

## Laparoscopic Gastrojejunostomy for the Gastric Outlet Obstructions

*Air Marshal, Assist Prof. Poschong Suesat, MD.*

*Bhumibol Adulyadej Hospital, Directorate of Medical Service, Royal Thai Air Force. Bangkok, Thailand*

### Abstract

The application of laparoscopic techniques to removal of the gallbladder has emerged as the preferred way of treating symptomatic gallstone disease. The benefits of the laparoscopic approach in the treatment of other disease processes became evident and were applied to the treatment of the gastric outlet obstructions. Three laparoscopic procedures were managed in patients with benign and malignant obstructions. Laparoscopic gastrojejunostomy combined with truncal vagotomy is selected for the patient with gastric outlet obstruction as a result of chronic peptic ulceration. Laparoscopic gastrojejunostomy is also an alternative procedure in management of either unresectable gastric or extragastric diseases with duodenal obstructions. Hand-assisted laparoscopic gastrojejunostomy were employed to patients with gastric outlet obstructions from one recurrent chronic pancreatitis and one metastatic gynecological cancer.

**Key words :** *Laparoscopic surgery, Gastrojejunostomy, Gastric outlet obstruction*

*Royal Thai Air Force Medical Gazette, Vol. 58 No. 1 January - April 2012*

### Introduction

The potential advantages of laparoscopic surgery for major organ surgery have been well documented, with a decreased hospital stay, less operative pain, and shorter recovery period. Improvement of the technique and experience with laparoscopic procedures will demonstrate that morbidity and mortality levels are similar to or better than open procedures. Laparoscopic surgery remains a valuable addition to the surgical armamentarium. Most surgeons are not familiar with laparoscopic techniques but they can be use in every branch of surgery. They will need extensive laparoscopic skills in the future. Training by practice themselves and following advisable techniques may be useful for improvement of this new trend of surgery. The laparoscopic gastrojejunostomy techniques may be useful for the interested surgeons who practice in laparoscopic surgery.

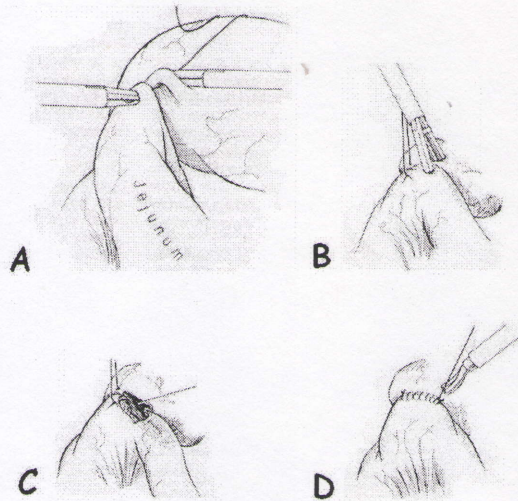
### Methods

Nine patients with benign and malignant gastric outlet obstructions underwent laparoscopic procedures (Table 1). Laparoscopic truncal vagotomy and gastrojejunostomy<sup>4</sup> were performed in two patients with chronic peptic ulcerations. Five patients with malignant obstructions were operated by laparoscopic gastrojejunostomy<sup>5</sup>. Hand-assisted laparoscopic gastrojejunostomy<sup>6</sup> were employed to patients with gastric outlet obstructions from one recurrent chronic pancreatitis and one metastatic gynecological cancer. The combination of stapling with running suture closure of the residual defect is attractive in the totally laparoscopic gastrojejunostomy (Figure 1, Figure 2). Exploration of the abdominal cavity and retrieving the selected small bowel for outside anastomosis is also attractive in Hand-assisted laparoscopic procedures.

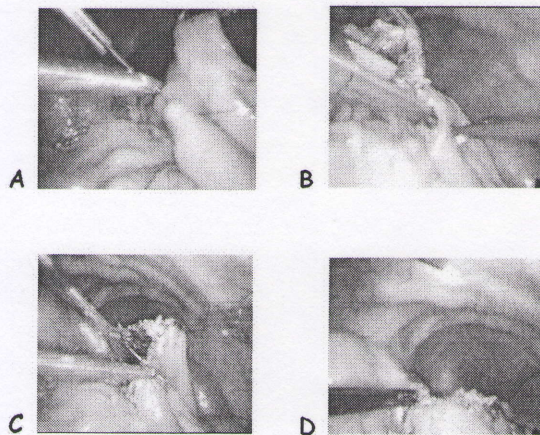


**Table 1 Laparoscopic procedures in nine patients**

Truncal vagotomy and gastrojejunostomy	Two benign obstructions :- two chronic peptic ulcerations
Gastrojejunostomy	Five malignant obstructions :- four gastric cancers and one pancreatic cancer
Hand-assisted laparoscopic gastrojejunostomy	Two obstructions :- One benign obstruction and one malignant obstruction



**Figure 1.** Laparoscopic gastrojejunostomy<sup>3</sup>. **A.** The needle is passing through both tissues to be approximated between stomach and jejunum. **B.** Small gastrotomy and enterotomy incisions are made, and a linear cutting stapler is placed in the stomach and small intestine. **C.** The enterotomy is closed with a running suture. **D.** Completed the row of sutures.



**Figure 2.** Laparoscopic gastrojejunostomy. **A.** The needle is passing through both tissues to be approximated between stomach and jejunum. **B.** Small gastrotomy and enterotomy incisions are made, and a linear cutting stapler is placed in the stomach and small intestine. **C.** The enterotomy is closed with the running suture. **D.** Completed the row of sutures.

### Laparoscopic truncal vagotomy

The posterior (right) truncal vagotomy is begun on the first step. The left lobe of the liver is retracted upward and the avascular plane is located. The periesophageal peritoneal is carefully opened on the space between the right diaphragmatic crus and the esophagus. The posterior vagus nerve will be located at the upper portion of this space. In most cases, the posterior vagus nerve is a single trunk that is directly on the wall of the esophagus or on the internal aspect of the right diaphragmatic crus. The posterior truncal vagotomy is performed by resecting the one centimeter portion of the nerve between two clips to accomplish perfect hemostasis. This excised neural portion should be sent for histological identification. The secondary branches which coexist in about 5 to 10 percent of cases must be searched and excised for completing the posterior vagotomy. The anterior (left) truncal vagotomy is begun by denuding about 5 centimeters of the anterior aspect of the gastroesophageal junction. The procedure is started in the hiatal region next to the left crus of the diaphragm. It is imperative to identify all secondary neural branches, in particular the criminal nerve of Grassi, which is found either on the left lateral or posterior aspect of the esophagus. All excised neural portions should be also sent for histological confirmation.

### Laparoscopic gastrojejunostomy

The gastrojejunostomy is begun by placing the external anchoring suture through the stomach and jejunum for retraction and approximation of both organs. The gastrotomy and enterotomy at the selected portion are made by the vessel seal device. The 60 millimeters endo GIA is inserted into both lumens parallel to greater curve



and clamped. The position is checked before firing of the instrument. The suture lines are then inspected after irrigations and suctions. The defect is closed with two layers running suture on straight needle by intracorporeal hand suturing.

### **Hand-assisted laparoscopic gastrojejunostomy**

The hand with the hand port access is inserted through the minilaparotomy incision at the upper part of the abdomen. Once an adequate pneumoperitoneum is established, the laparoscope with the attached video camera is passed through the 10 millimeter port and the abdomen inspected. An additional port is placed under direct vision. The minimally-invasive instruments are used to eliminate the adhesions and identify the proximal jejunum in the previous operated abdomen. The selected small bowel is brought out via the minilaparotomy Incision. The gastrojejunostomy is then performed in the routine maneuver.

### **Results**

All patients were successfully managed by laparoscopic procedures. Neither perioperative complications nor serious postoperative problems were detected. The satisfactory surgical outcomes were appeared during the hospitalization and the outpatient following schedules.

### **Discussion**

Gastric outlet obstruction is one of the important indications for surgery for an ulcer of the stomach or duodenum. The operation chosen depends on the condition of the patient. Vagotomy and gastroenterostomy may be performed if inflammation about the pylorus is severe. Another group of gastric origin is those patients with obstructive gastric cancers, where extensive

metastatic spread or associated medical illness determine that resection is ill advised, are suitable for palliative bypass. The consensus is that palliative non-radical resection may provide the best chance of relief of symptoms, and some patients (6 per cent) show prolonged survival after this procedure. Palliative bypass procedures do not increase survival times and are only necessary if there is obstruction. The benefit on the quality of life is highly questionable, and the mean survival for patients is 5 months. The benefit on the quality of life is highly questionable, and the mean survival for patients is 5 months<sup>5</sup>. The extragastric benign and malignant diseases with duodenal obstruction are also suitable for gastrojejunostomy if the resections could not be provided. (Table 2) Minimally-invasive surgeries have been used for many decades to provide palliation for the patient with an obstructive cancer. New technology and greater surgical skills allow for accurate minimally-invasive staging of cancer. Occasionally it is appropriate to perform palliative measures (e.g., laparoscopic gastrojejunostomy to bypass a pancreatic cancer) at the time of diagnostic laparoscopy if diagnostic findings preclude attempts at curative resection. Hand-assisted laparoscopic surgery is thought to combine the tactile advantages of open surgery with the minimal access of laparoscopy and thoracoscopy. This approach is commonly used to assist with difficult cases before conversion to celiotomy is necessary. Additionally, Hand-assisted laparoscopic surgery is employed to help surgeons negotiate the steep learning curve associated with advanced laparoscopic procedures. This technology employs a port for the hand which preserves the pneumoperitoneum and enables endoscopic visualization in combination with the use of minimally-invasive instruments<sup>2</sup>. This method was selected to eliminate the adhesions and identify the proximal



jejunum. The gastrojejunostomy is performed in the routine maneuver after small bowel retrieving via the minilaparotomy Incision.

**Table 2 Gastric outlet obstructions**

Gastric Origins	- Chronic Peptic Ulcerations - Gastric Cancers, ect
Extragastic Origins	- Previous Surgical Procedures :- hepatobiliary, duodenum, pancreas, colon, kidney, ect - Periapillary Cancers - Hepatobiliary Cancers - Pancreatic Cancers, ect

### Conclusion

Laparoscopic gastrojejunostomy for management of gastric outlet obstructions are feasible, and can be performed in the same maneuver that used in open procedures.

### References

1. Huge Barr and Michael J. Greenall, Palliative surgery, Treatment and Results, Chapter 15.3 Carcinoma of the stomach, Oxford Textbook of Surgery on CD-ROM, Version 1.00, Peter J. Morris, Ronald A. Malt 1995.
2. John G. Hunter, M.D., F.A.C.S., Hand-Assisted Laparoscopic Access, Chapter 13. Minimally-invasive surgery, Schwartz's Principles of Surgery, 8th ed. F. Charles Brunicaudi 2007 Available from URL <http://www.accessmedicine.com>
3. L.K. Nathanson. The Sutured Laparoscopic Gastrointestinal Anastomosis. Minimally Invasive Surgery, John G. Hunter, Jonathan M. Sackier 1993:167.
4. Poschong Suesat, M.D. Laparoscopic Truncal Vagotomy and Gastrojejunostomy, Laparoscopic Gastric Surgery Video Playlist, Available from URL <http://www.youtube.com/poschong>
5. Poschong Suesat, M.D. Laparoscopic Gastrojejunostomy, Laparoscopic Gastric Surgery Video Playlist, Available from URL <http://www.youtube.com/poschong>
6. Poschong Suesat, M.D. Laparoscopic Gastrojejunostomy, Hand Assisted Laparoscopic Surgery Video Playlist, Available from URL <http://www.youtube.com/poschong>