Supplementary Table	1. PRISMA Statement
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Section/topic	#	Checklist item	Reported on page #
TITLE			
Title	1	Identify the report as a systematic review, meta-analysis, or both.	1
ABSTRACT			
Structured summary	2	Provide a structured summary including, as applicable: background; objectives; data sources; study eligibility criteria, participants, and interventions; study appraisal and synthesis methods; results; limitations; conclusions and implications of key findings; system- atic review registration number.	2
NTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of what is already known.	5
Objectives	4	Provide an explicit statement of questions being addressed with reference to participants, interventions, comparisons, outcomes, and study design (PICOS).	5
METHODS			
Protocol and registration	5	Indicate if a review protocol exists, if and where it can be accessed (e.g., Web address), and, if available, provide registration informa- tion including registration number.	N/a
Eligibility criteria	6	Specify study characteristics (e.g., PICOS, length of follow-up) and report characteristics (e.g., years considered, language, publica- tion status) used as criteria for eligibility, giving rationale.	5
Information sources	7	Describe all information sources (e.g., databases with dates of coverage, contact with study authors to identify additional studies) in the search and date last searched.	5
Search	8	Present full electronic search strategy for at least one database, including any limits used, such that it could be repeated.	5
Study selection	9	State the process for selecting studies (i.e., screening, eligibility, included in systematic review, and, if applicable, included in the meta-analysis).	5
Data collection process	10	Describe method of data extraction from reports (e.g., piloted forms, independently, in duplicate) and any processes for obtaining and confirming data from investigators.	6-7
Data items	11	List and define all variables for which data were sought (e.g., PICOS, funding sources) and any assumptions and simplifications made.	7
Risk of bias in individual studies	12	Describe methods used for assessing risk of bias of individual studies (including specification of whether this was done at the study or outcome level), and how this information is to be used in any data synthesis.	7 and Figure 2
Summary measures	13	State the principal summary measures (e.g., risk ratio, difference in means).	7
Synthesis of results	14	Describe the methods of handling data and combining results of studies, if done, including measures of consistency (e.g., I ²) for each meta-analysis.	7-8
Risk of bias across studies	15	Specify any assessment of risk of bias that may affect the cumulative evidence (e.g., publication bias, selective reporting within studies).	7
Additional analyses	16	Describe methods of additional analyses (e.g., sensitivity or subgroup analyses, meta-regression), if done, indicating which were pre-specified.	8
RESULTS			
Study selection	17	Give numbers of studies screened, assessed for eligibility, and included in the review, with reasons for exclusions at each stage, ideally with a flow diagram.	8 and Figure 1
Study characteristics	18	For each study, present characteristics for which data were extracted (e.g., study size, PICOS, follow-up period) and provide the cita- tions.	Table 1
Risk of bias within studies	19	Present data on risk of bias of each study and, if available, any outcome level assessment (see item 12).	8 and Figure 2
Results of individual studies	20	For all outcomes considered (benefits or harms), present, for each study: (a) simple summary data for each intervention group (b) effect estimates and confidence intervals, ideally with a forest plot.	Figures 3-5, Supplementar Figures

Synthesis of results	21 Present results of each meta-analysis done, including confidence intervals and measures of consistency.	8-10, Table 1 , Figures 3-5 , Supplementary Figures
Risk of bias across studies	22 Present results of any assessment of risk of bias across studies (see Item 15).	Figure 2
Additional analysis	23 Give results of additional analyses, if done (e.g., sensitivity or subgroup analyses, meta-regression [see Item 16]).	Table 1, Supplementary Figure.
DISCUSSION		
Summary of evidence	24 Summarize the main findings including the strength of evidence for each main outcome; consider their relevance to key groups (e.g., healthcare providers, users, and policy makers).	10-13
Limitations	25 Discuss limitations at study and outcome level (e.g., risk of bias), and at review-level (e.g., incomplete retrieval of identified research, reporting bias).	12
Conclusions	26 Provide a general interpretation of the results in the context of other evidence, and implications for future research.	13
FUNDING		
Funding	27 Describe sources of funding for the systematic review and other support (e.g., supply of data); role of funders for the systematic review.	13

	PEC	Cs block	(System	nic analg	esia		Mean Difference	Mean Difference		
Study or Subgroup	Mean	SD	Total	Mean	SD	Total	Weight	IV, Random, 95% Cl	IV, Random, 95% Cl		
1.6.2 PECs I block											
Cros 2018	1.5	4.44	65	3	4.44	62	6.6%	-1.50 [-3.04, 0.04]	-		
Ekinci 2019	18.2	11.2	30	25.7	5.2	30	5.8%	-7.50 [-11.92, -3.08]			
Subtotal (95% CI)			95			92	12.4%	-4.13 [-9.96, 1.71]			
Heterogeneity: Tau ² =	= 15.15; 0	Chi² = 6.	31, df=	1 (P = 0	.01); I ² = 8	34%					
Test for overall effect	: Z = 1.39	(P = 0.1	17)								
1.6.3 PECs II block											
Al Ja' bari 2019	5	5.4	20	9.7	8.9	22	5.8%	-4.70 [-9.11, -0.29]			
Bashandy 2015	2.9	1.71	60	6.9	1.86	60	6.7%	-4.00 [-4.64, -3.36]	•		
Kakkar 2019	5.7	2.9	30	22	5	30		-16.30 [-18.37, -14.23]	-		
Karaca 2018	11.57	9.81	27	37.87	5.4	27	5.9%		_ _		
Khemka 2019	1.2	5.23	50	6.42	6.5	50	6.4%	-5.22 [-7.53, -2.91]			
Kim 2018	4.38	2.85	40	7.7	4.19	38	6.6%	-3.32 [-4.92, -1.72]	+		
Kumar 2018	11.4	0.5	25	40.3	7.3	25	6.3%	-28.90 [-31.77, -26.03]			
Lan 2018	1.2	3.4	32	4	3.9	33	6.5%	-2.80 [-4.58, -1.02]	-		
Neethu 2018	43.7	7.17	30	61	5.3	30	6.2%	-17.30 [-20.49, -14.11]			
Senapathi 2019	3	1.48	25	11	2.96	25	6.6%	-8.00 [-9.30, -6.70]	-		
Syal 2017	2.7	2.7	21	7.8	2.8	22	6.6%	-5.10 [-6.74, -3.46]	-		
Thomas 2018	0	0.01	28	34.7	13.6	30	5.6%	-34.70 [-39.57, -29.83]	- -		
Versyck 2017	9.16	10.15	45	14.97	14.38	40	5.4%	-5.81 [-11.16, -0.46]			
Wang 2018	1.75	0.91	32	5.42	1.83	32	6.7%	-3.67 [-4.38, -2.96]	•		
Subtotal (95% CI)			465			464	87.6%	-11.57 [-14.74, -8.41]	◆		
Heterogeneity: Tau ² =	= 34.28; 0	Chi² = 73	21.18, 0	if = 13 (P	< 0.0000)1); I² = 9	98%				
Test for overall effect	:Z=7.16	i (P < 0.0	00001)								
Total (95% CI)			560			556	100.0%	-10.66 [-13.54, -7.78]	•		
Heterogeneity: Tau ² =	= 32.23; (Chi² = 74	48.36, d	if = 15 (P	< 0.0000)1); I² = 9	98%		-20 -10 0 10 20		
Test for overall effect	: Z = 7.26	(P < 0.0	00001)						-20 -10 0 10 20 Favours PECs Favours GA		
Test for subaroup dif	Terences	Chi ² =	4.83. dt	f = 1 (P =	0.03). I ^z =	= 79.3%			Favouis FEOS Favouis OA		

Supplementary Figure 1. Subgroup analysis of 24-hour opioid requirement of PECs I studies compared to PECs II studies.

	PE	Cs bloci	ĸ	Systen	nic analg	esia		Mean Difference	Mean Difference
Study or Subgroup	Mean	SD	Total	Mean	SD	Total	Weight	IV, Random, 95% Cl	IV, Random, 95% Cl
1.7.1 <=75mg LA									
Bashandy 2015	2.9	1.71	60	6.9	1.86	60	7.7%	-4.00 [-4.64, -3.36]	•
Ekinci 2019	18.2	11.2	30	25.7	5.2	30	6.6%	-7.50 [-11.92, -3.08]	
<akkar 2019<="" td=""><td>5.7</td><td>2.9</td><td>30</td><td>22</td><td>5</td><td>30</td><td>7.4%</td><td>-16.30 [-18.37, -14.23]</td><td>+</td></akkar>	5.7	2.9	30	22	5	30	7.4%	-16.30 [-18.37, -14.23]	+
Karaca 2018	11.57	9.81	27	37.87	5.4	27	6.6%	-26.30 [-30.52, -22.08]	
<hemka 2019<="" td=""><td>1.2</td><td>5.23</td><td>50</td><td>6.42</td><td>6.5</td><td>50</td><td>7.4%</td><td>-5.22 [-7.53, -2.91]</td><td>-</td></hemka>	1.2	5.23	50	6.42	6.5	50	7.4%	-5.22 [-7.53, -2.91]	-
<im 2018<="" td=""><td>4.38</td><td>2.85</td><td>4</td><td>7.7</td><td>4.19</td><td>38</td><td>7.1%</td><td>-3.32 [-6.41, -0.23]</td><td></td></im>	4.38	2.85	4	7.7	4.19	38	7.1%	-3.32 [-6.41, -0.23]	
<umar 2018<="" td=""><td>11.4</td><td>0.5</td><td>25</td><td>40.3</td><td>7.3</td><td>25</td><td>7.2%</td><td>-28.90 [-31.77, -26.03]</td><td>-</td></umar>	11.4	0.5	25	40.3	7.3	25	7.2%	-28.90 [-31.77, -26.03]	-
Veethu 2018	43.7	7.17	30	61	5.3	30	7.1%	-17.30 [-20.49, -14.11]	
Senapathi 2019	3	1.48	25	11	2.96	25	7.6%	-8.00 [-9.30, -6.70]	-
/ersyck 2017	9.16	10.15	45	14.97	14.38	40	6.1%	-5.81 [-11.16, -0.46]	
Subtotal (95% CI)			326			355	70.7%	-12.24 [-17.07, -7.42]	◆
Heterogeneity: Tau ²	= 57.91; (Chi ^z = 51	16.38, d	lf=9 (P ∘	< 0.00001	l); Iz = 98	3%		
Test for overall effec	t: Z = 4.97	? (P < 0.0	00001)						
l.7.2 >75 mg									
Al Ja'bari 2019	5	5.4	20	9.7	8.9	22	6.6%	-4.70 [-9.11, -0.29]	
an 2018	1.2	3.4	32	4	3.9	33	7.5%	-2.80 [-4.58, -1.02]	-
Syal 2017	2.7	2.7	21	7.8	2.8	22	7.5%	-5.10 [-6.74, -3.46]	-
Vang 2018	1.75	0.91	32	5.42	1.83	32	7.7%	-3.67 [-4.38, -2.96]	-
Subtotal (95% CI)			105			109	29.3%	-3.84 [-4.69, -3.00]	•
Heterogeneity: Tau ²	= 0.20; C	hi² = 3.9	0. df = 3	3 (P = 0.2	27); I² = 23	3%			
Fest for overall effec	t: Z = 8.87	? (P < 0.0	00001)						
otal (95% CI)			431			464	100.0%	-9.82 [-12.76, -6.88]	•
leterogeneity: Tau ²	= 29.14;	Chi ² = 53	78.92. 0	df = 13 (P	< 0.0000)1); I ^z = 9	38%		
- 2									-50 -25 0 25
Fest for overall effect	t: Z = 0.55) (🗖 🛰 U.I	000011						Favours PECs Favours GA

Supplementary Figure 2. Subgroup analysis of 24-hour opioid requirement according to the dose of local anesthetics used for the PECs block, studies was divided at the 75 mg threshold.

	PEC	s bloc	k	Systen	nic analg	esia		Mean Difference	Mean Difference
Study or Subgroup	Mean	SD	Total	Mean	SD	Total	Weight	IV, Random, 95% Cl	IV, Random, 95% Cl
1.6.1 Mastectomy or	nly								
Al Ja' bari 2019	5	5.4	20	9.7	8.9	22	6.6%	-4.70 [-9.11, -0.29]	
Bashandy 2015	2.9	1.71	60	6.9	1.86	60	7.7%	-4.00 [-4.64, -3.36]	-
Kakkar 2019	5.7	2.9	30	22	5	30	7.4%	-16.30 [-18.37, -14.23]	+
Kim 2018	4.38	2.85	4	7.7	4.19	38	7.1%	-3.32 [-6.41, -0.23]	
Kumar 2018	11.4	0.5	25	40.3	7.3	25	7.2%	-28.90 [-31.77, -26.03]	
Lan 2018	1.2	3.4	32	4	3.9	33	7.5%	-2.80 [-4.58, -1.02]	-
Neethu 2018	43.7	7.17	30	61	5.3	30	7.1%	-17.30 [-20.49, -14.11]	-
Senapathi 2019	3	1.48	25	11	2.96	25	7.6%	-8.00 [-9.30, -6.70]	-
Syal 2017	2.7	2.7	21	7.8	2.8	22	7.5%	-5.10 [-6.74, -3.46]	-
Wang 2018	1.75	0.91	32	5.42	1.83	32	7.7%	-3.67 [-4.38, -2.96]	-
Subtotal (95% CI)			279			317	73.3%	-9.33 [-12.61, -6.04]	◆
Heterogeneity: Tau ² :	= 26.65; 0	≿hi² = 4	84.95, d	df=9(P∢	< 0.00001); I ^z = 98	3%		
Test for overall effect	: Z = 5.56	(P ≤ 0.	00001)						
1.6.2 Other breast s	urgeries	unspe	cified						
Ekinci 2019	18.2	11.2	30	25.7	5.2	30	6.6%	-7.50 [-11.92, -3.08]	
Karaca 2018	11.57	9.81	27	37.87	5.4	27	6.6%	-26.30 [-30.52, -22.08]	
Khemka 2019	1.2	5.23	50	6.42	6.5	50	7.4%	-5.22 [-7.53, -2.91]	-
Versyck 2017	9.16	10.15	45	14.97	14.38	40	6.1%		
Subtotal (95% CI)			152			147	26.7%	-11.20 [-20.97, -1.43]	
Heterogeneity: Tau ² :	= 94.78; 0	⊳hi² = 7	6.45, df	= 3 (P <	0.00001)	; I² = 96	%		_
Test for overall effect	: Z = 2.25	(P = 0.	02)		,				
Total (95% CI)			431			464	100.0%	-9.82 [-12.76, -6.88]	
. ,	- 20 4 4: 4	hiz - 7		w_ 10.00	- 0.0000			-3.02 [-12.70, -0.00]	
Heterogeneity: Tau ² :					< U.UUUU	n); r= :	18%		-20 -10 0 10 20
Test for overall effect		· · · · ·	,		0.700 17				Favours PECs Favours GA
Test for subgroup dif	Terences	Cni*=	0.13, ď	T=1 (P=	0.72), I*=	= 0%			

Supplementary Figure 3. Subgroup analysis of 24-hour opioid requirement according to the surgeries included, studies with only modified radical mastectomy were group separately to those which included all breast cancer surgery.

	PEC	s bloc	:k	System	ic analg	esia		Mean Difference	Mean Difference
Study or Subgroup	Mean	SD	Total	Mean	SD	Total	Weight	IV, Random, 95% Cl	IV, Random, 95% Cl
Al Ja' bari 2019	1.6	1.8	20	2.5	2.2	22	7.4%	-0.90 [-2.11, 0.31]	
Bashandy 2015	1.26	1.02	60	5.64	1.13	60	8.3%	-4.38 [-4.77, -3.99]	-
Cros 2018	3	2.22	30	3	2.96	62	7.6%	0.00 [-1.08, 1.08]	-+
Kamiya 2018	1	1.48	30	4	3.48	29	7.1%	-3.00 [-4.37, -1.63]	
Karaca 2018	1.7	1.9	27	4.7	1.1	27	7.9%	-3.00 [-3.83, -2.17]	_ -
Khemka 2019	1.1	5.2	50	2.6	5.86	50	5.8%	-1.50 [-3.67, 0.67]	
Kim 2018	3	1.48	38	5	1.48	40	8.1%	-2.00 [-2.66, -1.34]	
Kumar 2018	1	0.74	25	4	0.74	25	8.3%	-3.00 [-3.41, -2.59]	
Lan 2018	2.35	0.41	32	3	0.56	33	8.4%	-0.65 [-0.89, -0.41]	+
Nassar 2018	4.9	2.2	10	6.5	2.1	10	6.2%	-1.60 [-3.49, 0.29]	
Neethu 2018	1.73	0.78	30	3.2	1.51	30	8.2%	-1.47 [-2.08, -0.86]	- -
Syal 2017	3	0.74	22	3	0.74	21	8.3%	0.00 [-0.44, 0.44]	+
Wang 2018	1.5	0.39	32	4.8	0.69	32	8.4%	-3.30 [-3.57, -3.03]	-
Total (95% CI)			406			441	100.0%	-1.93 [-2.85, -1.01]	•
Heterogeneity: Tau ² =	= 2.61; C	hi²=4	84.13, 0	if = 12 (P	< 0.0000)1); l ² = !	98%		
Test for overall effect									-4 -2 U 2 4 Favours PECs Favours GA

Supplementary Figure 4. Forest plot comparing the Numerical rating scale (NRS) of PECs and systemic analgesia cohorts in PACU.

	PECs block					esia		Mean Difference	Mean Difference			
Study or Subgroup	Mean	SD	Total	Mean	SD	Total	Weight	IV, Random, 95% Cl	IV, Random, 95% Cl			
Bashandy 2015	2.32	1.3	60	3.67	1.29	60	8.4%	-1.35 [-1.81, -0.89]				
Ekinci 2019	4.1	1.74	30	6	1.36	30	7.8%	-1.90 [-2.69, -1.11]	_ _			
Kamiya 2018	1	1.48	29	1	4.1	30	6.0%	0.00 [-1.56, 1.56]				
Karaca 2018	1.37	1.4	27	4.44	1	27	8.1%	-3.07 [-3.72, -2.42]	_ —			
Khemka 2019	1.2	4.9	50	2.4	5.3	50	5.1%	-1.20 [-3.20, 0.80]				
Kim 2018	2.5	0.74	40	2	0.74	38	8.5%	0.50 [0.17, 0.83]				
Kumar 2018	1	1.48	25	4	0.74	25	8.1%	-3.00 [-3.65, -2.35]	_ -			
Lan 2018	1.47	0.36	32	1.23	0.28	33	8.6%	0.24 [0.08, 0.40]	+			
Nassar 2018	3.1	1.5	10	4.7	1.8	10	6.3%	-1.60 [-3.05, -0.15]				
Neethu 2018	0.43	1.11	30	0.76	1.62	30	8.0%	-0.33 [-1.03, 0.37]				
Senapathi 2019	0.7	0.6	25	2.8	0.6	25	8.5%	-2.10 [-2.43, -1.77]				
Syal 2017	4	0.74	21	4	1.48	22	8.0%	0.00 [-0.69, 0.69]	_ 			
Wang 2018	2.72	0.49	32	4.1	0.4	32	8.6%	-1.38 [-1.60, -1.16]	-			
Total (95% CI)			411			412	100.0%	-1.17 [-1.87, -0.48]	◆			
Heterogeneity: Tau ² =	= 1.45; C	hi² = 4	14.45, 0	if = 12 (P	< 0.0000	$(1); ^2 = 9$	37%					
Test for overall effect									-4 -2 U 2 4 Favours PECs Favours GA			
		,	,						Favours FECS Favours GA			

Supplementary Figure 5. Forest plot comparing the Numerical rating scale (NRS) of PECs and systemic analgesia cohorts 4-6 hours postoperatively.

	PECs block					esia		Mean Difference	Mean Difference
Study or Subgroup	Mean	SD	Total	Mean	SD	Total	Weight	IV, Random, 95% Cl	IV, Random, 95% Cl
Al Ja' bari 2019	0.8	1.4	2	1.2	1.9	22	2.7%	-0.40 [-2.50, 1.70]	
Bashandy 2015	1.02	1	60	2.67	0.49	60	7.8%	-1.65 [-1.93, -1.37]	-
Choi 2019	2	1.48	19	1	0.74	20	6.4%	1.00 [0.26, 1.74]	→
Cros 2018	1	0.88	62	1.2	1.11	65	7.6%	-0.20 [-0.55, 0.15]	-+
Ekinci 2019	0.97	0.79	30	2.97	1.66	30	6.7%	-2.00 [-2.66, -1.34]	_ -
Kamiya 2018	1	1.48	23	1	1.85	30	5.9%	0.00 [-0.90, 0.90]	
Karaca 2018	0.07	0.4	27	2.33	0.8	27	7.6%	-2.26 [-2.60, -1.92]	
Khemka 2019	0.9	5.4	50	1.4	5.7	50	2.6%	-0.50 [-2.68, 1.68]	
Kim 2018	1	0.74	40	1	0.74	38	7.7%	0.00 [-0.33, 0.33]	+
Kumar 2018	2	0.74	25	5	0.74	25	7.5%	-3.00 [-3.41, -2.59]	
Lan 2018	0.29	0.14	32	0.77	0.23	33	8.0%	-0.48 [-0.57, -0.39]	•
Neethu 2018	0.5	0.97	30	0.5	0.97	30	7.2%	0.00 [-0.49, 0.49]	-+-
Senapathi 2019	1.3	0.5	25	1.9	0.6	25	7.7%	-0.60 [-0.91, -0.29]	-
Syal 2017	4	1.48	21	5	0.74	22	6.6%	-1.00 [-1.70, -0.30]	_ -
Wang 2018	1.1	0.3	32	1.2	0.2	32	8.0%	-0.10 [-0.22, 0.02]	-
Total (95% CI)			478			509	100.0%	-0.79 [-1.22, -0.37]	◆
Heterogeneity: Tau ²	= 0.58; C	hi² = 4	04.32, 0	if = 14 (P	< 0.0000	1); I ² = !	97%		
Test for overall effect									-4 -2 U 2 4
reactor overall ellect	. 2 - 3.07	0-0	5.0002)						Favours PECs Favours GA

Supplementary Figure 6. Forest plot comparing the Numerical rating scale (NRS) of PECs and systemic analgesia cohorts 24 hours postoperatively.

	PE	Cs bloc	k	System	nic analg	esia		Mean Difference	Mean Difference		
Study or Subgroup	Mean	SD	Total	Mean	SD	Total	Weight	IV, Random, 95% Cl		IV, Random, 95% Cl	
Bashandy 2015	170	11	60	130	14.7	60	14.3%	40.00 [35.35, 44.65]		•	
Kakkar 2019	370	96	30	11	10	30	14.2%	359.00 [324.46, 393.54]			
Karaca 2018	89.1	49.3	27	79.6	31	27	14.3%	9.50 [-12.47, 31.47]		+	
Kumar 2018	1,128	45	25	163.2	36	25	14.3%	964.80 [942.21, 987.39]			•
Neethu 2018	44.33	17.65	30	10.36	4.97	30	14.3%	33.97 [27.41, 40.53]		-	
Syal 2017	466.5	37	22	268.5	35.7	21	14.3%	198.00 [176.27, 219.73]			
Thomas 2018	384	135	28	27.2	18.1	30	14.1%	356.80 [306.38, 407.22]		-	
Total (95% CI)			222			223	100.0%	279.90 [126.61, 433.19]		-	
Heterogeneity: Tau ² =	42622.	89; Chi ^z		-1000	-500 0 500	1000					
Test for overall effect	Z = 3.58	(P = 0.	-1000	-500 0 500 Favours GA Favours PECs	1000						

Supplementary Figure 7. Forest plot comparing the time to rescue analgesia (min) in the PECs and systemic analgesia cohort.