



Does Routine Drainage of the Operative Bed following Elective Distal Pancreatectomy reduce Complications? An Analysis of the ACS-NSQIP Pancreatectomy Demonstration Project

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Disclosures

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Drain placement following elective pancreatectomy -background-

Potential benefit

- Controlled evacuation of pancreatic secretions
- Potential reduction in pancreas specific complications
- May allow early recognition of hemorrhage

Potential detriment

- Retrograde sepsis
- Potential erosion into regional vasculature and viscera
- May promote PF
- May be sequestered from leak

Ready availability of percutaneous drainage should a leak arise

Drain placement following elective pancreatectomy

-background-

- Drain utilization remains common but controversial
- Prior studies have most often suggested no benefit to drains
- Fisher et al. *Ann Surg* 2014
 - Multicenter RCT Whipple procedures: drain vs no drain
 - Frequency and severity of complications greater in those without drain
 - Terminated early due to a ↑ incidence of death in those without drain
- *Analyses specific to distal pancreatectomy have been sparse*

Drain utilization following elective distal
pancreatectomy
-hypothesis-

*Drainage of the surgical bed will mitigate
the development of intra-abdominal
morbidity and the need for therapeutic
intervention postoperatively*

Methods

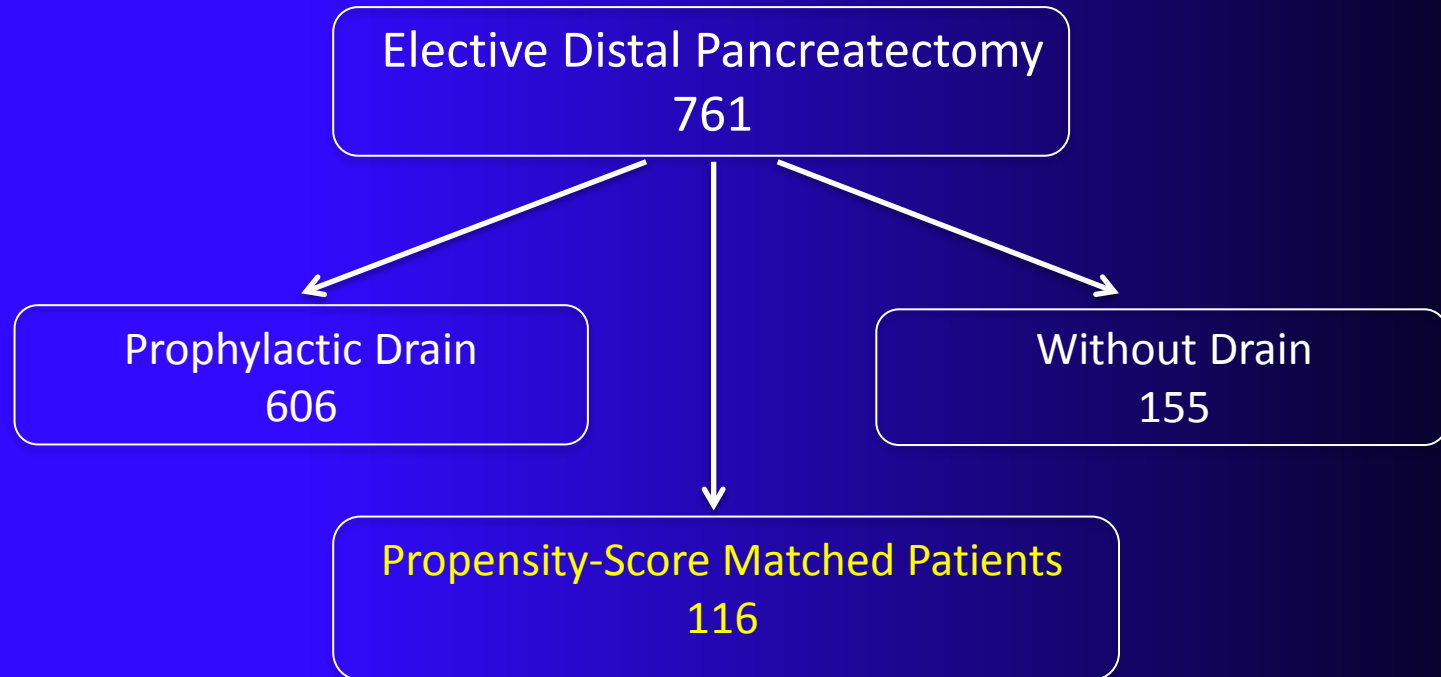
- ACS-NSQIP Pancreatectomy Demonstration Project
 - Variables relevant to short term outcome
- Distal pancreatectomy
- 43 volunteer institutions: 11/2011 – 12/2012
- Propensity score analysis: drain vs no drain
 - Simulates RCT in observational study
 - *a priori* identify variables useful to predict drain placement
 - Calculate probability individual patient received a drain
 - Rank in order based on probability patient received a drain
 - match drain vs no drain based on propensity score

Outcome analysis: drain vs no drain distal pancreatectomy

- 30-day morbidity
 - Overall and serious – ACS-NSQIP
 - Pancreas specific
 - Pancreatic fistula – chemical and clinically relevant
- Therapeutic intervention
 - Percutaneous drainage (PD)
 - reoperation
- Composite outcome
 - Deep incisional/organ space SSI, PD, reoperation
- Length of stay
- Mortality

ACS-NSQIP Pancreatectomy Demonstration Project

RESULTS



no difference between groups with respect to pancreas specific variables

Study limitations

- Retrospective nature
 - Selection bias
 - Mitigated by propensity score matched analysis
- Wide confidence intervals – may be underpowered
- Only matched & analyzed 116/155 potential cohorts
- Data re: early vs late drain removal incomplete
- Data beyond 30 days after surgery not captured

Randomized trial specific to distal pancreatectomy necessary

Drain vs no drain following distal pancreatectomy conclusions

- The placement of a drain was associated with:
 - higher incidence of pancreatic fistula

Serious morbidity and the need for therapeutic intervention postoperatively following elective distal pancreatectomy is equivalent whether or not drains are utilized

- intra-abdominal septic morbidity
- the incidence of clinically relevant PF
- the need for post-operative percutaneous drainage
- the need for re-operation

Propensity score analysis

- **Randomized controlled trial**
 - randomization balances covariates between treatment and control
- **Propensity score matching**
 - Simulates RCT in observational study
 - a priori identify variables useful to predict drain placement
 - Calculate probability individual patient received a drain
 - Rank in order based on probability patient received a drain
 - Match drain vs no drain based on propensity score

Drain vs no drain following distal pancreatectomy

conclusion

Serious morbidity and the need for therapeutic intervention postoperatively following elective distal pancreatectomy is equivalent whether or not drains are utilized

Drain vs no drain – distal pancreatectomy

statistical analysis

- Comparison of characteristics between groups
 - t-test – Continuous variables
 - chi-square – categorical variables
- Association between drain use and complications
 - Multiple logistic regression analysis
- Significance assessed at the 95th percentile

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- Mayo-St Mary's
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- Penn State University
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- Stanford University
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- Washington University St. Louis
- Winthrop University

ACS-NSQIP Pancreatectomy Demonstration Project

Pancreas specific variables

Preoperative:

Preoperative jaundice

Biliary stent placement

Neoadjuvant chemotherapy / radiation

Intraoperative:

Type of operation

Operative approach

Pylorus-preservation

Pancreatic duct size

Pancreatic gland texture

Vascular resection

Method of pancreatic reconstruction

Ante vs. retrocolic enteric
reconstruction

Intraop drain placement (PJ/HJ, both)

Postoperative:

POD #1 highest drain amylase

POD #2 – 30 highest drain amylase

Date drain removal

Pancreatic fistula

Percutaneous drainage

Delayed gastric emptying

Pathology

Malignant

Type

T,N,M staging

Benign

Type

Tumor size