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The Use of Muscle Flaps for the Management of Recalcitrant Gastrointestinal Fistulas

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Enterocutaneous fistulas (ECFs) can result from various surgical and nonsurgical conditions. In approximately 85% of the cases, fistulas develop after various intra-abdominal interventions and are primarily caused by leakage from an anastomotic site of the gastrointestinal (GI) tract, erosion from a synthetic mesh, or inadvertent enterotomies. The remaining 15% of GI fistulas occur spontaneously and are caused by various medical conditions including inflammatory bowel disease, diverticulitis, and malignancy or radiation injury. Postoperative fistulas represent a dreaded complication, carrying a significant degree of morbidity and mortality. With accumulated experience, better understanding of the anatomy and physiology of fistulas, and extensive use of parenteral nutrition, improved strategies for management and aggressive protocols for care have been introduced. Eradication of coexisting infection, drainage of all collections, optimization of patients' nutritional status with total parenteral nutrition (TPN), wound care and delayed repair of fistulas, at least 6 weeks following the initial intervention, has resulted in a significant reduction of morbidity and mortality from ECF. Several authors have reported their protocols and outcomes for management of these difficult cases [1–4].

Despite such advances, however, and despite improved medical and surgical care, numerous fistulas may persist or recur. Recurrent fistulas represent a much more difficult problem carrying significant additional morbidity and mortality. Reasons for failure of surgical repair include, among others, errors in technique of repair, local factors such as scarring, fibrosis, tissue ischemia, close contact with biomaterials, secondary infection, and in some instances, recurrent malignancy or radiation damage. When standard surgical techniques fail, the surgeon is left with very few viable options. It is for these complex cases that muscle flaps can be of great assistance and recommended to cover, support, and reinforce friable anastomotic sites.

Materials and methods

During the last 15 years, 13 male patients with recalcitrant GI fistulas were managed jointly and treated by the primary surgeon and the plastic surgeon. Nine patients developed fistulas after management of penetrating injuries to the abdomen,

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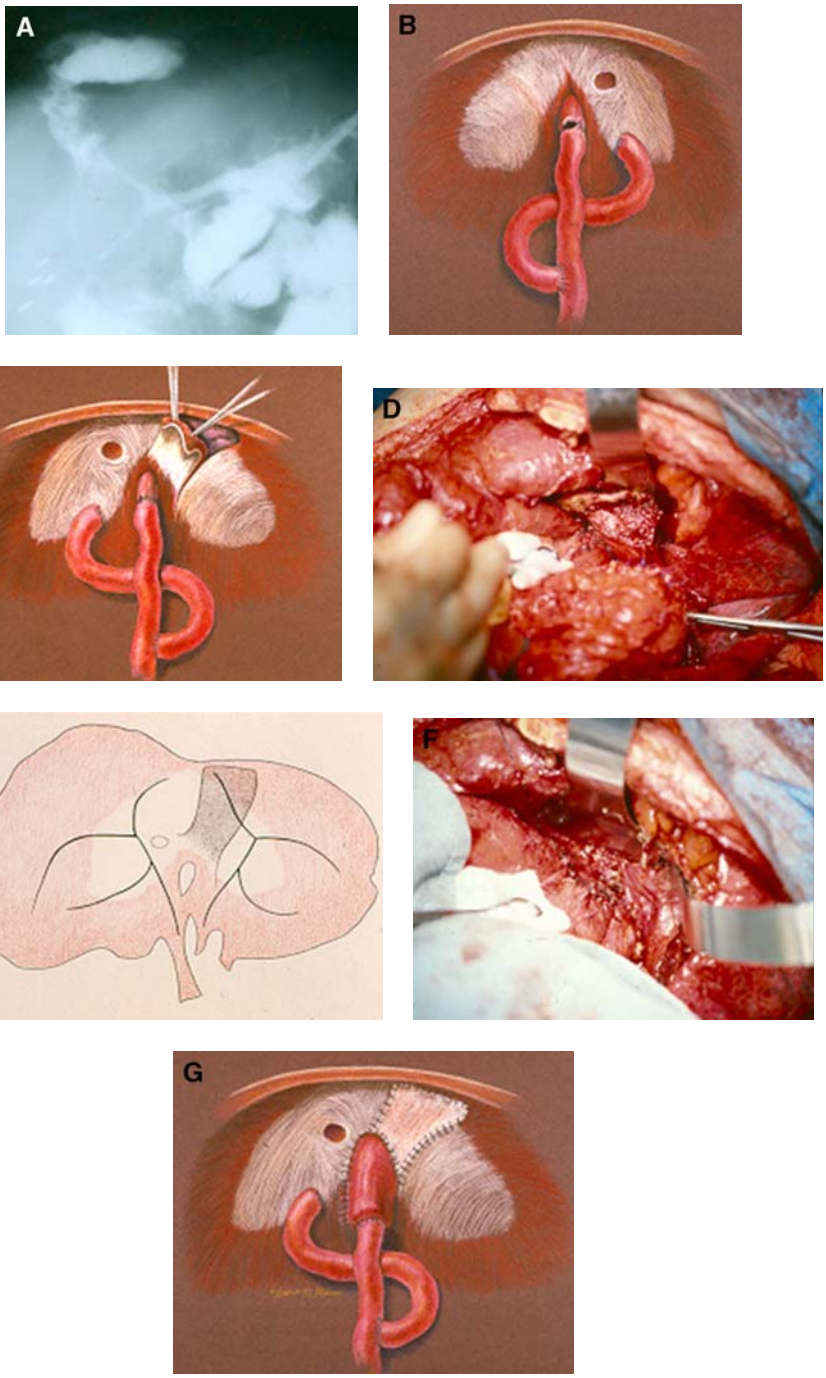

Fig. 1. (*A*) Fistulogram demonstrating a large subphrenic collection and a communication at the level of the esophago–jejunostomy. (*B*) Demonstration of the anatomy of the area, with complete disruption of the anterior portion of the anastomosis (*C*, *D*). The anastomosis was redone, and a flap from the diaphragm was designed to cover and protect the suture line. (*E*) The flap of the diaphragm was designed in such way to avoid injury of the major branches of the phrenic nerves (*F*, *G*) Complete coverage of the anastomosis was achieved. The donor site defect of the diaphragm was closed using an autologous fascia lata graft.