

Laparoscopic Repair of a CT diagnosed Perforated Duodenal Ulcer

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Introduction

Duodenal perforation occurs in 5% of duodenal ulcers but it is responsible for over 70% of deaths associated with peptic ulcer disease. Perforated duodenal ulcer can occur in any age group but is more common in the elderly population, probably due to increased NSAID use. There has been a sharp decline in the number of cases due to wide spread use of acid suppressing medication (over-the-counter and prescription) and *Helicobacter pylori* eradication.

Most (>80%) of perforated duodenal ulcers are *H. pylori* positive. The majority of patients suitable for surgery undergo laparotomy, washout and omental patching of their ulcer.

This case report discusses the laparoscopic repair for perforated duodenal ulcers in a 55 year old man with an atypical presentation.

Case Report

A 55 year old man presented to the Emergency Department with a sudden onset of excruciating abdominal pain of 1 day's duration, which started at work. The pain became more exaggerated the next day and felt like tightness across the epigastrium and was exacerbated by sitting forward or laying flat. He had no alteration in his bowel habit. On examination he was tender in his epigastrium with guarding.

He used a salbutamol inhaler and took occasional ibuprofen. He was a light smoker (4-5/day) and consumed 30 Units of alcohol a week. His past medical history included emphysema, asthma, alcoholic gastritis and alcoholism.

His blood tests, chest and abdominal X-rays were normal. The symptoms persisted and an urgent abdominal ultrasound scan was arranged which showed generalised increase in luminal intestinal fluid and mild thickening of the

small bowel affecting jejunum and ileum. A slight increase in doppler vascularity was noted and features were suggestive of enteritis, though a partial resolving small bowel obstruction was also a suspicion. A CT scan of the abdomen and pelvis with contrast the following day (Fig. 1) however demonstrated extensive free intraperitoneal air with an air fluid collection in the left perihepatic space measuring approximately 5 x 11cm. A suspected anterior duodenal wall perforation was visible and was also shown using virtual endoscopy (fig. 2).

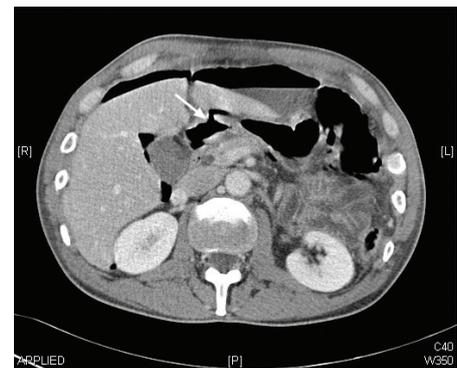


Figure 1. Axial CT demonstrating free intraperitoneal gas and defect in anterior wall of duodenum. (arrowed)

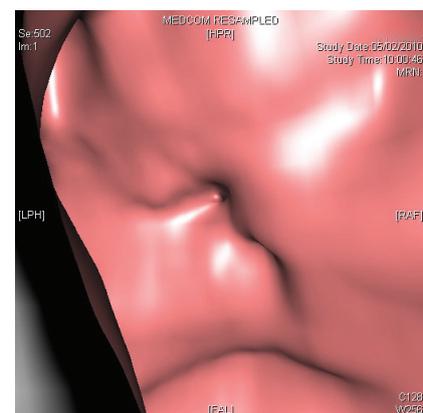


Figure 2. CT virtual endoscopic view demonstrating perforated ulcer

The patient underwent immediate surgery where a small ulcer in the first part of the duodenum was found with a moderate amount of free purulent bile in the abdomen and pelvis. One 10 mm port and two 5 mm ports were inserted. The duodenal ulcer was sutured with a single vicryl suture. A three litre washout was performed and two drains inserted. The procedure took less than 35 minutes to perform.

Following surgery, a rapid recovery was noted in the patient's condition. He required just two doses of opiate analgesia post operatively, was fully mobile the morning after his surgery and was discharged two days post operatively on *H. pylori* eradication.

The patient had made an uneventful recovery when reviewed in the out patient department at six week follow-up. An endoscopy has been arranged to confirm ulcer healing in three months time.

Discussion

Treatment for perforated ulcer ranges from conservative treatment (Taylor's approach) to radical surgery (vagotomy, gastrectomy). The traditional management of perforated duodenal ulcer was omental (Graham) patch plication which was first described in 1937. The surgical technique most often used is closure of the perforation combined with extensive peritoneal lavage. Since the first laparoscopic repair of perforated peptic ulcer by Mouret in 1990¹, mini-invasive technique has become increasingly popular as an alternative approach. In 1990 Mouret et al reported the first laparoscopic sutureless fibrin glue omental patch for perforated duodenal ulcer repair. The first successful laparoscopic suture repair for perforated peptic ulcer was described by Nathanson et al. also in 1990^{2,3}. In recent years, the laparoscopic approach has become more common.

Perforated duodenal ulcers can occasionally be managed conservatively if the patient presents early with minimal signs of peritonitis. Treatment includes IV proton pump inhibitor and IV antibiotics.

The laparoscopic approach offers patients with perforated peptic ulcer the same advantages as for other laparoscopic procedures - a cosmetically better outcome, less postoperative pain, less wound complications (hernia and wound infection), early mobilisation and return to work.

Laparoscopic treatment for perforated ulcer can be considered in most cases, making it possible to avoid a mid-line laparotomy. The laparoscopic approach is contraindicated in massive ileus, advanced purulent peritonitis and suspected perforated gastric cancer.

Conclusion

The laparoscopic approach for perforated peptic ulcers has advantages over open surgery in selected patients as typified in this case. With better results in minimal access surgery now available, the time has come for it to take its place in the on-call general surgeon's repertoire.

References:

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