별첨 1 비뚤림위험 평가

1. 흉부수술(개흉 및 흉강경)

연번(Ref ID)		228
1저자(출판연도)		Eljezi(2017)
영역	비뚤림위험	
Random sequence generation (무작위 배정순서 생성)	■ 낮음 □ 높음 □ 불확실	Patients were randomly assigned prior to the study following a plan with a block size of 4, by an independent research assistant responsible for sealed envelopes containing the allocated treatment and the inclusion number.
Allocation concealment (배정순서 은폐)	■ 낮음 □ 높음 □ 불확실	
Blinding of participants and personnel (연구 참여자, 연구자에 대한 눈가림)	■ 낮음 □ 높음 □ 불확실	This randomised, observer-blind, controlled trial The members of this committee were all blind to the patient's name and the treatment given.
Blinding of outcome assessment (결과평가에 대한 눈가림)	■ 낮음 □ 높음 □ 불확실	The occurrence of postoperative complications was also analysed by a blinded investigator through direct analysis of the patients' hospital data
Incomplete outcome data (불충분한 결과자료)	■ 낮음 □ 높음 □ 불확실	•The primary outcome was analysed on an intention to treat basis as well as per-protocol received, and secondary outcomes per-protocol only. •〈Late postoperative survey (pain outcomes)〉 n=59 and 50, respectively in control and intervention group, because of 1 and 5 losses to follow-up since discharge from hospital.
Selective reporting (선택적 보고)	■ 낮음 □ 높음 □ 불확실	프로토콜은 없지만 연구방법에 언급된 결과지표에 대해 연구결과에서 모두 보고하고 있음
Industrial funding support (민간 연구비 지원)	■ 낮음 □ 높음 □ 불확실	Financial support and sponsorship: none

연번(Ref ID)		4560
1저자(출판연도)		Hong(2017)
영역	비뚤림위험	
Random sequence generation (무작위 배정순서 생성)	■ 낮음 □ 높음 □ 불확실	•Participants were randomised to ropivacaine, sham or usual care groups by a centralised independent computer-generated program.
Allocation concealment (배정순서 은폐)	■ 낮음 □ 높음 □ 불확실	•All study personnel and participants were blinded to allocation of the infusion solution except the independent pharmacists.
Blinding of participants and personnel (연구 참여자, 연구자에 대한 눈가림)	□ 낮음 □ 높음 ■ 불확실	특정 그룹에 대해서만 눈가림이 깨짐 •Participants and assessors were **not blinded** in the usual care group, therefore there may have been a **bias with participants in this group**.
Blinding of outcome assessment (결과평가에 대한 눈가림)	□ 낮음 □ 높음 ■ 불확실	
Incomplete outcome data (불충분한 결과자료)	□ 낮음 □ 높음 ■ 불확실	관련 언급 없음
Selective reporting (선택적 보고)	■ 낮음 □ 높음 □ 불확실	프로토콜은 없지만 연구방법에 언급된 결과지표에 대해 연구결과에서 모두 보고하고 있음
Industrial funding support (민간 연구비 지원)	□ 낮음 ■ 높음 □ 불확실	•Funding: The study was funded by Australian and New Zealand Society of Cardiac and Thoracic Surgeons and AstraZeneca. There was no cost incurred by participants in the study.

연번(Ref ID)		4562
1저자(출판연도)		Jaroszewski(2016)
영역	비뚤림위험	
Random sequence generation (무작위 배정순서 생성)	■ 낮음 □ 높음 □ 불확실	•Patients were enrolled using computer-generated randomization to either: continuous infusion of local anesthetic at surgical wound site through On-Q pump with a Select-A-Flow Variable Rate Controller or TEA with local anesthesia •After consent for study enrollment, the randomization sequence was accessed to identify next allocation group.
Allocation concealment (배정순서 은폐)	■ 낮음 □ 높음 □ 불확실	
Blinding of participants and personnel (연구 참여자, 연구자에 대한 눈가림)	□ 낮음 ■ 높음 □ 불확실	•The researchers were not blinded to the therapies, which could raise the potential for bias.
Blinding of outcome assessment (결과평가에 대한 눈가림)	□ 낮음 □ 높음 ■ 불확실	관련 언급 없음
Incomplete outcome data (불충분한 결과자료)	□ 낮음 ■ 높음 □ 불확실	•A significant drop out occurred in the TEA group. We attempted to address this point by providing a group comparison between dropouts versus not. We did not find any significant differences between patients who withdrew from the study.
Selective reporting (선택적 보고)	□ 낮음 ■ 높음 □ 불확실	주요 결과값(통증, 약물사용량)이 그래프로 제시되어 불완전한 결과보고로 인해 메타분석에 포함시킬 수 없음
Industrial funding support (민간 연구비 지원)	□ 낮음 ■ 높음 □ 불확실	•This work was supported in part by Halyard Health formerly Kimberly-Clark Health Care.

연번(Ref ID)		2782
1저자(출판연도)		Liu(2015)
영역	비뚤림위험	
Random sequence generation (무작위 배정순서 생성)	☐ 낮음 ☐ 높음 ■ 불확실	Patients were randomly assigned to continuous wound infusion group (RWI group) or intravenous pump group (SPCA group). - 무작위방법에 대한 구체적 언급 없음
Allocation concealment (배정순서 은폐)	☐ 낮음 ☐ 높음 ■ 불확실	Patients were randomly assigned to continuous wound infusion group (RWI group) or intravenous pump group (SPCA group). - 배정순서 은폐방법에 대한 구체적 언급 없음
Blinding of participants and personnel (연구 참여자, 연구자에 대한 눈가림)	☐ 낮음 ■ 높음 ☐ 불확실	One hundred and twenty adult patients undergoing open thoracotomy were recruited into this assessor-blinded, randomized study.
Blinding of outcome assessment (결과평가에 대한 눈가림)	■ 낮음 ☐ 높음 ☐ 불확실	Postoperative evaluations were performed by an observer blind to this study at 2, 8, 12, 24, 48, and 72 h after tracheal extubation.
Incomplete outcome data (불충분한 결과자료)	■ 낮음 ☐ 높음 ☐ 불확실	-Industrial 최종 결측치가 거의 비슷한 수준으로 결과에 영향을 미치지 않는 것으로 판단됨
Selective reporting (선택적 보고)	☐ 낮음 ■ 높음 ☐ 불확실	주요 결과값(통증지표)이 그래프로 제시되어 불완전한 결과보고로 인해 메타분석에 포함시킬 수 없음
Industrial funding support (민간 연구비 지원)	■ 낮음 ☐ 높음 ☐ 불확실	This work was supported by Natural Science Foundation of Jinling Hospital (No. 2012036), and attributed to the Department of Anesthesiology, Jinling Hospital, School of Medicine, Nanjing University.

연번(Ref ID)		437
1저자(출판연도)		Fortier(2012)
영역	비뚤림위험	
Random sequence generation (무작위 배정순서 생성)	■ 낮음 □ 높음 □ 불확실	Patients were randomised to one of three groups by random selection of envelopes performed in the operating theatre. The envelopes were prepared in advance and contained a computer-generated randomisation schedule indicating the technique to be used.
Allocation concealment (배정순서 은폐)	■ 낮음 □ 높음 □ 불확실	
Blinding of participants and personnel (연구 참여자, 연구자에 대한 눈가림)	□ 낮음 ■ 높음 □ 불확실	The present study is a randomised, controlled, open label trial.
Blinding of outcome assessment (결과평가에 대한 눈가림)	□ 낮음 □ 높음 ■ 불확실	Baseline data were recorded at inclusion after allocation of the randomisation, and perioperative data were completed by nurses and/or the investigator and/or clinical research assistants.
Incomplete outcome data (불충분한 결과자료)	■ 낮음 □ 높음 □ 불확실	중재군과 대조군에서 탈락한 인원이 비슷한 수준이고 탈락 이유도 동일함
Selective reporting (선택적 보고)	□ 낮음 ■ 높음 □ 불확실	대부분의 결과값이 그래프로 제시되어 있고, 일부 지표에 대해 선택적으로 값을 보고하고 있어 메타분석에 포함시킬 수 없음
Industrial funding support (민간 연구비 지원)	■ 낮음 □ 높음 □ 불확실	Financial support and sponsorship: none declared

연번(Ref ID)		1204
1저자(출판연도)		Amour (2019)
영역	비뚤림위험	
Random sequence generation (무작위 배정순서 생성)	☐ 낮음 ☐ 높음 ■ 불확실	The **randomization list** was **computer-generated, balanced by blocks** of variable and undisclosed size, and **stratified by the center and by the baseline** high or low risk of postoperative pneumonia.
Allocation concealment (배정순서 은폐)	■ 낮음 ☐ 높음 ☐ 불확실	Allocation concealment was achieved **using a centralized, secure, interactive, web-response system** accessible from each study center (Cleanweb, Telemedecine Technologies S.A.S., Boulogne-Billancourt, France).
Blinding of participants and personnel (연구 참여자, 연구자에 대한 눈가림)	■ 낮음 ☐ 높음 ☐ 불확실	This trial was a randomized, double-blind, two-arm, parallel-group, multicenter, placebo-controlled study (Fig. 1). Both **patient and medical team** involved in the study were **blinded** to the allocated treatment.
Blinding of outcome assessment (결과평가에 대한 눈가림)	■ 낮음 ☐ 높음 ☐ 불확실	Outcomes Experts were **blinded** with respect to patient allocation.
Incomplete outcome data (불충분한 결과자료)	■ 낮음 ☐ 높음 ☐ 불확실	결측치가 군간 유사하게 발생하였음 - Overall, the number of **missing values** for the primary outcome was 10 **(1.3%)** in the l-bupivacaine group and 6 **(0.8%)** in placebo group.
Selective reporting (선택적 보고)	■ 낮음 ☐ 높음 ☐ 불확실	프로토콜이 존재하여 연구방법에 언급된 결과지표에 대해 연구결과에서 모두 보고하고 있음
Industrial funding support (민간 연구비 지원)	☐ 낮음 ■ 높음 ☐ 불확실	Funding The STERNOCAT study was **funded by the French Ministry of Health** (Programme Hospitalier de Recherche Clinique National, P100107) and **sponsored by Assistance Publique-Hopitaux de Paris** (AP-HP). **Baxter** provided multiperforated wound catheters, **Abbott** France provided l-bupivacaine, and Wym France provided elastomeric pumps, all free of charge. Conflicts of interest All authors have completed and submitted the ICMJE Form for Disclosure of Potential Conflicts of Interest. No disclosure was reported.

연번(Ref ID)		776
1저자(출판연도)		Florkiewicz (2019)
영역	비뚤림위험	
Random sequence generation (무작위 배정순서 생성)	■ 낮음 ☐ 높음 ☐ 불확실	Patients were allocated to either the ropivacaine or placebo group, **according to a computer-generated randomization protocol**, with a **block size of 4**.
Allocation concealment (배정순서 은폐)	■ 낮음 ☐ 높음 ☐ 불확실	Assignments were performed **by a statistician** from the University of Eastern Finland, Kuopio, who was not involved in the study.
Blinding of participants and personnel (연구 참여자, 연구자에 대한 눈가림)	■ 낮음 ☐ 높음 ☐ 불확실	All personnel **participating** in the study **were blinded** to the group assignment, including the **attending anesthesiologist; all staff** in the operation room, postoperative unit, and cardiac surgery ward; and the research nurse. The code remained blinded **until the end of the study**.
Blinding of outcome assessment (결과평가에 대한 눈가림)	■ 낮음 ☐ 높음 ☐ 불확실	
Incomplete outcome data (불충분한 결과자료)	■ 낮음 ☐ 높음 ☐ 불확실	결측치가 군간 유사하게 발생하였음 - Fig. 1. (중재군) completed 48-h F/U (47/49) (대조군) completed 48-h F/U (43/49)
Selective reporting (선택적 보고)	☐ 낮음 ☐ 높음 ■ 불확실	일부 결과값(secondary outcome;통증 지표)이 그래프로만 제시되어 불완전한 결과 보고를 하고 있어 메타분석에 포함시킬 수 없음
Industrial funding support (민간 연구비 지원)	☐ 낮음 ■ 높음 ☐ 불확실	Elastomeric **pumps** (Multirate Infusor) and wound **catheters** were **provided for free by Baxter Corporation**, Helsinki, Finland.

연번(Ref ID)		1652
1저자(출판연도)		Fiorelli (2016)
영역	비뚤림위험	
Random sequence generation (무작위 배정순서 생성)	■ 낮음 □ 높음 □ 불확실	Patients recruited in the study were **randomly allocated** to receive a continuous surgical wound site infusion of either bupivacaine (wound group) or saline solution (placebo group) delivered by a multiholed wound catheter (PAINfusor by Baxter) connected with an elastomeric pump (ON-Q PainBuster, ref. PS6505; I-Flow Corp., Lake Forest, CA, USA) **according to computer-generated codes** kept in a **sealed opaque envelope**.
Allocation concealment (배정순서 은폐)	■ 낮음 □ 높음 □ 불확실	
Blinding of participants and personnel (연구 참여자, 연구자에 대한 눈가림)	■ 낮음 □ 높음 □ 불확실	Our study is a prospective, **double-blind,** randomized, placebocontrolled, unicentre trial~ All **investigators and study staff**, including the nurses, were **blinded** to the elastomeric pump drugs.
Blinding of outcome assessment (결과평가에 대한 눈가림)	■ 낮음 □ 높음 □ 불확실	(Inter-groups differences assessment criteria) The technician was **blinded** to patient group allocations.
Incomplete outcome data (불충분한 결과자료)	■ 낮음 □ 높음 □ 불확실	결측치가 군간 유사하게 발생하였고, 원인도 유사함 Figure 2. (중재군) Lost to F/U (3/30) (대조군) Lost to F/U (2/30)
Selective reporting (선택적 보고)	■ 낮음 □ 높음 □ 불확실	프로토콜은 없지만 연구방법에 언급된 결과지표에 대해 연구결과에서 모두 보고하고 있음(Table 2)
Industrial funding support (민간 연구비 지원)	■ 낮음 □ 높음 □ 불확실	Conflict of interest: **none** declared.

연번(Ref ID)		1083
1저자(출판연도)		Mattila (2016)
영역	비뚤림위험	
Random sequence generation (무작위 배정순서 생성)	■ 낮음 □ 높음 □ 불확실	Enrolled children were **randomly assigned** to a treatment **by the sealed-envelope** method. The study design was a series of **blocks of fours**, whereby a **patient randomly** received either a continuous wound infusion of ropivacine (Group R) or of saline (Group C).
Allocation concealment (배정순서 은폐)	■ 낮음 □ 높음 □ 불확실	
Blinding of participants and personnel (연구 참여자, 연구자에 대한 눈가림)	■ 낮음 □ 높음 □ 불확실	This randomized, **double-blind** study~ Thus, **anesthetist, surgeon, and intensive care and ward nurses were blinded** regarding the drug the child received.
Blinding of outcome assessment (결과평가에 대한 눈가림)	■ 낮음 □ 높음 □ 불확실	Thus, anesthetist, surgeon, and **intensive care and ward nurses were blinded** regarding the drug the child received. Pain was assessed **by the intensive care nurse**
Incomplete outcome data (불충분한 결과자료)	■ 낮음 □ 높음 □ 불확실	결측치 없음
Selective reporting (선택적 보고)	□ 낮음 □ 높음 ■ 불확실	일부 결과(통증 지표)가 그래프(Figure 2)로만 제시되어 불완전한 결과 보고를 하고 있어 메타분석에 포함시킬 수 없음
Industrial funding support (민간 연구비 지원)	■ 낮음 □ 높음 □ 불확실	**Funding** A grant (ATeK 31.10.2014/Olkkola) from the special **governmental subsidy** for health sciences research. **Conflict of interest** **No** conflict of interest to be declared.

연번(Ref ID)		2960
1저자(출판연도)		Agarwal(2013)
영역	비뚤림위험	
Random sequence generation (무작위 배정순서 생성)	■ 낮음 □ 높음 □ 불확실	The patients were assigned to treatment using a computer-generated randomization schedule prepared by the Division of Biostatistics before the study.
Allocation concealment (배정순서 은폐)	□ 낮음 □ 높음 ■ 불확실	언급 없음
Blinding of participants and personnel (연구 참여자, 연구자에 대한 눈가림)	■ 낮음 □ 높음 □ 불확실	The 0.3% ropivacaine or normal saline solutions were made up by our study pharmacy, and both the patients and all personnel were blinded as to what was being infused. All decisions regarding weaning and extubation of the patient were made by the anesthesiologist covering the ICU, who was blinded as to group designation. -Masking:Quadruple (Participant, Care Provider, Investigator, Outcomes Assessor) (https://clinicaltrials.gov/ct2/show/NCT00586976)
Blinding of outcome assessment (결과평가에 대한 눈가림)	■ 낮음 □ 높음 □ 불확실	
Incomplete outcome data (불충분한 결과자료)	□ 낮음 □ 높음 ■ 불확실	관련 보고가 불충분함 -Only 85 patients were included in this study, although 200 were originally planned.
Selective reporting (선택적 보고)	□ 낮음 □ 높음 ■ 불확실	일부 결과값이 그래프(Figure 1)로 제시되어 있어 불완전한 보고로 인해 메타분석에 포함시킬 수 없음
Industrial funding support (민간 연구비 지원)	■ 낮음 □ 높음 □ 불확실	This study was supported by Mayo Foundation for Education and Research and Stryker Nordic

연번(Ref ID)		3530
1저자(출판연도)		Abbasi(2012)
영역	비뚤림위험	
Random sequence generation (무작위 배정순서 생성)	☐ 낮음 ☐ 높음 ■ 불확실	In this prospective, randomized, placebo-controlled, double-blind clinical trial The patients were randomized in two groups (group A= Cases Group B = Controls). Each group had 18 patients.
Allocation concealment (배정순서 은폐)	☐ 낮음 ☐ 높음 ■ 불확실	관련 언급 없음
Blinding of participants and personnel (연구 참여자, 연구자에 대한 눈가림)	☐ 낮음 ☐ 높음 ■ 불확실	관련 언급 없음
Blinding of outcome assessment (결과평가에 대한 눈가림)	☐ 낮음 ☐ 높음 ■ 불확실	관련 언급 없음
Incomplete outcome data (불충분한 결과자료)	■ 낮음 ☐ 높음 ☐ 불확실	결측치 없음
Selective reporting (선택적 보고)	■ 낮음 ☐ 높음 ☐ 불확실	프로토콜은 없지만 사전에 정해놓은 결과에 대해 모두 보고함
Industrial funding support (민간 연구비 지원)	☐ 낮음 ☐ 높음 ■ 불확실	언급 없음

연번(Ref ID)		100
1저자(출판연도)		Eljezi(2012)
영역	비뚤림위험	
Random sequence generation (무작위 배정순서 생성)	■ 낮음 □ 높음 □ 불확실	Each patient was given an inclusion number to be used for the randomization, which was conducted by an independent research assistant with blocks of 4.
Allocation concealment (배정순서 은폐)	■ 낮음 □ 높음 □ 불확실	Before connection, the infusion pump was filled with the study solution under the control of the anesthesiologist in charge of the patient, who opened the allocation envelope.
Blinding of participants and personnel (연구 참여자, 연구자에 대한 눈가림)	■ 낮음 □ 높음 □ 불확실	All providers were blinded to the treatment group; the patient was unaware of the treatment administered, throughout the study. Nobody in the postoperative care unit (PACU) and surgical ward staff was aware of the treatment administered. -Masking:Double (Participant, Investigator) (https://clinicaltrials.gov/ct2/show/NCT01196767)
Blinding of outcome assessment (결과평가에 대한 눈가림)	□ 낮음 □ 높음 ■ 불확실	
Incomplete outcome data (불충분한 결과자료)	■ 낮음 □ 높음 □ 불확실	결측치 없음 -Of the 40 patients included in the study and randomized (20 in each group), ~
Selective reporting (선택적 보고)	□ 낮음 ■ 높음 □ 불확실	대부분의 결과값이 그래프(Figure 2)로 제시되어 있어 불완전한 보고로 인해 메타분석에 포함시킬 수 없음
Industrial funding support (민간 연구비 지원)	■ 낮음 □ 높음 □ 불확실	No financial support was received for this study.

연번(Ref ID)		706
1저자(출판연도)		Tirotta(2009)
영역	비뚤림위험	
Random sequence generation (무작위 배정순서 생성)	☐ 낮음 ☐ 높음 ■ 불확실	a prospective, randomized, and double-blind study The patients were assigned to one of two groups; Treatment Group (0.25% levobupivacaine or 0.25% bupivacaine) or Placebo Group (normal saline).
Allocation concealment (배정순서 은폐)	☐ 낮음 ☐ 높음 ■ 불확실	
Blinding of participants and personnel (연구 참여자, 연구자에 대한 눈가림)	☐ 낮음 ☐ 높음 ■ 불확실	a prospective, randomized, and double-blind study
Blinding of outcome assessment (결과평가에 대한 눈가림)	■ 낮음 ☐ 높음 ☐ 불확실	The CICU staff was unaware of the patient's group assignment. Pain assessment was based on age according to institutional guidelines. The nurses in the CICU are specifically trained in the utilization of these scales.
Incomplete outcome data (불충분한 결과자료)	■ 낮음 ☐ 높음 ☐ 불확실	89명 중 17명이 배제기준에 해당하여 최종 중재군 35명, 대조군 37명 분석 -A total of 89 patients were enrolled. Seventeen patients did not complete the study and were excluded for the following reasons: unable to extubate in the operating room or within 6 h of arrival to the CICU (10), parents changed their mind the day of surgery (3), accidental removal of the catheter (1), incorrect size pump inserted (1), surgeon forgot to place pump (1), and median sternotomy incision not utilized (1).
Selective reporting (선택적 보고)	☐ 낮음 ☐ 높음 ■ 불확실	일부 결과값(통증 지표)을 보고하고 있지 않아 메타분석에 포함시킬 수 없음
Industrial funding support (민간 연구비 지원)	☐ 낮음 ■ 높음 ☐ 불확실	Financial support provided by Miami Children's Hospital Research Institute, Arnold Palmer Hospital for Children and I-Flow Corporation.

연번(Ref ID)		3531
1저자(출판연도)		White(2003)
영역	비뚤림위험	
Random sequence generation (무작위 배정순서 생성)	☐ 낮음 ☐ 높음 ■ 불확실	In this prospective, randomized, placebo-controlled, double-blind clinical trial,
Allocation concealment (배정순서 은폐)	☐ 낮음 ☐ 높음 ■ 불확실	관련 언급 없음
Blinding of participants and personnel (연구 참여자, 연구자에 대한 눈가림)	☐ 낮음 ☐ 높음 ■ 불확실	In this prospective, randomized, placebo-controlled, double-blind clinical trial,
Blinding of outcome assessment (결과평가에 대한 눈가림)	■ 낮음 ☐ 높음 ☐ 불확실	Postoperative evaluations were performed by a blinded observer 4, 8, 12, 24, 48, and 72 h after tracheal extubation, ~
Incomplete outcome data (불충분한 결과자료)	■ 낮음 ☐ 높음 ☐ 불확실	45명 중 21명이 배제기준에 해당하여 최종 중재군 12명, 대조군 12명 분석 -A total of **45 patients** were enrolled in the study. However, nine patients were excluded from the data analysis because of failure to initiate the therapy or protocol violations (e.g., premature termination of the therapy). In six cases, the local anesthetic catheters either were not placed by the surgeon at the end of the operation (four cases) or were inadvertently removed within 24 h (two cases). Two patients developed serious bradyarrhythmias during the postbypass period (and were withdrawn from the study before initiating the therapy), and one patient (in the control group) developed a cerebrovascular accident and died on the second postoperative day.
Selective reporting (선택적 보고)	☐ 낮음 ■ 높음 ☐ 불확실	대부분의 결과값이 그래프(Figure 1-2.)로 제시되어 있어 메타분석에 포함시킬 수 없음
Industrial funding support (민간 연구비 지원)	■ 낮음 ☐ 높음 ☐ 불확실	Supported by an educational grant from Ethicon Endo-Surgery, Cincinnati, Ohio.

연번(Ref ID)		1961
1저자(출판연도)		Dowling(2003)
영역	비뚤림위험	
Random sequence generation (무작위 배정순서 생성)	■ 낮음 □ 높음 □ 불확실	a randomized, double-blind, clinical trial Assignment of the local anesthetic or placebo was made on the basis of a random table created in advance of patient enrollment.
Allocation concealment (배정순서 은폐)	□ 낮음 □ 높음 ■ 불확실	관련 언급 없음
Blinding of participants and personnel (연구 참여자, 연구자에 대한 눈가림)	■ 낮음 □ 높음 □ 불확실	a randomized, double-blind, clinical trial All investigators and study staff, including the nurses, were blinded to the identity of the injected solution.
Blinding of outcome assessment (결과평가에 대한 눈가림)	■ 낮음 □ 높음 □ 불확실	The nurses were blinded to the study and were significantly more likely to assess the patients in the treated group as having improved pain control.
Incomplete outcome data (불충분한 결과자료)	■ 낮음 □ 높음 □ 불확실	결측치가 두 군간 유사하게 발생하고 발생한 원인도 유사함 -Five patients initially enrolled in the study were excluded from evaluation. Two patients who were randomized to the ropivacaine group were excluded before treatment because of abnormalities on the intraoperative echocardiogram (severe mitral regurgitation in one and left ventricular ejection fraction of 35% in the other). Three patients required prolonged intubation and received additional sedation. Two of these patients were randomized to ropivacaine and one to placebo.
Selective reporting (선택적 보고)	■ 낮음 □ 높음 □ 불확실	프로토콜은 없지만 연구방법에 언급된 결과지표에 대해 연구결과에서 모두 보고하고 있음
Industrial funding support (민간 연구비 지원)	□ 낮음 ■ 높음 □ 불확실	The ONQ Pain Relief System (I-Flow Corp, Lake Forest, Calif), which provides the continuous infusion of local anesthetic or saline control, was provided by the manufacturer. (기기 제공) The local anesthetic (ropivacaine [Naropin]; AstraZeneca, Wilmington, Del) was provided free of cost by the manufacturer. The manufacturers did not contribute to the design of the study or the correction, analysis, or interpretation of the data. Also, they did not participate in the decision to submit the study for publication.

2. 복부수술(개복 및 복강경)

연번(Ref ID)		1358
1저자(출판연도)		Gathege(2021)
영역	비뚤림위험	
Random sequence generation (무작위 배정순서 생성)	■ 낮음 □ 높음 □ 불확실	Patients were stratified by medical speciality and randomly allocated 1:1 by a computer-generated algorithm to either continuous local anaesthesia wound infusion or thoracic epidural analgesia.
Allocation concealment (배정순서 은폐)	■ 낮음 □ 높음 □ 불확실	Opaque envelopes with the group allocation, opened at the pre-operative unit, were used for participant group assignment.
Blinding of participants and personnel (연구 참여자, 연구자에 대한 눈가림)	□ 낮음 ■ 높음 □ 불확실	A randomized, single-blind, controlled clinical trial
Blinding of outcome assessment (결과평가에 대한 눈가림)	■ 낮음 □ 높음 □ 불확실	We conducted a parallel group, assessor-blinded randomized controlled study at a teaching and referral hospital with a 1:1 post-operative treatment allocation of either continuous local anaesthetic wound infusion or epidural analgesia.
Incomplete outcome data (불충분한 결과자료)	■ 낮음 □ 높음 □ 불확실	In the intention to treat analysis (Fig. 2), the mean difference for total morphine consumption at 72 h was4.01 mg (95% CI − 4.67 to 12.70) which fell within the pre-determined equivalence range of (− 15 to 15 mg)
Selective reporting (선택적 보고)	■ 낮음 □ 높음 □ 불확실	프로토콜은 없지만 연구방법에 언급된 결과지표에 대해 연구결과에서 모두 보고하고 있음
Industrial funding support (민간 연구비 지원)	■ 낮음 □ 높음 □ 불확실	Conflict of interest: The authors declare no conflict of interest as related to this study

연번(Ref ID)		826
1저자(출판연도)		Narayan(2021)
영역	비뚤림위험	
Random sequence generation (무작위 배정순서 생성)	■ 낮음 □ 높음 □ 불확실	After obtaining informed written consent, the patients were randomly allocated to CEI or CWI group using a computer-generated sequence.
Allocation concealment (배정순서 은폐)	□ 낮음 □ 높음 ■ 불확실	언급 없음
Blinding of participants and personnel (연구 참여자, 연구자에 대한 눈가림)	□ 낮음 ■ 높음 □ 불확실	The other limitation of the study is that blinding was not used. We did not use a sham wound catheter in the epidural group to enable the assessment infection resulting from an indwelling wound catheter.
Blinding of outcome assessment (결과평가에 대한 눈가림)	□ 낮음 □ 높음 ■ 불확실	언급 없음
Incomplete outcome data (불충분한 결과자료)	■ 낮음 □ 높음 □ 불확실	두 군의 최종 결측치가 동일하고 결과에 영향을 미치지 않는 것으로 판단됨
Selective reporting (선택적 보고)	■ 낮음 □ 높음 □ 불확실	프로토콜은 없지만 연구방법에 언급된 결과지표에 대해 연구결과에서 모두 보고하고 있음
Industrial funding support (민간 연구비 지원)	■ 낮음 □ 높음 □ 불확실	Received institutional research grant for purchase of wound infusion catheters.

연번(Ref ID)		816
1저자(출판연도)		Klotz(2020)
영역	비뚤림위험	
Random sequence generation (무작위 배정순서 생성)	■ 낮음 □ 높음 □ 불확실	In order to achieve comparable intervention groups for known and unknown risk factors, patients were allocated randomly to the two treatment groups using randomizer.at, a web-based tool from university Graz (Randomizer, Medical University of Graz, Institute for Medical Informatics, Statistics and Documentation (IMI)). A block-randomization with a block length of four was implemented.
Allocation concealment (배정순서 은폐)	■ 낮음 □ 높음 □ 불확실	
Blinding of participants and personnel (연구 참여자, 연구자에 대한 눈가림)	□ 낮음 ■ 높음 □ 불확실	-Blinding of patients, anaesthesiologists and outcome assessors to the intervention was not implemented as the insertion of the epidural catheter is performed when the patient is awake. -A limitation of our trial was the unblinded trial design.
Blinding of outcome assessment (결과평가에 대한 눈가림)	□ 낮음 ■ 높음 □ 불확실	
Incomplete outcome data (불충분한 결과자료)	■ 낮음 □ 높음 □ 불확실	Of 846 patients screened within 14 months, 71 were randomized and 62 (31 per group) included in the intention-to-treat analysis.
Selective reporting (선택적 보고)	■ 낮음 □ 높음 □ 불확실	프로토콜이 존재하고 연구방법에서 언급한 결과지표에 대해 결과를 모두 보고하고 있음
Industrial funding support (민간 연구비 지원)	■ 낮음 □ 높음 □ 불확실	The study was funded by an intramural funding programme of the University Hospital Heidelberg "Heidelberger Stiftung Chirurgie" (www.stiftung-chirurgie.de/startseite.html). The authors did not receive individual grants. The funders had no role in study design, data collection and analysis, decision to publish, or preparation of the manuscript.

연번(Ref ID)		1272
1저자(출판연도)		Othman(2019)
영역	비뚤림위험	
Random sequence generation (무작위 배정순서 생성)	■ 낮음 □ 높음 □ 불확실	Patients were randomly assigned using sealed envelopes into one of 2groups (20 patients each)
Allocation concealment (배정순서 은폐)	■ 낮음 □ 높음 □ 불확실	
Blinding of participants and personnel (연구 참여자, 연구자에 대한 눈가림)	□ 낮음 ■ 높음 □ 불확실	This randomized, comparative, observer-blinded trial was conducted after approval from the ethics committee of South Egypt Cancer Institute
Blinding of outcome assessment (결과평가에 대한 눈가림)	■ 낮음 □ 높음 □ 불확실	Clinical assessment for vital signs, analgesia, side effects, patients' satisfaction, and also blood sampling was performed by an observer who was blinded to group assignment.
Incomplete outcome data (불충분한 결과자료)	■ 낮음 □ 높음 □ 불확실	To compensate for dropouts, we recruited 20 patients in each group to account for random errors and additional comparisons.
Selective reporting (선택적 보고)	□ 낮음 ■ 높음 □ 불확실	통증 결과값이 그래프로 제시되어 있고, 일부 지표에 대해 선택적으로 값을 보고하고 있어 메타분석에 포함시킬 수 없음
Industrial funding support (민간 연구비 지원)	□ 낮음 □ 높음 ■ 불확실	관련 보고 없음

연번(Ref ID)		654
1저자(출판연도)		Kadam(2019)
영역	비뚤림위험	
Random sequence generation (무작위 배정순서 생성)	■ 낮음 □ 높음 □ 불확실	Group allocation was by a simple randomisation table using a user-written Stata module 'ralloc'. This allocation was concealed using a sealed opaque envelope.
Allocation concealment (배정순서 은폐)	■ 낮음 □ 높음 □ 불확실	
Blinding of participants and personnel (연구 참여자, 연구자에 대한 눈가림)	□ 낮음 ■ 높음 □ 불확실	-It was conducted in a single centre, was single-blind and our costings and current practice of PPC catheter insertion may not be applicable in other settings. -The proceduralist could not be blinded, but patients were initially blinded to group allocation; the patients would only become aware of their group allocation once they arrived on the ward post-procedure. On arrival in theatre the chief investigator handed the box of envelopes to the attending nurse or anaesthetic colleague to assign participants for intervention.
Blinding of outcome assessment (결과평가에 대한 눈가림)	□ 낮음 ■ 높음 □ 불확실	The acute pain team who assessed pain scores on the ward also could not be blinded, as it would not be possible to perform catheter assessment and care otherwise.
Incomplete outcome data (불충분한 결과자료)	■ 낮음 □ 높음 □ 불확실	두 군의 최종 결측치가 비슷하고 결과에 영향을 미치지 않는 것으로 판단됨
Selective reporting (선택적 보고)	■ 낮음 □ 높음 □ 불확실	프로토콜은 없지만 연구방법에 언급된 결과지표에 대해 연구결과에서 모두 보고하고 있음
Industrial funding support (민간 연구비 지원)	■ 낮음 □ 높음 □ 불확실	This study was partially funded by the Australian and New Zealand College of Anaesthetists Research Foundation

연번(Ref ID)		3195
1저자(출판연도)		Beaussier(2018)
영역	비뚤림위험	
Random sequence generation (무작위 배정순서 생성)	■ 낮음 □ 높음 □ 불확실	Patients were randomized in a 1:1 ratio. Centralized block balance randomization was prepared by URC-Est.
Allocation concealment (배정순서 은폐)	■ 낮음 □ 높음 □ 불확실	
Blinding of participants and personnel (연구 참여자, 연구자에 대한 눈가림)	■ 낮음 □ 높음 □ 불확실	The CATCH study was designed as a multicentre, prospective, randomized, double-blind, triple-arm, placebo controlled study.
Blinding of outcome assessment (결과평가에 대한 눈가림)	■ 낮음 □ 높음 □ 불확실	The area of hyperalgesia was determined by punctuate mechanical stimulation using calibrated von Frey hairs (ref. NC12775-14, Bioseb, Chaville, France) by investigators blinded to the administered treatment. Statistical analyses were performed blind to treatment allocations.
Incomplete outcome data (불충분한 결과자료)	■ 낮음 □ 높음 □ 불확실	They were done using an intention-to-treat principle and included all patients who received treatment without consent withdrawal.
Selective reporting (선택적 보고)	□ 낮음 ■ 높음 □ 불확실	통증 결과값이 그래프로 제시되어 선택적으로 값을 보고하고 있어 메타분석에 포함시킬 수 없음
Industrial funding support (민간 연구비 지원)	■ 낮음 □ 높음 □ 불확실	Funding for this study was provided entirely by institutional grants (Projet Hospitalier deRecherche Clinique).

연번(Ref ID)		4559
1저자(출판연도)		Wu(2018)
영역	비뚤림위험	
Random sequence generation (무작위 배정순서 생성)	■ 낮음 □ 높음 □ 불확실	-The patients were randomized and divided into three groups ~ -For randomization, opaque and sealed envelopes were numbered consecutively,
Allocation concealment (배정순서 은폐)	■ 낮음 □ 높음 □ 불확실	
Blinding of participants and personnel (연구 참여자, 연구자에 대한 눈가림)	■ 낮음 □ 높음 □ 불확실	and a **physician** who was not involved in the trial kept the randomization list in a locked drawer until the trial was over and all follow-ups had been conducted. All **patients** were masked to the treatment groups assigned for the study.
Blinding of outcome assessment (결과평가에 대한 눈가림)	□ 낮음 □ 높음 ■ 불확실	언급 없음
Incomplete outcome data (불충분한 결과자료)	■ 낮음 □ 높음 □ 불확실	결측치 없음
Selective reporting (선택적 보고)	■ 낮음 □ 높음 □ 불확실	프로토콜은 없지만 연구방법에 언급된 결과지표에 대해 연구결과에서 모두 보고하고 있음
Industrial funding support (민간 연구비 지원)	□ 낮음 □ 높음 ■ 불확실	언급 없음

연번(Ref ID)		410
1저자(출판연도)		Ammianickal(2018)
영역	비뚤림위험	
Random sequence generation (무작위 배정순서 생성)	■ 낮음 ☐ 높음 ☐ 불확실	Patients were recruited by convenient sampling method. They were randomized using computer-generated random numbers.
Allocation concealment (배정순서 은폐)	■ 낮음 ☐ 높음 ☐ 불확실	Allocation concealment was done using serially numbered opaque-sealed envelope technique.
Blinding of participants and personnel (연구 참여자, 연구자에 대한 눈가림)	☐ 낮음 ☐ 높음 ■ 불확실	-We planned to infuse the same infusion rate to both groups to eliminate observer bias. -연구 참여자에 관한 언급 없음
Blinding of outcome assessment (결과평가에 대한 눈가림)	■ 낮음 ☐ 높음 ☐ 불확실	The anaesthesiologist who was not involved in the intraoperative management only assessed the post-operative VAS score. The abdomen of the patient was covered to blind the observer.
Incomplete outcome data (불충분한 결과자료)	■ 낮음 ☐ 높음 ☐ 불확실	각 군에 결측치가 동일하게 발생하고 결과에 영향을 미치지 않을 것으로 판단됨
Selective reporting (선택적 보고)	■ 낮음 ☐ 높음 ☐ 불확실	프로토콜은 없지만 연구방법에 언급된 결과지표에 대해 연구결과에서 모두 보고하고 있음
Industrial funding support (민간 연구비 지원)	■ 낮음 ☐ 높음 ☐ 불확실	Financial support and sponsorship: Nil.

연번(Ref ID)		2521
1저자(출판연도)		Mouawad(2018)
영역	비뚤림위험	
Random sequence generation (무작위 배정순서 생성)	■ 낮음 □ 높음 □ 불확실	Randomization was performed using a computer-generated random numbers table with permutated blocks of ten. The patients were randomized using a 1:1 ratio after providing written informed consent in the outpatient clinic.
Allocation concealment (배정순서 은폐)	□ 낮음 ■ 높음 □ 불확실	Following randomization, health care providers, research staff, and patients were not blinded to study treatment arm.
Blinding of participants and personnel (연구 참여자, 연구자에 대한 눈가림)	□ 낮음 ■ 높음 □ 불확실	It was a parallel assignment interventional model with open label masking, managed per the principles outlined in the Declaration of Helsinki and approved by the Institutional Review Board at SJMH (HSR 09-1061). It is a single-center single-surgeon study; blinding was not possible; because the routes of treatment administration after randomization were obvious in both groups. Patient perceptions may vary and we made no attempt to control for previous patient experiences and what information patients may have received from family and friends.
Blinding of outcome assessment (결과평가에 대한 눈가림)	□ 낮음 □ 높음 ■ 불확실	관련 언급 없음
Incomplete outcome data (불충분한 결과자료)	■ 낮음 □ 높음 □ 불확실	After randomization, 8 cancelled surgery (4 in each group). Therefore, the data were analyzed with a total of 90 patients (78.9% of anticipated accrual) on an intention to treat basis. -각 군의 결측치가 동일하게 발생했고 결과에 영향을 미치지 않을 것으로 판단됨
Selective reporting (선택적 보고)	■ 낮음 □ 높음 □ 불확실	프로토콜은 없지만 연구방법에 언급된 결과지표에 대해 연구결과에서 모두 보고하고 있음
Industrial funding support (민간 연구비 지원)	■ 낮음 □ 높음 □ 불확실	This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors

연번(Ref ID)		1350
1저자(출판연도)		Capdevila(2017)
영역	비뚤림위험	
Random sequence generation (무작위 배정순서 생성)	■ 낮음 □ 높음 □ 불확실	On the morning of the surgical procedure, the patients were randomly assigned to 1 of 3 groups using a computer-generated randomization table: EA group, CSSA group, or control group (Figure 1).
Allocation concealment (배정순서 은폐)	□ 낮음 □ 높음 ■ 불확실	언급 없음
Blinding of participants and personnel (연구 참여자, 연구자에 대한 눈가림)	□ 낮음 ■ 높음 □ 불확실	For both ethical and practical reasons, according to the Patient Protection Committee request, the control group was not a placebo group and patients were nonblinded. Both the patient and the investigator were not blinded at least up to the first 72 postoperative hours.
Blinding of outcome assessment (결과평가에 대한 눈가림)	■ 낮음 □ 높음 □ 불확실	all parameters were recorded by 2 research physicians not involved in the primary phase of the study and intraoperative patient care
Incomplete outcome data (불충분한 결과자료)	■ 낮음 □ 높음 □ 불확실	결측치 없음
Selective reporting (선택적 보고)	□ 낮음 ■ 높음 □ 불확실	주요 결과값(통증)이 그래프로 제시되어 불완전한 결과보고로 인해 메타분석에 포함시킬 수 없음
Industrial funding support (민간 연구비 지원)	■ 낮음 □ 높음 □ 불확실	Funding: Institutional.

연번(Ref ID)		2535
1저자(출판연도)		Araujo(2017)
영역	비뚤림위험	
Random sequence generation (무작위 배정순서 생성)	■ 낮음 □ 높음 □ 불확실	In total, 70 patients aged 21 to 89 were equally randomised to the EDA or CWI groups through an electronically generated list and transferred to individual envelopes.
Allocation concealment (배정순서 은폐)	■ 낮음 □ 높음 □ 불확실	
Blinding of participants and personnel (연구 참여자, 연구자에 대한 눈가림)	□ 낮음 □ 높음 ■ 불확실	another important limitation regards the fact that this has not been a double-blind study, which was not possible, considering the different protocols and involving medical bedside examination.
Blinding of outcome assessment (결과평가에 대한 눈가림)	□ 낮음 □ 높음 ■ 불확실	언급 없음
Incomplete outcome data (불충분한 결과자료)	□ 낮음 □ 높음 ■ 불확실	8 patients were removed from the study allowing for an equal statistical analysis 각 군의 수를 맞추기 위해 실시한 방법이 명확하게 기술되지 않음
Selective reporting (선택적 보고)	□ 낮음 ■ 높음 □ 불확실	대부분의 결과값이 그래프로 제시되어 있고, 선택적으로 값을 보고하고 있어 메타분석에 포함시킬 수 없음
Industrial funding support (민간 연구비 지원)	■ 낮음 □ 높음 □ 불확실	Pro bono supply of 30 PAINfusor® 30 catheters has been provided by Baxter. This equipment has been supplied to the Department of Anaesthesiology of the Hospital de Santa Maria as a sample, as it was not included into the hospital's stock. The catheters were used in the study without granting any power to the company in return.

연번(Ref ID)		779
1저자(출판연도)		Lalmand(2017)
영역	비뚤림위험	
Random sequence generation (무작위 배정순서 생성)	■ 낮음 □ 높음 □ 불확실	A pharmacist who was not otherwise involved in the study used a computer program (Randomization.com) to randomize the participants into three parallel study groups in blocks of 12 with 1:1:1 randomization.
Allocation concealment (배정순서 은폐)	□ 낮음 □ 높음 ■ 불확실	관련 언급 없음
Blinding of participants and personnel (연구 참여자, 연구자에 대한 눈가림)	■ 낮음 □ 높음 □ 불확실	This prospective randomized controlled, double-blind study included pregnant women admitted for planned cesarean delivery with Pfannenstiel incision at rugmann University Hospital.
Blinding of outcome assessment (결과평가에 대한 눈가림)	■ 낮음 □ 높음 □ 불확실	From randomization until completion of the statistical analyses, the patient, the anesthesiologist in charge, and the study staff responsible for collecting data were blinded to the treatment group. The collected data were stored in a locked cupboard in the department of anesthesiology
Incomplete outcome data (불충분한 결과자료)	■ 낮음 □ 높음 □ 불확실	We included 60 patients per group to account for potential loss of results and/or protocol violations. Finally, to account for exclusions after randomization, we recruited an additional block of 12 patients with the same random sequence as initially used, achieving a total of 192 recruitments. -이후 결측치가 발생하긴 했으나 결과에 영향을 미치지 않을 것으로 판단됨
Selective reporting (선택적 보고)	■ 낮음 □ 높음 □ 불확실	프로토콜은 없지만 연구방법에 언급된 결과지표에 대해 연구결과에서 모두 보고하고 있음
Industrial funding support (민간 연구비 지원)	■ 낮음 □ 높음 □ 불확실	The materials used for the study (catheters and elastomeric pumps) were partially funded by a grant of $6000 (USD) received from the Belgian Association for Regional Anesthesia (BARA; BARA_2012_170912). The remainder was funded by our department of anesthesia.

연번(Ref ID)		91
1저자(출판연도)		Telletxea(2016)
영역	비뚤림위험	
Random sequence generation (무작위 배정순서 생성)	■ 낮음 □ 높음 □ 불확실	Patients who agreed to take part were randomized to wound catheterisation (treatment group) or standard post-operative analgesia (control group) using a computer-generated schedule obtained using SAS randomization software. Allocation was concealed to all except the principal investigator.
Allocation concealment (배정순서 은폐)	■ 낮음 □ 높음 □ 불확실	
Blinding of participants and personnel (연구 참여자, 연구자에 대한 눈가림)	□ 낮음 ■ 높음 □ 불확실	As in any study evaluating the quality of analgesia on the basis of perceived pain, patient subjectivity may influence findings. Aside from randomization to the treatment or control group, the study was not blinded.
Blinding of outcome assessment (결과평가에 대한 눈가림)	□ 낮음 □ 높음 ■ 불확실	언급 없음
Incomplete outcome data (불충분한 결과자료)	■ 낮음 □ 높음 □ 불확실	각 군에서 발생한 결측치가 결과에 크게 영향을 미치지 않을 것으로 판단됨
Selective reporting (선택적 보고)	■ 낮음 □ 높음 □ 불확실	프로토콜이 있고 연구방법에 언급된 결과지표에 대해 연구결과에서 모두 보고하고 있음
Industrial funding support (민간 연구비 지원)	■ 낮음 □ 높음 □ 불확실	This clinical trial was has received funding from the Department of Health and Consumer Affairs of the Government of the Basque Country (N ○ exp 2011111058).

연번(Ref ID)		1327
1저자(출판연도)		Zheng(2016)
영역	비뚤림위험	
Random sequence generation (무작위 배정순서 생성)	■ 낮음 □ 높음 □ 불확실	-a prospective, randomized and double-blinded study -The patients were divided randomly into the following three groups according to a computer-generated randomization code: CWI with 0.3% ropivacaine (group CWI), PCIA with morphine (group PCIA), and epidural analgesia (group EA).
Allocation concealment (배정순서 은폐)	□ 낮음 □ 높음 ■ 불확실	언급 없음
Blinding of participants and personnel (연구 참여자, 연구자에 대한 눈가림)	■ 낮음 □ 높음 □ 불확실	a prospective, randomized and double-blinded study
Blinding of outcome assessment (결과평가에 대한 눈가림)	■ 낮음 □ 높음 □ 불확실	Effectiveness and safety of the three analgesic methods were evaluated by the same acute pain service (APS) team who were blinded to the entire anesthesia procedure and analgesia approach.
Incomplete outcome data (불충분한 결과자료)	■ 낮음 □ 높음 □ 불확실	-Overall, 75 cases were recruited to this study (25 per group) and all patients successfully completed the study. -결측치 없음
Selective reporting (선택적 보고)	□ 낮음 ■ 높음 □ 불확실	주요 결과값(통증, 약물사용량)이 그래프로 제시되어 불완전한 결과보고로 인해 메타분석에 포함시킬 수 없음
Industrial funding support (민간 연구비 지원)	□ 낮음 □ 높음 ■ 불확실	언급 없음

연번(Ref ID)		3066
1저자(출판연도)		Lee(2016)
영역	비뚤림위험	
Random sequence generation (무작위 배정순서 생성)	■ 낮음 □ 높음 □ 불확실	-Patients were randomly allocated following a simple randomization procedure to one of two parallel groups in 1 : 1 ratio to receive subfascial ropivacaine continuous infusion (R group) or fentanyl IV PCA (F group). - A random sequence was generated by computer-generated allocation numbering (www.randomizer.org) and allocation concealment was achieved through sequentially numbered concealed sheets.
Allocation concealment (배정순서 은폐)	■ 낮음 □ 높음 □ 불확실	
Blinding of participants and personnel (연구 참여자, 연구자에 대한 눈가림)	□ 낮음 ■ 높음 □ 불확실	Blinding of the operator was not applied in this study because R group patients received wound catheters and F group patients did not. In an attempt to reduce the risk of bias, the research investigator who recorded the postoperative study parameters was not informed of and was oblivious to the presence of the ropivacaine infusion device. However, blinding was not complete in this study.
Blinding of outcome assessment (결과평가에 대한 눈가림)	■ 낮음 □ 높음 □ 불확실	In an effort to reduce the risk of bias in this study, our assessor was not informed of and was oblivious to the presence of a wound device, while investigating the pain scores, side effects, and IV PCA infusion doses.
Incomplete outcome data (불충분한 결과자료)	■ 낮음 □ 높음 □ 불확실	Violation of intervention protocol: IV PCA regimen set to receive a continuous infusion of 1ml/hr rather than 0.5mg/hr (n=2,included in the analysis for intention to treat analysis)
Selective reporting (선택적 보고)	■ 낮음 □ 높음 □ 불확실	프로토콜이 있고 연구방법에 언급된 결과지표에 대해 연구결과에서 모두 보고하고 있음
Industrial funding support (민간 연구비 지원)	□ 낮음 ■ 높음 □ 불확실	Acknowledgments There was no other source of funding for research. However, this study received On-Q PainbusterTM (I-Flow Corp., Lake Forest, CA, USA) product supply from B-Braun corporation, without prejudice nor other financial support.

연번(Ref ID)		813
1저자(출판연도)		Mungroop(2016)
영역	비뚤림위험	
Random sequence generation (무작위 배정순서 생성)	■ 낮음 □ 높음 □ 불확실	-Patients were randomly allocated (1:1) to continuous wound infiltration or epidural analgesia. Randomisation was done centrally using a web-based randomisation module and stratified according to centre and type of incision (subcostal vs midline). -Computer-generated permutated block randomisation with a 1:1 allocation ratio and concealed varying permuted block sizes of two, four, six, and eight patients was used.
Allocation concealment (배정순서 은폐)	■ 낮음 □ 높음 □ 불확실	
Blinding of participants and personnel (연구 참여자, 연구자에 대한 눈가림)	□ 낮음 ■ 높음 □ 불확실	-In this randomised controlled, open label, non-inferiority trial -Because of the invasive nature of the interventions, neither the trial participants nor the investigators were masked to group allocation.
Blinding of outcome assessment (결과평가에 대한 눈가림)	□ 낮음 □ 높음 ■ 불확실	언급 없음
Incomplete outcome data (불충분한 결과자료)	□ 낮음 □ 높음 ■ 불확실	-All analyses were done on the basis of a per-protocol principle. Our primary endpoint was first analysed per protocol, with a secondary, supportive modified intention-to-treat analysis, since use of an intention-to treat analysis as the primary analysis of a non-inferiority trial might introduce bias to no difference, which could exaggerate estimates of equivalence. -The modified intention-to-treat analysis yielded similar results (table 2)
Selective reporting (선택적 보고)	■ 낮음 □ 높음 □ 불확실	정해진 프로토콜을 따르며 연구방법에 언급된 결과지표에 대해 연구결과에서 모두 보고하고 있음
Industrial funding support (민간 연구비 지원)	■ 낮음 □ 높음 □ 불확실	This study was solely funded by departmental sources of the Departments of Surgery and Anaesthesiology of the Academic Medical Centre, University of Amsterdam, Netherlands.

연번(Ref ID)		256
1저자(출판연도)		Elshamaa(2016)
영역	비뚤림위험	
Random sequence generation (무작위 배정순서 생성)	■ 낮음 □ 높음 □ 불확실	The patients were randomly divided, using computer-conducted concealed envelope method, into two equal groups
Allocation concealment (배정순서 은폐)	■ 낮음 □ 높음 □ 불확실	
Blinding of participants and personnel (연구 참여자, 연구자에 대한 눈가림)	■ 낮음 □ 높음 □ 불확실	patients as well as the anesthesiologist and the surgeon were blinded to the type of the medications infused and the master codes were kept with a person that **does not share in the collection or analysis of the results.**
Blinding of outcome assessment (결과평가에 대한 눈가림)	■ 낮음 □ 높음 □ 불확실	
Incomplete outcome data (불충분한 결과자료)	■ 낮음 □ 높음 □ 불확실	발생한 결측치가 결과에 영향을 주지 않을 것으로 판단됨
Selective reporting (선택적 보고)	■ 낮음 □ 높음 □ 불확실	프로토콜은 없지만 연구방법에 언급된 결과지표에 대해 연구결과에서 모두 보고하고 있음
Industrial funding support (민간 연구비 지원)	■ 낮음 □ 높음 □ 불확실	The author would like to thank Erfan & Bagedo General Hospital for financing the current study.

연번(Ref ID)		599
1저자(출판연도)		Hotta(2016)
영역	비뚤림위험	
Random sequence generation (무작위 배정순서 생성)	■ 낮음 ☐ 높음 ☐ 불확실	Because surgical incision can be extended cephalad by the result of the pathologic examination during surgery, patients were randomly assigned into one of two groups using computer-generated random numbers just before the wound closure
Allocation concealment (배정순서 은폐)	☐ 낮음 ☐ 높음 ■ 불확실	관련 언급 없음
Blinding of participants and personnel (연구 참여자, 연구자에 대한 눈가림)	☐ 낮음 ■ 높음 ☐ 불확실	this study was not blinded. As the study design was comparison between two groups having different regional anesthesia, the regional technique used in each patient was evident.
Blinding of outcome assessment (결과평가에 대한 눈가림)	■ 낮음 ☐ 높음 ☐ 불확실	-In order to reduce any bias, the data were collected by observers who were not involved in the study. -Data were collected by observers who were not involved in the study.
Incomplete outcome data (불충분한 결과자료)	■ 낮음 ☐ 높음 ☐ 불확실	결측치 없음
Selective reporting (선택적 보고)	■ 낮음 ☐ 높음 ☐ 불확실	프로토콜 하에 연구방법에서 언급한 결과지표에 대해 결과를 모두 보고하고 있음
Industrial funding support (민간 연구비 지원)	☐ 낮음 ☐ 높음 ■ 불확실	관련 언급 없음

연번(Ref ID)		2739
1저자(출판연도)		Klasen(2016)
영역	비뚤림위험	
Random sequence generation (무작위 배정순서 생성)	■ 낮음 □ 높음 □ 불확실	-Patients were randomly assigned using a computer generated table using a permuted block design with a 1:1 allocation ratio ~
Allocation concealment (배정순서 은폐)	□ 낮음 □ 높음 ■ 불확실	관련 언급 없음
Blinding of participants and personnel (연구 참여자, 연구자에 대한 눈가림)	□ 낮음 ■ 높음 □ 불확실	prospective, randomized, open-label, two-parallel group study
Blinding of outcome assessment (결과평가에 대한 눈가림)	□ 낮음 ■ 높음 □ 불확실	Another limitation was the lack of blinding that could have affected both the parturient and medical assessment.
Incomplete outcome data (불충분한 결과자료)	■ 낮음 □ 높음 □ 불확실	두 군 모두 결측치가 발생했으나, 일부 결측치의 사유가 동일하고 결과에 큰 영향을 미치지 않는 것으로 판단됨
Selective reporting (선택적 보고)	□ 낮음 ■ 높음 □ 불확실	대부분의 결과값(통증, 약물 사용량)이 그래프로 제시되어 불완전한 결과보고로 인해 메타분석에 포함시킬 수 없음
Industrial funding support (민간 연구비 지원)	■ 낮음 □ 높음 □ 불확실	The sponsor of the study was the Assistance Publique-Ho^ pitaux de Marseille, France.

연번(Ref ID)		2758
1저자(출판연도)		Dowidar(2016)
영역	비뚤림위험	
Random sequence generation (무작위 배정순서 생성)	■ 낮음 □ 높음 □ 불확실	60 patients were randomized preoperatively using closed envelops and computer generated random numbers into 2 equal groups,
Allocation concealment (배정순서 은폐)	■ 낮음 □ 높음 □ 불확실	
Blinding of participants and personnel (연구 참여자, 연구자에 대한 눈가림)	■ 낮음 □ 높음 □ 불확실	A blinded nurse, not participating in data collection read the patient 's number. The participants and people analyzing the data were also blinded. All the randomized patients completed the trial, Fig. 1.
Blinding of outcome assessment (결과평가에 대한 눈가림)	■ 낮음 □ 높음 □ 불확실	
Incomplete outcome data (불충분한 결과자료)	■ 낮음 □ 높음 □ 불확실	결측치 없음
Selective reporting (선택적 보고)	□ 낮음 ■ 높음 □ 불확실	주요 결과값(통증, 약물 사용량)이 그래프로 제시되어 불완전한 결과 보고로 인해 메타분석에 포함시킬 수 없음
Industrial funding support (민간 연구비 지원)	■ 낮음 □ 높음 □ 불확실	Self funded (the authors supported the study by themselves).

연번(Ref ID)		285
1저자(출판연도)		Jolly(2015)
영역	비뚤림위험	
Random sequence generation (무작위 배정순서 생성)	■ 낮음 □ 높음 □ 불확실	FJ,who had no role in the eligibility assessments or patient inclusions, manually achieved the randomization in a 1:1 ratio and in blocks of 4.
Allocation concealment (배정순서 은폐)	■ 낮음 □ 높음 □ 불확실	Using a list of random numbers, FJ placed each number in an opaque sealed envelope before study initiation. This envelope was opened by the treating anesthesiologist immediately before the patient entered the operating room.
Blinding of participants and personnel (연구 참여자, 연구자에 대한 눈가림)	□ 낮음 ■ 높음 □ 불확실	Neither the patients nor the physicians were blinded to the treatment arm. The unblinded design may have resulted in bias.
Blinding of outcome assessment (결과평가에 대한 눈가림)	■ 낮음 □ 높음 □ 불확실	All study outcomes were routinely collected by the nursing staff using a specific monitoring chart and entered daily into the study database by FJ, who had no role in patient care.
Incomplete outcome data (불충분한 결과자료)	■ 낮음 □ 높음 □ 불확실	-결측치 없음 -To compensate for possible early discontinuation of the study treatment due to technical issues reported in a previous trial [21], we decided to include 12 additional women, i.e., 68 women in all.
Selective reporting (선택적 보고)	□ 낮음 ■ 높음 □ 불확실	주요 결과값(통증, 약물 사용량)이 그래프로 제시되어 불완전한 결과 보고로 인해 메타분석에 포함시킬 수 없음
Industrial funding support (민간 연구비 지원)	□ 낮음 ■ 높음 □ 불확실	*Funding* The continuous wound infiltration devices used for this study was donated by Baxter Laboratories (France), which had no role in the design or analysis of this study. Departmental funds were used to review the manuscript in English.

연번(Ref ID)		1924
1저자(출판연도)		Barr(2015)
영역	비뚤림위험	
Random sequence generation (무작위 배정순서 생성)	■ 낮음 □ 높음 □ 불확실	Patients were randomised in parallel to receive post-operative analgesia by either TEA or WIC for the first 48 h after their surgery. Pharmacy staff in each centre determined allocation using a pre-prepared randomisation schedule using permuted blocks of variable size, and the anaesthetic department was informed by email.
Allocation concealment (배정순서 은폐)	■ 낮음 □ 높음 □ 불확실	To facilitate blinding of the study, details of treatment allocation were not revealed to the patient, research nurse, research fellow or surgeon. To achieve double blinding, ''double dummy'' administration technique was used.
Blinding of participants and personnel (연구 참여자, 연구자에 대한 눈가림)	■ 낮음 □ 높음 □ 불확실	
Blinding of outcome assessment (결과평가에 대한 눈가림)	■ 낮음 □ 높음 □ 불확실	In this study, the outcome assessors and patients were blinded, which is important to minimise bias.
Incomplete outcome data (불충분한 결과자료)	■ 낮음 □ 높음 □ 불확실	All data were analysed on an intention to treat basis.
Selective reporting (선택적 보고)	■ 낮음 □ 높음 □ 불확실	프로토콜을 따르며 연구방법에 언급된 결과지표에 대해 연구결과에서 모두 보고하고 있음
Industrial funding support (민간 연구비 지원)	■ 낮음 □ 높음 □ 불확실	This paper represents independent research funded by the National Institute for Health Research (NIHR) under its Research for Patient Benefit (RfPB) Programme (Grant Reference Number PB-PG-1207-15004) and was registered with ISRCTN2734773. The views expressed are those of the authors and are not necessarily those of the NHS, the NIHR or the Department of Health. The funding body did not have any role in the planning of the study, recruitment, data collection or analysis.

연번(Ref ID)		2241
1저자(출판연도)		Machoki(2015)
영역	비뚤림위험	
Random sequence generation (무작위 배정순서 생성)	■ 낮음 ☐ 높음 ☐ 불확실	An online computer random number generator, (http://www.randomizer.org), was used to create the random number sequences for the two parts of the study.
Allocation concealment (배정순서 은폐)	■ 낮음 ☐ 높음 ☐ 불확실	Study participant group allocation was revealed only to the principal investigator, the operating surgeon, anesthesiologist and the data and safety management board.
Blinding of participants and personnel (연구 참여자, 연구자에 대한 눈가림)	☐ 낮음 ■ 높음 ☐ 불확실	
Blinding of outcome assessment (결과평가에 대한 눈가림)	■ 낮음 ☐ 높음 ☐ 불확실	-To ensure blinding during pain assessment, the patient wound dressings were identical in all groups and left in place for the duration of the study. -The pain assessor was blinded to the post-operative treatment allocation. -All patients in the study were assessed for pain by the same pediatric pain specialist, who was blinded to the treatment arms, using the same pain scale and at equal intervals of up to 6 hourly.
Incomplete outcome data (불충분한 결과자료)	■ 낮음 ☐ 높음 ☐ 불확실	두 군 모두 유사한 수준으로 결측치가 발생하였고 결과에 큰 영향을 미치지 않는 것으로 판단됨
Selective reporting (선택적 보고)	■ 낮음 ☐ 높음 ☐ 불확실	프로토콜을 따르며 연구방법에 언급된 결과지표에 대해 연구결과에서 모두 보고하고 있음
Industrial funding support (민간 연구비 지원)	■ 낮음 ☐ 높음 ☐ 불확실	Conflict of interest: None

연번(Ref ID)		1595
1저자(출판연도)		Kong(2014)
영역	비뚤림위험	
Random sequence generation (무작위 배정순서 생성)	☐ 낮음 ☐ 높음 ■ 불확실	Via a randomization procedure, 31 patients were allocated to the intravenous (IV) PCA group and received pain relief via a PCA pump
Allocation concealment (배정순서 은폐)	☐ 낮음 ☐ 높음 ■ 불확실	언급 없음
Blinding of participants and personnel (연구 참여자, 연구자에 대한 눈가림)	☐ 낮음 ☐ 높음 ■ 불확실	언급 없음
Blinding of outcome assessment (결과평가에 대한 눈가림)	■ 낮음 ☐ 높음 ☐ 불확실	언급 없음
Incomplete outcome data (불충분한 결과자료)	■ 낮음 ☐ 높음 ☐ 불확실	결측치 없음
Selective reporting (선택적 보고)	■ 낮음 ☐ 높음 ☐ 불확실	프로토콜은 없지만 연구방법에 언급된 결과지표에 대해 연구결과에서 모두 보고하고 있음
Industrial funding support (민간 연구비 지원)	■ 낮음 ☐ 높음 ☐ 불확실	*Conflict of interest* The authors have no conflicts of interest.

연번(Ref ID)		1528
1저자(출판연도)		Kilic(2014)
영역	비뚤림위험	
Random sequence generation (무작위 배정순서 생성)	■ 낮음 □ 높음 □ 불확실	They were allocated using computer-generated list of random numbers in opaque sealed envelopes to receive either subfascial or epidural catheter at the end of surgery.
Allocation concealment (배정순서 은폐)	■ 낮음 □ 높음 □ 불확실	
Blinding of participants and personnel (연구 참여자, 연구자에 대한 눈가림)	□ 낮음 ■ 높음 □ 불확실	Therefore this study is not designed to be double blinded which can be seen as a limitation affecting the strength of our results.
Blinding of outcome assessment (결과평가에 대한 눈가림)	□ 낮음 □ 높음 ■ 불확실	언급 없음
Incomplete outcome data (불충분한 결과자료)	■ 낮음 □ 높음 □ 불확실	두 군 모두 유사하게 결측치가 발생하였고 결과에 큰 영향을 미치지 않을 것으로 판단됨
Selective reporting (선택적 보고)	□ 낮음 ■ 높음 □ 불확실	주요 결과값(통증, 약물 사용량)이 그래프로 제시되어 불완전한 결과 보고로 인해 메타분석에 포함시킬 수 없음
Industrial funding support (민간 연구비 지원)	■ 낮음 □ 높음 □ 불확실	Conflicts of interest. The authors certify that there is no conflict of interest with any financial organization regarding the material discussed in the manuscript.

연번(Ref ID)		2054
1저자(출판연도)		Fassoulaki(2014)
영역	비뚤림위험	
Random sequence generation (무작위 배정순서 생성)	■ 낮음 □ 높음 □ 불확실	This prospective randomized, observer-blind, single-center study Patients were randomized by the third author (AM) to the epidural or subcutaneous group using a computer-generated table with random numbers (http://www.randomizer.org)
Allocation concealment (배정순서 은폐)	□ 낮음 □ 높음 ■ 불확실	관련 언급 없음
Blinding of participants and personnel (연구 참여자, 연구자에 대한 눈가림)	□ 낮음 ■ 높음 □ 불확실	-This prospective randomized, observer-blind, single-center study -Ethical reasons and patients' refusal prevented the investigators from inserting an epidural and a subcutaneous catheter in all patients to assure a double-blinded study with active and placebo infusion according to the group assignment.
Blinding of outcome assessment (결과평가에 대한 눈가림)	■ 낮음 □ 높음 □ 불확실	~the lack of double blind design of the study. However, analgesic requirements and pain intensity were recorded by an anesthesiologist not involved in the analgesic technique.
Incomplete outcome data (불충분한 결과자료)	■ 낮음 □ 높음 □ 불확실	두 군 모두 유사하게 결측치가 발생하였고 결과에 큰 영향을 미치지 않을 것으로 판단됨
Selective reporting (선택적 보고)	■ 낮음 □ 높음 □ 불확실	프로토콜은 없지만 연구방법에 언급된 결과지표에 대해 연구결과에서 모두 보고하고 있음
Industrial funding support (민간 연구비 지원)	■ 낮음 □ 높음 □ 불확실	The authors have no conflict of interest to declare. No external financial support has been provided. This study has been supported by Departmental sources only (Aretaieio Hospital, University of Athens, Athens, Greece).

연번(Ref ID)		3519
1저자(출판연도)		Chandon(2014)
영역	비뚤림위험	
Random sequence generation (무작위 배정순서 생성)	■ 낮음 □ 높음 □ 불확실	randomization was performed using a computer-generated set of scratch cards with blocks of 6 and a ratio 1:1 for each arm, and patients were assigned to one of the two groups for postoperative analgesia TAP or CWI.
Allocation concealment (배정순서 은폐)	■ 낮음 □ 높음 □ 불확실	
Blinding of participants and personnel (연구 참여자, 연구자에 대한 눈가림)	□ 낮음 ■ 높음 □ 불확실	For ethical reasons, patients and investigators were not blinded.
Blinding of outcome assessment (결과평가에 대한 눈가림)	■ 낮음 □ 높음 □ 불확실	-nurses, not involved in the study, from the mobile pain unit assessed patients 3 hours post-cesarean delivery, ~~. They collected also every adverse event of the techniques for safety concern. During the assessment, the women were asked to rate pain with~ -One month post-delivery, the women were interviewed by phone by an investigator blinded to the patient's group assignment.
Incomplete outcome data (불충분한 결과자료)	□ 낮음 ■ 높음 □ 불확실	The Intention to Treat population included all patients that were randomized to the study whatever the treatment they actually received and the Per-Protocol population includes subjects who completed the follow-up in each group. -두 군간 불균형한 결측치 수 차이가 발생하고, PP분석 결과자료를 제시하였음
Selective reporting (선택적 보고)	□ 낮음 ■ 높음 □ 불확실	주요 결과값(통증지표)이 그래프로 제시되어 불완전한 결과보고로 인해 메타분석에 포함시킬 수 없음
Industrial funding support (민간 연구비 지원)	■ 낮음 □ 높음 □ 불확실	Funding: The authors have no support or funding to report.

연번(Ref ID)		3722
1저자(출판연도)		Chung(2013)
영역	비뚤림위험	
Random sequence generation (무작위 배정순서 생성)	☐ 낮음 ☐ 높음 ■ 불확실	Twenty patients consented to use a pain control device following gynecology oncologic surgery and were randomly divided into two groups of ten.
Allocation concealment (배정순서 은폐)	☐ 낮음 ☐ 높음 ■ 불확실	언급 없음
Blinding of participants and personnel (연구 참여자, 연구자에 대한 눈가림)	☐ 낮음 ☐ 높음 ■ 불확실	언급 없음
Blinding of outcome assessment (결과평가에 대한 눈가림)	☐ 낮음 ☐ 높음 ■ 불확실	언급 없음
Incomplete outcome data (불충분한 결과자료)	■ 낮음 ☐ 높음 ☐ 불확실	결측치 없음
Selective reporting (선택적 보고)	■ 낮음 ☐ 높음 ☐ 불확실	프로토콜은 없지만 연구방법에 언급된 결과지표에 대해 연구결과에서 모두 보고하고 있음
Industrial funding support (민간 연구비 지원)	☐ 낮음 ☐ 높음 ■ 불확실	언급 없음

연번(Ref ID)		1707
1저자(출판연도)		Jouve(2013)
영역	비뚤림위험	
Random sequence generation (무작위 배정순서 생성)	■ 낮음 □ 높음 □ 불확실	patients were randomly assigned in a 1:1 ratio for parallel arms and using a concealed allocation approach (computer-generated codes; SEM software, version 2.0)20 with sealed envelopes to ~
Allocation concealment (배정순서 은폐)	■ 낮음 □ 높음 □ 불확실	
Blinding of participants and personnel (연구 참여자, 연구자에 대한 눈가림)	■ 낮음 □ 높음 □ 불확실	This prospective, randomized, double-blind, single-center study
Blinding of outcome assessment (결과평가에 대한 눈가림)	■ 낮음 □ 높음 □ 불확실	Study investigators, but not anesthesiologists, were blinded to treatment assignments.
Incomplete outcome data (불충분한 결과자료)	■ 낮음 □ 높음 □ 불확실	두 군 모두 발생한 결측치가 결과에 큰 영향을 주지 않을 것으로 판단됨
Selective reporting (선택적 보고)	□ 낮음 ■ 높음 □ 불확실	일부 지표(통증 및 재원일수)의 결과가 그래프로 제시되어 불완전한 결과보고로 인해 메타분석에 포함시킬 수 없음
Industrial funding support (민간 연구비 지원)	■ 낮음 □ 높음 □ 불확실	Support was provided solely by institutional and/or departmental sources.

연번(Ref ID)		1821
1저자(출판연도)		Boulind(2013)
영역	비뚤림위험	
Random sequence generation (무작위 배정순서 생성)	■ 낮음 □ 높음 □ 불확실	-The randomization schedule was prepared by the trial statistician using a computer-generated list of pseudorandom numbers. Permuted blocks of variable size were used and randomization was stratified by trial centre.
Allocation concealment (배정순서 은폐)	■ 낮음 □ 높음 □ 불확실	-It was held securely within the pharmacy and was inaccessible to other members of the research team, maintaining effective allocation concealment.
Blinding of participants and personnel (연구 참여자, 연구자에 대한 눈가림)	■ 낮음 □ 높음 □ 불확실	-Details of treatment allocation were not revealed to the research nurse, research fellow, surgeon or patient. -The double-dummy blinding technique was implemented successfully for all patients.
Blinding of outcome assessment (결과평가에 대한 눈가림)	■ 낮음 □ 높음 □ 불확실	Despite some scepticism about the ability to lind this trial, a formal assessment found the blinding to be successful.
Incomplete outcome data (불충분한 결과자료)	■ 낮음 □ 높음 □ 불확실	Completeness of outcome data was also assessed, and data were analysed on an intention-to-treat basis.
Selective reporting (선택적 보고)	■ 낮음 □ 높음 □ 불확실	프로토콜이 존재하고 연구방법에서 언급한 결과지표에 대해 결과를 모두 보고하고 있음
Industrial funding support (민간 연구비 지원)	■ 낮음 □ 높음 □ 불확실	Acknowledgements This study was funded by the Research for Patient Benefit Scheme of the National Institute for Health Research (reference number PB-PG-1207-15004). J.M.B. is partially funded by the Medical Research Council ConDuCT Trials Methodology Hub. The funding body had no role in the planning of the study, patient recruitment, data collection or analysis.

연번(Ref ID)		2257
1저자(출판연도)		Renghi(2013)
영역	비뚤림위험	
Random sequence generation (무작위 배정순서 생성)	■ 낮음 □ 높음 □ 불확실	The randomization, which was created by a computer, was contained in opaque envelopes that were opened upon the patients' arrival in the operating room.
Allocation concealment (배정순서 은폐)	■ 낮음 □ 높음 □ 불확실	
Blinding of participants and personnel (연구 참여자, 연구자에 대한 눈가림)	■ 낮음 □ 높음 □ 불확실	To ensure that all personnel were blinded, all patients had identical infusion pumps visible at the shoulder level.
Blinding of outcome assessment (결과평가에 대한 눈가림)	■ 낮음 □ 높음 □ 불확실	In the postoperative period, data were collected by doctors and nurses blinded to the analgesic regimen used.
Incomplete outcome data (불충분한 결과자료)	■ 낮음 □ 높음 □ 불확실	결측치 없음
Selective reporting (선택적 보고)	□ 낮음 ■ 높음 □ 불확실	일부 지표값(통증)에 대해 그래프로 제시되어 불완전한 결과보고로 인해 메타분석에 포함시킬 수 없음
Industrial funding support (민간 연구비 지원)	□ 낮음 □ 높음 ■ 불확실	관련 언급 없음

연번(Ref ID)		3188
1저자(출판연도)		O'Neill(2012)
영역	비뚤림위험	
Random sequence generation (무작위 배정순서 생성)	■ 낮음 □ 높음 □ 불확실	After written informed consent was obtained and before initiation of anesthesia, patients were randomly assigned, through a computer-generated random number list concealed in an opaque envelope,
Allocation concealment (배정순서 은폐)	■ 낮음 □ 높음 □ 불확실	
Blinding of participants and personnel (연구 참여자, 연구자에 대한 눈가림)	□ 낮음 ■ 높음 □ 불확실	An important limitation of our study design was that the patient and nurse were not blinded to the analgesic technique.
Blinding of outcome assessment (결과평가에 대한 눈가림)	■ 낮음 □ 높음 □ 불확실	we conducted an assessor-blinded, randomized study that aimed to compare the efficacy and side effects of these analgesia techniques
Incomplete outcome data (불충분한 결과자료)	■ 낮음 □ 높음 □ 불확실	두 군의 결측치가 동일하게 발생하여 결과에 영향을 주지 않을 것으로 판단됨
Selective reporting (선택적 보고)	□ 낮음 ■ 높음 □ 불확실	일부 지표값(통증)에 대해 그래프로 제시되어 불완전한 결과보고로 인해 메타분석에 포함시킬 수 없음
Industrial funding support (민간 연구비 지원)	□ 낮음 ■ 높음 □ 불확실	Funding: B Braun and Baxter were contacted simultaneously by the authors to provide the devices to perform the study. B Braun declined and Baxter showed interest and provided the devices for the study. There was no financial support for this study.

연번(Ref ID)		2776
1저자(출판연도)		Bertoglio(2012)
영역	비뚤림위험	
Random sequence generation (무작위 배정순서 생성)	■ 낮음 □ 높음 □ 불확실	Patients were randomized using a computer-generated randomization schedule on a web-based system at a remote site made available to authorized researchers. Enrolled patients were allocated a subject number in sequential order of their enrollment into the trial and received CWI or CEI analgesia using the central randomization system.
Allocation concealment (배정순서 은폐)	□ 낮음 □ 높음 ■ 불확실	관련 언급 없음
Blinding of participants and personnel (연구 참여자, 연구자에 대한 눈가림)	□ 낮음 □ 높음 ■ 불확실	관련 언급 없음
Blinding of outcome assessment (결과평가에 대한 눈가림)	■ 낮음 □ 높음 □ 불확실	Proper functioning of the elastomeric pump and collection of the patient's postoperative pain evaluation was made by PACU and surgical ward nurses blinded to the study hypothesis.
Incomplete outcome data (불충분한 결과자료)	■ 낮음 □ 높음 □ 불확실	두 군에 결측치가 모두 발생하였으나 수용 가능한 수준으로 판단됨
Selective reporting (선택적 보고)	□ 낮음 ■ 높음 □ 불확실	일부 지표값(통증)에 대해 그래프로 제시되어 불완전한 결과보고로 인해 메타분석에 포함시킬 수 없음
Industrial funding support (민간 연구비 지원)	■ 낮음 □ 높음 □ 불확실	Supported by intramural institutional and/or departmental sources.

연번(Ref ID)		836
1저자(출판연도)		Kainu(2012)
영역	비뚤림위험	
Random sequence generation (무작위 배정순서 생성)	■ 낮음 □ 높음 □ 불확실	-This prospective, randomized, double-blind placebo controlled study -Parturients were allocated to three groups, using computer-generated random numbers
Allocation concealment (배정순서 은폐)	□ 낮음 □ 높음 ■ 불확실	관련 언급 없음
Blinding of participants and personnel (연구 참여자, 연구자에 대한 눈가림)	■ 낮음 □ 높음 □ 불확실	-This prospective, randomized, double-blind placebo controlled study
Blinding of outcome assessment (결과평가에 대한 눈가림)	■ 낮음 □ 높음 □ 불확실	-Investigators collecting data were not aware of the group assignment. -The study drugs were prepared by an anaesthesiologist who was not participating in the care or evaluation of the parturients.
Incomplete outcome data (불충분한 결과자료)	■ 낮음 □ 높음 □ 불확실	결측치가 유사한 수준과 사유로 발생하였고 결과에 큰 영향을 주지 않을 것으로 판단됨
Selective reporting (선택적 보고)	■ 낮음 □ 높음 □ 불확실	프로토콜은 없지만 연구방법에 언급된 결과지표에 대해 연구결과에서 모두 보고하고 있음
Industrial funding support (민간 연구비 지원)	□ 낮음 □ 높음 ■ 불확실	관련 언급 없음

연번(Ref ID)		2768
1저자(출판연도)		Almeida(2011)
영역	비뚤림위험	
Random sequence generation (무작위 배정순서 생성)	☐ 낮음 ☐ 높음 ■ 불확실	언급 없음 Patients were randomized into two groups.
Allocation concealment (배정순서 은폐)	☐ 낮음 ☐ 높음 ■ 불확실	언급 없음
Blinding of participants and personnel (연구 참여자, 연구자에 대한 눈가림)	☐ 낮음 ☐ 높음 ■ 불확실	언급 없음
Blinding of outcome assessment (결과평가에 대한 눈가림)	☐ 낮음 ☐ 높음 ■ 불확실	언급 없음
Incomplete outcome data (불충분한 결과자료)	■ 낮음 ☐ 높음 ☐ 불확실	one patient in GII was excluded from the study due to early catheter disconnection. -한 군에서 결측치가 발생하였으나 결과에 큰 영향을 주지 않을 것으로 판단됨
Selective reporting (선택적 보고)	☐ 낮음 ■ 높음 ☐ 불확실	주요 결과값(통증, 약물 사용, 만족도)이 그래프로 제시되어 불완전한 결과보고로 인해 메타분석에 포함시킬 수 없음
Industrial funding support (민간 연구비 지원)	☐ 낮음 ☐ 높음 ■ 불확실	언급 없음

연번(Ref ID)		4556
1저자(출판연도)		Magnani (2006)
영역	비뚤림위험	
Random sequence generation (무작위 배정순서 생성)	☐ 낮음 ☐ 높음 ■ 불확실	언급없음 - Twenty patient's, scheduled for elective cesarean section, were included in this double-blind, randomized study. - randomly assigned into two groups to receive~
Allocation concealment (배정순서 은폐)	☐ 낮음 ☐ 높음 ■ 불확실	
Blinding of participants and personnel (연구 참여자, 연구자에 대한 눈가림)	☐ 낮음 ☐ 높음 ■ 불확실	
Blinding of outcome assessment (결과평가에 대한 눈가림)	☐ 낮음 ☐ 높음 ■ 불확실	언급없음
Incomplete outcome data (불충분한 결과자료)	■ 낮음 ☐ 높음 ☐ 불확실	결측치 없음
Selective reporting (선택적 보고)	☐ 낮음 ■ 높음 ☐ 불확실	연구방법에 언급된 pain VAS 결과는 초록에만 언급되어 있음 - (Methods) Postoperative pain was assessed by the patients using a visual analogue scale (VAS)~ - (초록) The two groups differed in their VAS scores with group A experiencing significantly less pain than group B;
Industrial funding support (민간 연구비 지원)	☐ 낮음 ☐ 높음 ■ 불확실	언급없음

연번(Ref ID)		3024
1저자(출판연도)		Lau (2003)
영역	비뚤림위험	
Random sequence generation (무작위 배정순서 생성)	■ 낮음 □ 높음 □ 불확실	Eligible patients were randomized to two arms of treatment by random number.
Allocation concealment (배정순서 은폐)	■ 낮음 □ 높음 □ 불확실	
Blinding of participants and personnel (연구 참여자, 연구자에 대한 눈가림)	□ 낮음 ■ 높음 □ 불확실	Our study has been limited by the absence of a placebo pump and lack of blinding of patients and evaluators.
Blinding of outcome assessment (결과평가에 대한 눈가림)	□ 낮음 ■ 높음 □ 불확실	
Incomplete outcome data (불충분한 결과자료)	■ 낮음 □ 높음 □ 불확실	결측치 없음
Selective reporting (선택적 보고)	□ 낮음 ■ 높음 □ 불확실	- 주요 결과값(통증)이 그래프로 제시되어 불완전한 결과보고로 인해 메타분석에 포함시킬 수 없음
Industrial funding support (민간 연구비 지원)	■ 낮음 □ 높음 □ 불확실	Acknowledgements This project was partly supported by The Tung Wah Group of Hospitals Research Fund. The authors wish to acknowledge the kind assistance of Tze-Ching Tan, MD, in editing the manuscript.

연번(Ref ID)		3021
1저자(출판연도)		Cheong (2001)
영역	비뚤림위험	
Random sequence generation (무작위 배정순서 생성)	□ 낮음 □ 높음 ■ 불확실	- a prospective **randomized** study was conducted~ - they were **randomized to receive either** continuous subcutaneous wound infusion ~
Allocation concealment (배정순서 은폐)	□ 낮음 □ 높음 ■ 불확실	
Blinding of participants and personnel (연구 참여자, 연구자에 대한 눈가림)	□ 낮음 □ 높음 ■ 불확실	언급없음
Blinding of outcome assessment (결과평가에 대한 눈가림)	□ 낮음 □ 높음 ■ 불확실	언급없음
Incomplete outcome data (불충분한 결과자료)	■ 낮음 □ 높음 □ 불확실	결측치 없음
Selective reporting (선택적 보고)	■ 낮음 □ 높음 □ 불확실	프로토콜은 없지만 연구방법에 언급된 결과지표에 대해 연구결과에서 모두 보고하고 있음
Industrial funding support (민간 연구비 지원)	□ 낮음 □ 높음 ■ 불확실	언급없음

연번(Ref ID)		3605
1저자(출판연도)		Gómez-Ríos (2022)
영역	비뚤림위험	
Random sequence generation (무작위 배정순서 생성)	■ 낮음 □ 높음 □ 불확실	This was a single-center, prospective, randomized, placebo-controlled, triple-blinded study. Using a computer-generated random allocation sequence (R v3.6.3, The R Development Core Team), patients were randomized to receive either continuous wound instillation with 0.35% levobupivacaine (group L) or an equal volume of saline (group S) after cesarean delivery.
Allocation concealment (배정순서 은폐)	■ 낮음 □ 높음 □ 불확실	
Blinding of participants and personnel (연구 참여자, 연구자에 대한 눈가림)	■ 낮음 □ 높음 □ 불확실	The patient, the attending anesthesiologist, the data collectors, and the data analysts were blinded to group assignment.
Blinding of outcome assessment (결과평가에 대한 눈가림)	■ 낮음 □ 높음 □ 불확실	All postoperative data were collected by a single anesthesiologist (M.A.G.R.) who was blinded to group assignment.
Incomplete outcome data (불충분한 결과자료)	■ 낮음 □ 높음 □ 불확실	결측치가 군간 유사하게 발생하였고, 원인도 유사함(Figure 1) - (중재군) Discontinued intertvention (PCA disconnection (n=1), protocol violation (n=1)); (2/35) (대조군) Discontinued intervention (Postpartum preeclampsia (n=2), protocol violation (n=2)); (4/41)
Selective reporting (선택적 보고)	□ 낮음 □ 높음 ■ 불확실	일부 결과(통증 지표)가 그래프(Figure 2)로만 제시되어 불완전한 결과 보고를 하고 있어 메타분석에 포함시킬 수 없음
Industrial funding support (민간 연구비 지원)	□ 낮음 ■ 높음 □ 불확실	Funding: This study was supported by a noncompetitive grant received from Abbott Laboratories.

연번(Ref ID)		2774
1저자(출판연도)		Lee (2021)
영역	비뚤림위험	
Random sequence generation (무작위 배정순서 생성)	■ 낮음 ☐ 높음 ☐ 불확실	Participants were randomly assigned to the ropivacaine or placebo groups at a 1:1 ratio **using a random permuted block randomization algorithm** via an **interactive Webbased response system** (https ://www.rando mizat ion.com).
Allocation concealment (배정순서 은폐)	■ 낮음 ☐ 높음 ☐ 불확실	- The **allocation sequence** was **hidden** from the **investigators** and **participants.** - a randomized, **double-blinded**, placebo controlled trial prospectively conducted
Blinding of participants and personnel (연구 참여자, 연구자에 대한 눈가림)	■ 낮음 ☐ 높음 ☐ 불확실	
Blinding of outcome assessment (결과평가에 대한 눈가림)	■ 낮음 ☐ 높음 ☐ 불확실	Postoperative pain **was measured** using a visual analog scale (VAS) 1, 6, 12, 24, and 48 h after surgery by several assessors who were **blinded** to the interventions.
Incomplete outcome data (불충분한 결과자료)	■ 낮음 ☐ 높음 ☐ 불확실	결측치가 거의 발생하지 않음(Fig. 2) - (중재군) Discontinued intervention (n=0), (대조군) Discontinued intervention (n=1)
Selective reporting (선택적 보고)	■ 낮음 ☐ 높음 ☐ 불확실	프로토콜은 없지만 연구방법에 언급된 결과지표에 대해 연구결과에서 모두 보고하고 있음(Table 2)
Industrial funding support (민간 연구비 지원)	■ 낮음 ☐ 높음 ☐ 불확실	Funding **None.** Disclosures Nae Hyun Lee, Kyoungho Ryu, and Taejong Song have **no** conflicts of interest or financial ties to disclose.

연번(Ref ID)		778
1저자(출판연도)		Rosetti (2021)
영역	비뚤림위험	
Random sequence generation (무작위 배정순서 생성)	■ 낮음 □ 높음 □ 불확실	The current study is a prospective randomized controlled double-blind study.
Allocation concealment (배정순서 은폐)	■ 낮음 □ 높음 □ 불확실	Group allocation was performed using a computer-generated randomization and was concealed in sealed envelopes until the start of surgery. These data were kept secret on a central database throughout the study period.
Blinding of participants and personnel (연구 참여자, 연구자에 대한 눈가림)	■ 낮음 □ 높음 □ 불확실	
Blinding of outcome assessment (결과평가에 대한 눈가림)	■ 낮음 □ 높음 □ 불확실	All data were collected by independent investigators who were not aware of group allocation.
Incomplete outcome data (불충분한 결과자료)	■ 낮음 □ 높음 □ 불확실	결측치 없음(Figure 1)
Selective reporting (선택적 보고)	□ 낮음 □ 높음 ■ 불확실	일부 결과(통증 지표)가 그래프(Figure 2)로만 제시되어 불완전한 결과 보고를 하고 있어 메타분석에 포함시킬 수 없음
Industrial funding support (민간 연구비 지원)	■ 낮음 □ 높음 □ 불확실	CONFLICTS OF INTEREST The authors have no conflicts of interest

연번(Ref ID)		5
1저자(출판연도)		Peres-Bachelot (2019)
영역	비뚤림위험	
Random sequence generation (무작위 배정순서 생성)	■ 낮음 □ 높음 □ 불확실	The **randomization** was performed the day before the surgery **with a computer-generated system using a permuted blocks method** of two and four patients to avoid an unbalanced baseline profile between groups.
Allocation concealment (배정순서 은폐)	■ 낮음 □ 높음 □ 불확실	The infusion medication was **masked** to health care **professionals** and **patients** until the study was completed. To note, no stratification on the type of wound incision has been performed.
Blinding of participants and personnel (연구 참여자, 연구자에 대한 눈가림)	■ 낮음 □ 높음 □ 불확실	
Blinding of outcome assessment (결과평가에 대한 눈가림)	□ 낮음 □ 높음 ■ 불확실	The infusion medication was **masked to health care professionals** and patients **until the study was completed.**
Incomplete outcome data (불충분한 결과자료)	□ 낮음 □ 높음 ■ 불확실	결측치가 약간 차이남 - missing data (중재군) 0/42, (대조군) 5/43
Selective reporting (선택적 보고)	■ 낮음 □ 높음 □ 불확실	프로토콜은 없지만 연구방법에 언급된 결과지표에 대해 연구결과에서 모두 보고하고 있음
Industrial funding support (민간 연구비 지원)	□ 낮음 ■ 높음 □ 불확실	Funding information Astra Zeneca; DistriClass; APICIL fundation; SLB Medical

연번(Ref ID)		1586
1저자(출판연도)		Wagner-Kovacec (2018)
영역	비뚤림위험	
Random sequence generation (무작위 배정순서 생성)	■ 낮음 □ 높음 □ 불확실	The parturients were **randomly allocated** to one of the four groups before surgery, **according to** numbered sealed envelopes.
Allocation concealment (배정순서 은폐)	■ 낮음 □ 높음 □ 불확실	The sealed envelopes were chosen by the parturients and given to the nurse anaesthetists, who prepared an elastomeric pump (On Q Pain Buster; I-Flow Corporation, Lake Forest, CA, USA) in the operating theatre next door.
Blinding of participants and personnel (연구 참여자, 연구자에 대한 눈가림)	■ 낮음 □ 높음 □ 불확실	This prospective, randomised, double-blind, placebocontrolled trial~ The parturient and the staff involved in the peri-operative management and data collection were blinded to the assignment of the parturient to one of the four randomised agents.
Blinding of outcome assessment (결과평가에 대한 눈가림)	■ 낮음 □ 높음 □ 불확실	
Incomplete outcome data (불충분한 결과자료)	■ 낮음 □ 높음 □ 불확실	결측치 거의 발생하지 않음(Fig. 1) - (1군) (n=0/15), (2군) discontinued intervention-catheter removed for operative revision (n=1/16), (3군) discontinued intervention-early discontinued catheter from device (n=1/15), (4군) (n=0/15)
Selective reporting (선택적 보고)	□ 낮음 □ 높음 ■ 불확실	일부 결과(통증 지표)가 그래프(Figure 3-4)로만 제시되어 불완전한 결과 보고를 하고 있어 메타분석에 포함시킬 수 없음
Industrial funding support (민간 연구비 지원)	■ 낮음 □ 높음 □ 불확실	Funding None. Competing interests The authors declare that they have no competing interests.

연번(Ref ID)		90
1저자(출판연도)		Dalmau (2018)
영역	비뚤림위험	
Random sequence generation (무작위 배정순서 생성)	■ 낮음 □ 높음 □ 불확실	A randomization sequence was created **using a computer generated random list.**
Allocation concealment (배정순서 은폐)	■ 낮음 □ 높음 □ 불확실	The **allocation sequence was concealed** from the **researchers,** the **caregivers**, and the **statistician** who analyzed the results.
Blinding of participants and personnel (연구 참여자, 연구자에 대한 눈가림)	■ 낮음 □ 높음 □ 불확실	Single-center, randomized, **double-blind**, placebo-controlled trial conducted~ The solutions for the study protocol were previously prepared by the **central pharmacy department** and placed in correlatively numbered sealed boxes according to the random number sequence. **Masking:** Triple (Participant, Care Provider, Investigator) (https://clinicaltrials.gov/ct2/show/NCT01075646?term=NCT01075646&draw=2&rank=1)
Blinding of outcome assessment (결과평가에 대한 눈가림)	■ 낮음 □ 높음 □ 불확실	
Incomplete outcome data (불충분한 결과자료)	■ 낮음 □ 높음 □ 불확실	결측치가 군간 유사하게 발생하였고, 원인도 유사함(Fig. 1) (중재군) (대조군) - ITT 53 46 - Failed PCA 1 2 - completed 52 44
Selective reporting (선택적 보고)	□ 낮음 □ 높음 ■ 불확실	일부 결과(통증 지표)가 그래프(Figure 2)로만 제시되어 불완전한 결과 보고를 하고 있어 메타분석에 포함시킬 수 없음
Industrial funding support (민간 연구비 지원)	□ 낮음 ■ 높음 □ 불확실	Conflict of interest **Baxter®** provided the multiholed catheters and elastomeric pumps used in the trial. The authors have no conflict of interests to disclose.

연번(Ref ID)		1343
1저자(출판연도)		Dhanapal (2017)
영역	비뚤림위험	
Random sequence generation (무작위 배정순서 생성)	■ 낮음 ☐ 높음 ☐ 불확실	Eligible patients who consented to participate in the study were **randomly allotted, by block randomization (blocks of 10),** into one of the two groups using the sealed envelope technique.
Allocation concealment (배정순서 은폐)	■ 낮음 ☐ 높음 ☐ 불확실	
Blinding of participants and personnel (연구 참여자, 연구자에 대한 눈가림)	■ 낮음 ☐ 높음 ☐ 불확실	This was a double blind randomized placebo-controlled trial~
Blinding of outcome assessment (결과평가에 대한 눈가림)	■ 낮음 ☐ 높음 ☐ 불확실	Both the participating patient and surgeon assessing the outcome were blinded to the group allotment.
Incomplete outcome data (불충분한 결과자료)	■ 낮음 ☐ 높음 ☐ 불확실	결측치 없음 - Bupivacaine group (n=47) Normal saline group (n=47)
Selective reporting (선택적 보고)	■ 낮음 ☐ 높음 ☐ 불확실	프로토콜은 없지만 연구방법에 언급된 결과지표에 대해 연구결과에서 모두 보고하고 있음
Industrial funding support (민간 연구비 지원)	■ 낮음 ☐ 높음 ☐ 불확실	Disclosure The authors reported no proprietary or commercial interest in any product mentioned or concept discussed in the article.

연번(Ref ID)		2608
1저자(출판연도)		Fassoulaki(2016)
영역	비뚤림위험	
Random sequence generation (무작위 배정순서 생성)	■ 낮음 □ 높음 □ 불확실	Randomization was carried out by means of a computer-generated table with 1 set of 55 numbers for the range 1 to 110. In a second set the remaining 55 numbers were included corresponding to the control group. Each number for the ropivacaine and the control group remained unique (http://www.randomizer.org)
Allocation concealment (배정순서 은폐)	□ 낮음 □ 높음 ■ 불확실	The study is randomized and conducted blindly, thus limiting the occurrence of bias.
Blinding of participants and personnel (연구 참여자, 연구자에 대한 눈가림)	■ 낮음 □ 높음 □ 불확실	Masking: Triple(Participant, Care Provider, Outcomes Assessor) (https://clinicaltrials.gov/ct2/show/NCT01388946)
Blinding of outcome assessment (결과평가에 대한 눈가림)	■ 낮음 □ 높음 □ 불확실	
Incomplete outcome data (불충분한 결과자료)	■ 낮음 □ 높음 □ 불확실	결측치가 군간 유사하게 발생하고 결측치가 발생한 원인도 유사함 (Figure 1) (중재군) (대조군) - catheter removal 2 1 - converted to open surgery 1 2
Selective reporting (선택적 보고)	■ 낮음 □ 높음 □ 불확실	프로토콜이 존재하여 연구에서 사전에 정해놓은 결과지표에 대해 연구결과에서 모두 보고하고 있음
Industrial funding support (민간 연구비 지원)	■ 낮음 □ 높음 □ 불확실	The authors declare no conflicts of interest.

연번(Ref ID)		4563
1저자(출판연도)		Cleveland(2015)
영역	비뚤림위험	
Random sequence generation (무작위 배정순서 생성)	■ 낮음 □ 높음 □ 불확실	The pharmacist randomized patients **using a coin flip** and then filled the 600cc elastometric pump with either .9% injectable normal saline or .2% ropivacaine.
Allocation concealment (배정순서 은폐)	■ 낮음 □ 높음 □ 불확실	The pump was labeled with patient identification, and was distributed to the operating room **before the start of the procedure.**
Blinding of participants and personnel (연구 참여자, 연구자에 대한 눈가림)	■ 낮음 □ 높음 □ 불확실	The content of the CIC(continuous infusion catheters) was **not known** by the patient, the operating surgeons, nurses, or the data collectors until completion of data analysis.
Blinding of outcome assessment (결과평가에 대한 눈가림)	■ 낮음 □ 높음 □ 불확실	
Incomplete outcome data (불충분한 결과자료)	■ 낮음 □ 높음 □ 불확실	결측치 없음 -82 patients were enrolled in the study, with 43 in the placebo group and 39 in the ropivacaine group.
Selective reporting (선택적 보고)	■ 낮음 □ 높음 □ 불확실	프로토콜은 없지만 연구방법에서 사전에 정해놓은 결과지표에 대해 연구결과에서 모두 보고하고 있음
Industrial funding support (민간 연구비 지원)	■ 낮음 □ 높음 □ 불확실	Disclosures *The authors have no commercial associations that might be a conflict of interest in relation to this article.*

연번(Ref ID)		2765
1저자(출판연도)		Fustran(2015)
영역	비뚤림위험	
Random sequence generation (무작위 배정순서 생성)	■낮음 ☐ 높음 ☐ 불확실	A randomization sequence was created using a computer-generated random list and was stratified based on the surgical technique.
Allocation concealment (배정순서 은폐)	■ 낮음 ☐ 높음 ☐ 불확실	The solutions for the study protocol were previously prepared by the central pharmacy department and placed in correlatively numbered sealed boxes according to the random number sequence. They were then dispensed to the nurses for storage in an agreed location in the operating room. The allocation sequence was concealed from the researchers and the statistician who analysed the results. Randomization was done just before wound closure.
Blinding of participants and personnel (연구 참여자, 연구자에 대한 눈가림)	■ 낮음 ☐ 높음 ☐ 불확실	The study was blinded for every professional who took care of the patient from the day of surgery to the day of discharge. Masking: Triple(Participant, Care Provider, Outcomes Assessor) (https://clinicaltrials.gov/ct2/show/NCT01075646_
Blinding of outcome assessment (결과평가에 대한 눈가림)	■낮음 ☐ 높음 ☐ 불확실	
Incomplete outcome data (불충분한 결과자료)	■ 낮음 ☐ 높음 ☐ 불확실	결측치가 군간 유사하게 발생하였고, 원인도 유사함(Fig. 1) (중재군) (대조군) - ITT 33 34 - Failed PCA 4 3 - completed 29 31
Selective reporting (선택적 보고)	■ 낮음 ☐ 높음 ☐ 불확실	프로토콜이 존재하여 연구에서 사전에 정해놓은 결과지표에 대해 연구결과에서 모두 보고하고 있음
Industrial funding support (민간 연구비 지원)	☐ 낮음 ■ 높음 ☐ 불확실	We also thank Baxter for their support. Baxter provided the multi-holed catheters and elastomeric pumps used in the trial and also the expenses of the independent external monitor.

연번(Ref ID)		4564
1저자(출판연도)		Andrews(2014)
영역	비뚤림위험	
Random sequence generation (무작위 배정순서 생성)	■ 낮음 □ 높음 □ 불확실	Eligible participants were randomly assigned in a 1:1 ratio to a continuous infusion of either 0.5% levobupivicaine or 0.9% normal saline. Group allocation was performed using **computer-generated random numbers**, which were placed in **sealed, opaque, serially numbered envelopes**, which were opened at the end of the operation.
Allocation concealment (배정순서 은폐)	■ 낮음 □ 높음 □ 불확실	Randomisation was conducted by a statistician who was otherwise not involved in the study. The envelopes were opened by the anaesthetist who prepared the solution, but who was not otherwise involved with the collection or analysis of the data.
Blinding of participants and personnel (연구 참여자, 연구자에 대한 눈가림)	■ 낮음 □ 높음 □ 불확실	The participants and surgeon were **blinded** to the type of solution being administered.
Blinding of outcome assessment (결과평가에 대한 눈가림)	■ 낮음 □ 높음 □ 불확실	**Masking**: Triple (Participant, Investigator, Outcomes Assessor) (https://clinicaltrials.gov/ct2/show/NCT01291147)
Incomplete outcome data (불충분한 결과자료)	■ 낮음 □ 높음 □ 불확실	결측치 없음
Selective reporting (선택적 보고)	■ 낮음 □ 높음 □ 불확실	프로토콜이 존재하여 연구에서 사전에 정해놓은 결과지표에 대해 연구결과에서 모두 보고하고 있음
Industrial funding support (민간 연구비 지원)	■ 낮음 □ 높음 □ 불확실	Funding No funding was obtained for this study.

연번(Ref ID)		3045
1저자(출판연도)		Krishnan (2014)
영역	비뚤림위험	
Random sequence generation (무작위 배정순서 생성)	■ 낮음 ☐ 높음 ☐ 불확실	Allocation was controlled by the hospital clinical trials pharmacist who applied a randomization schedule (2:1 ratio levobupivacaine:placebo) and who also directed the sterile filling of the elastomeric pump with the levobupivacaine treatment or placebo to maintain blinding of the investigators and others involved with the patient's care.
Allocation concealment (배정순서 은폐)	■ 낮음 ☐ 높음 ☐ 불확실	
Blinding of participants and personnel (연구 참여자, 연구자에 대한 눈가림)	■ 낮음 ☐ 높음 ☐ 불확실	this prospective, randomized, double-blind, placebo-controlled clinical trial~
Blinding of outcome assessment (결과평가에 대한 눈가림)	■ 낮음 ☐ 높음 ☐ 불확실	All patients, medical staff, nursing staff, and assessors were blinded to the levobupivacaine/placebo treatment.
Incomplete outcome data (불충분한 결과자료)	■ 낮음 ☐ 높음 ☐ 불확실	결측치 없음 - (Table 4) 31/ 2/ 24/ 6 → 총 81명
Selective reporting (선택적 보고)	☐ 낮음 ☐ 높음 ■ 불확실	일부 결과(통증 지표)에 대해 본문 상 High, significant 등의 기술만 되어있고, 불완전한 결과 보고를 하고 있어 메타분석에 포함시킬 수 없음
Industrial funding support (민간 연구비 지원)	☐ 낮음 ■ 높음 ☐ 불확실	Partial financial support was received via the program grant from The Hospital Research Foundation, South Australia, to the Discipline of Surgery. The project received commercial untied support by way of gratis PainBuster devices from the I-Flow Corp (United States) via Surgical Specialties (Australia). These sources had no input into any aspects of the study from design through to manuscript. Financial support was also provided by The Hospital Research Foundation via a program grant to the Discipline of Surgery, The University of Adelaide. S.K. was a recipient of a postgraduate scholarship from The Hospital Research Foundation, South Australia (http://www.hospitalresearch.com.au). The remaining authors declare no conflicts of interest.

연번(Ref ID)		820
1저자(출판연도)		Reinikainen(2014)
영역	비뚤림위험	
Random sequence generation (무작위 배정순서 생성)	■ 낮음 □ 높음 □ 불확실	With the help of a random number list, study participants were randomly allocated to the ropivacaine or placebo groups. Block randomisation using varying block sizes was used.
Allocation concealment (배정순서 은폐)	■ 낮음 □ 높음 □ 불확실	The information about group allocation was placed in sequentially numbered envelopes that were sealed and kept at the hospital's pharmacy.
Blinding of participants and personnel (연구 참여자, 연구자에 대한 눈가림)	■ 낮음 □ 높음 □ 불확실	We conducted a prospective, randomised, placebo controlled trial. Both the patients and the personnel participating in their treatment and/or assessing outcomes were blinded to the study group allocation.
Blinding of outcome assessment (결과평가에 대한 눈가림)	■ 낮음 □ 높음 □ 불확실	
Incomplete outcome data (불충분한 결과자료)	■ 낮음 □ 높음 □ 불확실	Randomized n=70 -excluded after randomisation n=3 ·emergency operation n=1 ·no study drug available n=1 ·no study drug strated(∵communication errors) n=1 -allocated :ropivacaine group(n=33)/placebo group (n=34) -analysed arroding to the intention to treat :ropivacaine group(n=33)/placebo group (n=34)
Selective reporting (선택적 보고)	□ 낮음 □ 높음 ■ 불확실	일부 결과값이 그래프로 제시되어 있어 메타분석에 포함시킬 수 없음
Industrial funding support (민간 연구비 지원)	■ 낮음 □ 높음 □ 불확실	Funding: The study was supported by grants from North Karelia Central Hospital (EVO grant). No funding from any external source.

연번(Ref ID)		1627
1저자(출판연도)		Xin(2014)
영역	비뚤림위험	
Random sequence generation (무작위 배정순서 생성)	■ 낮음 □ 높음 □ 불확실	prospective, double-blinded, randomized, controlled design study ~ Group allocation was done using computer-generated code allocation. Ropivacaine and saline were added to the elastomeric pump by an anesthesiologist not involved in the study. Patients were randomized to receive a continuous surgical wound infusion of either 0.3% ropivacaine or 0.9% saline delivered through an elastomeric pump ~.
Allocation concealment (배정순서 은폐)	■ 낮음 □ 높음 □ 불확실	
Blinding of participants and personnel (연구 참여자, 연구자에 대한 눈가림)	■ 낮음 □ 높음 □ 불확실	The patients, surgeons and investigator were kept blinded to the assigned treatment groups throughout the study period.
Blinding of outcome assessment (결과평가에 대한 눈가림)	□ 낮음 □ 높음 ■ 불확실	언급 없음
Incomplete outcome data (불충분한 결과자료)	■ 낮음 □ 높음 □ 불확실	결측치 거의 발생하지 않음(한 군에서 1명 발생) - Forty patients were initially enrolled in our study. However, 1 patient was lost because of postoperative bleeding, and thus, finally, 19 patients were included in the ropivacaine group and 20 in the control group.
Selective reporting (선택적 보고)	□ 낮음 ■ 높음 □ 불확실	대부분의 주요 결과값(통증, 약물 사용량)이 그래프로 제시되어 있어, 불완전한 보고로 인해 메타분석에 포함시킬 수 없음
Industrial funding support (민간 연구비 지원)	■ 낮음 □ 높음 □ 불확실	The authors declare no conflict of interest.

연번(Ref ID)		3606
1저자(출판연도)		Kristensen(2013)
영역	비뚤림위험	
Random sequence generation (무작위 배정순서 생성)	■ 낮음 □ 높음 □ 불확실	Participants were randomly assigned using a sealed opaque envelope system to active treatment or placebo. The envelope was opened by a person not participating in the study who also prepared a 30-ml syringe and an elastomeric infusion pump (On-Q, Pain Buster; I-Flow LLC, Lake Forest, USA), according to randomisation, with either bupivacaine 2.5 mgml1 (SAD; Amgros I/S, Copenhagen, Denmark) or isotonic saline (Natriumklorid isotonisk 0.9%; DAK, Roskilde, Denmark). The study vehicle was brought to the operating room labelled with a case-specific randomisation number.
Allocation concealment (배정순서 은폐)	■ 낮음 □ 높음 □ 불확실	
Blinding of participants and personnel (연구 참여자, 연구자에 대한 눈가림)	■ 낮음 □ 높음 □ 불확실	Single-centre prospective, double-blinded, placebo controlled trial.
Blinding of outcome assessment (결과평가에 대한 눈가림)	■ 낮음 □ 높음 □ 불확실	During the study period, all staff were blinded to the content of the study vehicle.
Incomplete outcome data (불충분한 결과자료)	■ 낮음 □ 높음 □ 불확실	결측치가 군간 유사하게 발생하고, 결측치가 발생한 원인도 유사함
Selective reporting (선택적 보고)	□ 낮음 □ 높음 ■ 불확실	일부 결과값이 그래프로 제시되어 있어 메타분석에 포함시킬 수 없음
Industrial funding support (민간 연구비 지원)	□ 낮음 ■ 높음 □ 불확실	Financial support and sponsorship: wound catheters were supplied by the manufacturer.

연번(Ref ID)		2246
1저자(출판연도)		Hermansson(2013)
영역	비뚤림위험	
Random sequence generation (무작위 배정순서 생성)	■ 낮음 □ 높음 □ 불확실	-The patients were randomized to receive bupivacaine or saline using a sealed envelope system.
Allocation concealment (배정순서 은폐)	■ 낮음 □ 높음 □ 불확실	
Blinding of participants and personnel (연구 참여자, 연구자에 대한 눈가림)	■ 낮음 □ 높음 □ 불확실	All pumps were filled under sterile conditions by the operating room nurse, who did not participate in the postoperative care. The surgeon and the postoperative ward staff were **unaware** as to whether saline or bupivacaine was infused in the wounds.
Blinding of outcome assessment (결과평가에 대한 눈가림)	□ 낮음 □ 높음 ■ 불확실	관련 언급 없음
Incomplete outcome data (불충분한 결과자료)	■ 낮음 □ 높음 □ 불확실	결측치가 거의 발생하지 않음 -Thirty-three patients were enrolled in the study. In all, 17 patients received bupivacaine and 16 patients received saline. **One** patient in the saline group was excluded as the wound catheter was accidentally cut during wound dressing change.
Selective reporting (선택적 보고)	■ 낮음 □ 높음 □ 불확실	프로토콜은 없지만 연구에서 사전에 정해놓은 결과지표에 대해 연구 결과에서 모두 보고하고 있음
Industrial funding support (민간 연구비 지원)	■ 낮음 □ 높음 □ 불확실	The study was supported by institutional and departmental funds.

연번(Ref ID)		1321
1저자(출판연도)		Eldaba(2012)
영역	비뚤림위험	
Random sequence generation (무작위 배정순서 생성)	■ 낮음 □ 높음 □ 불확실	Randomization was performed using a **computer based random number generator** in permutated blocks of varying sizes and the assignment entered in **sealed envelopes** that were not opened until informed consent was obtained.
Allocation concealment (배정순서 은폐)	■ 낮음 □ 높음 □ 불확실	
Blinding of participants and personnel (연구 참여자, 연구자에 대한 눈가림)	■ 낮음 □ 높음 □ 불확실	Patient, anesthetist, investigator starting post-operative infusion and investigator making post-operative observations and recordings were **blinded** to the group assignment.
Blinding of outcome assessment (결과평가에 대한 눈가림)	■ 낮음 □ 높음 □ 불확실	
Incomplete outcome data (불충분한 결과자료)	■ 낮음 □ 높음 □ 불확실	결측치 없음
Selective reporting (선택적 보고)	■ 낮음 □ 높음 □ 불확실	프로토콜은 없지만 연구에서 사전에 정해놓은 결과지표에 대해 연구 결과에서 모두 보고하고 있음
Industrial funding support (민간 연구비 지원)	■ 낮음 □ 높음 □ 불확실	Source of Support: Nil

연번(Ref ID)		4565
1저자(출판연도)		Moore(2012)
영역	비뚤림위험	
Random sequence generation (무작위 배정순서 생성)	■ 낮음 □ 높음 □ 불확실	Randomization was performed after consent had been obtained and following completion of the operating procedure. Allocation was in **blocks of 10 by computer-generated** sequence allocation
Allocation concealment (배정순서 은폐)	■ 낮음 □ 높음 □ 불확실	
Blinding of participants and personnel (연구 참여자, 연구자에 대한 눈가림)	■ 낮음 □ 높음 □ 불확실	Both patients and treating surgeons were **blinded** as to allocation,
Blinding of outcome assessment (결과평가에 대한 눈가림)	■ 낮음 □ 높음 □ 불확실	all data collection was performed by **a third party with no knowledge of group allocation.**
Incomplete outcome data (불충분한 결과자료)	■ 낮음 □ 높음 □ 불확실	결측치 없음
Selective reporting (선택적 보고)	□ 낮음 ■ 높음 □ 불확실	대부분의 결과값이 그래프로 제시되어 있어 메타분석에 포함시킬 수 없음
Industrial funding support (민간 연구비 지원)	■ 낮음 □ 높음 □ 불확실	Conflict of interest The authors declare that there are no conflicts of interest.

연번(Ref ID)		3048
1저자(출판연도)		Bell (2012)
영역	비뚤림위험	
Random sequence generation (무작위 배정순서 생성)	☐ 낮음 ☐ 높음 ■ 불확실	Patients over age 18 years, undergoing laparoscopic primary or reoperative repair of hiatal hernia, and who consented to the study, were **randomized** at time of surgery to either the control arm (placebo) or the treatment arm (drug) **by the hospital pharmacy**.
Allocation concealment (배정순서 은폐)	☐ 낮음 ☐ 높음 ■ 불확실	언급없음
Blinding of participants and personnel (연구 참여자, 연구자에 대한 눈가림)	☐ 낮음 ☐ 높음 ■ 불확실	randomized, **double-blind**, placebo-controlled study~
Blinding of outcome assessment (결과평가에 대한 눈가림)	☐ 낮음 ☐ 높음 ■ 불확실	언급없음
Incomplete outcome data (불충분한 결과자료)	☐ 낮음 ☐ 높음 ■ 불확실	결측치가 발생하였으나, 군간 차이는 알수 없음 - Of the 46 patients enrolled in the study, **seven were dropped** for adverse events or noncompliance; 20 were given placebo (0.9% NaCl) and 19 were given 0.5% bupivacaine.
Selective reporting (선택적 보고)	■ 낮음 ☐ 높음 ☐ 불확실	프로토콜은 없지만 연구방법에 언급된 결과지표에 대해 연구결과에서 모두 보고하고 있음
Industrial funding support (민간 연구비 지원)	☐ 낮음 ■ 높음 ☐ 불확실	**Disclosures** The study was supported by a small, unrestricted grant from **I-Flo, Inc**. to cover hospital, pharmacy, and research coordination costs. Dr. Reginald Bell is a consultant and is on the speakers bureau for Davol, Inc., EndoGastric Solutions, Inc., and Sandhill Scientific, Inc. These relationships would not pose a conflict of interest with regards to this study. Katherine Freeman NP and Rachel Hufford RN have no conflicts of interest or financial ties to disclose.

연번(Ref ID)		684
1저자(출판연도)		Baulig(2011)
영역	비뚤림위험	
Random sequence generation (무작위 배정순서 생성)	■ 낮음 □ 높음 □ 불확실	The patients were randomly allocated with computer-generated randomization to receive a continuous wound infusion of either 0.33% ropivacaine (Naropin, AstraZeneca GmbH, Wedel, Germany) or 0.9% saline.
Allocation concealment (배정순서 은폐)	■ 낮음 □ 높음 □ 불확실	Only the pharmacist of the hospital was aware of the type of solution to be administered; physicians, attending staff in charge of the patient, and the patients were fully blinded to the patient's group assignment.
Blinding of participants and personnel (연구 참여자, 연구자에 대한 눈가림)	■ 낮음 □ 높음 □ 불확실	
Blinding of outcome assessment (결과평가에 대한 눈가림)	□ 낮음 □ 높음 ■ 불확실	관련 언급 없음
Incomplete outcome data (불충분한 결과자료)	■ 낮음 □ 높음 □ 불확실	결측치 없음
Selective reporting (선택적 보고)	■ 낮음 □ 높음 □ 불확실	프로토콜은 없지만 연구에서 사전에 정해놓은 결과지표에 대해 연구결과에서 모두 보고하고 있음
Industrial funding support (민간 연구비 지원)	□ 낮음 □ 높음 ■ 불확실	관련 언급 없음

연번(Ref ID)		3608
1저자(출판연도)		Wang (2010)
영역	비뚤림위험	
Random sequence generation (무작위 배정순서 생성)	■ 낮음 □ 높음 □ 불확실	A computer-generated randomization code was created using permutated blocks of four.
Allocation concealment (배정순서 은폐)	■ 낮음 □ 높음 □ 불확실	a double-blinded, randomized controlled trial The intervention assignment schedule was also blinded from patients, all staff administering the treatment (i.e. surgeon, surgical assistants and scrub nurses), as well as from those who monitored outcomes (i.e. doctors, nurses, allied health staff and members of the Acute Pain Service).
Blinding of participants and personnel (연구 참여자, 연구자에 대한 눈가림)	■ 낮음 □ 높음 □ 불확실	
Blinding of outcome assessment (결과평가에 대한 눈가림)	■ 낮음 □ 높음 □ 불확실	
Incomplete outcome data (불충분한 결과자료)	■ 낮음 □ 높음 □ 불확실	결측치가 군간 유사하게 발생하였고, 원인도 유사함(Fig. 2) (중재군) (대조군) - allocation 28 28 - received intervention 26 26 - not received, had RF 2 2 - lost F/U 0 0 - discontinued intervention 0 3 - ITT 28 27 - PP 26 22
Selective reporting (선택적 보고)	□ 낮음 □ 높음 ■ 불확실	모든 결과지표에 대해 SD 값은 보고하고 있지 않아 메타분석에 포함시킬 수 없음
Industrial funding support (민간 연구비 지원)	□ 낮음 ■ 높음 □ 불확실	Acknowledgements We thank Diane Davies (clinical trials pharmacist), as well as the surgical registrars, junior medical officers and members of the Acute Pain Service for their assistance during the implementation of the trial. I-Flow Corporation and its Australian distributor, Surgical Synergies, provided funding for the study but were not involved in the design, implementation, analysis and reporting of the study.

연번(Ref ID)		1850
1저자(출판연도)		Iyer(2010)
영역	비뚤림위험	
Random sequence generation (무작위 배정순서 생성)	■ 낮음 □ 높음 □ 불확실	The patients were randomized to 1 of 2 treatment groups using a standard randomization table with a 1:1 ratio between the groups.
Allocation concealment (배정순서 은폐)	■ 낮음 □ 높음 □ 불확실	Each patient's treatment group information was provided by an unblinded certified registered nurse anesthetist during the operation to the attending anesthesiologist.
Blinding of participants and personnel (연구 참여자, 연구자에 대한 눈가림)	■ 낮음 □ 높음 □ 불확실	The principal investigator and study coordinator responsible for patient follow-up **remained unaware** of the treatment group assignments.
Blinding of outcome assessment (결과평가에 대한 눈가림)	□ 낮음 □ 높음 ■ 불확실	관련 언급 없음
Incomplete outcome data (불충분한 결과자료)	□ 낮음 □ 높음 ■ 불확실	관련 언급 없음
Selective reporting (선택적 보고)	□ 낮음 ■ 높음 □ 불확실	대부분의 결과값이 그래프로 제시되어 불완전한 보고로 인해 메타분석에 포함시킬 수 없음
Industrial funding support (민간 연구비 지원)	■ 낮음 □ 높음 □ 불확실	Disclosures The authors have **no commercial associations** that might be a conflict of interest in relation to this article.

연번(Ref ID)		785
1저자(출판연도)		Carvalho(2010)
영역	비뚤림위험	
Random sequence generation (무작위 배정순서 생성)	■ 낮음 □ 높음 □ 불확실	singleton pregnancies undergoing elective cesarean delivery under spinal anesthesia were enrolled in this randomized controlled study.
Allocation concealment (배정순서 은폐)	■ 낮음 □ 높음 □ 불확실	Group allocation was done using computer-generated random-number allocation.
Blinding of participants and personnel (연구 참여자, 연구자에 대한 눈가림)	■ 낮음 □ 높음 □ 불확실	To maintain blinding, the bupivacaine and saline were prepared and added to the On-QPainBusterPost-Op Pain Relief System (I-Flow, Lake Forest, CA) by an anesthesiologist not involved in the study or any data collection.
Blinding of outcome assessment (결과평가에 대한 눈가림)	■ 낮음 □ 높음 □ 불확실	The patient, investigator, and all study staff remained blinded to the assigned treatment groups throughout the study period.
Incomplete outcome data (불충분한 결과자료)	■ 낮음 □ 높음 □ 불확실	결측치 없음 -All 38 patients enrolled and randomized in this prospective study completed the protocol. There were no patients lost to follow-up or noncompliance
Selective reporting (선택적 보고)	■ 낮음 □ 높음 □ 불확실	프로토콜이 존재하여 연구에서 사전에 정해놓은 결과지표에 대해 연구결과에서 모두 보고하고 있음
Industrial funding support (민간 연구비 지원)	■ 낮음 □ 높음 □ 불확실	Supported by a Building Interdisciplinary Careers in Women's Health research grant from the Office of Research on Women's Health and National Institute of Child Health and Human Development of the National Institutes of Health (5K12 HD043452) (to BC). Disclosure: The authors report no conflicts of interest.

연번(Ref ID)		112
1저자(출판연도)		Chan(2010)
영역	비뚤림위험	
Random sequence generation (무작위 배정순서 생성)	■ 낮음 □ 높음 □ 불확실	Once recruited to the study, patients were randomly allocated to receive either ropivacaine 0.25% or 0.9% saline according to computer-generated codes kept in a sealed opaque envelope.
Allocation concealment (배정순서 은폐)	■ 낮음 □ 높음 □ 불확실	
Blinding of participants and personnel (연구 참여자, 연구자에 대한 눈가림)	□ 낮음 □ 높음 ■ 불확실	All patients received standardised general anaesthesia administered by an independent anaesthetist not involved in the study.
Blinding of outcome assessment (결과평가에 대한 눈가림)	■ 낮음 □ 높음 □ 불확실	On completion of surgery, the envelope was opened by an anaesthetist not involved in the anaesthetic management during surgery or postoperative assessments, who prepared the study drug in the anaesthetic room next to the operating theatre.
Incomplete outcome data (불충분한 결과자료)	■ 낮음 □ 높음 □ 불확실	연구 참여자 48명 중 4명 탈락함. 결측치가 군간 유사하게 발생하고 원인이 유사함 (중재군) (대조군) ST-segment depression 0 1 unexpected carcinomatosis 1 1 transient ischaemic attack 1 0
Selective reporting (선택적 보고)	□ 낮음 ■ 높음 □ 불확실	대부분의 결과값이 그래프(Figure 1-3.)로 제시되어 있어 불완전한 보고로 인해 메타분석에 포함시킬 수 없음
Industrial funding support (민간 연구비 지원)	■ 낮음 □ 높음 □ 불확실	Competing interests No external funding and no competing interests declared.

연번(Ref ID)		2943
1저자(출판연도)		Rosen(2009)
영역	비뚤림위험	
Random sequence generation (무작위 배정순서 생성)	■ 낮음 □ 높음 □ 불확실	Using computer-generated randomization, the patients were prospectively randomized in a double-blind manner at the time of surgery into blocks of 10 to receive either 0.5% bupivacaine or saline continuous infiltration via a 100-ml single-lumen pump for 50 h at 2 ml/h.
Allocation concealment (배정순서 은폐)	■ 낮음 □ 높음 □ 불확실	
Blinding of participants and personnel (연구 참여자, 연구자에 대한 눈가림)	■ 낮음 □ 높음 □ 불확실	a prospective randomized double-blind study, Neither the surgeon nor the scrub nurse was aware of the actual medication
Blinding of outcome assessment (결과평가에 대한 눈가림)	■ 낮음 □ 높음 □ 불확실	Assessments and data collection were performed by physicians and nurses blinded to the treatment groups.
Incomplete outcome data (불충분한 결과자료)	■ 낮음 □ 높음 □ 불확실	During the study period, 83 patients underwent ventral hernia repair at both institutions. The study excluded 10 patients for the following reasons: history of substance abuse/daily NSAID usage (n = 3), conversion to open procedure (n = 2), refusal to participate in the study (n = 2), refusal of the laparoscopic approach (n = 1), catheter unavailable (n = 1), and pregnancy (n = 1).
Selective reporting (선택적 보고)	□ 낮음 ■ 높음 □ 불확실	불완전한 결과보고(평균값만 보고)로 인해 메타분석에 포함시킬 수 없음
Industrial funding support (민간 연구비 지원)	□ 낮음 □ 높음 ■ 불확실	관련 언급 없음

연번(Ref ID)		1341
1저자(출판연도)		Forastiere(2009)
영역	비뚤림위험	
Random sequence generation (무작위 배정순서 생성)	■ 낮음 □ 높음 □ 불확실	Upon arrival in the preoperative room, an independent pharmacist dispensed a pump filled either with 0.5% ropivacaine (ON-Q group) or 0.9% saline (control group) according to a computer-generated randomization code in all patients.
Allocation concealment (배정순서 은폐)	■ 낮음 □ 높음 □ 불확실	
Blinding of participants and personnel (연구 참여자, 연구자에 대한 눈가림)	■ 낮음 □ 높음 □ 불확실	This prospective, randomized, double-blinded, placebo-controlled study Only the pharmacist was aware of the type of solution to be administered, whereas physicians and attending staff in charge of the patient were fully **blinded** to the patient's group assignment.
Blinding of outcome assessment (결과평가에 대한 눈가림)	■ 낮음 □ 높음 □ 불확실	
Incomplete outcome data (불충분한 결과자료)	■ 낮음 □ 높음 □ 불확실	결측치 없음 -Overall, 168 patients were enrolled (84 per group). All enrolled patients successfully completed the study and were included in the main analysis.
Selective reporting (선택적 보고)	□ 낮음 ■ 높음 □ 불확실	불완전한 결과보고(평균값만 보고)로 인해 메타분석에 포함시킬 수 없음
Industrial funding support (민간 연구비 지원)	□ 낮음 □ 높음 ■ 불확실	관련 언급 없음

연번(Ref ID)		2771
1저자(출판연도)		Lavand'homme(2007)
영역	비뚤림위험	
Random sequence generation (무작위 배정순서 생성)	■ 낮음 ☐ 높음 ☐ 불확실	The parturients were then randomly assigned using computer-generated random numbers to one of the three following groups to receive ~
Allocation concealment (배정순서 은폐)	■ 낮음 ☐ 높음 ☐ 불확실	The patient, the person in charge of perioperative management, and the staff involved in data collection were not aware of the patient group assignment.
Blinding of participants and personnel (연구 참여자, 연구자에 대한 눈가림)	■ 낮음 ☐ 높음 ☐ 불확실	
Blinding of outcome assessment (결과평가에 대한 눈가림)	■ 낮음 ☐ 높음 ☐ 불확실	All of the postoperative data were collected by an anesthesiologist who was not involved with intraoperative patient care and was blinded to the group assignment.
Incomplete outcome data (불충분한 결과자료)	■ 낮음 ☐ 높음 ☐ 불확실	결측치가 거의 발생하지 않음 -Ninety-two patients were enrolled, and 90 completed the study; **one** patient was excluded because spinal anesthesia failed and was converted to general anesthesia, and **another** was excluded after early disconnection of the subcutaneous device.
Selective reporting (선택적 보고)	☐ 낮음 ■ 높음 ☐ 불확실	대부분의 결과값이 그래프로 제시되어 불완전한 보고로 인해 메타분석에 포함시킬 수 없음
Industrial funding support (민간 연구비 지원)	☐ 낮음 ■ 높음 ☐ 불확실	Support was provided solely from institutional and/or departmental sources. The continuous wound instillation devices (Pain Buster㈜) were provided by I-Flow Corporation, Lake Forest, California. I-Flow Corporation did not have any input into the study design, data collection or analysis, or manuscript preparation.

연번(Ref ID)		831
1저자(출판연도)		Polglase(2007)
영역	비뚤림위험	
Random sequence generation (무작위 배정순서 생성)	■ 낮음 □ 높음 □ 불확실	according to a computer-generated table of random numbers created by the study biostatistician.
Allocation concealment (배정순서 은폐)	■ 낮음 □ 높음 □ 불확실	To ensure treatment allocation concealment, immediately before surgery, a trial nurse not otherwise involved with patient care was given the necessary participant details (surgeon and operation type), referred to the randomization list, and delivered the appropriate syringe to the operating room.
Blinding of participants and personnel (연구 참여자, 연구자에 대한 눈가림)	■ 낮음 □ 높음 □ 불확실	All participants, medical and nursing staff, and the outcome assessors were **blinded** to the analgesia regimen.
Blinding of outcome assessment (결과평가에 대한 눈가림)	■ 낮음 □ 높음 □ 불확실	All participants, medical and nursing staff, and the outcome assessors were **blinded** to the analgesia regimen. All patients were assessed postoperatively by the blinded surgical research fellow or surgical registrar for pain control parameters ~
Incomplete outcome data (불충분한 결과자료)	■ 낮음 □ 높음 □ 불확실	결측치가 두 군간 유사하게 발생하고 발생한 원인도 유사함 (중재군) (대조군) --- - allocation 153 173 - **Painberster(PB) not used 10 6** ·medically unfit/ anesthetic decision 4 2 ·refused 1 0 ·openeration change/cancel 4 3 ·not available 1 1(not inserted) - **failed to complete data collection 5 7** ·PB disloged 2 1 ·PB removed early 1 0 ·surgical protocol not met 1 2 ·analgesic protocol not met 1 2 - **ITT 143 167** - **PP 138 160** For missing data, we used the technique of carrying the last recorded observation forward. Because of setup difficulties, no information for pain on movement was recorded for the first five patients enrolled in the study; these patients were excluded from "pain on movement" analysis.
Selective reporting (선택적 보고)	■ 낮음 □ 높음 □ 불확실	프로토콜은 없지만 연구에서 사전에 정해놓은 결과지표에 대해 연구결과에서 모두 보고하고 있음
Industrial funding support (민간 연구비 지원)	□ 낮음 ■ 높음 □ 불확실	Supported by Tackling Bowel Cancer - Cabrini Hospital Clinical Education and Research Institute Melbourne, Victoria, Australia; Mazda Foundation - Private Bag 40 Mount Waverly, Victoria 3149; and I-Flow Corporation, Pleasant Plain, Ohio: **Supplied Painbuster Soaker™ devices for this trial.**

연번(Ref ID)		771
1저자(출판연도)		Beaussier(2007)
영역	비뚤림위험	
Random sequence generation (무작위 배정순서 생성)	■ 낮음 □ 높음 □ 불확실	patients were randomly allocated to receive a continuous wound infusion of either 0.2% ropivacaine ~ The inclusion number referred to a sealed envelope, which was opened by the pharmacist and which contained the patient's allocation group (determined by a computer generated random list). Randomization was established by blocks of four patients.
Allocation concealment (배정순서 은폐)	■ 낮음 □ 높음 □ 불확실	
Blinding of participants and personnel (연구 참여자, 연구자에 대한 눈가림)	■ 낮음 □ 높음 □ 불확실	Physicians in charge of the patient, during both intraoperative and postoperative periods, were fully **blinded** to the patient's group assignment.
Blinding of outcome assessment (결과평가에 대한 눈가림)	□ 낮음 □ 높음 ■ 불확실	관련 언급 없음
Incomplete outcome data (불충분한 결과자료)	■ 낮음 □ 높음 □ 불확실	Forty-nine patients were enrolled in the study. **Three** patients were excluded from analysis because of an intraoperative decision to use a dysfunctioning stoma. In **one** patient (allocated to the saline group), the catheter was withdrawn at H12 because of severe hyperthermia. **A further 3 patients** were excluded because of parietal tumor extension (1 patient), lack of peritoneum (1 patient who had undergone previous major intraabdominal surgery), and intraoperative urologic complication (1 patient). Twenty-one patients successfully completed the study in each groups.
Selective reporting (선택적 보고)	□ 낮음 ■ 높음 □ 불확실	대부분의 결과값이 그래프로 제시되어 있어 불완전한 보고로 인해 메타분석에 포함시킬 수 없음
Industrial funding support (민간 연구비 지원)	□ 낮음 ■ 높음 □ 불확실	Supported by a grant from AstraZeneca, Rueil Malmaison, France.

연번(Ref ID)		3567
1저자(출판연도)		Baig(2007)
영역	비뚤림위험	
Random sequence generation (무작위 배정순서 생성)	■ 낮음 □ 높음 □ 불확실	Patients were randomized in the operating room by drawing an envelope with a computer-generated number.
Allocation concealment (배정순서 은폐)	■ 낮음 □ 높음 □ 불확실	This **sealed envelope** was then sent to the pharmacy, where the pharmacist opened the envelope and filled the pump with either saline or bupivacaine, depending on the corresponding number.
Blinding of participants and personnel (연구 참여자, 연구자에 대한 눈가림)	■ 낮음 □ 높음 □ 불확실	The surgeon who placed the pump and the staff who subsequently recorded various parameters were completely **blinded** as to the nature of the solution. In addition, the patients were **blinded** to their randomization to continuous subcutaneous wound infusion with either 0.5% bupivacaine or 0.9% saline at 4 mL/hour through the ON-Q pain management system.
Blinding of outcome assessment (결과평가에 대한 눈가림)	□ 낮음 □ 높음 ■ 불확실	관련 언급 없음
Incomplete outcome data (불충분한 결과자료)	■ 낮음 □ 높음 □ 불확실	결측치 없음 -Seventy patients were included in this study, 35 in the saline group and 35 in the bupivacaine group.
Selective reporting (선택적 보고)	■ 낮음 □ 높음 □ 불확실	프로토콜은 없지만 연구에서 사전에 정해놓은 결과지표에 대해 연구 결과에서 모두 보고하고 있음
Industrial funding support (민간 연구비 지원)	□ 낮음 □ 높음 ■ 불확실	This study was supported by a generous donation from the Caporella family.

연번(Ref ID)		3529
1저자(출판연도)		Kushner (2005)
영역	비뚤림위험	
Random sequence generation (무작위 배정순서 생성)	■ 낮음 □ 높음 □ 불확실	A random-number generator was used to produce a blocked randomization code without stratification. Randomization codes were generated by University of Wisconsin Hospital Investigational Drug Service staff who then composed bags of bupivacaine or placebo analgesic solution, as appropriate (identical in appearance). To avoid misrandomizations, a bag would be sent to the operating room only after an eligible consenting patient was anesthetized for surgery.
Allocation concealment (배정순서 은폐)	■ 낮음 □ 높음 □ 불확실	
Blinding of participants and personnel (연구 참여자, 연구자에 대한 눈가림)	■ 낮음 □ 높음 □ 불확실	All clinical personnel and patients were blinded; only the Investigational Drug Service staff and study statistician knew the patients' true treatments until after the final analysis.
Blinding of outcome assessment (결과평가에 대한 눈가림)	■ 낮음 □ 높음 □ 불확실	(상동) The General Clinical Research Center staff obtained all pain data. Subjects completed the Brief Pain Inventory once daily, assisted by a study nurse if necessary, for 5 days.
Incomplete outcome data (불충분한 결과자료)	■ 낮음 □ 높음 □ 불확실	결측치 없음 - Table 2, n (%) - No patients were missing intravenous narcotic dose data.
Selective reporting (선택적 보고)	□ 낮음 □ 높음 ■ 불확실	일부 결과값(primay outcome;pain and narcotic use)에 대해 그래프로만(Fig. 2, 3) 제시하여 불완전한 결과보고를 하고 있어 메타분석에 포함시킬 수 없음
Industrial funding support (민간 연구비 지원)	■ 낮음 □ 높음 □ 불확실	Funding Support: This work was supported by grant M01 RR003186 from the General Clinical Research Centers Program of the National Center for Research Resources, National Institutes of Health.

연번(Ref ID)		1750
1저자(출판연도)		LeBlanc(2005)
영역	비뚤림위험	
Random sequence generation (무작위 배정순서 생성)	■ 낮음 □ 높음 □ 불확실	The pump is filled with 100 mL of either 0.5% bupivacaine or saline solution as per a computer-generated randomization schema.
Allocation concealment (배정순서 은폐)	■ 낮음 □ 높음 □ 불확실	Patients were prospectively randomized in a double-blinded manner to receive either 0.5% bupivacaine (Marcaine Abbott Laboratories) or saline continuously for 48 hours at 2 mL/h. Ultimately, 23 patients were randomized into the saline group and 29 into the Marcaine group.
Blinding of participants and personnel (연구 참여자, 연구자에 대한 눈가림)	■ 낮음 □ 높음 □ 불확실	
Blinding of outcome assessment (결과평가에 대한 눈가림)	□ 낮음 □ 높음 ■ 불확실	관련 언급 없음
Incomplete outcome data (불충분한 결과자료)	■ 낮음 □ 높음 □ 불확실	결측치 없음 -After Institutional Board Review approval, written informed consent was obtained from 52 unilateral inguinal hernia patients undergoing primary open hernia repair with the Prolene Hernia System - Ultimately, 23 patients were randomized into the saline group and 29 into the Marcaine group.
Selective reporting (선택적 보고)	□ 낮음 ■ 높음 □ 불확실	대부분의 결과값이 그래프로 제시되어 있어 메타분석에 포함시킬 수 없음
Industrial funding support (민간 연구비 지원)	□ 낮음 ■ 높음 □ 불확실	Supported by a grant from Ethicon Endo-Surgery and I-Flow Corporation.

연번(Ref ID)		1590
1저자(출판연도)		Wu(2005)
영역	비뚤림위험	
Random sequence generation (무작위 배정순서 생성)	■ 낮음 □ 높음 □ 불확실	All patients enrolled in this study provided informed consent, after which they were randomized according to a previously computer generated list to receive either a continuous infusion of local anesthetic or placebo (normal saline) at the incision site.
Allocation concealment (배정순서 은폐)	□ 낮음 □ 높음 ■ 불확실	관련 언급 없음
Blinding of participants and personnel (연구 참여자, 연구자에 대한 눈가림)	■ 낮음 □ 높음 □ 불확실	This was a prospective, double-blind, placebo-controlled, randomized trial consecutive subset of 50 patients was asked to guess to which group they had been randomized to assess the robustness of the blinding, -〉 Patients were unable to assess properly to which group they had been randomized, with 5 participants declining to guess.
Blinding of outcome assessment (결과평가에 대한 눈가림)	□ 낮음 □ 높음 ■ 불확실	관련 언급 없음
Incomplete outcome data (불충분한 결과자료)	■ 낮음 □ 높음 □ 불확실	결측치 없음 -A total of 100 patients were successfully randomized, with all patients completing the protocol
Selective reporting (선택적 보고)	■ 낮음 □ 높음 □ 불확실	프로토콜은 없지만 연구에서 사전에 정해놓은 결과지표에 대해 연구 결과에서 모두 보고하고 있음
Industrial funding support (민간 연구비 지원)	□ 낮음 ■ 높음 □ 불확실	This study was supported by a grant from I-Flow Corporation, Lake Forest, California. This protocol was designed and implemented by the authors. I-Flow Corporation did not have any input into the study design, implementation, data collection, data analysis, or manuscript preparation.

연번(Ref ID)		4557
1저자(출판연도)		Sanchez(2004)
영역	비뚤림위험	
Random sequence generation (무작위 배정순서 생성)	■ 낮음 □ 높음 □ 불확실	Using a random number table, pharmacists prepared vials of either normal saline or 0.25 percent bupivacaine with epinephrine and labeled these vials with consecutive study numbers.
Allocation concealment (배정순서 은폐)	■ 낮음 □ 높음 □ 불확실	관련 언급 없음
Blinding of participants and personnel (연구 참여자, 연구자에 대한 눈가림)	■ 낮음 □ 높음 □ 불확실	We performed a prospective, double-blind randomized study ~
Blinding of outcome assessment (결과평가에 대한 눈가림)	□ 낮음 □ 높음 ■ 불확실	관련 언급 없음
Incomplete outcome data (불충분한 결과자료)	■ 낮음 □ 높음 □ 불확실	결측치 없음 - A total of 45 patients consented and were included in the study. Twenty-three hernia repairs were randomized to the bupivacaine group and 22 repairs randomized to the placebo group.
Selective reporting (선택적 보고)	■ 낮음 □ 높음 □ 불확실	프로토콜은 없지만 연구에서 사전에 정해놓은 결과지표에 대해 연구결과에서 모두 보고하고 있음
Industrial funding support (민간 연구비 지원)	□ 낮음 □ 높음 ■ 불확실	관련 언급 없음

연번(Ref ID)		3057
1저자(출판연도)		Stewart (2004)
영역	비뚤림위험	
Random sequence generation (무작위 배정순서 생성)	■ 낮음 □ 높음 □ 불확실	Following informed and witnessed consent, the patients were then centrally randomized by concealed allocation list into two arms by the QEII Hospital pharmacist.
Allocation concealment (배정순서 은폐)	■ 낮음 □ 높음 □ 불확실	
Blinding of participants and personnel (연구 참여자, 연구자에 대한 눈가림)	■ 낮음 □ 높음 □ 불확실	Prior to the conclusion of the study the patients, surgeons and nurses collecting data were all blinded to the randomization allocations.
Blinding of outcome assessment (결과평가에 대한 눈가림)	■ 낮음 □ 높음 □ 불확실	
Incomplete outcome data (불충분한 결과자료)	■ 낮음 □ 높음 □ 불확실	결측치가 거의 발생하지 않음 - 총 48명 중 1명 탈락
Selective reporting (선택적 보고)	□ 낮음 ■ 높음 □ 불확실	대부분의 결과가(VAS, mean dose of morphine required) 그래프로만 제시되어(Fig. 3, 4) 불완전한 결과보고로 인해 메타분석에 포함시킬 수 없음
Industrial funding support (민간 연구비 지원)	□ 낮음 ■ 높음 □ 불확실	ACKNOWLEDGEMENTS The authors wish to acknowledge the following from the QEII Hospital: the patients who volunteered for the study, Ms Shauna Paine RN and the other nurses of Ward 2B, the trial recruitment coordinator Ms Sue Fitzgerald RN, and the hospital pharmacist Dr John Parke PhD. This study was sponsored by Orthotech Australia, with whom we have no financial affiliation, with a grant of PCIP units (manufactured by Sgarlato Laboratories, Los Gatos, CA, USA).

연번(Ref ID)		748
1저자(출판연도)		Schurr (2004)
영역	비뚤림위험	
Random sequence generation (무작위 배정순서 생성)	■ 낮음 □ 높음 □ 불확실	Patients were **randomized in a bracketed fashion** to receive either 120 mL of normal saline or 120 mL of 0.5% bupivacaine at 2 mL/h through a disposable pump for 60 hours postoperatively.
Allocation concealment (배정순서 은폐)	■ 낮음 □ 높음 □ 불확실	The disposable pump was filled with 120 mL from generic syringes of either bupivacaine or saline as prepared by the hospital Investigational Drug Services who used a **randomization list coded by the Investigational Drug Services.**
Blinding of participants and personnel (연구 참여자, 연구자에 대한 눈가림)	□ 낮음 □ 높음 ■ 불확실	A prospective, randomized, **double-blinded**, placebo-controlled trial was used.
Blinding of outcome assessment (결과평가에 대한 눈가림)	□ 낮음 □ 높음 ■ 불확실	언급없음
Incomplete outcome data (불충분한 결과자료)	■ 낮음 □ 높음 □ 불확실	결측치 거의 발생하지 않음 - **Two** patients were dropped from further analysis because of missing postoperative pain data from the GCRC (**both bupivacaine**).
Selective reporting (선택적 보고)	□ 낮음 ■ 높음 □ 불확실	결과값(pain score, opioid consumption)이 일부 본문에 명시되었으나, 전체 결과는 그래프로만 제시됨(Fig. 1, 2). 불완전한 결과보고로 인해 메타분석에 포함시킬 수 없음
Industrial funding support (민간 연구비 지원)	□ 낮음 ■ 높음 □ 불확실	**Supported by** the University of Wisconsin General Clinical Research Center, the University of Wisconsin Department of Surgery, and **Ethicon Inc.**

연번(Ref ID)		3063
1저자(출판연도)		Givens
영역	비뚤림위험	
Random sequence generation (무작위 배정순서 생성)	■ 낮음 □ 높음 □ 불확실	Participating patients were randomized to receive a system filled with either 0.25% bupivacaine (n = 20) or normal saline solution (n = 16), based on a computer-generated randomization schedule
Allocation concealment (배정순서 은폐)	■ 낮음 □ 높음 □ 불확실	Sealed packets that contained group assignments were shuffled and drawn randomly to further prevent knowledge of the contents of any 1 envelope.
Blinding of participants and personnel (연구 참여자, 연구자에 대한 눈가림)	■ 낮음 □ 높음 □ 불확실	Surgeons, patients, and subsequent data recorders were blinded to the assignment of control versus study group.
Blinding of outcome assessment (결과평가에 대한 눈가림)	■ 낮음 □ 높음 □ 불확실	
Incomplete outcome data (불충분한 결과자료)	■ 낮음 □ 높음 □ 불확실	결측치 없음
Selective reporting (선택적 보고)	■ 낮음 □ 높음 □ 불확실	프로토콜은 없지만 연구에서 사전에 정해놓은 결과지표에 대해 연구 결과에서 모두 보고하고 있음
Industrial funding support (민간 연구비 지원)	□ 낮음 □ 높음 ■ 불확실	On-Q Systems were provided by Ethicon Endosurgery.