

Table S1. Within Group Effects of the Interventions.

No	Authors	Year	Sample Size (n)	Time	Baseline M(SD)	Intraoperative M(SD)	Post-Operative M(SD)	Mean Analgesia Demand per Group	Level of Significance
1	El-Dawlatly [59]	2009	21	24 h		0.9(0.7)	10.5(7.7)	9.6	<0.05 *
						8.6(3.5)			<0.01 *
						2.3(1.0)	22.8(4.3)	20.5	<0.05 *
						23.0(4.8)			<0.01 *
2	Ra [7]	2010	18	20 min			3.3(1.84)	-1.2	<0.001 *
				30 min			2.9(1.68)	-0.8	
				60 min			2.8(1.70)	-0.7	
				6 h			3.1(1.55)	-1.0	
				12 h			2.1(1.41)		
				24 h			1.6(1.46)		
			18	20 min			3.2(1.89)	-1.4	<0.001 *
				30 min			2.8(1.38)	-1.0	
				60 min			2.6(1.46)	-0.8	
				6 h			1.9(1.43)	-0.1	
				12 h			1.8(1.16)		
				24 h			1.3(0.97)		
			18	20 min			8.6(1.76)	-4.2	<0.001 *
				30 min			8.2(1.72)	-3.8	<0.001 *
				60 min			6.9(1.57)	-2.5	<0.001 *
				6 h			6.1(1.98)	-1.7	<0.001 *
				12 h			5.1(2.01)	-0.7	<0.001 *
				24 h			4.4(1.68)		<0.001 *
3	Ortiz [20]	2012	39	24 h	1.5(1.8)		16.1(9.9)	14.6	0.75
				24 h		5.0(3.5)	16.1(9.9)	11.1	
						237(82)			0.67
				24 h			1.8(1.6)		
			35	24 h	0.9(2.0)		15.4(9.2)	14.5	0.75
						5.0(3.5)	15.4(9.2)	10.4	
				24 h		5.8(2.8)	15.4(9.2)	9.6	
						245(75)			0.67
				24 h			1.8(1.8)		
4	Petersen [21]	2012		24 h		Ketomidone consumption $p = 0.41$, 95% CI: 0.13, 0.65			
				0-2 h		5mg			
						Ketomidone consumption $p = 0.68$, 95% CI: 0.45, 0.83			
				0-2 h		7.5mg			
				1 & 4 h					
5	Tolchard [60]	2012	21			0.58(0.47)			0.5
						2.2(0.94)			0.56
						3.0(0.94)			0.85
						0.65(0.19)			0.18
						16(7.0)			0.61
						1.1(0.47)			
			22			0.65(0.46)			0.5
						2.4(0.92)			0.56
						3.1(1.4)			0.85

				0.7(3.2)	0.18
				21(9.2)	0.61
				1.2(0.46)	
6	Bhatia [6]	2014			
	US-TAP Block, Posterior	21			
			0 h	1.2(1.1)	-0.4
			2 h	1.6(1.5)	-0.8
			4 h	1.8(1.2)	-1.0
			6 h	1.6(1.3)	-0.8
			8 h	2.2(1.8)	-1.4
			12 h	1.8(2.0)	-1.0
			24 h	0.8(0.8)	
	US-TAP Block, Subcostal	21			
			0 h	0.85(0.87)	-0.7
			2 h	0.8(0.89)	-0.65
			4 h	0.8(1.2)	-0.65
			6 h	0.9(1.1)	-0.75
			8 h	1.0(1.5)	-0.85
			12 h	0.8(1.5)	-0.65
			24 h	0.15(0.36)	
	Control (GA only)	22			
			0 h	2.35(1.3)	-1.0
			2 h	3.0(1.3)	-1.7
			4 h	2.3(0.9)	-1.0
			6 h	2.0(1.1)	-0.7
			8 h	2.6(1.7)	-1.3
			12 h	1.9(1.5)	-0.6
			24 h	1.3(1.0)	
7	Shin [61]	2014			
	US-TAP-Block	15	8.0(13.7)	8.0(13.7)	0.415
			72.4(4.6)	10.0(15.8)	-62.4
				7.3(7.0)	0.852
			VNRS Scores at rest		
			10 min	4.3(0.5)	-2.2
			30 min	3.5(0.4)	-1.4
			1 h	3.5(0.4)	-1.4
			3 h	3.3(0.3)	-1.2
			6 h	3.6(0.3)	-1.5
			24 h	2.1(0.2)	
			VNRS scores while coughing		
			10 min	4.7(0.6)	-1.8
			30 min	4.5(0.5)	-1.6
			1 h	4.5(0.5)	-1.6
			3 h	4.4(0.4)	-1.5
			6 h	4.7(0.4)	-1.8
			24 h	2.9(0.2)	
	US-OSTAP	15	8.0(13.7)		0.415
			78.1(4.6)	6.7(11.4)	-71.4
				8.0(7.7)	0.852
			VNRS Scores at rest		
			10 min	2.3(0.5)	-1.0
			30 min	2.8(0.6)	-1.5
			1 h	2.1(0.4)	-0.8
			3 h	2.0(0.3)	-0.7
			6 h	2.3(0.3)	-1.0
			24 h	1.3(0.2)	
			VNRS scores while coughing		
			10 min	2.9(0.6)	-0.8
			30 min	3.3(0.6)	-1.2
			1 h	2.7(0.4)	-0.6
			3 h	2.7(0.3)	-0.6
			6 h	3.2(0.3)	-1.1
			24 h	2.1(0.2)	
	Control (GA only)	15	14.0(5.5)		0.415
			82.9(4.4)	41.7(37.4)	-41.2
				6.7(8.2)	0.852
			VNRS Scores at rest		
			10 min	6.6(0.5)	-4.5
			30 min	6.3(0.5)	-4.2

			1 h		5.1(0.3)	-3.0	0.001 *
			3 h		3.7(0.5)	-1.6	0.002 *
			6 h		3.3(0.3)	-1.2	0.009 *
			24 h		2.1(0.4)		0.014 *
			VNRS scores while coughing				
			10 min		7.5(0.5)	-4.5	0.001 *
			30 min		7.4(0.5)	-4.4	0.001 *
			1 h		6.4(0.4)	-3.4	0.001 *
			3 h		4.7(0.5)	-1.7	0.001 *
			6 h		4.3(0.4)	-1.3	0.003 *
			24 h		3.0(0.4)		0.020 *
8	Basaran [62]	2015					
	US-OSTAP-Block Group	38					
					19.4(47.6)		0.437
					0.26(1.6)		0.48
			0-2h		31.6(31.7)		0.001 *
			2-24 h		126.3(54.2)		0.001 *
			0-24 h		2.3(3.7)		0.719
	Control (GA only)	38					
					19.4(47.6)		0.437
					0.26(1.6)		0.48
			0-2 h		80.3(50.1)		0.001 *
			2-24 h		267.1(108.6)		0.001 *
			0-24 h		3.3(5.5)		0.719
9	Elamin [63]	2015					
	LAP-TAP Block with Bupivacaine plus Periportal saline injection.	40	In the LAP-TAP group (Bupivacaine + Periportal saline injection), numerical pain assessment scores were significantly decreased after 1, 3 and 6 h of rest ($p = 0.025$, $p = 0.03$, and $p = 0.007$, respectively).				
	LAP-TAP Block with saline plus Periportal Bupivacaine injection.	40	In the LAP-TAP group (Bupivacaine + Periportal saline injection), numerical pain assessment scores were significantly decreased after 1, 3 and 6 h of rest ($p = 0.025$, $p = 0.03$, and $p = 0.007$, respectively).				
10	Saliminia [64]	2015		Time of first Fentanyl request			
	US-TAP Block with Bupivacaine + Normal saline	18	24 h usage	144.44 (83.1)	566.7 (367.8)	422.3	0.019 *
	US-TAP Block (Bupivacaine + Sufentanil)	18	24 h usage	206.38 (112.7)	555.5 (356.8)	349.1	0.002 *
	US-TAP Block (normal saline)	18	24 h usage	79.44 (42.2)	877.8(338.8)	978.4	0.012 *
11	Al-refaey [65]	2016					
	US-TAP Block with Bupivacaine	30	Post-operative day 1		2.1(0.5)		<0.001 *
					0.5± 0.1mg		<0.011 *
	US-TAP Block with Bupivacaine + magnesium	30			2.2(0.5)		<0.001 *
					2.1± 0.1mg		<0.011 *
	Control (GA only)	30			2.8(0.6)		<0.001 *
					0.9± 0.1mg		<0.011 *
12	Bava [66]	2016	A total of 8 patients in the US-TAP group and 16 patients in the local infiltration group required additional Fentanyl intraoperatively ($p = 0.028$). In the immediate postoperative period, local infiltration levels were significantly higher at rest and during cough ($p = 0.034$ and $p = 0.007$, respectively).				
			Median (minimum-maximum)				
	US-TAP Block	21	0 h		5.0(0-8)		0.034 *
			1 h		3.0 (2-7)		0.209
			2 h		2.0(0-5)		0.579
			4 h		2.0 (0-3)		0.864
			6 h		2.0(0-5)		0.528
			12 h		1.0(0-5)		0.176
			24 h		2.0 (0-5)		0.01 *
					34.57 x 14.64 mg		0.688
	Control (Port Sites infiltration)	21	0 h		7.0 (2-8)		0.034 *

			1 h	2.0 (0–8)	0.209
			2 h	2.0 (0–6)	0.579
			4 h	2.0 (0–7)	0.864
			6 h	1.0 (0–5)	0.528
			12 h	2.0 (0–6)	0.176
			24 h	0.5 (0–5)	0.01 *
				32.76 x 14.34 mg	0.688
13	Huang [67]	2016			
	US-TAP Block	20	0	2.8(1.3) *	-1.1
			30 min	2.6(1.4) *	-0.9
			60 min	2.5(1.3) *	-0.8
			6 h	2.9(1.5) *	-1.2
			12 h	2.3(1.5) *	-0.6
			24 h	1.7(1.3) *	
	US-TAP Block + Dexamethasone	20	0	2.6(1.2) *	-1.1
			30 min	2.7(1.4) *	-1.2
			60 min	2.5(1.3) *	-1.0
			6 h	2.6(1.4) *	-1.1
			12 h	1.9(1.2) *	-0.4
			24 h	1.5(1.1) *	
	Control (GA)	20	0	8.5(1.6)	-4.3
			30 min	6.5(1.1)	-2.3
			60 min	6.5(1.5)	-2.3
			6 h	6.3(1.4)	-2.1
			12 h	5.6(1.6)	-1.4
			24 h	4.2(1.4)	
14	Oksar [68]	2016			
	Intercostal-iliac US-TAP Block	22		11(55%) do not require additional analgesics; 9(45%) require addi- tional analgesics.	
	US-OSTAP Block	22		17(85%) do not require additional analgesics; 3(15%) require addi- tional analgesics.	
	Control (GA + PCA only)	22		7(35%) do not require additional analgesics; 13(65%) require addi- tional analgesics.	
15	Sinha [69]	2016		Median IQR	
	US-TAP Block with 0.25% Bupi- vacaine	30	10 min	0.00(0.00–0.00)	0.044 *
			30 min	1.00(0.00–1.00)	0.003 *
			1 h	1.50(0.75–2.25)	0.020 *
			4 h	2.00(1.00–5.00)	0.441
			8 h	2.00(1.00–2.00)	0.164
			12 h	1.50(1.00–2.00)	0.803
			24 h	1.00(1.00–2.00)	1.000
	US-TAP Block with 0.375% Ropivacaine	30	10 min	0.00(0.00–0.00)	0.044 *
			30 min	0.00(0.00–0.00)	0.003 *
			1 h	0.00(0.00–2.00)	0.020 *
			4 h	2.00(1.00–4.00)	0.441
			8 h	2.00(1.00–4.25)	0.164
			12 h	0.00(0.00–2.00)	0.803
			24 h	1.00(1.00–2.00)	1.000
16	Breazu [70]	2017		Pain score at rest: Results presented as median (25 th to 75 th percentile)	
	US-OSTAP (Bu- pivacaine)		0 h	3(2–4)	
			2 h	3(3–4)	
			4 h	4(3–4)	
			6 h	2(2–3)	
			12 h	2(1–2)	
			24 h	1(1–2)	
				Pain score in movement: Results presented as median (25 th to 75 th percentile)	
			0 h	1(1–2)	
			2 h	1(1–3)	
			4 h	1(1–2)	
			6 h	1(0–1)	
			12 h	0(0–1)	
			24 h	0(0–1)	

			24 h	160(140–180)	
			24 h	34.8(26.94)	
	US-OSTAP (Peth- idine)		Pain score at rest: Results presented as median (25 th to 75 th percentile)		
			0 h	1(1–2)	
			2 h	1(1–2)	
			4 h	1(1.2)	
			6 h	1(0–1)	
			12 h	0(0–1)	
			24 h	0(0–0)	
			Pain score in movement: Results presented as median (25 th to 75 th percentile)		
			0 h	0(0–1)	
			2 h	1(1–2)	
			4 h	1(1–2)	
			6 h	1(0–1)	
			12 h	0(0–1)	
			24 h	0(0–0)	
			24 h	150(140–180)	<0.001
			24 h	20.4(20.71)	
	US-OSTAP-Block (Normal saline)		Pain score at rest: Results presented as median (25 th to 75 th percentile)		
			0 h	0(0–1)	
			2 h	1(1–2)	
			4 h	1(1–2)	
			6 h	1(0–1)	
			12 h	0(0–1)	
			24 h	0(0–0)	
			Pain score in movement: Results presented as median (25 th to 75 th percentile)		
			0 h	3(2–4)	
			2 h	3(3–4)	
			4 h	4(3–5)	
			6 h	2(2–3)	
			12 h	2(1–2)	
			24 h	1(1–2)	
			24 h	400(320–340)	
			24 h	78(17.32)	
17	Choi [71]	2017	Number of patients requiring additional analgesics		
	US-TAP block (Inserted in- dwelling cathe- ter)	34			
				4(11.8%)	0.114
				17(50.0%)	0.332
	US-TAP block + PCA	34			
				2(5.9%)	0.114
				11(32.4%)	0.332
	Control (PCA)	35			
				0(0.0%)	0.114
				15(42.9%)	0.332
18	Sahin [72]	2017	Results presented as median (range)		
	US-TAP Block (Bupivacaine + 10mls normal sa- line).	30			
			20 min	2.0(0–8)	0.014 *
			12 h	2.5(0–7)	0.003 *
			24 h	3.0(1–7)	<0.001 *
	US-TAP Block (20mls normal saline)	30			
			20 min	2.0(0–4)	0.014 *
			12 h	1.0(0–4)	0.003 *
			24 h	1.0(0–4)	<0.001 *
19	Baral [73]	2018			
	US-TAP, subcos- tal	30			
			24 h	125 ± 25.42	<0.001 *
				3.20 ± 0.84	<0.001)
	Control (Port Site Infiltration)	30			
			24 h	175 ± 25.42	<0.001 *
				1.70 ± 0.65	<0.001 *

20	Bhalekar [74]	2018				
			US-TAP block, Subcostal			
			24 h	Yes = 17(68.0) No = 8(32.0)	0.002 *	
				Yes = 2(8.0) No = 23(92.0)	0.001 *	
			US-TAP block (0.9% Normal sa- line)			
			24 h	Yes = 25(100.00) No = 0(0.00)	0.002 *	
				Yes = 24(96.0) No = 1(4.0)	0.001 *	
21	Sarvesh [75]	2018				
			US-TAP Block 1	30	24 h	Postoperatively, it took 485.6 min for the first analgesic to be requested in US-TAP Block 2, compared with 289.8 min in US-TAP Block 1. Patients in US-TAP block 2 consumed less cumulative morphine in the first 24 h than patients in US-TAP block 1.
						0.0001 *
						Patients in US-TAP block 2 consumed less cumulative morphine in the first 24 h than patients in US-TAP block 1.
						<0.00001 *
			US-TAP Block 2	30	24 h	Postoperatively, it took 485.6 min for the first analgesic to be requested in US-TAP Block 2, compared with 289.8 min in US-TAP Block 1.
						0.0001 *
						Patients in US-TAP block 2 consumed less cumulative morphine in the first 24 h than patients in US-TAP block 1.
						<0.00001 *
22	Suseela [76]	2018				
			US-TAP Block, Subcostal	40	1 h	0.00(0.00) 1.13
					2 h	0.03(0.16) 1.1 0.004 *
					3 h	0.43(0.55) 0.7 <0.001 *
					6 h	1.35(0.80) -0.22 <0.001 *
					12 h	0.93(0.86) 0.2 <0.001 *
					24 h	1.13(0.52) <0.001 *
						510.3 ± 154.55
						48.69 ± 36.14 mg 0.001 *
			Control (Port Site Infiltration)	40	1 h	0.00(0.00) 2.25
					2 h	0.30(0.56) 1.95 0.004 *
					3 h	2.05(0.96) 0.2 <0.001 *
					6 h	3.10(1.19) -0.85 <0.001 *
					12 h	2.48(0.82) -0.23 <0.001 *
					24 h	2.25(0.59) <0.001 *
						292.7 ± 67.03
						141.8 ± 60.01 mg 0.001 *
23	Altıparmak [77]	2019				
			US-OSTAP Block.			
				96.3 ± 30.8 8 24 24	0.821	
			First 24 h	48		
			First 24 h	199.4 ± 27.7	<0.001 *	
			US-ESP Block			
				95.5 ± 23.3	0.821	
			1 h	4		
			First 12 h	8		
			2 nd 12 h	16		
			First 24 h	24		
			First 24 h	139.1 ± 21.9	<0.001 *	
24	Baytar [78]	2019				
			US-TAP Block (subcostal)	53		
				1.63 ± 0.23	0.056 *	
				63.73 (103.42)	0.187	
				83.43(71.25)	0.754	

Visual Analogue Scale				
	0 h	1.33(1.50)	-1.22	0.418
	1 h	0.75(1.29)	-0.64	0.227
	6 h	0.47(0.95)	-0.36	0.734
	12 h	0.20(0.53)	-0.09	0.554
	24 h	0.11(0.37)		0.951
Dynamic Visual Analogue Scale				
	0 h	2.42(2.10)	-2.1	0.879
	1 h	1.94(1.87)	-1.62	0.720
	6 h	1.38(1.52)	-1.06	0.535
	12 h	1.00(1.28)	-0.68	0.815
	24 h	0.32(0.85)		0.402
Quadratus Lum- borum-Block	54			
		1.67 ± 0.27		0.056 *
		70.00 ± 92.76		0.187
		86.66 ± 67.82		0.754
Visual Analogue Scale				
	0 h	1.03(1.18)	-0.94	0.418
	1 h	0.70(0.76)	-0.61	0.227
	6 h	0.42(0.74)	-0.33	0.734
	12 h	0.22(0.46)	-0.13	0.554
	24 h	0.09(0.029)		0.951
Dynamic Visual Analogue Scale				
	0 h	2.42(2.10)	-1.96	0.879
	1 h	1.90(1.49)	-1.44	0.720
	6 h	1.50(1.38)	-1.04	0.535
	12 h	0.92(1.24)	-0.46	0.815
	24 h	0.46(0.88)		0.402
25	Houben [79]	2019		
	US-TAP Block (Levobupiva- caine)	26		
			5.6(4.9)	0.71
			4.2(5.8)	0.72
			21.2(14.5)	0.48
	US-TAP Block (Saline)	26		
			6.2(6.4)	0.71
			6.5(10.5)	0.72
			25.2(25.3)	0.48
26	Janjua [80]	2019		
	US-TAP Block, Unilateral	50		
		0 h	2.65(1.60)	0.02
		1 h	3.20(1.26)	-0.53
		2 h	3.47(1.62)	-0.8
		8 h	1.36(0.74)	1.31
		24 h	2.67(1.47)	<0.001 *
	Control (Port Site Infiltration)	50		
		0 h	4.42(1.11)	-0.5
		1 h	4.64(1.63)	-0.72
		2 h	5.08(1.45)	-1.16
		8 h	1.52(0.59)	2.4
		24 h	3.92(1.88)	<0.001 *
27	Karnik [81]	2019		
	US-TAP Block	40	Pain scores were presented as Median(Interquartile range values)	
		10 min	2(0-2.5)	0.011 *
		30 min	1.5(0-3)	<0.001 *
		1 h	1.5(0-2)	<0.001 *
		2 h	2(0-2)	0.010 *
		3 h	2(0-2)	0.352
		4 h	0(0-2)	0.267
		6 h	0(0-2)	0.509
			5	0.001
			8	0.001
	Control (Port Sites Infiltration)	40	Pain scores were presented as Median(Interquartile range values)	
		10 min	2(3-4)	0.011 *
		30 min	3(2-5)	<0.001 *
		1 h	2(2-3)	<0.001 *
		2 h	2(1.5-2.5)	0.010 *
		3 h	2(0-2)	0.352

			4 h	2(0–2)	0.267
			6 h	0(0–2)	0.509
				38	0.001 *
				30	0.001 *
28	Khandelwal [82]	2019			
	US-STA Block		40		
			0 h	2.32(0.82)	1.05
			1 h	3.32(1.09)	0.05
			2 h	3.37(1.29)	0.0
			4 h	3.65(1.14)	–0.28
			6 h	3.2(1.09)	0.17
			12 h	2.45(1.13)	0.92
			24 h	3.37(1.29)	0.76
	Control (Intra-peritoneal Infiltration)		40		
			0 h	3.7(1.5)	–0.9
			1 h	4.2(1.39)	–1.4
			2 h	4.02(1.38)	–1.22
			4 h	4.45(1.17)	–1.65
			6 h	3.77(1.25)	–0.97
			12 h	2.70(1.13)	0.1
			24 h	2.8(1.50)	0.76
29	Ribeiro [83]	2019			
	US-OSTAP Block (Ropivacaine)		21		
			0 h	0.71(1.06)	–0.33
			30 min	1.3(1.62)	–0.92
			2 h	1.45(1.65)	–1.07
			4 h	0.90(1.44)	–0.52
			6 h	0.20(0.56)	0.18
			24 h	0.38(0.60)	0.035 *
				122(19.21)	0.575
			First 8 h	4.64(3.38)	1.25
			8–16 h	1.25(2.75)	4.64
			16–24 h	NA	
			24 h	5.89(6.13)	0.05 *
	US-OSTAP Block (Normal saline)		21		
			0 h	2.21(1.61)	–0.69
			30 min	2.30(1.35)	–0.78
			2 h	2.52(1.20)	–1.0
			4 h	2.29(1.55)	–0.77
			6 h	1.71(1.05)	–0.19
			24 h	1.52(0.98)	0.035 *
				126.19(21.61)	
			First 8 h	9.52(3.76)	1.78
			8–16 h	0.83(2.14)	10.47
			16–24 h	0.95(2.11)	10.35
			24 h	11.3(8.03)	0.05 *
30	Siriwardana [84]	2019			
	LAP-TAP Block + port Site infiltration		45		
			6 h	6(2–10)	0.043 *
			12 h	4(2–9)	0.587
			18 h	3(0–7)	0.135
			24 h	2(0–8)	0.188
			36 h	1(0–6)	0.093
				Opioids requirement (Number of doses)	
			6 h	1(0–1)	0.021 *
			12 h	0(0–6)	0.414
			18 h	0(0–3)	0.715
			24 h	0(0–4)	0.267
			36 h	0(0–4)	0.671
	Control (Port Site Infiltration)		45		
			6 h	5(0–9)	0.043 *
			12 h	4(1–7)	0.587
			18 h	2(0–6)	0.135
			24 h	2(0–6)	0.188

		36 h		0(0–5)		0.093
				Opioids requirement (Number of doses)		
		6 h		1(0–1)		0.021 *
		12 h		0(0–6)		0.414
		18 h		0(0–2)		0.715
		24 h		0(0–2)		0.267
		36 h		0(0–2)		0.671
31	Wu [85]	2019				
	LAI Group	60	The three groups did not differ in pain scores at each time point within the 48 h period.			
	TL-Group	60	The three groups did not differ in pain scores at each time point within the 48 h period.			
	TR-Group	60	The three groups did not differ in pain scores at each time point within the 48 h period.			
32	Arik [86]	2020				
	TAP Block, sub-costal	24		Post-operative Pain scores at Rest		
		1 h		3.29(2.1)	–2.46	0.001 *
		3 h		1.87(1.5)	–1.04	0.001 *
		6 h		1.70(1.8)	–0.87	0.001 *
		12 h		1.20(1.2)	–0.37	0.001 *
		24 h		0.83(1.0)		0.001 *
				Post-operative Pain score during Cough		
		1 h		3.83(2.2)	–2.42	0.001 *
		3 h		2.45(1.7)	–1.04	0.001 *
		6 h		2.38(1.9)	–0.97	0.001 *
		12 h		2.04(1.5)	–0.63	0.001 *
		24 h		1.41(1.3)		0.001 *
	Local Anaesthetic Infiltration (Port Sites)	24		Post-operative Pain scores at rest		
		1 h		4.95(2.1)	–3.66	0.001 *
		3 h		2.54(1.7)	–1.25	0.001 *
		6 h		2.29(1.9)	–1.0	0.001 *
		12 h		2.20(1.7)	–0.91	0.001 *
		24 h		1.29(1.2)		0.001 *
				1(4.2)		
				Post-operative Pain score during Cough		
		1 h		5.87(2.2)	–4.0	0.001 *
		3 h		3.50(2.0)	–1.63	0.001 *
		6 h		3.16(2.2)	–1.29	0.001 *
		12 h		2.95(1.8)	–1.08	0.001 *
		24 h		1.87(1.0)		0.001 *
	Control (IV-PCA + GA)	24		Post-operative Pain scores at rest		
		1 h		5.7(2.4)	–4.2	0.001 *
		3 h		2.87(2.2)	–1.37	0.001 *
		6 h		2.62(1.6)	–1.12	0.001 *
		12 h		2.70(2.0)	–1.2	0.001 *
		24 h		1.50(1.50)		0.001 *
				2(8.3)		
				Post-operative Pain score during Cough		
		1 h		6.33(2.3)	–4.46	0.001 *
		3 h		3.20(2.0)	–1.33	0.001 *
		6 h		3.33(1.6)	–1.46	0.001 *
		12 h		3.45(2.4)	–1.58	0.001 *
		24 h		1.87(1.5)		0.001 *
				3(2.5)		
33	Kharbuja [87]	2020				
	US-TAP Block					
		0 h		3.10(0.48)	–0.43	0.044 *
		1 h		2.87(0.81)	–0.2	0.001 *
		2 h		3.23(1.06)	–0.56	0.001 *
		4 h		3.33(1.18)	–0.66	0.001 *
		8 h		3.37(0.90)	–0.7	0.001 *
		16 h		3.10(0.75)	–0.43	0.001 *
		24 h		2.67(0.95)		0.001 *
				3.36(2.09)		0.001 *
				136(66.31)		0.001 *
	Control (Port Site Infiltration)					
		0 h		3.37(0.49)	0.46	0.044 *
		1 h		3.87(1.07)	–0.04	0.001 *
		2 h		4.30(0.988)	–0.47	0.001 *
		4 h		4.37(1.12)	–0.54	0.001 *
		8 h		4.87(1.00)	–1.04	0.001 *
		16 h		4.27(0.94)	–0.44	0.001 *

		24 h		3.83(0.83)		0.001 *
				1.73(1.60)		0.001 *
				202(80.58)		0.001 *
34	Liang [88]	2020				
	Group H (0.75% Ropivacaine)	30			PACU <i>n</i> (%): 11(36.7%) Ward <i>n</i> (%): 4(13.3%)	
	Group M (0.5% Ropivacaine)	30			PACU <i>n</i> (%): 12(40%) Ward <i>n</i> (%): 3(10%)	
	Group L (0.25% Ropivacaine)	30			PACU <i>n</i> (%): 10(33.3%) Ward <i>n</i> (%): 5(16.7%)	
	Group Control (0.9% normal saline)	30			PACU <i>n</i> (%): 21(70%) Ward <i>n</i> (%): 13(43.3%)	
35	Abdelfatah [89]	2021				
	US-TAP-Block group 1 (Bupivacaine + Esmolol)		Arri- val to PACU	0.87(1.01)	2.16	0.010 *
			1 h	0.97(0.85)	2.06	0.034 *
			2 h	1.67(0.92)	1.36	0.083
			6 h	2.63(1.38)	0.4	0.286
			12 h	3.07(1.53)	-0.04	0.662
			24 h	3.03(1.47)		0.437
				12.91(6.16)		0.148
				5.83(2.87)		0.204
	US-TAP-Block group 2 (Bupivacaine + Isotonic saline)		Arri- val to PACU	0.83(1.26)	2.5	0.010 *
			1 h	1.7(1.64)	1.63	0.034 *
			2 h	2.03(0.67)	1.3	0.083
			6 h	3.0(1.26)	0.33	0.286
			12 h	3.23(1.41)	0.1	0.662
			24 h	3.33(1.49)		0.437
				9.13(6.69)		0.148
				7.5(3.65)		0.204
36	Ergin [90]	2021				
	TAI-Group	40				
			1 h	3.08(2.75)	-1.33	0.001 *
			2 h	2.6 (2.05)	-0.85	0.001 *
			4 h	2.43(2.16)	-0.68	0.001 *
			6 h	2.2 (2.17)	-0.45	0.001 *
			12 h	2.25(2.25)	-0.5	0.001 *
			24 h	1.75(1.9)		0.001 *
	TAPB-Group	40				
			1 h	3.3(2.44)	-2.17	0.001 *
			2 h	2.43(1.62)	-1.3	0.001 *
			4 h	2.3(1.9)	-1.17	0.001 *
			6 h	2.2(2.19)	-1.07	0.001 *
			12 h	1.23(1.27)	-0.1	0.001 *
			24 h	1.13(1.07)		0.001 *
	IPLA-Group	40				
			1 h	4.7(2.5)	-1.77	0.001 *
			2 h	4.15(1.83)	-1.22	0.001 *
			4 h	4.0(2.18)	-1.07	0.001 *
			6 h	3.53(2.14)	-0.6	0.001 *
			12 h	3.23(1.95)	-0.3	0.001 *
			24 h	2.93(1.86)		0.001 *
	Control (Sham)	40				
			1 h	7.03(2.18)	-2.88	0.001 *
			2 h	6.45(1.71)	-1.3	0.001 *

			4 h	5.35(1.66)	-1.2	0.001 *
			6 h	5.0(1.68)	-0.85	0.001 *
			12 h	4.73(2.1)	-0.58	0.001 *
			24 h	4.15(2.12)		0.001 *
37	Jung [91]	2021				
	BD-TAP Block					
			2 h	3(2-4.75)		0.024 *
				4(3-6)		0.047 *
				4.2(2.1)		0.013 *
			6 h	3(2-4)		0.442
				3.9(1.9)	-1.0	0.281
				3(3-4)		0.218
			12 h	3(2-4)		0.721
				3(3-4)		0.753
				3(2-4.75)		0.771
			24 h	2(2-3)		0.981
				3(2-4)		0.719
				3(2-3)		0.531
			48 h	2(1-3)		0.863
				2.9(1.5)		646
				2(2-3)		0.653
			593.5(507-700)			0.921
			181.5(105-286)			0.771
			2.5(2-3)			0.184
	Control (Sham)					
			2 h	4.5(3-6)		0.024 *
				6(4-8)		0.047
				5.7(2.5)		0.013 *
			6 h	3.0(2-4.8)		0.442
				4.4(2.2)	-1.3	0.281
				4(2-6)		0.218
			12 h	3(2-4)		0.721
				4(2-5)		0.753
				3(2-5)		0.771
			24 h	2(1.3-3.8)		0.981
				3(2-5)		0.719
				3(2-4)		0.531
			48 h	2(1-3)		0.863
				3.1(1.7)		646
				3(1-3)		0.653
			605.5(500-746)			0.921
			189(130-283)			0.771
			3.0(2-4)			0.184
38	Sahu [92]	2021				
	US-ESP-Block (at T7)	30	Mean values			
			2 h	1.60	-1.5	0.029 *
			4 h	1.17	-1.07	0.001 *
			6 h	0.90	-0.8	0.001 *
			8 h	0.33	-0.23	0.001 *
			10 h	0.60	-0.5	0.001 *
			12 h	0.83	-0.73	0.001 *
			14 h	0.83	-0.73	0.001 *
			16 h	0.20	-0.1	0.001 *
			18 h	0.13	-0.03	0.001 *
			20 h	0.17	-0.07	0.001 *
			22 h	0.10	0	0.001 *
			24 h	0.10		0.001 *
			6.9(1.8)			0.174
	OSTAP-Block (Bilateral)	30				
			2 h	2.27	-01.57	0.029 *
			4 h	2.73	-2.03	0.001 *
			6 h	2.33	-1.63	0.001 *
			8 h	1.80	-1.1	0.001 *
			10 h	1.87	-1.17	0.001 *
			12 h	2.23	-1.53	0.001 *
			14 h	1.70	-1.0	0.001 *
			16 h	1.67	-0.97	0.001 *

			18 h	1.23	-0.53	0.001 *
			20 h	1.07	-0.37	0.001 *
			22 h	1.10	-0.4	0.001 *
			24 h	0.70		0.001 *
				7.6(2.3)		0.174
39	Saravanan [93]	2021				
	US-Modified BRILMA-Block	30				
				5.67(1.98)		0.317
				759.33(80.29)		0.295
	US-TAP-Block	30				
				5.17(1.85)		0.317
				854(93.01)		0.295
40	Vindal [94]	2021		VAS (REST) Median IQR		
	LAP-TAP-Block	50				
			3 h	4(2)		0.577
			6 h	3(1)		0.187
			24 h	2.5(1)		0.146
			Dis-charge	1(1)		0.05 *
			1-week post-op	1(1)		0.001 *
				VAS (Coughing) Median IQR		
			3 h	5(1)		0.001 *
			6 h	4(1)		0.001 *
			24 h	3(1)		0.001 *
			Dis-charge	1.5(1)		0.001 *
			1-week post-op	1(1)		0.001 *
				14(28%)		0.05 *
	Control (Port Site Infiltration)	50		VAS (REST) Median IQR		
			3 h	4(2)		0.577
			6 h	3(1)		0.187
			24 h	3(1)		0.146
			Dis-charge	2(1)		0.05
			1-week post-op	1(1)		0.001 *
				VAS (Coughing) Median IQR		
			3 h	5(1)		0.001 *
			6 h	5(1)		0.001 *
			24 h	3(1)		0.001 *
			Dis-charge	3(1)		0.001 *
			1-week post-op	1(0)		0.001 *
				26(52%)		0.05 *
41	Priyanka [95]	2022				
	US-TAP Block (Pre-induction)					
			30 min	3.18(1.04)	0.29	7.36×10^{-7}
			1 h	0.03(0.84)	4.44	1.73×10^{-6}
			2 h	3.13(1.00)	0.34	2.82×10^{-5}
			4 h	3.38(1.00)	0.09	3.69×10^{-6}
			8 h	3.42(1.00)	0.05	4.93×10^{-6}
			12 h	3.53(1.01)	-0.06	2.83×10^{-4}
			24 h	3.47(0.81)		5.92×10^{-5}
	US-TAP Block (Post-surgery)					
			30 min	4.96(1.08)	-0.33	7.36×10^{-7}
			1 h	4.30(1.19)	0.33	1.73×10^{-6}
			2 h	4.54(1.30)	0.09	2.82×10^{-5}
			4 h	4.69(1.28)	-0.06	3.69×10^{-6}
			8 h	4.39(1.16)	0.24	4.93×10^{-6}

			12 h		4.71(1.29)	-0.08	2.83×10^{-4}
			24 h		4.63(1.18)		5.92×10^{-5}
42	Emile [96]	2022					
	US-TAP Block						
			2 h		4.4(1.3)	-3.0	0.0001 *
			6 h		2.9(0.8)	-1.5	0.0001 *
			12 h		1.9(0.7)	-0.5	0.0001 *
			24 h		1.4(0.7)		0.0001 *
			24 h		1027.8(166.7)		0.0001 *
					5.1(1.2)		0.0001 *
					1(1-2)		0.0001 *
	LSTAP Block						
			2 h		4.8(1.2)	-3.5	0.0001 *
			6 h		3.3(1.1)	-2.0	0.0001 *
			12 h		2.1(0.7)	-0.8	0.0001 *
			24 h		1.3(0.5)		0.0001 *
					1055.5(232.3)		0.0001 *
					5.4(1.0)		0.0001 *
					1(1-2)		0.0001 *
	Control (GA only)						
			2 h		6.4(1.7)	-4.2	0.0001 *
			6 h		6.7(1.5)	-4.5	0.0001 *
			12 h		3.2(1.1)	-1.0	0.0001 *
			24 h		2.2(0.9)		0.0001 *
				1657.9(668.8)			.0001 *
				4.1(1.2)			.0001 *
				2(1-2)			.0001 *
43	Fargaly [97]	2022					
	US-TAP Block Group	25	Median (IQR)				
			30 min		2(2-3)		0.084
			2 h		3(3-3)		0.004 *
			4 h		33-4)		0.008 *
			6 h		4(4-5)		0.0001 *
			12 h		5(4-6)		0.0001 *
			24 h		4(4-5)		0.026 *
					Yes = 18, 72%		
					No = 7, 28%		0.239
				Median (IQR) =>	8(6-24)		0.001 *
					6(6-9)		0.0001 *
	Quadratus Lumborum (QLB-Group)	25	Median (IQR)				
			30 min		2(2-2)		0.084
			2 h		2(2-3)		0.004 *
			4 h		3(3-3)		0.008 *
			6 h		33-4)		0.0001 *
			12 h		43-4)		0.0001 *
			24 h		4(3-4)		0.026 *
					Yes = 14, 56%		
					No = 11, 44%		0.239
				Median (IQR) =>	17(12-24)		0.001 *
					3(3-6)		0.0001 *
44	Han [98]	2022					
	US-TAPB Block (Ropivacaine + Tropisetron + Normal saline)	60	The US-TAPB block group had significantly lower resting VAS values than the S and N groups at 2, 6, 12, 24, and 48 h postoperatively ($p < 0.05$). Postoperatively, dynamic VAS was significantly lower in the US-TAPB block group ($p < 0.05$) than in the S and N groups.				
	Group S (Sufentanil + Tropisetron + Normal saline)	60	The US-TAPB block group had significantly lower resting VAS values than the S and N groups at 2, 6, 12, 24, and 48 h postoperatively ($p < 0.05$). Postoperatively, dynamic VAS was significantly lower in the US-TAPB block group ($p < 0.05$) than in the S and N groups.				
	Group N (Nalbuphine + Tropisetron + Normal saline)	60	The US-TAPB block group had significantly lower resting VAS values than the S and N groups at 2, 6, 12, 24, and 48 h postoperatively ($p < 0.05$). Postoperatively, dynamic VAS was significantly lower in the US-TAPB block group ($p < 0.05$) than in the S and N groups.				
45	Lee [99]	2022					
	US-TAP Block (0.375% Ropivacaine)	27	Number (%)				
			1 h		15(55.6%)		0.652
			8 h		0(0.0%)		0.002 *
			24 h		4(14.8%)		0.728

	US-TAP Block (normal saline)	26	Number (%)		
		1 h	17(65.4%)		0.652
		8 h	8(30.8%)		0.002 *
		24 h	5(19.2%)		0.728
46	Ozciftci [100]	2022			
	US-TAP Block, unilateral (right side)	30	VNRS at Rest		
		1 h	3.10(1.61)	-1.87	0.001 *
		2 h	2.70(1.21)	-1.47	0.001 *
		4 h	1.83(0.83)	-0.6	0.001 *
		8 h	1.83(0.83)	-0.6	0.002 *
		12 h	1.40(0.77)	-0.17	0.009 *
		24 h	1.23(0.68)		0.001 *
		VNRS (Cough)			
		1 h	3.37(1.77)	-1.57	0.001 *
		2 h	5.23(2.06)	-3.43	0.001 *
		4 h	2.73(1.34)	-0.93	0.014 *
		8 h	2.57(1.28)	-0.77	0.001 *
		12 h	2.0(1.20)	-0.2	0.001 *
		24 h	1.8(1.01)		0.001 *
	US-TAP Block, bilateral	30	VNRS at Rest		
		1 h	3.33(1.06)	-2.1	0.001 *
		2 h	2.87(1.22)	-1.64	0.001 *
		4 h	2.17(0.79)	-0.94	0.001 *
		8 h	1.73(0.74)	-0.5	0.002 *
		12 h	1.63(0.89)	-0.4	0.009 *
		24 h	1.23(0.90)		0.001 *
		VNRS (Cough)			
		1 h	3.47(1.48)	-1.9	0.001 *
		2 h	3.20(1.35)	-1.63	0.001 *
		4 h	2.53(1.01)	-0.96	0.014 *
		8 h	2.0(0.74)	-0.43	0.001 *
		12 h	1.83(1.02)	-0.26	0.001 *
		24 h	1.57(1.14)		0.001 *
	Control (GA only)	30	VNRS at Rest		
		1 h	6.03(1.52)	-3.93	0.001 *
		2 h	4.50(1.71)	-2.4	0.001 *
		4 h	2.80(1.19)	-0.7	0.001 *
		8 h	2.60(1.13)	-0.5	0.002 *
		12 h	2.17(1.02)	-0.07	0.009 *
		24 h	2.10(1.09)		0.001 *
		VNRS (Cough)			
		1 h	6.33(1.81)	-3.26	0.001 *
		2 h	3.33(1.69)	-0.26	0.001 *
		4 h	3.63(1.59)	-0.56	0.014 *
		8 h	3.57(1.46)	-0.5	0.001 *
		12 h	3.13(1.51)	-0.06	0.001 *
		24 h	3.07(1.70)		0.001 *
47	Paudel [101]				
	US-TAP Block	30	US-TAP Block and local infiltration had significantly different postoperative pain scores (VAS) at 0, 2, 6, 12, and 24 h. The VAS score is significantly higher in the local infiltration group than in the US-TAP block group ($p < 0.001$).		
		24 h	24.67(24.17)		0.001 *
			3.45(1.12)		0.001 *
	Control (port site infiltration)	30	US-TAP Block and local infiltration had significantly different postoperative pain scores (VAS) at 0, 2, 6, 12, and 24 h. The VAS score is significantly higher in the local infiltration group than in the US-TAP block group ($p < 0.001$).		
		24 h	3.45(1.12)		0.001 *
			1.75(0.70)		0.001 *
48	Rahimzadeh [102]	2022			
	US-TAP Block (post-surgery)	38			
			34.21(3.64)		0.518
			2.22(1.20)		0.089
	US-TAP Block (after induction)	38			
			32.11(2.67)		0.581
			5.80(2.68)		0.089

Time = Time after the surgical operation; GA = General Anaesthesia; IV = Intravenously; IQR = Interquartile Range; LAI-Group = received pre-operational administration of 0.5% Ropivacaine plus 1mcg of Dexamethasone at the trocar entrance; TL-Group = received pre-operational administration of 0.5% Ropivacaine plus

1mcg of Dexamethasone at the trocar entrance alongside posterior US-TAP block; TR-Group = US-TAP block combined with rectus sheath block; BD-TAP = bilateral dual transversus abdominis plane; VNRS = Verbal Numerical Rating Scale; PCA = Patient Controlled Analgesia; IV-PCA = Intravenous Patient Controlled Analgesia; PCIA = Patient Controlled Intravenous Analgesia; NAS = Numeric Analogue Scale; VAS = Visual Analog Scale; NR = Not Reported; NRS = Numerical Rating Scale; US-OSTAP = Ultrasound-guided oblique subcostal transversus abdominis plane; TAP block = transversus abdominis plane block; OSTAP = oblique subcostal transversus abdominis; US-STA = Subcostal Ultrasound Transversus Abdominis; Subcostal Transversus Abdominis; US-Posterior TAP = Ultrasound guided posterior transversus abdominis plane block; Subcostal TAP block: subcostal transversus abdominis plane block; US-ESP = Ultrasound-guided erector spinae plane; US-STA Block = Ultrasound Guided Subcostal Transversus Abdominis; LAP-TAP = Laparoscopic transversus abdominis plane; US-TAPB = Ultrasound-guided transversus abdominis plane block; RSB = Rectus Sheath Block; LAI = Local Anaesthetic Infiltration; TAPB = transversus abdominis plane block; IPLA = Intraperitoneal Local Anaesthetic Injection; Modified BRILMA Block = Blocking the Branches of Intercostal nerves at the Level of Mid-Axillary line; LSTAP = Laparoscopic Subcostal TA; * *p*-value less than 0.05.