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A clinical study on surgical complications of peptic ulcer disease at a tertiary care center

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Abstract
Introduction: Peptic ulcer Complications of peptic ulcer disease is a life threatening complication it needs special attention with prompt resuscitation and appropriate surgical management if morbidity and mortality are to be avoided.
Aims: Aimed to study surgical management of the various causes of duodenal perforation to try to recognise the predictors of outcome in such patients.
Materials and methods: It is a prospective study done in department of general surgery study from April 2018 to September 2019 with 50 patients with diagnosis of perforated peptic ulcer disease, above 20-70 years of age, patients consented for study and patients presenting with complications of PUD like upper GI bleeding, peptic ulcer perforation and features of gastric outlet obstruction were included.
Results: In present study the peak incidence was in the 4th decade (31-40 years). The majority of patients, 23(46%) were younger than 40 years. Post-operative complications were recorded in 14 (28%) patients. Of these, surgical site infection (16%) was the most common post-operative complications. The mean age of patients who developed complications was 53.4±15.1 years. Premorbidiy illness, treatment delay and nature of perforation are significant Predictors of complications.
Conclusion: Perforation of peptic ulcer remains a frequent clinical problem in our environment predominantly affecting young males not known to suffer from PUD.

Keywords: surgical complications, peptic ulcer, tertiary

Introduction

Peptic ulcers are sores that develop in the lining of the stomach, lower esophagus, or small intestine. They're usually formed as a result of inflammation caused by the bacteria *H. pylori*, as well as from erosion from stomach acids. Peptic ulcers are a fairly common health problem. Complications of peptic ulcer disease (PUD) include bleeding, penetration, perforation, and gastric outlet obstruction.

The risk of complications in patients with chronic PUD is 2 to 3 percent per year. Different authors have reported mortality rates in this condition ranging from 1.3% to 20%. [1,2]

There has been a consistent decrease in the incidence of bleeding and perforation and hospitalization rates due to complications of PUD. In patients with bleeding peptic ulcer, the majority of deaths are related to multi-organ failure or cardiopulmonary causes rather than to bleeding itself.

Trauma and abdominal surgery are other causes of duodenal perforation in 0.2%–3.7% of all trauma-related laparotomies, and the associated mortality of duodenal injuries was in the range of 11.2%–26%. [3,4]

Advanced age, preoperative shock, coexisting medical condition, and delay in care are common risk factors associated with poor outcomes in patients with duodenal perforation. Delay in diagnosis and initiation of surgical treatment of perforated PUD has been reported to be associated with high morbidity and mortality after surgery for perforated PUD. [5,6] Early recognition and prompt surgical treatment of perforated PUD is of paramount importance if morbidity and mortality associated with perforated PUD are to be avoided.[5] A successful outcome is obtained by prompt recognition of the diagnosis, aggressive resuscitation and early institution of surgical management.

Little work has been done on the surgical management of perforated peptic ulcer disease in our local environment despite increase in the number of admissions of this condition.

We our experience of surgical management of the various causes of duodenal perforation to try to recognise the predictors of outcome in such patients.

Materials and Methods

It is a prospective study done in Dr PK Das Institute of Medical Sciences in department of general surgery study from April 2018 to September 2019 with 50 patients with diagnosis of perforated peptic ulcer disease included in study.

Inclusion criteria

Patients above 20-70 years of age, patients consented for study and patients presenting with complications of PUD like upper GI bleeding, peptic ulcer perforation and features of gastric outlet obstruction were included.

Exclusion criteria

Patients with bleeding due to esophageal varices, patients with contraindications for endoscopy during study period like recent myocardial infarction (in <3 months), post- operative states and presence of shock were excluded from the study. In patients with bleeding, the decision regarding type of treatment was taken after considering age of the patient, general condition, number of episodes of haematemesis/malena, presence of shock, previous history of haematemesis and number of blood transfusions required.

All the patients are informed consents. 50 peptic ulcer disease patients were enrolled in to the study. All the patient's clinical history were collected. Also the complete physical examination was done. In these entire cases time interval between perforation and surgery was noted. Vital signs were monitored. Assessment of intake/output and biochemical parameters was done. Recovery was observed and any complications occurring in postoperative period were noted and treated accordingly. During operation amount of peritoneal fluid and its character was noted. Site, size of perforation, duodenal scarring and fibrosis were noted. In the post-operative period the patients were observed with special reference to the time of oral intake, number of postoperative days and the type of complication were recorded. After satisfactory improvement, patients were discharged from the hospital with advice regarding diet, anti- ulcer drugs, *H. pylori* eradication therapy and quitting of smoking/alcohol etc.12 All the patients were instructed to come for regular follow-up.

Statistical analysis

All the data was recorded systematically into the pro- forma and was Data were statistically analyzed using Statistical Package of Social Science (SPSS). The results of analysis were discussed and compared with available published literature in the form of tables and charts.

Results

Table 1: Demographic details in study

Age in yrs	Number of patients	Percentages
20-30	6	12
31-40	23	46
41-50	13	26
51-60	5	10
61-70	3	6
Total	50	100
Mean age	33.1+5.4	
Gender		0
Males	27	54
Females	23	46

27(54%) were males and females were 23 (46%) with a female ratio of 1.1:1. The patient's age ranged from 20 to 70 years with a median of 33.1 years. The peak incidence was in the 4th decade (31-40 years). The majority of patients, 23(46%) were younger than 40 years.

Table 2: Clinical presentation in present study

Clinical presentation	Frequency	Percentage
Severe abdominal pain	48	96
Abdominal tenderness	44	88
Abdominal distention	39	78
Classical signs of peritonitis	33	66
Vomiting	19	38
Nausea	17	34
Shock	18	36
Severe dyspepsia	16	32
Constipation	14	28
Fever	10	20

The duration of symptoms ranged from 1 to 12 days with a mean duration of 6.7±2.5 days. The commonest presenting symptoms were sudden onset of sever abdominal pain in 48 (96%), abdominal tenderness in 44 (88%) and Abdominal distention in 39 (78%) patients respectively.

Table 3: Post-operative complications

Complications	Frequency	Percentage
Surgical site infections	6	12
Post-operative pyrexia	4	8
Pulmonary infection	3	6
Intra-abdominal abscess	2	4
Wound dehiscence/burst abdomen	1	2
Re-perforation	2	4
Septic shock	1	2
Enterocutaneous fistula	1	2
Peritonitis	1	2

Post-operative complications were recorded in 14 (28%) patients. Of these, surgical site infection (16%) was the most common post-operative complications. The mean age of patients who developed complications was 53.4 ± 15.1 years.

Table 4: Predictors of complications in multivariate logistic regression analysis

variable	Complication N (%)	No complication n (%)	Multivariate analysis	
			O.R. 95% C.I.	p-value
Age (in years)				
<40	9 (31)	20 (69)		
≥40	7 (33)	14 (66.7)	1.25(0.27-2.99)	0.86
Sex				
Male	8 (27.5)	19 (73.5)		
Female	7 (30.4)	16 (69.6)	1.33(0.28-3.23)	0.95
Premorbid illness				
Yes	3(60)	2(40)		
No	11(24)	34(76)	4.63(2.39-6.82)	**0.007***
Previous PUD				
Yes	3(23)	10(77)		
No	9(24)	28(76)	1.87(0.20-4.15)	0.92
NSAIDs use				
Yes	3(75)	1(25)		
No	11(24)	35(76)	1.02(0.78-3.90)	0.723
Alcohol use				
Yes	11(30.5)	25(69.5)		
No	4(28.5)	10(61.5)	1.82(0.28-4.2)	0.89
Cigarette smoking				
Yes	8(27.5)	21(72.5)		
No	4(19)	17(81)	2.9(0.41-6.3)	0.48
Treatment delay				
< 48	9(90)	1(10)		
≥ 48	5(12.5)	35(87.5)	0.23(0.11-0.95)	**0.003***
Nature of perforation				
Acute	12(28)	31(72)		
Chronic	0	7(100)	2.15(1.11-7.8)	**0.012***

Premorbidiy illness, treatment delay and nature of perforation are significant
Predictors of complications in with p value <0.05.

Discussion

A total of 50 patients were enrolled over a one-year period, which is close to what was stated by Chalya, P.L *et al,* Schein et al. Mieny et al. reported a low incidence of perforated PUD in South Africa. These differences reflect differences in risk factors for perforated peptic ulcer disease from one country to another. In fact, the figures in our study may be overstated and the magnitude of the problem may not be apparent due to the high number of patients excluded from this study. [7,8,9]

In the present study, perforated peptic ulcer disease was found to be most prevalent in the fourth decade of life and appeared to affect more males than females, with a male-to-female ratio of 1.1:1 comparable to other studies in developing countries. Our demographic profile compares favorably with that reported in developing countries where the majority of patients are over 60 years of age and the incidence is higher in elderly women taking ulcerogens. Male predominance in this age group is due to the excessive consumption of alcohol and smoking among young males that is prevalent in our society. Alcohol and smoking have been reported to be associated with an increased risk of perforated peptic ulcer. Alcohol, as a noxious agent, causes gastric mucosal damage, stimulates acid secretion and increases serum gastrin levels[10], and smoking inhibits pancreatic bicarbonate secretion, leading to increased acidity in the duodenal bulb. It also inhibits duodenal ulcer healing.

In agreement with other studies, more than sixty percent of patients had no history of peptic ulcer disease, and those with a known history of PUD did not receive regular treatment. This contrasts sharply with Nuhu et al in Nigeria, which reported that 71% of cases had a previous history of peptic ulcer disease. It has been reported that in many developing countries, PUD diagnosis is first made in many cases after perforation. The present study confirms this observation because 75% of patients with perforation had not previously been diagnosed with PUD and were therefore not on treatment. [11,12]

The use of NSAIDs is an important cause of perforated peptic ulcer in the West. In our series, the use of NSAIDs as an offending cause could be attributed to only 25 per cent of patients. NSAID inhibits prostaglandin synthesis to further reduce gastric mucosal blood flow. [12]

The interval between perforation and initiation of treatment has been reported to be a better predictor of outcome. In the present study, the majority of patients reported late more than 24 hours from the onset of symptoms. This is in line with other studies in most developing countries. Late presentation of our study may be attributed to a lack of accessibility to health care facilities and a lack of awareness of the disease. Hospital treatment is expensive and patients may seek care only if the pain is unbearable. Patients may take drugs in the pre-hospital period with the hope that the symptoms will be reduced. It is also possible that some clinicians who manage patients may initially be able to do so. [13,14]

Many procedures have been suggested since the first description of surgery for acute perforated peptic ulcer disease. Recent advancements in antiulcer therapy have shown the easy closure of omental patch perforation accompanied by eradication of H. Pylori is an easy and safe choice in many centres and has changed the old pattern of truncated vagotomy and drainage procedures. [12]

Conclusion

Perforation of peptic ulcer remains a frequent clinical problem in

our environment predominantly affecting young males not known to suffer from PUD. Premorbidiy illness, treatment delay and nature of perforation are significant Predictors of complications.

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