

Original Research Article

Assessment of post-operative complications in emergency abdominal surgery in a tertiary care centre

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Abstract: The aim is to assess the postoperative complications in emergency abdominal surgery at Bundelkhand Medical College, Sagar. The study was carried out in 350 patients who underwent emergency laparotomy in surgery department during period of January 2015 to February 2016 of Govt. Bundelkhand Medical College associated hospital, Sagar, MP. Information collected included demographics, details of procedures, complications and outcomes. A total of 350 emergency abdominal surgeries were performed among which 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%). Postoperative complications documented in 128 (36.57%) patients included pyrexia (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 septicemia. This study revealed that fever; nausea and vomiting, wound infection and respiratory tract infection are the commonest postoperative complication.

Keywords: Emergency, laparotomy, abdominal surgery, postoperative, complications

INTRODUCTION

Complications in surgery have been an issue for centuries and are not a new concept. Surgeons fear any form of complication in their patients and do their utmost to prevent any that may be related to surgical diseases or to surgical treatments. Postoperative complication may be defined as any negative outcome as perceived by the surgeon or by the patient [1]. It may occur intraoperatively, in the immediate postoperative period, or later on. There is no surgical procedure in this world free from complication. Either minor or major complications matter with mortality and morbidity [2] and prolong the course of illness and lengthen hospital stay. These complications range from simple wound infection or unusual pain at operation site to extremes like death or permanent handicapping of the patient [3]. Therefore the prevention of complications is of the utmost importance for surgeons.

Laparotomy is a most common surgical procedure done by routine surgical team. In surgical language the word laparotomy explains exploration of

the abdomen and proceeds further according to the cause identified [4]. This study was conducted to identify post-operative complication in the form of outcome in emergency laparotomies so that effective measures could be suggested to reduce them.

MATERIALS AND METHODS

This study was conducted at Department of General Surgery in Bundelkhand Medical College, Sagar, MP, India, a tertiary care teaching institute and hospital. The target population was patients undergoing emergency laparotomy admitted to the general surgical wards. This was a hospital based, single centre longitudinal prospective observational study from January 2015 to February 2016 including 350 patients.

Patients who were admitted but died during resuscitation, absconded and referred to higher centre were excluded from study. The data was noted on a proforma. A detailed history and clinical examination was conducted. Basic investigations like random blood sugar, complete blood count, urinalysis, serum urea/

creatinine, serum electrolytes, chest radiograph, electrocardiograph, hepatitis B and HIV profile and blood grouping and cross matching were done. Abdominal radiographs and ultrasonography was also done where required.

Patients were resuscitated with IV fluids and supportive treatment and foley’s catheterisation/nasogastric intubation, pre-anaesthetic assessment was made and written/ informed consent was taken after counselling regarding the condition of the patient and the possible outcomes. Under general/spinal anaesthesia the operative field was prepared with povidone iodine and all the patients were opened through a midline abdominal incision. After surgery patients were observed for any postoperative complication and mortality with predisposing factors. Persistent postoperative fever (>48 hrs), post-operative nausea and vomiting and respiratory tract infections were monitored regularly.

Examination of the wound related complication was started from the second postoperative day and patients having postoperative pyrexia and serosanguinous/serous/pus discharge coming from main

wound side were included in this complication. They were further followed up for sequelae like wound gapping and burst abdomen. Patients were also evaluated for post operative systemic complications like pulmonary, gastrointestinal and urinary complications. On the basis of clinical examination and investigations (blood examination and X ray chest) patients with pulmonary complications were assigned into following groups- atelectasis, tracheobronchitis, bronchopneumonia, pleural effusion or empyema and ARDS. Gastrointestinal complications observed during postoperative period included postoperative ileus, intestinal obstruction, diarrhoea and gastrointestinal fistula. Urinary tract infection and renal failure in postoperative period were also documented.

RESULTS

Total 350 patients underwent emergency laprotomy. Peptic perforation peritonitis constitute 110(31.42%) cases followed by typhoid perforation peritonitis 85(24.28%), intestinal obstruction 76 (21.7%), blunt and penetrating trauma abdomen 28 (7.98%), appendicular perforation 17 (4.85%) and other surgeries were performed as mentioned in table below (Table 1).

Table 1: Distribution of cases according to Diagnosis

S.No.	Diagnosis	Total No. of cases	Percentage(%)	
1.	Peptic perforation peritonitis	110	31.42	
2.	Typhoid perforation peritonitis	85	24.28	
3.	Intestinal obstruction	Small Bowel	45	12.85
		Large Bowel	31	8.85
4.	Trauma	Haemoperitonium	12	3.42
		Jejunal perforation peritonitis	10	2.85
		Colonic perforation	6	1.71
5.	Pyoperitonium	21	6	
6.	Abdominal Tuberculosis	13	3.71	
7.	Appendicular perforation	17	4.85	

128(36.57%) patients developed complications in postoperative period. Most common complication evident was postoperative pyrexia in 70(20%) patients followed by wound related complication in 43 patients(12.28%) and postoperative nausea and vomiting in 42(12%) patients, respiratory complications seen in 24(6.85%) patients, fecal fistula observed in 7 (2%) patients, post operative obstruction seen in 6

(1.71%) patients, toxemia and septicemia developed in 28 (8%) cases. Deep Vein Thrombosis was seen in 1 patient. 30 patients died in postoperative period because of complications (Table 2). Most complication occurred in typhoid perforation peritonitis 37(28.90%), intestinal obstruction 35 (27.34%) and peptic perforation peritonitis 34(26.56%) cases (Table 3). Many patients were affected from more than one complication.

Table 2: Distribution of complications

S. No.	Complications	No. of cases	Percentage (%)	
1.	Post operative fever	70	20	
2.	Postoperative nausea and vomiting	42	12	
3.	Wound related complication	Wound infection	34	9.71
		Minor gapping	7	2
		Burst Abdomen	2	.57
4.	Respiratory complications	Atelactasis	15	4.28
		Tracheobronchitis	10	2.85
		Pneumonia	6	1.71
		Pleural effussion or empyema	2	.57
		ARDS	1	.28
5.	Toxemia and septicemia	28	8	
6.	Faecal fistula	7	2	
7.	Post operative obstruction	6	1.71	

Table 3: Distribution of complications according to diagnosis

S. No.	Complications	No. of cases	Percentage(%)	
	Typhoid perforation peritonitis	37	28.90	
	Intestinal obstruction	Small Bowel	27.34	
		Large Bowel		13
	Peptic perforation peritonitis	34	26.56	
	Trauma	Haemoperitonium	7.81	
		Jejunal perforation peritonitis		3
		Colonic perforation		4
	Pyoperitonium	3	2.34	
	Appendicular Perforation	5	3.90	
	Abdominal tuberculosis	4	3.12	
Total		128	100	

DISCUSSION:

The emergency laparotomy for acute abdomen is a major test of the surgical skills of a surgeon. Postoperative care is as essential as the preoperative preparation for a successful outcome. Deficient care in either may produce unsatisfactory results irrespective of the standard of surgery [5]. The main aim of meticulous postoperative care is early detection and immediate treatment of postoperative complications.

Fever is common among postoperative patients [6, 7]. In present study also most common complication seen was postoperative fever in 20% patients. Most

early postoperative fever (temperature above 38°C/ 100.4°F) during 48 hours or more is caused by the inflammatory stimulus of surgery and resolves spontaneously [8, 9]. However, postoperative fevers can also be a manifestation of a serious complication. Pyrexia within 48 hours of surgery is often due to pulmonary atelectasis. Between 48 hours and five days, pyrexia may be the result of thrombophlebitis or infection of the urinary tract or the chest and more than five days after surgery wound infection or anastomotic breakdown should be suspected [10]. Between 7 to 10 days deep venous thrombosis and pulmonary embolus are the common causes. A study in critically ill surgical

patients showed that 26% of patients developed postoperative fever [11]. Patient who continue to have fever, slow clinical progress, and no discernible external source may require computed tomography (CT) of the abdomen to look for an intra-abdominal source of infection [12].

Wound infection is a well recognized complication of surgical treatment and sometimes places a high burden on hospital resources [13]. In present study wound infection occurred in 12.28% cases. Incidence of wound infection range from 1.28% to as high as 18.92%. In a study by Finn Gottrup *et al.*; in 2000 incidence of post operative wound infection recorded was 5% while in another study done by Al Hashemy *et al.*; in 2004 was 9% [13,14]. In our study wound gapping occurred in 2% while burst abdomen occurred in 0.6% of patients (Figure 1, 2). The incidence of burst abdomen in many Western studies showed its occurrence as 0.4-3.5%. In a study by Girish Parmar *et al.*; in 2009 incidence of burst abdomen recorded was 5.5%. The low incidence of burst abdomen in present study may be attributable to early intervention and better post operative care.

Postoperative nausea and vomiting (PONV) is reported as one of the most undesirable side effects after surgery, as studies that use the willingness-to-pay method to report this event have evaluated [15]. In this study, PONV was recorded in 12% of patients; however, the incidence PONV may range from between 20% and 30% [16, 17]. There currently is no “gold standard” for prophylaxis against PONV. Multimodal prophylaxis involving both pharmacologic and nonpharmacologic interventions, as well as risk reduction, has been recommended for PONV prophylaxis [18].

Postoperative pulmonary complications account for a substantial proportion of morbidity and mortality related to surgery and anesthesia and lead to longer hospital stays [19]. There is a wide spectrum of pulmonary complications including atelectasis-resulting in post-operative hypoxaemia (commonest complication), pneumonia, bronchitis, acute respiratory distress syndrome (ARDS), pleural effusion or

empyema and pulmonary embolism. 9.7% patients in our study developed pulmonary complications. The incidence of post-operative pulmonary complication varies from 5 to 60% as reported by L.G.G. Serejo *et al.*; in 2006 [20] and Deodhar *et al.*; in 1991 [21]. The low incidence of postoperative pulmonary complications in present series may be due to better election of anesthetic technique, postoperative analgesia and physiotherapy in early post operative period in our institute.

In the present series six cases of post-operative intestinal obstruction were documented, out of these four were due to paralytic ileus, and two were due to mechanical obstruction. Physiologic ileus spontaneously resolves within 2-3 days, after sigmoid motility returns to normal. Ileus that persists for more than 3 days following surgery is termed postoperative adynamic ileus or paralytic ileus [22]. Bands and adhesion following laparotomy involving small intestine may develop at any point where the serosa of bowel has been damaged, devascularised, torn by rough handling. Iatrogenic causes of mechanical obstructions such as man maid traps or hiatus were not seen in present study [23].

Most GI fistulas (75-85%) occur as a complication of abdominal surgery due to bowel injury, inadvertent enterotomy and anastomotic leakage [24]. In its simplest definition, a fistula is a communication between two epithelialized surfaces. We reported 7 cases of postoperative enterocutaneous fistula in this study (Figure 3).

Sepsis is a rare, complex, multifactorial syndrome which can evolve into conditions of varying severity. If left untreated, it may lead to the functional impairment of one or more vital organs or systems [25]. Severe sepsis is defined as sepsis associated with at least one acute organ dysfunction, hypo perfusion, or hypotension [26]. However, when observed, the result is catastrophic. In our study septicemia developed in 8% of post operative cases. Compared to overall mortality rate of 8.57%, in patients with severe sepsis or septic shock in the post-operative period the mortality rate was 93.33%.



Fig 1: Case of Wound Gapping after Laparotomy



Fig 2: Case of burst abdomen having complete disruption of abdominal wall layer showing bowel loops



Fig 3: Postoperative fecal fistula- Showing discharge of fecal matter from drain site with excoriation of surrounding skin

CONCLUSION:

Postoperative complications cause death and suffering; longer hospital stays and increase costs. In no era of surgery, surgeons can skip from postoperative complications. They are the inherent part of any operative procedure particularly in critically ill patients. Therefore early detection and immediate intervention with better postoperative care can minimize both morbidity and mortality associated with them. This study portrays the incidence of complications following emergency laparotomy, showing that fever, wound infection, nausea and vomiting are the mostly encountered complications. The current results suggest the need for additional studies aimed at implementing changes to the structure and processes related to healthcare to reduce postoperative morbidity and mortality.

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