Journal of Cardiovascular Disease Research

ISSN: 0975-3583, 0976-2833 VOL 14, ISSUE 09, 2023

Original Research Article

A CLINICAL STUDY OF FACTORS AFFECTING PROGNOSIS IN DUODENALULCER PERFORATION CASES

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Article History: **Received:** 20.08.2023 **Revised:**25.08.2023 **Accepted:** 05.06.2023

Abstract

The causes of these perforations can be many. The most common cause being perforation of a pre-existing peptic ulcer, infection with H pylori, chronic use of NSAIDS, traumatic, malignancies etc. In treatment of peptic ulcer, incidence of elective surgery tended to decrease due to eradication of Helicobacter pylori during the recent three decades whereas incidenceof emergency surgical interventions for complications of the disease did not decrease . Moreover, population ageing and extensive use of NSAIDS increased theincidence of bleeding and perforation of peptic ulcer . Only 5-10% of the patients withbleeding peptic ulcers require surgical intervention whereas almost all patients with perforated peptic ulcer (PPU) necessitate surgery . The risk of mortality (6-30%) and morbidity (21-43%) of PPU unfortunately have not changed during the last decades

Keywords: NSAIDS, Ulcer

Introduction

Intestinal perforations are encountered by surgeons as a very frequent cause of acute abdomen for which operative intervention will be required in most of the casesand is still a dreaded condition having high mortality and morbidity. Of all the intestinal perforations gastric and duodenal perforations are very common. The causes of these perforations can be many. The most common cause being perforation of a pre-existing peptic ulcer, infection with H pylori, chronic use of NSAIDS, traumatic, malignancies etc.In treatment of peptic ulcer, incidence of elective surgery tended to decrease due to eradication of Helicobacter pylori during the recent three decades whereas incidenceof emergency surgical interventions for complications of the disease did not decrease . Moreover, population ageing and extensive use of NSAIDS increased theincidence of bleeding and perforation of peptic ulcer . Only 5-10% of the patients with bleeding peptic ulcers require surgical intervention whereas almost all patients with perforated peptic ulcer (PPU) necessitate surgery . The risk of mortality (6-30%) and morbidity (21-43%) of PPU unfortunately have not changed during the last decades .Perforation was the cause of death in 70% of the patients with peptic ulcer and rate of mortality due to PPU is 10-fold higher than other acute abdominal factors such as acute appendicitis and acute cholecystitis.

The outcome of surgical management of gastric and duodenal perforations is dependent on many factors like the age of the patient, size of the perforation, delayin presentation, shock at the time of presentation, malnutrition, presence of coexisting illnesses etc. Young patients can tolerate and most often will survive the peritonitis that accompanies a perforated duodenal ulcer, this is not necessarily true of the elderly, the debilitated, or those patients with associated

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other coexisting systemic diseases.In general the mortality rate for perforated duodenal ulcer in healthy patients has been reported as between 3 and 6% whereas the relatively poor risk or elderly patient has a 10 to 30% chance of not surviving the 30 day postoperative period. Peptic ulcers are focal defects in the gastric or duodenal mucosa that extend into submucosa or deeper. They may be acute or chronic and Ultimately are caused by an imbalance between mucosal defences and acid/peptic injury. Common sites for peptic ulcers are the first part of the duodenum and the lesser curve of the stomach, but they also occur on the stoma following gastric surgery, the oesophagus and evenin a Meckel's diverticulum, which contains ectopic gastric epithelium .In general, the ulcer occurs at a junction between different types of epithelium, the ulcer occurring inthe epithelium least resistant to acid damage. It is now widely accepted that infectionwith H. pylori is the most important factor in the development of peptic ulceration.

The other factor of major importance at present is ingestion of NSAIDs. Cigarettesmoking and other factors like physical and mental stress also contribute. Indications for operative intervention have changed over past 20 years with the virtual elimination of elective operations. Operative intervention is now reserved forthe treatment of complicated ulcer disease. The three most common complicationsof peptic ulcer include bleeding, perforation and obstruction. For peptic perforation surgery is almost always indicated , although occasionally non surgical treatment can be used in the stable patient without peritonitis in whom radiologic studies document a sealed perforation. Perforation peritonitis is the most common surgicalemergency in India and duodenal ulcer perforation remains leading cause. Hence,an attempt to analyse the various pre-operative factors, which affect the morbidity/mortality of patients with peptic ulcer perforations is made.

Patients and Methods

Sample Size: 35

Period of Study – Jan 2022 to Jan 2023

Inclusion criteria:

1. Patients with duodenal perforation of peptic ulcer origin.

Exclusion criteria:

1) Iatrogenic gastro duodenal perforation.
2) Malignant gastro duodenal perforation.
3) Traumatic gastro duodenal perforation.

Observations and Results

The results obtained in the present study are analysed as follows:

Table 1 : Age and sex wise incidence

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Age (years)	Males		Females		Total	
	NO.	%	NO.	%	NO	%
21-30	8	24.24	1	50	9	25.71
31-40	11	33.33	0	0	11	31.42
41-50	2	6.06	0	0	2	5.71
51-60	6	18.18	0	0	6	17.14
61-70	6	18.18	1	50	7	20
TOTAL	33	100	2	100	35	100
Mean ± SD	45.27±10.4 8		45.75±11.74		45.26 ± 10.52	

The highest incidence was observed in Third decade of life. The youngest patientwas 23 years old and oldest was 67 years old.

Perforation was more common in males compared to females, the ratio being 17.5:1.Out of 35 cases 33 were males. The mean age (SD) of the patients was 45.26 years.The mean ages (SD) were, for males 45.27 years and for females 45.75 years.

Peptic ulcer perforation is common in second and third decade. Mean age of patients with peptic ulcer perforation in study by Kocer et al. (2007) was 43 years and in thestudy by J. C. Dakubo et al. (2009) it was 41 years. However Sharma et al. (2006) another Indian study showed mean age of 33 years. Study by Irvin (1989) showed older age group patients (mean age 70 years) were commonly affected.

Present study matches with studies by Kocer et al. (2007) and J. C. Dakubo et al.(2009). Peptic ulcer perforation was common in the age group of 30-50 years withmean age 44.2 years in our study. But age is no bar for perforation to occur. It hasalso been reported in 4 years old child (Bhatacharya, 1969).

Table2: Age related morbidity and mortality

Age group (In years)	*No.of Patients*	*Good recovery*	*Morbidity*	*Mortality*
21-30	9	5	3	1
31-40	11	8	1	2
41-50	2	2	0	0
51-60	6	4	0	2
61-70	7	2	2	3

Morbidity is increased in age group of 61-70 , 3 patients expired in the age group of61-70. This shows morbidity as well as mortality increases as the age advances.

Table 3: Morbidity and Mortality in relation to NSAIDs, Smoking,Alcohol and Associated illnesses

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Parameter		Total	Morbidity	Mortality
NSAID use	Present	9	1	5
	Absent	26	5	3
Corticosteroid use	Present	1	0	1
	Absent	34	6	7
H/o Smoking	Present	17	3	4
	Absent	18	3	4
H/o Alcohol	Present	13	3	4
	Absent	22	3	4
H/o Peptic ulcer disease	Present	6	1	1
	Absent	29	5	7
Associated illness	Present	8	2	3
	Absent	27	4	5

In this study 9 (25.71%) patients had history of regular ingestion of NSAIDs and 1(2.85%) patient had history of ingestion of corticosteroid. History of regular smokingwas present in 17 (48.57%) patients. Among these, 4(14.81%) patients developed morbidity and 10 (37.03%) patients expired in postoperative period. History of regular alcohol consumption was present in 13(37.14%) patients, 3 (23.07%) patients developed morbidity and 4 (30.76%) patient expired in postoperative period.

A previous history of dyspepsia or peptic ulcer symptoms was present in 6 (17.14%) out of 35 patients. 1(16.66%) developed morbidity and 1(16.66%) patient expired. 8 (22.85%) patients had associated co-morbid conditions. Hypertension was present in4 patients, COPD was present in 1, 1 was diabetic, 2 had Ischemic Heart Disease (IHD). 2 (25%) patients developed morbidity and 3 (37.5%) patients expired in postoperative period.
In a study by Kocer et al. in 2007, 8.9% patients had history of regular ingestion of NSAIDs whereas in study by J. C. Dakubo et al. in 2009, it was 28.22%. In our study14% patients were chronic NSAIDs users.

In a study by Kocer et al. in 2007, 73.2% patients had history of regular smokingwhereas in study by J. C. Dakubo in 2009, it was 9.81%. In our study 48.57% patients were chronic smokers.
In a study by Kocer et al. in 2007, 12.3% patients had history of regular alcohol consumption whereas in study by J. C. Dakubo in 2009, it was 38.03%. In our study37.14% patients were chronic alcoholics.

Table 4 : Morbidity and Mortality in relation to pre operative shock and time ofsurgery

Parameter		Total	Morbidity	Mortality
Pre-operative shock	Present	3	1	2
	Absent	32	5	6
Time of surgery	<24 hrs	12	1	1
	>24 hrs	23	5	7

23 (65.71%) patients underwent surgery after 24 hours of perforation, the rest were seen before 24 hours. 5 (21.73%)patients who underwent surgery after 24 hours developed morbidity and 7 (30.43%) patients expired.

Discussion

Gut perforations secondary to various causes is a very frequently encountered problem in the practice of any general surgeon.As a treating doctor it is our responsibility to address to the

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problems associated with these perforations as a whole rather than just closing the perforation surgically as the mortality and morbiditywhich follows depends on multiple factors. Young and well nourished patients usuallytolerate and recover well ,the main problem we are facing now is not being able to reduce the mortality and morbidity in the high risk group like the elderly, malnourished, large perforations, and in those with other coexisting diseases. In general the mortality rate for perforated duodenal ulcer in healthy patients has been reported as between 3 and 6% whereas the relatively poor risk or elderly patient has a 10 to 30% chance of not surviving the 30 day postoperative period.

In India ,especially in our set up most of the patients we see are from low socio economic status who neglect their problems for a very long time but going to local quacks and come to a proper centre with a huge delay after the time of onset of symptoms sometimes even after 7 days.During this delay mostly are generally nil by mouth and have to be nil per oral for another week or so in the post operative periodtill the anastomosis heals, this can prove detrimental if nutritional support in immediate postoperative period was not supplemented.Other factors affecting the outcome of surgical management are

AGE OF THE PATIENT:

PULP or Boey scores found that age over 60 or 65 was an independent risk factor for mortality. Advanced age had been reported in several studies as an
independent risk factor on mortality in PPU patients and its importance is stillremains.Age > 60 yrs was taken as an inclusion criteria in our study.

SIZE OF THE PERFORATION:

In case of peptic ulcer perforation ulcers larger than 2cm in duodenum havebeen shown to have higher leak rates upto 15 % with primary repair and an associated mortality of 10- 35% and further increases with delay in re- exploration.

For the study purpose we have done feeding jejunostomy in patients with gastric perforation of any size and duodenal perforation >1.5 cms in the studygroup.

DELAY IN PRESENTATION:

As discussed above delay in presentation is very common in our set up some patients even present after 7 days and during this period they these people donot take anything orally leading to further dehydration and malnourishment.

We have considered any presentation with a delay of 24 hrs or more than 24hrs from the time of onset of the first complaint as an inclusion criteria and have done feeding jejunostomy for this patient in the study group.

EMO DYNAMICALLY UNSTABLE AT THE TIME OF PRESENTATION:

A substantial number of patients present with shock at the time of our first encounter, this has also been proven to be associated with bad outcome in the post operative period. After adequate pre operative resuscitation , thesepatients also underwent feeding jejunostomy in the study group.

MALNUTRITION

Malnutrition in hospitalised patients often goes unrecognised. It has a prevalence of30 -40 % of hospitalised patients,40% of then are malnourished at the time of admission.

Deliberate semi starvation for 24 weeks was studied by Brozek et al among healthymale volunteers. The studied volunteers who lost upto 25% of their weight became depressed, anxious, irritable, and apathetic; they also lost muscle strength and physical capacity.

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Hypo albuminemia alone had been shown as marker of increased risk of morbidity and mortality in PPU patients.
These patients have poor healing capacities and is also known to adversely effectboth humoral and cell mediated immunity.
After nutritional assessment all malnourished patients underwent feedingjejunostomy in the study group.

PRESENCE OF OTHER COEXISTING ILLNESSES:
Presence of other coexisting illnesses like uncontrolled diabetes mellitus, respiratoryor cardiac compromise etc also have increased mortality and morbidity in the post operative period, so these patients were also included in the study group.
It has been reported that the overall mortality is 10% in all studies. However, if all three of the following are present mortality becomes 100%.

- Delay (>24hrs)
- Preoperative Systolic BP<100
- Concurrent medical illness.

A reasonable comparison is done between the present study and previous studies published about similar topic.
The highest incidence was observed in Third decade of life. The youngest patientwas 23 years old and oldest was 67 years old.

Conclusions
From present study following conclusions can be drawn based on variousobservations and its analysis. Peptic perforation is common in the age group of 30-50 years. It is more common in males. Age more than 65 years and associated medical illness increase morbidity andmortality in patients with peptic perforation. Prolonged use of drug like NSAID's is a statistically significant predictor ofoutcome in terms of mortality. Similarly use of corticosteroids also causesincrease in mortality.

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13. WSES position paper. *World J Emerg Surg* 2014, 9:45. doi:10.1186/1749-7922-9-45 At the time of admission, shock (systolic BP less than 100) was present in 6(17.14%) patients. 1 (16.66%) patient developed morbidity and 2(33.33%) patients expired in postoperative period.
14. In study by Kocer et al. in 2007, patients older than 65 years had a highermorbidity rate (56.6% vs 16.2%) and mortality rate (37.7% vs 1.4%) when compared to younger patients.
15. In study by J. C. Dakubo et al. in 2009, patients older than 65 years had ahigher mortality rate (19.81% vs 6.8%) when compared to younger patients.Factors like age above 60 years, excessive alcohol intake were statistically significant in predicting postoperative complications and/or mortality in their study.
16. In our study, patients older than 65 years had a higher mortality (100 % vs 20.58 %). Hence age 65 years is significant in predicting postoperativemortality in our study.