HARVESTING THE POWER OF RESEARCH COLLABORATIVES



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Pancreatectomy Project OVERVIEW

Pancreatectomy
 Vascular Resection

Demo Project • Minimally Invasive

Neoadjuvant therapy

Delayed Gastric

Emptying

Pancreatic

Anastomosis

Pancreatoduo-

denectomy

POD #1 Drain

Amylase

Drain management

Pancreatectomy Project PANCREATECTOMY PROJECT

AHPBA

E. Molly Kilbane

Bruce L. Hall



Pancreatectomy Project

NSQIP PANCREATECTOMY

- Started November 1, 2011
- 35 Procedure Targeted hospitals
- 43 hospitals as of July 1, 2012
- 2805 patients pancreatic surgery
- 65 cases mean/institution
- Patient characteristics representative
- Median LOS PD 9 days DP 6 days
- 30 day readmissions 16%
- 1.6% 30-day mortality

Pancreatectomy Project OPERATION TYPE



Pancreatectomy Project PREOPERATIVE VAIABLES

- Obstructive jaundice History – 2 months Physical exam T. bili > 2.0 mg/dl
- Biliary stent Endoscopic Percutaneous
- Neoadjuvant
 Chemotherapy 90d
 Radiation 90d

Pancreatectomy Project INTRAOPERATIVE VARIABLES

- Panc duct size
- Panc gland texture
- Vasc resection
- Panc reconstruct
- Intest reconstr
- Drains

Pancreatectomy Project

POSTOP VARIABLES/OUTCOMES

- Drain amylase
- Drain removal
- Pancreatic fistula
- Perc drainage
- Delayed gastric emptying
- Pathology

Pancreatectomy Project POSTOP OUTCOMES



Pancreatectomy Project NEOADJUVANT THERAPY

- Impact of neadjuvant therapy on postpancreatectomy outcomes is unknown
- Analyzed 1,567 panc cancer patients
- 12.7% received chemo alone (6.3%) or radiation <u>+</u> chemotherapy (6.4%)
- More likely to have biliary stenting (58 vs. 45%) and vasc res (42 vs 17%)
- Neither mortality (2.0 vs 1.5%) nor morbidity (56 vs 53%) were affected

Pancreatectomy Project NEOADJUVANT RADIATION



Pancreatectomy Project CONCLUSIONS

- Despite evidence for more disease, neoadjuvant therapy did not increase overall morbidity nor mortality
- Neoadjuvant radiation was associated with fewer organ space infections and pancreatic fistulas
- Pancreatic surgery can be performed safely following neoadjuvant therapy

* Cooper A, et al. JGIS In Press

Pancreatectomy Project GASTRIC EMPTYING

- Factors associated with delayed gastric emptying (DGE) are not known
- 711 patients undergoing pancreatoduodenectomy or total pancreatectomy
- 20% developed DGE
- Bivariate and multivariable models

Pancreatectomy Project GASTRIC EMPTYING

Not Significant Significant

- Neoadj 9 vs 9%
 Panc fist 32 vs 10%*
- Diabetes 23 vs 24% Organ space 24 vs 8%
- Pylor Pres 47 vs 44%
 Postop sepsis 22 vs 7%*
- Antecolic 60 vs 65%
 Perc drain 23 vs 11%
- Drains 86 vs 85%
 Reoperation 11 vs 3%*

* Multivariable factors

Pancreatectomy Project CONCLUSIONS* Only postoperative complications were associated with delayed gastric emptying Neither pylorus preservation nor route of enteric reconstruction (antecolic versus retrocolic) was associated with delayed gastric emptying

* Parmar A, et al HPB 2013; 15:763-72

Pancreatectomy Project PANCREATICOJEJUNOSTOMY

- No consensus exist regarding the most effective form of PJ
- 1,781 patients underwent pancreatoduodenectomy
- 82% duct-to-mucosa 18% invagination
- Eight multivariable analyses for morbidity and mortality

Pancreatectomy Project PANCREATICOJEJUNOSTOMY

- Invagination f albumin, J BMI, J bili, f biliary stent, f chemo, J PPPD, f soft pancreas (p<0.04)
- Morbidity 1 age, male, 1 BMI, J albumin,
 1 biliary stent, soft pancreas, small pd (p<0.05), PJ not significant
- Mortality Duct-to-mucosa OR 0.22
- Pancreatic fistula mortality 0/199 D-to-M vs 5/20 Invag (p<0.01)

Pancreatectomy Project CONCLUSIONS*

Patients who undergo a pancreaticojej by

duct-to-mucosa or invagination differ with

respect to pre- and intraoperative factors

When an invagination pancreaticojejunostomy

leaks, the consequences may be lethal

* Lavu H, et al Abstract Submitted

Pancreatectomy Project VASCULAR RESECTION

- Threshold for performing vascular resection has I
- 820 Whipples
 150 vasc resection (18%)
 80% adenocarcinoma
- 376 Distals

40 vasc resection (11%)

75% adenocarcinoma

• Subanalysis of high- and low-volume centers

Pancreatectomy Project OVERALL MORBIDITY



Pancreatectomy Project CONCLUSIONS*

- In a large, multicenter cohort, the morbidity of vascular resection during pancreatectomy is increased compared to no vascular resection
- Even in high-volume, expert referral centers, the morbidity of vascular resection remains high
- The decision to perform vascular resection during pancreatectomy should be undertaken with caution

*Pitt S, et al *Presented 2013 ACS*

Pancreatectomy Project CELIAC AXIS RESECTION (CAR)

- Surgeons have become aggressive - tumors of the pancreatic body
- Reported series are small and not adequately controlled
- 20 patients (2.4%) with CAR compared to 822 distal pancreatectomies



Pancreatectomy Project CONCLUSIONS*

 Distal pancreatectomy with celiac axis resection is associated with increased operative time, renal failure and a 10% mortality Decision to offer an Appleby procedure should be made with full disclosure of the increased risks *Bean JD, et al Abstract Submitted

Pancreatectomy Project MINIMALLY INVASIVE WHIPPLE

- MIPD introduced at a few specialized centers
- Generalizability has yet to be established
- Open 1,650 patients
 MIPD 131 patients
 - 21 centers
 - 50% converted
 - 3/instit median

Pancreatectomy Project

MORBIDITY MORTALITY



Pancreatectomy Project CONCLUSIONS*

- Minimally invasive pancreatoduodenectomy takes longer and is associated with increased major morbidity and mortality
- For MIPD to become generalizable, improved developmental paradigms will be required

*Nakeeb A, et al Presented ACS 2014

Pancreatectomy Project DRAIN MANAGEMENT







Pancreatectomy Project CONCLUSIONS

- Drain fluid amylase on POD 1 of less than 90 IU is associated with a very low rate of pancreatic fistula*
- Drains do not reduce morbidity nor the need for postoperative procedures in patients undergoing distal pancreatectomy †

* Lee CW, et al *JGIS* In Press † Behrman SW, et al *JGIS* In Press

Pancreatectomy Project DRAIN REMOVAL



Pancreatectomy Project CONCLUSIONS*

- Early drain removal is associated with reduced morbidity following pancreatic surgery
- Early drain removal should be considered in selected patients undergoing pancreatectomy
 *Pitt HA, et al Abstract Submitted

Pancreatectomy Project INSTITUTIONS

- Albany MC
- Baptist Mem**
- Baylor U
- Baystate MC
- Beth Israel Dec
- Boston MC
- Brigham & W
- Cal Pac MC
- Clev Clinic
- Emory U
- Hosp U Penn
- Intermountain
- IU University**
- IU Methodist

- Johns Hopkins
- Kaiser Perm SF
- Kaiser Walnut
- Leigh Valley
- Mass Gen
- Mayo Methodist
- Mayo St. Mary's
- Northwestern U
- Ohio State U
- Oregon HSU
- Penn State U
- Prov Portland
- Sacred Heart
- Stanford U
- Tampa Gen

- Thomas Jeff U*
- U Alabama
- UC Irvine
- UCSD
- U lowa
- U Kentucky
- U Minnesota
- U Texas MB**
- U Virginia
- U Wisconsin*
- Vanderbilt U
- Wake Forest U
- Wash U St. L*
- Winthrop U