

Early Identification of Postoperative Pancreatic Fistula May Reduce the Risk of Postoperative Hemorrhage in Pancreatic Resected Patients

Raffaele Pezilli

Department of Digestive Diseases and Internal Medicine, Sant'Orsola-Malpighi Hospital.
Bologna, Italy

Mortality after pancreatic surgery in high volume centers has decreased to less than 2% [1, 2, 3], but morbidity still remains considerably high, ranging from 18 to 52% [4, 5, 6, 7, 8]. The most frequent causes of morbidity are mainly hemorrhage, pancreatic fistulas in the early postoperative period and the delayed gastric emptying which appears during the refeeding.

For these reasons, we report the results of two large studies carried out in two well-known surgical centers which are aimed at diagnosing and treating the early complication of pancreas resection.

In the first study [9] the authors aimed at analyzing the clinical course and outcome of postpancreatectomy hemorrhage after major pancreatic surgery. Between 1992 and 2006, 1,524 patients operated on for pancreatic diseases were included in a prospective database. A risk stratification of postpancreatectomy hemorrhage was designed according to the following parameters: the severity of postpancreatectomy hemorrhage was classified as mild (drop of hemoglobin concentration less than 3 g/dL) or severe (greater than 3 g/dL), the time of postpancreatectomy hemorrhage occurrence (early, first to fifth postoperative day; late, after sixth day), coincident pancreatic fistula, intraluminal or extraluminal bleeding manifestation and the presence of "complex" vascular pathologies (erosions, pseudoaneurysms). Success rates of interventional endoscopy and angiography in preventing relaparotomy were analyzed as well as

postpancreatectomy hemorrhage-related overall outcome. The prevalence of postpancreatectomy hemorrhage was 5.7%, distributed almost equally among patients suffering from malignancies, borderline tumors and focal pancreatitis, and those having chronic pancreatitis. Postpancreatectomy hemorrhage-related overall mortality of 16% was closely associated with the occurrence of a pancreatic fistula (13 out of 14), vascular pathologies (i.e., erosions and pseudoaneurysms), delayed postpancreatectomy hemorrhage and underlying disease with lethal postpancreatectomy hemorrhage found only in patients with a soft texture of the pancreatic remnant while no patient with chronic pancreatitis died. Conversely, the primary severity of postpancreatectomy hemorrhage (mild vs. severe) and the type of index operation (Whipple resection, pylorus-preserving partial pancreaticoduodenectomy, organ-preserving procedures) had no influence on the outcome of postpancreatectomy hemorrhage. Endoscopy was successful in 20% of patients who had intraluminal postpancreatectomy hemorrhage within the first or second postoperative day. "True" early extraluminal postpancreatectomy hemorrhage had to be treated uniformly by relaparotomy. Seventeen patients had "false" early extraluminal postpancreatectomy hemorrhage due to a primarily intraluminal bleeding site from the pancreaticoenteric anastomosis with secondary disruption of the anastomosis. From the 43 patients who underwent angiography, 25 underwent interventional

coiling with a success rate of 80%. Overall, relaparotomy was performed in 60 patients of whom 33 underwent surgery as a first-line treatment while 27 were relaparotomized as a rescue treatment after the failure of interventional endoscopy or radiology. What are the results of this study? The prognosis of postpancreatectomy hemorrhage depends mainly on the presence of a preceding pancreatic fistula. When making a decision as to the indications for non-surgical intervention, time of onset, the presence of a pancreatic fistula, vascular pathologies and any underlying disease should be considered. Thus, a pancreatic fistula remains the main early surgical problem occurring after pancreatic resection. In this regard, we report in brief the results of a study conducted in Verona, Italy [10] in which the authors aimed at identifying, within the first postoperative day, the predictive role of the different risk factors, including amylase value in drains, in the development of a pancreatic fistula in 137 consecutive patients who underwent major pancreatic resection (101 pancreaticoduodenectomies and 36 distal resections). The overall incidence of a pancreatic fistula was 19.7% (14.8% after pancreaticoduodenectomy and 33.3% after distal resection). As expected, all the pancreatic fistulas occurred in the "soft" remnant pancreas. The predicting risk factors selected in the univariate setting were a "soft" pancreas and an amylase value in drains greater than 5,000 U/L whereas, in multivariate analysis, the predicting risk factor was the amylase value in drains greater than 5,000 U/L within the first postoperative day. Thus, an amylase value in drains greater than 5,000 U/L within the first postoperative day may be considered a predictive factor for the development of a pancreatic fistula. Of course the results must be confirmed and, in this case, the very early identification of a postoperative pancreatic fistula may also reduce the risk of postoperative hemorrhage.

Keywords Gastrointestinal Hemorrhage; Intraoperative Complications; Pancreatic Diseases; Pancreatic Fistula; Surgical Procedures, Operative

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Correspondence

Raffaele Pezzilli
Department of Digestive Diseases and
Internal Medicine
Sant'Orsola-Malpighi Hospital
Via Massarenti, 9
40138 Bologna
Italy
Phone: +39-051.636.4148
Fax: +39-051.549.653
E-mail: raffaele.pezzilli@aosp.bo.it

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