

## CASE REPORT

# Novel approach for peptic ulcer perforation surgery

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**Abstract**

A case of peritonitis following the repair of perforated peptic ulcer using omental flap. The revision surgery was performed using pedicled falciform ligament flap, and no postoperative and one-month follow-up complications were reported. In cases of perforated peptic ulcer that cannot be treated with omentopexy, use of a falciform ligament.

**KEYWORDS**

ligament, omental patch, pedicled falciform ligament, peptic ulcer, perforation surgery

## 1 | INTRODUCTION

Perforation is the second most reported occurring complication of the peptic ulcer.<sup>1</sup> Surgery is required in all the cases but in patients with hemodynamic pathology and the evidence of self-closure through radiological findings.<sup>2</sup>

The method of omentoplasty using a pedicle patch was first explained by Cellan—jones in 1929. In this method, a part of omentum is employed at the site of perforation with full-thickness sutures on both sides.<sup>3</sup> However, in cases where omentum is technically not usable or absent, an alternative method is required.<sup>3</sup> In this case, we report an alternative method based on falciform ligament for perforation repair.

## 2 | CASE REPORT

The patient was a 42-year-old woman who was referred to the emergency department of our center with extreme pain and abdominal distention. The patient described the history of cesarean surgery 2 weeks before the referral. The patient was an opium addict. At the time of the visit, her vitals were 90/P and PR = 115/min.

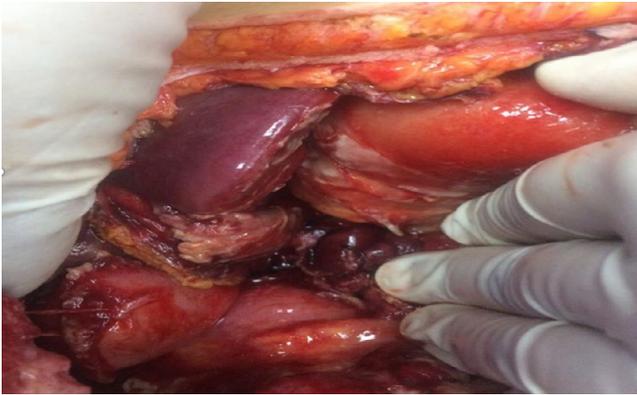
The patient's abdomen had severe exacerbations and generalized tenderness, which was diagnosed through

acute abdominal surgery. A laparotomy was performed where 4 liters of concentrated purulent-fibrin secretion was obtained (Figure 1). There was a wound with a diameter of approximately 2 cm on the stomach curvature and near the pylorus. Initially, the inside of the abdomen was washed with about 10 L of normal saline serum, followed by the wound biopsy. The repair was then performed using a stable flap of omentum (which was held in place by full-thickness sutures). Patient displayed complete recovery after 7 days and was discharged in a healthy condition on 11th postoperative day. The biopsy of ulcer was negative for any malignancy.

One month later, the patient was referred to our center again with abdominal pain, fever 100°F, and nausea. Physical examination revealed abdominal tenderness, and the patient was subjected to diagnostic laparotomy where the 200 mL of pus was drained and complete omental patch was seen to have gangrenous appearance and, therefore, was completely removed. Patient did not have more omental mass to cover the perforation. The pedicled falciform ligament flap was embedded as a substitute and was fashioned on the wound with full-thickness sutures. The pedicle was conserved for the ligament in order to sustain the vasculature where, its free end was used to repair ulcer and flap was sutured over the ulcer using interrupted 2-0 vicryl sutures.

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**FIGURE 1** View of patient under laparotomy

Drain (nonsuction) was positioned in the Morrison's pouch followed by washing and closure. The patient was transferred to the ICU, without any evidence of sepsis, and was under parenteral nutritional support for 6 days along with antibiotic therapy and proton-pump inhibitor. No postoperative complication was seen. The patient was resumed to the normal diet after and was discharged with the good physical condition after 12 days. One-month follow-up to the clinic did not show any signs of leak/infection, dysphagia, and weight loss, and patient was satisfied with her health condition.

### 3 | DISCUSSION

Perforated peptic ulcer is one of the most common surgical emergencies worldwide. Its overall mortality rate is between 1.3% and 20%, whereas mortality due to perforation of the stomach ulcer is more than that of duodenal ulcer (40% vs 10%).<sup>4</sup>

The omental patch is a common surgical answer to ulcerative perforation; however,<sup>4</sup> in some cases, omentum may not be available due to previous omental surgeries, inflammation, and adhesion caused by necrotic pulmonary peritonitis, or through penetration of the perforation site.<sup>5</sup> Furthermore, because of the postoperative ileus, stomach, and intestinal stretch, causing stretch at the omentum, postoperative suture leakage and opening can occur.<sup>6</sup> Boshnaq, et al<sup>3</sup> reported a case of 83-year-old woman where perforated prepyloric ulcer was closed using falciform ligament pedicle flap due to the absence of omental fat likely due to the previous panproctocolectomy. Similarly, Munro, et al<sup>7</sup> demonstrated a successful use of falciform ligament for perforated duodenal ulcer in six patients without any postoperative complications. In a case report Park, et al<sup>8</sup> utilized falciform ligament for the closure of giant paraesophageal hernia with no postoperative complication and recurrence.

Therefore, we present a first case of an alternative method of using pedicled falciform ligament flap to repair the perforation in our center. This method has been scarcely presented in literature and is not commonly practiced. However, postoperative outcomes are satisfactory, and it can be feasibly used as an alternative to omental flap.<sup>9</sup> The falciform ligament is a sickle-shaped peritoneal fold, extending from the navel to the anterior hepatic surface.<sup>3</sup> In light of previous cases and our study, this method is a safe and feasible alternative of omental (Graham's) technique. Nonetheless, a comparative study with long term follow-up is required to validate these outcomes.

### CONFLICT OF INTEREST

The authors deny any conflict of interest in any terms or by any means during the study. All the fees provided by research center fund and deployed accordingly.

### AUTHOR CONTRIBUTIONS

MA: conceptualized and designed the study, drafted the initial manuscript, and reviewed and revised the manuscript. LHM: Designed the data collection instruments, collected data, carried out the initial analyses, and reviewed and revised the manuscript, coordinated and supervised data collection, and critically reviewed the manuscript for important intellectual content.

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### REFERENCES

- Graham RR, Tovee E. The treatment of perforated duodenal ulcers. *Surgery*. 1945;17(5):704-712.
- Lee CW, Sarosi GA Jr. Emergency ulcer surgery. *Surg Clin N Am*. 2011;91(5):1001-1013.
- Boshnaq M, Thakrar A, Martini I, Doughan S. Utilisation of the falciform ligament pedicle flap as an alternative approach for the repair of a perforated gastric ulcer. *BMJ Case Rep*. 2016;2016:bcr2015213025.
- Vakayil V, Bauman B, Joppru K, et al. Surgical repair of perforated peptic ulcers: laparoscopic versus open approach. *Surg Endosc*. 2019;33(1):281-292.
- Li X, Xu D, Tan H, Li C. Anatomical study on the morphology and blood supply of the falciform ligament and its clinical significance. *Surg Radiol Anat*. 2004;26(2):106-109.
- Naraynsingh V, Ramdass MJ. Control of the bleeding gallbladder bed using a pedicled falciform ligament flap based on the left inferior phrenic artery and middle segment hepatic artery. *Can J Surg*. 2009;52(5):E203.
- Munro WS, Bajwa F, Menzies D. Laparoscopic repair of perforated duodenal ulcers with a falciform ligament patch. *Ann R Coll Surg Engl*. 1996;78(4):390-391.

8. Park AE, Hoogerboord CM, Sutton E. Use of the falciform ligament flap for closure of the esophageal hiatus in giant paraesophageal hernia. *J Gastrointest Surg*. 2012;16(7):1417-1421.
9. Yuval JB, Szold A. *Laparoscopic Repair of Perforated Peptic Ulcer. Surgical Principles of Minimally Invasive Procedures*. Berlin: Springer; 2017:71-73.

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