Laparoscopic Management of Perforated Peptic Ulcer in Early and Late Presentation: A Comparative Study

T Anil Kumar, Manoj Gowda, Manash Ranjan Sahoo

ABSTRACT

Aim: To compare results of laparoscopic treatment of perforated peptic ulcer (PPU) in early and late presentation.

Materials and methods: Fifty-eight patients of age ranging from 18 to 55 years underwent laparoscopic closure of PPU over a period of 4 years between 2008 and 2011 of which 43 were male, 15 were female. In our study we took early presentation as 3 days and late presentation as 3 to 7 days (time taken for seeking treatment from the onset of symptoms). Thirty-seven presented early whereas other 21 presented late. All patients were compared for variables like operating time, intraoperative complications, risk of anesthesia, rate of conversion to open surgery, postoperative pain and the opiate analgesic requirements, postoperative morbidity and mortality, hospital stay.

Results: Mean operating time for patients with early presentation was 60 vs 90 minutes for delayed presentation. Conversion rate was 0 in early presentation vs 4.6% (10 cases) in late presentation. Thorough abdominal toileting was possible in all cases of early presentation. In late presentation it was possible only in 6 out of 11 cases after excluding conversion rate because of intestinal matting. No patients had any anesthesia problem in early presentation but 3 out of 11 cases had delayed recovery from anesthesia requiring treatment in intensive care unit. Postoperatively Opioid analgesia was required for mean of 3 days in early presentation vs mean of 4 days in late presentation. Nasogastric tube was removed on 3rd day in early presentation vs 4th day in late presentation which coincided with return of bowel sounds. Port site infection was seen in 5 out of 37 cases in early presentation and 2 out of 11 in late presentation. Intraperitoneal localized abscess was seen in 2 out of 11 cases in delayed presentation and none in early presentation which was then managed by aspiration. Mean hospital stay was 5 days in early presentation and 7 days in late presentation.

Conclusion: Laparoscopic treatment of PPU is safe, feasible done with ease in patients presenting less than 3 days and also in some cases of late presentation, with anesthetic complication, postoperative complications and conversion rate increasing with delayed presentation.

Keywords: Laparoscopic, Perforated duodenal ulcer, Early presentation, Delayed presentation, Opioid analgesia.

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INTRODUCTION

Laparoscopic treatment of perforated duodenal ulcer was first reported in 1990.1,2 Perforated peptic ulcer (PPU) is a condition in which laparoscopic repair is an attractive option. Not only is it possible to identify the site and pathology of the perforation, but the procedure also allows closure of the perforation and peritoneal lavage, just like in open repair but without a large upper abdominal incision.3,4

In the past 2 decades, there has been a change in the pattern of perforated peptic ulcer disease in affecting old and infirm patients, with a high association with nonsteroidal anti-inflammatory agents.5-12 They seldom require any definitive procedure, which is associated with increased rates of perioperative death and complications.13 Helicobacter pylori is now the recognized culprit of the majority of patients with duodenal and gastric ulcers, and postradication ulcer recurrence is uncommon.14-16 Acid-reduction procedures are not required for this group of patients. As a result, simple closure of the perforation with an omental patch has become the favored management approach in many institutions. It is technically straightforward and reliable and is also the preferred approach for high-risk patients.17-23 In this study we compare results of laparoscopic treatment of PPU in early and late presentation.

MATERIALS AND METHODS

Not all patients are suitable for laparoscopic repair, and it is important to preselect patients who are good candidates for laparoscopic surgery.3 Boey’s classification appears to be a helpful tool in decision-making:24,25 The Boey score is a count of risk factors, which are: shock on admission, American Society of Anesthesiologists (ASA) grade III and V, and duration of symptoms.26 The maximum score is 3, which indicates high surgical risk. Laparoscopic repair is reported only to be safe with Boey score 0 and 1.27,28 Elderly patients more than 70 years, cardiac pathology, chronic respiratory insufficiency, obesity, severe cirrhosis, severe coagulopathy, delayed presentation more than 7 days, patients requiring continuous vasopressor infusion to maintain blood pressure were excluded. Intraoperative exclusion criteria for the laparoscopic repair are: a nonjuxtapyloric gastric ulcer, an ulcer greater than 2 cm in diameter, concomitant hemorrhage, inability to tolerate pneumoperitoneum. After excluding patients from above criteria 58 patients of age ranging from 18 to 55 years underwent laparoscopic closure of PPU over a period of 4 years between 2008 and 2011 of which 43 were male,
15 were female. In our study we took early presentation as 3 days and late presentation as 3 to 7 days (time taken for seeking treatment from the onset of symptoms). Thirty-seven presented early whereas other 21 presented late. All patients were compared for variables like operating time, intraoperative complications, risk of anesthesia, rate of conversion to open surgery, postoperative pain and the opiate analgesic requirements, postoperative morbidity and mortality, hospital stay. Postoperative follow-up was done at 1, 6 months, 1 year and yearly thereafter.

After initial resuscitation and investigation revealing gas under diaphragm in straight X-ray of abdomen, patients were posted for surgery.

**SURGICAL TECHNIQUE**

After general anesthesia the patients were positioned in reverse Trendelenburg’s position, modified Fowler position with the thighs slightly flexed at the hip joints. The operating surgeon stood between the patient’s legs. The camera surgeon stood on the patient’s right side and the assistant surgeon on the left side. The camera port (10 mm) was placed in the umbilicus. The right hand working port (10 mm) was placed medial to the left midclavicular line, just above the level of the umbilicus. The left-hand working port (5 mm) was placed in the right midclavicular line, above the level of the umbilicus. A 5 mm port was placed in the epigastrium to retract the quadrate lobe of the liver. After identifying perforation (Fig. 1) the perforation was closed with interrupted sutures of 2-0 polyglactin. Three interrupted sutures were placed and kept without tying (Figs 2 and 3). An omental flap raised with intact blood supply was placed over the perforation, and the sutures were tied over the omental flap (Fig. 4), completely sealing the perforation. Thorough peritoneal lavage was then given with 4 to 6L of saline irrigation and aspiration mainly was in supra- and subhepatic regions, the left subdiaphragmatic space, pelvic cavity and interloop collections. After lavage, all the fluid was aspirated and a tube drain was kept in the subhepatic space and pelvis in all cases.

**RESULTS**

Comparison of results between early and delayed presentation are tabulated in Table 1.

Thorough abdominal toileting could not be done because of intestinal matting. Port site infection was managed conservatively with dressing. Intrapерitoneal localized abscess was aspirated under ultrasound guidance.

**DISCUSSION**

In 2002, Lagoo et al added the sixth decision for a surgeon to be made regarding PPU to the existing five therapeutic decisions proposed by Feliciano in 1992. The first decisions were about the need for surgical or conservative treatment, to use omentoplasty or not, the condition of the patient to undergo surgery, and which medication should be given. The sixth decision was: ‘Are we going to perform...
this procedure laparoscopically or open? Is there really a sixth decision to be made, or are there enough proven benefits of laparoscopic correction that this should not be a question anymore? Management of peptic ulcer perforation is controversial.29,30 Laparoscopic surgical treatment is attractive due to a lower morbidity rate associated with it than with conventional surgery.31 A recent review32 compared laparoscopic vs open peptic perforation surgery; laparoscopic repair was associated with lesser postoperative analgesic use, decreased hospital stay, lower wound infection rate, and lower mortality rate; open repair was associated with reduced operating time and suture-site leakage. A variety of laparoscopic techniques,33-40 including a combined laparoscopic-endoscopic method,41 have been described. We prefer intracorporeal suturing against extracorporeal knotting because the latter is likely to cut through the friable edge of the perforation. Laparoscopic perforation closure can be performed effectively with viable Graham’s patch omentoplasty as in conventional surgery.

CO₂ insufflation of the peritoneal cavity in the presence of peritonitis has been shown in rat models to cause an increase in bacterial translocation.42,43 This led to the assumption that laparoscopic surgery might be dangerous in patients with prolonged peritonitis. Vaidya et al performed laparoscopic repair in patients with symptoms of PPU for more than 24 hours and concluded that it was safe even in patients with prolonged peritonitis, which has been confirmed by others.24,44,47,48 In our study laparoscopic repair could be done with ease in patients presenting less than 3 days, also it could be done in patients presenting after 3 days with increasing difficulty, morbidity complications like localized peritoneal abscess, port site infection and with increase conversion rates.

CONCLUSION

Laparoscopic treatment of PPU is safe, feasible, done with ease in patients presenting less than 3 days and also in some cases of late presentation, with anesthetic complication, postoperative complications, conversion rate, duration of hospital stay with increasing morbidity increasing with delayed presentation.

Table 1: Comparison of results between early and delayed presentation. Thorough abdominal toileting could not be done because of intestinal matting. Port site infection was managed conservatively with dressing. Intraperitoneal localized abscess was aspirated under ultrasound guidance.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Early presentation</th>
<th>Delayed presentation</th>
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</thead>
<tbody>
<tr>
<td>Mean operating time</td>
<td>60 minutes</td>
<td>90 minutes</td>
</tr>
<tr>
<td>Conversion rate</td>
<td>0 out of 37 cases (0%)</td>
<td>10 out of 21 (47.6%)</td>
</tr>
<tr>
<td>Thorough abdominal toileting</td>
<td>0 out of 37 cases (0%)</td>
<td>6 out of 11 (54.5%)</td>
</tr>
<tr>
<td>Delayed recovery from anesthesia</td>
<td>0 out of 37 cases (0%)</td>
<td>3 out of 11 case (27.3%)</td>
</tr>
<tr>
<td>Postoperative opioid analgesia</td>
<td>Mean 3 days</td>
<td>Mean 4 days</td>
</tr>
<tr>
<td>Nasogastric tube removal</td>
<td>3rd day</td>
<td>4th day</td>
</tr>
<tr>
<td>Port site infection</td>
<td>5 out of 37 cases (13.5%)</td>
<td>2 out of 11 cases (18.2%)</td>
</tr>
<tr>
<td>Intraperitoneal localized abscess</td>
<td>0 out of 37 cases (0%)</td>
<td>2 out of 11 cases (18.2%)</td>
</tr>
<tr>
<td>Duration of hospital stay</td>
<td>Mean 5 days</td>
<td>Mean 7 days</td>
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REFERENCES


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