Outcomes of Abdominal Drainage Versus No Abdominal Drainage After Distal Pancreatectomy: A Single Institution Review

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Background

- Pancreatic resection is common for lesions of the pancreas but can be associated with high morbidity and complication rates
- Recently, there has been a paradigm shift away from intra-operative prophylactic drain placement for elective distal pancreatectomy (DP) [2,3,4,5]
- This began in 2012 when Paulus et al concluded that no reduction in morbidity or therapeutic intervention was present in patients without drains compared to drain [1]
- Despite the mounting evidence suggesting no difference exists in outcomes, drain placement is still a common practice amongst surgeons. [6,7]

Patient and Operative Variables

- 38 patients met our inclusion criteria between October 2019 and April 2024
- 25 female (65.8%) and 13 male (34.2%)
- 26 (68.4%) and 12 (31.6%) in drain and no drain groups, respectively
- The average age of our cohort was 59.3 years
- Indications for distal pancreatectomy included Adenocarcinoma, intraductal papillary mucinous neoplasm (IPMN), pancreatic neuroendocrine tumor (PNET), solid pseudopapillary tumor, and other

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Objective

To study outcomes within our own institution to see if there were any differences in outcomes with drain versus no drain placement after distal pancreatectomy.

Methods

- Single institution, single surgeon retrospective review of cases of minimally invasive distal pancreatectomy between October 2019 and April 2024 at AdventHealth Orlando
- Inclusion criteria included DP with or without splenectomy for any reason during the included time frame.
- In both laparoscopic and robotic-assisted approaches we used the Clockwise technique [8] and the pancreas was divided using the squeeze technique with an Echelon 60 linear stapler.
- The primary outcome of the investigation was pancreatic fistula or other complications graded by need for post-operative Interventional Radiology (IR) drainage, Endoscopic drainage, or reoperation
- Secondary outcomes included hospital length of stay (LOS), readmission rates, Intensive Care Unit (ICU) admission, mortality with 30 days, in-hospital mortality, surgical site infections (SSI), deep infection, post-operative pancreatic fistula (POPF), and exocrine pancreatic insufficiency.

Results

Characteristics	Overall N(%) 38(100)	Drain N(%) Yes 26(68.4)	Drain N(%) No 12(31.6)	P-value
Age, mean±SD	59.3±16.6	58.5±17.9	61.0±14.0	0.816
Sex				0.938
Female	25(65.8)	17(65.4)	8(66.7)	
Male	13(34.2)	9(34.6)	4(33.3)	
Ethnicity				0.786
African American	9(23.7)	6(23.1)	3(25.0)	
Caucasian	20(52.6)	14(53.8)	6(50.0)	
Hispanic	7(18.4)	4(15.4)	3(25.0)	
Other	2(5.3)	2(7.7)	0	
Prior Abdominal Surgery				0.485
Yes	19(50.0)	14(53.8)	5(41.7)	
No	19(50.0)	12(46.2)	7(58.3)	
ASA Class				0.322
1	5(13.2)	5(19.2)	0(0.0)	
2	17(44.7)	10(38.5)	7(58.3)	
3	15(39.5)	10(38.5)	5(41.7)	
4	1(2.6)	1(3.8)	0(0.0)	
BMI(Kg/m^2)	30.3±7.1	30.8±7.3	29.1±6.8	0.447
Length of Surgery (minutes)	223.1±88.3	202.2±68.2	268.3±111.4	0.129
Splenectomy				-
Yes	38(100)	26(100)	12(100)	
Intra-operative Blood Loss (mL)	43.7±46.8	32.9±43.0	67.1±47.8	0.003
Tumor Size (cm)	3.7±2.0	3.6±1.8	3.9±2.6	0.792
Tumor Location				0.415
Body	14(36.8)	11(42.3)	3(27.3)	
Neck	2(5.3)	2(7.7)	0(0)	
Tail	21(55.3)	13(50.0)	8(72.7)	
Missing	1(2.6)			

Outcomes	Overall N(%) 38(100)	Drain N(%) Yes 26(68.4)	Drain N(%) No 12(31.6)	P-value
IR/Endo drain/Reoperation				0.689
Yes	8(21.1)	5(19.2)	3(25.0)	
No	30(78.9)	21(80.8)	9(75.0)	
Hospital LOS(days)	7.5±6.7	7.5±7.5	7.4±5.1	0.816
Readmission				0.363
Yes	12(31.6)	7(26.9)	5(41.7)	
No	26(68.4)	19(73.1)	7(58.3)	
ICU admission				1.000
Yes	1(2.6)	1(3.8)	0(0)	
No	37(97.4)	25(96.2)	12(100)	
Mortality within 30 days				-
No	38(100)	26(100)	12(100)	
In-hospital mortality				1.000
Yes	1(2.6)	1(3.8)	0(0)	
No	37(97.4)	25(96.2)	12(100)	
Wound Infection				0.099
Yes	2(5.3)	0(0)	2(16.7)	
No	35(92.1)	25(100)	10(83.3)	
Missing	1(2.6)			
Deep Infection				0.176
Yes	7(18.4)	3(11.5)	4(33.3)	
No	31(81.6)	23(88.5)	8(66.7)	
POPF				0.428
None	18(47.4)	12(46.2)	6(50.0)	
Grade A	12(31.6)	10(38.5)	2(16.7)	
Grade B	6(15.8)	3(11.5)	3(25.0)	
Grade C	2(5.3)	1(3.8)	1(8.3)	
Exocrine Pancreatic Insufficiency				0.031
Yes	3(7.9)	0(0)	3(25.0)	
No	33(86.8)	24(100)	9(75.0)	
Missing	2(5.3)			

Results

Table 1: Descriptive Statistics for patient and operative variables

	N	Minimum	Maximum	Mean	Std. Deviation
Age	38	25	82	59.29	16.61
BMI(Kg/m2)	38	20.24	53.00	30.29	7.06
Hospital LOS	38	3	43	7.50	6.75
Length of Surgery (in minutes)	38	91	440	223.11	88.35
Intra-operative Blood Loss (in mL)	38	5	200	43.68	46.76
Tumor Size (cm)	38	.8	8.9	3.69	2.03

Conclusions

- No statistically significant difference in pre-operative patient characteristics or post-operative outcomes between drain versus no drain after DP was found.
- Continued investigation with a randomized, prospective trial or larger meta-analysis could strengthen these findings.

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