

A novel device for pancreaticojejunostomy via a pure laparoscopic approach

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Background

During pure laparoscopic reconstruction after pancreaticoduodenectomy or middle pancreatectomy, tangling of a number of sutures that have been retained without ligation after stitching causes difficulty and is time-consuming in pancreaticoenteric anastomosis.

Procedures

For laparoscopic pancreaticojejunostomy, a modified Kakita method was employed, which is an end-to-side technique with approximation of the seromuscular layer of the jejunum and full-thickness pancreas by several interrupted sutures. For this method, we created a novel device, “Haenawa”, which is assembled from a 10cm 18Fr catheter and four pieces of 4-0 polypropylene sutures of 18cm with a gently curved long needle. For normal-size main pancreatic duct (MPD), a short stent tube for internal drainage is placed and fixed at the stump of the MPD with a purse-string suture of the pancreatic parenchyma around the MPD using a 5-0 Maxon suture, and then is inserted into the jejunum through a small orifice without duct-to-mucosal anastomosis (internal drainage method). For the dilated MPD, duct-to-mucosal anastomosis using continuous 5-0 Maxon sutures is performed without a stent. After all Haenawa sutures have been placed, first, the most cranial Haenawa suture is ligated. Then, inner layer procedures are performed, and the other Haenawa sutures are ligated in sequence from the cranial to caudal side.

Results

In 23 patients, laparoscopic pancreaticojejunostomy was performed using this procedure. The mean overall operative time of 23 patients was 510 (range, 349-778) minutes, with mean blood loss of 167 (range, 10-360) g. Postoperative complications occurred in 9 patients. Postoperative pancreatic fistula (ISGPF, Grade B) occurred in 3 patients and delayed gastric emptying, peptic ulcer, portal vein thrombus, congestion of the brought limb of the jejunum, abdominal abscess and pneumonitis occurred in one patient each. In all patients, complications were resolved by conservative measures.

Conclusions

The current procedure was safe and feasible for laparoscopic pancreaticojejunostomy. Whichever procedure of pancreaticoenteric anastomosis becomes standard in the future, Haenawa is supposed to be useful for laparoscopic pancreaticoenteric anastomoses using interrupted sutures for approximating the pancreas remnant and the jejunum or stomach.