Perforated Duodenal Ulcer Emerging Pattern

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Abstract

Background: Twenty seven patients of perforated duodenal ulcer admitted in our institution between December 2010 and November 2012 were treated and studied.

Material and Methods: All patients were diagnosed on the basis of clinical and radiological findings, exploratory laparotomy was performed and simple closure of perforation with placement of Graham's omental patch was carried out. This was followed by triple regimen for H. pylori eradication.

Results: All patients were male, maximum incidence (61.54%) was noted in the age group of 21 to 30. O+ve blood group was most commonly observed in our patients. Eight patients had history suggestive of acute acid peptic disease. Mean time interval between start of symptoms and surgery was 43 hrs. No morbidity except minimal pleural effusion was seen in one case. There was no mortality in our series.

Conclusion: We conclude that although a number of definitive surgeries have been described for acid peptic disease but requirement of such procedures has come down due to increasing use of H. pylori eradication therapy and proton pump inhibitors. However surgery for complications especially for duodenal ulcer perforation has not reduced concomitantly. Incidence has been greater in young males. Nowadays perforations are seen more in acute peptic ulcer disease. NSAID is one of the contributing etiological factors. Early diagnosis and timely management is advocated to reduce morbidity and mortality.

Introduction

Duodenal ulcer is a common condition characterized by the presence of a well-demarcated break in the mucosa that may extend into the muscularis propria of the duodenum. Despite better understanding of pathophysiology and medical therapy of acid peptic disease, duodenal ulcer perforation remains one of the major cause of Peritonitis.\(^1\)\(^2\)

The incidence of perforated peptic ulcer in western countries is 7 to 9 per 1,00,000 population per year.\(^3\) The incidence of perforation of duodenal ulcers in young and middle aged patients appear to be falling but in contrast, there is currently a marked increase in the numbers of elderly. Perforation peritonitis is the most common surgical emergency in India, and duodenal ulcer perforation remains the leading cause (4) Non operative treatment of perforated peptic ulcer is associated with a very high incidence of mortality and has no role in the management of this serious life-threatening condition. Patient generally present with acute abdomen and once the diagnosis is confirmed, emergency laparotomy should be performed\(^4\). Conservative management is reserved for those who can not withstand stress of surgery\(^5\). Closure of the perforation with omental patch\(^4\) followed by eradication of H.pylori is accepted worldwide.\(^4\)

Materials And Methods

All patients of perforated duodenal ulcer admitted under care of all surgical units at Padmashree Dr. D. Y. Patil Medical college and hospital between December 2010 and November 2012 were treated and studied. All patients were initially managed with antibiotics, ryle's tube aspiration, intravenous fluids and close monitoring of pulse rate, respiratory rate, blood pressure and urine output. Diagnosis was made on the basis of clinical presentation of patient and radiological findings of presence of free gas under diaphragm in erect chest radiograph.

Necessary investigations for anesthesia purpose were carried out and patients were prepared for laparotomy. A well informed and written consent was taken from all patients and their relatives. All variables related to history suggestive of acid peptic disease, smoking, alcohol consumption, NSAID use, any other associated medical diseases were noted. Then presence of clinical features pain, vomiting, fever, abdominal distension, tenderness, guarding / rigidity, tachycardia, shock were recorded. Distribution of perforated duodenal ulcer in different age groups, gender and blood group were documented. Treatment delay time was duly calculated. Intraoperative findings of peritoneal spillage, location and size of perforation were given due importance.
All laparotomies were done under general anesthesia with supra umbilical midline incision. Peritoneal spillage with bile stained fluid fibrinous exudates and flakes was found in all cases. All perforations were < 1cm in diameter with surrounding tissue edema. Peritoneal toilet was performed and perforation was closed by interrupted sutures with 3-0 silk. Graham's pedicled omental patch was reinforced at the site of perforation with 3-0 silk (Figure: 3). Thorough peritoneal lavage was given in all patients with two to three litres of normal saline.

Intraabdominal drain was placed and abdominal closure done in single layer. Postoperatively patients were kept nil by mouth till return of bowel sounds and intravenous fluids were supplemented. Intravenous antibiotics were given for 5 to 7 days. Patients were discharged within 14 days. At the time of discharge they were advised to refrain from smoking, consumption of alcohol and using NSAIDs. All patients were put on triple regimen for eradication of H. Pylori for 2 weeks at the time of discharge from hospital.

Post operative morbidity, mortality and stay in hospital were assessed. These patients have been followed up for nine months; they remained asymptomatic.

Results

In our study all patients were male, and age group varied from 17 years to 68 years with mean age of 30.43 years. Eight cases (61.54%) were seen in age group between 21 to 30 years and only one case over the age of 50 years (Figure: 4). Eight patients (61.54%) were having blood group O-positive, three (23.07%) patients of A-positive and two (15.38%) patients of B-positive.

See Illustration 1

Out of these 13 patients, eight (61.54%) gave history of symptoms suggestive of acid peptic disease for the duration varying from one month to six months for which none of them had consulted any doctor nor had taken any treatment. Three patients (23.07%) were chronic alcoholic and they also gave history of alcohol consumption on the day before the onset of symptoms. Three patients (23.7%) had used NSAID very often, and two patients (15.38%) were smoker. None of these 13 patients had any associated medical illness like tuberculosis, COPD, diabetes mellitus, hypertension.

All patients came with complains of severe pain in abdomen. The pain was associated with multiple episodes of non-bilious vomiting. Surprisingly none of them presented with fever. Out of them eleven (84.61%) had tachycardia at the time of admission and two (15.38%) patients presented in the state of shock.

On examination all patients had tenderness all over abdomen, which was most marked in epigastric region. Eight (61.54%) patients were having guarding/rigidity and four (30.77%) patients presented with abdominal distension. We studied treatment delay in two parts, one before coming to hospital i.e. from the onset of symptoms to arrival in emergency department in hours and second delay in hospital i.e. from arrival of patient in emergency department to the start of exploratory laparotomy.

Six patients (46.15%) presented on the second day i.e. (25 to 48 hrs) after the onset of symptoms. One patient (7.69%) came to hospital after 93 hrs and 10 min after onset of symptoms. The mean time delay before the patient came to hospital was 35 hrs & 30 min (Figure: 5). In hospital four patients (30.77%) were operated within 6 hrs of admission and nine patients (69.23%) were operated within 24 hrs of admission. Mean in-hospital delay was 7 hrs 53 min (Figure: 6).

See Illustration 2

Intraoperatively peritoneal spillage, tissue edema were common findings. First part of duodenum was the most common site of perforation as seen in eleven (84.61%) patients and one (7.69%) each in pyloric region and second part of duodenum. All these perforations were found to be on the anterior wall and there was no evidence of concomitant posterior wall perforation or bleeding through it.

All patients were discharged within 14 days with healing of wound by primary intention and uneventful postoperative period except one case.

This case had minimal pleural effusion on right side which seemed to be reactionary and resolved without any intervention.

The mortality rate was zero in our study.

Discussion

Duodenal ulcer perforation is one of the most common causes of generalized peritonitis. Though it has been seen that incidence of peptic ulcer disease as such is
decreased; epidemiological data suggest that incidence of ulcer complications has remained stable or has increased slightly over last decade. However, controversy exist regarding the incidence of perforated peptic ulcer: most authors' reports that the number of operations for perforated peptic ulcer remains constant, whereas others claim that it has risen and some state that it has fallen.

Despite decrease in surgical volume, due to decrease in elective surgery for peptic ulcer disease, there is an increase in proportion of emergency operations performed for which most common indication was perforated peptic ulcer.

Eight cases (61.54%) in our study were in the age group of 21-30 years, which is contrary to the figures in literature, which states that the incidence of duodenal ulcer perforation is decreasing in youngsters and increasing in elderly. This preponderance in youngsters may be due to lifestyle pattern with increased stress, smoking habits, alcohol consumption, irregularity in meals etc. In literature it was noticed that hospital admissions and mortality is increasing in older patients. In our study we have only one case over the age of 50 and he had uneventful recovery. Cecillie had correlated it with cohort stating that ulcer perforation risk is common in cohort bora after turn of 20th century and less common in previous and succeeding birth cohort.

All our patients were male; as also seen in many studies. This could be because of greater acid secretion in men than women or because of more stress and increased indulgence in smoking by men. Earlier male: female ratio was 10:1 which is now 1.5:1. This may be the effect of changing pattern of smoking and increased stress in the working women which is rising in western countries. Smoking is a causal factor for ulcer perforation and accounts for a major part of ulcer perforation. In our study we had only two patients who used to smoke.

Eight patients had history suggestive of acid peptic disease for the duration varying from 1 month to 6 months; this suggest that all of them had acute peptic ulcer disease. R. M. Watkins et al study suggested that the majority of perforations are now of acute peptic ulcer and are unlikely to be prevented by improved therapy.

We observed that eight (61.54%) patients in our study had ‘0 positive’ blood group. Our this observation is strongly supported by other authors. Peptic ulcer has been shown to be associated with increased Lewis blood group antigen expression. It is not done routinely and we did not have facilities to perform Lewis antigen expression test.

Inspite of overall decline in the incidence of peptic ulcer disease, the incidence of perforated duodenal ulcer has not been reduced in western countries; this may be due to the increased use of NSAIDs. In our study three patients (23.1%) gave history of use of NSAIDs frequently. About one of four ulcer perforation can be attribute to the use of NSAID.

The use of NSAID has been found to be the most common cause of peptic ulcer among patients who test negative for H. Pylori.

Some studies find no correlation between H. pylori infection and ulcer perforation and reports that, the eradication of H. pylori does not involve any significant reduction in the incidence of patients with perforated peptic ulcer. Marshall stated that H. pylori has been detected in almost 100% of patients with duodenal ulcers but in patients presenting with perforated peptic ulcer, the prevalence of H. pylori can be as low as 50%. Considering all these facts and proven benefits of triple regimen for eradication of H. pylori we also put all our patients on triple regimen for eradication of H. pylori post operatively.

All perforations we treated were of <1cm in diameter. Mortality has significant bearing to the size of perforation. Size of perforation greater than 5mm was identified as risk factor for releak. We did not come across a single releak in our patients.

The delay before surgical treatment is a strong determinant for lethality, complication rates, and hospital cost. Patients who received treatment within 6hrs have better prognosis. Delay of more than 24 hrs increases morbidity and mortality. We were fortunate that out of thirteen; ten patients who were operated more than 24 hrs after onset of symptoms survived without any major complication. These results should not undermine need of immediate operative management for peptic ulcer perforation for better outcome.

In our study the cause of delay before coming to hospital were mainly lack of transportation services, unawareness of seriousness, and indulgence of quacks in management of such patients in villages. The principal causes of in hospital delay were absence of accompanying relative for consent and financial
support.

The significant risk factors that lead to death have been cited as presence of shock at admission and co-existent significant illness24. In our study two patients came in shock but none with any coexistent disease. Out of these two, one of our patients developed post-operative complication of minimal pleural effusion, which resolved on its own.

**Conclusion**

We conclude that although a number of definitive surgeries have been described for acid peptic disease, but requirement of such procedures has come down due to increasing use of H. pylori eradication therapy and proton pump inhibitors. However surgery for complications especially for duodenal ulcer perforation has not reduced concomitantly. Incidence has been greater in young males. Nowadays perforations are seen more in acute peptic ulcer disease. NSAID is one of the contributing etiological factors. Early diagnosis and timely management is advocated to reduce morbidity and mortality.

**References**

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Illustrations

Illustration 1

Fig 1

AGE DISTRIBUTION

NUMBER OF PATIENTS

AGE IN YEARS

0 TO 10
11 TO 20
21 TO 30
31 TO 40
41 TO 50
51 TO 60
61 TO 70
Illustration 2

Fig 2

![TREATMENT DELAY Diagram]

- DELAY IN HOSPITAL
- Patients vs. Delay
Illustration 3

Fig 3

Illustration 4

Fig 4
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