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Original Research Article

Perforated peptic ulcer (PPU): a one year review in tertiary care hospital in Uttarakhand, India

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ABSTRACT

Background: Peptic ulcer perforation is a common surgical emergency. The perforation usually involves the anterior wall of duodenum (60%), although, it might occur in antrum (20%) and lesser curvature of stomach (20%). Conventional open surgery involving repair with omental patch remains the gold standard treatment. This study evaluates the patterns and demographic factors associated with this common surgical disease and the outcome analysis of surgery in our state.
Methods: The study was undertaken for patients admitted in surgery department in a single unit who underwent open surgery for perforated peptic ulcer. A total of 78 patients were assessed between January 2016 to January 2017.
Results: The study found PPU to be a male dominated disease in fifth decade and with significant association with smoking and alcohol consumption. First part of duodenum being the commonest location of PPU, the peritoneal contamination was directly associated with the duration of symptoms. Wound infection was the most frequent post-operative complication. Simple repair with omental patch remains an effective treatment modality.
Conclusions: Perforated peptic ulcer disease commonly affects middle aged males especially due to association with alcohol intake. Simple closure with omental patch followed by *H. pylori* eradication is an effective treatment modality.

Keywords: Omental patch, Perforation, Peptic ulcer

INTRODUCTION

Perforated peptic ulcer (PPU) is a common surgical emergency with 30 and 50% association with short-term mortality and morbidity.[1] PPU presents as an acute abdominal condition with localized or generalized peritonitis and a high risk for developing sepsis and death. The pathogenesis involves an imbalance between the defensive (mucus-bicarbonate layer, prostaglandins, cellular renovation and blood flow) and aggressive factors (hydrochloric acid, pepsin, ethanol, bile salts, some medications etc.). Worldwide variation in *Helicobacter pylori* prevalence, demographic features and pattern of drug prescription make investigations into risk factors for PPU difficult. Complications of PPU include perforation, obstruction and bleeding.[2,3] Although perforations are second to bleeding in frequency (about 1:6 ratio), they represent the most frequent indication for emergency surgery for peptic ulcer disease.[4-6]

Early surgical intervention with repair of perforation and intensive sepsis management is the cornerstone of treatment. The perforation initially causes chemical peritonitis which is followed by an intermediate stage (6-12hours) during which some patients might get some relief in pain due to dilution of irritating gastroduodenal contents by ensuing peritoneal exudates. This phase is followed by intra-abdominal infection (12-24 hours). Delaying surgery is consistently related to morbidity and mortality.[7] Though the worldwide incidence of peptic

ulcer disease and its complications have reduced due to wide-spread use of proton pump inhibitors and *H. pylori* eradication treatment, it still remains an important cause of morbidity and mortality. This retrospective study aims to analyse the epidemiological factors, peri-operative and post-operative factors associated with PPU in our state.

METHODS

This retrospective study was conducted in SGRRIMHS and SMIH, Dehradun in Department of General Surgery. 78 patients admitted in single unit with the diagnosis of PPU were analysed.

The epidemiological features and demographic profile of the patients was included in the study. They were subjected to standard investigations. Patients with extensive co-morbidities were excluded from the study. A special note of pre-presentation symptomatology was noted.

The surgical procedure involved laparotomy followed by repair of perforation with omental patch. The site of perforation and amount of peritoneal contamination was noted. Repair involved simple closure with non-absorbable suture followed by re-enforcement with omental patch. Lavage of the peritoneal cavity with 3-4 litres of saline was done. Abdominal drains in sub-hepatic and pelvic regions were put. All patients were given triple regimen kit for 14 days for *H. Pylori* eradication.

The patients who were managed laparoscopically or conservatively by abdominal drains only due to sepsis were not included in the study. Data analysis of patient demographics, risk factors, duration before presentation, amount of pyoperitoneum, operative and post-operative factors. SPSS-22 statistical package was used to analyse the data.

RESULTS

A total of 78 patients constituted the study group. The maximum incidence of peptic ulcer perforation was found in the 5th decade i.e. (32.05%), followed by patients in 4th decade i.e. (21.79%) No patient with peptic ulcer perforation presented in 1st decade and a very few patients presented in 2nd (3.84%) and 8th (5.12%) decade (Figure 1).

Out of 78 patients 76 (97.43) were males and 2 patients (2.56%) were females. Males dominated the series in this study and male to female ratio was 38:1. 22 patients (28.20%) were literate (received education up to 5th standard or more) whereas 56 patients (71.79%) were illiterate. 78 patients involved in the study, 35 patients (44.87%) belonged to urban setup whereas 43 patients (55.13%) belonged to rural setup. According to the socioeconomic status 74 patients (94.87%) belonged to lower socioeconomic status and 4 patients (5.13%) belonged to middle class (Figure 2).

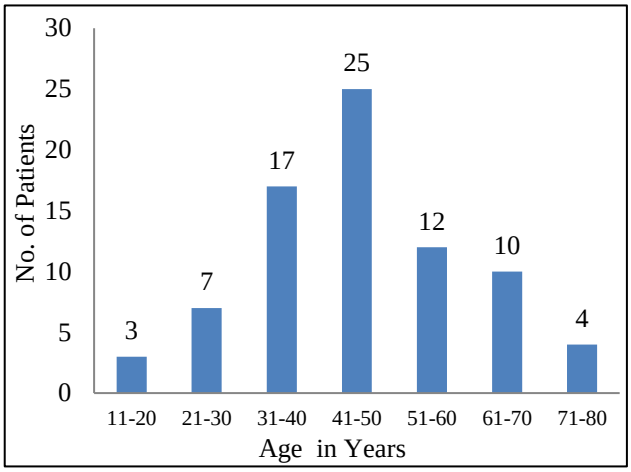

Figure 1: Age distribution.

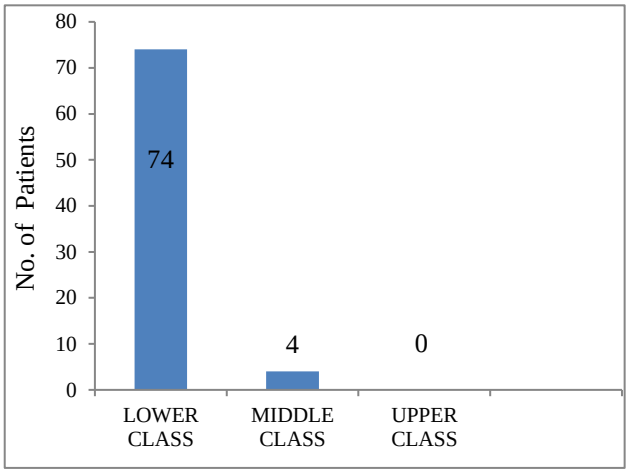

Figure 2: Socioeconomic status.

There were a number of patients who were taking pain-killers. Twenty-three patients (29.49 %) had NSAID intake history (Table 1). 64 (82.05%) patients were smokers, 40 patients (51.28%) used to consume alcohol, 37 patients (47.43%) used to both drink and smoke (Figure 3).

Symptoms involved typical epigastric pain, severe in intensity starting in upper abdomen and becoming diffuse was noticed in all the patients. Vomiting was associated in 30 patients (38.49%) and abdominal distension was noticed in 30 patients (38.49%) (Figure 4).

Table 1: Preoperative drug history.

Drug	No. of patients	Percentage
No drug	55	70.51
NSAIDS	23	29.49
Steroids	Nil	Nil

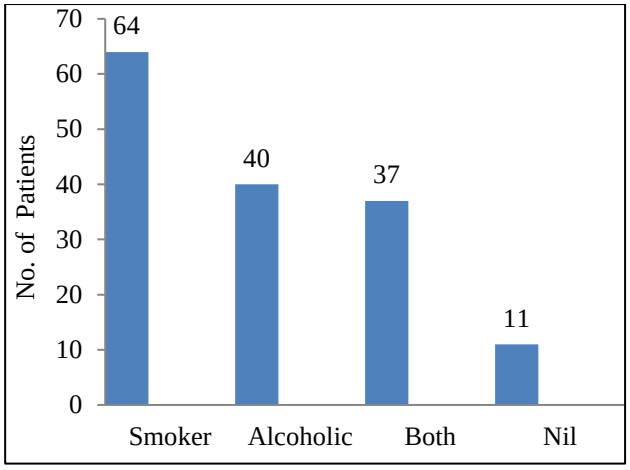

Figure 3: Habits.

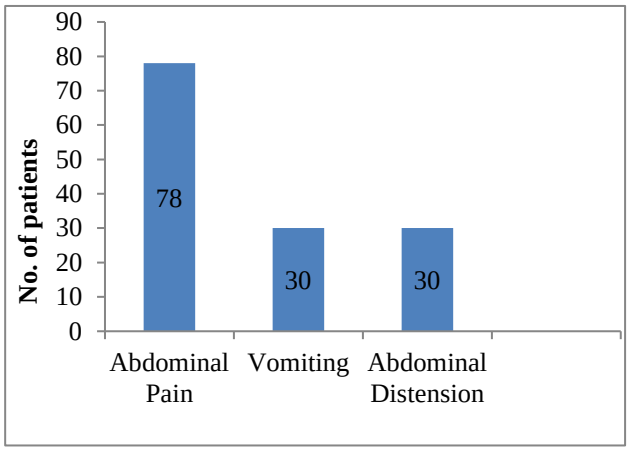

Figure 4: Profile of peptic ulcer perforation symptoms.

Investigations revealed pneumoperitoneum in 70 patients (89.74%). Diagnosis of perforation based on history and clinical examination was confirmed at laparotomy in 10.26% of cases where the radiological study was negative.

In this study 1st part of duodenum was the site of perforation in majority of the cases (76.92%). Pyloric antrum was the site of perforation in 15 patients (19.23%) and stomach was the site of perforation in 3 patients (3.84%) (Figure 5).

It was observed that peritoneal contamination was directly proportional to time interval between perforation and operation and the size of perforation. Peritoneal contamination was minimal in 12 patients and gross in rest of 66 patients (Figure 6).

All the patients presenting after 48hours of perforation had gross contamination at time of surgery. Bigger size perforations had severe peritoneal spoilage than smaller perforation. The average size of the peptic ulcer perforation was 0.5cm.

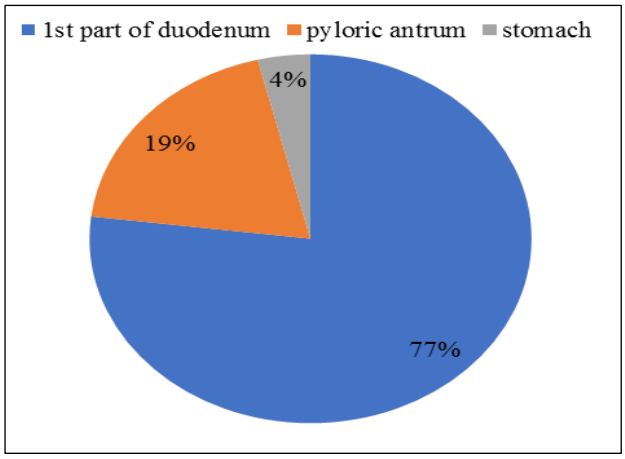

Figure 5: Site of perforation.

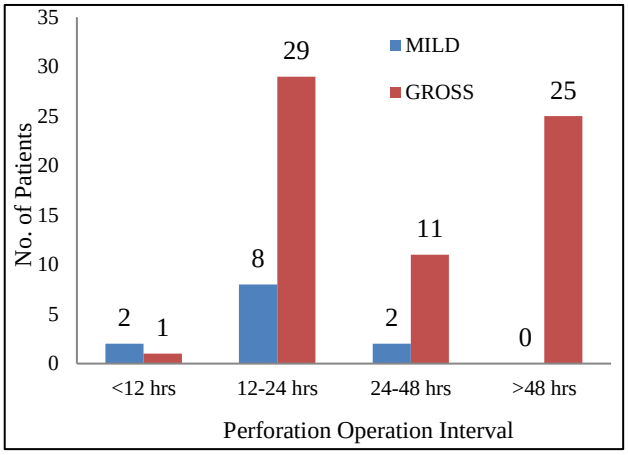

Figure 6: Peritoneal contamination.

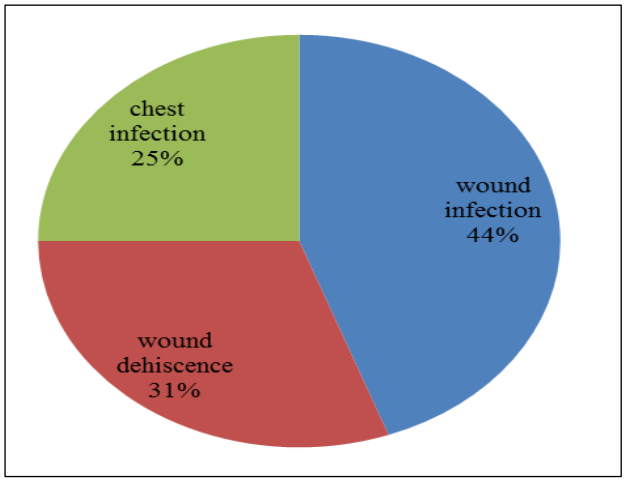

Figure 7: Post-operative complications (as noted in 36 patients out of 78).

In the postoperative period return of bowel sounds took an average of 2.51 days. The mean days at which the perihepatic and pelvic drains were removed in the postoperative period were 4.98 and 5.81 days respectively. The study group observed wound infection

as the most common complication in 16 patients (20.51%) (Figure 7). There was no mortality in the intraoperative and postoperative period. The average postoperative hospital stay was 12.7 days (Figure 8).

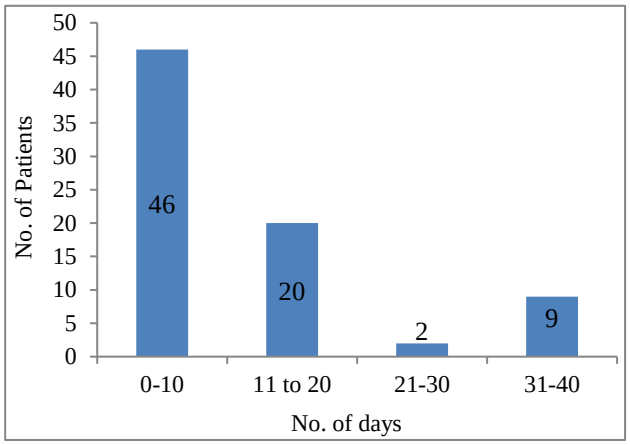

Figure 8: Hospital stay.

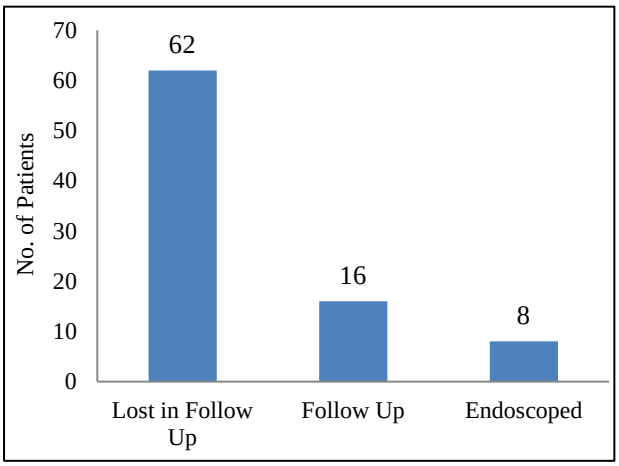

Figure 9: Follow-up.

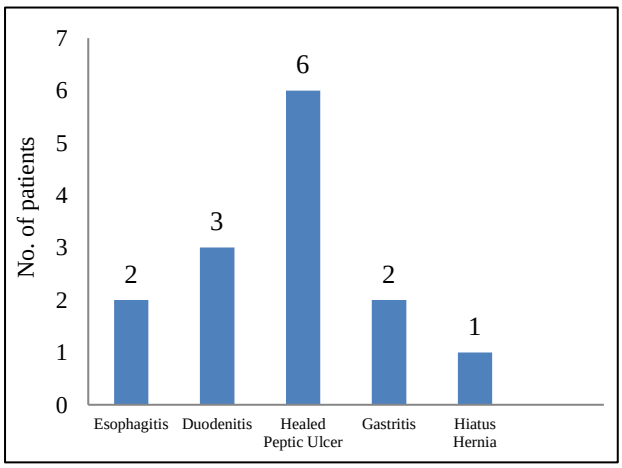

Figure 10: Endoscopy findings.

In this study out of 78 patients 16 patients (20.51%) presented with postoperative ulcer symptoms in the follow up. Epigastric pain, sour eructation's and postprandial fullness were the main complaints in follow up.

All patients were put on a 6 weeks therapy of Proton Pump Inhibitor after the simple closure of peptic ulcer perforation and were advised upper gastrointestinal endoscopy after 6 weeks. Out of the patients undergoing endoscopy, 75% patients had findings suggestive of healed peptic ulcer; 37.5% patients had features of duodenitis; 25% patients had features of esophagitis and 25% patients had features of gastritis. One patient (12.5%) had hiatus hernia on upper gastrointestinal study (Figure 10).

DISCUSSION

PPU is a disease mostly of middle age group as found in other studies as well.[8] The association of the disease with smoking, alcohol and NSAID use has also been validated by numerous studies.[8-10] *H. pylori* prevalence is 50-80% in PPU and studies support the use of *H. pylori* eradication treatment in the effective management of peptic ulcer disease.[11,12]

Abdominal pain was the most frequent presentation of patients in our study similar to the observation by Mathur PN et al.[13]

Literature review supports the association between duration of perforation with post-operative outcome.[14] Simple closure with omental patch is the procedure of choice and is the most commonly employed surgical technique in most studies.[13] We observed wound infection to be the most common complication in our study similar to the observation by the study Lee et al.[15]

Follow-up endoscopy of our study group revealed healed ulcer in majority which is similar to the finding by Mansberger JA.[15]

CONCLUSION

Surgery for PPU still is a subject of debate despite more than an era of published expertise. Reviewing different strategies of management for instance the indication for conservative treatment, indication of keeping drains, need for omentoplasty, performing the procedure laparoscopically and the need of definitive ulcer surgery, might contribute to establishing consensus. PPU closure with omental patch remains the treatment of choice by far.

We could conclude that PPU is a common surgical emergency easily dealt with laparotomy followed by simple closure. The outcome is usually good if there are no associated co-morbidities and surgery is done timely.

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Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

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