Biological and Clinical Sciences Research Journal
eISSN: 2708-2261; pISSN: 2958-4728
www.bcsrj.com
DOI: https://doi.org/10.54112/bcsrj.v2024i1.1464
*Biol. Clin. Sci. Res. J., Volume, **2024**: 1464*
Original Research Article

POST-OPERATIVE COMPLICATIONS FREQUENCY IN PATIENTS UNDERGOING EMERGENCY LAPAROTOMY IN TERTIARY CARE HOSPITAL

NAZIR MT[1], ANJUM IH[*2], KHARL RAK[3], MENGAL MZ[4]

[1]*Department of Surgery, Services Hospital Lahore, Pakistan*
[2]*Department of Surgery, Sahara Medical College Narowal, Pakistan*
[3]*Armed Forces Hospital Alhada Taif Saudi Arabia, Saudi Arabia*
[4]*Department of Surgery, Narowal Medical College Narowal, Pakistan*
**Corresponding author`s email address:* drinayatanjum@hotmail.com

(Received, 07th November 2024, Revised 06th December 2024, Published 30th December 2024)

Abstract: *One of the most frequent surgical procedures performed by general surgeons is laparotomy. Early diagnosis and prompt treatment of postoperative complications are the goals of appropriate post-operative care.* ***Objective:*** *The study aimed to explore Post-operative complications frequency in individuals undergoing emergency laparotomy in tertiary care hospitals.* ***Methods:*** *This hospital-based, single-centre longitudinal prospective observational study was carried out at the Surgical Unit 2 SIMS/ Services Hospital Lahore from January 2022 to January 2024 after getting permission from the ethical board. A total of 254 participants in the general surgical unit for emergency laparotomies were included. A thorough medical history of each individual was collected. Participants were followed for post-operative issues and mortality with risk variables after surgery. Clavien-Dindo and severity classifications were used to categorize post-operative issues. Data was entered into Microsoft Excel and presented in the form of tables and figures.* ***Results:*** *A total of 254 individuals took part in this study out of which male were 57(22.44%) and female were 197(77.55 %.). The most prevalent age group in the study participants was 40 to 59 years group 108(42.5%). Gastrointestinal perforation accounts for 80 (31.49%) of the reasons for an exploratory laparotomy, subsequently followed by duodenal perforations 40 (15.7%), gallbladder perforation 30 (11.8%), blunt & penetrating trauma abdomen 15 (5.9%), and appendicular abscess 14 (5.5%). Surgical site infection was the most frequent of these, 120 (47%), followed by fever 97(38.1%) and pneumonia 76 (30 %), thrombophlebitis 27 (10.8%), after surgery ileus 32, (12%), UTI 25 (10%), and nausea and vomiting 35(14%). The mortality rate in our study was 7 %.****Conclusion:*** *The current study concluded that emergency laparotomies are more likely to result in postoperative complications than elective ones. The most frequent negative outcomes include fever, vomiting nausea, and postoperative surgical site infection. The overall mortality rate in our study was 7%.*

Keywords: Laparotomy Postoperative Complications Emergency Treatment Surgical Wound Infection Mortality

Introduction

One of the most frequent surgical procedures performed by general surgeons is laparotomy. The term "laparotomy" in surgical terminology refers to the examination of the abdomen and the subsequent steps based on the identified reason (1). A post-operative complication is any unfavourable result as determined by the patient or the physician. It might happen during the surgical process, just after the procedure, or afterwards (2). In a general surgery unit, when abdominal surgery makes up the majority of major procedures, complications after abdominal surgery provide a significant challenge to the surgeon. They are the main areas where the surgeon's skill on the operating table is limited. They may start as a little disruption and, if left unchecked, may endanger the patient's recovery or even cause death. Both planned and emergency laparotomies might result in post-operative complications. The outcome depends on several variables, including age, underlying pathology (mesenteric an ischemia as well as faecal peritonitis), meticulous surgical approach, pre-operative resuscitation, anaesthesia technique, post-operative care, as well as any underlying diseases (high blood pressure, diabetes, coronary artery disease). Pneumonia, wound problems, fever, and in severe cases, death, are all possible post-operative sequelae. Emergent laparotomies have a disproportionately high death and morbidity rate as well as a longer hospital stay than elective laparotomies. There is no uniformity of efficient post-operative treatment following emergency laparotomy to prevent post-operative problems, despite the bundles of care (3). The study aimed to identify post-operative problems in terms of emergency laparotomy results to provide practical methods to reduce them.

Methodology

This hospital-based, single-centre longitudinal prospective observational study was carried out at the Surgical Unit 2 SIMS/ Services Hospital Lahore from January 2022 to January 2024 after obtaining permission from the ethical board. A total of 254 participants in the general surgical unit for emergency laparotomies were included. Individuals of various genders and ages were taken into account and the potential reasons for laparotomy were recorded. A thorough medical history was collected, including information on intravenous drug users, alcohol consumption, smoking, and

[Citation: Nazir, M.T., Anjum, I.H., Kharl, R.A.K., Mengal, M.Z. (2024). Post-operative complications frequency in patients undergoing emergency laparotomy in tertiary care hospital. *Biol. Clin. Sci. Res. J.*, **2024***: 1464*. doi: https://doi.org/10.54112/bcsrj.v2024i1.1464]

any concomitant conditions such as diabetes, TB, and COPD, along with acquired immune deficiency syndrome. In addition to the biochemical screening necessary for the pre-anesthetic checkup and other tests necessary for diagnosis, a medical checkup was performed. Each participant received the necessary resuscitation, and a midline incision was used to do an exploratory laparotomy. Following the surgical procedure, participants were followed up for death rate and other complications regular monitoring was done for respiratory tract infections, postoperative nausea and vomiting, and noteworthy post-operative fever (more than 48 hours). Post-operative systemic problems, including gastrointestinal, urinary, and pulmonary issues, were assessed. A respiratory tract infection was determined based on clinical examination and testing (blood test and X-ray of chest). Among the digestive problems identified during the following surgery were ileus, intestinal obstruction, diarrhoea, and gastrointestinal fissure. Septicemia was observed throughout the post-operative phase, and the corresponding mortality was documented. Clavien-Dindo and severity classifications were used to categorize post-operative issues (4). Data was entered into Microsoft Excel and presented in the form of tables and figures.

Results

A total of 254 individuals took part in this study out of which male were 57(22.44%) and female were 197(77.55 %.) as presented in Figure 1. The most prevalent age group in the study participants was 40 to 59 years group 108(42.5%) followed by the age group 20-29 years 87(34.2%) as presented in Table 1. Gastrointestinal perforation accounts for 80 (31.49%) of the reasons for an exploratory laparotomy, subsequently followed by duodenal perforations 40 (15.7%), gallbladder perforation 30 (11.8%), blunt & penetrating trauma abdomen 15 (5.9%), and appendicular abscess 14 (5.5%) as shown in table 2. Surgical site infection was the most frequent of these, 120 (47%), followed by fever 97(, 38.1%) and pneumonia 76 (30 %).thrombophlebitis 27 (10.8%), after surgery ileus 32, (12%), UTI 25 (10%), and nausea and vomiting 35(14%). Anastomotic leak & enter cutaneous fistula (0.8%), wound closure (3.2 per cent), burst abdomen (1.6%), and stoma problems (7.2%) were among the local complications. The death rate was 7 %. (table 3).

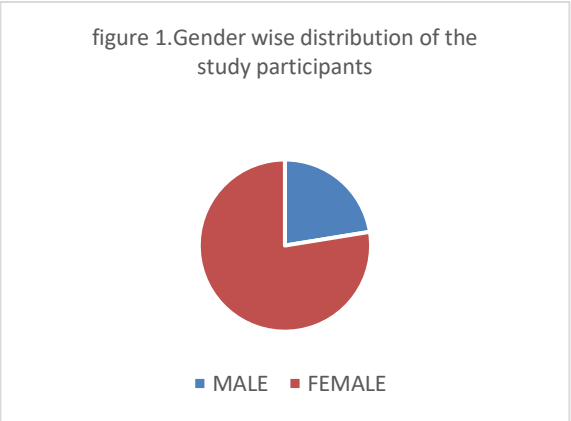

Figure 1:

Table 1. Age-wise distribution of the study population

Age in years	N	%
Above 20	7	2.7
20 to 39	87	34.2
40 to 59	108	42.5
60 or above	52	20.4

Table 2. Surgical procedures N (%)

Appendicitis	1(0.39
Appendicular abscess	14(5.5%)
Appendicular mass	7(2.7%)
Gall bladder perforation	30 (11.8%),
Gastric perforation	80(31.49%
Duodenal perforation	40(15.7%)
Other small bowel perforation	7(2.7%)
Large bowel perforation	10(3.9%)
Intestinal obstruction	4(1.5%)
Gangrenous bowel	3(1.1%)
Mesenteric ischemia	7(2.7%)
Intussusception	5(1.9%)
Volvulus	7(2.7%)
Malignancy	5(1.9%)
Intra-abdominal abscess	14(5.5%)
Deep penetrating trauma 1	15(5.9%)
Other	5(1.9%)

Table 3. Post-operative complications according to Clavien-Dindo classification and severity

Severity	Clavien-Dindo classification	Complications after surgery	N (%)
Mild	Grades 1 and 2	Vomiting and nausea	35(14)
		Pyrexia	35(14)
		Pulmonary atelectasis	1(0.4)
		UTIs	25(10)
		Thrombophlebitis	27(10)
		Stoma complications	18(7.2)
		Ileus	32(12)
		Surgical site infection	120(47)
		Pneumonia	76(30)
		Sepsis	4(1.6)
Moderate	Grade 3	Anastomotic leak	1(04)
		Wound	8(3.2)
		Abdominal burst	4(1.6)

[Citation: Nazir, M.T., Anjum, I.H., Kharl, R.A.K., Mengal, M.Z. (2024). Post-operative complications frequency in patients undergoing emergency laparotomy in tertiary care hospital. *Biol. Clin. Sci. Res. J.*, **2024***: 1464*. doi: https://doi.org/10.54112/bcsrj.v2024i1.1464]

		Entero-cutaneous fistula	2(0.8)
Severe	Grade 4	Acute injury of kidneys	1(0.4)
		cardiac failure and high blood pressure	2(8.0)
	Grade 5	Post-operative death	18(7)

Discussion

One of the major tests of a surgeon's skills is an emergency laparotomy for an acute abdomen. For a successful outcome, follow-up after surgical intervention is just as important as pre-operative preparation. Regardless of the surgical norm, inadequate care in any area may result in poor outcomes early diagnosis and prompt treatment of postoperative complications are the goals of appropriate post-operative care. In the current study, a total of 254 emergency laparotomies were done. Surgical site infection was the most frequent of these (47%), followed by fever (38.1%) nausea and vomiting (14%), pneumonia (30 %), after surgery ileus (12%), thrombophlebitis (10.8%) and UTI (10%). In this study, males were 22.44% and females were 77.55 %. The findings of Dickson and Cole (5). Nogueira et al (6). And Kapoor et al (7). Which revealed a higher man-to-woman percentage. The current study is consistent with international research showing that men exceed women because of greater rates of drug and alcohol misuse, smoking, and outdoor activities that expose them to trauma. Gastric perforation accounts for 31.49% of perforation peritonitis cases, with duodenal perforation following the next (15.7%). Our findings are somewhat similar to the studies conducted by Gupta et al (8). (Thirty %), Wani et al (9). Gandhi et al (10). Jhoota et al (11). (33%), Chauhan et al (12). (Thirty-one %), and Graham et al (13). (Twenty-nine %). One of the main causes of patients' post-operative morbidity is post-operative wound infections. Wound infection after surgery was observed in 120 individuals (47%) in our study; this is a high number when compared to a study conducted in Karachi that reported 22 per cent of participants. Another study conducted in Karachi by Memon et al. revealed wound infection in 22 per cent of cases. In the study we conducted, fever after surgery was observed in 95 patients (38.0%), making it the most prevalent systemic postoperative complication. Jawaid et al (14). Reported that post-operative fever was the most common complication, occurring in 18.2% of cases. Post-operative nausea and vomiting is another frequent result; in this study, it was observed in 35 patients (14%); one of the most recent investigations on laparotomies by Murtaza et al (2). supports this finding as well. An extremely dangerous postoperative complication linked to a high rate of morbidity and death is wound dehiscence/burst abdomen. Both the patient's and the hospital's healthcare costs are significantly impacted. According to national findings from research by Waqar et al (15). Buhler et al (16). And Afzal et al (17). In our findings the death rate was 7% these outcomes are not similar to the previous study conducted in Finland in which 444 studies were studied based on the Clavien-Dindo classification and documented an 18.2% death rate (18).

Conclusion

The current study concluded that emergency laparotomies are more likely to result in postoperative complications than elective ones. The most frequent negative outcomes include fever, vomiting nausea, and postoperative surgical site infection. The death rate was 7%.

Declarations

Data Availability statement
All data generated or analyzed during the study are included in the manuscript.
Ethics approval and consent to participate
Approved by the department concerned.
Consent for publication
Approved
Funding
Not applicable

Conflict of interest

The authors declared the absence of a conflict of interest.

Author Contribution

MUHAMMAD TARIQ NAZIR (Assistant Professor)
Coordination of collaborative efforts.
Study Design, Review of Literature.
INAYAT HUSAIN ANJUM (Assistant Professor)
Conception of Study, Development of Research Methodology Design, Study Design, Review of manuscript, final approval of manuscript.
Conception of Study, Final approval of manuscript.
RAI AHMAD KHAN KHARL (Consultant vascular surgeon)
Manuscript revisions, critical input.
Coordination of collaborative efforts.
MUHAMMAD ZAFAR MENGAL (Assistant Professor)
Data acquisition, and analysis.
Manuscript drafting.
Data entry and Data analysis, drafting article.

References

1. Bansal AR, Mallick MR and Jena S. A study of postoperative complications of all emergency laparotomy in a tertiary care hospital within 90 days. Arch Clin Gastroenterol. 2019; 5(2):15-18.https://doi.org/10.17352/2455-2283.000062
2. Murtaza B, Saeed S and Sharif MA. Postoperative complications in emergency versus elective laparotomies at a peripheral hospital. J Ayub Med Coll Abbottabad. 2010; 22(3):42-47.
3. Zimmerman JE, Wagner DP, Draper EA, Wright L, Alzola C and Knaus WA. Evaluation of acute physiology and chronic health evaluation iii predictions of hospital mortality in an independent database. Crit Care Med. 1998;26:1317-26.https://doi.org/10.1097/00003246-199808000-00012
4. Huddart S, Peden CJ, Swart M. Use of a pathway quality improvement care bundle to reduce mortality after

emergency laparotomy. Br J Surg. 2015; 102(1):57-66.https://doi.org/10.1002/bjs.9658
5. Pearse RM, Harrison DA and James P. Identification and characterisation of the high-risk surgical population in the United Kingdom. Crit Care. 2006; 10(3):R81.https://doi.org/10.1186/cc4928
6. Dickson JA and Cole GJ. Perforation of the terminal ileum. A review of 38 cases. Br J Surg. 1964; 51:893-897. https://doi.org/10.1002/bjs.1800511207
7. Noguiera C, Silva AS, Santos JN, Silva AG, Ferreira J, Matos E, et al. Perforated factors of morbidity and mortality. World J Surg. 2003;27:782-787.https://doi.org/10.1007/s00268-003-6645-0
8. Kapoor S, Sharma R, Srivastava A, Kumar A, Singh A and Singh H. Study of surgical complications of explorative laparotomy and their management study of 100 cases. J Dent Med Sci. 2017; 16(12):36-41.
9. Gupta S, Kaushik R, Sharma R and Attri A. The management of large perforations of duodenal ulcers. BMC Surg. 2005;5:15.https://doi.org/10.1186/1471-2482-5-15
10. Wani RA, Bhat FQ and Bhatand MA. Nontraumatic terminal ileal perforation. World J Emerg Surg. 2006; 11:95-399.
11. Gandhi JA, Shinde PH and Digarse RD. Evaluation of abdominal wall closure technique in emergency laparotomies at a tertiary care hospital. Int Surg J. 2016;3:1796-1801.https://doi.org/10.18203/2349-2902.isj20162813
12. Jhoota RS, Attri AK, Kaushik R, Sharma R and Thobta A. Spectrum of perforation peritonitis in India-review of 504 consecutive cases. World J Emerg Surg. 2006;1:26.https://doi.org/10.1186/1749-7922-1-26
13. Chauhan S, Chauhan B and Sharma H. A Comparative study of postoperative complications in emergency versus elective laparotomy at a tertiary care centre. Int Surg J. 2017;4:2730-2735.https://doi.org/10.18203/10.18203/2349-2902.isj20173408
14. Jawaid M, Masood Z and Iqbal SA. Post-operative complications in a general surgical ward of a teaching hospital. Pak J Med Sci. 2006; 22(2):171-175.
15. Waqar SH, Malik ZI, Razzaq A, Abdullah MT, Shaima A and Zahid MA. Frequency and risk factors for wound dehiscence/ burst abdomen in midline laparotomies. J Ayub Med Coll Abbottabad. 2005; 17(4):70-73
16. Buhler L, Mentha G, Borst F, Roche B, Morel P and Rohner A. Safety of cholecystectomy by laparotomy in elective situation and in emergency. J Chir (Paris). 1992; 129(11):466-470
17. Afzal S and Bashir M, Determinants of wound dehiscence in abdominal surgery in Public Sector Hospital. Ann King Edward Med Univ. 2008; 14(3):110-117
18. Mentula PJ and Leppäniemi AK. Applicability of the ClavienDindo Classification to emergency surgical procedures: A retrospective cohort study on 444 consecutive patients. Patient Saf Surg. 2014; 8:31-37..

[Citation: Nazir, M.T., Anjum, I.H., Kharl, R.A.K., Mengal, M.Z. (2024). Post-operative complications frequency in patients undergoing emergency laparotomy in tertiary care hospital. *Biol. Clin. Sci. Res. J.*, **2024***: 1464*. doi: https://doi.org/10.54112/bcsrj.v2024i1.1464]