

Supplementary Table 1 Intrabdominal drainage vs no drainage vs selective drainage for pancreaticoduodenectomy and distal pancreatectomy, n (%)

No.	Ref.	Type of study	Country	Procedure	No of patients	Drainage	No drainage	Pathology	Postoperative pancreatic fistula		Delayed gastric emptying		Bile leak		Postoperative haemorrhage	
									D	ND	D	ND	D	ND	D	ND
1	Conlon <i>et al</i> [7], 2001	RCT	United States	PD+ DP	179	88	91	47/132	11 (12.5)	0	3 (3.4)	5 (5.5)	NP	NP	2 (2.3)	4 (4.4)
2	Van Buren <i>et al</i> [10], 2011-2012	RCT	United States	PD	137	68	69	42/95	21 (31)	14 (20)	16 (24)	26 (38)	3 (4)	1 (1)	6 (9)	10 (15)
3	McMillan <i>et al</i> [18],	RCT	United States	PD	137	68	69	42/95	21 (30.9)	14 (20.3)	NP	NP	NP	NP	NP	NP

	2011- 2012															
4	Van Buren <i>et al</i> [19], 2011- 2016	RCT	United States	DP	344	174	170	171/115	31 (18)	20 (12)	10 (6)	9 (5)	1 (1)	0	2 (1)	2 (1)
5	Witzigmann <i>et al</i> [20], 2007- 2015	RCT	Germany	PD	395	202	193	139/139	24 (11.9)	11 (5.7)	31 (15.3)	14 (7.3)	2 (1.0)	4 (2.1)	12 (6.0)	6 (3.1)
6	Addison <i>et al</i> [21], 2015- 2016	Retrospective	United States	PD	7583	666 6	917	1348/62 35	837 (12.6)	93 (10.1)	117 3 (17.7)	124 (13.6)	NP	NP	NP	NP
7	Adham <i>et al</i> [4], 2005-	Retrospective	France	PD	242	130	112	64/178	21 (16)	14 (13)	4 (3.1)	4 (3.6)	6 (4.6)	4 (3.6)	25 (19)	26 (23.2)

	2012	e														
8	Brubaker <i>et al</i> [22], 2003- 2020	Retr ospe ctiv e	United States	PD	2895	274 9	146	2055/22 37	328 (11.9)	49 (33.6)	NP	NP	NP	NP	NP	NP
9	Behrman <i>et al</i> [6], 2011- 2012	Retr ospe ctiv e	United States	DP	761	116	116	79/153	25 (21.7 0)	8 (7)	NP	NP	NP	NP	NP	NP
10	Correa- Gallego <i>et al</i> [8], 2006- 2011	Retr ospe ctiv e	United States	PD+ DP	1122	553	569	664/458	149 (27)	102 (18)	8 (1)	9 (2)	NP	NP	18 (3)	15 (3)
11	Fisher <i>et al</i> [16], 2004- 2009	Retr ospe ctiv e	United States	PD+ DP	226	179	47	89/113	79 (44)	5 (11)	43 (24)	4 (9)	1 (1)	0 (0)	3 (2)	0 (0)

12	Lim <i>et al</i> [23], 2009- 2011	Retr ospe ctiv e	France	PD	54	27	27	14/40	6 (22)	0	3 (11)	4 (15)	0	0	2 (7)	2 (7)
13	Heslin <i>et al</i> [24], 1994- 1996	Retr ospe ctiv e	United States	PD	89	51	38	11/78	3 (5.8)	1 (2.6)	NP	NP	NP	NP	1 (1.9)	0
14	Mehta <i>et al</i> [25], 2005- 2012	Retr ospe ctiv e	United States	PD	709	251	458	87/451	61 (24.3)	48 (10.5)	NP	NP	NP	NP	NP	NP
15	Paulus <i>et al</i> [9], 1997- 2011	Retr ospe ctiv e	United States	DP	69	39	30	17/52	6 (15.3)	0	NP	NP	NP	NP	NP	NP
16	Zaghal <i>et al</i> [26], 2014-	Pros pect ive	United States	PD	6858	599 7	861	399/645 9	1151 (19.4)	85 (9.9)	105 5	114 (13.75)	NP	NP	1261 (21)	126 (14.6)

2015

1)

17	Jeekel[17], 1989-1991	Pilot study	Netherlands	PD	36	14	22	NP	NP	NP	NP	NP	NP	NP	NP	NP
18	Kunstman <i>et al</i> [27], 2003-2007	Retrospective	United States	PD	106	53	53	31/75	12 (22.6)	4 (7.5)	12 (22.6)	10 (18.9)	1 (1.9)	1 (1.9)	NP	NP
19	Mangieri <i>et al</i> [29], 2014	Retrospective	United States	DP	1158	985	173	NP	191 (19.4)	12 (6.9)	NP	NP	NP	NP	35 (3.6)	6 (3.5)
20	El Khoury <i>et al</i> [28],	Retrospective	United States	DP+ PD	5013	4343	670	1479/3534	841 (20)	53 (8)	516 (12)	63 (9)	NP	NP	NP	NP

	2014	e														
21	Nickel <i>et al</i> [30], 2017- 2018	Retr ospe ctiv e	Germa ny	PD+ DP	589 (befo re matc hing)	397	192	NP	80 (20.1)	24 (12.5)	30 (7.5)	8 (4.2)	10 (2.5)	6 (3.1)	28 (7)	7 (3.6)
					378 (after matc hing)	189	189	NP	39 (20.6)	23 (12.2)	13 (6.8)	8 (4.2)	6 (3.2)	5 (2.6)	12 (6.3)	7 (3.7)
22	Van Bodegra ven <i>et al</i> [31], 2010- 2019	Retr ospe ctiv e	Nether lands	DP	963	805	158	NP	182 (22.6)	7 (4.4)	21 (2.6)	0	NP	NP	65 (8.1)	4 (2.5)

Supplementary Table 1 Intraabdominal drainage vs no drainage vs selective drainage for pancreaticoduodenectomy and distal pancreatectomy, n (%) (Continued Supplementary Table 1)

No	Ref.	Intraabdominal abscess		Wound infection		Need for intervention		Re-exploration		Re-admission		Clavien Dindo		Mean hospital stay		Overall morbidity		Mortality at 30 days	
		D	ND	D	ND	D	ND	D	ND	D	ND	D	ND	D	N	D	N	D	ND
1	Conlon <i>et al</i> [7], 2001	6 (6.8)	6 (6.6)	11(12.5)	9(9.9)	11 (13)	7 (8)	8 (9)	4 (4)	NP	NP	55 (63)	52 (57)	9	9	66 (75)	57 (63)	2 (2)	2 (2)
2	Van Buren <i>et al</i> [10], 2011-2012	7 (10)	17 (25)	6 (9)	10 (15)	NP	NP	2 (3)	6 (9)	16 (24)	12 (17)	19 (28)	28 (41)	7	8	50 (74)	52 (75)	0	4 (6)
3	McMillan <i>et al</i> [18], 2011-2012	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	8.	14	NP	NP	N	NP
														8				P	
4	Van Buren <i>et al</i> [19], 2011-2016	16 (9)	13 (8)	8 (5)	5 (3)	74 (43)	74 (44)	9 (5)	6 (4)	41 (24)	37 (22)	51 (29)	44 (26)	5	5	96 (55)	93 (55)	0	0

5	Witzigman n et al[20], 2007-2015	13 (6.5)	7 (3.6)	27 (13.4)	28 (14.5)	43 (21.3)	32 (16.6)	31 (15.4)	22 (11.4)	NP	NP	NP	NP	1 9	18. 1	127 (63.2)	115 (59.6)	6 (3.0)	6 (3.1)
6	Addison et al[21], 2015-2016	NP	NP	987 (14.8)	158 (17.2)	NP	NP	344 (5.16)	53 (5.78)	1103 (16.5)	153 (16.7)	1493 (22.4)	269 (29.3)	8	7	2119 (31.8)	358 (39.8)	84 (1.26)	19 (2.07)
7	Adham et al[4], 2005- 2012	16 (12)	15 (13.4)	NP	NP	19 (14.6)	23 (20.5)	NP	NP	NP	NP	38 (29.4)	48 (42.9)	1 6	17. 8	83 (64)	45 (67)	N P	NP
8	Brubaker et al[22], 2003-2020	NP	NP	NP	NP	NP	NP	92 (3.3)	21 (14.7)	NP	NP	505 (18.4)	78 (53.4)	7 5	10	1568 (57)	108 (74)	N P	NP
9	Behrman et al[6], 2011- 2012	NP	NP	NP	NP	NP	NP	1 (1) (2.70)	3	NP	NP	49 (42.2)	35 (30.2)	N P	NP	80 (68.9)	55 (47.4)	N P	NP
10	Correa- Gallego et al[8], 2006- 2011	NA	NA	11 (2)	5 (1)	103 (19.4)	83 (15.1)	3 (1)	2 (1)	NP	NP	185 (33)	150 (26)	7 5	6	301 (54)	272 (48)	6 (1.13)	12 (2.18)

11	Fisher	<i>et al</i> [16], 2004-2009	10 (6)	2 (4) (12)	22 (12)	1 (2)	4 (2)	5 (11)	8 (4)	0 (0)	17 (9)	8 (17)	38 (21)	7 (15)	7	7	117 (65)	22 (47)	1 (1)	1 (1)
12	Lim	<i>et al</i> [23], 2009-2011	1 (3.7)	1 (3.7)	2 (7) (3.7)	1 (3.7)	1 (3.7)	1 (3.7)	2 (7) (3.7)	1 (3.7)	0	1 (3.7)	5 (19) (7.4)	2 (7.4)	1	10 (70)	19 (56)	15 (3.7)	1 (3.7)	1
13	Heslin	<i>et al</i> [24], 1994-1996	3(5. 8)	0	NP	NP	2 (3.9)	1 (2.6)	1 (1.9)	3 (7.8)	NP	NP	14 (27.4)	8 (21)	1	12 (45)	23 (39)	15 (39)	N P .4)	NP
14	Mehta	<i>et al</i> [25], 2005-2012	NP	NP	NP	NP	NP	NP	14 (5.6)	26 (5.7)	44 (17.5)	75 (16.8)	62 (36.3)	75 (30.2)	1	11. 3	171 (68.1)	248 (54.1)	5 (2)	11 (2.5)
15	Paulus	<i>et al</i> [9], 1997- 2011	8 (20.5)	7 (23.3)	NP	NP	15 (56.5)	13 (43.3)	11 (28.2)	8 (26.7)	NP	NP	NP	NP	N P	NP	15 (50)	20 (51)	N P .3)	NP
16	Zaghal	<i>et al</i> [26], 2014-2015	NP	NP	NP	NP	NP	NP	317 (5.3)	43 (5.0)	954 (15.9)	135 (15.7)	NP	NP	N P	NP	2969 (49.5)	355 (41.2)	10 (1.7)	25 (2.9)

17	Jeekel[17], 1989-1991	3	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	1	NP	NP	NP	N	NP
															8.				P	
															5					
18	Kunstman <i>et al</i> [27], 2003-2007	3	1	NP	NP	3	5	2	3	11	13	11	9	7	7	44	38	0	1	
		(5.7)	(1.9)			(5.7)	(9.4)	(3.8)	(5.7)	(20.	(24.	(20.8)	(17.			(83)	(71		(1.9)	
										8)	5)		0)			.7)				
19	Mangieri <i>et al</i> [29], 2014	NP	NP	NP	NP	92	14	27	5	175	18	55	11	5	5	198	41	5	1 (1)	
						(9.3)	(8.1)	(2.7)	(2.9)	(17.	(10.	(5.6)	(6.4)			(20)	(23	(1)		
										8)	4)					.9)				
20	El Khoury <i>et al</i> [28], 2014	NP	NP	NP	NP	NP	NP	217	44	749	94	NP	NP	1	9.9	NP	NP	53	19 (3)	
								(5)	(7)	(17)	(14)			0.	±			(1)		
														4	10.					
														±	1					
														9.						
														6						
21	Nickel <i>et al</i> [30], 2017-2018	NP	NP	NP	NP	69	17	50	13	14	1 (1)	159	53	1	14.	NP	NP	12	1 (1)	
						(17.4)	(8.8)	(12.	(6.7)	(3.5)		(40)	(27.	8.	8			(3)		
								6)					6)	8						
		NP	NP	NP	NP	34	16	22	13	8	1 (1)	80	51	1	14.	NP	NP	5	1 (1)	

						(17.9)	(8.4)	(11.6)	(6.8)	(4.2)		(42.3)	(26.9)	9.6	7			(3)	
22	Van Bodegraven <i>et al</i> [31], 2010-2019	NP	NP	62	6	95	8	50	1	91	8	171	11	1	3	NP	NP	7	0
				(7.7)	(3.8)	(11.8)	(5.1)	(6.2)	(0.6)	(11.3)	(5.1)	(21.2)	(7.0)	1				(0.9)	

DP: Distal pancreatectomy; NA: Not applicable; NP: Not provided; RCT: Randomised controlled trial; PD: Pancreaticoduodenectomy; **ND**; **D**.

Supplementary Table 2 Active suction vs passive gravity drainage for pancreaticoduodenectomy and distal pancreatectomy, n (%)

No.	Ref.	Type of study	Country	Procedure	No of patients	Active (suction)	Passive (gravity)	Sex	Postoperative pancreatic fistula		Delayed gastric emptying		Bile leak	
									Male/female	CSD	GD	CSD	GD	CSD
1	Lee <i>et al</i> [32], 2004-2006	RCT	South Korea	PD	110	55	55	62/48	14	24	10	16	2	2
									(25.5)	(43.6)	(18.2)	(29.1)	(3.6)	(3.6)

2	Jiang <i>et al</i> [33], 2010-2015	RCT	China	PD	160	82	78	118/42	9 (11.0)	11 (14.1)	2 (2.4)	3 (3.8)	3 (3.7)	2 (2.6)
3	Čečka <i>et al</i> [34], 2013-2016	RCT	Czech Republic	PD + DP	61 + 161	30 + 81	31 + 80	109/113	24 (30)	31 (39)	NP	NP	NP	NP
4	Schmidt <i>et al</i> [41], 1980-2002	Retrospective	United States	PD	510	269	241	284/226	38 (14)	8 (3)	NP	NP	NP	NP
5	Aumont <i>et al</i> [35], 2012-2015	Retrospective	France	PD	197	65	132	108/89	32 (47.7)	43 (32.65)	NP	NP	NP	NP
6	Marchegiani <i>et al</i> [36], 2012-2015	Retrospective	Italy	PD + DP	320	131	189	167/153	23 (17.5)	39 (20.6)	NP	NP	4 (3)	9 (4.7)
7	Lemke <i>et al</i> [37], 2016	Retrospective	Canada	PD	3430	2867	563	1843/1587	532 (18.6)	98 (17.4)	501 (17.5)	77 (13.7)	NP	NP
8	O'Grady <i>et al</i> [38], 2013-	Retrospective	United States	PD + DP	629	588	41	313/316	125 (27.6)	NP	NP	NP	NP	NP

2020

9	Kone <i>al</i> [40],	<i>et</i>	Retrospective	United States	PD + DP	9232	7887	1345	4712/4520	336 (25)	2366 (30)	NP	NP	NP	NP
10	Hall <i>al</i> [39],	<i>et</i>	Prospective	United States	PD	9665	8441	1224	5176/4489	1389 (16.5)	168 (13.7)	1403 (16.6)	171 (14.0)	NP	NP

Supplementary Table 2 Active suction *vs* passive gravity drainage for pancreaticoduodenectomy and distal pancreatectomy, *n* (%) (Continued Supplementary Table 2)

No.	Ref.	Post op haemorrhage		Intra-abdominal abscess		Wound infection		Need of intervention		Re-exploration		Readmissions		Clavien Dindo		Mean hospital stay		Overall morbidity		Mortality at day 30			
		CS	GD	CS	GD	CS	GD	CS	GD	CS	GD	CS	GD	CS	GD	CS	GD	CS	GD	CS	GD		
		D		D		D		D		D		D		D		D		D		D			
1	Lee <i>et al</i> [32], 2004-2006	NP	NP	NP	NP	3 (5.5)	5 (9.1)	NP	NP	0	0	NP	NP	NP	NP	NP	NP	24.8	28.5	29 (52.7)	35 (63.6)	0	0
2	Jiang <i>et al</i> [33], 2010-2015	1 (1.2)	1 (1.3)	0	2 (2.6)	5 (6.1)	7 (8.8)	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	12.6 ± 4.4	14.5 ± 6.7	18 (22.0)	25 (32.1)	1 (1.2)	0
3	Čečka <i>et al</i> [34], 2013-2016	9 (11)	15 (19)	NP	NP	7 (9)	8 (10)	0	0	7 (9)	5 (6)	5 (6)	5 (6)	13 (16)	14 (18)	NP	NP	12	12	35 (43)	44 (55)	3 (4)	3 (4)

4	Schmidt <i>et al</i> [41], 1980- 2002	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	
5	Aumont <i>et al</i> [35], 2012- 2015	6 (9.2)	12 (9)	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	26 (40)	50 (37.9)	31 ± 48	28 ± 18	46 (70.8)	94 (71.2)	8 (12.3)	20 (15.2)		
6	Marche giani <i>et al</i> [36], 2012- 2015	9 (6.8)	12 (6.3)	NP	NP	10 (7.65)	17 (9)	7 (5.3)	13 (6.9)	NP	NP	9 (6.8)	10 (5.3)	NP	NP	10.6	12.2	84 (64.1)	120 (63.4)	6 (4.5)	5 (2.6)		
7	Lemke <i>et al</i> [37], 2016	NP	NP	NP	NP	657 (22.9%)	97 (17.2)	NP	NP	141 (4.9)	29 (5.2)	NP	NP	NP	NP	NP	NP	NP	NP	NP	45 (1.6)	8 (1.4)	
8	O'Grad y <i>et al</i> [38],	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	9	7	NP	NP	NP	NP	NP	NP

2013- 2020	9	Kone	<i>et al</i> [40],	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP
2016- 2017	10	Hall	<i>et al</i> [39],	NP	NP	NP	NP	1801 (21.3)	210 (17.2)	NP	NP	475 (5.6)	54 (4.4)	1486 (17.6)	173 (14.1)	NP	NP	NP	NP	NP	NP	158 (1.9)	14 (1.1)	
2016- 2018																								

DP: Distal pancreatectomy; NP: Not provided; RCT: Randomised controlled trial; PD: Pancreaticoduodenectomy; CSD: Closed-suction drain; **GD**..

Supplementary Table 3 Early drain removal *vs* late drain removal for pancreaticoduodenectomy and distal pancreatectomy, *n* (%)

No.	Ref.	Type of study	Country	Procedure	Drain removal (day)	Early removal	Late removal	Male/female	Pathology benign/malignant	postoperative pancreatic fistula		Delayed gastric emptying		Bile leak		Postoperative haemorrhage	
										ED	LD	ED	LD	ED	LD	ED	LD
1	Bassi <i>et al</i> [42], 2008-2009	RCT	Italy	PD + DP	3	57	57	59/55	44/70	1 (1.8)	15 (26)	2 (3.5)	3 (5.3)	NP	NP	0	1 (1.8)
2	McMillan <i>et al</i> [43], 2008-2009	RCT	United States	PD	3	38	37	43/32	NP	1 (2.6)	12 (32.4)	NP	NP	0	2 (5.4)	NP	NP
3	Dembinski <i>et al</i> [44], 2011-2015	RCT	France	PD	3	71	70	54/87	94/47	3 (4.2)	9 (12.8)	11 (14.5)	20 (28.6)	0	4 (5.7)	2 (2.9)	2 (2.8)

4	Dai <i>et al</i> [45], 2014- 2018	RCT	China	PD + DP	3	72	72	79/65	54/90	2 (2.78)	0	2 (2.78)	5 (6.94)	NP	NP	0	2 (2.78)
5	Dai <i>et al</i> [46], 2017- 2020	RCT	China	PD	3	156	156	195/17	NP	6 (3.8)	10 (6.4)	17 (10.9)	12 (7.7)	NP	NP	6 (3.8)	5 (3.2)
6	Balzano <i>et al</i> [47], 1996- 2004	Retro spective	Italy	DP	> 5	NP	123	52/71	106/17	0	42 (34.1)	0	0	0	0	0	0
7	Beane <i>et al</i> [48], 2019	Retro spective	United States	PD	≤ 3	116	116	105/27	NP	1 (1)	9 (8)	11 (9.5)	11 (9.5)	NP	NP	NP	NP
8	Ven Fong <i>et al</i> [49], 2009-	Retro spective	United States	PD	3	229	140	186/83	NP	2 (1)	44 (31.4)	20 (9)	9 (6.4)	NP	NP	3 (2.1)	10 (4.5)

2012

9	Xourafa s <i>et al</i> [50], 2014- 2016	Retro specti ve	Unite d States	PD	3	273	548	300/5 21	NP	4 (1)	33 (6)	20 (7)	68 (12)	NP	NP	NP	NP
10	Villafan e-Ferriol <i>et al</i> [13], 2006- 2016	Prosp ective	Unite d States	PD +	< 5	90	154	113/1 31	NP	0	2 (1)	3 (3)	27 (18)	0	2 (1)	1 (1)	1 (1)
11	Kawai <i>et al</i> [51], 2002- 2004	Prosp ective	Japan	PD	4	52	52	57/47 24/80		2 (3.84)	12 (23)	12 (23)	17 (32. 7)	2 (3.8 4)	3 (5.8)	0	2 (3.8 4)
12	Seykora <i>et al</i> [52], 2014- 2017	Retro specti ve	Unite d States	DP	≤ 3	716	3992	2111/ 2597	NP	26 (3.6)	857 (21. 5)	13 (2)	192 (5)	NP	NP	NP	NP

13	Adachi <i>et al</i> [53], 2005- 2009	Prosp ective	Japan	DP	1	41	30	37/34	NP	0	5 (16)	NP	NP	NP	NP	NP	NP
14	Linnem ann <i>et al</i> [54], 2014- 2016	Retro specti ve	Neth erlan ds	PD +	≤ 3	219	789	779/6 23	NP	13 (6)	121 (15)	53 (24)	177 (22)	NP	NP	5 (2)	42 (5)
15	Sakamo to <i>et al</i> [55], 2010- 2019	Retro specti ve	Japan	DP	< 5	19	38	38/19	NP	2 (10.5)	15 (39. 5)	NP	NP	NP	NP	NP	NP
16	Yoon <i>et al</i> [56], 2018- 2020	Retro specti ve	Kore a	PD	3	91	359	253/1 97	NP	38 (41.8)	216 (60. 2)	NP	NP	NP	NP	NP	NP

Supplementary Table 3 Early drain removal *vs* late drain removal for pancreaticoduodenectomy and distal pancreatectomy, *n* (%) (Continued Supplementary Table 3)

No.	Ref.	Intraabdominal abscess		Wound infection		Need of intervention		of Re-exploration		Readmission		Clavien dindo		Mean hospital stay		Overall morbidity		Mortality at 30 days		
		ED	LD	ED	LD	ED	LD	ED	LD	ED	LD	ED	LD	ED	LD	ED	LD	ED	LD	
1	Bassi <i>et al</i> [42], 2008-2009	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP
										0	5 (8.8)	NP	NP	8.7	11.8	22 (38.5)	35 (61.4)	0	0	
2	McMillan <i>et al</i> [43], 2008-2009	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP
										0	5 (13.5)	NP	NP	9.3	13.9	13 (34.2)	28 (75.6)	0	0	
3	Dembinski <i>et al</i> [44], 2011-2015	NP	NP	10 (14.1)	17 (24.3)	NP	NP	5 (7)	6 (8.6)	2 (2.8)	1 (1.4)	10 (14.1)	15 (21.4)	17.8	21.0	NP	NP	1 (1.4)	1 (1.4)	
4	Dai <i>et al</i> [45], 2014-2018	3 (4.17)	2 (2.78)	1 (1.39)	0	3 (4.17)	3 (4.17)	1 (1.39)	1 (1.39)	3 (4.17)	4 (5.56)	5 (6.94)	15 (20.83)	12.72 ± 8.04	13.61 ± 8.61	10 (11.1)	22 (30.56)	0	0	

5	Dai	<i>et al</i> [46], 2017-2020	8 (5.1)	6 (3.8)	4 (2.6)	5 (3.2)	11 (7.1)	6 (3.8)	1 (0.6)	0	5 (3.2)	2 (1.3)	32 (20.5)	41 (26.3)	15	16	46 (29.5)	49 (31.4)	0	0	
6	Balzano	<i>et al</i> [47], 1996-2004	0	6 (4.5)	0	9 (7.3)	NP	NP	0	5 (4.1)	NP	NP	NP	NP	0	11.8 ± 6	0	60 (48.8)	0	0	
7	Beane	<i>et al</i> [48], 2019	NP	NP	2 (2)	1 (1)	NP	NP	NP	NP	16 (13.8)	16 (13.8)	11(9.5) (16.4)	19	6	8	41 (35.3)	61 (52.3)	3 (2.6)	3 (2.6)	
8	Ven Fong	<i>et al</i> [49], 2009-2012	16 (7)	10 (7)	NP	NP	11 (5)	9 (6.4)	7 (3.2)	2 (1.4)	38 (17.1)	36 (25.7)	35 (17.9)	26 (20.5)	7	7	91 (46.7)	60 (47.2)	1 (0.6)	2 (1.6)	
9	Xourafas	<i>et al</i> [50], 2014-2016	NP	NP	19 (7)	38 (7)	NP	NP	8 (3)	23 (4)	33 (12)	77 (14)	22 (8)	76 (14)	6	8	76 (28)	224 (41)	6 (2)	7 (1)	
10	Villafane- Ferriol	<i>et al</i> [13], 2006-2016	2 (2)	12 (8)	5 (6)	10 (6)	NP	NP	0	1 (0.6)	15 (17)	35 (23)	NP	NP	5	7	30 (33)	84 (55)	1 (1)	0	
11	Kawai	<i>et al</i>	3 (5.8)	10	1 (2)	0	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	0	1 (2)

	<i>al</i> [51],																				(19.2)	
	2002-2004																					
12	Seykora <i>et al</i> [52],	NP	NP	NP	NP	NP	NP	NP	NP	14 (2)	143 (3.6)	81 (11.3)	765 (19.2)	63 (8.8)	859 (21.5)	4	6	NP	NP	NP	NP	
	2014-2017																					
13	Adachi <i>et al</i> [53],	NP	NP	NP	NP	NP	NP	NP	NP	NP	2 (5)	1 (3)	1 (2.4)	7 (23.3)	16	17.5	NP	NP	NP	NP		
	2005-2009																					
14	Linnemann <i>et al</i> [54],	NP	NP	NP	NP	29 (13)	161 (21)	8 (4)	38 (5)	22 (10)	141 (18)	NP	NP	NP	NP	108 (49.3)	475 (60.2)	3 (1)	6 (1)			
	2014-2016																					
15	Sakamoto <i>et al</i> [55],	NP	NP	NP	NP	NP	NP	NP	NP	1 (5.3)	0	NP	NP	18	22	NP	NP	0	0			
	2010-2019																					
16	Yoon <i>et al</i> [56],	NP	NP	NP	NP	NP	NP	NP	NP	6 (6.6)	39 (10.9)	12 (13.2)	73 (20.3)	9.8	13.3	28 (30.8)	211 (58.8)	NP	NP			
	2018-2020																					

DP: Distal pancreatectomy; ED: Early drain removal; LD: Late drain removal; NP: Not provided; PD: Pancreaticoduodenectomy; RCT: Randomised controlled trial.