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Effect of endoscopic failure on the results of internal surgical drainage in pancreatic pseudocyst

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ABSTRACT

Background: The treatment of pancreatic pseudocysts has evolved during the past two decades. Endoscopic treatment (ET) has gradually become used as a first-line management even though it showed no significant superiority to surgical internal drainages (SIDs) in a recent randomized trial. The objective of the present work was to analyze the effect of ET failure on the results of SID in the global management of pancreatic pseudocysts.

Methods: A multicenter retrospective study (Clichy, Bordeaux, Nantes, and Rennes) was conducted between January 2000 and December 2012. The main criteria were as follows: (i) major postoperative complications (MPCs) (Clavien $\geq$ 3) and (ii) treatment failure in the first 12 mo. All factors that may affect these two parameters were tested in univariate and multivariate analyses, when necessary.

Results: One hundred nineteen patients, with a median age of 52 y (22-83) underwent SID, including 45 procedures (37.8%) performed after ET failure. Mortality and overall morbidity rates were 1.7% and 30.2%, respectively. Eighteen patients (15.1%) presented an MPC. Multivariate analysis revealed that failure of ET (odds ratio 3.04, confidence interval [1.04 to 9.5], $P = 0.046$) and BMI $\leq$20 (odds ratio 4.5, confidence interval [1.50; 15.5], $P = 0.010$) were independent risk factors of MPCs. The success of SID was 92.5% in the first year. In univariate analysis, the occurrence of an MPC was the only factor linked to the failure of SID ($P = 0.029$).

Conclusions: Performing an SID after ET failure is associated with an increased risk of MPC. Close postoperative monitoring is recommended for these patients.

The present work has been presented as an oral communication at the 11th annual joint congress of the SFCD (French Society of Digestive Surgery) and the ACBHT (Association of Hepato-Biliary Surgery and Transplantation) in November 2015 and at the 51st Congress of the European Society for Surgical Research in May 2016.

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Introduction

Pancreatic pseudocysts (PPCs) are a common complication of acute and chronic pancreatitis. PPCs are defined as fluid collections with well-defined walls arising in the pancreatic parenchyma or in the adjacent space, but lack an epithelial lining.[1] The incidence of PPCs varies according to their etiology, ranging from 15% to 30% in acute pancreatitis, resulting from a process of auto-digestion, whereas they occur in 20% to 40% of chronic pancreatitis cases. Usually, the maturation of the PPC wall requires 2 to 6 wk. During this period, 30% to 60% of them disappear spontaneously. The main indications of the decompression are the complicated PPC (e.g., compression of large vessels, gastric or duodenal obstruction, and compression of the common bile duct), symptomatic PPC (e.g., satiety, pain), or concerning asymptomatic patients, a lesion measuring 5 cm or more after 6 wk.[2,3] Indeed, the last condition is associated with an increased risk of complications (e.g., infection, hemorrhage, and rupture).[4] Regardless of the type of approach, internal drainage into the digestive tract (by creating a fistula between the PPC and stomach, duodenum or jejunum) is the treatment of choice in the management of PPC. Initially, these internal decompressions were described and performed surgically.[5,6] Parallel to the progress of endoscopy, these internal drainages were made possible by an endoscopic approach.[7,8] Currently, endoscopic treatment (ET) is the preferred first-line treatment,[9-12] although a recent randomized trial report no superiority in the effectiveness between both treatments.[13] Moreover, the effect of the ET failure on the results of rescue surgery remains unsolved and poorly studied.

The aim of this retrospective multicenter study was to analyze the results of surgical internal drainage (SID) in the modern era of ET, with particular focus on the effect of ET failure prior to surgery.

Materials and methods

All consecutive patients who underwent SID (as a first intent or after ET failure) for PPC in four tertiary French pancreatic referral centers (Bordeaux, Clichy, Nantes, and Rennes) between January 2000 and December 2012 were included in the present study. The clinical data were retrospectively collected and analyzed after institutional review board approval was obtained. A waiver of consent was approved by the institutional review board, given the retrospective nature of the design.

According to the revision of the Atlanta classification in 2012,[1] PPCs were defined as peripancreatic fluid collections limited by a wall cover of fibrous or granulation tissue.

Data were collected on demographics (age, sex, and body mass index [BMI]), etiology of the PPC (alcoholic, lithiasis, and others [i.e., post-traumatic, iatrogenic, or unknown etiology]), and divided into PPC following acute or chronic pancreatitis groups.

Pathologic data such as the site of the pseudocyst (head, body, or tail of pancreas), the size, and the symptomatic nature were also collected.

Surgery

All the indications of SID were discussed among a multidisciplinary staff, including a gastroenterologist, radiologist, and surgeon. Surgical procedures were performed as first intent (when patients were contraindicated to ET, for intervening vessels or the presence of solid debris in pancreatic fluid) or following the failure of a prior treatment (ET or radiological treatment by percutaneous external drainage). The ET failure was defined by a technical failure, no resolution of symptoms, or persistence of the pancreatic fluid collection on control imaging. All SIDs were performed by a senior pancreatic surgeon using laparotomy or laparoscopy. The choice of laparoscopic approach was decided based on the expertise of the surgeon in minimally invasive surgery and the characteristics of the PPC (e.g., presence of intervening vessels on endoscopic ultrasound). Three types of SID have been performed according to the site of the PPC on the pancreas: cystogastric, cystojejunal, or cystoduodenal anastomosis. Abdominal intraperitoneal drainage was used at the discretion of the surgeon. The emergency nature of the surgery was also recorded.

Postoperative outcomes and follow-up

Postoperative morbidity was defined as any complication that occurred within 90 d after surgery and was categorized according to the Clavien–Dindo classification.[14] Major postoperative complications (MPCs) were defined as a Clavien score of III-V. All patients were followed up by clinical examination at 1, 3, and 12 mo.

All suspected recurrences were confirmed by imaging. Regarding the initial symptoms, it was considered as a recurrence only when it occurred again after a period of resolution following the treatment. In case of persistence of the symptoms after the procedure, it was considered as a primary failure of the treatment instead of a recurrence. The median follow-up was 25 mo, and all patients had at least 12 mo of follow-up (except those who died prematurely). Other data collected were perioperative allogenic blood transfusion, hospitalization duration, and surgical revision.

Statistical analysis

Qualitative variables are expressed as numbers with percentages and were compared with the chi-squared or Fisher's exact tests when necessary. Quantitative variables are expressed as mean values ± standard deviation or median and were compared using Student's *t*-test or Mann–Whitney U tests as appropriate. Univariate analyses were conducted on the variables known to have roles in MPCs. All variables with $P < 0.1$ in the univariate analyses were entered in the multivariate analysis, which utilized a multiple logistic regression model. The most suited model was then selected using a stepwise method based on the Akaike criterion. The threshold for statistical significance was set to $P < 0.05$. Analyses were performed with R statistical software (available: http://www.r-project.org/).