



**ST.PAUL'S HOSPITAL MELLINNIUM MEDICAL
COLLEGE**

**ASSESSMENT OF THE MAGNITUDE, ASSOCIATED FACTORS AND
OUTCOME OF PERFORATED PEPTIC ULCER DISEASE AMONG
PATIENTS PRESENTED WITH SURGICAL ACUTE ABDOMEN AT RAS
DESTA HOSPITAL IN ADDIS ABABA**

BY: - ABATE GASHAW (MEDICAL INTERN)

ADVISOR: - TAKELE MENNA, PhD

**A RESEARCH THESIS TO BE SUBMITTED TO PUBLIC HEALTH
SPHMMC, IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR
THE DEGREE OF DOCTOR OF MEDICINE**

JULY 2018

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ACRONYMS

PUD	Peptic ulcer disease
PPU	Perforated peptic ulcer
PPUD	Perforated peptic ulcer disease
RDMH	Ras Desta Damtew Memorial Hospital
H. Pylori	Helicobacter Pylori
NSAIDs	Non Steroidal Anti Inflammatory Drugs
Hx	History
SPHMMC	St. Paul Hospital millennium medical college

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ABSTRACT

BACKGROUND: - Peptic ulcer perforation is a life threatening complication of peptic ulcer disease occurring in about 2–14% of cases of peptic ulcer disease. Perforated peptic ulcer is a surgical emergency and is associated with short-term mortality in up to 30% of patients and morbidity in up to 50%. Perforation is one of the commonest causes of emergency hospitalization and surgery in peptic ulcer disease and it is also one of the commonest causes of acute abdomen. There is a scarcity of high-quality studies about the condition that results in limitation of the knowledge base for clinical decision making, but a few published randomised trials are available. Although *Helicobacter pylori* and use of non-steroidal anti-inflammatory drugs are common causes, there is demographic differences and variation in mortality between countries, as well as among different setup within the same country.

OBJECTIVE: - To assess the magnitude, risk factors and outcome of perforated peptic ulcer among patients who presented with surgical acute abdomen at Ras Desta Damtew Memorial Hospital over a period of 2 years (October 2015 to 2016).

METHODS: - A hospital based descriptive type of cross sectional study was conducted from June 12 to 18 focusing on two years retrospective record review of the surgical patients who were admitted from October 2015 to August 2016. Medical records of patients were used. The SPSS version 20 was used to analyze the data.

RESULTS: - There were a total of 606 admissions with an assessment of surgical acute abdomen during the study period. Of the total admissions, 66 of them were found to have PPUD making the prevalence of PPUD 11 %. The study involved analysis of 66 cases of PPUD. 47 % of cases were found in the age group of 40-60 years with a M: F ratio of 1.6:1.

65 % of cases had previous history of dyspepsia while 56 % had family history of similar illness (dyspepsia). 64% of cases were discharged without complication while the most common post-operative complication was wound infection followed by sepsis. Based on the finding of this study, age was found to have significant association with complication with a level of significance of 0.017.

CONCLUSION

Perforated peptic ulcer was one of the most common causes (accounting for ~11%) of acute abdomen. Based on the findings of this research most patients having PPU was the males, office workers, those found in the age group of 40-60 years and those who have previous history and family history of clinical peptic ulcer disease. Wound infection was the most common post-operative complication. Based on the finding of this study, age was found to have significant association with complication with a level of significance of 0.017.

1. Introduction

1.1 Background

Perforated peptic ulcer is one of a life threatening complication of peptic ulcer disease that occurs in about 2 to 14% of cases of peptic ulcer disease [1]. Peptic ulcer perforation is one of a surgical emergency and is associated with mortality in up to 30% of patients and morbidity as high as 50% [2]. The perforation is located either in the lesser curvature of the stomach or on the anterior surface of the duodenum [3] leading to a spillage of gastro intestinal contents into the peritoneal cavity. Perforation is one of the commonest causes of surgical acute abdomen and surgery in peptic ulcer disease [4, 5].

Perforated peptic ulcer was first described in 1670 in princess Henrietta of England [6]. Since then a lot of distinguished people have died due to this illness over the years [7]. The presentation may be striking with sudden onset of usually severe pain and radiating to the back with quickly superseding features of peritonitis in about two thirds of patients [8]. With this classical presentation the patient may remember the exact time of perforation, often in the early hours of the morning.

Pain may occasionally be gradual in onset and sometimes mimic an acute appendicitis [9] when perforation is small and contents leak slowly into the right iliac fossa through the right paracolic gutter [10]. In older patients, or immunocompromised individuals, the signs of perforation may be insidious or equivocal [11].

The diagnosis of perforated peptic ulcer requires a high index of suspicion with the main differential being an acute exacerbation in a patient with known peptic ulcer disease [12]. Oftentimes observation of air under the diaphragm in an erect chest radiograph clinches the diagnosis. This finding, present in up to three fourth [13] of erect chest radiographs, is dependent on size of perforation and time of presentation. The use of an erect lateral chest radiograph can increase detection of pneumo-peritoneum to 98% [14].

Currently, the use of computerized tomographic scan is the gold standard for detection of perforation [15, 16]. Even though it is easily accessible and useful when radiation burden is

critical [17], ultrasonographic detection of pneumoperitoneum is difficult even for the skilled sonographer [18]. The principle of management is surgery after active resuscitation [19]. Few recent studies recommend non operative intervention except as a stop gap before definitive surgical intervention [20].

Recently, laparoscopic repair is being suggested when the expertise and materials are available. Although outcome of open surgery was found to be comparable with [21] laparoscopic repair, the later one has the unique advantage of decreased hospital stay as well as reduced postoperative pain and opiate requirement [22]. Nonetheless, in a resource-limited set-up, open surgery remains the only available option with either a simple closure or the use of an omental patch [23].

Because of our improved understanding of the pathogenesis of ulcers, mainly the role of *Helicobacter pylori*, the question of definitive antiulcer surgery at the same setting has few indications [24–25]. When indicated [26], a meticulous evaluation of several factors like the presence of comorbidities, age, and the physiological state of the patient is necessary to improve mortality.

This study attempted to highlight the prevalence, associated factors, area of perforation and outcome of management of peptic ulcer perforation at Ras Desta Damtew Memorial Hospital (RDMH).

1.2 statement of the problem

Worldwide perforated peptic ulcer is one of the leading causes of acute abdomen with greatest morbidity and mortality in the non-traumatic adult surgical emergency. In 2006, more than 150 000 patients were admitted to hospital for complicated peptic ulcer disease in the USA alone. Although the overall share of complications caused by perforations (n=14 500 [9%]) was seven-times lower than that attributable to bleeding, perforated peptic ulcers caused 37% of all ulcer-related deaths [4]. According to US data, more than one in every ten hospital admissions for perforated peptic ulcer leads to death

Mortality rates for perforated peptic ulcer in Europe have been quite stable during the past three to four decades, despite progress in perioperative care, imaging techniques, and surgical management.

There is a scarcity of high-quality studies about the condition that results in limitation of the knowledge base for clinical decision making, but a few published randomised trials are available. Although *Helicobacter pylori* and use of non-steroidal anti-inflammatory drugs are common causes, there is demographic differences and variation in mortality between countries, as well as among different setup within the same country [4].

Ethiopia is one of the low income countries (15th poorest country in the world with GDP per capita of 549.80 billion USD) that have high health related morbidity and mortality. One of the major causes of morbidity and mortality is road traffic accident followed by emergency acute abdomen. Acute abdomen remains one of important causes of morbidity and mortality that are encountered in emergency medicine. Any delay in seeking surgical management opinion contributes to make the problem worse [27].

Even in our country perforated PUD is the 3rd most common cause of acute abdomen (next to acute appendicitis and intestinal obstruction) accounting for 9% of cases. The mortality rate of PPU was found to be 28.5% [28].

Clinically, acute abdomen ranges from mild dull aching pain to sever tenderness and rigidity with constitutional symptoms like fever. There is a need to know the spectrum of clinical presentation as well as the most common among them. Surgeons managing a case of acute

abdomen need to be aware of the different etiologies of acute abdomen. There is a need to enlist the differential diagnosis leading to acute abdomen and the most common etiologies among them, so that the decision concerning the management of such cases can be taken as early as possible [27].

Surgical acute abdomens are among the commonly encountered emergencies in the practice of General surgery and for which emergency surgery commonly performed. Despite of advancement in modern surgery is being practiced; the mortality rate after non-traumatic surgical emergencies is still high worldwide. It is always better to do an early surgery than a delayed surgery. So knowing pattern and causes of diseases will help to make diagnosis early, then starting treatment accordingly and this will decrease delays in management and related complications [27].

1.3 Significance of the study

Despite the fact that perforated peptic ulcer disease (PPU) is the most fatal complication of PUD unless detected and intervened early, the attention paid for it is disappointing [29]. In 2006, more than 150, 000 patients were admitted to hospital due to complicated peptic ulcer disease in the USA alone. Even though the overall share of complications caused by perforations (n=14 500 [9%]) was seven-times lower than that attributable to bleeding; PPU caused 37% of all ulcer-related deaths [30].

There is a scarcity of high-quality studies about the condition that results in limitation of the knowledge base for clinical decision making, but a few published randomised trials are available. Although *Helicobacter pylori* and use of non-steroidal anti-inflammatory drugs are common causes, there is demographic differences and variation in mortality between countries, as well as among different setup within the same country [4].

In Ethiopia, very little is known about the general pattern and the relative incidence of PPU. Compared to the significance of the problem, so far there were a few researches on the case of PPU [31]. A review of 74 cases of PPU at Tikur Anbessa hospital in 2005 showed that 78% of the cases were complicated by purulent peritonitis and nearly 19 % of them were died in the hospital [32]. This study was conducted with the aim of assessing prevalence and associated factors of PPU among patients presented with acute abdomen at Ras Desta Damtew Memorial Hospital (RDMH). The study is believed to have epidemiological and clinical benefits and would also serve as a base for other studies.

2. Literature Review

In 2006, more than 150 000 patients were admitted to hospital for complicated peptic ulcer disease in the USA alone. Although the overall share of complications caused by perforations (n=14 500 [9%]) was seven-times lower than that attributable to bleeding, perforated peptic ulcers caused 37% of all ulcer-related deaths [4].

Although *Helicobacter pylori* and use of non-steroidal anti-inflammatory drugs are common causes, there is demographic differences and variation in mortality between countries, as well as among different setup within the same country [4].

A Study that was conducted in Sina hospital showed that a total of 139 patients diagnosed with acute abdomen had underwent emergency Laparotomy. The most common causes of acute abdomen were peritonitis (14.4%) among which 8(5.7%) resulted from PPUD, 5(3.5%) were perforated appendicitis, 2 (1.4%) pancreatitis and 10 (7.2%) cases were cholecystitis [33].

In Lilongwe, Malawi 190 patients were included in the study of etiologies, clinical presentation and outcome of patient with peritonitis and perforated peptic ulcer was the 3rd most common cause accounting for 11 % following perforated appendicitis (22%) and intestinal obstruction (17%) [34].

A study that was conducted over 84-month period from January 1998 to December 2004 at Komfo Anokye Teaching Hospital in Kumasi Ghana, West Africa showed in a total of 3114 patients, of which 2070 were men and 1044 women. The ages ranged from 15 to 95 years. Gastro duodenal perforations accounting for 342 (11.0%) cases were the 4th most common cause of admission [35].

A retrospective clinical based Study covering a period of one year from January 1 to December 31 2000 conducted in Tikur Anbessa hospital showed that there were a total of 587 adult surgical emergency operations. Of which 214 (36.4%) laparatomies were done for acute abdomen. Perforated PUD was found to be the 3rd most common cause of acute abdomen and accounted for 9% of cases, for which simple closure with graham's patch was done [36].

A study that was conducted at Zewditu Memorial Hospital, Addis Ababa on 76 patients with perforated PUD showed male to female ratio was 6.6:1 with a mean age being 31.5 years. The

most common presenting symptom was abdominal pain in 76 (100%) patients. History of smoking and khat chewing was identified in 82.8% and 75% of the patients respectively. Twenty five per cent of the patients gave no history of previous peptic ulcer disease. Seventy patients (92.1%) presented after 48 hours of their illness. The mean hospital stay was 14.5 days. Sixty five (85.5%) patients had duodenal ulcer perforation the rest were gastric perforation. 15.8% of patients have been died in the hospital before they discharged home [37].

A four year (September 1998 to August 2002) retrospective study at Gondar university hospital showed that of all laparotomies, emergency laparotomies were 511 (43.3%) for non-traumatic acute abdomen. PPU was found to be the fourth leading operative diagnosis [38].

3. Objectives

3.1 General Objective

- To determine the magnitude and associated factors of PPU among patients presented with surgical acute abdomen in Ras Desta Damtew Memorial Hospital (RDMH) in Addis Ababa, from June 12 to 18.

3.2 Specific Objectives

- To determine the magnitude of PPU among patients presented with surgical acute abdomen in RDMH
- To determine the risk factors associated with PPU
- To assess the outcome of patients with PPU

4. Methods

4.1 Study design

A descriptive type of cross sectional, hospital based study was conducted that involved the analysis of data from medical records of patients during a two years study period at RDMH.

4.2 Study area and Period

Ras Desta Damtew Memorial hospital is one of the general public hospitals in Ethiopia located in the capital, Addis Ababa, found in Arada sub city. It was built in 1924 in memory of Ras Desta Damtew; an Ethiopian army commander, and a son-in-law of Emperor Haile Slassie. Currently, it is one of the hospitals under Addis Ababa health bureau having 98 beds. The data collection of this research was conducted from June 12 to 18 focusing on two years retrospective record review of the surgical patients who were admitted from October 2015 to August 2016.

4.3 Population

4.3.1 Source population

All patients admitted to surgical ward in Ras Desta Damtew General Hospital.

4.3.2 Study population

Patients admitted to surgical ward in Ras Desta Damtew General Hospital who presented with surgical acute abdomen from October 2015 to August 2016.

4.4 Inclusion and exclusion criteria

Inclusion Criteria: All patients with a diagnosis of non-traumatic surgical acute abdomen during the study period.

4.5. Sample size determination and sampling procedure

4.5.1 Sample size determination

There were a total of 606 emergency surgical operations for surgical acute abdomen in the two years period. Of which 66 charts of operated patients for non-traumatic surgical acute abdomen

secondary to PPU during the period of October 2015 to August 2016 were taken as the sample size of the study.

4.5.2 Sampling technique

Charts of all patients in the study period who were operated for emergency non traumatic acute abdomen and found to have PPUD were used.

4.6 Data collection tools and procedures

The data were collected retrospectively from patient charts using a format developed with a checklist designed for this purpose. The variables included in the data are socio-demographic characteristics, surgical history (duration of illness, presenting symptoms including risk factors) and findings at presentation, operative findings, post-operative course and outcome.

4.6.1 Study variables

Dependent Variables

Magnitude and outcome of perforated peptic ulcer

Independent Variables

Age, sex, occupation, religion, residency, risk factors, duration of illness & area of perforation.

4.6.2 Operational definitions

Outcome- clinical improvement or any complications related to the course of the disease or to the surgical intervention with in the hospital stay.

Urban- from Addis Ababa

Rural – outside Addis Ababa

4.6.3 Data quality management

To ensure the quality of the data, the data collectors were trained. There were routine checkups for completeness and consistency of the data. The data tool was pre tested before the actual data collection to check for the accuracy of the data. The result of pretest was good and no significant change was made.

4.6.4 Data processing and analysis

The collected data were coded and checked for completeness and consistency before entry to the computer software. Then the data entered to the computer were analyzed using SPSS software, version 20. Descriptive statistics like frequencies and cross tabulations were used for describing the study population in relation to relevant variables. And chi-square test was done to identify possible risk factors.

4.7 Ethical considerations

Data collection was started after the study was approved and ethical clearance was obtained from the department of public health, SPHMMC. An informed verbal consent was obtained from RDMH surgical department. Confidentiality of the collected data was maintained throughout the study period. Reports did not include names and identifiers of the patients.

The result is going to be disseminated to:-

- SPHMMC, public health department and
- Ras Desta general hospital

5. Results

5.1. Socio-demographic Characteristics of the Study subjects

The data was not complete and the information regarding risk factors was not well informative. A total of 31 (47 %) of the patients were found in the age category of 40-60 and 27 (41 %) were within 20-40 years old. Only 3 and 5 patients were below 20 & above 60 years old respectively. Of the total study subjects 41 (62 %) of them were males with a male to female ratio of 1.6 : 1. Looking at religion 56 % of the clients were adherent to orthodox christianity while 19.7% were muslim. 72.7 % of patients were urban dweler and occupationally 30.3 % were office workers followed by trader (27.3%) and farmer (24.2 %). Students account for 13.6%. (Table 1).

Table 1. Socio-demographic Characteristics of a study subjects at Ras Desta Hospital from October 2015 to August 2016 (n=66)

Character	Frequency	Percentage
Occupation		
Farmer	16	24.2
Trader	18	27.3
Office worker	20	30.3
Residency		
Urban	48	72.7
Rural	18	27.3
Religion		
Orthodox	37	56.1
Muslim	13	19.7
Protestant	8	12.1

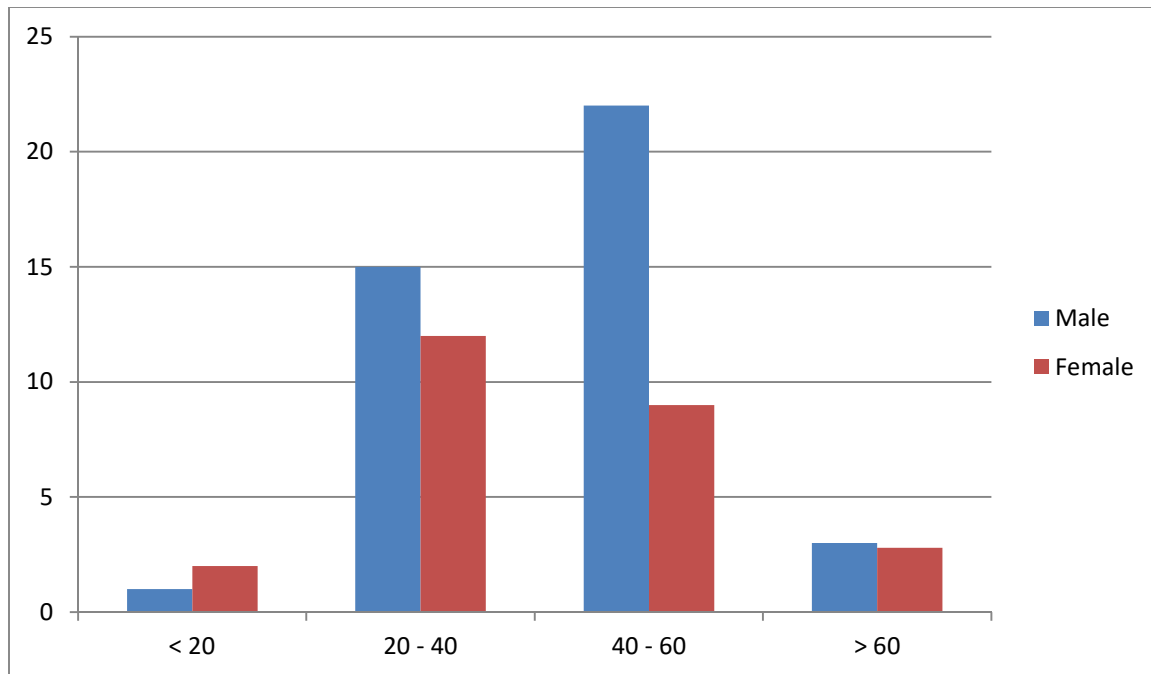


Figure 1. Age and sex distribution of the study subjects at Ras Desta Hospital from October 2015 to August 2016.

5.2 Risk factors

Among the total study subjects the h. Pylori status was determined for 34 (51.5 %) of them and of which 42.4% were positive for H. Pylori stool exam. 51.5 % of the clients has no history of NSAIDs use. 71 % of the study subjects denied use of tobacco while 15 % has history of tobacco use. Regarding stress 53 % denied any form of stress while ~23 % has history of stressful conditions. Of all patients with PPUD 65 % had previous history of dyspepsia while 56 % had family history of similar illness (Table 2).

Table 2. Risk factors of PPU identified in the study subjects at Ras Desta Hospital from October 2015 to August 2016 (n=66)

Character	Frequency	Percentage
H. pylori		
Yes	28	42
No	6	9
Not known	32	49
NSAIDs		
Yes	3	4.5

No	24	51.5
Not known	29	44
Tobacco		
Yes	10	15
No	47	71
Not known	9	14
Stress		
Yes	15	23
No	35	53
Not known	16	24
Family hx of similar illness		
Yes	37	56
No	25	38
Previous history of dyspepsia		
Yes	43	65
No	22	33

5.3 Duration of illness

Of all study subjects 51.5 % of them presented with in two to four days of the start of illness. while 33 % presented with in less than 48 hours of the onset of symptoms.

5.4 Clinical features

Abdominal pain was the most common presentation (83.3%) followed by fever (80%) and vomiting (77%). While abdominal distention is present in only 44% of cases. Abdominal tenderness was the most common finding (92.4%). Of which 89% had abdominal rigidity. Tachycardia (Pulse rate >100) was present in 85% of the cases while hypotension was found in 64%. On plain abdominal x-ray 64% of patients had air under the diaphragm. Intra-operatively 52% of the perforation was over the anterior surface of the duodenum while 44% were in the lesser curvature. Of the total study subject ~74 % of hospital stays were less than a week while the rest stayed beyond 8 days. Regarding complication ~64 % of patients were discharged without post-operative complications. Of the post-operative complications wound infection accounted for 19.7 % followed by sepsis (7.6%). Pneumonia and death each accounted for 3 % (Table 3).

Table 3. Clinical features PPU identified in the study subjects at Ras Desta Hospital from October 2015 to August 2016 (n=66)

Character	Frequency	Percentage
Abdominal pain		
Yes	55	83
No	11	17
Fever		
Yes	53	80
No	13	20
Vomiting		
Yes	51	77
No	15	23
Abdominal distention		
Yes	29	44
No	37	56
Tenderness		
Yes	61	92
No	5	8
Tachycardia		
Yes	56	85
No	10	15
Hypotension		
Yes	42	63.6
No	24	36.4
Area of perforation		
Anterior duodenum	34	51.5
Lesser curvature	29	43.9
Air under diaphragm		
Yes	42	63.6
No	24	36.4

Table 4. Complication/outcome of PPU in the study subjects at Ras Desta Hospital from October 2015 to August 2016 with in the period of hospital stay (n=66)

Character	Frequency	Percentage
No post op-complication	42	63.6
Wound infection	13	19.7
Sepsis	5	7.6
Pneumonia	3	4.5
Death	3	4.5

5.5 Association between variables

In this study, the relationship between post-operative hospital stay and age, sex, occupation, previous and family history of PUD was analyzed and it was found that none of these variables had significant relation with hospital stay (Table 5). Age was found to have significant association with complication with a level of significance of 0.017. However, based on the finding of this study, the other variables were not significantly associated with any of the complications (Table 6).

Table 5. Correlation of hospital stay with other variables (n=66)

Variables	Hospital stay		Chi-square	p-value
Age (years)	<= 7 days	8-14 days	2.6	0.4
<20	2 (66.7%)	1 (33.3%)		
20-40	21 (77.8%)	6 (22.2%)		
40-60	21 (67.7%)	10 (32.3%)		
>60	5 (100%)			
Sex			0.065	0.8
Male	30 (73.2%)	11 (26.8%)		
Female	19 (76%)	6 (24%)		
Occupation			7.76	0.256
Farmer	11 (68.8%)	5 (31.2%)		
Trader	15 (83.3%)	3 (16.7%)		
Office worker	16 (80%)	4 (20%)		
Student	6 (66.7%)	3 (33.3%)		
Previous history			3.83	0.15
Yes	34 (79.1%)	9 (20.9%)		
No	15 (68.2%)	7 (31.8%)		
Family history			5.55	0.06

Variables	Complication	Chai-square	p-value
Age (years)		24.5	0.017
<20	2 (8.3)		
20-40	9 (37.5%)		
40-60	11 (48.3%)		
>60	2 (8.3%)		
Sex		6.8	0.15
Male	14 (66.7%)		
Female	10 (41.7%)		
Occupation		49.6	0.002
Farmer	8 (33.3%)		
Trader	6 (25%)		
Office worker	4 (14.7)		
Student	4 (16.7%)		
Previous history		9.12	0.33
Yes	15 (62.5%)		
No	8 (33.3%)		
Family history		12.4	0.135
Yes	13 (54.2%)		
No	9 (37.5%)		

6. Discussion

Perforated peptic ulcer was one of the most common causes of acute abdomen at Ras Desta Hospital. The prevalence of PPUD was found to be 11.0 %. This is in line with a research that was conducted in Lilongwe Malawi to study the etiologies, clinical presentation and outcome of patients with acute abdomen [31].

This finding also agrees with the study that was conducted in Komfo Anokye teaching hospital in Kumasi Ghana over 84 month period from 1998-2000 [32].

Compared to the researches that was done in our country, the prevalence of PPU that was found in this research was slightly higher than that was found in a research done at Tikur Anbessa hospital in 2000 where PPU was having a prevalence of 9% [33].

In this research, 3/4th of patients were urban dweller. This might be due to the geographic location of the study area. This figure is also similar with a study that was done on the pattern of acute abdomen at Tikur Anbessa Hospital in 2000 which found that 66% of the study subjects were from Addis Ababa [37].

A study that was conducted at Zewditu Memorial Hospital on 76 patients with perforated PUD showed a male to female ratio of 6.6:1 [38]. Which was not the same as that was found in this research where the male to female ratio was 1.6:1.

In this study, it was observed that of all patients with PPUD 2/3rd had previous history of dyspepsia while more than half had family history of similar illness. This is relatively in line with a study that was conducted at Zewditu Memorial Hospital. Abdominal pain was the most common presentation followed by fever and vomiting. Tenderness was the most common finding. This result also agrees with studies done at Tikur Anbessa [37] and Zewditu Memorial Hospital [38].

In this research, 2/3rd of patients were discharged without post-operative complication and there were 4.5% death. This is not the same as that was found in a study at Zewditu Memorial Hospital where death accounted for 16 % of complications [38].

Duodenal perforation accounted for half of the case while gastric perforation was 44%. This is also different from the result that was observed in Zewditu's research where 85% had duodenal perforation [38].

Regarding outcome, the most common post-operative complication was wound infection followed by sepsis. This result is different from what has been observed in a study at Tikur Anbessa Hospital where sepsis was the leading complication followed by wound infection [37].

In this study, the relationship between post-operative hospital stay and age, sex, occupation, previous and family history of PUD was analyzed and it was found that none of these variables had significant relation with hospital stay. Based on the finding of this study, age was found to be a determinant factor of complication with a level of significance of 0.017 and most commonly the affected individuals were those who were found in the age group of 40-60 years old. This finding is in line with a research that was done in Tanzania [39].

7. Limitations of the study

As the study was retrospective and hospital based, the research used secondary data to reach to conclusion for the source population. During the data collection there was poor recording of patient profile on the HMIS and hence it was difficult to draw firm conclusion that can be applied for the source population. The sample size was also so small that it was difficult to draw a conclusion on the prevalence and outcome of PPU.

8. Conclusion & recommendation

Perforated peptic ulcer was one of the most common causes (accounting for ~11%) of acute abdomen. Based on the findings of this research most patients having PPU was the males, office workers, those found in the age group of 40-60 years and those who have previous history and family history of clinical peptic ulcer disease. Wound infection was the most common post-operative complication.

In this study, the relationship between post-operative hospital stay and age, sex, occupation, previous and family history of PUD was analyzed and it was found that none of these variables had significant relation with hospital stay. Age was found to have significant association with complication with a level of significance of 0.017. However, based on the finding of this study, the other variables were not significantly associated with any of the complications.

It is my suggestion that, it would have been better if recording of patient's profile on HMIS was improved and become well informative. It is also good for the physician to document a complete and clear patient as well as disease information on patients chart. Since PPU is one of the commonest causes of surgical acute abdomen, it would be fruit full if the ministry of health creates public awareness on the issue. It is my opinion that this research might be used as a reference for the upcoming researchers on the subject matter.

9. References

- [1] M. J. O. E. Bertleff and J. F. Lange, "Perforated peptic ulcer disease: a review of history and treatment," *Digestive Surgery*, vol. 27, no. 3, pp. 161–169, 2010.
- [2] J.-Y. Lau, J. Sung, C. Hill, C. Henderson, C. W. Howden, and D. C. Metz, "Systematic review of the epidemiology of complicated peptic ulcer disease: incidence, recurrence, risk factors and mortality," *Digestion*, vol. 84, no. 2, pp. 102–113, 2011.
- [3] Moller MH, Adamsen S, Thomsen RW, Moller AM, and the Peptic Ulcer Perforation (PULP) trial group. Multicentre trial of a perioperative protocol to reduce mortality in patients with peptic ulcer perforation. *Br J Surg* 2011; **98**: 802–10
- [4] N. Williams, C. Bullstrode, and P. O'Connell, *Stomach and Duodenum in Bailey and Love's Short Practice of Surgery*, CRC, London UK, 26th edition, 2013.
- [5] Y. R. Wang, J. E. Richter, and D. T. Dempsey, "Trends and outcomes of hospitalizations for peptic ulcer disease in the united states, 1993 to 2006," *Annals of Surgery*, vol. 251, no. 1, pp. 51–58, 2010.
- [6] H. Guzel, S. Kahramanca, D. S. eker et al., "Peptic ulcer complications requiring surgery: what has changed in the last 50 years in Turkey," *Turkish Journal of Gastroenterology*, vol. 25, no. 2, pp. 152–155, 2014.
- [7] T. Milosavljevic, M. Kostic-Milosavljević, I. Jovanović, and M. Krstić, "Complications of peptic ulcer disease," *Digestive Diseases*, vol. 29, no. 5, pp. 491–493, 2011.
- [8] Perforated ulcers. Notable cases, http://en.m.wikipedia.org/wiki/perforated_ulcer, 2017.
- [9] B. I. Hirschowitz, J. Simmons, and J. Mohnen, "Clinical outcome using lansoprazole in acid hypersecretors with and without Zollinger-Ellison syndrome: a 13-year prospective study," *Clinical Gastroenterology and Hepatology*, vol. 3, no. 1, pp. 39–48, 2005.
- [9] M. King, P. C. Bewes, J. Cairns, and J. Tornton, *Perforated gastric or duodenal ulcer in primary surgery*, vol. 1, ena GTZ (GmbH), Jena, 1999.
- [10] N. Williams, C. Bullstrode, and P. O'Connell, *Stomach and Duodenum in Bailey and Love's Short Practice of Surgery*, CRC, London UK, 26th edition, 2013.
- [11] S. M. Fakhry, D. D. Watts, and F. A. Luchette, "Current diagnostic approaches lack sensitivity in the diagnosis of perforated blunt small bowel injury: analysis from 275,557 trauma admissions from the EAST multi-institutional HVI trial," *The Journal of Trauma: Injury, Infection, and Critical Care*, vol. 54, no. 2, pp. 295–306, 2003.
- [12] S. Di Saverio, M. Bassi, N. Smerieri et al., "Diagnosis and treatment of perforated or bleeding peptic ulcers: 2013 WSES position paper," *World Journal of Emergency Surgery*, vol. 9, article 45, 2014.

- [13] M. Mehboob, J. A. Khan, Rehman Shafq-ur, S. M. Saleem, and A. Abdul Qayyum, Peptic Duodenal Perforation-an Audit, vol. 6, 103, 101, 2000.
- [14] J. H. Woodring and M. J. Heiser, "Detection of pneumoperitoneum on chest radiographs: comparison of upright lateral and posteroanterior projections," *American Journal of Roentgenology*, vol. 165, no. 1, pp. 45–47, 1995.
- [15] S. R. Baker, "Imaging of pneumoperitoneum," *Abdominal Imaging*, vol. 21, no. 5, pp. 413–414, 1996.
- [16] V. Maniatis, H. Chryssikopoulos, A. Roussakis et al., "Perforation of the alimentary tract: Evaluation with computed tomography," *Abdominal Imaging*, vol. 25, no. 4, pp. 373–379, 2000.
- [17] F. F. Coppolino, G. Gatta, G. Di Grezia et al., "Gastrointestinal perforation: Ultrasonographic diagnosis," *Crit Ultrasound J*, vol. 5, supplement 1, article S4, 2013.
- [18] K. Seitz and Reising K. D., Reising KD. Ultrasound detection of free air in the abdominal cavity. *Ultraschall Med*, vol. 5, 4-6, 1982.
- [19] M. H. Møller, S. Adamsen, R. W. Tomsen, and A. M. Møller, "Multicentre trial of a perioperative protocol to reduce mortality in patients with peptic ulcer perforation," *British Journal of Surgery*, vol. 98, no. 6, pp. 802–810, 2011.
- [20] S. Di Saverio, M. Bassi, N. Smerieri et al., "Diagnosis and treatment of perforated or bleeding peptic ulcers: 2013 WSES position paper," *World Journal of Emergency Surgery*, vol. 9, article 45, 2014.
- [21] R. Lunevicius and M. Morkevicius, "Comparison of laparoscopic versus open repair for perforated duodenal ulcers," *Surgical Endoscopy and Other Interventional Techniques*, vol. 19, no. 12, pp. 1565–1571, 2005.
- [22] A. E. Sanabria, C. H. Morales, and M. I. Villegas, "Laparoscopic repair for perforated peptic ulcer disease," *Cochrane Database of Systematic Reviews*, no. 4, Article ID CD004778, 2005.
- [23] R. Graham, "The treatment of perforated duodenal ulcers," *Surg Gynec Obstet*, vol. 64, pp. 235–238, 1937.
- [24] E. K. Ng, Y. H. Lam, J. J. Sung et al., "Eradication of *Helicobacter pylori* prevents recurrence of ulcer after simple closure of duodenal ulcer perforation: randomised control trial," *Ann Surg*, vol. 221, no. 2, pp. 153–158, 2000.
- [25] C. Gutierrez De La Peña, R. Márquez, F. Fakih, E. Domínguez-Adame, and J. Medina, "Simple closure or vagotomy and pyloroplasty for the treatment of a perforated duodenal ulcer: Comparison of results," *Digestive Surgery*, vol. 17, no. 3, pp. 225–228, 2000.
- [26] Dempsey D. T., "Stomach," F. C. Brunicki, D. K. Anderson, T. R. Billiar, D. L. Duncan, J. G. Hunter, and R. E. Pollock, Eds., pp. 968-969, The McGraw-Hill companies Inc.
- [27] Solomon Gebre, Causes and Outcome of Surgically Treated Non Traumatic Surgical Acute Abdomen in Suhul General Hospital, Shire, Northwest Tigray, Ethiopia, a Retrospective Study. *American Scientific Research Journal for Engineering, Technology, and Sciences (ASRJETS)* 2016 p.75

- [27] Solomon Gebre, Causes and Outcome of Surgically Treated Non Traumatic Surgical Acute Abdomen in Suhul General Hospital, Shire, Northwest Tigray, Ethiopia, a Retrospective Study. American Scientific Research Journal for Engineering, Technology, and Sciences (ASRJETS) 2016 p.75
- [27] Solomon Gebre, Causes and Outcome of Surgically Treated Non Traumatic Surgical Acute Abdomen in Suhul General Hospital, Shire, Northwest Tigray, Ethiopia, a Retrospective Study. American Scientific Research Journal for Engineering, Technology, and Sciences (ASRJETS) 2016 p.75
- [28] B. Kotiso, Z. Abdurahman, Pattern of Acute Abdomen in Adult Patients in Tikur Anbessa Teaching Hospital, Addis Ababa, Ethiopia. East and Central African Journal of Surgery Volume 12 Number 1 - April 2007 p.50.
- [39] Zelalem A. Pattern of acute abdomen in Yirgalem Hospital, Southern Ethiopia. Ethiop Med J. 2000; 38(4):227-235
- [30] Wang Y R, Richter JE, Dempsey DT. Trends and outcomes of hospitalizations for peptic ulcer disease in the United States,1993 to 2006. Ann Surg 2010; **251**: 51–58.
- [31] Feng xiaoshan, Li Defu, Chen Shuchang Analysis of the causes of acute surgical Abdomen in Nazareth, Ethiopia. Abstract, XXXIVth, annual medical conference of the Ethiopian Medical Association (EMA), May 20-22, 1998, A.A
- [32] B. Kotiso, Z. Abdurahman, Pattern of Acute Abdomen in Adult Patients in Tikur Anbessa Teaching Hospital, Addis Ababa, Ethiopia. East and Central African Journal of Surgery Volume 12 Number 1 - April 2007 p.50.
- [33] Faku h, Faraja m.b patterns of acute abdomen in Sulaimany teaching hospital journal Zankoy Sulmaini(JZS) ,2000,vol.3(59-72).
- [34] Jonathan C, Javeria S an observational study of the etiology, clinical presentation and outcomes associated with peritonitis in Lilongwe, Malawi world journal of emergency surgery 2011, 6:37.
- [35] Ahmed Doumi E. Assessment of pattern, causes and management outcomes of patients presenting with acute abdomen to El Obeid hospital, western Sudan. Dec 2005.
- [36] Kotiso, B. & Abdurrahman, Z. pattern of acute abdomen in adult patients in Tikur Anbessa teaching hospital, Addis Ababa, Ethiopia. East and central African journal of surgery volume 12 number 1 - april 2007.
- [37] Asefa Z, G/eyesus A, perforated peptic ulcer disease in Zewditu hospital, Ethiopian medical journal, 2012, 50(2):145-151

[38] Tsegaye, S.; Osman, M. & Bekele, A. surgically treated acute abdomen at Gondar university hospital, Ethiopia. abstract from east and central African journal of surgery, vol. 12, NO. 1, april, 2006, PP.53-57.

[39] Chalya PL, Mabula JB, Koy M, et al. Clinical profile and outcome of surgical treatment of perforated peptic ulcers in Northwestern Tanzania: A tertiary hospital experience. *World J Emerg Surg* 2011; **6**: 31

10. Annex

Questionnaire

1. Socio-demography

Age

- a. <20 years b. 20-40 c. 40-60 d. >60

Sex

- a. Male b. female

Occupation

- a. Farmer b. trader c. office worker d. health professional e. student f. teacher g. others

Religion

- a. Orthodox Christian b. catholic c. protestant d. Muslim e. others

Residency

- a. Rural b. urban

2. Risk factors

Helicobacter Pylori infection

- a. yes b. no c. not known

NSAIDs

- a. Yes b. no c. not known

Tobacco use

- a. Yes b. no c. not known

Stress (physiologic like burn, trauma and surgery or occupational)

- a. Yes b. no c. not known

Family history of PPUD

- a. Yes b. no c. not known

Previous history of PUD

- a. Yes b. no c. not known

3. Disease

Duration of illness

- a. <2 days b. 2-4 days c. >4 days

Symptoms

- a. Abdominal pain b. vomiting c. fever d. abdominal distention e. others

Signs (finding)

- a. Tenderness b. rigidity c. hypotension d. tachycardia e. air under the diaphragm f. others

Area of perforation

- a. Lesser curvature of stomach b. anterior surface of duodenum c. other

Hospital stay

- a. 7 days b. 8-14 days c. > 14 days

Complication/outcome

- a. Sepsis b. wound infection c. pneumonia d. death e. discharged improved