(International Print/Online Journal)

SJIF IMPACT FACTOR: 5.565
PUBMED-National Library of Medicine ID-101739732

ISSN (Print): 2209-2870
ISSN (Online): 2209-2862

International Journal of Medical Science and Current Research (IJMSCR)
Available online at: www.ijmscr.com
Volume 6, Issue 4 , Page No: 493-501
July-August 2023

IJMSCR

The Impact Of Delayed Hospital Presentation And Analysis Of Perioperative Factors Associated With Postoperative Outcome After Emergency Laparotomy

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Type of Publication: Original Research Paper
Conflicts of Interest: Nil

Abstract

Background &Aims: Emergency laparotomy is associated with significant morbidity and mortality. Despite being one of the most commonly performed emergency surgical procedures, there is a scarcity of data on the outcomes and postoperative mortality rates of emergency laparotomy. The aim is to study impact of delayed presentation & outcome after emergency laparotomy and associated perioperative factors.

Material And Method: An observational study was conducted in our hospital from January 2022 among 100 patients those who underwent Emergency laparotomy in the department of general surgery

Result: A total of **100** patients where included in the study. The mean age of the study population was **42 years**, with **78% being males.** The majority of patients had late presentation **(>6 hrs.**) after onset of symptoms. Preexisting Co morbidities are found **in 27**% of patients .Perforation peritonitis **(41%)** found to be most common indication for emergency laparotomy. Wound complications **(29%)** was the most common complications followed by nausea and vomiting **(24%),** chest infection**(20%).** Mortality rate was **13%** at 30 days.

Conclusions: Most of the postoperative complications were found in patients with delayed hospital presentation ,patients having any associated co morbidities . As most of the patients belongs to lower socioeconomic class from rural areas ,therefore proper health education to seek prompt medical aid, early referral and efficient transportation can reduced delayed presentation and proper preoperative resuscitation will help in better perioperative outcome of patient following emergency laparotomy

Keywords: Emergency Laparotomy, delayed hospital presentation, postoperative outcome

Introduction

Emergency laparotomy is considered as a commonly performed operation by general surgeons .It is high-risk procedure with significant postoperative morbidity and mortality. The outcome of any emergency laparotomy is directly related to underlying pathology, 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, anastomosis leak and extreme cases death. This study aimed at creating data on survival pattern and various perioperative factors influencing mortality in patients who underwent emergency laparotomy in the department of general surgery of a tertiary care hospital, New civil hospital, Surat.

Material And Method

An Observational study was conducted among 100 patients those who underwent emergency laparotomy in the Department of General Surgery, New civil

hospital Surat, over a period of 17 months (January 01, 2022-May 2023).

Methods Data of patient different age groups, socioeconomic class and sex were collected and the possible causes of emergency laparotomy were noted. A detailed history on smoking, alcohol intake, and any co morbidities like diabetes, tuberculosis, hypertension. A clinical examination was conducted and all biochemical investigations required for pre anesthetic checkup along with other investigations required for making diagnosis were done. All the patients after adequate resuscitation went under emergency laparotomy. 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 noted. They were further followed up for sequel like wound gapping and burst abdomen. Gastrointestinal complications observed during post- operative period included Enterocutaneous fistula, paralytic ileus, Intestinal obstruction, Anastomotic leak. All the patients were educated regarding chest physiotherapy and were encouraged to do spirometer. Early post operative ambulation was also encouraged. The 30 day mortality was recorded .

Result

Socio- demographic characteristics

A Total of 100 patients were included in the study .Of the study participants ,78 where males & 22 where females. Among socioeconomic class of study participants majority of them n=50 belongs to lower class, n=42 middle class, n =8 upper class. The majority of patients were American society of anesthesiologists physical status three (ASA3: n=42) where as ASA- 4(n=56) and ASA -5(n=2) respectively. 27 out of 100 patients had preoperative associated co morbidities as mentioned in (table 1) .(n=23)patients had CT scanning before emergency laparotomy for better preoperative diagnosis of pathology and decision making.

Onset of symptoms and hospital presentation

The majority of patients had late (>6 hrs.) presentations to the hospital after the onset of symptoms of the diseases. 60% patients have unstable vitals on admission . Out of 60% patients having unstable vitals on admission 40% patients needs preoperative resuscitation in form of IV Fluids, acidosis correction, electrolytes imbalance correction, Blood products, preoperative antibiotics for better perioperative outcome.

Table 1: Socio –demographic characteristics of the study participants (N=100)

Factor	Frequency
<1	7
1-18	13
19-29	20
30-45	42
50-65	13
>65	5
Comorbidities	
NO	73
YES	27
Diabetes mellitus	10
Hypertension	17

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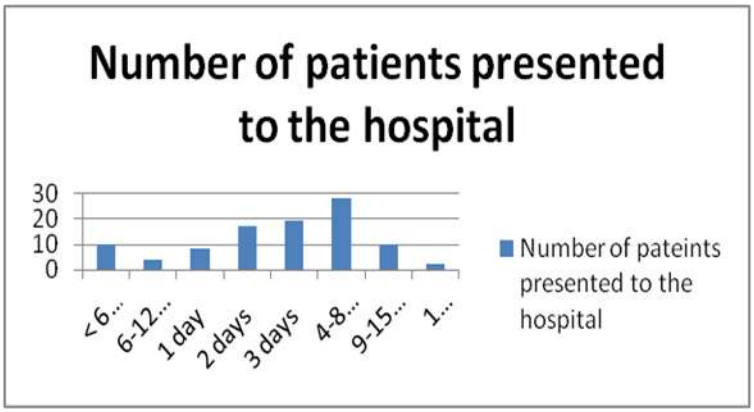
Addiction	
Smoking	28
Alcoholic	56
Tobacco	31
Socioeconomic class	
Lower	50
Middle	42
Upper	8
Preoperative CT scan	
No	77
Yes	23
Vitals on Admission	
Stable	40
Unstable	60
ASA CLASS	
ASA Class 3	**42**
ASA Class 4	**56**
ASA Class 5	**2**



	Frequency
Pre opt CVP Insertion	
No	80
Yes	20
Pre opt Resuscitation	
No	**60**

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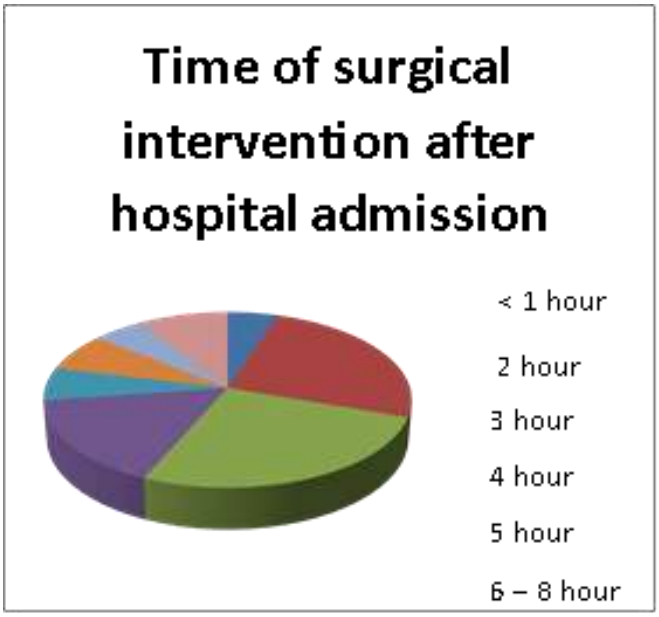
Yes	**40**

Type of surgery and factors related with surgery

Most of patients had early surgical intervention <6hrs after hospital admission according to definition of the International society of emergency laparotomy network.



Out of 100 laparotomy cases performed, majority of cases were of perforation peritonitis(n=41),while others were acute intestinal obstruction(n=19),abdominal trauma(n=11) ,peptic perforation (n=19) was the leading cause of acute abdomen , among abdominal trauma penetrating stab injury (n=8) is common factor as most of the blunt trauma abdomen cases are managed by conservative management. Mostly midline incision (89%) is used for better exposure of pathology . Consultant surgeons where involved in 79 operations. In 7 cases sudden intra operative event noticed in form of ECG changes ,sudden hypotension. The main surgical indications and type of operations are summarized below:

Indication	**No of patients**	**Male**	**Female**
Perforation peritonitis	**36**	**28**	**8**
Intestinal Obstruction	**20**	**12**	**8**
Penetrating stab injury	**11**	**10**	**1**
Blunt abdominal trauma	**6**	**5**	**1**
Ruptured appendix	**6**	**4**	**2**

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Ruptured liver abscess	**2**	**2**	**0**
Sigmoid Volulus	**4**	**3**	**1**
RTA with Intraperitoneal bladder rupture	**1**	**1**	**0**
NVD bladder rupture	**1**	**0**	**1**
Uterine dehiscence	**1**	**0**	**1**
Reexploration for anastomosis leak	**2**	**1**	**1**
Ileal atresia	**3**	**2**	**1**
Strangulated Inguinal hernia	**1**	**1**	**0**
Mesentric thrombosis	**1**	**1**	**0**
Esophageal perforation	**2**	**1**	**1**
Necrotising enterocolitis	**2**	**1**	**1**
Congenital malrotation	**1**	**1**	**0**

SURGEON	
Senior Surgeon	79
Junior Surgeon	21

Primary operation performed	**Frequency**
Grahams Patch Repair	15
Repair of perforated bowel	16
Stoma	18
Adhesiolysis	4
Sigmoidopexy	2

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Tissue repair for obstructed hernia	1
Peritoneal lavage	5
Open cholecystectomy	3
Resection and anastomosis	10
Appendectomy with abscess drainage	6
Negative laparotomy	3
Emergency splenectomy	3
Traumatic Diaphragmatic Repair	1
Bladder Repair with SPC	2
Ladd's procedure	1
Total gas trectomy with FJ With pharyngostomy	2
Hartmann's procedure	1
Nephrectomy	1
Sigmoidectomy	2
Distal gastrectomy with GJ with retrogradeduodenostomy	3
Stricturoplasty	**2**
Feeding Jejunostomy	3
Triple Bypass procedure grade 5- pancreatic injury	1

Post operative patient management

Most of patient recovery normal and passed through the recovery room after operation (n=64).

(n=36) patients have abnormal vitals and consciousness level during recovery from anesthesia, out of which (n= 5) patient where extubated with 02 support and(n =31) where directly transferred from the operation theatre to the SICU intubated. (n=38) patients needed critical care inform of mechanical ventilator support , inotropic support in post operative period .mortality is high in patient needing postoperative critical care. The variables such as age, sex, ASA status , co- morbidity , Vitals at admission, ASA CLASS ,vitals during recovery phase ,time from admission to operation, type of operation, post operative critical care have positive association with post operative mortality after laparotomy.

	Frequency

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Extubated	64
Extubated with 02 support	5
Intubated	31
Critical care needed	
No	62
Yes	38
Post operative CVP	
No	55
Yes	42
PIC LINE	3

Duration	Resuscitation		Mortality	Re exploration	Post opt critical care	Chest infection	Wound infection	Co morbidities
	Yes	No						
< 6 hours	7	3	n=1,(0.1%)	3	7	2	4	0
6-12 hours	1	3	n=1,(25%)	0	1	0	1	0
1 day	5	3	n=0,(0%)	1	4	1	4	0
2 day	5	12	n=2,(11.76%)	4	8	5	4	1
3 days	3	16	n=1,(5.26%)	3	7	4	8	1
4-8 days	14	13	n=5,(17.85%)	7	12	12	12	5
9-15 days	5	5	n=3,(30%)	5	6	4	6	2
>1 month (Sub acute obstruction,Carcinoma rectum,)	1	1	n=0,(0%)	2	1	1	1	1

Post operative morbidity and associated factors

Fever(22),nausea and vomiting (24) , wound infection (29) were the commonly observed early complications in the post –operative period of emergency laparotomy. Patient presentation to hospital is delayed leading to increase morbidity after emergency laparotomy & is closely related to the presence of comorbid conditions like chronic obstructive pulmonary disease , diabetes mellitus.

Post operative	**No of patients**

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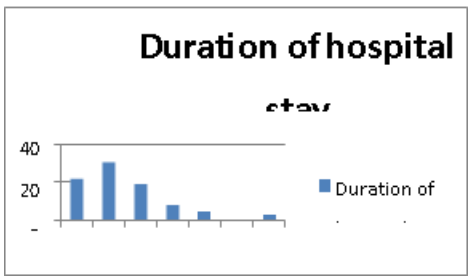
Complications	**(out of 100)**
Fever	22
Nausea and Vomiting	24
Chest Infection	20
Wound infection	29
Paralytic Ileus	7
Wound Dehiscence	20
Burst Abdomen	5
Thrombophlebitis	16
Urinary tract infection	11
Upper respiratory tract infection	15
Anastomotic leak	15
Stoma related complications(edema ,prolapsed , peristomal abscess ,blackening)	6 Peristomal abscess 2 Blackening 2 Stomal diarrhea-1 Retraction 1
DIC/sepsis	14
Enterocutaneous fistula	5

Average Hospital Stay

In our setup overall average hospital stay period is <14 days. As wound complications is one of the most common complications . 14 patients where wound kept open during first surgery and posted for secondary suturing .68 patients have healing by primary intention,30 patients have healing secondary intention,2 patients have healing by tertiary intention.



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Postoperative patient mortality and associated factors

30 Day mortality after emergency laparotomy is n=13 out of which 8 are male and 5 are female. males has the higher rate of mortality compared to females. 14 Patient having post operative DIC & Sepsis out of which mortality is n=7.

Mortality v/s time of presentation

The time of presentation of patients ranged from < 6 hours to 1 month. Most of the patients presented after 3 days. Mortality increased correspondingly with delay in presentation. It was n=1(7.69%), n=3(23.07%) for < 24 hours, n=1(7.69%%) for 3 days and n=8(61.53%%)for 4 days and above.

Age Group	**Neonatal**	**<20 year**	**20-40 year**	**40-60 years**	**60 years and above**
No of patients expired	0,(n=6)	0,(n=15)	6,(n=47)	3,(n=22)	4,(n=10)
Mortality (%)	0%	0%	12.76%	13.63%	40%

Pneumonia found in 14 patients leading to death in 4 patients. Cardiac complications were found in 3 patients in the form of arrhythmia in 02 patients and M.I in 1 patient. Death occurred in 13 patients out of which 3 were due to cardiorespiratory arrest, 2 were due to pneumonia coexisting with DIC in 2 , 5 were due to septic shock, 2 due to hypovolemic shock..

Out of 13 deaths occurred preexisting medical comorbidity was found in 8 patients. Out of 13 mortality 6 patients was in SICU and 3 patients were shifted to SICU before mortality ,4 patients died in ward. Mortality rate are found to be maximum in geriatric patients >60years (40%) with associated comorbidities

Conclusion

Most of the postoperative complications were found in patients with delayed hospital presentation ,patients having any associated co morbidities. Factors associated with postoperative morbidity were preoperative comorbidities, Anesthetists preoperative opinion on post operative patient outcome ,level of consciousness , post operative critical care. As most of the patients belongs to lower socioeconomic class from rural areas ,therefore proper health education to seek prompt medical aid, early referral and efficient transportation can reduced delayed presentation and proper preoperative resuscitation will help in better perioperative outcome of patient following emergency laparotomy.

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