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## Laparoscopic repair of peptic ulcer perforation - our experience

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### Abstract

**Introduction:** Perforation is a complication of peptic ulcer disease and requires emergency surgical treatment. In recent decades laparoscopic repair of perforation has been widely used.

**Aim:** To evaluate the role of laparoscopy in peptic ulcer perforation in terms of operation time, post operative complications

**Material and Methods:** 37 cases of ASA grade I,II,III with non traumatic perforated peptic ulcer on diagnostic laparoscopy were included and were analysed further.

**Results:** Among the 37 cases, average age of presentation was  $39 \pm 6$  years. Males were more than female. Average operation time was around  $66 \pm 15$ min. 3 cases were with large perforation and extensive contamination was converted to laparotomy. Patients were discharged on  $6 \pm 3$  days.

**Conclusions:** In hand of good experienced laparoscopic surgeon and in a selected cases laparoscopic approach is an effective method for treatment of perforated peptic ulcer.

**Keywords:** Laparoscopic surgery, peptic ulcer, peptic ulcer perforation, ASA grading

### Introduction

Peptic ulcer perforation is one of the common surgical emergencies that General Surgeon comes across and is a major cause of death in elderly patients <sup>[1, 2]</sup>. Peptic Ulcers can occur due to Helicobacter pylori infection and overuse of NSAIDs. Due to the understanding in the pathophysiology of Ulcer, effective eradication of infection by medical management decreased the complications of the peptic ulcer like perforation and bleeding.

Peptic ulcer perforation and peritonitis is one of the important complications of the ulcer. The standard of treatment for perforated ulcer was extensive procedure like gastrojejunostomy and vagotomy, antrectomy etc. Understanding the pathophysiology and usage of H pylori eradication therapy brought up simple procedures like omental patch closure of the perforation followed by peritoneal lavage and peritoneal drainage by conventional laparotomy.

Due to introduction of laparoscopy, surgeons started using laparoscopy for perforation repair. Main constraints of the procedure were perforation closure techniques and peritoneal wash. Simple closure and omental plug by suturing, fibrin glue, and stapler for the perforation closure are the techniques of repair of perforation <sup>[3, 4]</sup>.

There are still many questions as to whether the surgeon should perform this type of surgery in an emergency. Some surgeons have suggested that laparoscopic primary repair is the best way to improve early surgical outcomes <sup>[7-12]</sup>.

### Aim

To evaluate the role of laparoscopy in peptic ulcer perforation in terms of operation time, post operative complications

### Material and Methods

**Study method:** Prospective interventional study

**Study period:** July 2017 to September 2019

**Study setting:** Department of General Surgery, Narayana Medical college, Nellore

**Study sample:** 37 cases

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**Inclusion criteria**

1. Male and female Patients above 18 years
2. Non traumatic PU perforation Patients under ASA I, II, III grades

**Exclusion criteria**

1. Peritonitis due to perforations other than Peptic ulcer detected on diagnostic laparoscopy
2. Patients under ASA IV, V, VI

**Methodology**

Patients admitted in Narayana hospital with pain abdomen were evaluated by erect abdomen X ray, and those cases with air under the right dome of diaphragm indicating hallow viscus perforation were selected and investigated further for assessment of risk factors and ASA grading done.

Patients with ASA I, II, III were selected and diagnostic laparoscopy was done. Cases with Duodenal and gastric perforation were included in the study and rest was excluded.

Laparoscopic repair of the perforation with simple closure using the omentum was done and peritoneal lavage and drainage was done. Post operatively supportive treatment was given with analgesics and antibiotics. All the events were recorded in the proforma and evaluated.

**Statistics:** Microsoft Excel charts were used for entry of data. Means and percentages were used for description purpose.

**Study Design**

Total number of cases with pain abdomen – 210

Cases with air under diaphragm on erect abdomen Xray – 123

Cases under ASA I, II, III – 57

Cases with Peptic ulcer perforation – 37

**Results****Table 1:** Age Distribution

Age in years	No of cases	Percentage
18 -30	2	5
31- 40	4	11
41-50	18	48
51-60	10	27
>60	3	9

**Table 2:** Sex Distribution

Sex	No of cases	Percentage
Male	27	73
Female	10	27

**Table 3:** Distribution of patients according to ASA

ASA grade	No of cases	Percentage
I	7	19
II	13	35
III	17	46

**Table 4:** Distribution of patients at presentation

Duration	No of cases	Percentage
<24hrs	13	35
>24hrs	24	65

All cases were operated by experienced laparoscopic surgeon. Average operation time was around  $66 \pm 15$ min. 3 cases were with large perforation and extensive contamination was

converted to laparotomy.

Patients were given adequate analgesics, antibiotics. Started on orals with clear liquids followed by soft diet at average on 3<sup>rd</sup> day. Patients were discharged on  $6 \pm 3$  days. A case had a bile leak which was managed conservatively.

**Discussion**

Proton pump inhibitors and *H. pylori* eradication therapy have significantly decreased the rate of PUD complications, but perforation of duodenal ulcer is still quite frequent in developing countries [13, 14].

The laparoscopic approach for perforated peptic ulcer has significant advantages. It allows better visualization, is less traumatic and allows quick recovery after the operation. [15, 16]

Patients' selection for laparoscopic repair is still disputable. There are no firm criteria for patient selection for the laparoscopic approach [15, 17].

In our study ASA class I, II and III, without severe cardiopulmonary comorbidities or shock on admission were selected for laparoscopy. Conversion was mainly associated with technical difficulties owing to difficulty in suturing etc which were impossible to predict before the operation.

Suture leak remains the most dangerous surgical complication after perforated peptic ulcer repair. It was noted in a case in our study, in some studies it has a high incidence (7–9%) [17, 18]

Average operative time was  $66 \pm 15$ min, in many studies the average duration of surgery of laparoscopic repair was 65–95 min [15, 17, 18].

Several studies on laparoscopic repair of perforated peptic ulcer have shown that this method is more favourable than the open repair method as it involves less analgesic therapy, has a shorter hospital stay, a lower rate of wound infection, a lower mortality rate and earlier return to work [18-20]

Our study results show that laparoscopic repair for perforated duodenal ulcer is feasible with acceptable mortality and morbidity rates. Patient selection and surgeon experience are crucial for favourable outcomes of laparoscopic cases.

**Conclusion**

The laparoscopic repair of perforated peptic ulcer is an effective method for treatment in selected cases. More prospective randomized studies are needed to evaluate the effectiveness of laparoscopic repair of perforated duodenal ulcer.

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