Clinical Science: Invited Commentary


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First suggested for patients with perforated gastric ulcers in 1894,1 omental patch closure of a perforated duodenal ulcer was popularized by Graham in 19372 and has remained a surgical mainstay. Over time and before the descriptions of Helicobacter pylori, H2-receptor antagonists, and proton-pump inhibitors, omental patch closure was one of the 4 operations used to treat perforated gastroduodenal ulcers. These included gastrectomy for perforated gastric ulcers and truncal vagotomy and pyloroplasty, truncal vagotomy and resection, and proximal gastric vagotomy with omental patch closure for perforated duodenal ulcers.3–5 These “definitive” operations were used from the 1940s to the 1990s because of the following problems or limitations of omental patch closure as follows: (1) technical difficulties in patching gastric or large duodenal perforations; (2) early reperforation or bleeding; (3) recurrent symptoms (73% of patients) postoperatively5; (4) late reperforation (9% of patients)6; and (5) a large number of reoperations (48% of patients).7

Since the descriptions of H. pylori, H2 receptor antagonists, and proton-pump inhibitors, either open or laparoscopic omental patch closure has become the most commonly used operation to treat perforated duodenal ulcers. Patch closure suffices as postoperative medical therapy to eliminate the Helicobacter causative agent is so successful. It is of interest, however, that perioperative care for patients undergoing omental patch closure has varied so much. For many years, the postoperative management after omental patch closure of a perforated duodenal ulcer in certain centers included a mandatory 5 to 7 days of nasogastric suction and nil per os status. In contrast, other surgeons and centers removed the nasogastric tube and fed the patient as soon as flatus was passed. Both of these approaches have been effective, but this has led to confusion among trainees and young surgeons. The 3 related factors that have decreased such variations in perioperative care have been evidence-based medicine, clinical pathways, and fast-track surgery.

Wilmore and Kehlet summarized the principles, processes, and benefits of fast-track surgery in a series of reviews from 2001 to 2008.8–10 Basic concepts include the following: (1) preoperative optimization of organ function for elective procedures; (2) the use of anesthetic techniques “that provide for minimal carryover of opioid effects into the recovery period” along with regional anesthetic techniques and continuous postoperative neural blockade for pain relief; (3) use of laparoscopic operations; (4) evidence-based principles of thromboprophylaxis, perioperative antibiotic prophylaxis, and decreased use of nasogastric tubes and drains11; (5) early enteral feeding; and (5) use of pharmacologic agents (multimodal antiemetics, glucocorticoids, anabolic agents, etc) where appropriate.10 Preliminary evidence, especially in colorectal surgery, has documented a similar incidence of postoperative complications (as compared to open procedures), shortened length of stay, and decreased costs with fast-track programs.12

Gonenc et al from Istanbul standardized the preoperative management and a laparoscopic operative technique in 47 patients with perforated peptic ulcers <10 mm in size from 2012 to 2013. Patients who were not excluded from the study (failure to consent, age, neuropsychiatric issues, shock, etc) were assigned to 1 of 2 groups. Group 1 patients had omental patch closure and received the same perioperative medical care as the controls, and group 2 patients had the same surgical procedure and received the fast-track medical care. Patients who underwent omental patch closure with fast-track medical care had a significantly shorter hospital stay (5 days) than controls (9 days) and were able to start ambulation and discharge sooner.12

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pregnancy, steroids, complex, large or sealed ulcers, conversion to open procedure) were then randomized into a “Control” group (#26) and an “Enhanced Recovery after Surgery” (ERAS) group (#21). Patients in the “Control” group had a nasogastric tube until output was <300 mL/day, pain management with intravenous tramadol (centrally acting analgesic), and received intravenous metoclopramide and pantoprazole. The postoperative regimen in the “ERAS” group is summarized in the authors’ Table 2. The major differences in management as compared to the “Control” group were substitution of the analgesic tramadol with diclofenac, a nonsteroidal anti-inflammatory drug (NSAID), the institution of a liquid diet on postoperative day 1, and discharge if bowel sounds (rather than flatus or bowel movement) were present and feeding was tolerated. As noted in the authors’ Table 3, the incidence of postoperative complications was equivalent in the 2 groups, and length of stay was decreased 45% in the ERAS group.

The author’s approach is a valid one and follows many of the principles of fast-track surgery for elective and certain emergency operations outlined above.13,14 Omental patch repair with a laparoscopic approach is now widely accepted as the standard of care for most perforated gastroduodenal ulcers.15–17 Avoidance of postoperative narcotic analgesics with secondary nausea, vomiting, and ileus is a logical component of many gastrointestinal fast-track programs. The authors’ use of an NSAID to decrease postoperative inflammation, however, deserves comment. In patients ingest- ing NSAIDS, especially those with chronic use, there is a higher incidence of myocardial infarcts and strokes. Is it appropriate for an elderly patient with long-term use of NSAIDS to resume such a medication in the early postoperative period? The mean age of patients in the Control (37.8 years) and ERAS (35.4 years) groups may have obviated any concerns about adverse cardiovascular events in this prospective study. The other concern about the use of postoperative NSAIDS is the known increased risk of gastrointestinal ulcers, perforation, and bleeding. Again, these effects occur most frequently in patients who are chronic users, are older and in poor health, and who abuse alcohol. Presumably, the 48-hour course of diclofenac in the ERAS group would minimize the risk of unwanted gastrointestinal sequelae. Finally, other recent fast-track approaches in patients undergoing gastrectomy have emphasized the safety and benefits of omitting nasogastric tubes and instituting early gastric feedings.18–20

The surgical aphorism that a well-performed operation generally predicts an uncomplicated recovery is still true in previous healthy patients. On the other hand, postoperative complications and even death are often related to the patient’s pre-existing health problems and the magnitude of the surgical problem. For this reason, fast-track approaches to perioperative care are appropriate for elective and a selected group of emergency operations. Evidence-based medicine now clearly supports the previously described changes in anesthesia and pain control, elimination of nasogastric tubes, and early institution of oral feedings in patients undergoing emergent omental patch repair of a perforated gastroduodenal ulcer.

References