



Mini-invasive pancreaticogastrostomy

Edoardo Rosso¹, Giuseppe Zimmitti¹, Antonio Iannelli^{2,3,4}, Mohammed Abu Hilal¹

¹Department of Surgery, Istituto Fondazione Poliambulanza, Brescia, Italy; ²Université Côte d'Azur, Nice, France; ³Digestive Surgery and Liver Transplantation Unit, Centre Hospitalier Universitaire de Nice, Archet 2 Hospital, 151 Route Saint Antoine de Ginestière, BP 3079, Nice Cedex 3, French; ⁴Inserm, U1065, Team 8 "Hepatic Complications of Obesity and Alcohol" Nice, French

Correspondence to: Edoardo Rosso, MD. Department of Surgery, Istituto Fondazione Poliambulanza, Brescia, Italy.

Email: edoardo_rosso@hotmail.com.

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Introduction

Two main pancreaoticoenteric anastomosis are conventionally performed after pancreaticoduodenectomy (PD) (1-12): pancreaticojejunostomy and pancreaticogastrostomy (PG). Several publications, review, randomized trials, and meta-analysis have not yet established which pancreaoticoenteric anastomosis is safer (4-18). Our group has a long dating experience with PG after open PD (1-3,18) therefore it was a "natural instinct" to use the same anastomosis in case of laparoscopic PD.

Hereby, we present our current technique of PG underling all the tricks required to reproduce it safely.

Laparoscopic double purse-string telescoped pancreaticogastrostomy (Video 1)

Once completed the resection phase of the PD, the distal pancreatic stump at the level of the superior and inferior border with a 2/0 Prolene stay sutures (Ethicon) the treed should be dived at around 20 cm and keep tougher with a clip to be used later during the intussusception of the pancreatic remnant. The pancreatic remnant is then separated from the splenic artery and vein for at least 3 to 4 cm respecting two "magic rules" should be respected: (I) to avoid the "Pisa Tower effect", the body of the pancreas should be freed from splenic vessels equally in view to obtain a symmetric stump, indeed it is easier to mobilized the pancreas from the vein then from the artery and the tendency, at beginning of the learning curve, is to leave the splenic artery side shorter than the splenic vein side. (II)

To preserve the dorsal pancreatic-artery, when is present, to avoid ischemic pancreatitis. Once the pancreatic stump is mobilized the posterior wall of the stomach is pulled toward the right like a flag and the serous and muscular layer is divided preserving the mucosa layer. The incision is performed at the level of the base of the pancreatic stump and its length is about the length of the cut margin of the pancreas. The first purse-string suture of 2/0 absorbable Monocryl (Ethicon) is applied in a concentric fashion around the posterior gastric incision and includes the seromuscular layers only. The second purse-string suture of 2/0 absorbable Monocryl (Ethicon) is performed in a similar fashion after having divided the mucosa layer and it include the mucosa only. In this case the treed are positioned inside the stomach. At this stage the anterior wall of the stomach is incised at the level of the posterior wall incision, then the pancreatic remnant is gently pulled into the gastric lumen by progressive traction on the 2 stay sutures, the "trick" at this stage is to pull one corner after the other till the pancreatic remnant protrudes 2 to 3 cm in the stomach lumen and in particularly till it stay inside by itself without slipping outside. The 2 purse-string sutures are tightened in order the seromuscular first and the muscular after. It should be avoided to tight to much the sutures the but is to "seal" the anastomosis without strangulating the pancreas. Finally, the anterior gastrotomy is closed with a resorbable 2/0 barbed suture.

Post-operative care

The postoperative care is tailored according to the Fistula

Risk Score (ref) in case of low risk score oral intake is started from the 3rd post-operative day (POD) and gradually increased. In case of intermediate or high risk score the oral intake is postponed till POD 5 at the time of the systematic abdominal CT scan, if the CT does not show any significant peri-anastomotic collection than oral intake is allowed, in case of peri-anastomotic collections than oral intake is started after percutaneous drainage.

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Ethical Statement: The authors are accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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