

Original Research Article

Retrospective study of perforated peptic ulcer: a surgical emergency

P. N. Mathur*, J. L. Kumawat, C. P. Joshi, Suman Parihar

Department of General Surgery, Geetanjali Medicine College and Hospital, Udaipur, Rajasthan, India

Received: 12 October 2016

Accepted: 18 October 2016

***Correspondence:**

Dr. P. N. Mathur,

E-mail: drpnmathur@yahoo.com

Copyright: © the author(s), publisher and licensee Medip Academy. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

ABSTRACT

Background: Peptic ulcer disease and acid peptic disorder are medical diseases and now managed mainly by medical treatment with advent of H₂ blockers, proton pump inhibitors and antibiotics, with eradication of *Helicobacter pylori*, the complications have reduced, but perforation of peptic ulcer is still frequently occurring and is always a surgical emergency.

Methods: This is a retrospective study of patients who were diagnosed, managed and operated for perforated peptic ulcer at Geetanjali Medical College and Hospital, Udaipur, Rajasthan, India from January 2009 to December 2014. Data of 373 patients were collected from case records using a standard proforma and their risk factors, post-operative progress and outcome were analysed.

Results: In our study of 373 cases, patients between ages of 30-50 years (72%) were commonly affected and there was male predominance (83%). Smoking, alcohol consumption and improper treatment for peptic ulcer were major risk factors. The significantly related complications were due to co-morbid illness, age and delayed presentation for treatment.

Conclusions: Perforated peptic ulcer (PPU) is a frequent surgical emergency in this southern part of our state, predominantly affecting young and middle aged male, may be because of dietary habits (very spicy food) and other risk factors. Surgical intervention is always warranted. Simple closure with omental patch is the standard procedure, followed by treatment for *H. pylori* eradication. It was effective and majority of patients survived despite delayed preoperative admission.

Keywords: *Helicobacter pylori*, Perforated peptic ulcer, Simple closure with omentopexy

INTRODUCTION

Peptic ulcer is a common ailment in this southern region of Rajasthan; the reason may be hard water and food habits which is very spicy. Perforation is the commonest complication; emergency surgical intervention is always required to save life. Crisp's description of PPU in 1843, still stands true even today.¹⁻⁴ Ulcer perforation was a lethal disease until surgical treatment was introduced at the turn of century. Mikulicz sutured a perforated gastric ulcer for the first time in 1880 and suture is still the most common treatment for ulcer perforation. The revolution

in the ulcer treatment that occurred with the discovery of *Helicobacter pylori* has not yet led to any detectable changes in incidence of ulcer perforation.^{5,6}

The incidence of peptic ulcer disease has fallen in recent times.^{7,8} Despite this and recent advances in both diagnosis and management of peptic ulcer disease, like improvement in endoscopic facilities, eradication of *H. pylori*, use of proton pump inhibitors, complication as PPU is frequent and remains a substantial health problem and this may be due to risk factors. The aim of this retrospective study was to evaluate the total number of

373 perforated peptic ulcer cases managed in this institute from January 2009 to December 2014.

Risk factors

Smoking

Smoking seems to be major risk factor for ulcer perforation.⁹⁻¹¹ Bidi smoking is a common habit in our area. In our study the bulk of patients were from rural areas, where both male and female are bidi smokers. Doll et al showed that smokers had a threefold higher mortality than nonsmokers and excess mortality in PPU can be attributed to smoking related diseases.¹² Smoking inhibits pancreatic bicarbonate secretion, resulting in increased acidity in the duodenal bulb, it also inhibits the healing of duodenal ulcers.^{13,14}

Use of non-steroidal anti-inflammatory drugs

Another well documented and important risk factor for PPU is use of NSAIDs. Five to eight times increased risk has been reported for NSAIDs users.^{15,16}

Alcohol consumption

Alcohol consumption is associated with increased risk of PPU, especially in male patients. Alcohol is a noxious agent causing gastric mucosal damage, stimulates acid secretion and increases serum gastrin level.¹⁷

Use of corticosteroids in 6 cases was the cause; it was used for some medical disorders.

METHODS

All patients were studied, who were diagnosed and operated for PPU in our institute, Geetanjali Medical College and Hospital, Udaipur, Rajasthan, India, a tertiary hospital with 1100 beds. The details of patients who presented from January 2009 to December 2014 were retrieved retrospectively from medical record department and operation theater records. Case history and detailed clinical examination of patients were evaluated. Investigations viz. blood CBC, RBS, serum urea, creatinine, BT, CT, Electrolytes, HbsAg, HIV, urinalysis, ECG, X-ray chest P.A. view and X-ray flat plate abdomen in erect posture were carried out. In some cases -119, USG was also done, but it was not a mandatory practice. Diagnosis of PPU was made from history, clinical examination, abdominal distension, upper abdominal tenderness, rigidity and obliteration of liver dullness. Signs of peritonitis noted. Radiological investigation viz. X-ray chest and X-ray abdomen in erect posture showing free gas under the dome of diaphragm, more obviously on right side clinched the diagnosis. After admission in surgical ward or in surgical intensive care unit as per patient's general condition, all the patients were resuscitated by continuous nasogastric suction (rules tube suction), intravenous fluids,

intravenous broad spectrum antibiotics, metronidazole and proton pump inhibitors. Adequate hydration achieved with urine output 30 - 40 ml/hour. After adequate resuscitation, laparotomy under endotracheal general anaesthesia was performed through midline incision, mostly supraumbilical. Perforation was identified, noted the site viz. gastric, prepyloric or duodenal with its size.

Simple closure of perforation with commonly 3 sutures with nonabsorbable silk suture was done and reinforcement with free or pedicle omental patch (Graham's omentopexy). In larger perforation (more than 1 cm. size), omental plugging was done. Thorough peritoneal lavage was done with 3-4 liters normal saline and removal of all food debris and easily removable flakes. In most of the cases mostly two abdominal drains were put, one sub hepatic and other in pelvis, but at times only one drain was put in pelvis. In 4 patients, only drains were put as they were in severe shock. Conservative management was advocated by Taylor in 1946, but it is not generally accepted.¹⁸

No patient was treated by definitive surgery for peptic ulcer by truncal vagotomy and drainage procedure or gastric resection. Almost all operations were performed by consultant faculty members. In 6 patients, the surgery was performed laparoscopically, as all surgeons are not well versed with laparoscopic procedure and in emergency it was not routinely done. Data were analysed using a questionnaire proforma, including patient's demographic details (age, sex), rural or urban, associated premorbid illness, previous history of PUD and faulty treatment, use of NSAID, cortisone and, alcohol use, smoking (bidi or cigarette) time between onset of symptoms and surgery, site of perforation, type of surgical procedure, postoperative complications and mortality.

RESULTS

Out of 373 patients treated by exploratory laparotomy through midline incision. Duodenal perforation was commonest 343 (91.95%), prepyloric 19 (5%) and gastric 11 (2.95%). Ulcer size ranged from .05 cm to 2.5 cm. The biopsy was taken from larger ulcers found in stomach on its lesser curvature, but none was malignant.

Table 1: Gender wise incidence (n = 373).

Gender	Number	Percentage
Male	310	83
Female	63	17

Simple closure of ulcer with omental patch, either free or pedicle graft (Graham's patch) was done in 348 patients (93.29%). Omental plugging was done in 15 (4%) patients, in ulcers of more than 1 cm. size. In 6 patients the procedure was done laparoscopically. Simple drains were put in 4 patients who came in severe shock and of them 2 survived and no further attempt to closure was

done. (Table 6) 99 patients (26.54%) were managed in surgical ICU as they came in severe shock (septic), haemo dynamically unstable, with pre-existing co morbidity, CRF and cardio pulmonary risks. 274 patients were managed in post-operative ward with continuous monitoring facility. Overall mortality occurred in 13 patients (3.48%). The common reasons were old age, co morbidity, late arrival and septic shock.

Table 2: Age wise distribution.

Age in years	No. of patients	Percentage
20 -30	41	11
31- 50	269	72
51 - 70	54	15
More than 70	9	2

Table 3: Clinical presentations, symptoms and signs.

Symptoms and signs	No. of patients	Frequency percentage
Severe epigastric pain	363	97.3
Vomiting	262	71
Abdominal Distension	309	83
Constipation	186	50
Fever	63	17
Shock	116	31
Abdominal tenderness guarding / rigidity, rebound tenderness	370	99

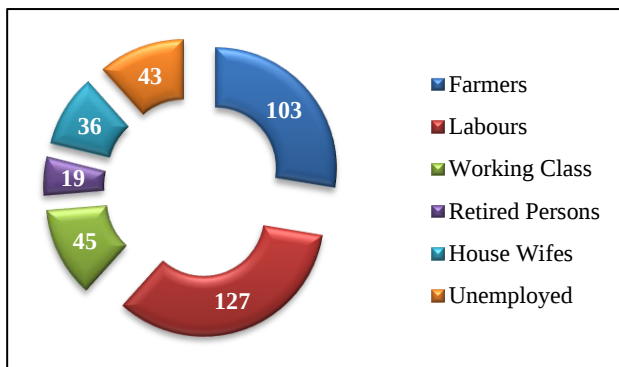


Figure 1: Occupation's frequency.

The commonest post-operative complication was surgical site infection in 118 (31.6%) cases. It was mainly because of per operative spoilage of wound by intraperitoneal purulent fluid and food particles, in spite of all precautions.

Wound dehiscence occurred in 17 (4.55%) cases which required secondary suturing. Pulmonary infection, pneumonia occurred in 16 (4.28%) patients, but reactionary pleural effusion occurred in 93 patients (24.9%) which caused cough in patients, but recovered and absorbed in time. Acute renal failure happened in 2 cases (0.5%) requiring dialysis and survived.

Reperforation occurred in 2 patients and both had drains in situ and survived after 20 days in hospital stay with parenteral therapy. 1 patients developed jaundice and died of hepatorenal failure (Table 7).

Table 5: Co-morbid illness.

Diseases	Frequency	Percentage
Daibetes	71	19%
Hypertension	68	18%
Previously diagnosed PUD (peptic ulcer disease)		
Yes	No	Percentage
78	-	21%
-	295	79%
History of epigestive pain on and off and dyspepsia		
-	184	49.32%
Preadmission delay (n = 373)		
Hours	Number	Percentage
< 24	39	10.45%
24 - 48	187	50.13%
48 - 72	113	30.29%
> 72	34	9.11%

Table 6: Site of perforation.

Site of perforation	Number	Percentage
Duodnum	943	91.95
Prepylonic	19	5
Gastric (lesser curatures)	11	2.95
Size of perforation	Number	Percentage
< 1cm	352	94
> 1 cm	21	6
Surgical procedure (n = 373)		
Simple closure with Graham's patch open (ometyopy)	348	
Laparoscopice	6	
Omental plugging	15	
Simple abdominal drainage	4	

Table 7: Complications (n = 373).

Complications	Frequency	Percentage
Surgical site infection	118	32.7
Pulmonary infection	16	4.5
Reactionary pleural effusion	93	25.7
Wound detri scence requiring secondary suturing	17	4.7
Acute renal failure	2	0.5
Managed in SICU	99	27.5
Re - perforation	2	0.5
Jaundice	1	0.3
Cardio pulmonary arrest-mortality	13	3.6

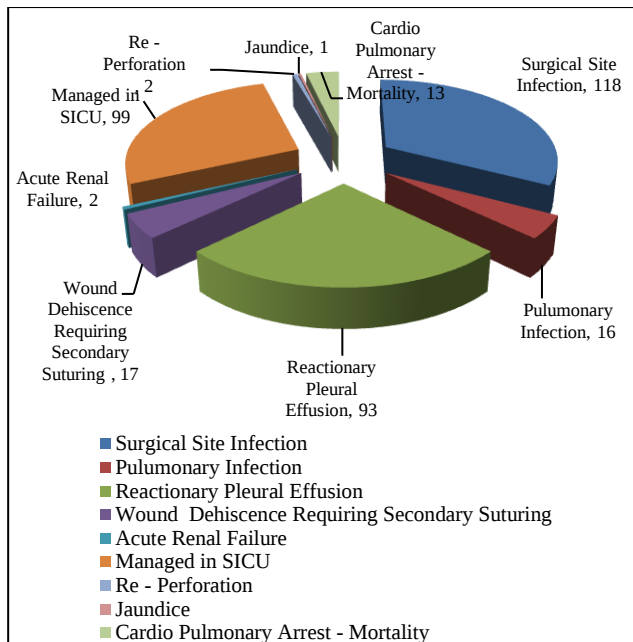


Figure 2: Complications frequency.

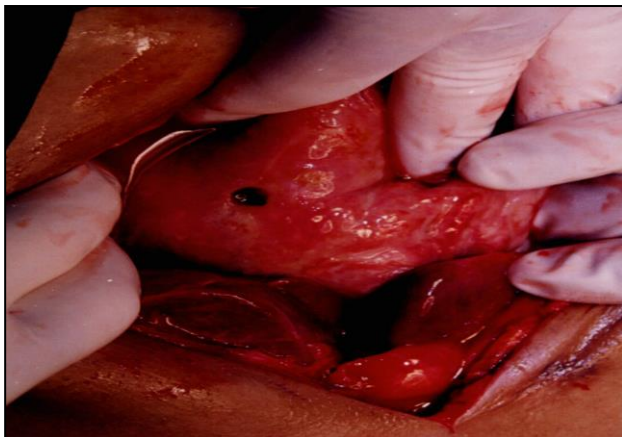


Figure 3: A perforation is seen over the anterior wall of the first part of duodenum.

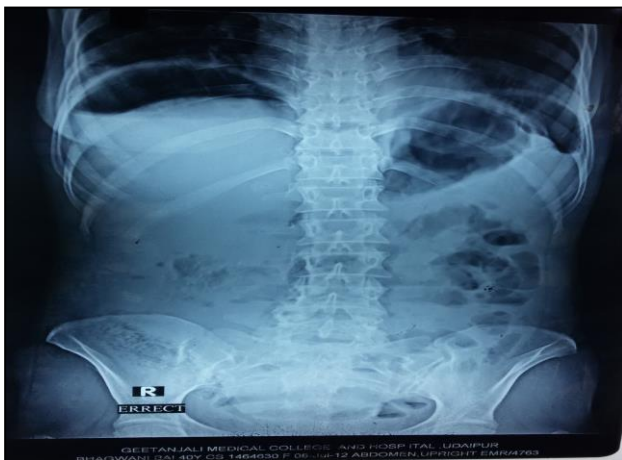


Figure 2: Skiagram abdomen in erect posture, showing free gas under diaphragm.

DISCUSSION

In this retrospective study of 373 patients over a period of 6 years the average incidence is 60 patients annually. As PUD and PPU is quite frequent in our part of state, may be because of spicy foods, smoking, alcohol use, irregular and inadequate treatment for PUD and most of patients were from rural areas where ill literacy is still prevalent and proper medical facility is lacking.

In our study PPU was more found in middle age group, from 30-50 years age and also mostly the patients were male, as was observed in other studies also.^{13,18}

Male predominance may be attributed to use of alcohol and smoking. NSAIDs also play an important role, in elderly patients in particular. It may be because of frequent and indiscriminate use for pains. NSAIDs inhibit prostaglandin synthesis which reduces gastric mucosal blood flow.¹⁹ Preoperative *H. pylori* determination was not done, because of emergency nature of disease, but all patients were discharged with treatment regimen for 14 days for *H. pylori* and then continuous use of PPI for another three months. In many cases post-operative endoscopy was performed on follow-up. Only 21% patients gave history of previously diagnosed PUD, but about 50% had history of occasional epigastric pain and dyspepsia. These patients were on irregular and inadequate treatment. Patients with no particular history of PUD are more likely to have PPU, as they take no treatment and dietary precautions.

Most of the patients present late for treatment, after more than 24 hours. This may be attributed to lack of awareness of the disease, patients take some medication for pain locally at home and continues to eat and also the clinicians they consult at smaller places may not had suspected perforation. They only reach to higher centers when the pain becomes unbearable.

All most all patients, 363 (97.31%) presented with severe abdominal pain, more in epigastrium, duration ranged from 1 day to 5 days, vomiting in 262 (70.24%), abdominal distension 309 (83%), constipation especially in those who presented late 186(50%), fever 63 patients (17%), because of peritonitis. 116 patients (31%) came in shock which improved with resuscitation. Signs of peritonitis viz. generalised abdominal tenderness, guarding, rigidity and rebound tenderness were found in all most all cases, 370 (99%) (Table 3). Diagnosis was mainly established by history, clinical examination and radiological evidence of gas under the dome of diaphragm (pneumoperitoneum) found in X-ray chest and plain X-ray abdomen in erect posture.

CONCLUSION

Perforation of peptic ulcer is frequent surgical emergency and requires awareness and prompt management and operation. It mostly affects young and middle aged males

in their productive age. Most of the times there are no alarming signs before actual ailment, but seeking proper medical help in time results in favorable results. Simple closure with omental patches i.e. omentopexy give excellent results. Patient should be prescribed treatment for *Helicobacter pylori* and PPI. They should be advised to avoid the common risk factors like too much spicy food, smoking, excess alcohol use, and indiscriminate use of NSAIDs and should seek proper medical advice in time.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: The study was approved by the institutional ethics committee

REFERENCES

1. Crisp E. Cases of perforation of the stomach. Lancet. 1843;1:639.
2. Jennings D. Perforated peptic ulcer. Lancet. 1940;1:444.
3. DeBekay, M.: Acute perforated gastroduodenal ulceration. Surgery 8: 852, 1940.
4. Svanes C, Lie RT, Kvåle G, Svanes K, Soreide O. Incidence of perforated ulcer in western Norway 1935-1990: cohort or period dependent time trends? Am J Epidemiol. 1995;141:836.
5. Mikulicz J. Ueber Laparotomie bei Magen und Darmperforation. Samml Klin Vort Leipzig. 1885;262:2307.
6. Rauws EAJ, Tytgat GNJ. Cure of duodenal ulcer associated with eradication of *Helicobacter pylori*. Lancet. 1990;335:1233.
7. Elnagib E, Mcquaid E, Ahmed ME. Perforated peptic ulcer in Khartoum. Khartoum Med J. 2008;1(2):62-4.
8. Makela JT, Kivineum H, Ohtonen P, Latinen S. Factors that predveb morbidity and mortility in patieuts with perforated peptic Ulcer. Eur J Surg. 2002;168:446-51.
9. Svanes, C, Soreide JA, Skarstein A, Svanes BT, Svanes K, Soreide O. Smoking and ulcer perforation. Gut. 1997;41:177.
10. Reinbach DH, Cruickshank G, Mccoll KEL. Acute perforated duodenal ulcer is not associated with *Helicobacter pylori* infection. Gut. 1993;34:1344.
11. Smedley F, Hickish T, Taube M, Yale C, Leach R, Wastell C. Perforated duodenal ulcer and cigarette smoking. JR Soc Med. 1988;81:92.
12. Doll R, Peto R, Wheathly K, Gray R, Sutherland I. Mortality in relation to smoking: 40 years' observations on male British doctors. British Med J. 1994;309:901.
13. Nuhu A, Madziga AG, Gali BM: Acute perforated duodenal ulcer in Maiduguri. Internet J Surg. 2009;21:1.
14. Stabile BE, Passaro EP. Duodenal ulcer: a disease in evolution. Curr Probl Surg. 1984;21:1-79.
15. Rodriguez LAG, Jick H. Risk of upper gastrointestinal bleeding and perforation associated with individual non-steroidal anti- inflammatory drugs. Lancet. 1994;343:769.
16. Henry D, Dobson A, Turner C. Variability in the risk of major gastrointestinal complications from non-steroidal anti-inflammatory drugs. Gastroenterology. 1993;105:1078.
17. Turkdogan MK, Hekim H, Tuncer I, Aksoy H. The epidemiological and endoscopic aspects of peptic ulcer disease in Van region. Eastern J Med. 1999;4(1):6-9.
18. Svanes C. Trends in perforated peptic ulcer: incidence, etiology, treatment and prognosis. World J Surg. 2000;24(3):277-83.
19. Chaliya PL, Mabula JB, Koy M, Mchembe MD, Jaka HM, Kabangila R, et al. Clinical profile and outcome of surgical treatment of perforated peptic ulcers in north western tanzania: a tertiary experience. World J Emergency Surg. 2011:6-31.

Cite this article as: Mathur PN, Kumawat JL, Joshi CP, Parihar S. Retrospective study of perforated peptic ulcer: a surgical emergency. Int Surg J 2016;3:19-23.