Giant Perforations of Duodenal Ulcer

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Abstract

Over a period of eleven years, eight patients were treated for duodenal ulcer perforation measuring more than one centimetre in diameter. In five of these patients, the perforation was sealed using a jejunal loop as a serosal onlay patch; one patient underwent gastrectomy and in two patients catheter duodenostomy was done. Two patients died, both due to renal failure. The six surviving patients were discharged with the advice for a subsequent 'ulcer-curing' operation after six months. Two patients developed life threatening complications during this waiting period and one of these died. Giant perforations of duodenal ulcer can safely be closed using a jejunal loop as serosal patch. Delay in doing the second stage definitive surgery for the ulcer may be dangerous.

Key words: Peptic ulcer surgery.

Introduction

Most perforated ulcers measure 3 to 10 mm in diameter; perforations greater than 10 mm in diameter (giant perforations) are rare. In comparison to the usual perforations, these large sized perforations pose a greater challenge to the treating surgeon, both because they need a different operative strategy and also because they are associated with a higher morbidity. We report our experience with the management of eight patients with giant perforations of duodenal ulcer.

Material and Methods

Of the 375 patients with perforated duodenal ulcer treated in the emergency service of the Institute hospital from June 1977 to June 1988, eight patients had a perforation measuring over 10 mm. There were seven males and one female, aged 45 to 70 years. Six patients had a past history suggestive of peptic ulcer. No patient had taken steroids or other ulcerogenic drugs. All patients had generalized peritonitis and a preoperative diagnosis of perforated duodenal ulcer was made on the basis of the clinical findings and radiological evidence of pneumoperitoneum. Four patients presented in a state of shock; one patient had associated hematemesis.

Emergency laparotomy was done in all patients after adequate resuscitation. In all patients there was gross peritonitis and the perforation was in the first part of the duodenum. The perforation measured 1-2 cm to 1-7 cm in diameter. The commonest surgical procedure was a serosal onlay patch using a jejunal loop (5 cases). Two patients had a catheter duodenostomy done, and one underwent partial gastrectomy. A thorough peritoneal lavage with saline and drainage of the peritoneal cavity was routinely done.

Results

Two patients died, one on the third and one on the sixth postoperative day. The cause of death in both patients was renal failure. Five of the remaining six patients had wound infection and four had residual intra-abdominal abscesses. Two patients had to be reoperated for drainage of subphrenic abscesses.

All patients were put on antibiotics or cotrimoxazole and advised to come for definitive surgery after six months. Two patients underwent truncal vagotomy with gastroenterostomy, six months after the initial surgery; in one of these, a serosal patch was put on for a persistent duodenal fistula. Both are doing well on follow up of over three years. One patient presented four weeks after the first surgery with a massive upper gastrointestinal bleed. Endoscopy revealed a bleeding duodenal ulcer. The patient died before any active intervention could be done. Another patient came five weeks after the first surgery with repeated bouts of hematemesis. Endoscopy confirmed a bleeding duodenal ulcer. A partial gastrectomy was done, and the patient is doing well on follow up. One patient was lost to follow-up.

Discussion

Scant information is available in the literature regarding large sized perforated ulcers.\textsuperscript{2} Maynard et al\textsuperscript{3} reported 86 cases of gasto-duodenal perforation; only 22% of perforated duodenal ulcers were greater than 5 mm in diameter. The cause of the large size of these ulcers is unknown. Probably the size is a reflection of a long standing neglected disease, but two of our patients with large perforated ulcers did not have a past history of ulcer disease.

A perforation as large as one centimetre or more is difficult and hazardous to close by the usual technique of simple suture with omental patch. Even if one manages to close such 'giant' perforations, there are high chances of either a leak or gastric outlet obstruction developing in the postoperative period.\textsuperscript{4} Confronted with a 'giant' perforated duodenal ulcer the options available to the operating surgeons remain either of the following procedures: a catheter duodenostomy, covering the perforation into a pyloroplasty,
partial gastrectomy, and the use of a loop of jejunum as a serosal onlay patch.  

Catheter duodenotomy involves inserting a Foley's catheter into the perforation; its balloon is then inflated to fit snugly around the perforation, converting the perforation into a controlled external biliary fistula. This simple and quick procedure is instituted in very sick patients who are unfit for major surgical procedure. Its main drawback remains the persistence of the duodenal fistula after the catheter is removed. The fistula in one of our patients persisted for three weeks after removal of the catheter and it had to be closed with a serosal patch using a jejunal loop during the second stage surgery. Though the conversion of the perforation into a pyloroplasty has been reported,  

we have not done it for fear of a leak developing, since the procedure involves suturing the inflamed and edematous tissues. Though theoretically ideal, gastrectomy may not be practical as these patients are often moribund. 

Closure of these 'giants' perforations with a serosal onlay patch using a loop of jejunum is easy, quick and effective. We have used this procedure in five patients, with no postoperative complications. In experimental studies conducted on mongrel dogs, duodenal perforations of 1-5 cm were artificially created. The perforations were closed either with a Graham's omental patch or Weinberg pyloroplasty or a serosal patch. The last one yielded the best results. Cranford et al. recently reported their experience with gastric disconnection in the management of six cases of perforated giant duodenal ulcer. We have not attempted this operative procedure, but in a situation where a serosal patch is difficult due to edema in the wall of the duodenum, gastric disconnection may be a logical alternative. 

The ulcer left behind continues to run an active course as is evident from the fact that two of our patients presented with hematemesis four and five weeks after the initial surgery. Ideally an attempt should be made to do a definitive operation, preferably a gastrectomy or a truncal vagotomy with drainage, during the emergency surgery itself, but usually this is not possible because of the patient's general condition or the extensive peritoneal contamination. If not possible during the first surgery, it may be safer to do the definitive surgery in the second stage within a period of four to six weeks. The waiting period of six months for the second surgery, as recommended by us to our patients, was probably too long, keeping in mind the potential of these giant perforations to cause complications. 

It is well known that the incidence of septic complications in perforated duodenal ulcer is proportional to the extent of peritoneal contamination. Large sized perforated ulcers cause a greater amount of spillage into the peritoneal cavity and are thus associated with a poor prognosis. All our patients had one or more septic problems complicating the postoperative course. Postoperatively two patients died because of renal failure. The large amount of peritoneal contamination and the resulting third space fluid sequestration leads to hypovolemic shock and renal failure. Vigorous attempts should be made to keep an adequate intravascular fluid volumes and maintain a satisfactory urine output.

References

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