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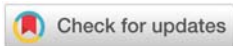
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### Thesis

# A study of post-operative complications of all emergency laparotomy in a tertiary care hospital within 90 days

### Abstract

**Introduction:** An emergency laparotomy is a life saving procedure undertaken mostly in acute cases without much preparation of the patient. Despite being one of the most common urgent surgical procedures, it still proves to be a challenge for the surgeons of the world.

**Methods:** This prospective study was carried out in 100 patients in Pt. B.D. Sharma PGIMS, Rohtak who underwent emergency laparotomy to evaluate different causes of laparotomy and the morbidity & mortality associated with it.

**Results:** Emergency laparotomy was performed for a variety of conditions; majority were being of perforation peritonitis. Intestinal obstruction (25%), abdominal trauma (19%), burst appendix (5%) etc were others to follow. Post-operative fever (68%) was the most common complication followed by nausea& vomiting(56%),chest infection(38%), wound complications (33%) and paralytic ileus (26%)to name a few. Mortality in this study was 4%.

**Conclusions:** Post-operative complications are more common after emergency laparotomies compared to elective laparotomies. Maximum complications were found in patients of delayed presentation or in patients having any associated co morbidities. Therefore early detection, immediate intervention with better postoperative care can minimise the postoperative complications .The present study suggests that proper awareness among rural populations, adequate health education to seek prompt medical aid, a good referral and efficient transportation can reduce the delayed presentation which in turn will prevent postoperative complications following emergency laparotomy.

## Introduction

An emergency laparotomy is a commonly performed operation by general surgeons where the abdomen is opened and the abdominal organs examined for any injury or disease [1]. A few major indications for an emergency laparotomy are like perforation peritonitis, acute intestinal obstruction, burst appendix and blunt or penetrating abdominal injuries either due to road side accidents, fall from height or gun shot or stab injuries.

The outcome of any emergency laparotomy is directly related to the underlying pathology like mesenteric thrombosis, faecal peritonitis or fulminant abdominal tuberculosis. However co morbid conditions, surgical expertise and post-operative care also contribute to the final results in many ways. Post-operative sequel can range from fever, pneumonitis, wound complications and in extremes cases death. Compared to elective laparotomy, emergency laparotomies have a disproportionately high

morbidity and mortality and prolonged hospital stay. Despite the bundles of care, there is limited standardisation of effective post-operative care after emergency laparotomy to avoid post-operative complications [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

This prospective study included a total of 100 patients in Pt.B.D. Sharma PGIMS Rohtak who fulfilled the inclusion and exclusion criteria underwent emergency laparotomy.

The inclusion criteria being patients of age 15 or more presenting to emergency and exclusion criteria are being patients < 15 years, emergency laparotomies for ileostomy or colostomy closure, cases who underwent laparotomy for indications other than abdominal pathology.

## Methods

Patients of different age groups and sex were tabulated and the possible causes of laparotomy were noted. A detailed history on smoking, alcohol intake, intravenous drug users and any co morbidities like diabetes, tuberculosis, chronic obstructive pulmonary disease, acquired immune deficiency syndrome. A clinical examination was conducted and all biochemical investigations required for pre anaesthetic checkup along with other investigations required for making diagnosis were done.

All the patients were resuscitated as per need and an exploratory laparotomy was carried out through a midline incision.

Patients were observed for any post-operative complications like fever, nausea and vomiting, thrombophlebitis, respiratory and urinary tract infections were monitored regularly and correspondingly noted for each patient. Examination of the wound related complications were started on 1<sup>st</sup> post-operative day itself. The clinical signs of redness, oedema, serous/pus discharge from main wound were noted. They were further followed up for sequel like wound gapping and burst abdomen. Gastrointestinal complications observed during post-operative period included paralytic ileus, Intestinal obstruction, Enterocutaneous fistula, Anastomotic leak. All the patients were educated regarding chest physiotherapy and were encouraged to do respirometer. Early post op ambulation was also encouraged. The 30 day mortality was recorded. The patients were followed up for 3 months for complications like incisional hernia, sub-acute intestinal obstruction, stoma related complications like prolapse or retraction.

## Results

A total of 100 cases were included in this study who were underwent emergency laparotomies. 71 (71%) were males and 29(29%) were females. The age ranged between 15–80 years. The majority of cases were of perforation peritonitis (45%), while others were Acute Intestinal Obstruction 25 (25%), Abdominal Trauma 19(19%). Perforated duodenal ulcer 27(27%) was the leading causes of acute abdomen followed by small intestine (16%) and burst appendix (5%). While bands and adhesions were the leading 15(15%) cause of acute intestinal obstruction followed by strictures 6(6%). Blunt abdominal trauma due to road side accident was the leading cause of abdominal trauma 9(9%) followed by traumatic perforation due to stab 5(5%) (Table 1).

Out of 100 laparotomy cases performed, post-operative complications were found in 68 patients. Post-operative fever (68%), nausea and vomiting (56%) were the common complications. Wound infection (33%) leading to wound dehiscence (16%) was the most common complications for prolonged hospital stay. COPD (22%) was the most common associated co morbid condition for patient who developed chest complications and wound complications. Mortality was witnessed in 4 patients. 2 patients died in ICU after surgery, one case was of peptic perforation leak leading to septicemic shock, another was of multiple stab injury who developed

septicemic and died on 7<sup>th</sup> post-operative day probably because of anastomotic leak. Other 2 cases were of road accidents, one of whom had grade 5 liver injury in whom re exploration was done twice but died in 5<sup>th</sup> week of surgery and another case was of large intestine injury associated with multiple long bone fractures who died on 3<sup>rd</sup> post-operative day of surgery (Table 2,3).

## Discussion

Emergency laparotomy is a major test of the surgical skills to a surgeon. The general surgeon performing laparotomy in emergency must be aware of the diverse aetiology of the acute abdomen, the unique characteristics of each case and their management. Patients undergoing emergency laparotomy have

**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

**Table 2:** Early post operative complications (within 30 days).

Post operative Complications	No. of patients (out of 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, peristomal erosion)	6	6%
Death	4	4%

**Table 3:** Late post operative complications (> 4<sup>th</sup> week to 90 days).

Complications	Number (Out of 16)	Percentage
Sub acute intestinal obstruction	7	7%
Incisional hernia	6	6%
Stoma related complications	3	3%
<b>Total</b>	<b>16</b>	<b>16%</b>

a disproportionately high morbidity and mortality compared to elective laparotomies [3].

In this study male to female ratio in the study was 2.5:1 which is comparable with the studies of Dickson et al., [4], Noguiera et al., [5], and Kapoor et al., [6], who also found a higher male: female ratio. But Gupta et al., [7] and Wani et al., [8], found male: Female ratio were 3.25:1 and 3:1 respectively. The present study is in conformity to the world literature where males were outnumbered females because of higher rate of smoking, alcohol, drug abuse and a higher proportion of outdoor activities exposing to trauma than in females.

In this study 76% of the patients were of 21 to 50 years of age and most of them suffered from peptic perforation (25%), enteric perforation (11%), intestinal obstruction (11%), road side accidents (10%), penetrating injuries (7%), burst appendix (4%) or ruptured liver abscess, tubercular perforation etc. These findings were in concordance with the studies conducted by Kapoor et al., [6], in which 69% were between 21 to 50 year age groups where mostly the above aetiologies were found in this age group. Also the present study was similar to the study conducted by Gandhi et al., [9], where in 44.5% patients were between 31-45 years and peptic perforation (28%), enteric perforation (8.73%), road side accidents (7.23%) were the commonly encountered pathologies.

The incidence of peptic perforation in younger age group is usually higher because of high rate of smoking and analgesic drug abuse as the same are easily available in medicine stores and sold as over the counter drug. This age group is also economically productive group and are involved in outdoor activities and are therefore more prone to road side accidents leading to head injury or abdominal injuries.

Among the cases of perforation peritonitis, peptic perforation constitutes 50% cases followed by small bowel perforation (30%). The present study is similar to the study Gupta et al<sup>7</sup> (30.9%), Jhoota et al., [10], (57%), Chauhan et al., [11], (31.42%), Graham et al., [12]. (29%), stating that peptic perforation is most common among all cases of perforation peritonitis.

In this study among 10 blunt abdominal injuries, the most common mode of injury was road traffic accidents and most common organ injured was spleen (50%). This is similar to the studies of Mehta et al., [13] and Yogish et al., [14], in which 53% and 46.6% cases were having splenic injury respectively. The study conducted by Mukhopadhyaya et al., [15], shows mesenteric injury was common in blunt abdominal injuries.

Fever (68%), nausea and vomiting (56%) were the commonly observed early complications in the post-operative period of emergency laparotomy. The observations in the present study were comparable with studies of Kapoor et al., [6], Chauhan et al., [11] and Chaudhary et al., [16]. The present study contradicts with the study of Graham et al., [12] who found wound complication (66%) is the commonest complication in post-operative period.

Other postoperative complications like chest complications (38%), wound infection (33%), paralytic ileus (26%), wound dehiscence (16%) and burst abdomen (8%) were also observed in the present study and observations are in concordance with the study of Kapoor et al., [6], who found chest complication(33%) wound complications(30%) paralytic ileus(29%), wound dehiscence(18%)and burst abdomen(12%).

Delayed complications after 1 month of surgery till 90 days were mostly like sub-acute intestinal obstruction (7%). Patients who needed admission were managed conservatively by nasogastric tube aspiration and nil per orally and prokinetic drugs like metoclopramide and discharged after sign and symptoms subsided. 6(6%) patients developed incisional hernia. 3 patients presented with stoma related complications like skin excoriation and prolapse of stoma. All these patients were managed conservatively and early stoma closure was planned in these patients depending upon their response to the primary pathology.

## Conclusions

Post-operative complications are more common after emergency laparotomy as compared to elective. These complications cause death and suffering; longer hospital stay and increase the cost of the patient care. Therefore early detection and immediate intervention with better post-operative care can minimise both morbidity and mortality associated with emergency laparotomy. The mortality and morbidity after emergency laparotomy is also closely related to the presence or absence of comorbid conditions like chronic obstructive pulmonary disease, diabetes mellitus and cardiovascular, asthma etc. which needs to be managed aggressively along with the primary disease.

The study suggests proper awareness among rural population; adequate health education to seek prompt medical aid, a good referral and efficient patient transportation to reduce the delayed presentation will help in a long way to reduce both morbidity and mortality in patients requiring emergency laparotomy.

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**Ethical approval:** The study was approved by the institutional ethics committee.

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