Laparoscopic pancreatic surgery: its indications and techniques: from the viewpoint of limiting the indications

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Abstract Indications in the field of pancreatic surgery should be limited considering the technical difficulties and the characteristics of pancreatic diseases. Benign or low-grade malignant tumors, including pseudocysts, islet tumors, and cystic tumors, are indications for distal pancreatectomy. Islet tumors such as insulinomas are good candidates for this procedure when they are located near splenic vessels or the main pancreatic duct and enucleation is considered inappropriate. Techniques of laparoscopic distal pancreatectomy with/without splenectomy and laparoscopy-assisted distal pancreatectomy indicated in low-grade malignant tumors such as mucinous cystadenoma are described. Insuloma is one of the best candidates for enucleation because many of the cases are solitary and benign. The technique of enucleation is also described.

Key words Laparoscopic distal pancreatectomy · laparoscopy-assisted distal pancreatectomy · Laparoscopic enucleation of an insulinoma · Hand-assisted laparoscopic distal pancreatectomy

Introduction

Laparoscopic surgery is being employed for various diseases, and its indications have been expanded. However, its indications in pancreatic diseases are still limited due to technical difficulties and the characteristics of pancreatic diseases. To date, experiences with the enucleation of pancreatic tumors,1,2 distal pancreatectomy with/without splenectomy,3,4 cystogastrotomy,5,6 pancreaticoduodenectomy,7 and diagnostic laparoscopy8 have been reported.

In this paper we describe our techniques of distal pancreatectomy and enucleation.

Indications and surgical techniques

Laparoscopic distal pancreatectomy

Indications. Benign or low-grade malignant tumors including pseudocysts, islet tumors, and cystic tumors, are indications for laparoscopic distal pancreatectomy. Islet tumors such as insulinomas are good candidates for this procedure when they are located near splenic vessels or the main pancreatic duct and enucleation is considered inappropriate.

Among cystic tumors, serous cystadenoma is one of the best candidates for this procedure, because this tumor is usually not malignant. However, there is still dispute about the indications of laparoscopic surgery for mucinous cystadenoma and the peripheral type of intraductal papillary tumors.

Surgical techniques. In this article, techniques of laparoscopic distal pancreatectomy with/without splenectomy and laparoscopy-assisted distal pancreatectomy indicated in low-grade malignant tumors such as mucinous cystadenoma are described.

Laparoscopic distal pancreatectomy with splenectomy.

The patient is placed in the right sided semi-decubitus position, using a Magic Bed (Nikko Fines, Tokyo, Japan). The primary surgeon stands at the right side of the patient, with the assistant and laparoscopist at the left side of the patient. The operating table is rotated to the supine position, and a Hasson cannula is placed at the umbilical site for insufflation and placement of a laparoscope. Operating ports for 10-mm trocars are
created at the subxiphoidal site and at the left subcostal sites on the midline and the anterior axillary line (Fig. 1).

The whole abdominal cavity is explored to detect liver metastasis and peritoneal dissemination of the tumor, which findings indicate inoperability. The lesser sac is opened by cutting the omentum near the gastroepiploic vessels, using a Harmonic Scalpel (LCS; Johnson & Johnson, Cincinnati, OH, USA). The stomach is lifted up to expose the pancreas, and laparoscopic intraoperative ultrasonography is performed to confirm the location of the tumor and to decide the extent of resection.

The operating table is returned to the right semi-decubitus position and the cutting of the gastrocolic ligament is advanced forward to the lower pole of the spleen. The splenic flexure of the colon is first taken down to facilitate exposure of the spleen and distal pancreas. The splenogastric ligament and splenocolic ligament are divided, using the LCS (Fig. 2). During this procedure, the left gastroepiploic vessels are clipped and divided.

The spleen is lifted up, the splenophrenic ligament is cut, and the spleen is separated and mobilized from the retroperitoneal plane (Fig. 3).

The peritoneum at the inferior edge of the pancreas is cut and the cutting line is extended to the lower pole and the lateral side of the spleen. The peritoneum of the superior edge of the pancreas is also cut, and the body and tail of the pancreas, with the spleen en masse, is mobilized from the retroperitoneum (Fig. 4). The inferior mesenteric vein joining the splenic vein is isolated and cut during this procedure.

The transecting line is established and the splenic artery is exposed and isolated. The splenic artery is double-clipped and cut (Fig. 5a). The parenchyma of the pancreas and the splenic vein are transected, using the Endo GIA (USS, Norwalk, CT, USA) (Fig. 5b). In