

Research Article

A prospective study on geriatric abdominal surgical emergencies

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ABSTRACT

Background: Geriatric population is a special subgroup of population undergoing emergency abdominal surgeries. Both higher age group and emergency surgical procedure are considered as high risk factors. In this study, we study the most common cause for geriatric population to undergo an emergency abdominal surgery and the therapeutic outcomes.

Methods: All the patients aged more than 60 years coming to surgical department, BLDEU's hospital with acute abdominal conditions. Study period was from Jan 2010 to Jan 2013. All patients aged more than 60 years old admitted with abdominal emergency conditions in department of surgery. Geriatric patients coming with blunt trauma of abdomen also included. Exclusion criteria were immunocompromised patients.

Results: 128 patients aged 60 years or more who presented with abdominal emergency surgical conditions were studied. Most common cause for emergency abdominal surgery was perforated peptic ulcer (38%) followed by intestinal obstruction (17%). The most common post-operative complication was surgical site infection (29%). Mortality rate was 17%. Most common cause of death was septic shock with multi organ dysfunction.

Conclusion: Geriatric population is an important subgroup of population undergoing emergency abdominal surgeries. Most common cause is peptic ulcer perforation followed by intestinal obstruction due to adhesions. More than the age per say, the delay in presentation may be the cause for mortality in this age group. The therapeutic outcome in patients with co morbid factors like hypertension and diabetes mellitus in control, were similar to other patients.

Keywords: Geriatric emergencies, Acute abdomen

INTRODUCTION

Characteristics of high-risk population;¹ Elderly, Co morbid conditions, Needing emergency surgery (no time for optimisation). Life expectancy and the geriatric population have increased steadily in recent decades. By 2030, people more than 65 years of age will account for 20% of overall population.^{2,3} Our society is continuing to age and with luck, fortunately this trend is continuing. Advances in healthcare systems have enabled people to live longer and to remain healthy for a significantly greater amount of time. Today, major surgical operations are offered to increasing numbers of geriatric patients. As

in other surgical specialties, the frequency of digestive operations performed in elderly patients, and even in subgroups of older patients (i.e. ≥ 80 or ≥ 85 years) has increased.³ Senescence or physiological ageing is decreased functional reserve of critical organ systems resulting in decreased ability in coping with operative stress.³ Patients >65 years old account for approximately 50% of all emergent operations and 75% of operative mortality.³ Geriatric patients are often viewed as high-risk surgical candidates. Consequently, elective surgery may not be performed, with the result that a potentially treatable disease process may develop into an acute catastrophic event.^{2,3} Surgery in geriatrics poses unique

challenge to surgeons and anaesthetists. There are certain types of age related problems in elderly that may affect the outcome of surgery.⁵ Gastrointestinal diseases are a frequent cause of morbidity, mortality and hospital admissions in the geriatric.⁶ They present with subtle clinical manifestations and life threatening complications.^{2,3,5}

Objectives

Abdominal surgeries in geriatric population are common in general surgery. The study was conducted to evaluate:

1. The common causes for emergency abdominal surgeries in geriatric patients.
2. The therapeutic outcome and effect of co-morbid conditions on the same.

METHODS

Source of data

All the patients aged more than 60 years coming to surgical department at BLDEU's hospital with acute abdominal conditions. Study was conducted from Jan 2010 to Jan 2014.

Method of collection of data

Patients aged more than 60 years old admitted with abdominal emergency conditions in our hospital, history noted, with emphasis on past history of surgeries, chronic medical illnesses. Thorough clinical examination was done. Their management, course of treatment, effect of co-morbid conditions on the course, events in operative and post-operative period studied.

Inclusion criteria

All patients aged more than 60 years old admitted with abdominal emergency conditions in department of surgery, geriatric patients coming with blunt trauma of abdomen also included.

Exclusion criteria

Immunocompromised patients

Finding out the common causes for abdominal surgical emergencies in elderly and identification of effect of co-morbid factors can help us to be better prepared and to provide better care to elderly patients. Investigations or interventions in this study are according to routine standardized protocol. There are no animal experiments involved in this study. These routine investigations were done and repeated as per patient requirements:

1. Complete blood count, BT, CT.

2. Blood group, Rh typing.
3. Urine-sugar, albumin and microscopy.
4. Random blood sugar, serum creatinine, serum albumin, blood urea, prothrombin time.
5. Electrocardiogram and chest X-ray.
6. 2d echocardiogram, as and when required.
7. X-ray erect abdomen.
8. Ultrasonography of abdomen and pelvis.
9. Tests of detect infection with human immunodeficiency virus and hepatitis B virus (in accordance to universal safety precautions).

RESULTS

128 patients aged 60 years or more who underwent emergency abdominal surgery were studied. Their preoperative status and post-operative outcomes were noted.



Figure 1: Intra operative photograph of 60 year old patient with pre pyloric perforation.



Figure 2: Ileal perforation with flakes in a 70 year old male patient.

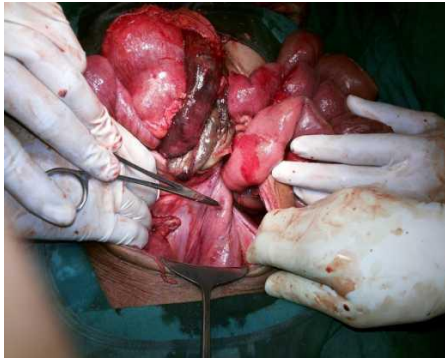


Figure 3: Post hysterectomy adhesions leading to small bowel obstruction and vascular compromise.



Figure 4: Case of strangulated inguinal hernia with gangrene of a segment of ileum. Underwent resection and primary end to end anastomosis.



Figure 5: Gangrenous gall bladder that lead to generalized peritonitis in 60 year old patient.

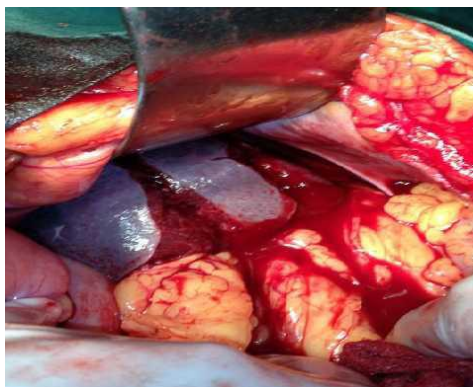


Figure 6: A case of blunt abdominal trauma that lead to grade 3 splenic injury.

The total abdominal emergency surgeries conducted in department of surgery were 814, out of which 128 were in geriatric age group (13%).

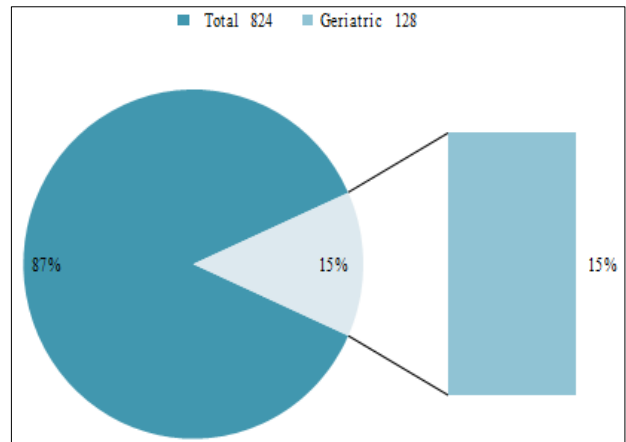


Figure 7: Percentage of geriatric patients undergoing emergency abdominal surgeries.

Age and sex incidence

Highest numbers of patients were in the age group of 60 to 65 years. 2 patients were aged 80 years. The distribution was as follows.

Table 1: Age distribution.

Age	Patients
60 - 65 years	76 (59.38%)
66 - 70 years	28 (21.88%)
71 - 75 years	12 (9.38%)
>75 years	12 (9.38%)

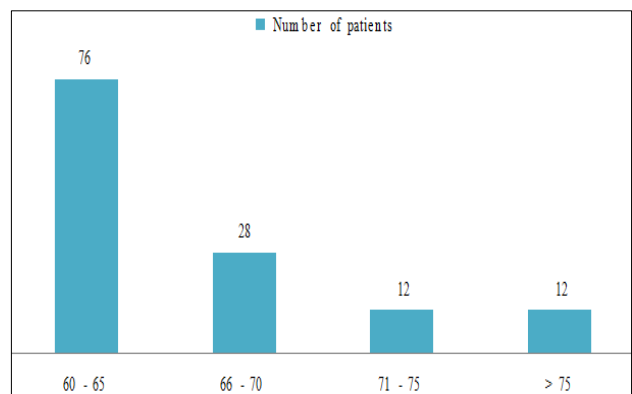


Figure 8: Age distribution of patients.

- Mean age of the patients studied is 67 years; range is 60-80 years.
- 92 (71.88%) were male patients and 36 (28.12%) were female patients. Male to female ratio is 1:2.5.

Table 2: Incidence of various abdominal emergencies in geriatric age group.

Etiology	Cases	Percentage
Perforated peptic ulcer	48	37.5
Obstruction due to adhesions	22	17.19
Ileal perforation	10	7.8
Cholecystitis	10	7.8
Appendicitis	16	12.5
Bowel gangrene	08	6.25
Trauma	04	3.125
Hernia	06	4.68
Malignant obstruction	02	1.56
Gastric volvulus	02	1.56
Ruptured liver abscess	02	1.56

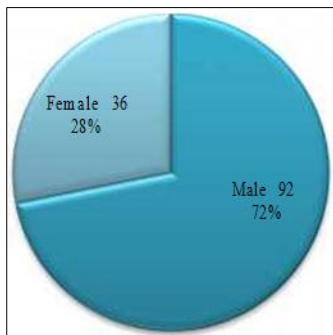


Figure 9: Sex incidence of emergency abdominal surgeries.

Table 3: Incidence of co-morbidities.

	Cases	Percentage
Diabetes mellitus	34	26.56%
Chronic obstructive lung disease	34	26.56%
Hypertension	22	17.19%

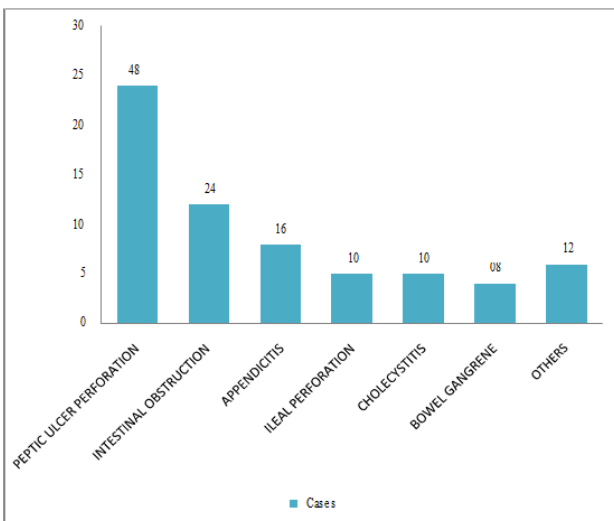


Figure 10: Incidence of various abdominal emergencies in geriatric age group.

Table 4: General physical examination.

	Patients
Pallor	58 (45.3%)
Icterus	2 (1.56%)
Pedal oedema	18 (14.1%)
Dehydration	28 (21.87%)

Pallor was the most common finding 45.3% and dehydration 21.8%.

Pulse rate, blood pressure

28 patients had tachycardia. It was associated with hypotension in 10 patients. Pulse and blood pressure was not recordable in 2 patients.

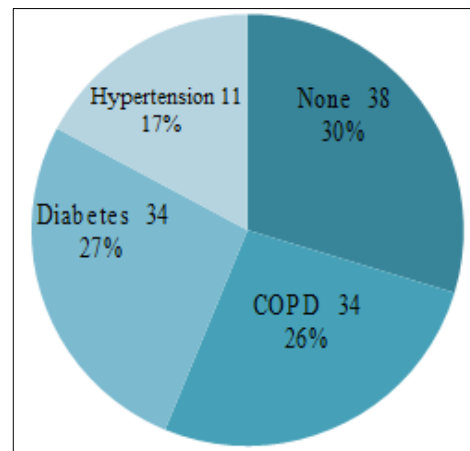


Figure 11: Incidence of co-morbidities.

- Past history of abdominal surgeries was present in 22 patients (17.19%).
- History of blunt trauma abdomen was present in 4 patients (3.12%).

Haemoglobin

Table 5: Haemoglobin values.

Value	
<6 g%	0
6-8 g%	10 (7.81%)
8-10 g%	18 (14.1%)
>10 g%	100 (78.1%)

WBC counts

48 patients (37.5%) had leucocytosis (WBC counts >11000 cells/cumm).

08 patients (6.25%) had leucopenia (WBC counts <4000 cells/cumm).

Biochemical investigations

46 patients (35.93%) had high blood urea levels (>40 mg/dl).

34 patients (26.56%) had high serum creatinine levels (>1.4 mg/dl).

52 patients (40.63%) had low serum albumin levels (<2.8 g/dl).

Chest X-ray findings

42 patients (40.63%) showed changes attributed to chronic obstructive lung diseases.

16 patients (12.5%) had pleural effusion.

04 patients (3.125%) had fibrosis in the upper lobes of lungs.

12 patients (10%) showed left ventricular hypertrophy.

Table 6: ECG recordings.

ECG recordings	
ST segment elevation	08 (6.25%)
T wave inversion	14 (10.9%)
Right axis deviation	18 (14.1%)
Left axis deviation	10 (7.81%)
Bundle branch block	08 (6.25%)

Patients with T wave inversion and ST segment elevation underwent biochemical tests for cardiac enzymes (CPK-MB and troponin T) and were diagnosed with acute myocardial infarction in 14 (10.93%).

Surgical and post-operative outcomes

Duration of surgical procedure

Mean duration of surgical procedure - 97 minutes

Range - 30 minutes to 200 minutes

Mean duration of surgery for duodenal ulcer perforation repair was 8 minutes.

Mean duration of surgery for intestinal obstruction due to adhesions was 59 minutes.

In 04 patients, additional surgical procedures were carried out in the same sitting. Suprapubic cystostomy for acute retention of urine in a patient with duodenal ulcer perforation with benign prostatic hyperplasia was done along with Graham’s omental patch repair. 2 patient underwent repair of ruptured urinary bladder during splenectomy for grade 3 splenic injury due to blunt abdominal trauma. 02 patient had cardiac arrest

and death on table, during surgery for acute intestinal obstruction. 02 patient underwent placement of intra peritoneal drainage tube under local anaesthesia as her general condition was poor and could not withstand general anaesthesia.

Post-operative management

All patients were treated according to standard protocols of intravenous fluids

According to individual patient’s needs, appropriate prophylactic and specific antibiotics, proton pump inhibitors and symptomatic therapy. Patients underwent chest physiotherapy. Appropriate management for diabetes mellitus and hypertension was administered. Additional treatment included:

Table 7: Additional post-operative management.

Management	
Blood transfusion	22 (17.19%)
Inotropic support	16 (12.5%)
Bronchodilators	26 (20.31%)
Anti-platelet medication	06 (4.69%)
Ventilator support	24 (18.75%)
Secondary suturing	12 (9.375%)

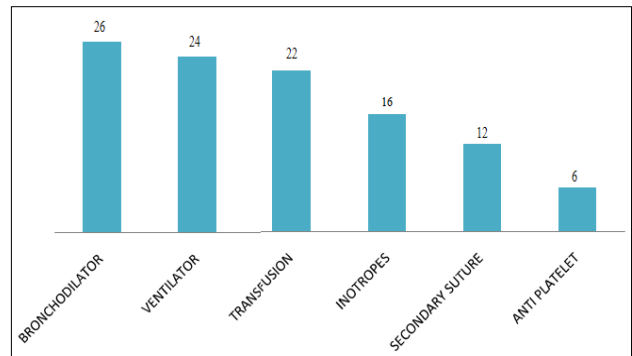


Figure 12: Additional post-operative management.

Most common additional post-operative management included use of bronchodilators, ventilator support and blood transfusion.

Post-operative complications

Table 8: Post-operative complications.

Complications	
Respiratory complications	30 (23.44%)
Cardiac complications	10 (7.81%)
Surgical site infection	38 (29.69%)
Septic shock	16 (12.5%)
Death	22 (17.19%)
No complications	50 (39.1%)

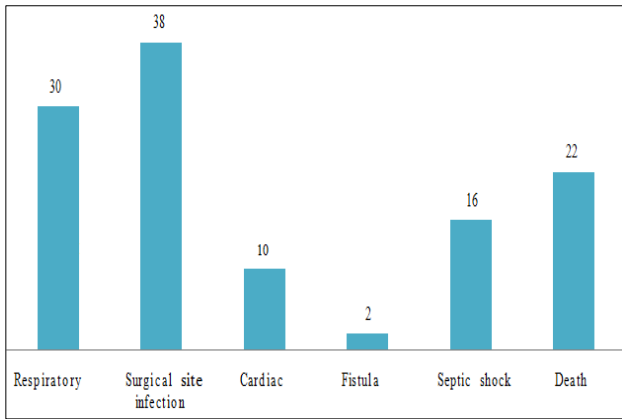


Figure 13: Post-operative complications.

The most common post-operative complication was surgical site infection (30%). Mortality was in 22 patients (17%). 06 patients with cardiac complications (myocardial infarction) recovered subsequently with treatment whereas 06 patients had death due to cardiac causes.

There were no complications seen to occur in 25 patients (39%).

Different causes of mortality were septic shock in 12 (55%), cardiac causes in 06 (27%) and respiratory failure in 04 (18%).

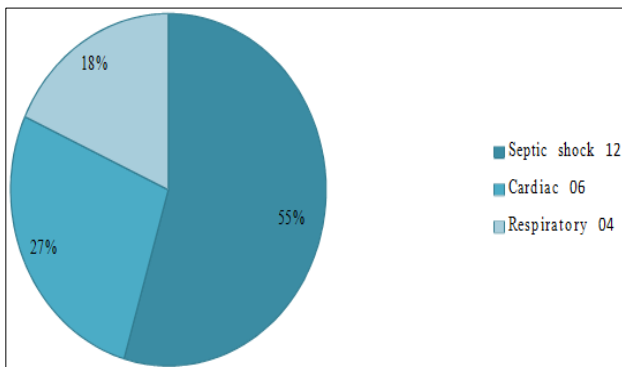


Figure 14: Causes of mortality.

DISCUSSION

Male to female ratio in present study was more as compared to study on emergency abdominal surgeries by Fernaro R¹¹ and colleagues from Italy and similar in a study by Thakuria⁶ and colleagues in Gauhati, India.

Table 9: Male to female ratio.

	Fernaro R ¹¹ (n=718)	Thakuria ⁶ (n=56)	Present study (n=128)
Male	361 (50.3%)	42 (64.6%)	92 (72%)
Female	357 (49.7%)	18 (23.4%)	36 (28%)

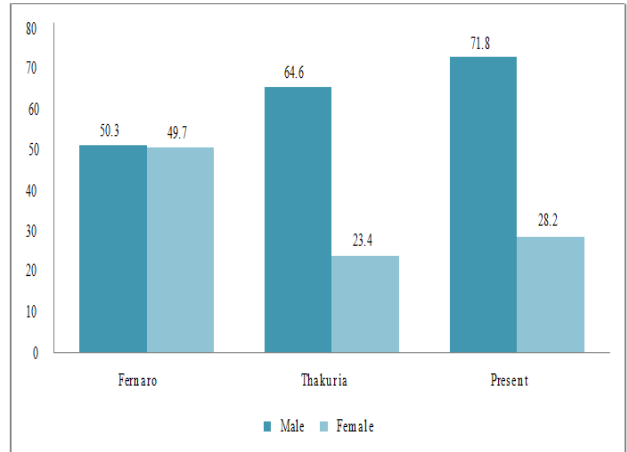


Figure 15: Male to female ratio.

Mean age in Thakuria⁶ - 66 years

Mean age in present study - 67 years

Incidence of chronic obstructive lung disease was found to be more in study by Khoja R and colleagues,⁹ done in Jodhpur, India, than that in the present study. 28.3% patients in the Khoja R⁹ study had anemia. 21.87% Patients in present in the present study had anaemia.

Table 10: Incidence of medical co morbid medical factors.

	Hypertension	Diabetes	COPD
Khoja HR (n=93) ⁹	10 (10.2%)	14 (15%)	29 (31.2%)
Present (n=64)	22 (17%)	34 (26.56%)	34 (26.56%)

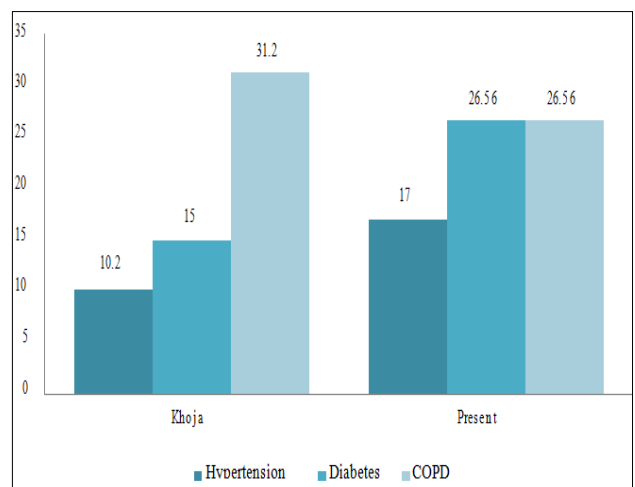


Figure 16: Incidence of medical co morbid medical factors.

Table 11: Incidence of various surgeries.

Etiology	Present (n=128)	Lebeau R ⁴ (n=137)
Perforated peptic ulcer	48 (37.5%)	29 (21.17)
Obstruction due to adhesions	22 (17.19%)	32 (23.36%)
Cholecystitis	10 (7.8%)	6 (4.4%)
Appendicitis	16 (12.5%)	23 (16.8%)
Trauma	04 (3.125%)	0
Hernia	06 (4.68%)	40 (29.2%)
Gastric volvulus	02 (1.56%)	0
Ruptured liver abscess	02 (1.56%)	4 (2.92%)

Table 12: Rate of complications.

Complications	Khoja HR (n=93)	Present (n=128)
Cardiac	6 (6.45%)	10 (7.8%)
Pulmonary	14 (15%)	30 (23.4%)
Surgical site infections	27 (29%)	38 (29.7%)
Septic shock/multi organ dysfunction	17 (18.3%)	16 (12.5%)
Death	16 (17.2%)	11 (17.2%)

Rate of complications showed similar results as compared to study on abdominal emergency surgeries by Khoja HR and colleagues.

CONCLUSION

Geriatric population is an important subgroup of population undergoing emergency abdominal surgeries (13%) of the total number. Most common cause being peptic ulcer perforation (38%) followed by intestinal obstruction due to adhesions (17%). Most common cause of death in abdominal emergency in geriatric patients is septic shock (55%). Thus it indicates that more than the age per say, the delay in presentation may be the cause for mortality in this age group. The therapeutic outcome in patients with co morbid factors like hypertension and diabetes mellitus, in good control, were similar to other patients.

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Conflict of interest: None declared

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

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