

Prospective study of management in surgical emergency laparotomy patients in Alexandria Main University Hospital

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Background

Emergency laparotomies form a broad group of time-sensitive surgeries done on variable patient population.

Purpose

The purpose of this study was to evaluate the incidence and details of emergency laparotomy, its complications, and mortality rates.

Patients and methods

This prospective study was held in Alexandria University Hospitals in the duration between April 2022 and September 2022 and included all patients were subjected to emergency laparotomies (481 patients). Preoperative, operative, and postoperative data were recorded.

Results

Out of 481 patients, 398 patients had nontraumatic causes and 83 patients had traumatic cause. The commonest nontraumatic cause was appendicitis, and the commonest traumatic cause were stab and road traffic accident. Most of trauma patients were males and had younger age than nontrauma groups. Intraoperative complications were reported at comparable frequencies between both groups and the commonest complications were atrial fibrillation (AF) and failed extubation. Postoperative complications were higher among nontrauma group and septic shock was the main complication. Postoperative mortality was higher among nontrauma group.

Conclusion

Emergency laparotomies were indicated for nontraumatic causes at higher rate the traumatic cause with higher postoperative complications and mortality rates.

Keywords:

emergency, laparotomy, surgical

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Introduction

Emergency laparotomies form a broad group of time-sensitive surgeries done for variable indications. Broadly, they can be divided into trauma and nontrauma laparotomies. Most common nontrauma surgeries include laparotomies done for intestinal perforation and obstruction, while trauma laparotomies are done for hemorrhage control as well as control of peritoneal spillage after bowel injury [1].

Average mortality rate of emergency laparotomies range from 10 to 18% in different studies which is higher than elective surgeries. There is significant global inequality among different countries in terms of approach to standard emergency surgical facilities, with lower income countries sharing the highest burden of surgical mortalities [2].

Regular perioperative care pathways have been used to improve outcome of these surgeries in many high-income countries. As these countries already have

separate well-developed trauma care network, only nontrauma laparotomies (acute abdomen) are included in their audits and care pathways for emergency laparotomies. The 30-day mortality among emergency laparotomy patients reduced from 11% in first report in 2015 to 9.6% in fifth report in 2019 [3].

Patients and methods

Study approval and design

This prospective study gained an approval from the Institutional Review Board (IRB) of the Alexandria Faculty of Medicine. An informed consent was obtained from the participants after complete explanations of the rationale, benefits, and possible

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complications of the indicated laparotomy. The consent also included that the laparotomy data will be included in the current study.

Settings and duration

The material of this study was recruited from Emergency Department, Alexandria University Hospitals, Alexandria, Egypt over a 6 months duration, from April 2022 till September 2022.

Patients

All patients subjected to emergency laparotomy (trauma and surgical emergency) in the previous time interval were included, who were older than 12 years, both sexes, and underwent urgent or emergent laparotomy. While patients younger than 12 years, elective surgeries, concomitant central insult affecting mortality, obstetric procedures related to cesarean section, or its complication and iatrogenic injuries were excluded from the study.

Methods

Data of all patients subjected to emergency laparotomy performed in the Main Alexandria University Hospital emergency operative theatre will be collected. Sources of data will include operating room registry files, patients files (ED report, surgery report, anesthesia report, radiological and laboratory findings, operative reports, . . . , etc.), and direct communication with the patients or their relatives.

Statistical analysis

After data collection, statistical analysis and correlative relations were performed. Data were to the computer end analyzed using IBM SPSS statistics for windows, Version 23.0. Armonk, NY: IBM Corp. Comparisons between groups for categorical variables were assessed using χ^2 test (Monte Carlo correction). Continuous data were assessed using Student *t* test, significance of the obtained results was judged at the 5% level.

Results

Characterization of the included patients

A total of 481 patients were subjected to emergency laparotomy during the period of the study. The total number of patients were subjected to emergency laparotomy for nontraumatic causes was 398 (82.75%) of the studied patients. However, only 83 (17.25%) were subjected to emergency laparotomy for traumatic causes. About 9.8% of patients were referred by ambulance with higher percent of patients in trauma group (16.9%) than nontrauma group (8.3%) with statistically significant difference ($P=0.017$). There

were statistically significant differences between both groups as regard sex distribution with higher male patients among trauma group (nontrauma vs. trauma; 62.8 vs. 91.6%; $P<0.001$). Patients in trauma group had lower mean age than nontrauma with statistically significant differences (nontrauma vs. trauma; 44.99 ± 18.35 vs. $32/04\pm 11.83$; $P<0.001$).

The largest number of laparotomies (102 laparotomies with a percent of 20%) was performed in July. While September was the least in the number of laparotomies performed (60 laparotomies, 12.5%) with no statistically significant differences between both groups. Most of laparotomy surgeries were performed on Saturday with no significant differences between both groups. Only on Tuesday, higher percent of laparotomy was done in nontrauma group than trauma group with significant differences (nontrauma vs. trauma: 16.3 vs. 6%; $P=0.015$). Most of the nontrauma cases were referred in the morning shift (51.5%) whereas most of the trauma cases were referred in night shift (65.1%) with statistically significant differences ($P=0.006$). Mean duration of Emergency Room (ER) stay was 0.79 ± 1.96 h with no statistically significant differences between both groups. No significant differences were found between both groups as regard to median values of National Early Warning Score (NEWS) score. Higher number of patients had associated comorbidities in nontrauma group. However, higher percent had associated comorbidities among trauma group with statistically significant difference ($P=0.002$). Diabetes and hypertension had higher frequency among trauma group with statistically significant difference. Higher percent of nontrauma group had history of laparotomy with statistically significant difference (25.9 vs. 6%; $P<0.001$) (Table 1).

Characterization of nontrauma group

Appendicitis was the commonest cause for nontraumatic laparotomies (35.7%) followed by hernia (24.4%) and intestinal obstruction (17.3%). Other indications of low frequencies were perforated peptic ulcer (8.8%), mesenteric vascular occlusion (5.3%), intestinal perforation (3%), diverticulitis (2.5%), and intra-abdominal abscess (2%). Table 2 illustrates characterizations of different nontraumatic causes for laparotomies.

Characterization of trauma group

As regards trauma causes for laparotomies, about 71.1% of patients had penetrating trauma (mostly stab '68.7%'), whereas 28.9% of patients had blunt trauma (mostly road traffic accident '16.9%' and falling from height '4.8%' or assault '3.6%'). Mean

Table 1 Characteristics of laparotomy patients between trauma and nontrauma groups

	Nontrauma [n (%)]	Trauma [n (%)]	P value
Number (%)	398 (82.75)	83 (17.25)	
Arrival by ambulance	33 (8.3)	14 (16.9)	0.017
Male sex	250 (62.8)	76 (91.6)	<0.001
Age (years) (mean±SD)	44.99±18.35	32.04±11.83	<0.001
Month of arrival to ER			
April	56 (14.1)	8 (9.6)	0.280
May	61 (15.3)	18 (21.7)	0.155
June	83 (20.9)	13 (15.7)	0.282
July	83 (20.9)	19 (22.9)	0.680
August	68 (17.1)	12 (14.5)	0.559
September	47 (11.8)	13 (15.7)	0.334
Day of arrival to ER			
Saturday	71 (17.8)	14 (16.9)	0.833
Sunday	50 (12.6)	12 (14.5)	0.639
Monday	59 (14.8)	13 (15.7)	0.846
Tuesday	65 (16.3)	5 (6.0)	0.015
Wednesday	44 (11.1)	14 (16.9)	0.139
Thursday	53 (13.3)	14 (16.9)	0.395
Friday	56 (14.1)	11 (13.3)	0.845
Time of arrival to ER			0.006
Long: 9 am : 9 pm	205 (51.5)	29 (34.9)	
Night: 9 pm : 9 am	193 (48.5)	54 (65.1)	
Duration of ER stay (h) (median, IQR)	0.0 (0.0–0.67)	0.0 (0.0–0.92)	0.2
NEWS score (points) (median, IQR)	1.0 (0.55–4.0)	2.0 (1.0–4.0)	0.076
Comorbidities			
Diabetes	219 (55)	61 (73.5)	0.002
Hypertension	62 (15.6)	2 (2.4)	0.001
Renal	81 (20.4)	1 (1.2)	0.001
Cardiac	11 (3.8)	0	0.87
Hepatic	25 (6.3)	0	0.55
Previous laparotomy	23 (5.8)	0	0.69
Previous laparotomy	103 (25.9)	5 (6)	<0.001

ER, Emergency Room; NEWS, National Early Warning Score.

duration between trauma and arrival to ER was 1.31 ±0.7 h. e-FAST was done for 30 patients (6.2% of total and 36.1% of trauma cases). Positive results were found in 21 out of 30 cases. Different diagnosis after trauma were described in Table 3.

Preoperative and intraoperative details

Most of the nontrauma patients were American society of anesthesia (ASA) class I (44.5%), whereas most of trauma patients were class II (68.7%) with statistically significant differences ($P=0.005$; $P<0.001$). Postoperatively, higher percent of nontrauma patients were referred to the ICU with statistically significant difference (16.8 vs. 7.2%; $P=0.027$). The incision in most of trauma patients was midline (94%), whereas midline incision was done in 52.8% of nontrauma patients followed by McBurney (29.9%) with statistically significant difference ($P<0.001$). Intraoperative complications were reported in 6.5% of nontrauma patients and 4.8% of trauma patients with no statistically significant difference. The complication of the highest frequency was shock (34.9%) (Table 4).

Postoperative complications

Postoperative complications happened in 18.5% (89 patient) from all studied patients. It was more in nontrauma group representing 21.4% (85 patients) while in trauma group it occurred in 4.8% (four patients). This difference between both groups was statistically significant. In nontrauma group the most common complication was septic shock in 19.1% from total patients and 20% from nontrauma group (17 patients). Other complications mentioned in detail in Table 6. In trauma group, four patients had postoperative complications were hematoma at colostomy (one patient, 25%), leakage anastomosis (one patient, 25%), recurrence of diaphragmatic hernia (one patient, 25%), and failed extubation with aspiration pneumonia in patient with diving injury (one patient, 25%) (Table 5).

Postoperative mortality

Through the study four patients died intraoperative and one patient died in the recovery room in operating theater. Sixty-two (12.9%) patients died postoperative. Postoperative mortality was more in the nontrauma

Table 2 Characterizations of nontraumatic causes for laparotomies

Diagnosis	Nontrauma (N=398)			Hospital stays (mean±SD)
	n	% of the condition	% of the total	
Appendicitis	142	100	35.7	3.51±2.20
Acute appendicitis	122	85.9	30.7	3.01±1.43
Appendicitis with perforation	14	9.9	3.5	6.71±3.27
Appendicitis with abscess	6	4.2	1.5	6.17±3.92
Hernia	98	100	24.6	7.14±6.09
Groin hernia	38	38.8	9.5	5.39±2.86
Incarcerated inguinal hernia	37	37.8	9.3	5.41±2.90
Incarcerated femoral hernia	1	1.0	0.3	5.0
Internal hernia				
Incarcerated internal hernia	3	3.1	0.8	3.33±0.58
Ventral hernia	57	58.2	14.3	
Incarcerated paraumbilical hernia	37	37.8	9.3	8.24±6.66
Incarcerated ventral hernia	4	4.1	1.0	3.0±2.83
Incarcerated incisional hernia	8	8.2	2.0	15.4±9.44
Incarcerated umbilical hernia	8	8.2	2.0	5.63±5.45
Intestinal obstruction	69	100	17.3	12.6±10.3
Adhesive				
Adhesive intestinal obstruction	22	31.9	5.5	11.9±11.2
Nonadhesive	47	68.1	11.8	12.9±9.9
Cecal volvulus	1	1.4	0.3	37.0
Intussusception	2	2.9	0.5	12.0±8.49
Stricture	2	2.9	0.5	7.0±0.0
Malignant intestinal obstruction	34	49.3	8.5	13.8±10.3
Sigmoid volvulus	5	7.2	1.3	8.6±3.9
Gall stone ileus	1	1.4	0.3	6.0
FB intestinal obstruction	2	2.9	0.5	7.0±0.0
Perforated peptic ulcer	35	100	8.8	8.57±5.28
Mesenteric vascular occlusion	21	100	5.3	14.6±12.4
Arterial	9	42.9	2.3	17.9±16.9
Venous	12	57.1	3.0	12.1±7.4
Intestinal perforation	12	100	3.0	14.6±15.5
Ulcerative colitis intestinal perforation	4	33.3	1.0	11.50±1.0
Chron's intestinal perforation	2	16.7	0.5	7.0±4.2
TB intestinal	2	16.7	0.5	22.0±25.5
Malignant intestinal perforation	2	16.7	0.5	5.50±4.9
Sigmoid volvulus intestinal perforation	1	8.3	0.3	53.0
Idiopathic intestinal perforation	1	8.3	0.3	7.0
Intra-abdominal abscess	8	100	2.0	9.38±8.72
Nonspecific intra-abdominal abscess	3	37.5	0.8	15.67±12.50
Epigastric intra-abdominal abscess	2	25.0	0.5	8.50±0.71
Groin intra-abdominal abscess	2	25.0	0.5	4.0±0.0
Splenic intra-abdominal abscess	1	12.5	0.3	3.0
Diverticulitis	10	100	2.5	15.0±15.26
Miscellaneous	3	100	0.8	11.3±4.4
Rupture gall bladder	1	33.3	0.3	7.0
Cancer head pancreas	1	33.3	0.3	15.0
Perianal abscess	1	33.3	0.3	12.0

group (61 patients, 15.3%) than in the trauma group (one patient, 1.2%). There was a statistically significant difference between both groups. In trauma group, the patient died due to chest infection (with diving trauma due to aspiration pneumonia). In nontrauma group, the most common cause was septic shock in 28 (45.9%) patients. The second common cause was sepsis in 11

(18.0%) patients. The third rank was for showers of pulmonary embolism (six patients, 9.7%) and chest infection (six patients, 9.7%). Hypovolemic shock was the cause of mortality in five (8.2%) patients. While cardiogenic shock was the cause in four (6.6%) patients. Two (3.3%) patients died due to cerebrovascular stroke (Table 6).

Table 3 Distribution of the diagnosis in traumatic laparotomies patients

Modes	Trauma (N=83) [n (%)]	Diagnosis	n (%)
Penetrating	59 (71.1)		
Gun shot	1 (1.2)	Gunshot	1 (1.2)
Stab	57 (68.7)	Negative exploration penetrating stab abdomen	39 (47.0)
		Splenic tear	5 (6.0)
		Liver laceration	2 (2.4)
		Parietal hematoma	3 (3.6)
		Renal tear	2 (2.4)
		Traumatic intestinal injury	4 (4.8)
		Traumatic stomach injury	1 (1.2)
		Traumatic GB injury	1 (1.2)
Falling on sharp object	1 (1.2)	Negative exploration penetrating stab abdomen	1 (1.2)
Blunt	24 (28.9)		
RTA	14 (16.9)	Diaphragmatic hernia	1 (1.2)
		Splenic tear	7 (8.4)
		Liver laceration	1 (1.2)
		Rectal tear	2 (2.4)
		Traumatic intestinal injury	2 (2.4)
		Intestinal perforation+rupture urinary bladder	1 (1.2)
Assault	3 (3.6)	Rectal tear	3 (3.6)
FFH	4 (4.8)	Splenic tear	2 (2.4)
		Liver laceration	1 (1.2)
		Traumatic intestinal injury	1 (1.2)
Diving	1 (1.2)	Traumatic intestinal injury	1 (1.2)
Falling of object on abdomen	2 (2.4)	Diaphragmatic hernia	1 (1.2)
		Rupture urinary bladder	1 (1.2)

FFH, falling from height; RTA, road traffic accident.

Table 4 Comparison of preoperative and intraoperative details between both groups

ASA score			
I	177 (44.5)	23 (27.7)	0.005
II	167 (42.0)	57 (68.7)	<0.001
III	45 (11.3)	2 (2.4)	0.013
IV	9 (2.3)	1 (1.2)	1.00
Postoperation admission			
ICU preoperative	31 (7.8)	6 (7.2)	0.862
ICU postoperative	67 (16.8)	6 (7.2)	0.027
Died in recovery	1 (0.3)	0	1.00
Intraoperative complications	26 (6.5)	4 (4.8)	0.56
Intraoperative complications			
Pneumothorax	1 (3.8)	0	1.00
AF	5 (19.2)	0	1.00
Failed extubation	3 (11.5)	1 (25.0)	0.45
Shock	9 (34.6)	0	0.287
Arrest	3 (11.5)	0	1.00
Died	1 (3.8)	3 (75.0)	0.004
Died in recovery	1 (3.8)	0	1.00
Metabolic acidosis	2 (7.7)	0	1.00
Pulmonary edema	1 (3.3)	0	1.00
Iatrogenic intestinal tear	1 (3.8)	0	1.00
Pneumomediastinum	1 (3.8)	0	1.00

AF, atrial fibrillation; ASA, American society of anesthesia.

Discussion

Our study is an observational noninterventional study. The total number of patients were subjected to

emergency laparotomy for nontraumatic causes was 398 representing 82.75% of the studied patients. However only 83 (17.25%) were subjected to emergency laparotomy for traumatic causes. In the study of Timan *et al.* [4], who compared effect of perioperative measurement on postoperative mortality, trauma was the cause in 15 (2.2%) patients in interventional group, while in control group was 20 (3.0%) patients.

In the current study, the mean age of the studied patients was 42.76±18.07 years. The mean age in trauma group was 32.04±11.83 which is lower than nontrauma as young age group are more exposed to trauma. In the study of Ahmed *et al.* [1] found the mean age group was 63.0±15.8 of the included patients. In Goh *et al.* [5] the mean was near to us (49±12.02) as they also excluded patients under 16 years of age. While in a study by Alder *et al.* [6] and the mean age was higher than 75 years for patients who underwent emergency laparotomy. In the current study male was more than female and male : female ratio was 326 : 155, with a male percent of 67.8% and female percent of 32.2%. While in the sixth NELA audit the male percent was 48% and female percent was 52% [7], and in the seventh NELA audit 49.2% were male and 50.8% were female [8].

Table 5 Postoperative complication

	Nontrauma (N=398) [n (%)]	Trauma (N=83) [n (%)]	P
Postoperative complication	85 (21.4)	4 (4.8)	<0.001
Septic shock	17 (20.0)	0	<0.001
Pneumothorax	2 (2.4)	0	
Hypovolemic shock	3 (3.5)	0	
Burst abdomen	4 (4.7)	0	
Sepsis	2 (2.4)	0	
DVT	1 (1.2)	0	
Wound infection	5 (5.9)	0	
Hematoma at colostomy	1 (1.2)	1 (25.0)	
CVS	2 (2.4)	0	
Wound dehiscence	3 (3.5)	0	
Uncontrolled hyperglycemia	1 (1.2)	0	
Leakage anastomosis	7 (8.2)	1 (25.0)	
Prolapsed stoma	2 (2.4)	0	
Necrotic stoma	6 (7.1)	0	
Intra-abdominal abscess	4 (4.7)	0	
High output stoma	1 (1.2)	0	
Renal failure	1 (1.2)	0	
GIT bleeding	1 (1.2)	0	
Respiratory failure	2 (2.4)	0	
Recurrence of diaphragmatic hernia	0	1 (25.0)	
Septic shock+failed intubation	1 (1.2)	0	
Bowel perforation	1 (1.2)	0	
Septic shock, chest infection	2 (2.4)	0	
Sepsis, chest infection	1 (1.2)	0	
Leakage anastomosis, intestinal gangrene	1 (1.2)	0	
Bleeding not from surgery, hypovolemic shock	1 (1.2)	0	
Hypovolemic shock, wound dehiscence	1 (1.2)	0	
Burst abdomen, sepsis, DVT, leakage anastomosis	1 (1.2)	0	
Sepsis, wound infection	2 (2.4)	0	
DVT, metabolic complication	1 (1.2)	0	
Postoperative ileus	1 (1.2)	0	
Failed intubation	3 (3.5)	0	
Failed intubation+bed sores	1 (1.2)	0	
Recovered intubated+arrest during transferee	1 (1.2)	0	
Failed extubation+aspiration pneumonia	0	1 (25.0)	
Cardiogenic shock	1 (1.2)	0	
DVT+PE	1 (1.2)	0	

CVS, cerebrovascular stroke; DVT, deep vein thrombosis; GIT, gastrointestinal tract; PE, pulmonary embolism.

Regarding the duration of hospital stay, in our study the mean duration was 7.79 ± 8.28 days with a minimum of 1 day and a maximum of 55 days with a median of 5

days. In the study of Lasithiotakis *et al.* [9] the median of hospital length of stay in 606 patients, was 10 days, while in the study of Ogbuanya and Ugwu [10] 50% of

Table 6 Postoperative mortality

	Nontrauma (N=398) [n (%)]	Trauma (N=83) [n (%)]	P
Postoperative mortality	61 (15.3)	1 (1.2)	<0.001*
Cause of death	(N=61)	(N=1)	
Septic shock	28 (45.9)	0	0.372
Hypovolemic shock	5 (8.2)	0	
Shower of pulmonary embolism	6 (9.8)	0	
CVS	2 (3.3)	0	
Chest infection	5 (8.2)	1 (100.0)	
Sepsis	11 (18.0)	0	
Cardiogenic shock	4 (6.6)	0	

CVS, cerebrovascular stroke.

*statistically significant difference between non-trauma and trauma groups.

the patients stayed for 4–7 days and only 11.6% stayed more than 14 days. In the study of Jeppesen *et al.* [11] the median of hospital stay was 7 days and extend to 16 days in major laparotomies.

In the current study, the indications of laparotomy in nontrauma group are illustrated as follows. The most common indication was acute appendicitis as 142 (35.7%) patients followed by incarcerated hernias in 97 (24.4%) patients. Similar to our study, in Rickard *et al.* [12] the most common indications for EL were appendicitis (133 patients, 21%), peptic ulcer disease (101 patients, 16%), and hernia (74 patients, 12%). In the study of Goh *et al.* [5], the most common indication was perforated gastric/duodenal ulcer in 34 patients, the second common indication was colorectal cancer (obstructed/perforated) in 31 patients. While in the study of Trotter *et al.* [13] the most common indication was intestinal obstruction in 141 patients, the second common indication was intestinal perforation in 83 patients.

In blunt trauma group, the most common mode of trauma was road traffic accident in 14 (16.9%) patients followed by falling from height in four (4.8%) patients. Similar to our study, the results of the study of Poulton *et al.* [2] showed that, in royal London hospital blunt trauma were more common than penetrating. Sixty-five (75.5%) patients were due to blunt trauma, while 21 (24.4%) patients were due to penetrating trauma. In Pooria *et al.* [14], blunt trauma was more common as it was the cause in 57.41% than penetrating trauma which was the cause in 42.7%. On the other contrast, in the study of Bentin *et al.* [15] penetrating trauma were more common in 65 (66.3%) patients. While blunt were the cause in 33 (33.7%) patients in penetrating group, stab wound was the most common mode of trauma which is similar to our studied patients.

In the present study, e-FAST was done in only 30 patients with a percent of 36.1% and it showed positive findings in 70% (21 patients). Our results were close to the results in the study of Bentin *et al.* [15]. Results of the current study showed that only 15 (3.1%) patients did not have any radiological investigation after admission.

In the current study the distribution of studied patients according to ASA score was, most of the patients had a low score (I, II) as 200 (41.6%) patients were score I, 224 (46.6%) patients were score II, only 12% had a high score (III, IV) as 47 (9.8%) patients were score III, and only 10 (2.1%) patients were score IV. In the study of

Oumer *et al.* [16] most patients (496 patients, 95.8%) were low score (I, II) and only 22 (4.2%) patients were scores III, IV [16].

Postoperative complications happened in 18.5% (89 patient) from all studied patients. It was more in nontrauma group representing 21.4% (85 patients), while in trauma group it occurred in 4.8% (four patients). In nontrauma group the most common complication was septic shock in 21.3% from total patients and 22.4% from nontrauma group (19 patients). In trauma group four patients had postoperative complications were hematoma at colostomy.

In the study of Ogbuanya and Ugwu [10], the most common complication was wound infection in 39.7% (349 patients), the second common cause was intra-abdominal collection in 10% (88 patients). Also, in Ylimartimo *et al.* [17] the most common complication was wound infection in 16.3% (110 patients).

In our study, 47 patients died intraoperative and one patient died in the recovery room in operating theater. Sixty-two (12.9%) patients died postoperative. Postoperative mortality was more in nontrauma group (61 patients, 15.3%) than in trauma group (one patient, 1.2%). This showed significant statistical difference between both groups.

The results regarding postoperative mortality were near to our study. The study of Oumer *et al.* [16] showed that out of 518 patients, the mortality rate was 42 (8.1%). Also, in the study of Ahmed *et al.* [1] the percent of postoperative mortality was like our study as it was 12%. The in-hospital mortality rate in the study of Kassahun *et al.* [18] was 38% (295 of 776) in the emergency group which was higher than in our study.

In conclusion, most cases of laparotomies were secondary to nontraumatic causes especially appendicitis followed by hernia. While the commonest traumatic indication was stab wounds and road traffic accident. Most of cases were referred in night shift. Most of cases could be diagnosed by eFAST. The findings were matched to clinical and operative findings. Intraoperative complications were reported in 6.2% and the commonest complication was shock. Postoperative complications were reported in 18.5% of patients with higher incidence among nontrauma patients. Mortality rate was about 12.9% with higher rate among nontrauma group.

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Conflicts of interest

There are no conflicts of interest.

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