

Available online at www.sciencedirect.com

ScienceDirect

journal homepage: www.JournalofSurgicalResearch.com

A standardized care plan is associated with shorter hospital length of stay in patients undergoing pancreaticoduodenectomy



Daniel P. Nussbaum, MD,^{a,*} Kara Penne, MSN,^a Sandra S. Stinnett, MD,^b Paul J. Speicher, MD,^a Andrei Cocieru, MD,^a Dan G. Blazer III, MD,^a Sabino Zani, MD,^a Bryan M. Clary, MD,^a Douglas S. Tyler, MD,^a and Rebekah R. White, MD^a

^aDepartment of Surgery, Duke University, Durham, North Carolina

^bDepartment of Biostatistics and Bioinformatics, Duke University, Durham, North Carolina

ARTICLE INFO

Article history:

Received 12 May 2014

Received in revised form

10 June 2014

Accepted 19 June 2014

Available online 26 June 2014

Keywords:

Pancreaticoduodenectomy

Whipple

Standardized care plan

Care plan

Clinical pathway

Critical pathway

Fast-track recovery pathway

Outcomes

ABSTRACT

Background: In this retrospective review, we evaluate a standardized care plan (SCP) for patients undergoing pancreaticoduodenectomy, which included selective placement of feeding jejunostomy tubes (FJTs) and a perioperative fast-track recovery pathway (FTRP). **Methods:** A review of 242 patients undergoing pancreaticoduodenectomy was completed. Patients treated pre- and post-SCP implementation were compared. Univariate comparison followed by multivariable linear regression were performed to identify predictors of hospital length of stay (HLOS). **Results:** SCP patients ($n = 100$) were slightly older but otherwise similar to pre-SCP patients ($n = 142$). FJT placement occurred less frequently in SCP patients (38 versus 94%, $P < 0.001$). All SCP patients were initiated on the FTRP. Among SCP patients, an oral diet was introduced earlier (5 versus 8.5 d, $P < 0.001$) and HLOS was shorter (11 versus 13 d, $P = 0.015$). Readmission rates were similar. Following adjustment with linear regression, we confirmed SCP status as a predictor of HLOS. To assess SCP components, HLOS was evaluated separately based on FTRP status and FJT placement. Although both were highly associated with HLOS, neither was independently predictive in multivariable analysis. **Conclusions:** Implementation of an SCP resulted in shorter HLOS without an increase in readmissions. Future studies are necessary to identify specific components of SCPs that most influence outcomes.

© 2015 Elsevier Inc. All rights reserved.

1. Introduction

Pancreaticoduodenectomy remains a complex and highly morbid surgical procedure. Even at high-volume institutions, perioperative complications and mortality range from 30%–60% and 1%–5%, respectively [1–3]. Correspondingly, hospital

length of stay (HLOS) can often exceed 14 d, and 30-d readmission rates have been reported as high as 50% [4,5]. As pancreaticoduodenectomy represents the most common surgical treatment for patients with pancreas cancer, many efforts have been made to improve outcomes among patients undergoing this procedure. These include alternative surgical

* Corresponding author. Duke University Medical Center, Box 3443, Durham, NC 27710. Tel.: +1 919 684 8111; fax: +1 919 681 8856.

E-mail address: daniel.nussbaum@duke.edu (D.P. Nussbaum).

0022-4804/\$ – see front matter © 2015 Elsevier Inc. All rights reserved.

<http://dx.doi.org/10.1016/j.jss.2014.06.036>

techniques (e.g., minimally invasive approach, pyloric preservation) [6,7], intraoperative practices (e.g., pancreatic duct stenting, administration of somatostatin analogs) [8,9], and postoperative care measures (e.g., enteral *versus* parenteral nutrition, early drain removal) [10,11]. However, despite these efforts, outcomes vary greatly between centers [12,13] and even within individual centers there may be considerable variability in how different surgeons manage their patients [12,14].

Standardized care plans (SCP)—also referred to as clinical pathways, critical pathways, or caremaps—are evidence-based protocols that detail crucial phases of care for a specific admission diagnosis or procedure. They are desirable programs for quality improvement because their implementation typically requires little upfront investment in resources and personnel, and tends to be cost-effective [15–17]. By guiding providers through evidence-based facets of care, care plans can mitigate both intra- and inter-center variability in practice patterns. They have emerged as powerful tools proven to improve outcomes in colorectal, gastroesophageal, orthopedic, and gynecologic surgery [18–21]. Several studies have suggested that care plans may also be useful in pancreatic surgery, particularly for patients undergoing pancreaticoduodenectomy. However, it remains unclear as to which components of these pathways are most helpful, or whether simply scrutinizing outcomes such as HLOS is the driving force influencing outcomes (e.g., the Hawthorne effect) [15,22–26].

In January 2011, we implemented a SCP for all adult patients undergoing pancreaticoduodenectomy at our institution, which included the selective placement (*versus* routine placement pre-SCP) of feeding jejunostomy tubes (FJTs) and a perioperative fast-track recovery pathway (FTRP), which detailed parameters of care from the day of surgery until the day of anticipated hospital discharge. The purpose of this study was to evaluate the impact of SCP implementation on perioperative outcomes, HLOS, and readmission rates for all patients undergoing pancreaticoduodenectomy.

2. Materials and methods

2.1. Patients

After obtaining approval from the Institutional Review Board, a retrospective review of inpatient and outpatient charts was completed. All patients who underwent pancreaticoduodenectomy at Duke University Medical Center from January 2008–January 2012 were included. In January 2011, an SCP was introduced, and all patients who underwent pancreaticoduodenectomy after this date were treated according to the SCP. Thus, patients were divided into pre- and post-SCP cohorts based on this date of implementation.

2.2. Components of the SCP

The SCP includes both the selective placement of a FJT and a perioperative FTRP (Figure). The decision to place an FJT is typically made by the attending surgeon in the preoperative period, based on the following criteria: (1) moderate-to-severe

malnutrition or anorexia before surgery or (2) anticipated problems with oral feeding postoperatively. Factors used to define malnutrition include unintentional weight loss >10% within the past year and hypoalbuminemia. However, ultimately the decision to place a FJT is subjective and left to the discretion of the attending surgeon.

The FTRP details elements of care starting on the day of surgery. Unless there are medical contraindications or patient refusal, an epidural catheter is placed in the preoperative holding area. Before skin incision, antibiotics (cefazolin 1–2 g intravenously q8 h unless allergic) are administered. In the operating room, sequential compression devices are used and a nasogastric tube is placed. Hemodynamic status is closely monitored with a foley catheter, arterial pressure line, and the selective use of a central venous catheter. Resectability and operative technique are left to the discretion of the attending surgeon. When used, a 10 French FJT is inserted directly into the jejunum using standard technique. Octreotide (100 mcg SQ q8 h) is initiated either intraoperatively or in the immediate postoperative period for “high risk” anastomoses (i.e., soft gland, small duct). In almost all cases, two closed suction drains are placed in the region of the biliary and pancreatic anastomoses. Following surgery, the patient is typically transferred to the surgical recovery room followed by a step-down unit, unless there is prolonged surgery time, excessive blood loss, vascular reconstruction, hemodynamic instability, or inability to extubate the patient in the operating room. Stress ulcer prophylaxis (pantoprazole 40 mg intravenously q24 h) is initiated on postoperative day (POD) 0, and subcutaneous (unfractionated) heparin (5000 U SQ q8 h) is initiated on POD 0 or 1 at the discretion of the attending surgeon.

On POD 1, the nasogastric tube is discontinued if output has been <700 mL since surgery and the patient is not experiencing nausea. For patients with cardiac risk factors or for whom a vein reconstruction was performed, aspirin (325 mg PO or PR q24 h) is initiated. Intravenous fluids are decreased each day by 25 mL/h as long as urine output remains adequate (>30 mL/h). Physical therapy and nutrition service consultations are routinely obtained. If blood sugars are elevated (>180 mg/dL on two consecutive readings), an endocrinology consult is obtained. A patient resource manager meets with the patient and family to discuss and evaluate discharge needs. The patient is expected to be at least out of bed to a chair.

On POD 2, the surgical dressings are removed. The patient is allowed sips of clear liquids. The foley catheter is discontinued. Contraindications to early foley removal include low urine output, hemodynamic instability, and history of urinary retention or renal insufficiency. Epidural anesthesia is not considered a contraindication to foley removal. The patient is expected to ambulate with assistance.

On POD 3, the patient is expected to ambulate independently (or with assistance if needed preoperatively). Incision and drain sites are swabbed daily with betadine. Also on POD 3, serum and drain amylase levels are obtained. The surgical drains are removed (and octeotide, if administered in the operating room, is discontinued) if drain amylase and/or serum amylase is ≤ 3 , drain volume ≤ 300 mL/d, and drain fluid is serosanguinous in character. If these criteria are not met, the drains are left in place. Pancreatic leaks and other

Download English Version:

<https://daneshyari.com/en/article/6253730>

Download Persian Version:

<https://daneshyari.com/article/6253730>

[Daneshyari.com](https://daneshyari.com)