

# Grand Rounds

## At Froedtert Hospital

Case Presentation

### Prosthetic Reinforcement of Posterior Cruroplasty During Laparoscopic Hiatal Herniorrhaphy

By Constantine T. Frantzides, M.D., Ph.D.,  
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Introduction

After several years of follow-up, the success of laparoscopic Nissen fundoplication in controlling the symptoms of gastroesophageal reflux (GER) appears to be 80 - 90%. A possible mechanism of Nissen fundoplication failure is herniation of the stomach and wrap into the chest which can produce recurrent reflux. We have noted failure of laparoscopic Nissen fundoplication in some patients who had a large defect (>8 cm) of the esophageal hiatus repaired with posterior cruroplasty. Subsequent barium meal in these patients confirmed a recurrent hiatal hernia with demonstrable reflux. In an attempt to prevent reherniation of the stomach into the chest, we reinforced the posterior cruroplasty with polytetrafluoroethylene (PTFE) onlay in the next patients with large hiatal hernia. Here we report laparoscopic Nissen fundoplication with mesh reinforcement posterior cruroplasty in three patients with symptomatic GER and large hiatal hernia.

Case Reports

Our technique of laparoscopic Nissen fundoplication and posterior cruroplasty follows a previous description. Cefazolin (2 g IV) is given with induction of general anesthesia. Carbon dioxide pneumoperitoneum and five 10 mm trocars are used. The lesser omentum and phrenoesophageal ligament are incised, a 50 Fr bougie is placed within the esophagus and a window is created posterior to the esophagus with blunt dissection. The hiatal hernia is reduced with sharp and blunt dissection of the hernia sac and with gentle traction on the stomach. The short gastric vessels are ligated with a right-angle clip applicator or an ultrasonic scalpel (Ethicon). The esophagus is circumferentially mobilized until the lower 5 cm is intraabdominal.

Prior to the onlay posterior cruroplasty is performed with interrupted sutures of 2-0 polyester into the right and left bundles of the right crus, ensuring that full-thickness bites are taken.

The mesh onlay is an oval sheet (15 x 10 x 0.1 cm) of fenestrated PTFE (MycroMesh GoreTex, W.L. Gore and Associates). A radial slot with a 3 cm defect in the center ("keyhole") is cut into the mesh. The mesh is pushed through a 10 mm trocar into the peritoneal cavity and placed around the gastroesophageal junction with the esophagus coming through the 3 cm defect and the radial slot oriented anteriorly. The PTFE is stapled to the diaphragm with a straight hernia stapler (Ethicon); the two leaves of the keyhole are stapled to each other.

Finally, a 3 cm long 360 degree fundoplication is created loosely around the 50 Fr bougie with three sutures of 2-0 polyester, taking bites of stomach wall only. The most cephalad stitch incorporates the mesh and the anterior arch of the right crus.

This procedure was performed on six patients who all had severe heartburn, reflux, a partially intrathoracic stomach, and an esophageal hiatus >8 cm in diameter. No perioperative complications occurred. At 5, 16, and 18 months of follow-up the patients are doing well and either barium meal or endoscopy has confirmed a successful operation in each.

Discussion

The cause(s) of recurrent reflux after an antireflux procedure may be revealed by examining the reoperation for reflux. In one series of 87 patients undergoing operation for a failed antireflux procedure, 72% had recurrent hiatal hernia. Despite the problem of recurrence, the technique of hiatal herniorrhaphy has not changed appreciably since its inception. Cruroplasty has been done by suturing the crura with 0 or 2-0 nonabsorbable material anterior and/or posterior to esophagus. Cushteri et al. has reported eight patients with large hiatal hernia who were treated with laparoscopic posterior cruroplasty, with a good short-term result.

Precedent for the use of the prosthetic at the esophageal hiatus is limited; one example is the Angelchik and Cohen prosthesis, a C-shaped ring of silicone gel contained in a

silicone elastomer shell which is placed around the gastroesophageal junction. The enthusiasm for this device was ended by reports of complications of prosthesis migration, luminal penetration, and dysphagia. The indication for the purpose of PTFE placement in the present study are different from those for placement of an Angelchik prosthesis, so comparison of these two techniques is difficult. Migration of the PTFE is unlikely since it is stapled to the diaphragm. We do not as yet have long-term follow-up.

Edelman has reported a series of 5 patients with paraesophageal hernia who were treated with laparoscopic hiatal herniorrhaphy with polypropylene mesh, gastropexy, and gastrostomy. Pitcher et al. has reported a series of 12 patients with paraesophageal hernia who underwent laparoscopic repair; two of these required polypropylene mesh to close a large hiatus. Since polypropylene mesh has been associated with enterocutaneous fistula secondary to the polypropylene eroding into the bowel lumen, we employed PTFE for the onlay because there have been no reports of bowel erosion secondary to PTFE.

Determination of the efficacy and safety of PTFE reinforcement of posterior cruroplasty for the large hiatal defect will require 50-75 patients observed over 10-15 years. The short-term result in our first six patients has been satisfactory. We do not, however, recommend routine use of PTFE in hiatal herniorrhaphy. At the present we are

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placing PTFE in patients with a large hernia sac and whose hiatal diameter is 8 cm or greater. The diameter indication was arrived at empirically; we do not have data specifying the hiatal diameter at which the risk for cruroplasty disruption is increased. We feel that the PTFE onlay provides a buttress where tissue is healing under tension and is subjected to stress from coughing, straining, retching, or obesity. We propose the use of PTFE when confronted with a large defect of the hiatus.

## Case Presentation

# Laparoscopic Highly Selective Vagotomy

By Constantine T. Frantzides, M.D., Ph.D., Associate Professor, Surgery, Medical College of Wisconsin.

## Introduction

Parietal cell, or highly selective, vagotomy is a physiologically sound ulcer operation. Dividing the branches of the vagus nerves that supply the parietal cell mass results in a 70 to 80% decrease in basal acid output and a 50 to 60% decrease in maximal acid output. This reduction is similar to that seen following truncal vagotomy. The gastric antrum is not denervated; thus, its function in gastric emptying is not disturbed. The hepatic and cephalic branches are preserved. Postgastrectomy side effects, such as dumping and diarrhea, are rare. Morbidity is reported to be less than 5%, and mortality averages less than 1%. Although there is a learning curve involved in performing highly selective vagotomy, in experienced hands, ulcer recurrence should be acceptable at less than 10%. Highly selective vagotomy has become our procedure of choice as an elective operation for duodenal ulcers.

The explosion in laparoscopic technology has allowed us to develop a new technique that combines the advantages of parietal cell vagotomy with those of minimally invasive surgery. Here we present the first reported laparoscopic highly selective vagotomy.

## Case Report

The patient, a 46-year-old white woman, had a 5-year history of duodenal ulcer disease. Maintenance therapy with H<sub>2</sub> antagonists had failed to control symptoms of intermittent epigastric pain. Two months before operation, the patient had been admitted through the emergency department for hematemesis. Esophagogastroduodenoscopy had revealed a large posterior duodenal ulcer. She was placed on oral Famotidine, 20 mg twice daily. She continued to complain of pain and was referred to the Surgery Department for intractable duodenal ulcer disease.

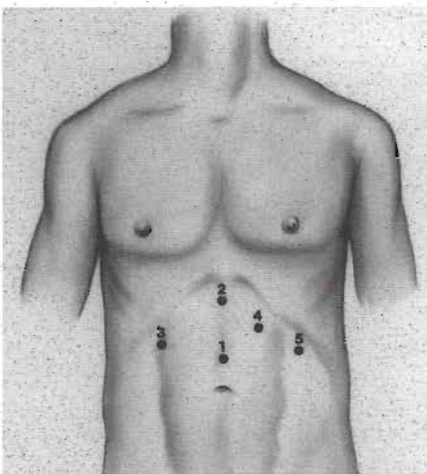


Figure 1. Location of sheaths and instruments used through each. All are 10 to 11 mm. Sheath 1: 0 degrees, forward-viewing laparoscope; sheath 2: three-pronged retractor; sheath 3: laparoscopic Babcock clamp and standard blunt-tipped grasper; sheath 4: right-angle dissector, clip applicator, laparoscopic scissors; and sheath 5: laparoscopic Babcock clamp.

The patient smoked a pack and a half of cigarettes per day but had no other significant medical or surgical history. She was 5 ft. 3 inches tall and weighed 140 lbs. Her physical examination was completely unremarkable. Preoperative hematocrit was 44%.

The patient consented to undergo laparoscopic highly selective vagotomy with the understanding that conversion to laparotomy was possible. On February 25, 1992, she was taken to the operating room; the laparoscopic procedure was completed in approximately 4 hours. On postoperative day one, her nasogastric tube and Foley catheter were withdrawn, and she was started on a clear liquid diet. Postoperative hematocrit was 41%. On postoperative day two, she was advanced to a regular diet and was discharged on the morning of postoperative day three. She took three doses of intramuscular morphine during the first 18 hours after operation and four doses of oral pain medication (oxycodone and acetaminophen) on postoperative days one and two. On postoperative day seven, she returned to work and full activity. She is tolerating a regular diet, is off medication, and reports no pain or gastrointestinal complaints. Three and twelve-month post-operative EGD's revealed completely healed duodenal ulcer.

The operating room arrangement is similar to that used with laparoscopic cholecystectomy. After administration of general endotracheal anesthesia, the patient is placed in a modified lithotomy position with the hips and knees only slightly flexed and the lower extremities abducted only wide enough to allow the surgeon to stand between them. We have found this the most convenient and effective operating position.

Pneumoperitoneum is established with CO<sub>2</sub> using either the Veress needle or the open technique. (We prefer the open technique.) The puncture is made approximately 4-cm above the umbilicus in the midline. A 0 degree laparoscope is placed through a 10- to 11-mm sheath in this position (sheath 1). Then, under direct vision, four other 10- to 11-mm trocars and sheaths are placed as depicted in Fig. 1.

The surgeon then uses the hook cautery placed through the left subcostal sheath (sheath 4) to incise the peritoneum along the lesser curvature, thus exposing the neurovascular bundles. The bundles are then dissected distally down to the Crow's foot, preserving the antral branches of the Latarjet's nerves. Isolation of the bundles is most easily performed using a right-angle dissector. Bundles are clipped and divided (Fig. 2). Dissection is then carried up to the gastroesophageal junction.

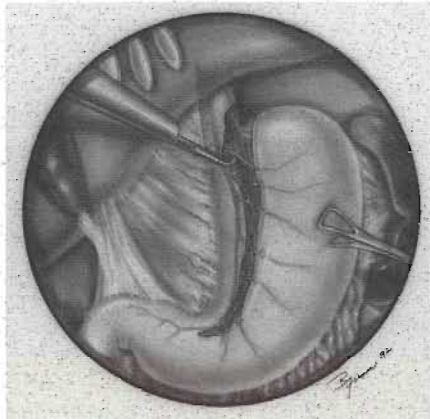


Figure 2. Laparoscopic view of division of anterior proximal gastric vagal fibers.

After the lesser curve is cleared anteriorly and posteriorly up to the gastroesophageal junction, dissection on the esophagus is begun (Fig. 3).

With the parietal cell mass denervated and the distal esophagus cleared, the procedure is terminated. The abdomen is irrigated, the pneumoperitoneum evacuated, and the wounds are closed in the standard fashion.

## Discussion

Others have described the technical aspects of laparoscopic posterior truncal vagotomy and anterior seromyotomy. This relatively new ulcer operation is technically less demanding than a highly selective vagotomy, but it has some disadvantages. Theoretically, it may lead to gastric stasis, postvagotomy diarrhea (because the posterior vagal trunk supplies the small bowel), and recurrent ulcer (because high fundal branches may be missed). Also, the possibility of missing the posterior vagus is real, as it is the most commonly missed trunk during routine

truncal vagotomy. This may lead to a high rate of incomplete vagotomy and recurrent ulcer. In clinical practice, however, good results have been reported. Katkhouda and Mouriél from France reported a 79% decrease in basal acid output and an 83% decrease in maximal output in 10 patients undergoing the procedure. Endoscopic examination 2 months after operating showed complete ulcer healing in nine patients and a residual ulcer scar in one patient. No postoperative abdominal complaints were noted. Obviously, more experience and long-term follow-up is needed before firm conclusions can be drawn as to the efficacy of this operation.

Highly selective vagotomy performed in the standard fashion has proved to be an effective operation. The primary stumbling blocks to performing a laparoscopic highly selective vagotomy have been the difficulty in ligating the branches of the posterior vagus and clearing the distal esophagus. Our experience in the laboratory and in the patient reported is that these problems can be overcome. The right-angle dissector and the Babcock clamps are important. The Babcock clamps allow significant traction to be placed on the stomach. Once the anterior and intermediate nerves and vessels are divided, the left-sided Babcock clamp is used to grasp the stomach on the lesser curvature. This maneuver rolls the posterior leaflet of the lesser omentum anteriorly, allowing easy dissection. Once the lesser sac is entered through the posterior leaflet, dissection, both proximal and distal, on the lesser curvature can proceed using the right-angle dissector. When dissection begins on the posterior leaflet, the right-sided Babcock is replaced with a standard grasper, which is used to retract the anterior leaflet of the lesser omentum down and to the right. This maneuver is also important in exposing the

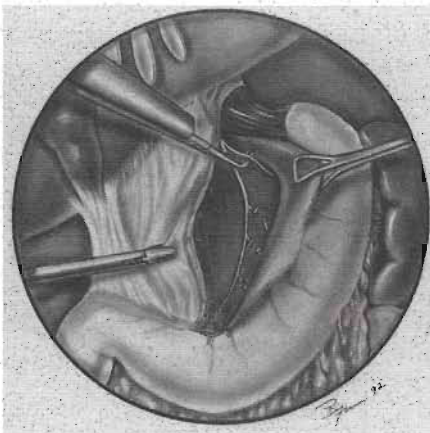


Figure 3. Laparoscopic view of division of posterior proximal gastric vagal fibers. Left-sided Babcock retracting the lesser curvature to the left and a grasper retracting the anterior leaflet of the lesser omentum to the right, exposing the branches of the posterior vagus nerve.

posterior neurovascular bundles. In dissecting the distal esophagus, the left-sided Babcock is used to grasp the stomach high on the fundus near the gastroesophageal junction. The gastroesophageal junction is retracted anteriorly and to the left, putting the esophagus on the stretch and thus exposing it for dissection.

In early 1943, Dragstedt performed his first two truncal vagotomies. During that same year, he published his technique and case reports. His new operation was a radical change in the surgical treatment of duodenal ulcer disease. It would be years before his ideas were widely accepted. In our case, the operation is known to be effective. We are simply reporting a new approach to carrying out the procedure.

Development of an ulcer operation associated with low morbidity, little pain, a short hospital stay, rapid return to work, minimal postoperative gastrointestinal complaints, and low recurrence rates may make operation a more attractive option in the treatment of duodenal ulcer disease.

#### Case Presentation

### *Minimal Invasive Surgery for the Treatment of Genuine Stress Incontinence*

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#### Case Report

The patient is a 41-year-old female gravida 2, para 2, who complains of leaking urine when she coughs and sneezes. This has been happening to her for the last eight years, since the birth of her last child. She leaks urine on a daily basis and needs to wear incontinence pads all the time. She denies any sense of urgency or urge incontinence. She denies any voiding difficulties. She denies any feelings of pelvic prolapse.

Past medical history is significant for two term normal spontaneous vaginal deliveries and a laparoscopic bilateral tubal ligation. She is on no medications.

Pertinent physical examination reveals her to be 5' 8" tall and she weighs 189 pounds. On pelvic examination she has a mild cystocele and no rectocele. There is no uterine descensus. Her uterus is normal size. She has significant mobility of her urethrovesical junction when she strains and she leaks urine with coughing. Uroflow shows a normal voiding pattern with a normal postvoid residual.

#### Discussion

Genuine stress incontinence (GSI) is involuntary leakage of urine with increased

intra-abdominal pressure without a detrusor contraction. Typically, this occurs when a patient is coughing, sneezing, exercising, or laughing. Anatomically, it is associated with hypermobility of the urethrovesical junction. The most prominent predisposing factors include childbearing, heavy lifting, chronic constipation, chronic coughing, decreased estrogen or aging.

Patients with GSI may be helped with conservative treatments to strengthen the muscles of the pelvic floor, such as Kegel exercises. Vaginal cones, biofeedback, or electrical stimulation may also augment strengthening exercises. Medications such as vaginal estrogen and alpha agonists may also help increase urethral tone. Although these options usually improve the patient's symptoms, they are rarely curative. The best cure is obtained with surgical correction.

Surgical correction of GSI concentrates on elevation and stabilization of the urethrovesical junction. There are many surgical approaches, although currently it is felt that the retropubic procedures such as the Burch procedure may have the best long-term outcome. Classically, the Burch procedure has been done through a transverse abdominal incision. Recently, it has been developed as a minimally invasive surgery. Laparoscopically, this procedure may be done either preperitoneally or intraperitoneally. In the preperitoneal approach the incision is made to one side of the umbilicus and dissection is carried down past the rectus muscles to the posterior rectus sheath and parietal peritoneum (Fig. 4). An instrument with an inflatable balloon is then inserted just above the posterior sheath and the peritoneum and is advanced down to the pubic symphysis. The balloon is inflated which opens the space of Retzius. The space of Retzius is then fully dissected to identify the symphysis pubis and Cooper's ligaments. The intraperitoneal approach involves placing the laparoscope within the peritoneal cavity and then dissecting into the space of the Retzius through the parietal peritoneum on the anterior abdominal wall above the bladder (Fig 5). The intraperitoneal approach is more time consuming as it necessitates dissection through the peritoneum and also closure of this peritoneum at the end of the procedure. However, it facilitates any other work that might need to be done intraperitoneally. The preperitoneal approach is faster, however, it is impossible if the patient has had a previous abdominal incision.

Once the symphysis pubis and Cooper's ligament are identified, two permanent sutures are placed on either side of the urethra in the paravaginal tissue. This tissue is elevated by placing a finger in the vagina. One suture is placed at midurethra and the other at the level

Case Presentation

Laparoscopic Jaboulay  
Gastroduodenostomy for  
Gastric Outlet Obstruction

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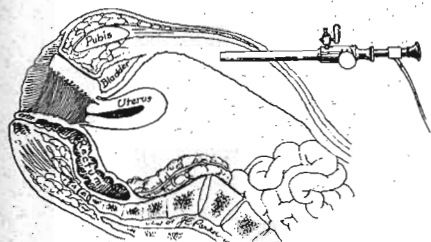


Figure 4. Preperitoneal approach to the Burch procedure. Culdeplasty sutures are not possible.

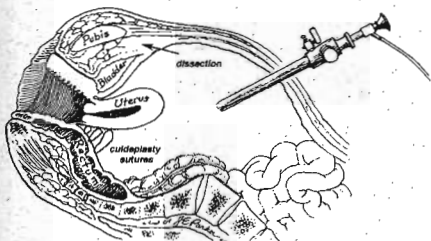


Figure 5. Intraperitoneal approach to the Burch procedure. Dissection into the space of Retzius is necessary through the parietal peritoneum.

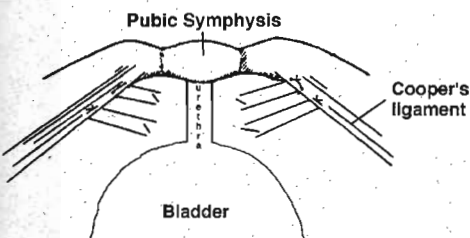


Figure 6. The space of Retzius showing placement of the Burch sutures.

of the urethrovesical junction. Both sutures are secured to Cooper's ligament (Fig 6).

Any concomitant vaginal wall prolapse such as a severe cystocele, rectocele, vaginal vault, or uterine prolapse should be corrected in the same operation. It is prudent to perform a culdeplasty by placing purse string sutures in the cul-de-sac intraperitoneally to close off the space behind the uterus and prevent formation of a future enterocele. This may be done either vaginally or with the intraperitoneal approach but can not be done with the preperitoneal approach.

Other techniques have been developed to perform the Burch procedure laparoscopically as suturing through the laparoscope can be challenging. Most other techniques involve using a permanent mesh and stapling or tacking this to the paravaginal tissue and then up to Cooper's ligament. Long-term follow-up is not available for any of the minimally invasive techniques. Immediate cure rate with the Burch procedure done in the classic way with an open abdominal incision is approximately 90 percent with a longer term cure rate of about 80 percent.

Introduction

One hundred years ago Jaboulay described a technique of gastroduodenostomy which today carries his name. In conjunction with either a truncal or proximal gastric vagotomy, the procedure is used to relieve gastric outlet obstruction secondary to cicatricial obstruction of the pylorus. Described below is such a case of complicated peptic ulcer disease that was treated laparoscopically with a truncal vagotomy and Jaboulay gastroduodenostomy.

Case Report

A 54-year-old man with a 10 year history of duodenal ulcer disease experienced postprandial emesis of undigested food and a 10-kg weight loss for six months prior to admission. On physical examination the patient had mild wasting and no palpable abdominal mass. Radiographic examination of the upper gastrointestinal tract with barium contrast revealed a near total gastric outlet obstruction secondary to a pyloric stricture. Complete blood count and electrolytes were normal. The patient was treated initially with nasogastric tube decompression and hydration for 48 hours. It was elected to perform laparoscopic vagotomy and gastroduodenostomy.



Figure 7. Stay suture placement for laparoscopic Jaboulay gastroduodenostomy. The duodenum has been mobilized with a Kocher maneuver.

Neomycin sulfate (1 g) and erythromycin (1 g) were given per nasogastric tube, and cefotetan (2-g IV) was given prior to induction of general anesthesia. The patient was placed in reverse Trendelenburg with the lower extremities in stirrups, and the surgeon stood between the legs. Five 10-mm trocars were

placed: left upper quadrant, subxiphoid, supraumbilical, and right upper quadrant (two). The left lobe of the liver was retracted with an inflatable balloon retractor (SoftWand, Circon Cabot, Santa Barbara, CA). The phrenoesophageal ligament was incised, and the lower 5 cm of the esophagus was mobilized bluntly with palpation probes. The anterior and posterior trunks of the vagus were isolated, clipped, and an 1-cm length of each trunk was excised for pathologic examination.

A Kocher maneuver was performed to allow the duodenum to come in apposition to the stomach. Two stay sutures were placed, with bites into the anterior duodenum and gastric antrum (Fig. 7). A duodenotomy and a gastrotomy then were performed superiorly to the inferior stay suture. The 10-mm trocar in

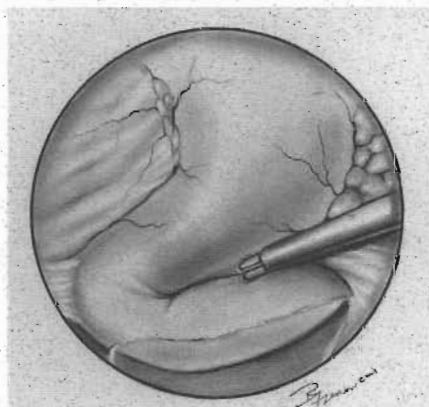


Figure 8. Insertion of a 6-cm linear cutter through a gastrotomy and a duodenotomy to create the gastroduodenostomy. The stay sutures have been omitted from the figure for clarity.

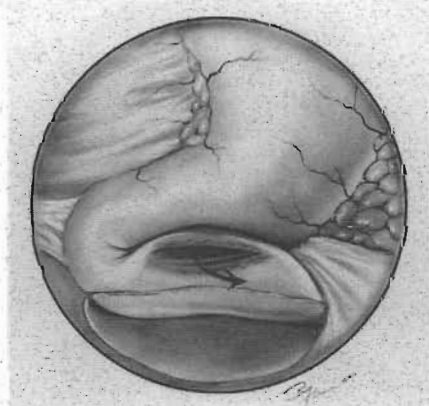


Figure 9. The completed gastroduodenostomy. The stapler has been fired and removed, and the gastrotomy and the duodenotomy have been closed with sutures.

the medial left upper quadrant was exchanged for an 18-mm trocar. A 6-cm linear cutter (Ethicon, Inc., Cincinnati, OH) then was inserted through the 18-mm trocar and into the duodenotomy and gastrotomy (Fig. 8). While the stay sutures were pulled posteriorly, the linear cutter was levered anteriorly to avoid the ampulla. The stapler was fired and removed, and single-layer closure of the duodenotomy and gastrotomy was performed with interrupted full-thickness sutures of 2-0 polyester (Fig. 9). The needle driver was placed through the 18-mm trocar (with a 5-mm adapter), and the grasper went through the right upper quadrant trocar.

Postoperatively the patient remained on nasogastric suction for two days, and was given fluids on postoperative day three. He was discharged on postoperative day four on a restricted diet. There were no preoperative complications. A barium meal three months later revealed both a patent anastomosis and pylorus. The patient is well and is gaining weight.

### Discussion

A patient with benign pyloric stenosis was treated with laparoscopic truncal vagotomy and Jaboulay gastroduodenostomy. This is possibly the first report of a laparoscopic Jaboulay gastroduodenostomy. By avoiding the pylorus and the bulb, the Jaboulay procedure is useful in the patient with severe scarring in the pyloroduodenal region. The truncal vagotomy was the personal preference of the surgeon; others may have preference for a proximal gastric vagotomy. There have been numerous reports of laparoscopic vagotomy.

Laparoscopic procedures involving gastric anastomosis have been reported for Billroth I gastrectomy and gastrojejunostomy. The anastomosis in these reports was created with a circular end-to-end anastomosis stapler inserted through a gastrotomy. The gastrotomy was closed with a linear stapler. Our Jaboulay gastroduodenostomy was made with a linear stapler so as to avoid the ampulla. Intracorporeal suturing then was required to close the gastrotomy and duodenotomy used by the stapler.

With the availability of effective medical treatment for peptic ulcer disease, the elective operation for peptic ulcer has all but vanished. Reports of laparoscopic vagotomy have small numbers compared to the reports of laparoscopic cholecystectomy, fundoplication, and herniorrhaphy. Currently the ulcer patient requiring an operation represents a failure of medical therapy (as our patient did). It will be important to maintain an armamentarium of procedures for complicated peptic ulcer disease; many of these procedures can and should be performed laparoscopically.

### Case Presentation

## Laparoscopic Management of a Pancreatic Pseudocyst

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### Introduction

Pancreatic pseudocysts occur in approximately 10% of patients after an attack of acute alcoholic pancreatitis. The natural history of pseudocysts is related partly to the size of the fluid collection, but overall, it can be said that nearly 50% of all patients with pseudocysts can be managed safely without surgical intervention.

When a pseudocyst does not resolve spontaneously, some action is taken based on the clinical setting, the symptoms, and the presence or absence of complications. Although this action required laparotomy in the past, percutaneous and endoscopic means of pseudocyst management recently have been described. The advent of new technologies in minimally invasive surgery allows another option that can be offered. We report a case of internal drainage of a pancreatic pseudocyst using laparoscopic techniques.

### Case Report

The patient is a 34-year-old white man with a history of alcohol and drug abuse who was admitted in October 1990 with acute pancreatitis. On CT scan of the abdomen, the patient was found to have extensive pancreatic necrosis and peripancreatic fluid. During a month-long admission, he developed a 12 x 5 x 5 cm pancreatic pseudocyst, which was managed by percutaneous drainage and subsequently resolved over the following 45 days.

The patient was pain free for approximately 16 months. He began to abuse alcohol again and, in August 1992, began complaining of epigastric pain. In March 1993, he was readmitted to the hospital with malaise, epigastric pain, and poor appetite. A repeat CT scan showed a 6 x 9 x 11 cm pseudocyst over the body of the gland in the root of the mesentery. An ERCP showed an abrupt end of the pancreatic duct at the junction of the head and body of the gland. Percutaneous drainage of the pseudocyst could not be undertaken because of overlying transverse colon. Therefore, on April 15, 1993, the patient underwent a laparoscopic cystjejunostomy.

The patient was placed on the operating table in the supine position, with the surgeon on the patient's right and the first assistant on the patient's left. The camera operator stood behind the surgeon on the patient's right.

The laparoscope was placed through an infraumbilical trocar. Additional trocars were placed in the midclavicular lines on the right

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and left at the level of the umbilicus. Two more trocars were placed in the midclavicular lines on the right and left in a subcostal position. Using Babcock graspers and especially designed inflatable retractor (Cabot Medical, Langhorne, PA), the pseudocyst was exposed at the base of the transverse mesocolon close to the ligament of Treitz (Fig. 10). The pseudocyst was punctured with a laparoscopic needle, and contrast medium was injected. The location and extent of the pseudocyst were confirmed by fluoroscopy. After location of the jejunum at the ligament of Treitz, a segment of proximal jejunum was selected for anastomosis to the pseudocyst.

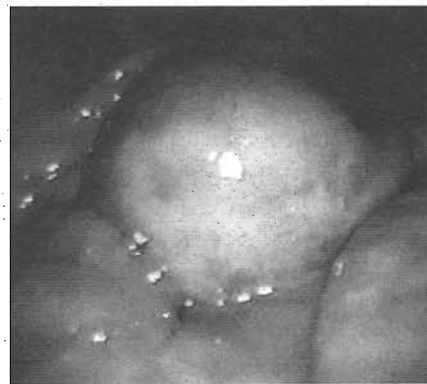


Figure 10. Laparoscopic view of the pseudocyst as it protruded through the transverse mesocolon. The transverse colon and the greater omentum have been retracted anteriorly and cephalad.

The jejunum was anchored to the inferior wall of the pseudocyst with a running 3-0 braided nylon suture. A 1 x 1 cm segment of the pseudocyst wall was excised and sent for frozen section histology to confirm its benign nature. An enterotomy was made in the loop of the jejunum, and the stapling device was