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Multidisciplinary strategies in bloodless medicine and surgery for patients undergoing pancreatectomy

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ABSTRACT

Background: Bloodless pancreatic surgery (BPS) is rarely performed and/or reported. We aim to characterize perioperative and anesthetic strategies in BPS.

Materials and methods: A literature search was performed on MEDLINE looking for case reports/case series using search terms ("Jehovah's Witness" [All Fields]) AND ("Pancreatic Surgery" [All Fields] OR "Pancreaticoduodenectomy" [All Fields] OR "Distal Pancreatectomy" [All Fields]). Data regarding categorical variables are reported as proportions and quantitative continuous variables as medians with ranges or means with standard deviation. Forty-one patients requiring BPS are reported in the literature with three additional cases from our institution ($n = 44$). The data analyzed included clinicopathologic factors, BPS strategies, patient complications, and in-hospital mortality.

Results: The most common procedure and diagnosis were pancreaticoduodenectomy ($n = 34$, 77.3%) and pancreatic ductal adenocarcinoma ($n = 12$, 27.3%), respectively. Transfusion reduction strategies in BPS fell into three categories: preoperative, intraoperative, and postoperative. Preoperative strategies included iron supplementation ($n = 24$, 54.5%) and erythropoietin administration ($n = 14$, 41.2%). Intraoperative strategies included acute normovolemic hemodilution ($n = 30$, 68%) and cell saver ($n = 4$, 9.1%). Postoperative strategies included erythropoietin ($n = 16$, 48.5%) and iron supplementation ($n = 16$, 48.5%). Complications occurred in 21 (60%) patients. There was no in-hospital mortality among the 44 patients in this cohort.

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Conclusions: A broad spectrum of bloodless medicine and surgery practices were used based on patient selection, multidisciplinary practice, and preference. With careful perioperative and anesthetic management, BPS can be performed with good outcomes.

Introduction

Bloodless surgery is a multidisciplinary field that seeks to minimize blood transfusions in surgical patients through a variety of management strategies.[1,2] The discipline of bloodless surgery arose in response to religious objections to blood transfusions by members of Watchtower Society/Jehovah's Witness (JW) founded in 1879. Transfusion of primary blood components (red cells, white cells, platelets, and plasma) is specifically banned in JW patients.[3] Depending on individual preference (JW or non-denominational), transfusion of secondary blood components such as albumin, cryoprecipitate, and clotting factors may be allowed.[4]

Perioperative considerations in Bloodless Medicine and Surgery (BMS), in part, have been described and applied to cardiac, gynecologic, oncologic, and select transplant surgeries, with favorable outcomes.[5-8] A reluctance to perform potentially high-risk pancreatic surgery in this patient population rests on lack of well-characterized, multidisciplinary, perioperative strategies.

Our systematic review and case series characterize strategies used as well as outcomes in bloodless pancreatic surgery (BPS). Both the value and limitations in this study are attributed to the fact that to date, only a few, heterogeneous case reports and case series have examined strategies in BPS.

Methods

A literature search was performed using MEDLINE search terms "Jehovah's Witness" [All Fields] AND ("Pancreatic surgery" [All Fields] OR "Pancreaticoduodenectomy" [All Fields] OR "Distal pancreatectomy" [All Fields]). Our search generated six case reports/case series included in this review. On further review of citations within each article and the "similar articles" and "cited by" sections of MEDLINE, we found and included three more case reports/case series (Figure). Three additional cases are reported from our institution (Table 1).

Inclusion criteria were case reports/series describing BPS. Articles that did not report on perioperative transfusion reduction strategies and patient complications/outcomes were excluded from our study. We then systematically reviewed and examined clinicopathologic factors and implementation of reported preoperative, intraoperative, and postoperative blood management strategies.

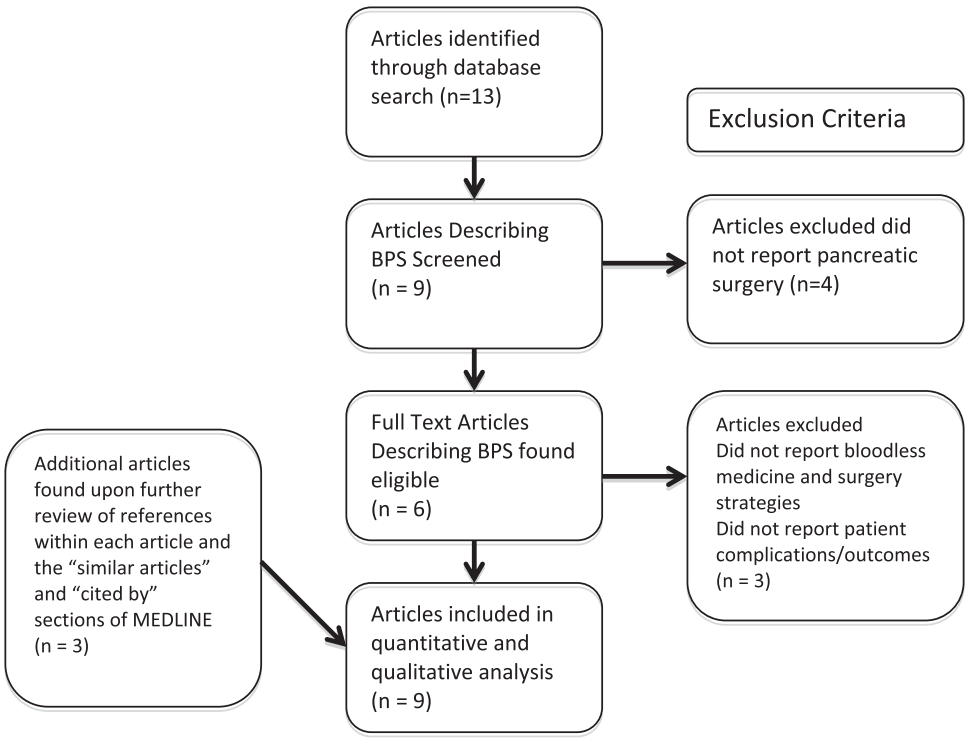

Figure – : PRISMA diagram of systematic review—our initial search yielded 13 articles. Four articles excluded did not report BPS. Three additional articles excluded did not report on BMS strategies and/or patient complications/outcomes yielding a total of six articles. Three additional articles were found on further review of references as well as "similar articles" and "cited by" sections of MEDLINE. A total of nine articles are included in our systematic review.