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ORIGINAL ARTICLE

The analgesic efficacy of transversus abdominis plane block vs. wound infiltration after inguinal and infra-umbilical hernia repairs

A systematic review and meta-analysis with trial sequential analysis

Sina Grape, Kyle R. Kirkham and Eric Albrecht

BACKGROUND Both transversus abdominis plane (TAP) block and wound infiltration with local anaesthetic have been used to relieve pain after inguinal or infra-umbilical hernia repair.

OBJECTIVES To determine whether TAP block or local anaesthetic infiltration is the best analgesic option after inguinal or infra-umbilical hernia repair.

DESIGN Systematic review and meta-analysis with trial sequential analysis.

DATA SOURCES MEDLINE, Embase, Cochrane Central Register of Controlled Clinical Trials, Web of Science, up to June, 2020.

ELIGIBILITY CRITERIA We retrieved randomised controlled trials comparing TAP block with wound infiltration after inguinal or infra-umbilical hernia repair. Primary outcome was rest pain score (analogue scale 0 to 10) at 2 postoperative hours. Secondary pain-related outcomes included rest pain score at 12 and 24 h, and intravenous morphine consumption at 2, 12 and 24 h. Other secondary outcomes sought were block-related complications such as rates of postoperative infection, haematoma, visceral injury and systemic toxicity of local anaesthetic.

RESULTS Seven trials including 420 patients were identified. There was a significant difference in rest pain score at 2 postoperative hours in favour of TAP block compared with wound infiltration, with a mean (95% confidence interval) difference of −0.8 (−1.3 to -0.2); $I^2 = 85\%$; $P = 0.01$. Most secondary pain-related outcomes were also significantly improved following TAP block. No complication was reported. The overall quality of evidence was moderate.

CONCLUSION There is moderate level evidence that TAP block provides superior analgesia compared with wound infiltration following inguinal or infra-umbilical hernia repair.

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KEY POINTS

- Both TAP block and wound infiltration with local anaesthetic have been used to relieve pain after inguinal or infra-umbilical hernia repair.
- We undertook a systematic review and meta-analysis with trial sequential analysis to determine whether TAP block or wound infiltration was the best analgesic option.
- We analysed all randomised controlled trials comparing TAP block with wound infiltration after inguinal or infra-umbilical hernia repair.
- We found moderate level evidence that TAP block provides superior analgesia compared with wound infiltration.

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Introduction

Acute postoperative pain after inguinal and infra-umbilical hernia repair can be moderate to severe,[1] and up to 20% of patients may develop chronic postoperative pain after hernia surgery.[2] Local anaesthetic techniques are valuable options for decreasing acute postoperative pain and reducing the risk of developing persistent postsurgical pain.[3] Two of these techniques are transversus abdominis plane (TAP) block and local anaesthetic infiltration of the surgical wound. Of note, the TAP block consists of injecting local anaesthetic into the plane between the internal oblique and the transversus abdominis muscles to anaesthetise the sensory nerves supplying the anterior abdominal wall.[4]

Several meta-analyses have summarised evidence that both local anaesthetic wound infiltration[5] and TAP block[6] provide better pain relief after inguinal or infra-umbilical hernia repair than placebo. However, it remains uncertain whether one technique is superior to the other. We therefore, undertook a systematic review and meta-analysis with trial sequential analysis to determine whether TAP block provides better analgesia than wound infiltration after inguinal or infra-umbilical hernia repair.

Methods

Literature search and inclusion criteria

This investigation followed the recommended 'Preferred Reporting Items for Systematic Reviews and Meta-Analyses' (PRISMA) statement process[7] and was prospectively registered on the International Prospective Register of Systematic Reviews (registration number CRD42020208053). The PRISMA flow diagram is depicted in the appendix (Supplementary Fig. 1, http://links.lww.com/EJA/A682).

Two authors (SG and EA) searched the following electronic databases up to 17 June 2020: MEDLINE, Embase, Cochrane Central Register of Controlled Clinical Trials and Web of Science. The following population search terms were applied: Hernia OR Hernia surgery. The results of this search were combined with Block OR Transversus abdominis OR TAP OR Local anaesthesia OR Local anesthesia OR Wound infiltration. The limits of Clinical trials OR Random allocation OR Therapeutic use were then applied to the results. The following words were searched as keywords

Hernia, Hernia Surgery, Incisi*, Operation*, Operative*, Surger*, Surgical*, Perioperati*, Pain*, Nociception*, Analges*, Anesthe*, Anaesthe*, Transversus abdominis plane block, Transvers*, Block*, Local anaesthe*.

The results of this search strategy were limited to randomised controlled trials and humans. No language limits were placed on the search. In addition, the authors scrutinised the references of all retrieved articles for any applicable trials that might not have been captured by the above approach. Finally, Google Scholar was queried to identify any remaining relevant publications, and authors that registered clinical trials on clinicaltrials.gov were contacted.

Two authors (SG and EA) independently collected data from each article on a standardised data collection form. In these forms all data extracted from included studies and data used for all analyses were summarised. These forms were not made publicly available.

Population

The meta-analysis addresses adult patients undergoing open or laparoscopic inguinal hernia repair or infra-umbilical hernia repair.

Intervention and comparator

Only trials investigating pain outcomes and comparing TAP block with wound infiltration were included in this meta-analysis.

Outcomes

Defined outcomes were extracted from each article following our routine approach previously described in meta-analyses on acute postoperative pain.[8–10] The primary outcome was rest pain score at 2 postoperative hours. Secondary pain-related outcomes included: rest pain score at 12 and 24 postoperative hours; dynamic pain score at 2, 12 and 24 postoperative hours; intravenous morphine equivalent consumption at 2, 12 and 24 postoperative hours; time to first analgesic request; rate of postoperative nausea and vomiting within the first 24 postoperative hours; and patient satisfaction assessed on a 11-point numeric rating scale (0, totally dissatisfied; 10, highly satisfied). Other secondary outcomes sought were rates of haematoma, postoperative infection, visceral injury and local anaesthetic systemic toxicity. We also aimed to capture hospital resource-related outcomes such as hospital length of stay.

Trial characteristics

Extracted trial characteristics included TAP block technique; timing of the TAP block and wound infiltration; type, concentration and volume of local anaesthetic administered for TAP block and wound infiltration; anaesthetic strategy; and type of postoperative analgesia.

Rating of the studies

For each randomised trial, the quality ofthe methodology was evaluated using the Cochrane Collaboration's Risk of Bias Tool.[11] Two authors (SG and EA) employed this method to independently screen, review and score the items for each trial. Disagreements in scoring or extracted data were adjudicated by KRK.

Data extraction

The texts, tables or images from the source articles were evaluated to extract the number of participants, number

of events, means, standard deviations, standard errors of means and 95% confidence intervals (CIs). For articles that failed to describe the sample size or results as a mean and standard deviation or standard error of the mean and 95% CI, we contacted the corresponding author twice by E-mail with a request for access to the relevant data or to the complete dataset. If the corresponding author failed to reply, we employed the median and interquartile range as approximations of the mean and standard deviation, by estimating the mean as equivalent to the median, and the standard deviation as the interquartile range divided by 1.35 or the range divided by 4.[11] All opioids were converted to equianalgesic intravenous morphine doses (intravenous morphine 10 mg = oral morphine 30 mg = intravenous tramadol 100 mg = intravenous pethidine 75 mg = intravenous fentanyl 100 μg = intravenous tapendatol 1 mg).[8] For pain scores employing an 11– graduation verbal, visual or numeric rating scale, results were transposed to a 0 to 10 analogue scale to permit statistical evaluation. When trials had several intervention groups, data from all groups were used for comparison. In addition, the Grades of Recommendation, Assessment, Development, and Evaluation (GRADE) Working Group system was applied to each outcome to evaluate the quality of evidence.[12]

Statistical analysis

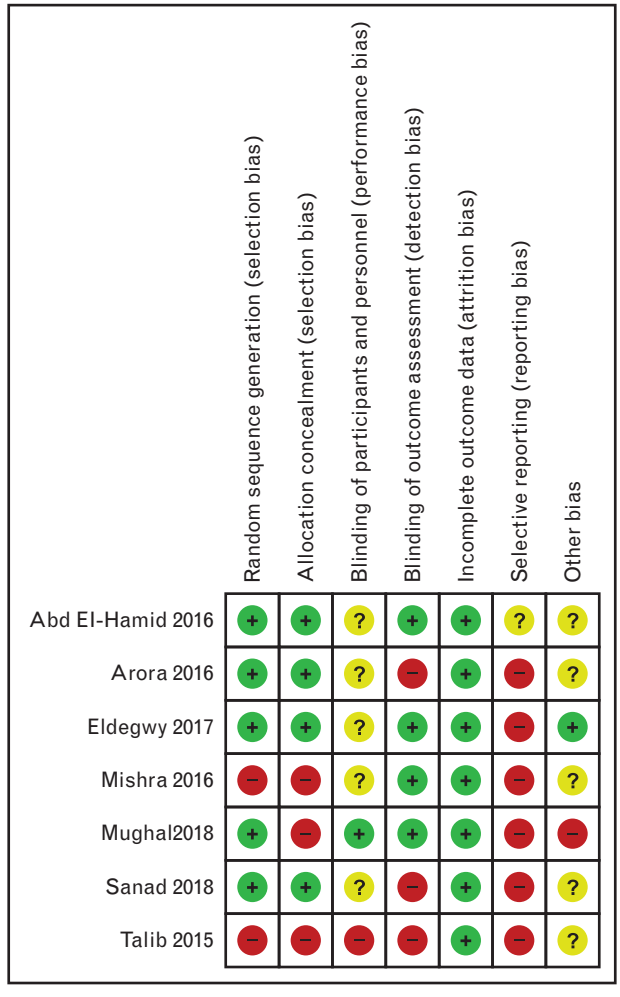
All meta-analyses were conducted using the Review Manager software (RevMan version 5.3.5; Copenhagen, The Nordic Cochrane Centre, The Cochrane Collaboration 2014). For continuous data, this software estimates the weighted mean differences, and similarly the risk ratio for categorical data between groups, with an overall estimate of the pooled effect. A meta-analysis was conducted when two or more trials reported any given outcome. We calculated the I^2 coefficient to assess heterogeneity and set predetermined limits for low (25 to 49%), moderate (50 to 74%) and high (> 75%) levels.[13] A random effects model was applied in circumstances when moderate or high heterogeneity was observed; otherwise, a fixed effects model was employed.[14] In an attempt to account for sources of heterogeneity, subgroup analyses were conducted for our primary outcome according to the TAP block technique (ultrasound-guided vs. landmark-guided vs. laparoscopy-guided), the TAP block or wound infiltration timing (before vs. after surgery), the anaesthetic strategy (general vs. spinal anaesthesia), the surgical approach (open vs. laparoscopic) and the prescription or not of multimodal analgesic treatment. The risk of publication bias associated with the primary outcome was estimated by drawing a funnel plot of the mean difference standard error of rest pain score at 2 postoperative hours (y-axis) as a function of the mean difference of rest pain score at 2 postoperative hours (x-axis)[15] and confirmed with Duval and Tweedie's trim and fill test.[16] This assessment was performed using Comprehensive Meta-analysis Version 2 software (Biostat, Englewood, New Jersey, USA). Finally, trial sequential analysis was performed on the primary outcome to confirm whether firm evidence was reached or not (TSA software version 0.9.5.10 Beta; Copenhagen Trial Unit, Center for Clinical Intervention Research, Rigshospitalet, Copenhagen, Denmark).[17]

We present results as the mean difference or relative risk with 95% CI and a two-sided P value less than 0.05 was considered significant.

Results

Of the 1123 trials identified from the literature search, seven met the inclusion criteria,[18–24] including a total of 420 patients (Supplementary Fig. 1, http://links.lww.com/EJA/A682). Figure 1 summarises the risk of bias of the different trials. Four authors were contacted[18,19,22,23] but none provided additional data; means

Fig. 1 Cochrane collaboration risk of bias summary: evaluation of bias risk items for each included study



Green circle, low risk of bias; red circle, high risk of bias; yellow circle, unclear risk of bias.

Table 1 Trial characteristics

Reference	Group, *n*	Surgical procedure	TAP block technique	Block timing		Medication used		Anaesthetic strategy	Postoperative analgesia
				TAP block	Surgical infiltration	TAP block (total volume)	Surgical infiltration		
Abd El-Hamid *et al.*[18]	TAP block (29) wound infiltration (30)	Unilateral, open	Ultrasound	Before incision	Before incision	Levobupivacaine 0.25%, 0.5 ml kg^{-1}	Levobupivacaine 0.25%, 0.2 ml kg^{-1}	General anaesthesia - isoflurane	i.v. morphine
Arora *et al.*[19]	TAP block (36) wound infiltration (35)	Bilateral, laparoscopy	Ultrasound	Before incision	Before incision	Ropivacaine 0.5%, 30 to 40 ml	Ropivacaine 0.5%, 20 to 30 ml	General anaesthesia - desflurane	i.v. PCA fentanyl, i.v. rescue morphine, oral paracetamol, oral diclofenac
Eldegwy *et al.*[20]	TAP block (20) wound infiltration (20)	Unilateral, open	Ultrasound	End of surgery	End of surgery	Levobupivacaine 0.5%, 15ml	Levobupivacaine 0.5%, 15ml	General anaesthesia - sevoflurane	i.v. PCA morphine
Mishra *et al.*[21]	TAP block (20) wound infiltration (20)	Unilateral, open	Ultrasound	End of surgery	End of surgery	Bupivacaine 0.25%, 40ml	Bupivacaine 0.25%, 20ml	General anaesthesia - isoflurane	im diclofenac and im tramadol
Mughal *et al.*[22]	TAP block (30) wound infiltration (30)	Unilateral, laparoscopy	Laparoscopy	Before incision	Before incision	Bupivacaine 0.25%, 30ml	Bupivacaine 0.5%, 15ml	General anaesthesia - sevoflurane	i.v. morphine, oral paracetamol, oral dexketoprofen, oral tapentadol
Sanad *et al.*[23]	TAP block (25) wound infiltration (25)	Unilateral, open	Ultrasound	End of surgery	End of surgery	Bupivacaine 0.25%, 40ml	Bupivacaine 0.25%, 20ml	General anaesthesia - isoflurane	im pethidine
Talib *et al.*[24]	TAP block (50) wound infiltration (50)	Unilateral, open	Ultrasound	End of surgery	End of surgery	Bupivacaine 0.5%, 1.5 ml kg^{-1}	Bupivacaine 0.5%, 1.5 ml kg^{-1}	General anaesthesia - sevoflurane	i.v. tramadol, i.v. paracetamol, i.v. diclofenac

i.v. intravenous; im, intramuscular; PCA, patient controlled analgesia; TAP, transversus abdominis plane.

and standard deviations were approximated from median, interquartile range or range in two trials.[18,19]

Table 1 presents the trial characteristics. The number of included patients ranged from 40[21] to 100.[24] Five studies included patients undergoing inguinal hernia repair only,[18–20,22,24] while two included patients undergoing inguinal or infra-umbilical hernia repair,[21,23] without presenting data for surgical subgroups. Inguinal or infra-umbilical hernia repair was performed with an open surgical approach in five studies[18,20,21,23,24] and with laparoscopy in two studies.[19,22]

All interventions were performed under general anaesthesia and maintained with inhalation agents. TAP blocks was always performed under ultrasound guidance except in one trial where it was performed under laparoscopic guidance.[22] TAP block and wound infiltration were performed at the beginning of surgery in three studies[18,19,22] and at the end in four studies.[20,21,23,24] All authors injected a single bolus of long-acting local anaesthetic and used the same concentration of local anaesthetic for both groups, except one study that injected bupivacaine 0.25% for the TAP block and bupi-vacaine 0.5% for wound infiltration.[22] No study used perineural or intravenous adjuncts. Volumes injected ranged from 15[20] to 40 ml[21,23] for the TAP block and from 15[20,22] to 40 ml[18] for wound infiltration. Four authors prescribed multimodal analgesia postoperatively,[19,21,22,24] while three did not.[18,20,23]

The mean ± SD rest pain score at 2 postoperative hours was significantly better following TAP block compared

Fig. 2 Rest pain score at 2 postoperative hours in patients undergoing inguinal or infra-umbilical hernia repair with transversus abdominis plane block vs. wound infiltration

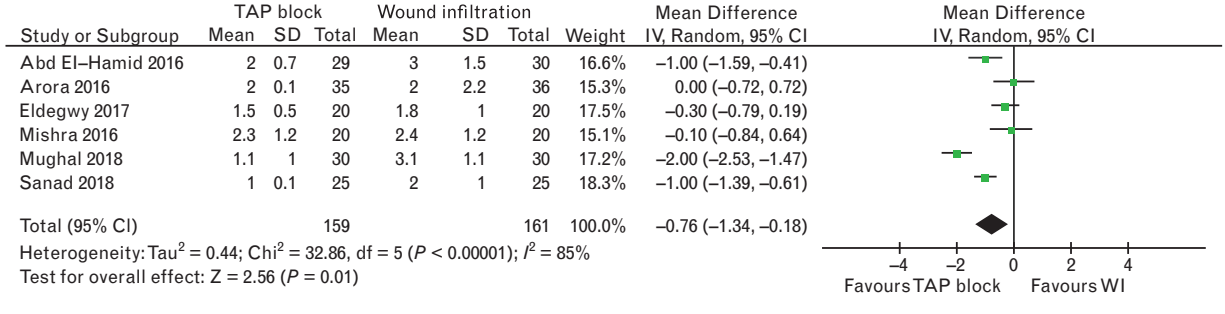
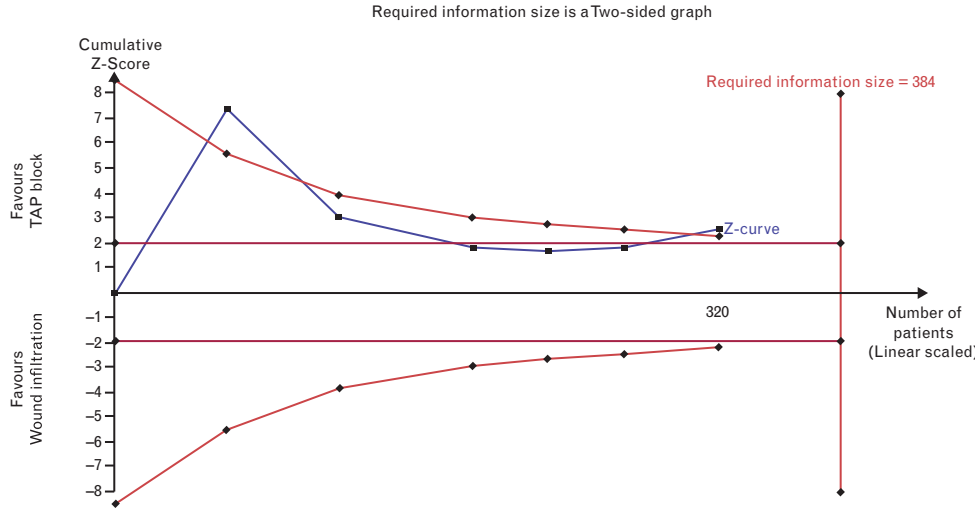


Fig. 3 Trial sequential analysis for rest pain score at 2 postoperative hours



The cumulative *Z* curve (blue) crosses the monitoring boundary curve (red) and reaches the required information size, indicating firm evidence that transversus abdominis plane block is superior to wound infiltration.

with wound infiltration, with a mean difference (95% CI) of −0.8 (−1.3 to −0.2), $I^2 = 85\%$, $P = 0.01$ (Fig. 2). Subgroup analyses did not reveal any difference in the timing of the TAP block or wound infiltration (before vs. after surgery, $P = 0.43$), between type of surgery (open vs. laparoscopic, $P = 0.71$), and the prescription of multimodal analgesic treatment (yes or no, $P = 0.95$). Our subgroup analysis according to TAP block technique (ultrasound vs. laparoscopy guided) indicated a significant difference in favour of laparoscopic guidance ($P < 0.0001$); however, this result was based on one study only.[22] The trial sequential analysis indicated that firm evidence was reached regarding the contribution of TAP block to decreasing rest pain scores at 2 postoperative hours (Fig. 3). Regarding the risk of publication bias for the primary outcome, Duval and Tweedie's trim and fill

Table 2 Secondary pain-related outcomes

Outcome	Number of trials	References	Total number of patients		Mean difference[9] or relative risk (95% CI)	I^2 (%)	*P* value for overall effect
			TAP block	Wound infiltration			
Rest pain score at 12 h po (analogue scale, 0 to 10)	4	Abd-El Hamid 2016,[18] Eldegwy 2017,[20] Mishra 2016,[21] Sanad 2018[23]	99	100	−2.1 (−3.3 to −0.9)	89	0.0004
Rest pain score at 24 h po (analogue scale, 0 to 10)	6	Abd-El Hamid 2016,[18] Arora 2016,[19] Eldegwy 2017,[20] Mughal 2013,[22] Sanad 2018,[23] Talib 2015[24]	189	19	−0.9 (−1.9 to 0.2)	94	0.12
Dynamic pain score at 2 h po (analogue scale, 0 to 10)	3	Abd-El Hamid 2016,[18] Eldegwy 2017,[20] Mughal 2013[22]	79	80	−1.3 (−2.7 to 0.2)	94	0.09
Dynamic pain score at 12 h po (analogue scale, 0 to 10)	2	Abd-El Hamid 2016,[18] Eldegwy 201 7[20]	49	50	−1.5 (−2.5 to −0.6)	77	0.002
Dynamic pain score at 24 h po (analogue scale, 0 to 10)	4	Abd-El Hamid 2016,[18] Arora 2016,[19] Eldegwy 2017,[20] Mughal 2013[22]	114	116	−0.8 (−1.4 to −0.1)	60	0.03
Cumulative i.v. morphine equivalent consumption at 2 h po (mg)	1	Mughal 2013[22]	30	30	−1.1 (−2.2 to 0.03)	N/A	0.06
Cumulative i.v. morphine equivalent consumption at 12 h po (mg)	0	None	0	0	N/A	N/A	N/A
Cumulative i.v. morphine equivalent consumption at 24 h po (mg)	5	Abd-El Hamid 2016,[18] Arora 2016,[19] Eldegwy 2017,[20] Mughal 2013,[22] Talib 2015[24]	164	166	−6.2 (−10.2 to −2.3)	95	0.002
Need for rescue analgesia	3	Abd-El Hamid 2016,[18] Arora 2016,[19] Sanad 2018[23]	34/89	50/91	0.3 (0.1 to 0.6)	0	0.003
Time to first analgesic request (min)	3	Abd-El Hamid 2016,[18] Arora 2016,[19] Eldegwy 2017[20]	84	86	183 (50 to 316)	93	0.007
Rate of po nausea and vomiting within 24 h po (relative risk)	1	Talib 2015[24]	10/50	36/50	0.3 (0.2 to 0.5)	N/A	<0.0001

CI, confidence interval; N/A, not applicable; po, postoperative; TAP, transversus abdominis plane.

Table 3 Quality of evidence assessment for each outcome sought

Quality assessment								Summary of findings
Outcome	Limitations	Inconsistency	Indirectness	Imprecision	Publication bias	Total number of participants	Conclusion	Quality of evidence (GRADE)
Rest pain score at 2 postoperative hours (analogue scale 0 to 10)	No major limitations[a]	Serious inconsistency[13]	No serious indirectness[c]	No serious imprecision[d]	No puNication bias	320	Reduced pain score in TAP Nock groups	Moderate quality (⊕⊕⊕)
Rest pain score at 12 postoperative hours (analogue scale 0 to 10)	No major limitations[a]	Serious inconsistency[b]	No serious indirectness[c]	No serious imprecision[d]	No puNication bias	199	Reduced pain score in TAP Nock groups	Moderate quality (⊕⊕⊕)
Rest pain score at 24 postoperative hours (analogue scale 0 to10)	No major limitations[a]	Serious inconsistency[b]	No serious indirectness[c]	No serious imprecision[d]	No puNication bias	380	No difference between groups	Moderate quality (⊕⊕⊕)
Dynamic pain score at 2 postoperative hours (analogue scale 0 to 10)	No major limitations[a]	Serious inconsistency[b]	No serious indirectness[c]	No serious imprecision[d]	No puNication bias	159	No difference between groups	High quality (⊕⊕⊕)[e]
Dynamic pain score at 12 postoperative hours (analogue scale 0 to 10)	Two studies sought this outcome	Serious inconsistency[b]	No serious indirectness[c]	No serious imprecision[d]	No puNication bias	99	Reduced pain score in TAP Nock groups	High quality (⊕⊕⊕⊕)[e]
Dynamic pain score at 24 postoperative hours (analogue scale 0 to10)	No major limitations[a]	No inconsistency	No serious indirectness[c]	No serious imprecision[d]	No puNication bias	230	Reduced pain score in TAP Nock groups	High quality (⊕⊕⊕⊕)[e]
Intravenous morphine consumption at 2 postoperative hours	One study sought this outcome	Serious inconsistency[b]	No serious indirectness[c]	No serious imprecision[d]	No puNication bias	60	No difference between groups	Moderate quality (⊕⊕⊕⊕)[f]
Intravenous morphine consumption at 12 postoperative hours	No study	N/A	N/A	N/A	N/A	0	N/A	N/A
Intravenous morphine consumption at 24 postoperative hours	No major limitations[a]	Serious inconsistency[b]	No serious indirectness[c]	No serious imprecision[d]	No puNication bias	330	Reduced consumption in TAP Nock group	Moderate quality (⊕⊕⊕⊕)[f]
Time to first analgesic request	No major limitations[a]	Serious inconsistency[b]	No serious indirectness[c]	No serious imprecision[d]	No puNication bias	170	Longer time in TAP Nock groups	High quality (⊕⊕⊕⊕)[e]
Need for rescue analgesia	No major limitations[a]	No inconsistency	No serious indirectness[c]	No serious imprecision[d]	No puNication bias	180	Less need for rescue analgesia in TAP Nock groups	High quality (⊕⊕⊕⊕)[e]
Rates of PONV within the first 24 postoperative hours	One study sought this outcome	No inconsistency	No serious indirectness[c]	No serious imprecision[d]	No puNication bias	100	Less PONV in TAP block group	Low quality (⊕)
Incidence of postoperative haematoma	One study sought this outcome	Not estimate, as no event occurred	No serious indirectness[c]	Not estimate, as no event occurred	No puNication bias	40	Not estimaNe, as no event occurred	Not applicaNe

GRADE, Grades of Recommendation, Assessment, Development, and Evaluation; PONV, postoperative nausea and vomiting; TAP, transversus abdominis plane. [a] As all trials have mainly a low risk of bias on the different items, we consider this does not represent a major limitation. [b] I^2 above 50% or not applicable, as only one trial reported this outcome. [c] Consistent definition of the reported outcome. [d] No serious imprecision as the clinical decision would not be modified whether the upper of lower boundary limit of the confidence interval represented the truth. [e] Although there was a concern about inconsistency, we did not rate down the quality of evidence because not every criterion appeared to justify rating down by one level. Moreover, there was consistent evidence from randomised controlled trials, with no plausible confounders. [f] We rated down for limitations, as two trials reported this outcome.

test calculated the combined studies point estimate to be −0.76 (95% CI −1.37 to −0.15) with a random effects model. Using trim and fill, these values were unchanged, suggesting that no studies are missing.

Secondary pain-related outcomes were all significantly reduced with the exception of rest pain score at 24 postoperative hours, dynamic pain score at 12 postoperative hours, and intravenous morphine consumption at 2 postoperative hours (Table 2). One study reported zero incidence of postoperative haematoma and visceral injury.[20] The incidence of postoperative infection or local anaesthetic systemic toxicity was not reported by any study, and neither was duration of hospital stay. Based on one study, patient satisfaction was significantly improved following wound infiltration.[22]

According to the GRADE system, the quality of evidence for the primary outcome was moderate both for the primary and the secondary outcomes (Table 3).

Discussion

The current systematic review and meta-analysis explored the analgesic efficacy of TAP block compared with wound infiltration in patients undergoing inguinal or infra-umbilical hernia repair. Based on seven randomised controlled trials that included a total of 420 patients, we demonstrated that TAP block provides superior analgesia to wound infiltration following inguinal or infra-umbilical hernia repair with reduced pain scores within 12 postoperative hours and reduced opioid consumption up to 24 postoperative hours. Of note, the absence of a reduction in morphine consumption at 2 postoperative hours might be secondary to a type II error as only one trial reported this outcome.

While the mean difference in rest pain scores at 2 postoperative hours is less than one unit, which has been shown to be clinically relevant,[25] it is necessary to balance this difference with the time necessary to perform the TAP block when there is no processing room in parallel available to perform the block.[26] We acknowledge that the TAP block requires more time and resources, such as ultrasound and the appropriate experience, than wound infiltration performed by the surgeon. On the contrary, none of the included trials reported the times related to anaesthesia and surgery. It is important, though, to realise that a reduction in pain scores led to a reduction in morphine consumption, even if the magnitude of the effect is not impressive. Indeed, in our meta-analysis the reduced postoperative morphine consumption was associated with a reduction in the rate ofpostoperative nausea and vomiting in favour of the TAP block, with an absolute risk reduction of 10 and a number needed to treat of 10. As postoperative nausea and vomiting is one of the main factors responsible for unplanned hospital admission or a prolonged length of stay after ambulatory surgery,[27] and as inguinal and infra-umbilical hernia repair are frequently performed in these settings, we believe that it is importance to provide the best analgesic technique for both patient recovery and hospital resources. Of note, we were unable to capture any data related to hospital outcomes, and that should be the topic of further research.

The current meta-analysis has several weaknesses. First, our hypotheses and subgroup analyses did not explain the elevated coefficient of heterogeneity resulting from the analysis of our primary outcome. Second, we were unable to draw any conclusion regarding some of our predefined outcomes such as complications after local anaesthetic injections, due to the absence of any record in the majority of trials. Third, the difference between surgical techniques makes it difficult to draw conclusions for individual efficiency. The limited dataset available extracted from small, single-centre studies is another limitation for generalisation of these results and implementation into the clinical practice. Finally, the comparison of analgesic efficacy of the TAP block vs. wound infiltration in patients having their surgery performed under spinal anaesthesia still is unknown and needs to be explored.

In conclusion, there is moderate-level evidence that TAP block provides superior analgesia when compared with wound infiltration in patients undergoing inguinal or infra-umbilical hernia repair.

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Presentation: none.

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