

Changing Trends in Perforative Peritonitis-Rural Hospital Based Study

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Abstract

Peptic ulcer disease causes high morbidity worldwide annually. The incidence of PUD has been estimated at around 1.5% to 3%. High risk of morbidity and mortality are found in patients with perforated peptic ulcer. PPU carries a high risk of mortality. Perforation is the major complication and treating them is most challenging. Perforation is the most disastrous complication of peptic ulcer and in spite of modern management it is still life threatening catastrophe (Hugh TB, 1990). The mainstay of treatment for bowel perforation is repair of perforation-surgically, Endoscopic, Laparoscopic procedures are now being increasingly performed instead of conventional laparotomy. The most common emergency in India compared to western world is peritonitis caused due to perforation. *Materials and Methods:* This study has been based on the analysis of 75 cases of hollow viscus perforation admitted to MVJ Medical College & Research Hospital. Duration of study was from AUG 2016 to MARCH 2017 (9 months) *Type of study:* Prospective study. Study was conducted after obtaining ethical clearance from ethics committee. Out of the 75 cases of peritonitis secondary to hollow viscus perforation all underwent emergency laparotomy and the site of perforation, its pathological condition, post operative complications, mortality were studied. Medical management can be attempted in peptic ulcer disease. Perforation remains as the important complication in treating the peptic ulcer. Perforated peptic ulcer presents with abdominal pain guarding and

tachycardia. Erect chest radiograph may not establish the diagnosis and an index of suspicion is essential. Early diagnosis, prompt resuscitation and urgent surgical intervention are essential to improve outcomes. Non-operative management should be conducted by experienced teams with optimal resources and ideally under trial conditions. Exploratory laparotomy and Grams omental patch stills remains as the gold standard. Gastrectomy is recommended in patients with large or malignant ulcer to enhance outcomes; however the outcomes of patients treated with gastric resections remain inferior. Gelatin sponge plugs, fibrin glue sealants, self-expandable stents and endoscopic clipping techniques are the newer advancements. *Results:* Duodenal to gastric ulcer perforation ratio when we compare to western population it stands out at 4:1 and in Indian population it is 30:1. In our study, interestingly for every 4 duodenal ulcer perforations there were 2.5 gastric ulcer perforations. This indicates the changing ratio of duodenal to gastric ulcer perforation approximately 2:1. *Conclusion:* Peptic ulcer can now be treated with medications instead of elective surgery. However, ulcer may perforate and carries a high mortality risk. There is a changing trend of increasing perforated gastric ulcer, but still duodenal ulcer perforation remains most common cause of peritonitis. Early diagnosis, prompt resuscitation and urgent surgical intervention are essential to improve outcomes.

Keywords: Perforative Peritonitis; Peptic ulcer; Gastrectomy.

Introduction

Peptic ulcer disease causes high morbidity worldwide annually. The incidence of PUD has been

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estimated at around 1.5% to 3%. High risk of morbidity and mortality are found in patients with perforated peptic ulcer [1].

PPU carries a high risk of mortality. perforation is the major complication and treating them is most challenging. Perforation is the most disastrous complication of peptic ulcer and in spite of modern management it is still life threatening catastrophe (Hugh TB, 1990). The mainstay of treatment for bowel perforation is repair of perforation-surgically, Endoscopic, Laparoscopic procedures are now being increasingly performed instead of conventional laparotomy. The most common emergency in india compared to western world is peritonitis caused due to perforation [2].

The advent of proton pump inhibitors and helicobacter pylori eradications in the management of chronic peptic ulcer disease has reduced the operative treatment of this condition to its complications [3,4].

Perforation of a duodenal ulcer allows release of gastric and duodenal contents into the peritoneal cavity with a resulting initial chemical peritonitis. If continuing leakage of gastro duodenal contents, bacterial contamination of the peritoneal cavity can occur [5].

Objectives

- To analyse the age / sex incidence of perforative peritonitis
- To estimate the relative frequency of anatomical site of perforation..
- To enlist the mode of presentation of perforation cases
- To know the usefulness of investigative procedures in diagnosis
- To study the outcome of surgical management for perforative peritonitis

Materials and Methods

- This study has been based on the analysis of 75 cases of hollow viscous perforation admitted to MVJ medical college & research hospital.
- Duration of study was from AUG 2016 to March 2017(9 months)
- *Type of Study:* Prospective study
- Study was conducted after obtaining ethical clearance from ethics committee
- Out of the 75 cases of peritonitis secondary to hollow viscus perforation all underwent emergency laparotomy and the site of perforation, its

pathological condition, post operative complications, mortality were studied.

- The procedures performed while treating were omental patch closure, simple closure, resection and anastomosis.
- Each patient was examined thoroughly, after taking a detailed history. The diagnosis was made with history, clinical features and X-ray abdomen erect posture or CT abdomen to support the diagnosis equivocal cases.

Results

In this study most of the patients with hollow viscous perforation were above the age of 50 years. The youngest patient in this study was 14 years who was having duodenal perforation and the oldest patient was 75 years, with duodenal ulcer perforation. Perforation was found in very less frequency below 20 yrs of age (Table 1).

Males presenting with the percentage of 89.33% as comparative to females presenting in 10.67% (Table 2).

Frequency of number of days of pain in patients with perforation;

- Most common symptom in patients presenting with perforation was pain, present in all of the patients. The number of days with which the patients presented were quite varied depending on the time of onset of pain to the time patient came to hospital. Most commonly the patients came to the hospital within 24hrs of onset of pain abdomen. These patients accounted for 48 patients, making it 64% of the total cases
- Patients presenting with perforation had varied sites of pain abdomen. Most common being diffuse all over abdomen showing in 46 patients out of our sample of 75 cases, standing for 61.3% of the cases,

Table 1: Distribution by Age

Age	No. of Patients	Percentage
<20	3	4
20-29	7	9.33
30-39	12	16
40-49	18	24
>50	35	46.67

Table 2: Sex distribution

Gender	Frequency	Percentage
Male	67	89.33
Female	8	10.67
Total	75	100

secondly followed by pain in the epigastric region in 25 cases, standing about 33.33% of the cases.

Perforative Peritonitis

- The other symptoms commonly present after pain abdomen were vomiting, fever and some patients also had significant earlier history which could be associated with perforation such as earlier history of acid peptic disease, fever etc.
- Out of these most common after pain abdomen was vomiting, which was present in 56 patients, followed by fever which was present in 44 patients which makes 74.67% and 58.67% respectively.
- Most common sign present in almost all cases was absence of bowel sounds which was evident in 63 cases accounting for about 84%, followed by guarding & rigidity which was evident in 47 cases (62.67%). This was followed by obliteration of liver dullness evident in 44 cases (58.67%).

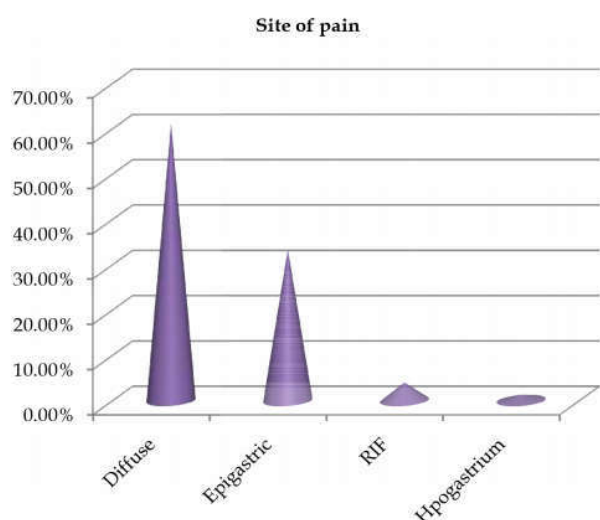


Fig. 1: Site of pain

In patients with suspected perforative peritonitis mainly two types of X-rays were done i.e. X-Ray Erect abdomen and Chest X-ray PA view. In majority of the cases free gas under diaphragm was seen i.e. in 57 cases, out of the sample of 75 cases accounting for 76% of the cases.

- CT was done in 18 of 75 patients in whom X-ray was inconclusive and the following findings were found. Thus positive findings were present in computed tomography in all cases with clinical suspicion of perforation with inconclusive results in plain x-ray.

Table 3: Distribution of signs in patients with perforative peritonitis

Signs	Frequency	Percentage
Guarding and rigidity	47	62.67
Obliteration of liver dullness	44	58.67
Absent bowel sounds	63	84

- CT scan is recommended as it has a diagnostic accuracy as high as 98%.
- The traditional practice of instilling air *via* the nasogastric tube and repeating the erect chest X-ray after few minutes is not recommended except where CT facility is not available.

Table 4: Frequency of Presence of free gas under Diaphragm

Free air under diaphragm	Frequency	Percentage
Yes	57	76%
No	18	24%

- It takes time and a repeat negative chest X-ray does not rule out the diagnosis of PPU and still a CT scan would be warranted.
- Rarely a CT scan is performed even when an erect chest X-ray reveals free air under diaphragm. The utility of this CT scan is justified when clinical presentation is not specific to upper gastrointestinal pathology or a malignancy is suspected and patients' hemodynamics is not deranged.

Table 5: Computed tomography findings

Sign	Frequency	Percentage
Free fluid	11	61.11
Free air	7	38.89

- All the duodenal perforations observed in this study were anterior and none was posterior.
- We noticed a changing trend in the ratio of duodenal and gastric ulcer ratio.

Discussion

Medical management can be attempted in peptic ulcer disease. Perforation remains as the important complication in treating the peptic ulcer. Perforated peptic ulcer presents with abdominal pain guarding and tachycardia. Erect chest radiograph may not establish the diagnosis and an index of suspicion is essential [6,7]. Early diagnosis, prompt resuscitation and urgent surgical intervention are essential to improve outcomes. Non-operative management should be conducted by experienced teams with optimal resources and ideally under trial conditions.

Table 6: Frequency of site of perforation along with the sex distribution in the Patients

Site	Male	Female	Percentage
Duodenum	37	6	57.3%
Gastric	25	2	36%
Ileal	3	1	5.3%
Rectal	1	-	1.3%
GJ anastomotic site	1	-	1.3%

Exploratory laparotomy and grams omental patch stills remains as the gold standard [9]. Gastrectomy is recommended in patients with large or malignant ulcer to enhance outcomes; however the outcomes of patients treated with gastric resections remain inferior. Gelatin sponge plugs, fibrin glue sealants, self-expandable stents and endoscopic clipping techniques are the newer advancements.

Changing Trends

- Duodenal to gastric ulcer perforation ratio when we compare to western population it stands out at 4:1 and in Indian population it is 30:1 [9,10].
- In our study, interestingly for every 4 duodenal ulcer perforations there were 2.5 gastric ulcer perforations.
- This indicates the changing ratio of duodenal to gastric ulcer perforation approximately 2:1.

Postoperative Complications

Wound infection was found as the most important complications in the patients presenting with perforation accounting to be in 26 patients out of 75, followed by respiratory complications which was present in 25 patients which ranged from LRTI, basal lobe collapse to severe ARDS, paralytic ileus, intra abdominal collection or sepsis.

- Mainly omental patch repair was done for all Duodenal perforations and Gastric perforation, whereas simple perforation repair was done for Intestinal and Rectal perforations.
- Resection and anastomosis was done in a case of ileal perforation, chronic ulcer suspicious of malignancy biopsy was taken.

Out of 48 patients admitted with one day history of pain 3 died. Of the 23 patients admitted with 2 days history of pain 3 died. All the patients admitted with 3 days history of pain died with 100% Mortality due to sepsis.

- Mortality is a serious complication in PPU. As we mentioned before, PPU carries a mortality of 12% in our study.
- Other studies have also reported 30-d mortality rate reaching 20% and 90-d mortality rate of up

Table 7: Frequency of operations performed

Operative procedure	No.	%
Omental patch repair	66	88%
Simple closure	5	6.67%
Resection and anastomosis	2	2.67%
Simple closure with colostomy (rectal perf)	1	1.3%
Distal gastrectomy with roux en Y GJ	1	1.3%

to 30%. (Hermansson M, Staël von Holstein C, Zilling T. Surgical approach and prognostic factors after peptic ulcer perforation.)

- Presence of multiple co-morbidities, operative procedure including resection and anastomosis, female gender, aged patients, a delay presentation of more than 24 h, are the Significant risk factors that lead to death.

Table 8: Mortality

Presentation	Mortality %
Day 1	6.25% (3 out of 48)
Day 2	13.04% (3 out of 23)
Day 3 and more	100% (4 out of 4)

Conclusion

- Peptic ulcer can now be treated with medications instead of elective surgery. However, ulcer may perforate and carries a high mortality risk.
- There is a changing trend of increasing perforated gastric ulcer, but still duodenal ulcer perforation remains most common cause of peritonitis.
- Early diagnosis, prompt resuscitation and urgent surgical intervention are essential to improve outcomes.

Support: Nil

Conflicts of Interest: Nil

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