Diagnostic laparoscopy for missed perforated duodenal ulcer; case report

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Abstract

Perforated peptic ulcer is a common abdominal disease that is treated by surgery. Despite the use of proton pump inhibitors, perforated peptic ulcer remains a frequent surgical emergency with an average mortality rate of 5.8%. This is a report of a 77 year old Saudi diagnosed as acalculus cholecystitis and upon laparoscopic exploration it was found to be sealed duodenum perforation. Patient was treated conservatively and discharged in good condition.

Introduction

Diagnostic laparoscopy is a minimally invasive surgical procedure [1]. It was first introduced in 1901, when kelling performed a peritoneoscopy in a dog and was called "Celioscopy" [1-3]. A Swedish internist named Jacobaeuse performed the first Diagnostic laparoscopy on human in 1910 [1, 3]. The diagnostic value of emergency laparoscopy has been proved since the 1950s and 1960s [2, 4]. Emergency diagnostic laparoscopy with surgical intervention was first proposed by Philippe Moment in 1990 [2, 4, 5].

Diagnostic laparoscopy offers the potential advantage of visually excluding or confirming the diagnosis of acute intra-abdominal pathology expeditiously without the need for a laparotomy [3, 6, 7]. It is the most accurate method even compared to open laparotomy, recommended and accepted worldwide [8]. The main advantage of diagnostic laparoscopy over traditional open laparotomy is reduced morbidity, decreased postoperative pain, and a shortened length of hospital stay [1, 4, 8]. It is safe well tolerated and can be performed in an outpatient and inpatient setting under general anesthesia [2, 6].

The introduction of Helicobacter pylori eradication therapy and the use of proton pump inhibitors have led to a decline in the incidence of perforated peptic ulcers (PPU) [1, 7]. Despite this, PPU remains a frequent surgical emergency with an average mortality rate of 5.8% in a recent review of the literature [1, 2, 6, 7]. Perforation is the second most common complication of peptic ulcer disease and surgery is almost always indicated [7, 9, 10]. If left untreated beyond 24 hours, the mortality approaches 50% [7, 8, 10]. Surgical management usually involves an upper midline laparotomy and repair of the perforation with a combination of simple suture repair and pedicled omentoplasty [4, 6, 10]. The first successful laparoscopic suture repair for perforated peptic ulcer was described by Nathanson in 1990 [2-4]. Soon after that, the laparoscopic approach became a widespread procedure [6]. Laparoscopic repair of duodenal perforation is a useful method for reducing hospital stay, complications and return to normal activity [3, 8].

Non-operative treatment has been shown to be safe and effective in selected patients, although, it is difficult to predict reliably of those who will respond successfully [4, 5]. It is known that perforated ulcers frequently seal spontaneously by the adherence of the omentum of organs adjacent to the ulcer [8-10].

Case Report(s)

A 77 years Saudi woman known case of hypertension, 2ry hyperparathyroidism, and Cohn's disease on potassium replacement, diuretic, and lyrica. She was presented to the emergency department complaining of abdominal pain before five days, improve after two days, then back one day prior to presentation. Pain started at flanks bilaterally then localized at umbilicus, radiated to back and both shoulders, stabbing in nature, no aggravating and reliving factors. Associated with anorexia, nausea, and vomiting (which was postprandial with food content).

Patient didn’t give any history of heartburn, gastric reflux, or using NSAID medication. Patient deny any change of bowel habit, urine color, or stool color. Also, she deny getting fever at home, or loss of weight in last year. No abnormality was detected in other systems. She had no surgical history.

On examination she was afebrile, Blood Pressure 125/70, Pulse 87. Abdomen was not distended, no scars seen and hernia orifices intact. By palpation abdomen was soft but marked tenderness over the epigastric area and right upper quadrant with no palpable mass. Bowel sounds were normal.

Laboratory investigations were normal apart from leukocytosis (18.6×103 U/l), elevated calcium (2.73 mmol/L), elevated lactic acid (2.9 mmol/L) and...
When present, peritonitis is an indication for emergency surgery to less than 2 per cent of patients [3, 7, 8]. The clinical presentation of acute pain in the upper abdomen with signs of peritonitis, is typical for PPU, but is seen in only about two-thirds of patients [5, 9]. When present, peritonitis is an indication for immediate laparoscopy or laparotomy, taking into account the patient’s condition and observations [4, 8]. Delay should not be introduced by additional imaging. Fewer than one-third of patients have a history of peptic ulcer disease before perforation [3, 7, 9].

Erect chest X-ray, seeking free air under the diaphragm, has been the imaging procedure of choice historically, but the diagnostic yield is suboptimal and free air is reported to be visible at rates varying from 30 to 85 per cent. X-ray has now been replaced by abdominal computed tomography (CT), which has a higher diagnostic yield, reportedly around 70–98 percent. In addition, CT can rule out other differential diagnoses of importance (such as acute pancreatitis) that would rule out the need for surgery. Ultrasonography may be useful in experienced hands and can locate the site of ulcer perforation [4, 6, 8]. The role of ultrasonography is limited and it should not delay surgery if other diagnostic procedures have confirmed the presence of free air, or the patient is ill.

Perforated peptic ulcer can be treated by a wide range of options that varies from conservative non-operative treatment to immediate definitive ulcer surgery [2, 4, 8]. Some patients with perforated ulcer can be managed successfully by non-operative means. The chief objections to this treatment are uncertainty or error in diagnosis, the unknown site and pathology of the perforation, and the unlikely response in elderly patients in whom this treatment is more attractive. However, routine definitive ulcer surgery in the form of highly selective vagotomy has been suggested in patients with perforated duodenal ulcer because this operation is unlikely to cause long-term side effects and because the prediction of the clinical course after simple repair of the ulcer is unreliable [4, 5, 10]. However, immediate definitive ulcer surgery for perforated peptic ulcer agrees that simple repair is indicated for patients who have poor surgical risks because of major concurrent medical illness or shock, for patients who have heavy bacterial contamination of the peritoneal cavity because of delay in surgery, and when experienced surgeon is not available [4, 5, 7]. Fewer surgeons currently have acquired enough expertise in performing highly selective vagotomy with advances in medical therapy. Simple closure remains an attractive option for perforation in most centers. Reports of laparoscopic treatment have shown that peritoneal toilet can be performed effectively and perforations can be closed safely. Whether repair of the perforation by the laparoscopic approach is better than by conventional open repair is undetermined. Laparoscopic repair of perforated peptic ulcer can be done by the suture or the sutureless technique [4, 5, 7, 8, 10].

**Discussion**

Perforation of a peptic ulcer is potentially fatal surgical emergency that remains a formidable health burden worldwide. The global prevalence of peptic ulcer disease has decreased in recent decades, but this has not been followed by a similar reduction in complications from peptic ulcers [4, 5]. The reduction in peptic ulcer disease is in part explained by the introduction of antibacterial therapy to eradicate Helicobacter pylori and the widespread use of proton pump inhibitors (PPIs) [5, 9]. Yet, despite the introduction of PPIs, the rate of peptic ulcer perforation has remained stable in several regions of the world [4, 6, 7]. Improved medical management of peptic ulcer disease has virtually eradicated the need for acid-reducing surgery, such as proximal selective vagotomy, and gastric resection [9, 10]. The complications of peptic ulcer disease, however, in particular bleeding and perforation, continue to present as an emergency [10]. Bleeding ulcers are five times more common than perforated ulcers. Non-operative management, including medication, endoscopy and interventional radiology, has decreased the role of emergency surgery to less than 2 per cent of patients [3, 7, 8].

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Conclusion

Every effort should be done to diagnose perforated ulcer. Radiological investigations can be misleading. It is crucial to have high index of suspicion for complications of perforated ulcer, in order to manage them appropriately. Thus, appropriate clinical decision making should not be delayed by suboptimal imaging.

Plain abdominal imaging harbors a substantial risk for false negative results. Accordingly, when imaging is used, low-dosage CT scan should be preferred.

References


Illustrations

Illustration 1

Figure 1: CT scan
Illustration 2

Figure 2: CT scan 2
Illustration 3

Figure 3: Laparoscopy picture 1
Illustration 4

Figure 4: Laparoscopy picture 2