Surgical repair of giant gastroduodenal perforation with Teflon-Felt?

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Summary Patients with longer duration of huge gastroduodenal perforation are known to be difficult to tolerate major surgery. Primary closure of the perforation will result in suture tension with high risk of dehiscence, gastric outlet obstruction, and even mortality. Teflon-Felt is a bioinert, polytetrafluoroethylene, flexible material used on patients with vascular defect. It is proposed that Teflon-Felt may be an optimal material for closure of giant gastroduodenal perforation to reduce suture tension without narrowing of the gastric outlet.

INTRODUCTION

The incidence of peptic ulcer perforation has increased in elderly and female patients (1), and surgical intervention for most of them is often considered. Patients with peptic ulcer perforation and associated with severe sepsis or medical illness may have difficulty in tolerating a major surgery (2,3). Consequently, a lesser procedure of simple closure will be the better choice (4). Nevertheless, closure of perforation for a patient with longer duration of giant gastroduodenal perforation will encounter suture tension, gastric outlet obstruction, risk of dehiscence, and even mortality (5).

CLOSURE FOR PERFORATED GASTRODUODENAL ULCER

According to Pappas and Lapp (6), the degree of friability of the ulcer edge determines whether a direct suture or omental patch is used for the closure of the ulcer perforation. When the perforation hole is larger than 2 cm and the surrounding tissues had severe inflammation, the direct closure will be difficult. Even the omental patch or falciform ligament patch closure (5) and closure of the defect by an omental plug attracted into the digestive tract with combined laparoscopic-endoscopic method (7) are also difficult. Although gelatin sponge plug can be tailored to suit individual cases (8), it is not ideal for repair of a large perforation.

PROBLEMS OF SURGICAL TREATMENT FOR PERFORATED GASTRODUODENAL ULCER

Analysis of prognostic factors in peptic ulcer perforation revealed that age, size of perforation, delay treatment, type of operation, and co-existing illness are related risk factors (2,3). Major surgery for gastroduodenal perforation in a high-risk patient is not commendable.

Crawford et al. (9) and our previous report (10) found that gastrojejunal disconnection in the presence of purulent peritonitis of giant perforated ulcer had shown survival improvement. However, a secondary operation for reconstruction is needed which results in a longer period of postoperative courses. Compulsorily using primary or omental patch closure for patients with giant perforated duodenal ulcer, not only one more drainage procedure such as gastrojejunostomy will be necessary.
but also presents a high risk of re-perforation or leakage of anastomosis.

**TEFLON-FELT (TF) AS A SUITABLE GIANT GASTRODUODENAL PERFORATION GRAFT MATERIAL**

TF is a bioinert, polytetrafluoroethylene material which has been used to graft vascular defects for a long period of time. It is flexible and can be cut into optimal size to graft securely on any difficult approximation tissue defect without tension or rejection. In addition, we have successfully sutured the TF on erosive arteries to check arterial massive bleeding during emergent operation for necrotizing pancreatitis without uncontrolled infection, effect by pancreatic enzyme, and interfere vascular flow (11). It is suggested that TF can be grafted on giant gastroduodenal perforation with easy, simple surgical technique to prevent the following problems of giant gastroduodenal perforation such as:

1. flow out gastric juice results in continuous chemical irritation and contamination;
2. occupy intraluminal space result in gastric outlet obstruction;
3. induce suture tension or infection causing dehiscence.

With TF as a temporally shield on the perforation as Figs. 1(A) and (B), the acute phase can be easily handled and allow healing on the inner surface of TF. It is expected that foreign body surface fibrosis will occur on the outer surface of TF progressively. After the perforation gradually heals, TF can be removed by endoscopy in several weeks or months after its graft.

**CONCLUSION**

When perforated giant gastroduodenal ulcer is difficult to suture or has suture tension with a high possibility of dehiscence and post-closure gastric outlet obstruction, the Teflon-Felt graft by either open or laparoscopic surgery can be a good alternative choice of treatment in the future.

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**REFERENCES**