

Pancreaticoduodenectomy with a double Roux-en-Y reconstruction performed after Billroth II gastric resection

Zijah Rifatbegovic, Emir Ahmetasevic, Amra Mestric,
Zlatan Mehmedovic, Majda Mehmedovic

ABSTRACT

Introduction: In the presence of the pancreatic head malignancy the resection is indicated in the absence of proven metastases and if the tumor is of such size that the major blood vessels are not implicated. When the pancreaticoduodenectomy is performed the double Roux-en-Y digestive tract reconstruction can be addressed to decrease the liquid flow and pressure in the duodenum and reduce the risks of traction, twisting and angularity of the jejunal loop associated with common reconstruction methods. **Case Report:** A 68-year-old man was admitted with abdominal pain, vomiting, jaundice, and weight loss. Before admission to the Surgery clinic he had underwent a diagnostic evaluation where computed tomography (CT) scanning revealed pancreatic head mass. The patient had gastric resection due to benign gastric ulcer disease 23 years prior. We performed a pancreaticoduodenectomy and used an efferent jejunal loop from the gastrojejunal anastomosis to perform a double Roux-en-Y anastomosis. **Conclusion:** We showed that double Roux-en-Y reconstruction after the pancreaticoduodenectomy can be successful way for reconstruction in case that gastric resection was performed prior.

Zijah Rifatbegovic¹, Emir Ahmetasevic¹, Amra Mestric², Zlatan Mehmedovic¹, Majda Mehmedovic³

Affiliations: ¹University Clinical Center Tuzla, Clinic of surgery Tuzla, Bosnia and Herzegovina; ²University of Tuzla, Faculty of medicine Tuzla, Bosnia and Herzegovina; ³University Clinical Center Tuzla, Department of gastroenterology, Bosnia and Herzegovina.

Corresponding Author: Zijah Rifatbegovic, University Clinical Center Tuzla, Trnovac bb, 75000 Tuzla, Bosnia and Herzegovina; Email: drzooro@gmail.com

Received: 19 October 2015
Accepted: 01 December 2015
Published: 29 February 2016

Keywords: Pancreaticoduodenectomy, Double Roux-en-Y reconstruction, Gastric resection

How to cite this article

Rifatbegovic Z, Ahmetasevic E, Mestric A, Mehmedovic Z, Mehmedovic M. Pancreaticoduodenectomy with a double Roux-en-Y reconstruction performed after Billroth II gastric resection. Edorium J Gastrointest Surg 2016;3:1–4.

Article ID: 100002G02ZR2016

doi:10.5348/G02-2016-3-CR-1

INTRODUCTION

Non-operative management of the benign gastric ulceration is indicated in nearly all cases with the exception of hemorrhage, perforation, obstruction, and refractory disease. Gastric ulcer location determines the preferred treatment modality with the classification system proposed by Johnson [1].

The authors reserve the use of a Billroth II (B II) gastroenterostomy for those patients in whom Billroth I (B I) is not feasible, most often because of an inability of the duodenum and greater curvature to approximate without tension. This usually involves carrying out a wide-mouthed gastroenterostomy with extension of the afferent limb along the closed portion of the stomach nearest to the lesser curve [1].

Carcinoma of the pancreatic head is one of the most common gastrointestinal malignancies and, because of its aggressive nature, one of the hardest to cure. The classic presentation of cancer of the pancreatic head is unremitting jaundice usually accompanied by dark urine, light stool, and pruritus. Significant weight loss is

common even when the pancreatic cancer is resectable [2].

In the presence of the malignancy, the resection is indicated in the absence of proven metastases and if the tumor is of such size that the major blood vessels are not implicated beyond the ability of the surgeon to accomplish a safe vascular resection and repair [3].

The double Roux-en-Y reconstruction is considered as an alternative way reconstruction after the pancreaticoduodenectomy. When the pancreaticoduodenectomy is performed the double Roux-en-Y digestive tract reconstruction can be addressed to decrease the liquid flow and pressure in the duodenal lumen and reduce not only the distance between the pancreaticojejunostomy and choledochojejunostomy but also the risks of tracting, twisting and angularity of the jejunal loop associated with common reconstruction methods [4].

CASE REPORT

A 68-year-old male was transferred from the Department of gastroenterology and hepatology where the diagnostic evaluation was done. He presented with abdominal pain localized in the right upper abdominal part, loss of weight and jaundice. The patient had undergone B II gastric resection due to benign gastric ulceration 23 years prior to the admission.

The laboratory tests showed high levels of total blood bilirubin 184.3 $\mu\text{mol/L}$ (normal 3–19 $\mu\text{mol/L}$), as well as high levels of the inflammation parameters. White blood cells number was $14.5 \times 10^9/\text{L}$ (normal $3.40\text{--}9.70 \times 10^9/\text{L}$), while the C-reactive protein value was 129.5 $\mu\text{g/L}$ (normal 0.0–3.3 $\mu\text{g/L}$).

Esophagogastroduodenoscopy (EGD) showed no abnormalities in the stomach part that had been left or in afferent and efferent jejunal loops. On the gastrojejunal anastomosis there was a polyp, 3 mm in diameter, where the biopsy was taken. The result of the biopsy showed an inflammatory origin.

Abdominal CT scanning revealed a dilated choledochal duct incorporated in a solid, low differentiated neoplastic mass of pancreatic head, 2 cm in diameter. Tumor had infiltrated a duodenum. However, the great blood vessels were not affected.

Surgical technique

Considering the earlier laparotomy, we performed medial superior et inferior relaparotomy to open the abdominal cavity. Exploration of the abdominal cavity revealed enlarged, distended gallbladder and multiple adhesions between the small bowel loops. On the pancreatic head there was a mass, 2 cm in diameter, expanding and infiltrating through the duodenal wall. We carried out the classical cholecystectomy and adhesiolysis. While preparing the pancreas and the duodenum for

resection, we identified the celiac trunk, as well as the common bile duct and the portal vein. We successfully performed pancreaticoduodenectomy and transected an afferent jejunal loop. The efferent loop of gastrojejunal anastomosis created during the B II resection was also transected. We used a distal limb from the transected efferent loop to create the choledochojejunal and the pancreaticojejunal anastomoses (Figure 1). A proximal limb, transected about 60 cm away from gastrojejunal anastomosis was used to form jejunojejunal end-to-side reconstruction. The jejunojejunal anastomosis was addressed manually, in one layer (Figure 2).

On the first postoperative day the patient had undergone one more laparotomy due to intra-abdominal bleeding. Laboratory tests revealed low red blood cells number $2.06 \times 10^{12}/\text{L}$ (normal $4.34\text{--}5.72 \times 10^{12}/\text{L}$), low blood hemoglobin 60 g/L (normal 138–175 g/L), and low hematocrit 0.172 L/L (normal 0.415–0.530 L/L). During the exploration of abdominal cavity we revealed the source of bleeding on the small bowel mesentery which was addressed with hemostatic stitches.

The early postoperative course went without complications such as bile leakage, pancreatic leakage, and digestive tract obstruction. The patient had undergone regular check-ups including EGD and tumor marker levels, without any signs of recurrence of the tumor.

DISCUSSION

Both B II and Roux-en-Y are acceptable techniques for reconstruction after subtotal gastrectomy. It has been



Figure 1: Pancreaticojejunal and choledochojejunal anastomoses performed after the transection of an efferent loop.

described that patients with Roux-en-Y reconstruction had fewer problems related to the bile reflux; however, higher incidence of stasis in the Roux limb tends to result in longer hospital stay. Roux-en-Y reconstruction is also connected with a triad of postoperative symptoms including abdominal pain, vomiting and nausea called Roux-en-Y loop syndrome. On the other hand, B II reconstruction is a simpler operation with only one anastomosis, but has increased reflux associated problems such as esophagitis and gastritis, risk of afferent loop and dumping syndrome [5].

In Figures 3 and 4, black arrows showing the jejunal loop is transected choledochojejunal, pancreaticojejunal and jejunojejunal anastomosis, respectively.

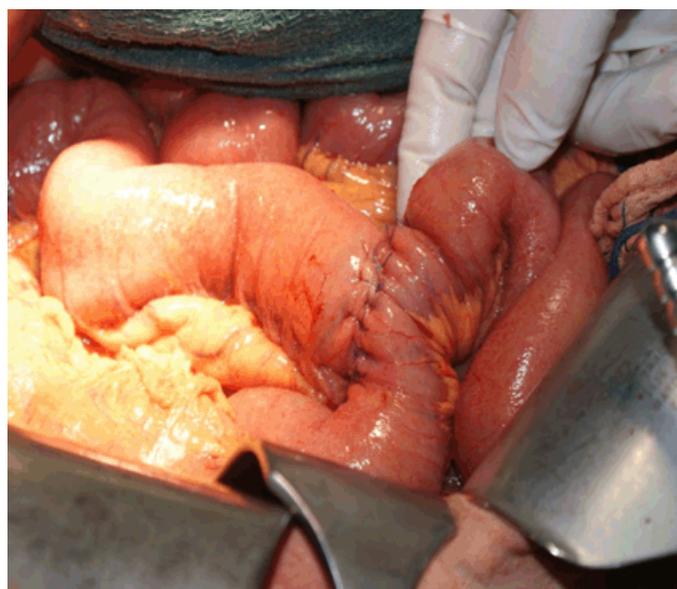


Figure 2: Jejunojejunal end-to-side anastomosis addressed manually.

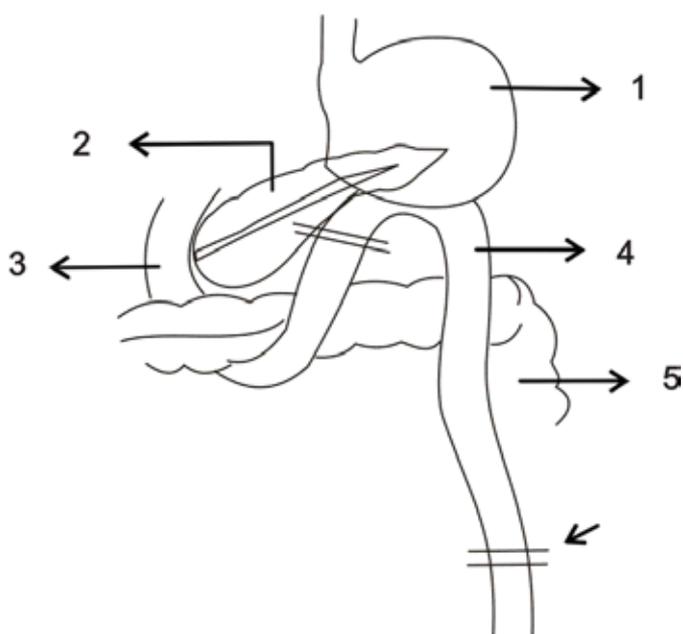


Figure 3: Before the surgical procedure is performed: 1. Gastric remnant, 2. Pancreatic head with tumor, 3. Duodenum, 4. Jejunum, 5. Large bowel loop.

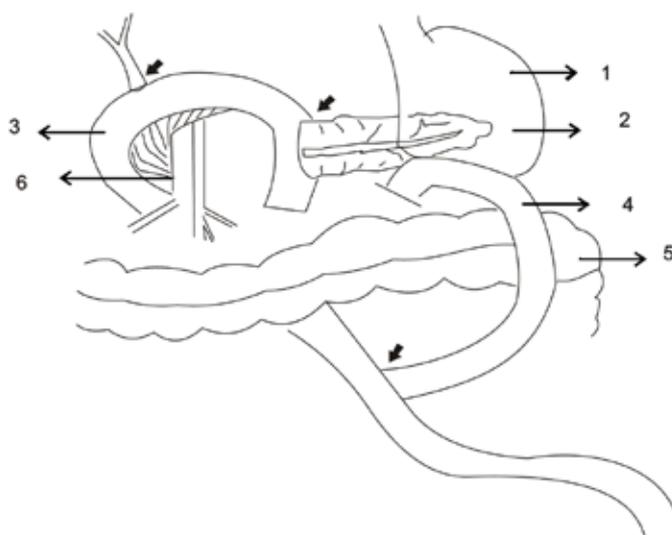


Figure 4: After the surgery is performed :1. Gastric remnant 2. Pancreatic body and tail 3. Distal part of the jejunal loop that had been transected, 4. The proximal part of the transected loop, 5. Splenic flexura of the color transversum, 6. Superior mesenteric vessels.

In a study, about single versus double Roux-en-Y reconstruction, where 319 patients were included, it was concluded that the double Roux-en-Y reconstruction of the alimentary tract is not beneficial in terms of surgical outcome, and postoperative morbidity and mortality [6]. Also the report about double Roux-en-Y reconstruction performed after gastrectomy due to gastric and hilar bile duct carcinoma, showed an uneventful postoperative course and longer hospitalization [7].

In this case, we performed a double Roux-en-Y reconstruction after pancreaticoduodenectomy. By performing the reconstruction using this technique we managed to successfully address pancreaticojejunal, choledochojejunal and jejunojejunal anastomosis on a patient who had undergone gastrojejunostomy after B II resection.

CONCLUSION

Double Roux-en-Y reconstruction is not often performed due to complications such as Roux-en-Y loop syndrome. We showed that double Roux-en-Y reconstructions after pancreaticoduodenectomy can be successful way for reconstruction in case that gastric resection was performed prior.

Author Contributions

Zijah Rifatbegovic – Substantial contributions to conception and design, Acquisition of data, Analysis and interpretation of data, Drafting the article, Revising

it critically for important intellectual content, Final approval of the version to be published

Emir Ahmetasevic – Analysis and interpretation of data, Revising it critically for important intellectual content, Final approval of the version to be published

Amra Mestric – Analysis and interpretation of data, Revising it critically for important intellectual content, Final approval of the version to be published

Zlatan Mehmedovic – Analysis and interpretation of data, Revising it critically for important intellectual content, Final approval of the version to be published

Majda Mehmedovic – Analysis and interpretation of data, Revising it critically for important intellectual content, Final approval of the version to be published

Guarantor

The corresponding author is the guarantor of submission.

Conflict of Interest

Authors declare no conflict of interest.

Copyright

© 2016 Zijah Rifatbegovic et al. This article is distributed under the terms of Creative Commons Attribution License which permits unrestricted use, distribution and reproduction in any medium provided the original author(s) and original publisher are properly credited. Please see the copyright policy on the journal website for more information.

REFERENCES

1. Abdel-Misih RZ, Larson JD, Abdel-Misih SR. The Management of Benign Gastric Ulcer. In: Cameron JL, Cameron AM eds. *Current Surgical Therapy*. Philadelphia: Elsevier-Saunders; 2014. P. 74–5.
2. Strasberg SM, Linehan DC. Tumors of the pancreas, biliary tract and liver. In: Ashley SW ed. *ACS Surgery: Principles and practice*. 6ed. Philadelphia: BC Decker Inc; 2009. P. 1–21.
3. Zollinger RM, Ellison EC. Pancreaticoduodenectomy, Whipple procedure. In: Zollinger`s Atlas of Surgical Operations. 9ed. New York: McGraw-Hill Inc; 2011. P. 276–93.
4. Jia CK, Lu XF, Yang QZ, Weng J, Chen YK, Fu Y. Pancreaticojejunostomy, hepaticojejunostomy and double Roux-en-Y digestive tract reconstruction for benign pancreatic diseases. *World J Gastroenterol* 2014 Sep 28;20(36):13200–4.
5. Woodward A, Sillin LF, Wojtowycz AR, Bortoff A. Gastric stasis of solids after Roux gastrectomy: is the jejunal transection important? *J Surg Res* 1993 Sep;55(3):317–22.
6. Uzunoglu FG, Reeh M, Wollstein R, et al. Single versus double Roux-en-Y reconstruction techniques in pancreaticoduodenectomy: a comparative single-center study. *World J Surg* 2014 Dec;38(12):3228–34.
7. Hasegawa K, Kubota K, Midorikawa Y, et al. Extended right hepatectomy and total gastrectomy with double Roux-en-Y reconstruction for hilar bile duct and gastric carcinomas. *Hepatogastroenterology* 2003 Mar-Apr;50(50):374–6.

Access full text article on
other devices



Access PDF of article on
other devices

