

Research Article

A clinical study of duodenal ulcer perforation

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ABSTRACT

Background: Time trends in the epidemiology of perforated peptic ulcer disease reflect complex, multifactorial etiologies. Based on today's fast and instant life style it is evident that the epidemiology of peptic ulcer disease largely reflects environmental factors, primarily *Helicobacter pylori* infection, NSAID use, and smoking.

Methods: Surgery was defined as urgent less as 4 hours between admission and surgery, same day (4-24 hours) and delayed at a later time during the same admission. This study comprises of 60 cases of duodenal ulcer perforation admitted in the Department of Surgery, Tertiary care Hospital. Operative details included the site and nature of operation performed.

Results: Highest incidence was found in 40 – 49 years of age (25%) followed by 20 – 29 years (21.67%), 30 – 39 years (20%), and 50 – 59 years (15%).

Conclusions: Duodenal ulcer perforation was more common in the age group of 40-49 years.

Keywords: Duodenal ulcer, Perforation, Clinical profile

INTRODUCTION

Duodenal ulcers occur due to an imbalance between gastroduodenal mucosal defense mechanisms and the damaging forces, particularly gastric acid and pepsin. Hyperacidity is not a prerequisite for duodenal ulcers. Failure of mucosal defenses against gastric acid and pepsin results in ulceration.¹

In the United States, approximately 4 million people have peptic ulcers (duodenal and gastric), and 350,000 new cases are diagnosed each year. Around 180,000 patients are hospitalized yearly, and about 5000 people die each year as a result of peptic ulcer disease.⁸ Approximately, 5-10 percent of patients with duodenal ulcer develop perforations.² Mortality of perforated duodenal ulcer has declined from 40 percent to the present level of less than 10 percent, largely due to early diagnosis and treatment. In the duodenum, the ulcers that perforate are located anteriorly, and the aphorism that - anterior ulcers

perforate, posterior ones bleed is a relevant today as ever.

Time trends in the epidemiology of perforated peptic ulcer disease reflect complex, multifactorial etiologies. Based on today's fast and instant life style it is evident that the epidemiology of peptic ulcer disease largely reflects environmental factors, primarily *Helicobacter pylori* infection, NSAID use, and smoking.³

Age

Peptic ulcer disease predominantly affects middle aged to older age. Increasing use of NSAIDs has resulted in an increased incidence in 6th and 7th decade.¹⁰

Gender

In men duodenal ulcers are more common than in females. The male-to-female ratio for duodenal ulcers is about 3:1.

Localization

Perforations of duodenal ulcers are 7 times more common than perforated gastric ulcers in both sexes in Western literature.

Predicting morbidity and mortality

The incidence of mortality due to perforation is 5-10%. Mortality increases up to 50% if the perforation has been present > 24 hours. Surgical delay is a well-established negative prognostic factor and limiting surgical delay in patients with perforated peptic ulcers (PPU) seems of paramount importance.⁴

METHODS

The study was conducted in the Department of Surgery, Tertiary care Hospital. The diagnosis of duodenal ulcer perforation was that established by the admitting surgeon, based on clinical features and supposed by radiological evidence and confined at operation.

Surgery was defined as urgent less as 4 hours between admission and surgery, same day (4-24 hours) and delayed at a later time during the same admission. This study comprises of 60 cases of duodenal ulcer perforation admitted in the Department of Surgery, Tertiary care Hospital. Operative details included the site and nature of operation performed. Mortality was defined as death following surgical procedure.

Post-operative morbidity was defined in terms of duration of hospital stay and associated complications following surgery.

RESULTS

Table 1: Age distribution.

Age (yrs)	No. of Cases	Percentage (%)
<19	2	3.33
20-29	13	21.67
30-39	12	20.00
40-49	15	25.00
50-59	9	15.00
>60	9	15.00
Total	60	100

Among 60 patients, highest incidence was found in 40 – 49 years of age (25%) followed by 20 – 29 years (21.67%), 30 – 39 years (20%), and 50 – 59 years (15%).

Only 3.44% of incidence was found in less than 19 years of age.

Study subjects constituted males and females, males constituted 95% and females 5% (Table 2).

Table 2: Showing gender distribution.

Gender	No. of cases	Percentage (%)
Male	57	95
Female	3	5
Total	60	100

Table 3: Socioeconomic status.

	No. of Cases	Percentage (%)
Lower	39	65
Upper	21	35
Total	60	100

Socioeconomic status revealed that 65% of patients belong to lower class and remaining 35% belong to upper class.

Table 4: History of peptic ulcers of patients with perforated duodenal ulcers.

History	No. of Cases	Percentage (%)
Present	36	60
Absent	24	40
Total	60	100

In this present study, 60% of patients had h/o Peptic ulcer.

Table 5: Presence of air under diaphragm in patients with perforated duodenal ulcers.

	No. of Cases	Percentage (%)
Air Present	55	91.67
Air Absent	5	8.33
Total	60	100.00

On X- ray, 91.67% of patients had finding of air under diaphragm.

DISCUSSION

Duodenal ulcer is a type of peptic ulcer disease that distresses the lining of the duodenum. Duodenal perforation, complication of duodenal ulcer, is one of the commonest surgical emergencies requiring hospitalization and early management. Perforated duodenal ulcer remains a surgical emergency but nowadays it rarely results in death. The discussion is based on the analysis of data pertaining to 60 cases of perforated duodenal ulcers.

Age

The age of patients in this study is ranging from 18 to more than 60 years. The peak age incidence was between 40 and 49 years, but age is no bar for the perforation.

Table 6: Age incidence.

Author	Year	Peak age incidence (years)
Samuel J et al ⁵	1953	30-60
Debaley et al ⁶	1990	>50
M.C.Dandpat et al ⁷	1991	20-40
Ramesh C et al ⁸	1995	30-50
Hannah et al ⁹	2005	31-40
Kalpesh Jani et al ¹⁰	2006	30-50
Taylor ¹¹		>50
Present study	2013	40-49

Gender

In the current study out of 60 cases, only 4 cases of females with perforated duodenal ulcers were observed. Our study found male predominance for perforated duodenal ulcers which correlates to the reported observation. The very low incidence of female patients with duodenal ulcer perforation in comparison to male incidence may be due to great difference in habits, social, economical and cultural activities.

Table 7: Gender incidence.

Author	Year	Male : Female ratio
Paul. H. Jordan ¹²	1995	26:1
Primrose N. John ¹³	2004	2:1
Rodney Maingot ¹⁴	1990	5:1
Present study	2013	19:1

Socioeconomic status

Perforation due to duodenal ulcer was common in lower socioeconomic group. Out of 60 cases of perforated duodenal ulcers, 39 cases (65%) belonged to lower socioeconomic status.

All patients in the present study were subjected to plain X-ray abdomen in erect position. Out of 60 cases studied, 55 patients (91.67%) were found with pneumoperitoneum.

Table 8: Comparison of Pneumoperitoneum.

Presence of pneuoperitoneum		
Study	Year	Pneuoperitoneum
Shaffer study ¹⁵	1992	70%
Present study	2013	91.67%

CONCLUSION

Duodenal ulcer perforation is one of the most common acute abdominal emergencies.

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