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ORIGINAL ARTICLE

Poor level of agreement on the management of postoperative pancreatic fistula: results of an international survey

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Abstract

Objectives: The occurrence of postoperative pancreatic fistula (POPF) is the main cause of severe complications, including death, after pancreatic surgery. This study was conduced to evaluate current practice in the management of POPF after Whipple surgery and distal pancreatectomy (DP).

Methods: An online survey endorsed by the European–African Hepato-Pancreato-Biliary Association (E-AHPBA) was conducted among surgical departments active in pancreatic surgery. A total of 108 centres were contacted by e-mail. The survey focused on the use and timing of drainage, nutrition strategies, provision of somatostatin and antibiotic therapies, imaging strategy and indications for reoperation when POPF is diagnosed after pancreatic surgery.

Results: A total of 55 centres (51%) completed the survey. Overall, responses showed poor agreement among centres (Fleiss' kappa: <0.40) on 89% of items after Whipple surgery and 78% of items after DP. There was very poor or no agreement (Fleiss' kappa: <0.1) on postoperative strategies for the management of nutrition and use of somatostatin after both procedures. In the event of POPF, 42% of centres used total oral nutrition and 22% used somatostatin after Whipple surgery, and 71% used total oral nutrition and 31% used somatostatin after DP. There were significant disagreements between units conducting, respectively, more and fewer than 50 Whipple procedures per year on drain removal after DP, and imaging strategy and patient discharge after Whipple surgery and DP.

Conclusions: This survey discloses important disagreements worldwide regarding the management of POPF after both Whipple surgery and DP. The standardized management of POPF would better facilitate the comparison of outcomes in future trials.

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Introduction

Postoperative pancreatic fistula (POPF) is one of the most commonly encountered complications after pancreatic surgery.[1] Its incidence varies considerably according to the type of pancreatic resection (Whipple, distal or central resection, or enucleation) and the definition used. Incidences of POPF range from 0% to 24%, and are reported to hover around 13% after Whipple surgery and to occur in 30–40% of patients after distal pancreatectomy (DP).[2–5] The occurrence of POPF may lead to intra-abdominal abscess, haemorrhage and sepsis, any of which may translate to a significant increase in hospital stay and costs.[6] In this setting, three steps are of primary concern; these refer to the prevention, diagnosis and management of POPF. Although the diagnosis and prevention of POPF have been extensively discussed in the literature,[7–10] data on the management of POPF once it has been diagnosed are scarce and lack standardization.[11–13]

With reference to the management of POPF, the optimal drainage of the remnant exocrine pancreas, nutritional support, use of somatostatin and antibiotics remain subject to controversy.[11,14,15] In addition, imaging strategy and indications for reoperation are paramount to the control of fistula-related complications. The principal aim in the management of POPF is to reduce the risk for

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severe fistula-related complications and to improve the nutritional condition of POPF patients, who are in a catabolic state.

Therefore, the purpose of this study was to evaluate current practice in the management of POPF after Whipple surgery and DP in hepatopancreatobiliary (HPB) centres worldwide.

Materials and methods

This survey was endorsed by the European–African Hepato-Pancreato-Biliary Association (E-AHPBA). A total of 108 HPB department heads around the world (North America, South America, Asia, Australia, New Zealand, Europe and Africa) were invited to participate in the survey by e-mail. Many HPB surgeons were personally contacted during the 2011 bi-annual E-AHPBA meeting (Cape Town, South Africa, 12–16 April 2011). The invitation letter included a direct link to the online survey available on the E-AHPBA website (http://www.e-ahpba.org/?q=pancreas-survey). Up to four reminder e-mails were sent. Data analysis and reporting were performed in an anonymized manner.

This survey covered six main aspects of current practice in the management of POPF after Whipple surgery and DP: (i) use and duration of drainage; (ii) strategies for the provision of nutrition; (iii) use of somatostatin analogues; (iv) use of antibiotics; (v) imaging strategy, and (vi) indications for reoperation. It included 15 questions for each type of procedure; only one answer could be given to each item. The survey was valid only if all of the questions had been addressed. Comments or suggestions could be added at the end of the survey.

Statistical methods

Continuous variables were compared using the Mann–Whitney *U*-test. Differences among proportions derived from categorical data were compared using Fisher's exact test. Agreement among the participating centres was assessed according to Fleiss' kappa statistic. Fleiss' kappa assesses the reliability of agreement among a number of raters (three or more) when assigning categorical ratings to a number of items.[16] Cohen's kappa was used to assess agreement between practices after Whipple surgery and DP, respectively, on items 7a to 15b (questions are available at http://www.e-ahpba.org/?q=pancreas-survey). The measure calculates the degree of agreement in classification over that which would be expected by chance and is scored as a number between 0 and 1. Kappa values of 0.41–1.0 indicate 'good' agreement, 0–0.40 'poor' agreement, and statistics of <0 indicate no agreement among participating centres. The continuous variable 'Number of Whipple procedures performed per year' was dichotomized by using the arbitrary 50th quartile (i.e. the median) as a cut-off point to discriminate a participating centre as a high- or low-throughput unit for pancreatic surgery.[17] All *P*-values were two-sided and were considered to indicate statistical significance at values of ≤ 0.05. Statistical analysis was performed using IBM SPSS Statistics Version 20 for Mac (IBM SPSS, Inc., Chicago, IL, USA).

Results

Fifty-five HPB centres (51%) completed the online survey. The majority of the institutions were located in Europe ($n = 40$, 73%). The other participating centres were situated in the Americas ($n = 8$), Asia ($n = 5$), Australia ($n = 1$) and Africa ($n = 1$). Overall, a median of 50 Whipple procedures [interquartile range (IQR): 25–65] and 20 DPs (IQR: 12–30) were performed each year in the various participating institutions. A total of 69% of respondents ($n = 38$) reported that they performed pancreaticojejunostomy during Whipple surgery. A total of 82% ($n = 45$) reported suturing the pancreatic stump in DP. Use of postoperative prophylactic drainage was reported by 93% of centres ($n = 51$) after Whipple surgery and 91% ($n = 50$) after DP.

Level of agreement among participating centres

Table 1 lists all items on the questionnaire related to the management of POPF after Whipple surgery and DP and shows the level of agreement among centres. Agreement among centres on the management of POPF was poor or absent on 89% of items pertaining to Whipple surgery and 78% of items pertaining to DP. In particular, the level of agreement among centres was very poor ($\kappa < 0.1$) on the management of nutrition after Whipple surgery and on the use of somatostatin after both Whipple surgery and DP. Total oral nutrition was used by 42% of centres after Whipple surgery and 71% after DP. The decision to start oral feeding was not based on the status of POPF in 46% of centres after Whipple surgery and 49% after DP. Use of somatostatin was reported by 91% of centres after Whipple surgery and 80% after DP. The most common duration of use of somatostatin was 7 days after both Whipple surgery (44%) and DP (35%).

More than 90% of centres reported the use of antibiotics after both Whipple surgery and DP. More than 80% of centres reported that the prophylactic drain was removed in the event of low output of amylase-rich fluid with (16%) or without (73%) previous imaging after both Whipple surgery and DP. Finally, patients were reportedly discharged once the fistula was draining well (drain *in situ*) and oral nutrition was well tolerated by 76% of centres after Whipple surgery and 84% after DP.

Level of agreement on management after Whipple surgery and DP

For 93% of items on the questionnaire, agreement among centres on the management of POPF was good when Whipple surgery was compared to DPs (Table 1). The lowest level of agreement referred to the type of nutrition used: 42% of centres reported the use of total oral nutrition after Whipple surgery, whereas 71% reported its use after DP; 29% of centres reported the use of no oral nutrition and total parenteral nutrition (TPN) after Whipple surgery, compared with 20% after DP, and 29% of centres reported the use of no oral nutrition and the provision of total enteral nutrition using a feeding tube after Whipple surgery, compared with 9% after DP.