



Post-Operative Complications and Outcome of Non-Traumatic Emergency Laparotomy

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Abstract: **Introduction:** An emergency laparotomy is a lifesaving procedure undertaken mostly in acute cases without much preparation of the patient. Despite being one of the most common urgent surgical procedures, it still proves to be a challenge for the surgeons of the world. **Objective:** To find out the post-operative complications and outcome of non-traumatic emergency laparotomy. **Methods:** This prospective study was carried out in 200 patients different surgery units of Dhaka Medical College Hospital with an initial diagnosis of acute abdomen of nontraumatic origin who underwent emergency laparotomy to evaluate different causes of laparotomy and the morbidity & mortality associated with it. Acute abdominal pain was the constant symptom with different degree of severity, presenting either locally or diffusely. In conditions with peritonitis either local or diffuse, muscle guarding, rigidity or diminished bowel sound were found. Plain X-ray abdomen was the most frequently used investigation along with blood count, serum amylase and ultrasonogram of abdomen. Clinical diagnosis was made depending on clinical findings and the results of investigations. **Results:** Two hundred cases of nontraumatic emergency laparotomy patients were studied in Dhaka Medical College Hospital during the period of July 2007 to June 2008. The peak age incidence was found in the third decade of life (34%). Overall male-female ratio was 2.3:1, but there were disease specific variations. Age ranged from 12 to 75 years. Most of them were in the age group of 10 to 50 years of age. Most common operation performed was appendectomy, 74 cases. Next repair of duodenal ulcer perforation and thorough peritoneal toileting, 46 cases. After Appendectomy 5.94% of the patient had complication. In case of duodenal ulcer perforation 17.65% had post-operative complication. Post-operative complication among the patients of resection and anastomosis of small gut perforation was 16.66% and for resection and anastomosis of sigmoid volvulus was 16.66%. Early post-operative complication ranges from minor chest infection to death of the patient. Commonest post-operative complication was wound infection. Some of the patients developed more than one complication. Out of 200 patients most of them were case of acute appendicitis and underwent appendectomy. Six patients (3%) died postoperatively. **Conclusion:** Post-operative complications are more common after emergency laparotomies. Maximum complications were found in patients of delayed presentation or in patients having any associated co morbidities. Therefore early detection, immediate intervention with better postoperative care can minimize the postoperative complications. The present study suggests that proper awareness among rural populations, adequate health education to seek prompt medical aid, a good referral and efficient transportation can reduce the delayed presentation which in turn will prevent postoperative complications following emergency laparotomy.

Keywords: Post-Operative Complications, Outcome, Non-Traumatic, Emergency Laparotomy.

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INTRODUCTION

Severe acute abdominal pain is the most frequently encountered symptom bringing the patient to the emergency department. Abdominal pain is the most frightening of all and most of them need laparotomies. Since there is frequently a progressive underlying intra-abdominal disorder, undue delay in the diagnosis and treatment adversely affects the outcome. An emergency laparotomy is a commonly performed operation by general surgeons where the abdomen is opened and the abdominal organs examined for any injury or disease [1]. A few major indications for an emergency laparotomy are like perforation peritonitis, acute intestinal obstruction, burst appendix and blunt or penetrating abdominal injuries either due to road side accidents, fall from height or gun shot or stab injuries. To achieve good prognosis and overall success depends on early and correct diagnosis and timely surgical intervention in correct fashion. Public ignorance is to be eliminated by mass health education, and health facilities are to be mobilized to doorsteps. It is necessary to diagnose the patient by taking detailed history; clinical examinations, necessary investigations and to correlate them with preoperative findings and postoperative outcomes. Once diagnosis is established and needs emergency laparotomy, one should not do any undue delay. It must be remembered that 'Diagnostic errors at the initial assessment may at best result in unnecessary surgical intervention, and at worst demise of the patient or a protracted illness due to the development of complications, which could have been avoided by prompt intervention' [2]. 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 and in extreme cases death. Compared to elective laparotomy, emergency laparotomies have a disproportionately high morbidity and mortality and prolonged hospital stay. Despite the bundles of care, there is limited standardisation of effective post-operative care after emergency laparotomy to avoid postoperative complications [3]. The study was conducted to identify postoperative complications in the form of outcome in emergency laparotomy so that effective measures could be suggested to reduce them.

MATERIALS AND METHODS

Study design: It is a prospective study.

Study period: The study period is one year starting from 1st July, 2007 to 30th June, 2008.

Study population: All the patients admitted into the surgery units of Dhaka Medical College Hospital with an initial diagnosis of acute abdomen of nontraumatic origin.

Study Place: Different surgical units of Dhaka Medical College Hospital, Dhaka, Bangladesh.

Sample size: 200 patients were selected for the study.

Inclusion Criteria

- All the patients of thirteen to eighty years with an initial diagnosis of acute abdomen of non-traumatic origin that is manageable by emergency laparotomies.

Exclusion Criteria

- Age < 10 years or, > 80 years.
- Acute pancreatitis.
- Acute cholecystitis.
- Severe cardio-respiratory problems.
- Patients who refused to give any consent for laparotomy.

Study method: Detailed history was taken and a meticulous clinical examination was performed. A pre designed study proforma (data sheet) was duly filled in. After making a provisional diagnosis, few investigations were needed to help the clinical diagnosis and to exclude differential diagnosis. Laparotomy findings and pathological assessment in relevant cases were also documented. Finally correlations between preoperative clinical diagnosis and preoperative findings were compared.

RESULTS

Two hundred cases of nontraumatic emergency laparotomy patients were studied in Dhaka Medical College Hospital during the period of July 2007 to June 2008. The peak age incidence was found in the third decade of life (34%). Overall male-female ratio was 2.3:1, but there were disease specific variations. Age ranged from 12 to 75 years.

Table-1: Age and sex distribution of the patients (n-200)

| Age | Male | | Female | |
|----------|--------|---------|--------|---------|
| | Number | Percent | Number | Percent |
| 10-20 | 40 | 20% | 20 | 10% |
| 21-30 | 42 | 21% | 25 | 12.5% |
| 31-40 | 24 | 12% | 6 | 3% |
| 41-50 | 21 | 10.5% | 6 | 3% |
| 51-60 | 8 | 4% | 1 | 0.5% |
| 61-70 | 3 | 1.5% | 3 | 1.5% |
| Above 70 | 1 | 0.5% | 0 | 0% |

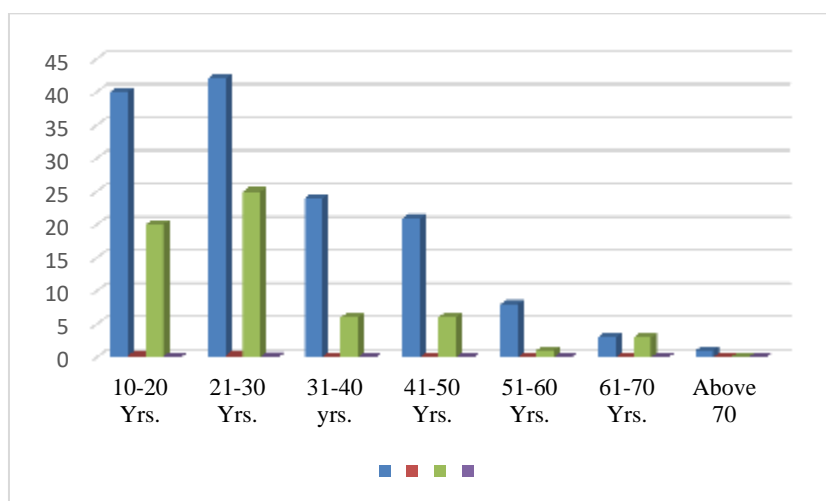


Fig-1: Age and sex distribution of the patients.

Among the 200 patients age of them ranged from 12 to 75 years. Most of them were in the age group of 10 to 50 years of age (Table-1).

Table-2: Diagnosis on laparotomy and types of operation.

| Diagnosis on laparotomy | Types of operation | Number of cases |
|-------------------------|---|-----------------|
| Perforated peptic ulcer | Repair of duodenal ulcer and thorough peritoneal toileting | 46 |
| | Repair of gastric ulcer and thorough peritoneal toileting | 3 |
| | Repair of duodenal ulcer and thorough peritoneal toileting with gastrojejunostomy | 2 |
| Acute appendicitis | Appendectomy | 74 |
| | Appendectomy with toileting | 10 |
| Intestinal obstruction | Resection and anastomosis of small gut, lysis of bands and adhesion | 2 |
| | Meckel's diverticulectomy | 1 |
| | Resection of sigmoid colon and end to end anastomosis | 6 |
| | Resection of sigmoid colon and Hartmann's procedure | 2 |
| Perforated small gut | Resection and anastomosis | 12 |
| | Ileostomy | 2 |
| Gallbladder perforation | Cholecystectomy | 2 |
| Ectopic Pregnancy | salpingo-oophorectomy | 2 |
| Twisted ovarian cyst | Cystectomy | 2 |
| Perforation of CBD | Cholecystectomy with repair of perforation with T-tube in situ | 1 |
| Burst liver abscess | Evacuation of pus and thorough peritoneal toileting | 2 |

Most common operation performed was appendectomy, 74 cases. Next repair of duodenal

ulcer perforation and thorough peritoneal toileting, 46 cases (Table-2).

Table-3: Post operative complications.

| Name of operation | Total number | Number of cases of postoperative complication | % |
|--|--------------|---|-------|
| Appendicectomy | 84 | 5 | 5.94 |
| Repair of duodenal ulcer perforation | 51 | 9 | 17.65 |
| Resection and anastomosis of ileal perforation | 12 | 2 | 16.66 |
| Ileostomy | 2 | 0 | 0 |
| Resection and anastomosis of volvulus | 6 | 1 | 16.66 |
| Hartmann's procedure | 2 | 0 | 0 |
| Repair of gastric ulcer perforation | 3 | 2 | 66.66 |
| Resection and anastomosis of small gut | 2 | 0 | 0 |
| Obstruction | 2 | 0 | 0 |
| Ovarian cystostomy | 2 | 0 | 0 |
| Salpingo-oophorectomy | 2 | 0 | 0 |
| Cholecystectomy | 2 | 0 | 0 |
| Lysis of band of small gut | 3 | 0 | 0 |
| CBD repair and cholecystectomy | 1 | 1 | 100 |

After Appendicectomy 5.94% of the patient had complication. In case of duodenal ulcer perforation 17.65% had post-operative complication. Post-operative complication among the patients of resection and anastomosis of small gut perforation was 16.66% and for resection and anastomosis of sigmoid volvulus was 16.66%. Early post-operative complication ranges from minor chest infection to death of the patient. Commonest post operative complication was wound infection. Some of the patients developed more than one complication (Table-3).

Commonest cause of death was due to ileal perforation (Table-4).

Early post-operative complication ranges from minor chest infection to death of the patient. Commonest post-operative complication was wound infection. Some of the patients developed more than one complication. Out of 200 patients most of them were case of acute appendicitis and under went appendicectomy. Six patients (3%) died postoperatively.

Table 4: Causes of death.

| Causes | Number | % |
|---------------------|--------|-------|
| Ileal Perforation | 2 | 33.33 |
| Gastric Perforation | 2 | 33.33 |
| DU- Perforation | 1 | 16.67 |
| Sigmoid volvulus | 1 | 16.67 |

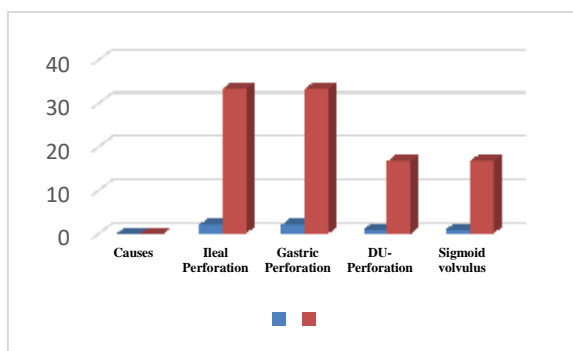


Fig-2: Causes of death.

DISCUSSION

Emergency laparotomy is a major test of the surgical skills to a surgeon. The general surgeon performing laparotomy in emergency must be aware of the diverse aetiology of the acute abdomen, the unique characteristics of each case and their management. Patients undergoing emergency laparotomy have a disproportionately high morbidity and mortality compared to elective laparotomies [4]. In this study overall male predominance with a ratio of 2.3:1. In case of acute appendicitis was approximately 3:2; that is with male predominance. It is consistent with Williams *et al.*, [5] and Miettinen *et al.*, [6], who showed that acute appendicitis was most frequently observed in young men. The study of Staniland *et al.*, [7] showed male female ratio in acute appendicitis as 3:2. This is exactly that I found in my study. In this study, age distribution of the disease according to decades showed that most patients are from third decade of life (34%), followed by second decade (30%). This finding correlates with the study of Brewer *et al.*, [8] and Irvin [9], who found the common age group as 10-29 years. It also correlates with the study of Iqbal [10]. This study shows that most common age group

for acute appendicitis was the third decade in case of male. But in case of female it was the second decade. Our study revealed rebound tenderness in 88.54% of patients suffering from acute appendicitis. It correlates with one study by Winsey and Jones *et al*, [11], who showed it in 90% cases. In the present study, muscle guarding was found in 86.46% cases of acute appendicitis. It does not correlate with live study of Horwitz *et al*, [12] (65%). Our study showed abnormal bowel sound (increased, diminished or absent) in intestinal obstruction in 83.33% cases. Which correlates well with one study by Brewer *et al*, [8] In this study only appendectomy has sufficient treatment for acute appendicitis in 74 patients out of 96 patients. Out of 51, 46 numbers of patients were undergone repair of duodenal ulcer and thorough peritoneal toiletting. The present series showed mortality of only 3%. It correlates with other studies. Among them 33.33% from ileal perforation, 33.33% died from gastric perforation. After appendectomy 5.94% of the patients had complication. In case of duodenal ulcer perforation 17.65% had some sort of post operative complication. Post operative complication among the patients of resection and anastomosis of small gut perforation was 16.66% and for resection and anastomosis of sigmoid colon was 16.66%. In this series, 35% of the patients attended the hospital within 12 hours of appearing symptoms, but 7% patients failed to attend the hospital even after 48 hours.

CONCLUSION

Post-operative complications are more common after emergency laparotomy. These complications cause death and suffering; longer hospital stay and increase the cost of the patient care. Therefore early detection and immediate intervention with better postoperative care can minimize both morbidity and mortality associated with emergency laparotomy. Nontraumatic emergency laparotomy accounts a major workload for the surgeon. Most of them were suffering from acute appendicitis 48%. It should be diagnosed carefully by taking detailed history, thorough and necessary clinical investigations. Negligence at any level may cause improper diagnosis and suffering of the patient. It must be remembered that 'Diagnostic errors at the initial assessment may at best result in unnecessary surgical intervention, and at worst demise of the patient or a protracted illness due to the development of complications, which could have been avoided by prompt intervention.

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