for 45% of the cases, with Acute Intestinal Obstruction and Abdominal Trauma accounting for 25% and 19% of the cases, respectively. The most common cause of acute abdomen was a perforated duodenal ulcer (27%), which was followed by small intestine (16%) and ruptured appendix (5%). Acute intestinal blockage was most commonly caused by bands and adhesions (15%), followed by strictures (6%) in that order. The most common cause of abdominal trauma was blunt abdominal trauma from a roadside collision (9%) and traumatic perforation from a stabbing (5%) (Table 1).

Table 1: Causes of emergency exploratory laparotomy

Cause	No. of patients	Percentage (%)	Male	Female
Perforation peritonitis	45	45%	34	11
Intestinal obstruction	25	25%	16	10
Trauma abdomen (blunt & penetrating)	19	19%	14	4
Burst Appendix	5	5%	3	2
Ruptured liver abscess	4	4%	4	0
Volvulus	2	2%	0	2
Total	100	100%	71	29

Sixty-eight patients out of 100 laparotomy cases had post-operative problems. The most frequent side effects were nausea and vomiting (56%) and post-operative fever (68%). The most frequent cause of extended hospital stays was wound infection (33%) followed by wound dehiscence (16%). The most prevalent co-morbid condition among patients who experienced wound and chest problems was COPD (22%). Four patients were observed to have died. Two patients passed away in the intensive care unit following surgery; one had a peptic perforation leak that resulted in septicemic shock, and the other had several stab wounds that caused septicemic and died on the seventh post-operative day, most likely due to an anastomotic leak. Two more cases were traffic accidents; one had a grade 5 liver injury for which reexamination was performed twice, but the patient passed away in the fifth week of surgery, and the other involved a large intestine injury linked to multiple long bone fractures, which resulted in death on the third post-operative day of surgery (Table 2,3).

Table 2: Early postoperative complications

Postoperative Complications	No. of patients (n=100)	Percentage (%)
Fever	68	68%
Nausea and vomiting	56	56%
Chest infection	38	38%
Wound infection	33	33%
Paralytic ileus	26	26%
Wound dehiscence	16	16%

Burst abdomen	8	8%
Thrombophlebitis	12	12%
Urinary tract infection	8	8%
Anastomotic leak	1	1%
Enterocutaneous fistula	1	1%
DIC/sepsis	3	3%
Stoma related complications (retraction, prolapsed, peri-stomalerosion)	6	6%
Death	4	4%

Table 3: Late postoperative complications

Complications	Number (n=16)	Percentage
Subacute intestinal obstruction	7	7%
Incisional hernia	6	6%
Stoma related complications	3	3%
Total	**16**	**16%**

Discussion

A critical test of a surgeon's surgical skills is an emergency laparotomy. The general surgeon who does an emergency laparotomy needs to understand the various causes of acute abdominal pain, the particulars of each case, and how to treat them. Compared to elective laparotomies, patients undergoing emergency laparotomies had a disproportionately high morbidity and fatality rate [3].

The male-to-female ratio in this study was 2.5:1, which is similar to greater male-to-female ratios seen in investigations by Dickson et al. [4], Noguiera et al. [5], and Kapoor et al. [6]. However, the male to female ratios were 3.25:1 and 3:1, respectively, according to Gupta et al. [7] and Wani et al. [8].The current study is consistent with global research showing that men outweigh women because to higher rates of drug and alcohol misuse, smoking, and outdoor activities that expose them to trauma.

Most of the patients in this study had peptic perforation (25%), intestinal obstruction (11%), enteric perforation (11%), roadside accidents (10%), penetrating injuries (7%), burst appendix (4%) or ruptured liver abscess, tubercular perforation, etc. 76% of the patients were between the ages of 21 to 50.

These results were consistent with research by Kapoor et al. [6], which found that 69% of the participants were in the age range of 21 to 50 years, and that the majority of the aetiologies were observed in this age group. The current study was also comparable to Gandhi et al.'s study [9], in which 44.5% of the patients were between the ages of 31 and 45, and the most common diseases were peptic perforation (28%), enteric perforation (8.73%), and roadside accidents (7.23%).

Because analgesic drugs are readily available in pharmacies and offered as over-the-counter medications, the prevalence of peptic perforation is typically higher in younger age groups due to high rates of smoking and drug usage. Due to their involvement in outdoor activities and economic productivity, this age group is also more likely to be engaged in roadside accidents that result in head or abdomen injuries.

Peptic perforation accounts for 50% of occurrences of perforation peritonitis, with small bowel perforation coming in second (30%).Peptic perforation is the most common of all cases of perforation peritonitis, according to studies like Gupta et al.7 (30.9%), Jhoota et al., [10], (57%), Chauhan et al., [11], (31.42%), and Graham et al., [12]. (29%).

Out of 10 blunt abdominal injuries in this study, traffic accidents were the most common cause of damage, and the spleen was the most often injured organ (50%). This is comparable to research by Mehta et al. [13] and Yogish et al. [14], where splenic damage was found in 53% and 46.6% of cases, respectively. According to a study by Mukhopadhya et al. [15], blunt abdominal injuries frequently resulted in mesenteric damage.

Fever (68%), nausea and vomiting (56%) were the generally seen early sequelae in the post-operative period of emergency laparotomy. The observations in the present study were comparable with those of Kapoor et al., [6], Chauhan et al., [11] and Chaudhary et al., [16]. The current study runs counter to that of Graham et al. [12], who discovered that the most frequent complication in the post-operative phase was wound complications (66%).

These findings are consistent with the findings of Kapoor et al. study [6], which found chest complications (33%), wound complications (30%), paralytic ileus (26%), wound dehiscence (16%), and burst abdomen (12%). Other postoperative complications included chest complications (38%),

wound infection (33%), paralytic ileus (26%), and wound dehiscence (18%).Sub-acute intestinal blockage accounted for the majority of delayed consequences (7%).

Patients who required admission were treated conservatively with nasogastric tube aspiration, prokinetic medications such as metoclopramide, and no oral medications. They were released once their signs and symptoms had improved. Six individuals (6%) experienced an incisional hernia. Three patients arrived with skin excoriation and soma prolapse, among other stoma-related problems. Depending on how each patient responded to the main pathology, early stoma closure was anticipated for all of these patients under conservative management.

Conclusion

Compared to elective laparotomies, post-operative compilations are more frequent following emergency laparotomies. These issues raise the expense of patient treatment, prolong hospital stays, and result in death and suffering.

Therefore, the morbidity and mortality linked to emergency laparotomy can be reduced by early detection, prompt management, and improved postoperative care. The presence or absence of comorbid illnesses, such as diabetes mellitus, cardiovascular disease, asthma, chronic obstructive pulmonary disease, etc., which must be aggressively addressed in addition to the primary disease, is also closely associated with the mortality and morbidity following emergency laparotomy.

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