Visualized Surgery

Laparoscopy-assisted D2 radical distal gastrectomy for gastric cancer (Billroth I anastomosis)

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Abstract: The process of laparoscopy-assisted D2 radical distal gastrectomy was recorded in the video. This was a 58-year-old man of early gastric cancer. The malignant lesion was located at the lesser gastric curvature near the angular notch. The operation followed the standardized procedure, including separation of the omentum and anterior leaf of transverse mesocolon, dissection of the inferior region of the pylorus, dissection of the superior region of the pancreas, dissection of the superior region of the pylorus, separation of hepatogastric ligament, and dissection of the left gastroepiploic vessel. In the end, a small incision was made to remove the specimen and reconstruct alimentary tract. The pathological stage was pT1N1M0.

Keywords: Laparoscopy; gastrectomy; gastric cancer

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Introduction

Radical distal gastrectomy by laparoscopy has been recommended for early gastric cancer in the recently published Japanese gastric cancer treatment guidelines. In this paper, we reported a case of early gastric cancer undergoing laparoscopy-assisted D2 radical distal gastrectomy. A 58-year-old man was admitted to hospital for upper abdominal pain for 3 months. Physical examination revealed no palpable abdominal mass, no swelling of superficial lymph nodes, and no palpable mass in digital rectal exam. There were no positive findings in blood tumor marker test and other laboratory examination. Gastroscopy revealed mucosal erosion with localized superficial ulcers along the lesser curvature of the stomach near the angular notch. The diagnosis of gastric moderately differentiated adenocarcinoma was confirmed by endoscopic biopsy. Upper abdominal CT revealed no obvious invasion of liver, spleen, pancreas and other adjacent organs. Chest CT was normal. The preoperative stage was cT1N0M0. The operation was performed successfully. He was discharged on postoperative day 12 and kept well at the first 3-month follow-up. The pathologist reported multifocal superficial erosion with local moderately differentiated adenocarcinoma at the antral lesser curvature. The tumor confined to the submucosa had the maximum diameter of 1.2 cm. There was no tumor invasion at the upper and lower margins of resection, while (1/22) regional lymph node infiltration was noted. The postoperative stage was pT1N1M0 (*Figure 1*).

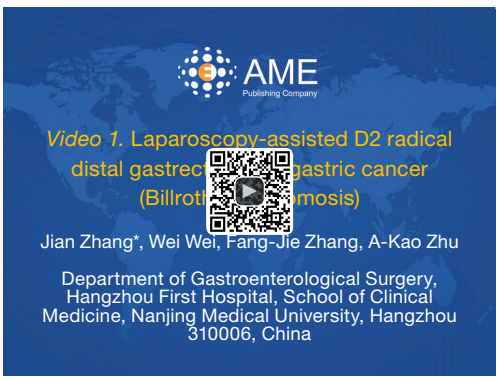

Figure 1 Laparoscopy-assisted D2 radical distal gastrectomy for gastric cancer (Billroth I anastomosis) (1).
Available online: http://www.asvide.com/articles/681

Operative techniques

To separate the omentum and anterior leaf of transverse mesocolon, the assistant using two clamps picked up the omentum and stretch it. The surgeon grasped the transverse colon by the left clamp and pulled it down. In this way, there was triangle traction to keep the tension of the greater omentum. The greater omentum was cut in the avascular zone of transverse colon margin from the hepatic flexure to the splenic flexure of colon. The separation of the anterior leaf of transverse mesocolon was continued by cutting through the loose connective tissue between the anterior leaf and posterior leaf of the transverse mesocolon.

To dissect the lymph nodes of the inferior region of the pylorus, the assistant grasped the posterior wall of gastric antrum by the left clamp and turned it over to the head side. It was alternative to simply lift up gastric antrum if it was difficult to grasp it, especially in case of tumor invasion. The gastroepiploic vessel pedicle was picked up by his right clamp. The surgeon gently pressed down the transverse mesocolon and pancreas by the left clamp so that gastroepiploic vessel and its surrounding lymphoid tissue were sufficiently exposed to be dissected.

To dissect the lymph nodes of the superior region of the pancreas, the assistant grasped the gastropancreatic fold by the left clamp and lifted it up. If it was difficult to grasp gastropancreatic fold due to tumor invasion or swelling of lymph nodes, the clamp kept open to lift up gastropancreatic fold or lesser curvature of gastric body. The surgeon gently pressed down the pancreas by the left clamp so that the superior region of the pancreas was completely exposed. The lymph nodes were dissected along the proximal splenic artery, celiac trunk, coronary vein, left gastric artery and common hepatic artery.

To dissect the lymph nodes of the superior region of the pylorus, the assistant lifted up the posterior wall of gastric antrum and pushed the duodenal bulb to the lateral side. The surgeon gently pressed down the pancreas to expose the superior region of the pylorus from the back. The lymph nodes along proper hepatic artery were dissected. In the process, right gastric artery was transected and removed together with its surrounding lymph nodes.

To separate hepatogastric ligament, the assistant lifted up the left lateral lobe of the liver by the left clamp and pulled the gastric body to the left lower side by the right clamp. The surgeon pressed the gastric angle to stretch the hepatogastric ligament. The hepatogastric ligament was cut along the inferior margin of the liver to complete the dissection of lymph nodes at the right side of gastric cardia and along the lesser curvature.

To dissect the lymph nodes surrounding the left gastroepiploic vessel, the assistant grasped the posterior wall of gastric body by the left clamp and turned it over to the right upper side. The splenogastric ligament was lifted by his right clamp. The surgeon gently pressed down the transverse mesocolon near the splenic flexure to expose the tail of pancreas and splenic hilum. The root of left gastroepiploic vessel was separated near the pancreatic tail and the lower pole of spleen. The vessel was transected and removed together with its surrounding lymph nodes.

If all the preceding steps were completed, a small incision of 5 cm was made at the center of the upper abdomen, and the incision protector was implanted. The two-third portion of distal stomach was removed. The proximal stomach was anastomosed directly to the duodenum.

Comments

How to improve the technique of laparoscopic radical gastrectomy is hard work, which largely depends on sufficient anatomical exposure by the assistant and effective teamwork between the surgeon and assistant.

The technical difficulty of laparoscopic radical gastrectomy can be reduced by following standardized and programmed surgical procedure.

For the beginners, which case is suitable for the operation should be carefully selected to avoid surgical complications. What is important is to gain more experience and shorten learning curve.

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Footnote

Conflicts of Interest: The authors have no conflicts of interest to declare.

References

1. Zhang J, Wei W, Zhang FJ, et al. Laparoscopy-assisted D2 radical distal gastrectomy for gastric cancer (Billroth I anastomosis). Asvide 2015;2:088. Available online: http://www.asvide.com/articles/681

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