8 Minimally Invasive Total Gastrectomy

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Introduction

Utilization of minimally invasive approaches for resection of gastric cancer has been increasing rapidly in recent years. Laparoscopic distal gastrectomy for early-stage, distal gastric cancers is well-established and routinely performed in Eastern countries where gastric cancer screening is practiced. Several randomized, prospective trials have confirmed improvements in postoperative outcomes for laparoscopic compared to open distal gastrectomy for patients with early gastric cancer [1–6].

Minimally invasive total gastrectomy (MIS-TG), however, is not as well-established or widely performed. This is primarily due to concerns about the status of the proximal resection margin and technical limitations in the construction of the esophagojejunal anastomosis. Many surgeons feel that this critical step of the operation cannot be performed safely with minimally invasive techniques. To date, no prospective, randomized trial comparing MIS-TG and open total gastrectomy (OTG) has been completed to address this concern.

Multiple small series of MIS-TG have been published, but include a variety of gastroesophageal anastomotic techniques, including intracorporeal and extracorporeal methods [7–9]. These include circular and linear stapling methods and hand-sewn methods with or without construction of a jejunal pouch. Furthermore, these series vary on whether the procedures were performed laparoscopically, with hand-assistance, or with the robotic surgery platform. Given this degree of heterogeneity, the conclusions that can be drawn from these reports are limited, and no single, standardized technique for MIS-TG has been widely embraced. This chapter will describe the technical aspects of MIS-TG for gastric cancer and discuss considerations regarding the learning curve and patient selection. Additionally, the chapter will summarize current literature on MIS-TG with a focus on technique, outcomes, and cost.

Patient Selection

Patient selection is an important part of successful robotic total gastrectomy (RTG). This is particularly relevant during a surgeon's initial experience. Ideal candidates for RTG are patients

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without significant medical comorbidities; and patients with early-stage disease, small tumors, normal body mass index (BMI), and intestinal-type histology. Patients also ideal for MIS-TG are those undergoing prophylactic TG for hereditary gastric cancer syndrome. These patients nearly always have foci of high-grade dysplasia or intramucosal carcinoma within the stomach, but they do not require more than D1 lymphadenectomy. The critical part of the operation for these patients is that all gastric mucosa is removed with the specimen. Both the proximal and distal margins should be sent for frozen section analysis for these patients to confirm the presence of esophageal and duodenal mucosa, respectively.

As a surgeon's experience with the procedure increases, the incorporation of patients with more advanced disease, neoadjuvant treatment, and higher BMI is reasonable with a low threshold for conversion based on extensive time of operation or difficulty. Consideration should also be given to initiate a prospective clinical trial for these patients as data on safety and efficacy of MIS-TG in this setting is limited. Furthermore, careful prospective recording of clinical and operative data may facilitate collaboration and pooling of data across different institutions. Given the relative rarity of gastric cancer in Western countries, collaboration among different centers is important to gain sufficient numbers of Western gastric cancer patients.

Technical Aspects of Minimally Invasive Total Gastrectomy

Patient Positioning and Port Placement

We have previously described patient positioning and technique for MIS gastrectomy [10]. The following description is a modification of the previous text focusing on RTG. MIS-TG is performed with the patient positioned supine on a split-leg table (Fig. 8.1). A beanbag device is helpful for stabilization of the patient during the procedure. The patient's arms can be tucked or placed on arm boards with appropriate padding of elbows and hands and other pressure points. The patient is secured to the table at the shoulders, hips, and knees with tape and/or safety straps. Footboards may also be applied at the feet as a further means to avoid sliding during reverse Trendelenburg positioning. Once patient positioning is completed, it is important to place the patient in steep reverse Trendelenburg as a test to assure stability. For robotic-assisted procedures, it is important that the bed be in reverse Trendelenburg position at approximately 45° prior to docking the robot. Once the robot arms are docked to the port sites, the bed position can no longer be changed without undocking the robot arms.

Port placement for MIS-TG follows the same principles as for any laparoscopic or robotic procedure, which includes placement of the camera port at a distance of 15–20 cm from the target anatomy, and placement of ports at least 5 cm apart for laparoscopic TG (LTG) and at least 8 cm apart for RTG. While multiple variations of port placement have been described, the placement illustrated in Fig. 8.2 is recommended.

Pneumoperitoneum is established via a Veress needle placed off the left costal margin or via an optical viewing trocar. A 10/12-mm trocar is then placed in the midline above or below the umbilicus depending on the patient's body habitus, but with port placement positioned about 15–20 cm from the target anatomy. In the majority of cases, the infraumbilical position is the best trocar position for total gastrectomy, since it is far enough in the caudal direction for omentectomy and the jejunojejunostomy anastomosis, while still providing sufficient reach to and visualization of the hiatus and distal esophagus. For RTG, two additional 8-mm robotic ports are then placed on the left side, at least 8 cm from each other and slightly offset from the plane of the camera port. An additional 12-mm port is placed in the right midclavicular line. This is the port that will be used for stapling and specimen extraction. For RTG, an 8-mm robotic port is placed within this 12-mm port. A 5-mm assistant port is placed further laterally on the right side, approximately at the anterior axillary line. Placement of a

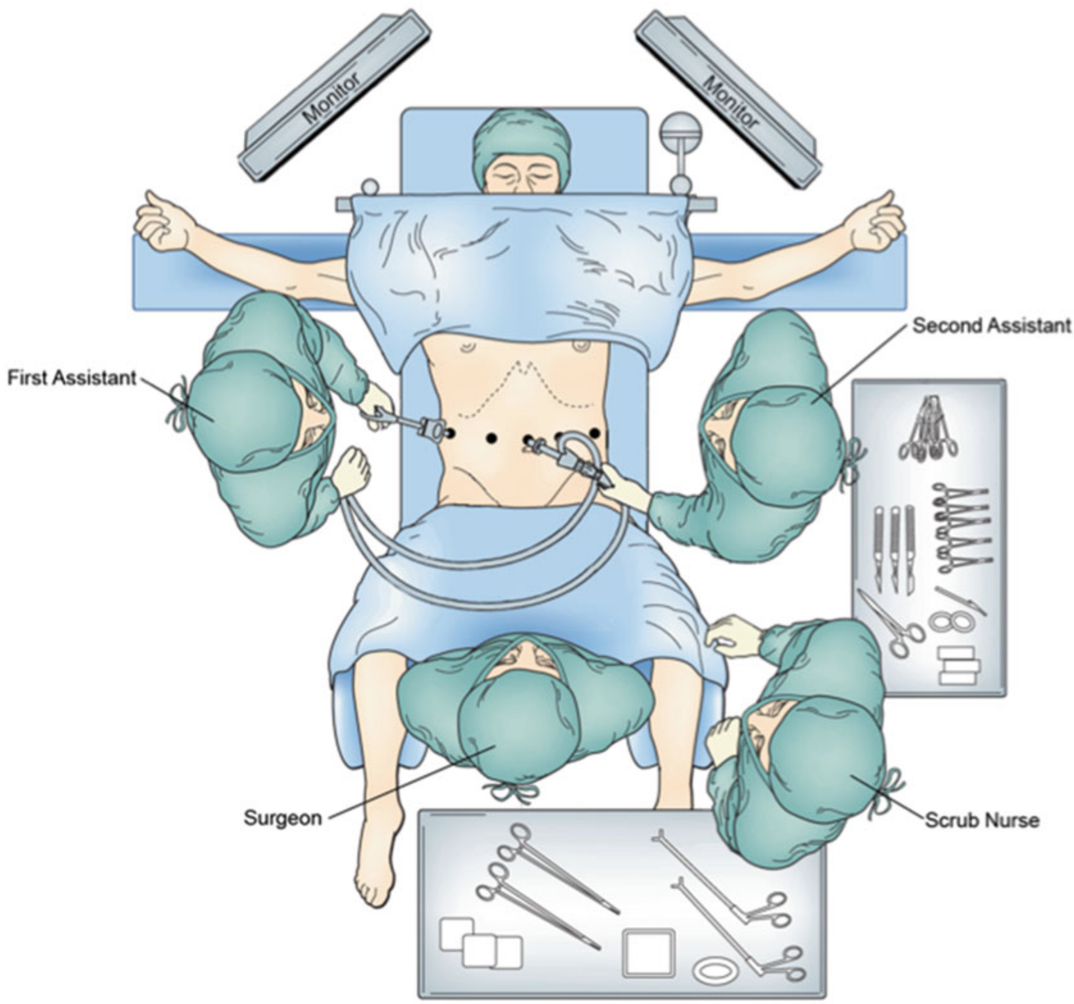


Fig. 8.1 Illustration of optimal patient position for MIS-TG. The pt is positioned on a split-leg table allowing the primary surgeon to stand between the patient's legs and two assistants to stand on either side of the patient

Nathanson liver retractor, via a small subxiphoid stab-wound incision, facilitates secure retraction of the left lateral lobe of the liver and excellent exposure of the esophageal hiatus.

The abdomen is explored for adhesions and for any evidence of peritoneal or metastatic disease. If the lesion is not appreciable on the extraluminal surface, an endoscope is passed to verify location of the lesion. For gastroesophageal junction tumors, the distal esophagus and Z-line should be carefully examined to localize the proximal extent of the lesion. It is critical to ensure that an adequate esophageal resection margin (2–4 cm from the lesion) can be obtained from the transabdominal approach. Once this is confirmed, the patient is placed in reverse Trendelenburg to approximately 45°. For RTG, the robot is docked from directly over the patient's head. Arms 1 and 3 are docked to the left-sided ports and arm 2 is docked to the right-sided port within the larger 12-mm port (Fig. 8.3). A fenestrated bipolar grasper is placed in arm 2 and an energy sealant device or monopolar scissors is placed in arm 1. Grasping forceps, preferably Cadiere or Prograsp (Intuitive Surgical), are placed in arm 3.

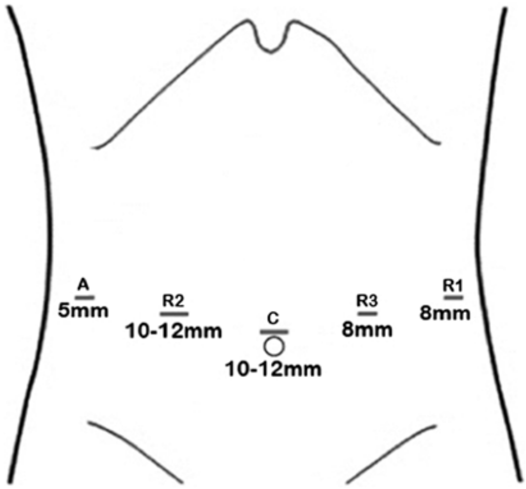


Fig. 8.2 Illustration of preferred port placement for MIS-TG. A 12 mm port is placed in the midline near the umbilicus. This port is usually above the umbilicus but the final position should be determined by measuring 15–20 cm from the target anatomy. Two additional ports are placed on the patient's left side. These are 8 mm ports for RTG or 5 mm ports for LTG. A 12 mm port is placed on the patient's right mid-clavicular line. For RTG, an 8 mm robotic port is placed within this 12 mm port and can be temporarily removed / reinserted as needed. Finally, a 5 mm assistant port is placed on the right side approximately at the anterior axillary line. All ports should be 5–8 mm apart from each other

Omentectomy

The procedure commences by retracting the greater omentum cephalad and locating the transverse colon. The omentum is carefully taken off the colon in the avascular plane, proceeding towards the splenic flexure. With careful dissection, the plane between the omentum and the transverse mesocolon is identified and the lesser sac is entered. Visualization of the posterior wall of the stomach confirms entry into the lesser sac. The posterior wall of the stomach is then grasped by the bedside assistant on the patient's right side and is retracted anteriorly and to the right (Fig. 8.4). The omentectomy is carried up towards the spleen allowing visualization of the short gastric vessels, which are ligated with an energy sealant device under direct visualization. This maneuver provides exposure up to the left crus of the diaphragm. The peritoneum overlying the left crus is incised with the energy sealant device, which should allow the crural muscle fibers to be visible. Gentle blunt dissection along the crus exposes the posterolateral aspect of the esophagus. If the port placement does not allow for reach to the esophageal hiatus, the bedside assistant may push the ports further into the abdominal wall, which can then be retracted again for the distal part of the resection.

Then, the posterior wall of the stomach is grasped by an assistant on the patient's left side or utilizing the third arm of the robot in RTG and is retracted toward the patient's left shoulder. The omentectomy then proceeds toward the hepatic flexure of the colon and is completed. The omentum can be placed in the left upper quadrant on the anterior wall of the stomach at this point.

Greater Curvature Dissection

The posterior attachments between the stomach and pancreas are then divided sharply or with an energy sealant device in the direction of the pylorus. The right gastroepiploic vessels are identified and dissected circumferentially at the level of the superior border of the pancreas at their point of origin from the gastroduodenal vessels (Fig. 8.5). If the linear stapler is to be used, arm 2 of the robot and its 8-mm port is removed from the larger 12-mm port and the linear stapler is used.

Division of Proximal Duodenum

Attention is then turned towards the suprapyloric region. The gastrohepatic attachments are incised with an energy sealant device in robot arm 1. The right gastric artery is identified and is ligated at its base. The lymphatic tissues along the proper hepatic and common hepatic artery are swept medially toward the specimen and a window is created at the level of the pylorus. The posterior aspect of the pylorus and proximal duodenum is gently elevated off the retroperitoneum with a combination of blunt dissection and use of the energy sealant device. An endovascular linear

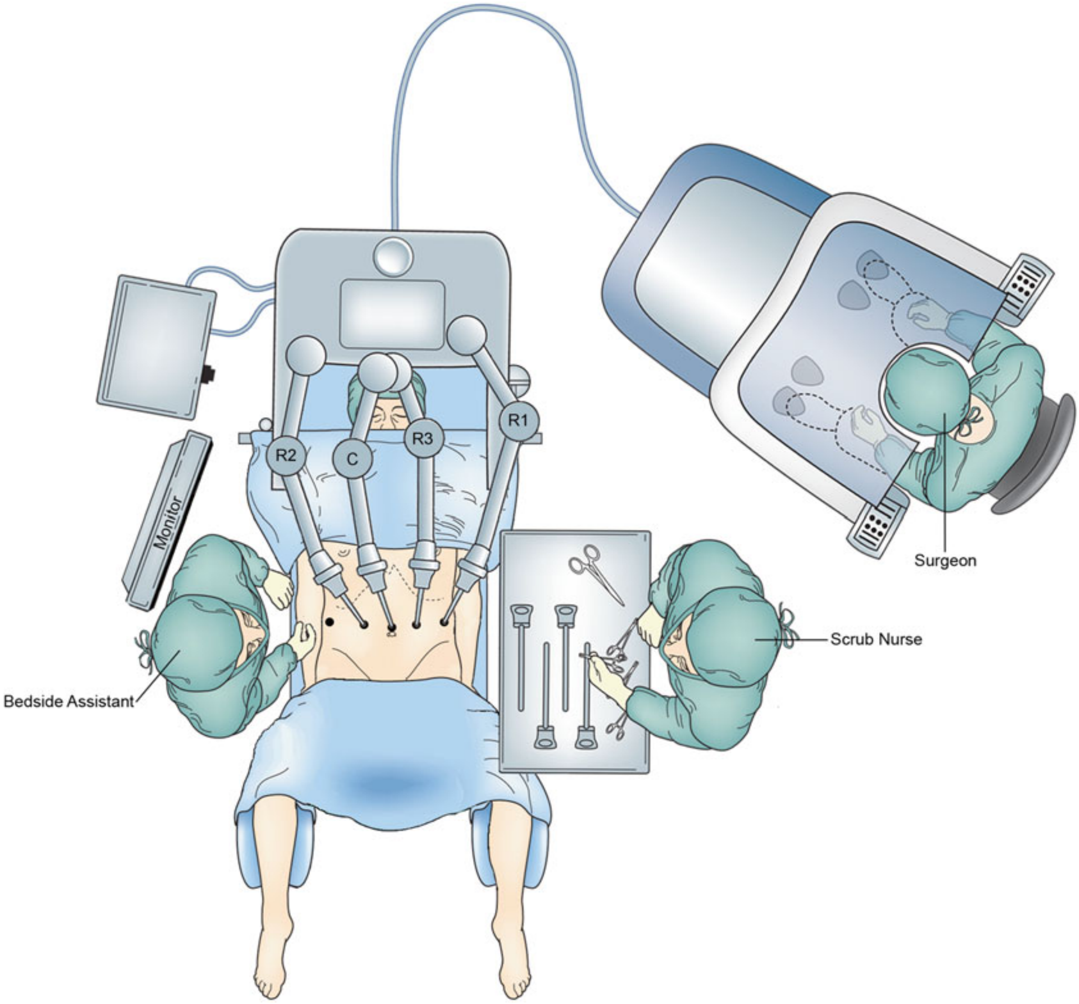


Fig. 8.3 Illustration of robot position for RTG. The robot is docked from directly over the patient's head

stapler with a blue or green load is then introduced and the proximal duodenum is stapled and divided just distal to the pylorus. We prefer to use bioabsorbable staple line reinforcement on the duodenum (Fig. 8.6).

Modified D2 Lymphadenectomy (D1 + β)

Next, the stomach can be placed in the left upper quadrant to facilitate exposure of the D2 lymph nodes (Fig. 8.7). The dissection that was started previously along the proper hepatic artery is continued along the common hepatic artery toward the celiac axis and proximal splenic artery. The left gastric vein and artery are identified at the celiac axis and all surrounding lymph nodes carefully swept up en bloc with the specimen. The vessels are then divided at their origin at the celiac axis with the endovascular linear stapler or with clips.

Division of the Distal Esophagus

The gastrohepatic attachments are then further incised up to the level of the esophageal hiatus

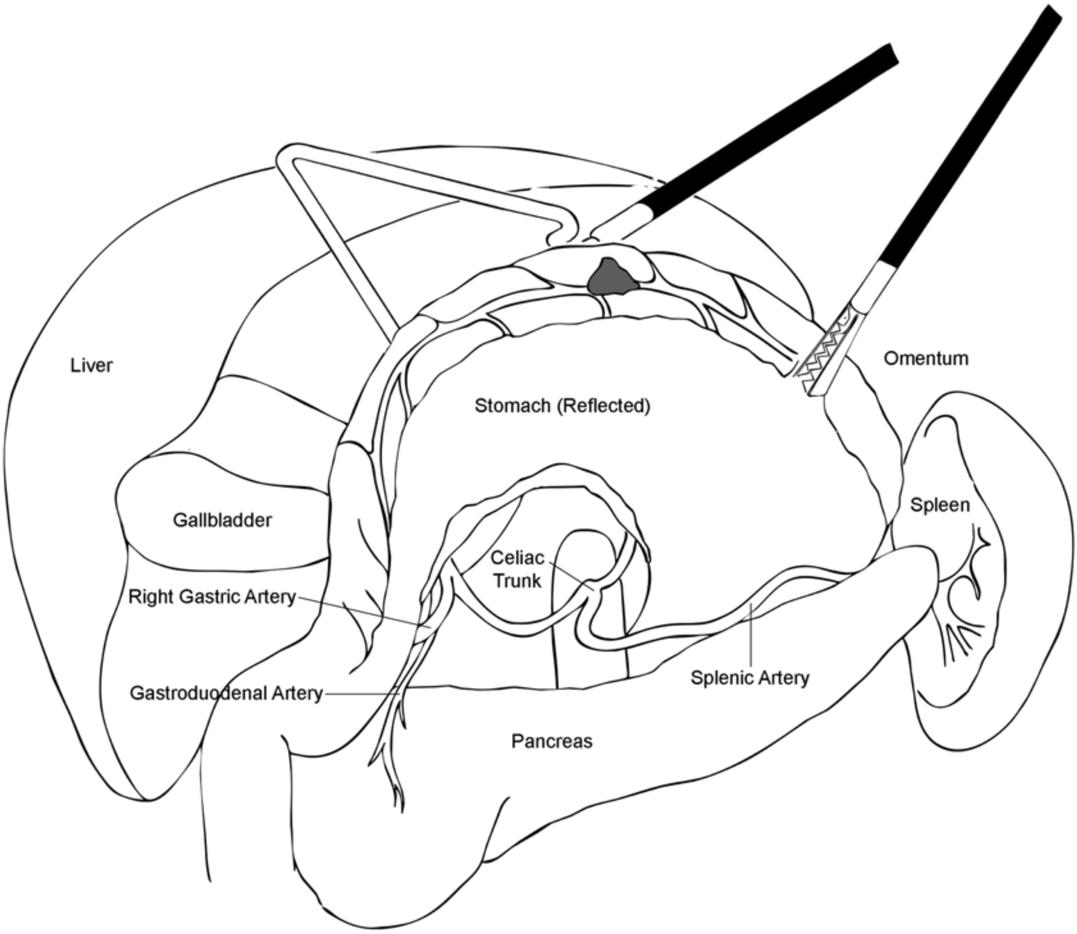
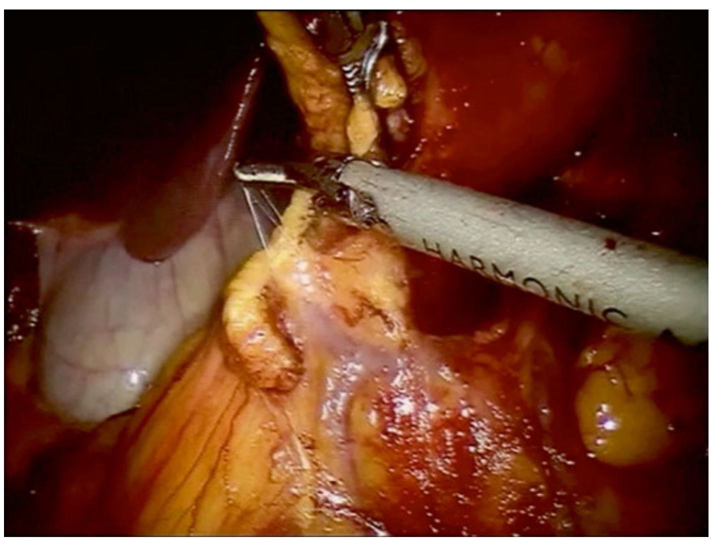


Fig. 8.4 Illustration of the view provided when the posterior wall of the stomach is grasped and elevated. This is a key maneuver in MIS-TG

Fig. 8.5 Photo of the origin of the right gastroepiploic vessels. The right gastroepiploic vein often shares a common trunk with the right colic vein (Henle's trunk)



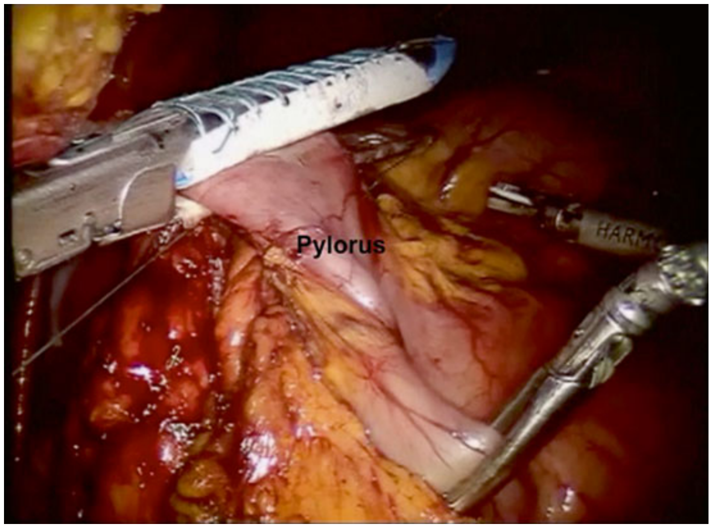


Fig. 8.6 Photo of the proximal duodenum being divided just distal to the pylorus. A linear stapler with bioabsorbable reinforcement is preferred

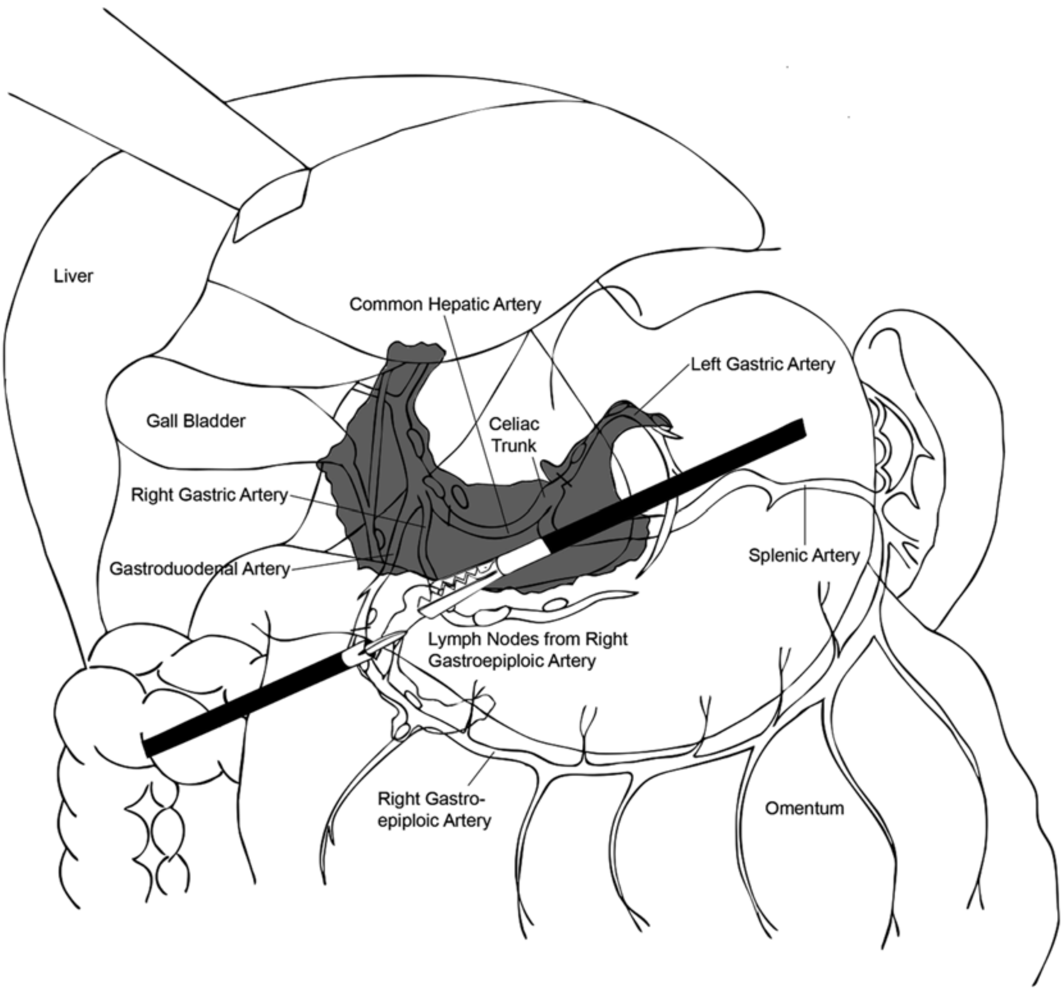


Fig. 8.7 Illustration of the lymph nodes beyond the D1, perigastric nodes, that need to be removed in a modified D2 lymphadenectomy

with the energy sealant device. The level 1 and 3 lymph nodes are dissected with the proximal stomach up to the right crus of the diaphragm and esophagus. The peritoneal fat and fat pad overlying the esophagus are opened with the energy sealant device and the distal esophagus is circumferentially dissected. The distal esophagus is then divided with a reticulating linear stapler (blue load).

Specimen Retrieval

At this point, the specimen is placed in a specimen retrieval bag and is removed via the umbilical port site which is enlarged about 1.5 cm after changing the camera position to the right-sided 12-mm port site. The camera port is then replaced and the 8-mm robotic port attached to arm 2 is placed within the 12-mm right-sided port site after returning the camera to its initial position at the umbilical port. The proximal margin is marked with a stitch and is sent for frozen section analysis to confirm microscopic clearance of disease. Attention is then turned to the reconstruction.

Reconstruction

Roux-en-Y esophagojejunostomy is performed for restoration of gastrointestinal continuity. The colon is elevated in a cephalad direction and the ligament of Treitz (LOT) is identified. A mobile piece of jejunum approximately 30–40 cm downstream from the LOT is selected based on mobility and tension-free reach to the esophageal hiatus and is used for reconstruction. The jejunum is then transected with a linear stapler with a blue load and the Roux limb is measured out to about 60–70 cm at which point the jejunojejunostomy is created with another firing of the linear stapler with a blue load. The resultant enterotomy is closed with a 2-0 silk running suture. The Roux limb is then prepared for esophagojejunostomy, which is an end-to-side anastomosis created with a 25-French circular stapler. To facilitate this, we prefer to use a transoral anvil (OrVil, Covidien) (Fig. 8.8). This device is an anvil connected to a nasogastric tube. The device is passed transorally usually by the anesthesiologist. Once the tip of the tubing is visible against the stapled end of the distal esophagus, a small esophagotomy is made with electrocautery to facilitate passage of the tubing through the wall of the esophagus. Care is taken to prevent contact between the contaminated tubing and the abdominal viscera. The tubing is grasped and pulled out of the abdomen via the 12-mm port. Robot arm 2 is undocked to facilitate removal of the tube in RTG. The tubing is then gently detached from the end of the anvil and is removed through the 12-mm port. The stapler is inserted into the Roux limb after removing the staple line with the energy sealant device. The anvil and spike are then connected and the stapler is fired. The open end of the Roux limb is then closed with a linear stapler.

Other options for the esophagojejunal anastomosis include using a linear stapler in the prepared Roux limb. The limb is positioned posterior to the esophageal stump and after creating the esophagotomy and enterotomy, a linear stapler is fired with closure of the remaining enterotomy with a running 2-0 silk suture. One other option is to hand sew the anastomosis in a single or double layer reconstruction. No single technique has been definitively shown to be superior, so the choice is based on surgeon experience and comfort level. Mesenteric defects from the jejunojejunostomy and Petersen's space are sutured closed in a running fashion with 3-0 vicryl suture.

Postoperative Care

Postoperatively, nasoesophageal/nasojejunal decompression is not necessary and is not recommended. In the absence of abdominal distention or evidence of ileus, patients are started on sips of clear liquids on postoperative day #2. This consists of ice chips and small-volume clear liquids (≤60 ml per 8 h nursing shift). If this is well tolerated, the diet is advanced to clear liquid tray the following day, then full liquids, and finally a soft bariatric diet (six small meals per day). Patients are discharged home on the soft

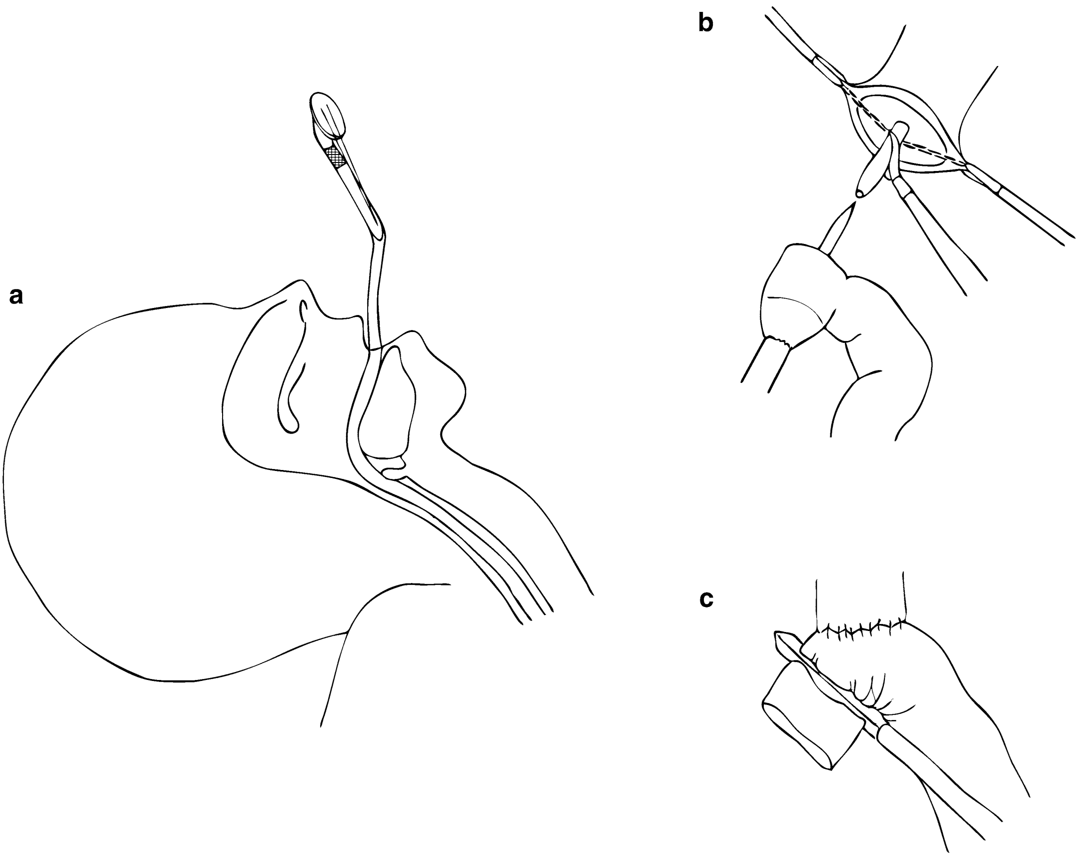


Fig. 8.8 Illustration of esophagojejunal anastomosis using the OrVil™ device (Covidien, USA). (**a**) The anvil is passed trans-orally by the anesthesiologist or a surgical assistant. (**b**) An end-to-side anastomosis is created by passing a 25 mm EEA stapler into the Roux limb. (**c**) The remaining open end of the Roux limb is closed with a linear stapler

diet for 2–3 weeks before advancing to solid food. We do not perform routine radiographic studies to evaluate for subclinical anastomotic leaks. If patients develop tachycardia, fever, or other evidence of leak, contrast-enhanced computed tomography (CT) or an esophogram with water-soluble oral contrast is performed.

Postoperative Outcomes

While the preponderance of data on minimally invasive gastric resection for cancer focuses on distal or subtotal gastrectomy, there are several retrospective series and meta-analyses that focus on MIS-TG [7, 8, 11, 12]. A recent meta-analysis comparing 2,313 patients undergoing LTG ($n = 955$) versus OTG ($n = 1{,}358$) found that LTG was associated with improved short-term outcomes including decreased blood loss, less postoperative pain, quicker return of bowel function, shorter hospital stay, and decreased postoperative morbidity [12]. The decrease in perioperative morbidity was primarily a reflection of decreased wound infections and there was no significant difference in anastomotic leak or stricture rates. Operative time was longer for the LTG group and long-term oncologic outcomes were not reported.

Comparisons of the robotic platform to both conventional laparoscopy and open surgery have also been performed. A meta-analysis by Marano et al. included 7 studies and 1,967 patients and robotic gastrectomy ($n=404$) was compared to both laparoscopic ($n=845$) and open gastrectomy ($n=718$) [13]. The robotic platform was associated with shorter length of stay compared to open surgery. Moreover, the robotic platform demonstrated a significant reduction in blood loss compared to the laparoscopic approach. On the other hand, robotic gastrectomy was associated with significantly longer operative time compared to both laparoscopic and open gastrectomy. Importantly, surgical morbidity and lymph node retrieval were not significantly different between the robotic gastrectomy and laparoscopic or open gastrectomy groups.

Cost of Robotic Gastrectomy

The cost of the robotic surgery platform is limiting in the current economy. In Eastern countries, patients pay out-of-pocket for the extra costs of robotic-assisted procedures. In the United States, hospitals charge significantly more for robotic-assisted procedures than for open or laparoscopic surgeries to offset the costs of the robots, instruments, and technical support. It is estimated that RTG costs approximately $4,400 more per case than LTG [14]. While most surgeons agree that the technical advantages of the robot definitely allow for more precise dissection and lymphadenectomy in some procedures, particularly gastrectomy, prostatectomy, and proctectomy, it is unknown whether the increased cost will continue to be justified in the absence of measurable clinical benefits over laparoscopy.

Summary

Current data suggest that utilization of minimally invasive approaches in total gastrectomy for cancer is associated with improved short-term postoperative outcomes compared to OTG. While data on MIS-TG with robotic-assistance are limited, use of the robot may allow for more precise dissection and D2 lymphadenectomy than with standard laparoscopy. This advantage comes with significantly increased cost, and it is unclear whether it will translate into clinical benefits for patients. It is reasonable to hypothesize that decreased postoperative morbidity, decreased blood loss and need for transfusion, and more precise lymphadenectomy may eventually translate into improved long-term oncologic outcomes. More prospective studies of MIS-TG are needed to clarify the role of laparoscopic and robotic approaches to total gastrectomy for gastric cancer.

References

1. Hayashi H, Ochiai T, Shimada H, Gunji Y. Prospective randomized study of open versus laparoscopy-assisted distal gastrectomy with extraperigastric lymph node dissection for early gastric cancer. Surg Endosc. 2005;19(9):1172–6. doi:10.1007/s00464-004-8207-4.
2. Huscher CG, Mingoli A, Sgarzini G, Sansonetti A, Di Paola M, Recher A, et al. Laparoscopic versus open subtotal gastrectomy for distal gastric cancer: five-year results of a randomized prospective trial. Ann Surg. 2005;241(2):232–7.
3. Kim HH, Hyung WJ, Cho GS, Kim MC, Han SU, Kim W, et al. Morbidity and mortality of laparoscopic gastrectomy versus open gastrectomy for gastric cancer: an interim report–a phase III multicenter, prospective, randomized Trial (KLASS Trial). Ann Surg. 2010;251(3):417–20. doi:10.1097/SLA.0b013e3181cc8f6b.
4. Kim YW, Baik YH, Yun YH, Nam BH, Kim DH, Choi IJ, et al. Improved quality of life outcomes after laparoscopy-assisted distal gastrectomy for early gastric cancer: results of a prospective randomized clinical trial. Ann Surg. 2008;248(5):721–7. doi:10.1097/SLA.0b013e318185e62e.
5. Lee JH, Han HS, Lee JH. A prospective randomized study comparing open vs laparoscopy-assisted distal gastrectomy in early gastric cancer: early results. Surg Endosc. 2005;19(2):168–73. doi:10.1007/s00464-004-8808-y.
6. Kitano S, Shiraishi N, Fujii K, Yasuda K, Inomata M, Adachi Y. A randomized controlled trial comparing open vs laparoscopy-assisted distal gastrectomy for the treatment of early gastric cancer: an interim report. Surgery. 2002;131(1 Suppl):S306–11.
7. Shim JH, Yoo HM, Oh SI, Nam MJ, Jeon HM, Park CH, et al. Various types of intracorporeal esophagojejunostomy after laparoscopic total gastrectomy for gastric cancer. Gastric cancer. 2013;16(3):420–7. doi:10.1007/s10120-012-0207-9.
8. Corcione F, Pirozzi F, Cuccurullo D, Angelini P, Cimmino V, Settembre A. Laparoscopic total gastrectomy in gastric cancer: our experience in 92 cases.

Minim Invasive Ther Allied Technol. 2013;22(5): 271–8. doi:10.3109/13645706.2012.743919.

9. Liu XX, Jiang ZW, Chen P, Zhao Y, Pan HF, Li JS. Full robot-assisted gastrectomy with intracorporeal robot-sewn anastomosis produces satisfying outcomes. World J Gastroenterol. 2013;19(38):6427–37. doi:10.3748/wjg.v19.i38.6427.
10. Kelly KJ, Vivian ES. Robotic utilization in gastric cancer surgery. In: Hochwald S, editor. Minimally Invasive Foregut Surgery for Malignancy: Principles and Practice. New York: Springer; 2014.
11. Nagai E, Ohuchida K, Nakata K, Miyasaka Y, Maeyama R, Toma H, et al. Feasibility and safety of intracorporeal esophagojejunostomy after laparoscopic total gastrectomy: inverted T-shaped anastomosis using linear staplers. Surgery. 2013;153(5): 732–8. doi:10.1016/j.surg.2012.10.012.
12. Wang W, Zhang X, Shen C, Zhi X, Wang B, Xu Z. Laparoscopic versus open total gastrectomy for gastric cancer: an updated meta-analysis. PLoS One. 2014;9(2):e88753. doi:10.1371/journal.pone.0088753.
13. Marano A, Choi YY, Hyung WJ, Kim YM, Kim J, Noh SH. Robotic versus laparoscopic versus open gastrectomy: a meta-analysis. J Gastric cancer. 2013;13(3):136–48. doi:10.5230/jgc.2013.13.3.136.
14. Park JY, Jo MJ, Nam BH, Kim Y, Eom BW, Yoon HM, et al. Surgical stress after robot-assisted distal gastrectomy and its economic implications. Br J Surg. 2012;99(11):1554–61. doi:10.1002/bjs.8887.

Key Operative Steps

1. Explore abdomen for adhesions and peritoneal carcinomatosis. Ensure that 2–4 cm of adequate proximal margin can be obtained.
2. If the lesion cannot be appreciated on the extraluminal surface, perform intraoperative endoscopy.
3. Dock the robot.
4. Dissect the omentum from the colon in the avascular plane proceeding towards the splenic flexure and enter the lesser sac.
5. Grasp the posterior wall of the stomach and retract anteriorly and to the right. Ligate the short gastric vessels with energy sealant device up to the left crus.
6. Incise the peritoneum over the left crus and expose the posterolateral aspect of the esophagus.
7. Retract the stomach to the left side and proceed with omentectomy towards the hepatic flexure. Place fully mobilized omentum in the left upper quadrant.
8. Divide the posterior attachments between the stomach and the pancreas sharply or with an energy sealant device.
9. Dissect the right gastroepiploic vessels at the level of the superior border of the pancreas near the point of origin from the gastroduodenal vessels. The linear stapler can be used for this maneuver.
10. Incise the gastrohepatic attachments near the suprapyloric region. Identify and ligate the right gastric artery.
11. Dissect the lymphatic tissues along the proper hepatic and common hepatic artery towards the specimen creating a window at the level of the pylorus.
12. Mobilize the posterior aspect of the pylorus and proximal duodenum and divide the duodenum with a linear stapler. Use a bioabsorbable staple line reinforcement.
13. Continue dissecting lymphatic tissues toward the celiac axis and proximal splenic artery.
14. Identify and ligate the left gastric vein and artery. Dissect all lymphatic tissues with the specimen.
15. Further incise gastrohepatic attachments to the level of the esophageal hiatus. Level 1 and 3 lymph nodes are dissected with the proximal stomach up to the right crus and esophagus.
16. Mobilize distal esophagus and divide it with a linear stapler.
17. Place specimen in a specimen bag and remove via the umbilical port site.
18. A Roux limb is prepared 30–40 cm downstream from the ligament of Treitz. Transect jejunum with a linear stapler.
19. Create jejunojejunostomy 60–70 cm downstream from the transected jejunum.
20. Perform esophagojejunostomy with a transoral anvil device and a circular stapler.