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A clinical study of peptic ulcer perforation

Chandreshkumar Durlabhbhai Mangaroliya

chandreshmangaroliya@gmail.com

National Institute of Medical Science and Research,
Jaipur, Rajasthan

Dr. Narayan Singh Shekhawat

nsshekhawat@gmail.com

National Institute of Medical Science and Research,
Jaipur, Rajasthan

ABSTRACT

Perforation of the peptic ulcer is one of the common and lethal complications of the peptic ulcer. Unless the prompt diagnosis is made and early active surgical management is done the mortality is very high, it is the commonest cause of death resulting from surgical abdominal emergency next to intestinal obstruction. The patients who are brought to the hospital at a late stage, have a major concurrent illness and preoperative shock, do not improve with conservative treatment. In spite of a better understanding of the disease, effective resuscitation and prompt surgery under modern anaesthesia techniques, there is high morbidity and mortality. Hence, the attempt has been made to analyze the various factors, which are affecting the aetiology, incidence, postoperative morbidity/mortality of patients with peptic ulcer perforations. Our study comprises of 104 cases of perforated peptic ulcer that were admitted in the Department of General Surgery, National Institute of Medical Sciences and Research, Jaipur from January 2017-June 2018. This study on the cases of perforated peptic ulcer was carried out to study the various risk factors that can and do affect the operative outcome in perforated peptic ulcer. In our study, we found out that the highest incidence of perforated peptic ulcer was in the 4th decade. Males are the most affected gender (70.19%). Ingestion of NSAIDs increases the risk of peptic ulcer perforation. Duodenal perforations were commoner than gastric in present series. The classical symptoms of peptic ulcer like pain, periodicity, vomiting, and hematemesis were observed in present work. Most common post-operative complications were pulmonary complications (16.35%). All over mortality rate was 12.5%

Keywords— Peptic ulcer perforation, Role of NSAIDs on peptic ulcer, Complication of peptic

1. INTRODUCTION

Peptic Ulcer Perforation is an important and common emergency and is affecting human being from time immemorial. It is a very notable problem in tropical countries like ours and stands fifth among the acute abdominal surgical emergency.

Peptic ulcer perforations are more common in men than in women. (John Boey et.al. 1982, Salley S. Mattingly et.al. 1980).¹ Peptic ulcer perforation is a life-threatening illness requiring immediate treatment. The treatment of choice is surgical. Conservative non-operative treatment being reserved for the rare patient unfit for surgery. The surgical procedure to be performed however remains controversial and the choice is between simple closure with omental patch and definite surgery.

Various prospective and retrospective studies have confirmed that old age, associated major medical illness, preoperative shock, perforation present more than 48 hrs duration, extensive peritoneal contamination, preoperative ulcer history and elevated serum creatinine in a patient without chronic renal failure are important risk factors that enhance operative mortality and morbidity in peptic ulcer perforation.

As these factors increase a lot of mortality, it needs a proper understanding of these factors. Keeping the above factors in view, a detailed clinical study is planned to be done to evaluate operative risk factors in perforated peptic ulcer.

2. OPERATIVE MANAGEMENT

2.1 Open Repair Technique.

Prophylactic antibiotics should be given just before induction of anaesthesia. In conventional surgery, an upper midline incision is performed. Identification of the site of perforation is not always easy: sometimes a perforation has occurred at the dorsal side of the stomach, only to be detected after the opening of the lesser sac through the gastrocolic ligament. Also, double perforations can occur. A biopsy must be taken in each and every case of gastric ulcer perforation. Simple closure of the perforation can be done in different ways (figure 1): simple closure of the perforation by interrupted sutures without omentoplasty, simple closure of the perforation with a pedicled omentum sutured on top of the repair, representing

omentoplasty, a pedicled omental plug drawn into the perforation after which the sutures are tied over it, and finally the free omental patch after Graham. A drain is left routinely^{2,3}. The abdominal wound can be infiltrated with bupivacaine 0.25% at the end of the procedure.

2.2 Irrigation of the Peritoneal Cavity

Although some surgeons doubt the usefulness of irrigation, nothing has been found in the literature supporting this theory.

Generally, it is reflected on to be one of the most important parts of the surgery and irrigation with 6–10 litres and even up to 30 litres of warm saline are recommended.

2.3 Definitive Surgery

Indications for elective surgery are still not defined.⁴ The number of elective procedures performed for peptic ulcer disease has declined by more than 70% since the 1980s^{4,5}.

The results of a questionnaire with 607 responders showed that only 0.3% of the surgeons routinely perform a vagotomy for peptic ulcer complications and 54.5% mentioned they never include it.⁶

Reasons for the decline in definitive ulcer surgery are- lower recurrence rate of peptic ulcer disease and perforated peptic ulcer because of the good results of *H. pylori* eradication and elimination of NSAID use.

2.4 Post-operative complications

- Pulmonary complications
- Wound infections
- Leakage of repair
- Septicaemia
- Bleeding
- Mortality.

3. AIMS AND OBJECTIVES

- To evaluate the incidence of peptic ulcer perforation in different age group and sex.
- To evaluate the role of NSAIDs in causing peptic ulcer perforation.
- The site of perforation will be noted in each case at the time of operation to evaluate the relation of frequency of perforation in relation to the site.
- A biopsy will be sent of perforated margins to rule out malignancy.
- To study the postoperative mortality and complications of peptic ulcer perforation.

4. MATERIAL AND METHOD

4.1 Study design

Clinicodemographic study.

4.2 Study location

Department of General Surgery, National Institute of Medical Sciences & Research, Jaipur.

4.3 Study period

Jan 2017 to June 2018.

4.4 Sample size

- All the cases presenting within the study period were included.
- A total of 104 cases have been included in this study.

4.5 Inclusion criteria

- All patients between 18 and 60 years of age
- All the cases included in the study will be operated cases of peptic perforation.

4.6 Exclusion criteria

- Patients with coagulopathy
- The patient is not fit for surgery

4.7 Methodology

This study will be carried out in the Department of General Surgery at National Institute of Medical Sciences and Research, Jaipur, Rajasthan, India on 104 cases after getting approval from the ethical committee.

5. OBSERVATION

Table 1: Association of Age groups with Ulcer

	Duodenal		Gastric		Total		P Value LS
	No	%	No	%	No	%	
21 to 30	8	9.20	1	5.88	9	8.65	0.79NS
31 to 40	38	43.68	10	58.82	48	46.15	
41 to 50	28	32.18	3	17.65	31	29.81	
51 to 60	13	14.94	3	17.65	16	15.38	
Total	87	100.00	17	100.00	104	100.00	
Mean \pm SD	46.10	10.341	47.94	10.750	46.40	10.378	0.51NS

Table 2: Association of Gender with Ulcer

	Duodenal		Gastric		Total		P Value LS
	No	%	No	%	No	%	
F	26	29.89	5	29.41	31	29.81	0.82NS
M	61	70.11	12	70.59	73	70.19	
Total	87	100.00	17	100.00	104	100.00	

Sex Incidence: Perforation of peptic ulcer is more common in men than in women. Following Table shows the trend in Male to Female ratio compared to the present study (3:1)

Table 3: Distribution of the cases according to NSAIDS

NSAID	Duodenal		Gastric		Total		P Value LS
	No	%	No	%	No	%	
Absent	51	58.62	5	29.41	56	53.85	0.05S
Present	36	41.38	12	70.59	48	46.15	
Total	87	100.00	17	100.00	104	100.00	

A significant association was observed according to History of NSAIDS with Ulcer as Gastric ulcers were more in presence of as compared to duodenal ulcer (70.59% vs. 41.38% (P=0.05S).

Table 4: Association of Duration of NSAIDs intake in cases of peptic perforation

Duration	Number of cases (48)
<3 months	12 (25%)
3-6 months	15 (31.25%)
> 6 months	21 (43.75%)

Minimum duration of NSAIDs was less than 3 months and the maximum is more than 6 months. Out of the total 48, 10 patients also had rheumatic arthritis, for which NSAIDs were being taken in the form of treatment.

Table 5: Distribution of the cases according to site

Site	No	%
Duodenal	87	83.65
Gastric	17	16.35
	104	100.00

The incidence of duodenal perforation is significantly higher (83.65%) than Gastric perforation (16.35%).

Table 6: Symptoms prior to a perforation in peptic ulcer

Pain	104	100%
Periodicity	100	96.15%
Vomiting	93	89.42%
Alteration in weight	54	51.92%
Hematemesis	8	7.69%

Typical symptoms of pain, exaggerating and relieving factors and seasonal variations occur in gastric or duodenal ulcers which are usually revealed by patients in the HOPI. Both the above tables show an analytical review of this fact.

Table 7: Association of clinical features with peptic ulcer perforation

	Duodenal		Gastric		Total		P Value LS
	No	%	No	%	No	%	
Abdominal Pain	87	100.00	17	100.00	104	100.00	NA
Abdominal Distension	83	95.40	15	88.24	98	94.23	0.55NS
Constipation	52	59.77	12	70.59	64	61.54	0.57NS
Vomiting	77	88.51	16	94.12	93	89.42	0.79NS
Abdominal Rigidity	85	97.70	17	100.00	102	98.08	0.73NS

Rebound Tenderness	79	90.80	16	94.12	95	91.35	0.97NS
Fever	68	78.16	15	88.24	83	79.81	0.54NS

There is no significant difference in clinical features of gastric and duodenal ulcers.

Table 8: Association of the content of ryles tube aspiration

Nasogastric tube Aspiration		Contents of Aspiration	
<100ml	>100ml	Gastric	Bile
96(92.30%)	8(7.69%)	100(96.15%)	4(3.84%)

The observation in the above table indicates less aspiration in peptic perforation. Also in most of the cases, aspiration consists of gastric content only.

Table 9: Investigation findings in perforated peptic ulcer

Flate plate abdomen		USG		
Gas present	Gas absent	Dilated loops	Interloop fluids	Marked ascitis
103(99.03%)	1(0.96%)	94(90.38%)	104(100%)	80(76.92%)

Gas under diaphragm is diagnostic of perforation but not always. As shown in the above findings, interloop fluids were present in all 104 cases.

Table 10: Interval between the first symptom of perforation and surgery

Within 6 hours	22	21.15%
Within 12 hours	80	76.92%
Within 72 hours	2	1.92%

Table 11: Distribution of the cases according to Biopsy

Biopsy	Gastric	
	No	%
Chronic Inflammatory Cells	16	94.12
Malignant Cells	1	5.88

In all seventeen cases of perforated gastric ulcers, 1(5.88%) case was positive for gastric carcinoma.

Table 12: Association of complications with ulcer

Complications	Duodenal		Gastric		Total		P Value LS
	No	%	No	%	No	%	
SSI	11	12.64	4	23.53	15	14.42	0.43NS
Leak	4	4.60	1	5.88	5	4.81	0.69NS
Pulmonary	16	18.39	1	5.88	17	16.35	0.34NS
Cardiac	3	3.45	0	0.00		0.00	0.98NS

No significant association was observed according to complications with ulcer

Table 13: Distribution of the cases according to Mortality

Mortality	No	%
Absent	91	87.50
Present	13	12.50
Total	104	100.00

Patients who died due to peptic perforation were considered of the 104 patients in this study overall mortality is 12.5% (that is 13 patients)

6. DISCUSSION

This study comprises of 104 cases of perforated peptic ulcer that were admitted in the Department of General Surgery, National Institute of Medical Sciences and Research, Jaipur from January 2017-June 2018.

This study on the cases of perforated peptic ulcer was carried out to study the various risk factors that can and do affect the operative outcome in perforated peptic ulcer.

In our study, the age of patients ranged from 18 to 60 years. The commonest age group of perforated peptic ulcer is between 31 to 40 years (46.15%) (Table 1)

In our study, the highest incidence of perforated peptic ulcer was in 4th decade (Table 1). Various other studies also reported similar findings. Sharma et al in 2006 also showed a mean age of 33 years. Most of the authors in literature recorded this age group as being commonest at which perforated peptic ulcer is admitted.^{7,8}

In our study, the incidence of perforated peptic ulcer was 70.19% in males (Table 2). This finding is similar to the incidence in male population reported in the study by Bertleff et al, 2010 (79%) and Lange et al, 2010.⁹

In our study of 104 cases, 48 cases (46.15%) had a history of Non-steroidal anti-inflammatory drugs ingestion. (Table 3) There are more chances of perforation in gastric ulcer after ingestion of NSAIDs (70.59%) as revealed by the present study. Gisbert JP et. Al. 2004 also had similar observations.¹⁰

Duration of the intake of NSAIDs also matters. In present work, the minimum duration was less than three months 25% cases while maximum duration was more than six months in 43.75% cases (Table 4) which is comparable to work of other authors Dimple Patel et al. 2015.¹¹

A peptic ulcer can occur on the lower part of the oesophagus (Barrett ulcer, stomach (gastric ulcer, duodenum (duodenal ulcers), jejunum, (stomal ulcers) and ileum, in association with Mickels diverticulum. In present work site of perforation being either duodenum or stomach (Table 5). Duodenal perforations were commoner than gastric in present series.as observed by other authors also.¹²In gastric ulcer perforation the present work recorded a fundal perforated ulcer in the stomach which has not been found in other series screened for this purpose. The commonest perforated gastric ulcer had been prepyloric as observed by other authors P. N. Mathur et al. 2016.¹²

The classical symptoms of peptic ulcer like pain, periodicity, vomiting, and hematemesis were observed in present work (Table 6) as well as in the work of the other author A Dodiya-Manuel et.al.2015.¹³

In our study of 104 cases of peptic ulcer perforation, all the cases came with abdominal pain while other clinical features were abdominal rigidity, vomiting, constipation, abdominal distention and fever (Table 7).there is no significant difference in between gastric and duodenal perforations. A similar study was done by P. N. Mathur et. al. 2016.¹²

Ryles tube aspiration can guide us to weather perforation is gastric or duodenal. In present work, ryles tube aspiration has been less than 100ml in gastric ulcer perforation (Table 8). This can serve as a good guide to differentiate perforated gastric and duodenal ulcers.

X-ray Flat plate abdomen in standing position remains the mainstay of investigation to diagnose perforated peptic ulcers but not always. In 1 case out of 104 perforated peptic ulcers, gas below diaphragm was absent (Table 9). This happens when either perforation is small or has been sealed. In such cases ultrasonography can provide a good clue in present work in one patient where gas under diaphragm was absent ultrasonography revealed dilated intestinal loops and minimum ascites with inter loop fluid collection.

All cases of perforated gastric ulcers were subjected for biopsy, tissue was taken from circumferentially from the perforated margins and sent for histopathological examination. In all seventeen cases of perforated gastric ulcers, one case was positive for gastric carcinoma (Table 11). This case was operated after 72 hours, had post op. Leak and ultimately died. Literature shows the incidence of malignancy in perforated gastric ulcer between 6 to 10 %, in present work, it was 5.88%.¹⁴

In this study of peptic ulcer perforation most common postoperative complications were pulmonary complications (16.35%). Other studies have shown similar results.¹⁵

In the present study all over mortality rate was 12.5% (Table 13). Thirteen patient died in this study which is similar to other studies.¹⁵

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