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Mini-Review: Omental Patch Repair of Giant Perforated Peptic Ulcer

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Abstract

Introduction. A perforated giant peptic ulcer is an emergency that requires surgery. Closure of the perforation with an omental patch has been reported in several cases of perforated giant peptic ulcers. However, there is insufficient evidence regarding the option of preferred treatment. This review to discuss published reports of a perforated giant peptic ulcer closed with an omental patch that focused on the complications

Method. The literature search was conducted through the Cochrane, PubMed, Scopus, and EBSCO data sites. The articles obtained were screened for duplication, title, abstracts, and full-text based on inclusion and exclusion criteria.

Result: Two articles were included in this study for critical review. From these two articles, no complications were reported regarding the closure of giant perforated gastric ulcers with an omental patch.

Conclusion: In general, closure of perforated gastric has a minimal incidence of postoperative complications. An omental patch can be used to close gastric perforation in unusual cases, such as giant perforation and septic shock, as presented in this case.

Keywords: giant perforated peptic ulcer, laparotomy, surgery, omental patch, omentoplasty, omentopexy, omental flap, complications

Introduction. A perforated peptic ulcer is the second most common complication of peptic ulcer disease after gastrointestinal bleeding (2–14%).¹ In our tertiary hospital, dr. Cipto Mangunkusumo General Hospital (CMGH), 48 cases of peptic ulcers with perforation undergoing surgery at the emergency room from 2006 to 2012.² Another study in the same hospital from 2011 to 2015 reported the rate of peptic ulcer perforation increased to 52 cases.³ From 2012 to 2015, the mortality rate for these cases reached 31.1%.⁴ There is a diversity of agreement regarding the diameter of giant perforated peptic ulcers, varying from 0.5 cm to 2.5 cm.⁵ According to the World Society of Emergency Surgery (WSES) guidelines, a giant perforated peptic ulcer is defined as a perforation diameter of 2 cm.⁶ Those face problems because of extensive tissue loss, and inflamed adjacent tissue is broader than that of small perforations.⁵

The use of an omental patch has been reported in some studies. The Graham technique is the standard method used to close perforated peptic ulcers. Ellatif reported a laparoscopic procedure in a patient with a perforated peptic ulcer and showed no significant differences in length of stay, time to start oral intake, postoperative complications, and surgical outcomes in patients who underwent and those who did not treat with an omental patch.⁷ Zhu et al. reported that the mortality was not significantly different in patients with a peptic ulcer who underwent operative management with an omental patch and gastric resection.

Giant perforated peptic ulcers are considered not to be treated using an omental patch. There is a belief that using this modality often results in postoperative leakage or obstruction of the gastric outlet.⁸ However, another study showed that leakage and mortality rates in patients with a small and giant perforated peptic ulcer treated using the Cellan Jones omental patch were not significantly different. This mini-review focused

on evaluating the postoperative complication of using the omental patch. This peptic ulcer case is unique because the patient presented with septic shock.

Methods

A literature search was carried out on some databases, i.e., Cochrane, PubMed, Scopus, and EBSCO, using the keywords "giant perforated peptic ulcer" AND ("laparotomy" OR "surgery") AND ("omental patch" OR "omentoplasty" OR "omentopexy" OR "omental flap") AND ("complications"). The studies included in this review were randomized controlled trials, cohort, case-control, cross-sectional studies, and case reports. The literature search proceeded according to the PRISMA (Figure 1). Joanna Briggs Institute (JBI) Critical Appraisal Tools 2017 was used to appraise these reports.

Results

Out of 85 articles found, only two articles met the eligible criteria, as shown in Tables 1 and 2. Marcucci et al. reported using an omental patch in gastric perforation measuring 4 x 4 cm with COVID-19 patients undergoing pulmonary resuscitation. Postoperatively, no complications related to the procedure.²¹ Turban et al. reported a case of peptic perforation measuring 3.5–4 cm through laparotomy that closed using the large omentum. In this report, no postoperative complications.²²

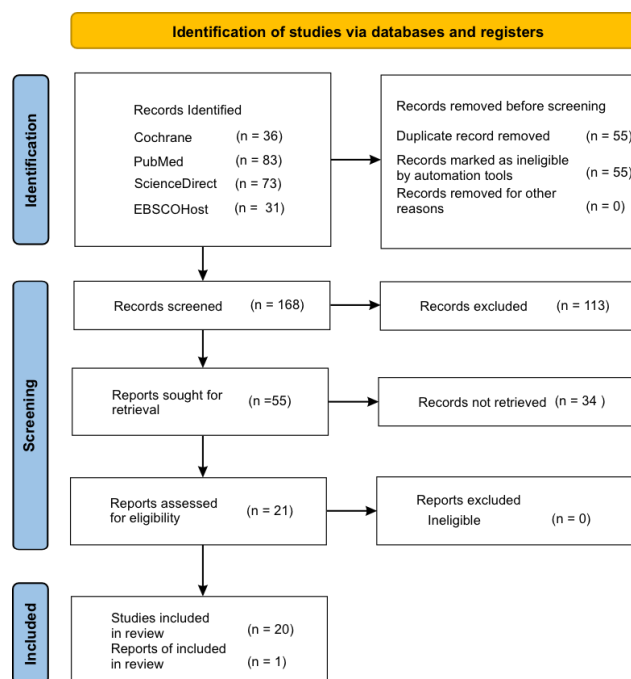


Figure 1. A literature search following PRISMA protocol found two eligible reports.

Table 1. Summary of studies that meet the eligibility criteria

No.	Authors, year	Studies	Subject	Intervention	Results	Follow Up	Level of evidence
1.	Turban et al., 2016	Case report	Gastric perforation 3.5–4 cm in patients with gastric cancer	Laparotomy and closure of perforation with great omentum	Barium radiography 19 days after surgery showed a normal esophagus, Increased fornix–diaphragmatic distance, giant malignant niche with normal gastrointestinal transit.	–	4
2	Marcucci et al., 2020	Case report	Anterior gastric perforation measuring 4 x 4 cm in the lesser curvature	Omental patch	Chest x-ray showing bilateral pleural fluids	No postoperative complications related to the procedure were reported.	4

Discussion

This review commenced with a systematic literature search and found two case reports that used omental patches on the giant perforated gastric ulcer. Both reports showed that using an omental patch for giant perforated gastric ulcers was effective. In the case of giant perforated gastric ulcer, there are two case reports using the omental patch. According to Marcucci et al., no complications related to the procedure occurred after the omental patch was closed.²¹ Surban et al. reported using an omental patch in a case of giant malignant gastric perforation with a diameter of 3.5–4 cm. Closure with an omental patch, in this case, was done because the gastric wall around the perforation was considered rigid and had been infiltrated by neoplastic tissue. On postoperative day 19^h, there were no complications related to the surgical procedure. Barium radiography 19 days after surgery showed normal esophagus, increased fornix–diaphragmatic distance, giant malignant niche, with normal gastrointestinal transit. Inspection chest x-ray shows pleural fluid in both lung fields.²² The low complication rate in giant perforated gastric ulcers reported in this study may be due to the more effortless procedure of using an omental patch with a lower risk of injuring surrounding organs than performing an omental patch of large duodenal perforation.

In addition, the incidence of preoperative sepsis also needs to be considered because septic shock is common in patients with giant perforated gastric ulcers. In the case of sepsis, surgical intervention with resection for ulcers involving the ampullary area is generally not recommended because of the high risk of postoperative complications.

Therefore, surgical procedures such as pyloric exclusion and gastric decompression using a nasogastric tube or gastrostomy and external biliary diversion with T-tube are recommended.⁶ The prospective cohort study with a larger sample by Sharma et al. in patients with overall gastric perforation of various sizes reported 29 (30%) cases of postoperative complications following repair with the omental patch technique. Of the total patients who experienced complications, 22 patients (75.9%) required repeat surgery.¹⁵ The mortality rate for gastric perforation <5 mm in diameter is 6%; if it is between 5 and 10 mm, the mortality rate is 19%, and if more than 10 mm, the mortality rate is about 24%. This study also did not observe mortality in the patient. The choice of surgical technique will depend on the ulcer's position and size and the patient's age and fitness. Ulcers in the pre-pyloric region, using therapy similar to duodenal perforation, but more proximal gastric ulcers should be excised if possible. Closure of the perforation with an omental patch was chosen because the perforation was in the pre-pyloric region; the ulceration was similar to duodenal ulceration.²³ Follow-up post-operation, there were no complications associated with this procedure. The omental patch technique can be used to close peptic perforations in cases of gastric perforation accompanied by septic shock.

Conclusions

Peptic perforation has a minimal incidence of postoperative complications. However, this measure is supported by only two case reports, so it is not yet strong enough to be applied in daily clinical practice.

Disclosure

The authors declare no conflict of interest

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