

Background

Peri-pancreatic fluid collections (FCs) following distal pancreatectomy and splenectomy (DPS) are often encountered though their precise incidence and indications for intervention are not well defined.¹

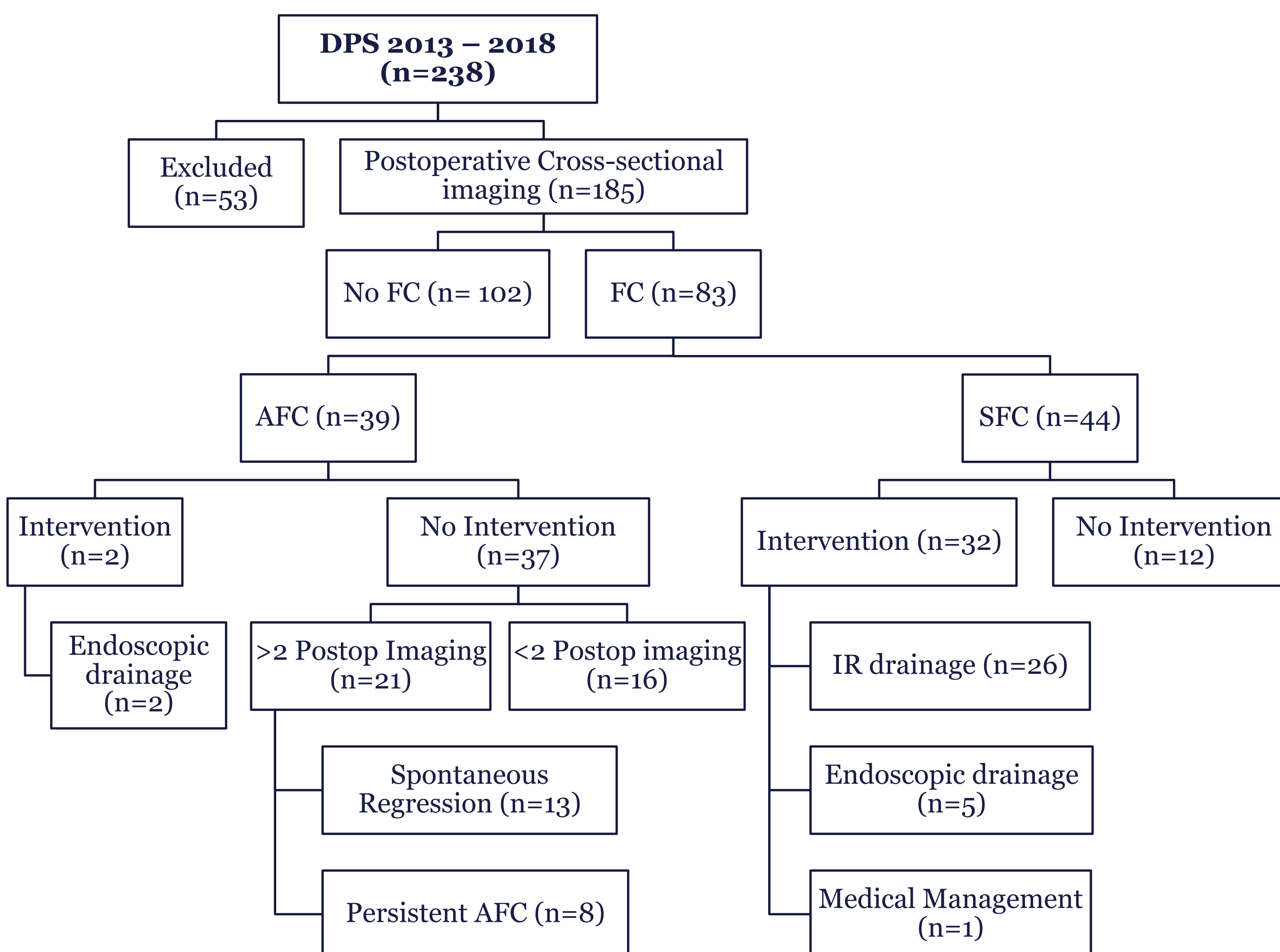
Objective

To determine the incidence, associated factors, natural history, and interventions for FCs.

Methods

We performed a single-institution retrospective review of patients with identifiable FCs on postoperative cross-sectional imaging following DPS between 2013 and 2018 (Figure 1). We defined FCs as cyst-like structures >1cm in diameter adjacent to the pancreatic stump. We examined diagnoses, operative notes, postoperative course, imaging findings, and interventions.

Figure 1: Study Flow Chart



*AFC – Asymptomatic fluid collections; SFC – Symptomatic fluid collections;
IR – interventional radiology

Results

We identified a total of 185 patients who had postoperative imaging following DPS, 83 (45%) of whom had FCs. Of these, 44 (53%) were symptomatic (SFCs). Presenting symptoms included: abdominal pain, nausea, fevers, chest pain, shortness of breath. 32 (73%) patients with SFCs required intervention via IR drainage (n=26), endoscopic drainage (n=5), and medical management (n=1) respectively. Of the 39 (47%) patients with AFCs, 2 (5%) patients required intervention via endoscopic drainage. No studied variables were associated with an increased incidence of postoperative FCs after DPS. Patients with FCs after DPS were more likely to be readmitted within 30 days after surgery (univariate OR = 2.47, p=0.007).

Table 1: Patient Characteristics

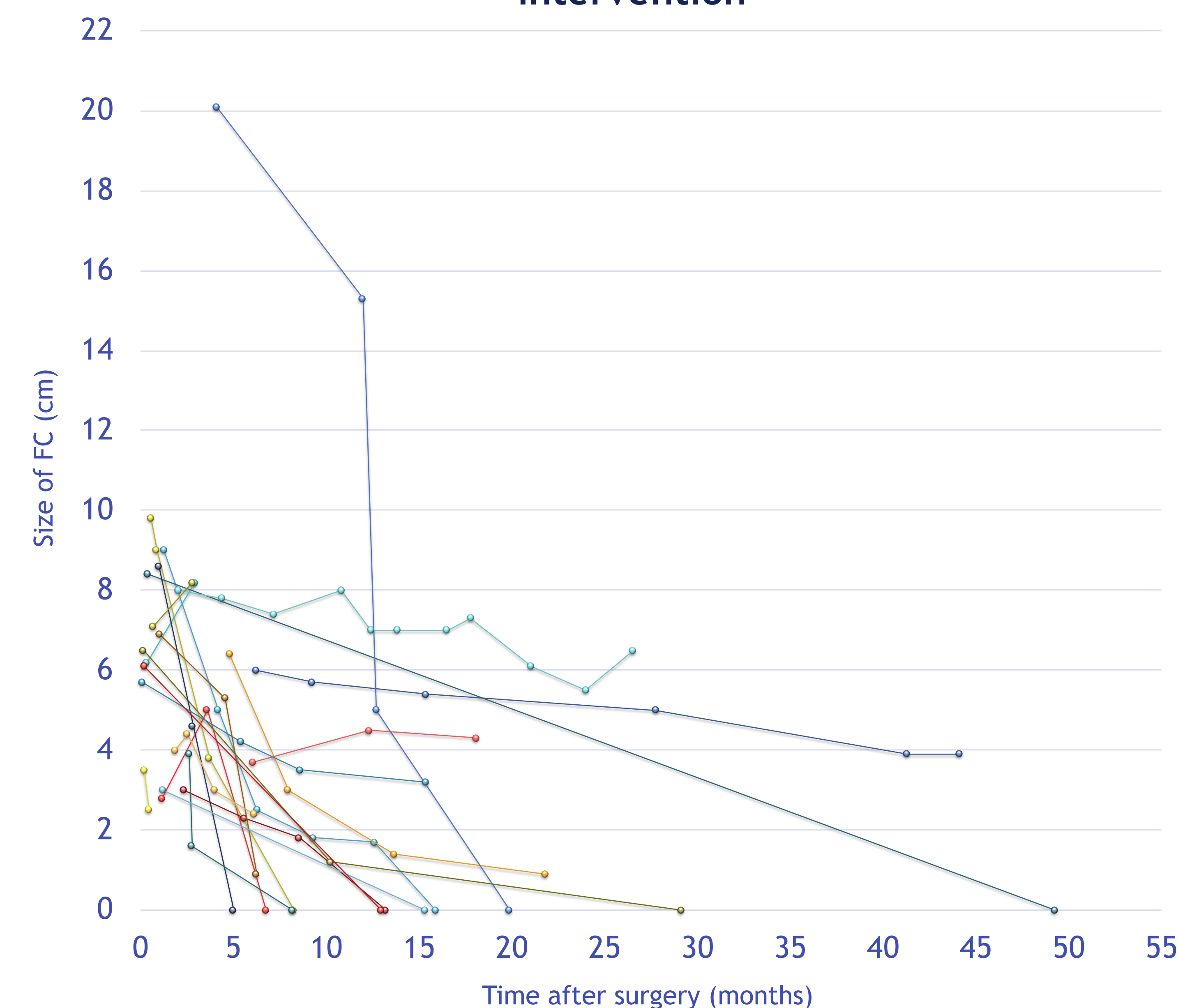
	All patients	FC	No FC	p value
Number of Patients	185	83 (45%)	102 (55%)	
Median Age (IQR)	65 (56-72)	65 (57-71)	65 (56-72)	
Sex				p=0.10
Male	108 (58%)	43 (52%)	65 (64%)	
Female	77 (42%)	40 (48%)	37 (36%)	
Diagnosis				p=0.19
Benign	97 (52%)	39 (47%)	58 (57%)	
PNET	30 (16%)	14 (17%)	16 (16%)	
IPMN	25 (14%)	7 (8%)	18 (18%)	
Other	19 (10%)	8 (10%)	11 (11%)	
SCN	7 (4%)	7 (8%)	0 (0%)	
Pancreatitis	6 (3%)	2 (2%)	4 (4%)	
MCN	5 (3%)	1 (1%)	4 (4%)	
Malignant	88 (48%)	44 (53%)	44 (43%)	
PDAC	74 (40%)	35 (42%)	39 (38%)	
Other	14 (8%)	9 (11%)	5 (5%)	
Closure method				p=0.40
Suture	144 (78%)	67 (81%)	77 (75.5%)	
Staple	41 (22%)	16 (19%)	25 (24.5%)	
Gland Texture				p=0.13
Soft	149 (80.5%)	71 (85.5%)	78 (76.5%)	
Firm	36 (19.5%)	12 (14.5%)	24 (23.5%)	
Median Blood loss (cc)	200	200	200	
Morbidity	45 (24%)	22 (27%)	23 (23%)	p=0.53
POPF	24 (13%)	15 (18%)	9 (9%)	p=0.06
Median LOS (days)	5	5	5	
Discharged with Drains				p=0.31
Yes	30 (16%)	16 (19%)	14 (14%)	
30 day readmission				p=0.007
Yes	49 (27%)	30 (36%)	19 (19%)	

*PNET – Pancreatic neuroendocrine tumor; IPMN – Intraductal Papillary Mucosal Neoplasm; SCN – Serous Cystic Neoplasm; MCN – Mucinous Cystic Neoplasm; PDAC – Pancreatic Ductal Adenocarcinoma; POPF – Postoperative Pancreatic Fistula; LOS – Length of stay

Asymptomatic Fluid Collections without intervention

AFCs without intervention were examined to identify their natural history (Figure 2). Of the 37 patients with AFCs who did not undergo intervention, only 21 had 2 or more postoperative imaging studies. Of these patients, AFCs in 13 patients (62%) resolved spontaneously on follow-up imaging. The median time to resolution was 13.2 months.

Figure 2: Natural Progression of 21 AFCs without intervention



Conclusion

- In this study, FCs following DPS were a frequent finding on postoperative cross-sectional imaging with an incidence of 45%.
- FCs that present with vague abdominal symptoms, leukocytosis, or fevers are often diagnosed as POPFs, intra-abdominal abscesses, pseudocysts and may require intervention.
- Clinically non-significant AFCs after DPS may spontaneously resolve (62%) without requiring intervention.

References

1. Tjaden C, Hinz U, Hassenpflug M, et al. Fluid collection after distal pancreatectomy: a frequent finding. *HPB (Oxford)*. 2016;18(1):35-40.