Kliiniline küsimus nr. 8
Kas patsiendil intraoperatiivse operatsioonihaava infiltratsiooni kasutamine (lokaalanesteetikumiga) vs selle mittekasutamine mõjutab postoperatiivset ägedat valu?

Kriitilised tulemusnäitajad: Tulemusnäitajad: *valu tugevus, lisavaluvaigisti vajadus (sh opiaadi vajadus), aeg esimese valuvaigistini, valuvaigistitest tingitud kõrvaltoimed, postoperatiivsete tüsistuste esinemissagedus, rehospitaliseerimine valu tõttu, patsiendi (eestkostja) rahulolu valuraviga, meetodi ohutus*

Kokkuvõte:
Tabel 1. Kokkuvõte hinnatud ravijuhistest, süstemaatilistest ülevaadetest ja Prospecti soovitustest:

Operation	**DE-07**	**Prospect**	**Systematic reviews**	
			Result	Author
Tonsillectomy	Recommended (C)		+/-	Grainger
Head surgery	Recommended (B)		+	Hansen
Thyroidectomy	Recommended (B)			
Laporoscopic cholecystectomy	Recommended (A)	Recommended (A)	+	Loizides
Herniorraphy	Recommended (A)	Recommended (A)	+	Joshi
Spine surgery	Recommended (A)		-	Kjærgaard
Iliac crest bone grafting	Recommended(B)			
Radical prostatectomy		Recommended (B)		
Total hip arthroplasty		Wound catheter is not recommended (D) LIA is recommended (A)	+	Yin
Total knee arthroplasty		Recommended	+	Andersen
Breast surgery		Not recommended	+/-	Byager
Colonic resection		Not recmmended (D)	+	Ventham (1)
			-	Gupta
Abdominal hysterectomy		Recommended (A)	+	Gupta
Caesarean section			+/-	Bamigboye
			+	Gupta

Subfastsiaalne haavainfiltratsioon on efektiivsem võrreldes nahaaluse haava infiltratsiooniga (Joshi, Ventham, Gupta)
Infiltratsiooni aeg: enne nahalõiget vs enne haava sulgemist valu tugevuses vahet ei olnud (Joshi)

Süstemaatilised ülevaated

Tabel.2.

Autor , aasta , uuritavate arv	Operatsioon	Sekkumine	Tulemusnäitajad				
			Valu tugevus	Analg vajadus	Tüsistused		
					Muud	PONV	Haava infektsioon
Loizides, 2014 19 RCT, 1263 pt	Lap cholocystectomy	Wound infiltration vs placebo or no treatment	4-8 h: ↓ 9-24 h: ↓	NR		No	No
Joshi 2011 79 RCT	Open hernia surgery	Field block vs placebo or no treatment (202 pt)	↓	↓		NR	NR
		Field block and wound infiltration vs placebo (517 pt)	↓	↓		NR	NR
		Wound infiltration vs placebo (270 pt)	↓	↓		NR	NR
Byager 2014 10 RCT, 699 pt	Breast surgery	Pre or post incisional wound infiltration	6/10- ↓, 4/10 ↔	6/10- no reduction, 4/10- ↓		↔	NR
Kjaergaard 2012 9 RCT, 529	Lumbar spine surgery	Pre – incisional vs pre-closure wound infiltration or wound infiltration vs placebo	3/10 comparisons ↓ (p < 0.005)	3/9- ↓, (p < 0.05)		↔	↔
Ventham 2014 12 RCT	Open and laporoscopic colorectal procdures	Only wound infiltration (single injection and continous infusion) are included	At rest at 24 h : ↔ (p = 0.1) and 48 h: ↔ (p = 0.7) On movement at 24: signifficant ↓ (p = 0.02) and 48 h: signifficant ↓ (p = 0.004)	24 h: non significant ↓ (p = 0.07) 48 h: significant ↓ (p= 0.002)	Ileus: ↔ , p = 0.8	NR	↔, p = 0.8
Ventham 2013 9 RCT, 505 pt	Abdominal surgery	Continuous wound infiltration vs epidural analgesia	At rest at 24 h: ↔ (p = 0.94) , at 48 h: ↔ (p = 0.19) On movement: at 24 h: ↔ (p= 0.13) , at 48 h : ↔ (p = 0.31)	Not significant ↓ (p = 0.08)	Urinary retention: ↓ (p = 0.002)	↔ (p = 0.33)	↔ (p = 0.49)
Bamigboye 2009 20 RCT, 1150 pt	Caeserean section	Wound infiltration vs control (3 RCT, 126 pt)	↔	↓			

Autor , aasta , uuritavate arv	Operatsioon	Sekkumine	Tulemusnäitajad				
			Valu tugevus	Analg vajadus	Tüsistused		
					Muud	PONV	Haava infektsioon
		Peritoneal instillation + wound infiltration (1 RCT, 100 pt)	At 1 h:↓	↓		NR	NR
Gupta 2011 32 RCT	General, gynecological , urological, plastic or thoracic surgery	Continuous wound infiltration vs placebo or control	Gynecological surgery : at rest at 48 h: signifficant ↓ (p = 0.03) Other : ↔	Gynecological surgery: ↓ (p = 0.001) Other: ↔		↔	↓ wound breakdown (p = 0.048)
Grainger 2008 13 RCT, 777 pt	Tonsillectomy (children are included)	Wound infiltration prior or after surgery Topical application of LA	At 4-6 h: ↓; topical application > wound infiltration (not signifficant) At 20-24 h: signifficant ↓ On day 5: ↓	7/13: ↔		↔	↔
Andersen 2014 7 RCT, 328 pt	Total knee arthroplasty	Local infiltration analgesia vs placebo or no infiltration	6/7 : ↓ 0-32 h	6/7 : ↓ 0-32 h			
Yin 2014 9 RCT, 748 pt	Total hip arthroplasty	Local infiltration analgesia vs placebo or no infiltration	At 4 h at rest : ↓ (p = 0.00001) and with motion: ↓ (p = 0.00001); 6 h a with motion (p = 0.02) At 24 h at rest: ↓ (p = 0.01)	0-24 h : ↓ (p = 0.001) 48-72 h : ↓ (p = 0.03)	Urinary tetention: not increasing risk (p = 0.96)	Not increasing the risk (p = 0.94	
Hansen 2011 5 RCT, 249 pt	Craniotomy	Scalp infiltration	At 1-2 h : ↓ At 24- 48 h: 2/5 ↓			↔	↔

NR- not reported; 3/9- 3 uuringut 9-st

Ravijuhendid

1. Acute Pain Management: Scientific Evidence 2010 (AU-10)
2. Guidelines on Pain Management 2013 (URO-13)
3. ” Behandlung acuter perioperativer und posttraumatischer Schmertzen ” 2009” (DE-09)
4. Prospect: procedure specific postoperative pain management

URO-13 : Guidelines on Pain Management 2013

LE	Type of evidence
1a	Evidence obtained from meta-analysis of randomised trials
1b	Evidence obtained from at least one randomised trial
2a	Evidence obtained from one well-designed controlled study without randomisation
2b	Evidence obtained from at least one other type of well-designed quasi-experimental study
3	Evidence obtained from well-designed non-experimental studies, such as comparative studies, correlation studies and case reports
4	Evidence obtained from expert committee reports or opinions or clinical experience of respected authorities

GR	Nature of recommendations
A	Based on clinical studies of good quality and consistency addressing the specific recommendations and including at least one randomised trial
B	Based on well-conducted clinical studies, but without randomised clinical trials
C	Made despite the absence of directly applicable clinical studies of good quality

Guideline gives two statements:

1. Wound infiltration with local anaesthetic can provide some postoperative analgesia and may reduce the requirement for systemic analgesia (LE:2b). This statement based on one study from Mulroy et al 1999 (RCT, 110 pt, hernia repair)
2. Continous postoperative wound instillation of local anaesthetic via multi –hole catheter placed intraoperatively by surgeon has been shown to provide satisfactory analgesia for modarate to severe postoperative pain, reducing consumption of systemic analgesics(LE:2b).

Table.3.

Author, year, level of evidence	Patients	Intervention	Results
Gupta 2005, LE: 2b	100, hysterectomy	Bupivacaine infusion	Pain scores ↓; analgesic consumption ↓; PONV ↓
Bianconi 2003, LE:2b	37, joint replacement surgery	Ropivacaine infusion	Pain scores ↓, rescue medication ↓, hospital stay ↓
Bianconi 2004, LE:2b	38, spine fusion surgery	Ropivacaine infusion	Pain scores ↓; rescue medicatin ↓, hospital stay ↓

AU-10: Acute Pain Management: Scientific Evidence 2010

Levels of evidence	
I	Evidence obtained from a systematic review of all relevant randomised controlled trials
II	Evidence obtained from at least one properly designed randomised controlled trial
III-1	Evidence obtained from well-designed pseudo-randomised controlled trials (alternate allocation or some other method)
III-2	Evidence obtained from comparative studies with concurrent controls and allocation not randomised (cohort studies), case-controlled studies or interrupted time series with a control group
III-3	Evidence obtained from comparative studies with historical control, two or more single-arm studies, or interrupted time series without a parallel control group
IV	Evidence obtained from case series, either post-test or pre-test and post-test
Clinical practice points	
☑	Recommended best practice based on clinical experience and expert opinion

1. Guideline recommends to use continuous local anaesthetic wound infusions because of reduction in pain scores (at rest and with activity), opioid consumption, PONV and length of hospital stay; patient satisfaction is higher and there is no difference in the incidence of wound infections (Level I).
Recommendation based on one meta-analysis (Liu 2006) and on 6 RCTs (Table 3). Analyses were performed for all surgical groups: cardiothoracic, general (incl appendectomy), gynaecology (incl Caesarean section) , urology, orthopaedics and iliac crest bone graft harvest.

Table.3.

Author, year, level of evidence	**Patients**	**Intervention**	**Results**
Ansaloni et al, 2007, Level II	96, appendectomy	Ropivacaine infsuion	Pain ↓; analgesia consumption ↓
Forastiere 2008; Level II	168; open nephrectomy	Ropivacine infusion	Pain scores ↓, morpine consumption ↓, hospital stay ↓
Blumenthal 2005; Level II	36, iliac crest bone grafting for shoulder surgery	Ropivacaine infusion	Pain scores ↓; morphine consumption ↓; patient satisfaction ↑
Hafizoglu 2008, Level II	62; abdominal hysterectomy	Bupivacaine infusion above (AF) the fascia vs below the facsia (BF)	Pain scores AF group ↓, opioid consumption ↓ AF group ; patient satisfaction ↑ in AF group
Lavand–homme 2007; Level II	92 ; elective Cesarean delivery	Infusion of diclofenac vs ropivacaine vs placebo	Pain scores and opioid consumption were ↓ both groups compared to placebo
Paech 2007, Level II	250 pt, laporoscopic surgery	Intraperitoneal meperidine alone vs meperidine + ropivacaine vs ropivacaine alone	pain scores ↔ analgesic consumption ↔ patient satisfaction ↔
Beaussier 2007 , Level II	42, colorectal surgery	Ropivacaine infusion	Pain scores ↓; opioid consumption ↓; hospital stay ↓;

DE-07: " Behandlung acuter perioperativer und posttraumatischer Schmertzen "

Guideline gives overall reccommendation to use postoperative wound infiltration with local anaesthetic and gives specific reccommnedations for different types of surgery. (Table 4)

The grading system of the guideline

Degree of recommendation	Level of evidence	
A	**1a**	Systematic review of controlled randomized clinical trials
	1b	Controlled randomized clinical trials with a strict confidence interval
	1c	"All or nothing" therapeutic results
B	**2a**	Systematic review of cohort studies
	2b	Cohort studies (including lesser quality randomized clinical trials)
	2c	Observation of therapeutic results (outcomes research).
	3a	Systematic review of case-control studies
	3b	Case-control study
C	**4**	Case report (including cohort or case-control of poor quality)
	5	Specialists' opinions lacking critical evaluation or based on basic matters (physiological study or study with animals)

Table .4.

Operation	**Recommendation**	**Degree of recommendation**	**Description of studies**
Tonsillectomy	Intraoperative wound infiltration with longacting LA	C	1 SR, 5 RCTs, children and adults
Head surgery	Intraoperative wound infiltration with longacting LA	B	2 RCTs
Thyroidectomy	Wound infiltration with LA alone or combination with non-opioid at the end of the surgery	B	2 RCTs, in one study LA combination with COX-2
Laparoscopic cholecystectomy	Perioperative wound infiltration with LA	A	11 RCTs, including different LA, different timepoints
Inguinal herniotomia	1. Pre or intraoperative field block in addition to basalanesthesia reduces immidiate postoperative pain 2. Wound instillation with LA at the end of surgery	A	16 RCTS, field block/ wound infiltration with LA
Spine surgery	Intraoperative wound infiltration is recommended	A	10 RCTs, nucleotomy and laminectomy pt
	Local adminstration of corticosteroidsf or patients with radicular pain is	B	

Operation	Recommendation	Degree of recommendation	Description of studies
	recommended		
Iliac crest bone grafting	Intraoperative wound infiltration with LA alone or combination with opioid is recommended	B	7 RCTs, infiltration or infusion of LA, in one study LA and morpine combination

PROSPECT: procedure specific postoperative pain management

Table.4**.**

Operation	Recommendation	Level of evidence	Remarks, Year of review
Total hip arthroplasty	Wound catheter techniques is not recommended because lack of procedure specific evidence (D)		2011, recommendation unchanged
	Intraoperative , high volume, low contsentration wound infiltration (LIA) is recommended because there are positive procedure-specific data (A)		2011, new recommendation
Total knee artroplasty	Incisisional LA have shown analgesic benefit	LoE 1	2007
Radical prostatectomy	Local anaesthetic wound infiltration is recommended at the end of surgery (B)	LoE1	Transferable evidence from hernia repair 2013
	Long-acting local anaesthetics are recommended in preference to short –acting LA (D)		
	Continous LA wound infusion is not recommended based on procedure-specific evidence showing lack of analgesic efficacy (B)	LoE2	
Non-cosmetic breast surgery	No recommendation due to insufficient evidence		2008
Laporoscopic cholecystectomy	Long-acting LA wound infiltration is recommended for reducing wound pain but not shoulder pain (A)	LoE1	2007
	Pre- operative administration is of no greater analgesic benefit than intra or postoperative administration	LoE1	

Operation	Recommendation	Level of evidence	Remarks, Year of review
Inguinal hernia	LA injection techniques (inguinal nerve block/field block/infiltration) pre or intraoperatively are recommended (A)		2005
Hemorroidectomy	Perianal LA infiltration is recommended for intra and postoperative analgesia (A)	LoE1	2008
Colonic resection	Continous postoperative wound infiltration with LA is not recommended (D)	LoE4	2010
	Pre-closure wound infiltration is not recommended (D)	LoE 4	
Laparoscopic colonic resection	Pre-closure wound infiltration is recommended (B)	LoE1	Transferable evidence from other laparoscopic abdominal surgical procedures
Abdominal hysterectomy	Intra-operative wound infiltration is recommended (A)		Although this outcome did not reach clinical significance, this method of analgesia is convenient and safe 2004
	Preoperative wound infiltration is not recommended because its lower benefits compared of postincisional infiltration (A)		
	Postoperative wound infiltration administred by PCA may have benefit , but there is not currently enoug evidence to recommend it (A)		

Viited

Kokkuvõtte (abstract või kokkuvõtlikum info)	Viide kirjandusallikale
ABSTRACT **Background** While laparoscopic cholecystectomy is generally considered to be less painful than open surgery, pain is one of the important reasons for delayed discharge after day surgery resulting in overnight stay following laparoscopic cholecystectomy. The safety and effectiveness of local anaesthetic wound infiltration in people undergoing laparoscopic cholecystectomy is not known.	**Wound infiltration with local anaesthetic agents for laparoscopic cholecystectomy** Loizides S, Gurusamy KS, Nagendran M, Rossi M, Guerrini

Objectives To assess the benefits and harms of local anaesthetic wound infiltration in patients undergoing laparoscopic cholecystectomy and to identify the best method of local anaesthetic wound infiltration with regards to the type of local anaesthetic, dosage, and time of administration of the local anaesthetic. **Search methods** We searched the Cochrane Central Register of Controlled Trials (CENTRAL), MEDLINE, EMBASE, and Science Citation Index Expanded until February 2013 to identify studies of relevance to this review. We included randomised clinical trials for benefit and quasi-randomised and comparative non-randomised studies for treatment-related harms. **Selection criteria** Only randomised clinical trials (irrespective of language, blinding, or publication status) comparing local anaesthetic wound infiltration versus placebo, no intervention, or inactive control during laparoscopic cholecystectomy, trials comparing different local anaesthetic agents for local anaesthetic wound infiltration, and trials comparing the different times of local anaesthetic wound infiltration were considered for the review. **Data collection and analysis** Two review authors collected the data independently. We analysed the data with both fixed-effect and random-effects meta-analysis models using RevMan. For each outcome, we calculated the risk ratio (RR) or mean difference (MD) with 95% confidence interval (CI). Wound infiltration with local anaesthetic agents for laparoscopic cholecystectomy (Review) 1 Copyright © 2014 The Cochrane Collaboration. Published by John Wiley & Sons, Ltd.Main results Twenty-six trials fulfilled the inclusion criteria of the review. All the 26 trials except one trial of 30 participants were at high risk of bias. Nineteen of the trials with 1263 randomised participants provided data for this review. Ten of the 19 trials compared local anaesthetic wound infiltration versus inactive control. One of the 19 trials compared local anaesthetic wound infiltration with two inactive controls, normal saline and no intervention. Two of the 19 trials had four arms comparing local anaesthetic wound infiltration with inactive controls in the presence and absence of co-interventions to decrease pain after laparoscopic cholecystectomy. Four of the 19 trials had three or more arms that could be included for the comparison of local anaesthetic wound infiltration versus inactive control and different methods of local anaesthetic wound infiltration. The remaining two trials compared different methods of local anaesthetic wound infiltration. Most trials included only low anaesthetic risk people undergoing elective laparoscopic cholecystectomy. Seventeen trials randomised a total of 1095 participants to local anaesthetic wound infiltration (587 participants) versus no local anaesthetic wound infiltration (508 participants). Various anaesthetic agents were used but bupivacaine was the commonest local anaesthetic used. There was no mortality in either group in the seven trials that reported mortality (0/280 (0%) in local anaesthetic infiltration group versus 0/259 (0%) in control group). The effect of local anaesthetic on the proportion of people who developed serious adverse events was imprecise and compatible with increase or no difference in serious adverse events (seven trials; 539 participants; 2/280 (0.8%) in local anaesthetic group versus 1/259 (0.4%) in control; RR 2.00; 95% CI 0.19 to 21.59; very low quality evidence). None of the serious adverse events were related to local anaesthetic wound infiltration. None of the trials reported patient quality of life. The proportion of participants who	GP, Davidson BR. *Cochrane Database Syst Rev. 2014 Mar 12;3*

were discharged as day surgery patients was higher in the local anaesthetic infiltration group than in the no local anaesthetic infiltration group (one trial; 97 participants; 33/50 (66.0%) in the local anaesthetic group versus 20/47 (42.6%) in the control group; RR 1.55; 95% CI 1.05 to 2.28; very low quality evidence). The effect of local anaesthetic on the length of hospital stay was compatible with a decrease, increase, or no difference in the length of hospital stay between the two groups (four trials; 327 participants; MD - 0.26 days; 95% CI -0.67 to 0.16; very low quality evidence). The pain scores as measured by the visual analogue scale (0 to 10 cm) were lower in the local anaesthetic infiltration group than the control group at 4 to 8 hours (13 trials; 806 participants; MD -1.33 cm on the VAS; 95% CI -1.54 to -1.12; very low quality evidence) and 9 to 24 hours (12 trials; 756 participants; MD -0.36 cm on the VAS; 95% CI -0.53 to -0.20; very low quality evidence). The effect of local anaesthetic on the time taken to return to normal activity between the two groups was imprecise and compatible with a decrease, increase, or no difference in the time taken to return to normal activity (two trials; 195 participants; MD 0.14 days; 95% CI -0.59 to 0.87; very low quality evidence). None of the trials reported on return to work. Four trials randomised a total of 149 participants to local anaesthetic wound infiltration prior to skin incision (74 participants) versus local anaesthetic wound infiltration at the end of surgery (75 participants). Two trials randomised a total of 176 participants to four different local anaesthetics (bupivacaine, levobupivacaine, ropivacaine, neosaxitoxin). Although there were differences between the groups in some outcomes the changes were not consistent. There was no evidence to support the preference of one local anaesthetic over another or to prefer administration of local anaesthetic at a specific time compared with another. **Authors' conclusions** Serious adverse events were rare in studies evaluating local anaesthetic wound infiltration (very low quality evidence). There is very low quality evidence that infiltration reduces pain in low anaesthetic risk people undergoing elective laparoscopic cholecystectomy. However, the clinical importance of this reduction in pain is likely to be small. Further randomised clinical trials at low risk of systematic and random errors are necessary. Such trials should include important clinical outcomes such as quality of life and time to return to work in their assessment.	
Background: Open inguinal hernia repair is associated with moderate postoperative pain, but optimal analgesia remains controversial. **The aim** of this systematic review was to evaluate the available literature on the management of pain after open hernia surgery. **Methods**: Randomized studies, in English, published between January 1966 and March 2009, assessing analgesic and anaesthetic interventions in adult open hernia surgery, and reporting pain scores, were retrieved from the Embase and MEDLINE databases. In addition to published evidence, clinical practice was taken into account to ensure that the recommendations had clinical validity. **Results**: Of the 334 randomized studies identified, 79 were included. Quantitative analysis suggested that regional anaesthesia was superior to general anaesthesia for reducing postoperative pain. Spinal anaesthesia was associated with a higher incidence of urinary retention and increased time to home- readiness	**Evidence-based management of postoperative pain in adults undergoing open inguinal hernia surgery** G. P. Joshi, N. Rawal and H. Kehlet *British Journal of Surgery 2012; 99: 168–185*

compared with regional anaesthesia. **Conclusion**: Field block with, or without wound infiltration, either as a sole anaesthetic/analgesic technique or as an adjunct to general anaesthesia, is recommended to reduce postoperative pain. Continuous local anaesthetic infusion of a surgical wound provides a longer duration of analgesia. Conventional non-steroidal anti-inflammatory drugs or cyclo-oxygenase 2-selective inhibitors in combination with paracetamol, administered in time to provide sufficient analgesia in the early recovery phase, are optimal. In addition, weak opioids are recommended for moderate pain, and strong opioids for severe pain, on request.	
Background: Wound infiltration with local anaesthetics is commonly used during breast surgery in an attempt to reduce post-operative pain and opioid consumption. The aim of this review was to evaluate the effect of wound infiltration with local anaesthetics compared with a control group on post-operative pain after breast surgery. **Methods**: A systematic review was performed by searching PubMed, Google Scholar, the Cochrane database and Embase for randomised, blinded, controlled trials of wound infiltration with local anaesthetics for post-operative pain relief in female adults undergoing breast surgery. The analgesic effect was evaluated in a qualitative analysis by assessment of significant difference between groups ($P < 0.05$) in pain scores and supplemental analgesic consumption. **Results:** Ten trials including 699 patients were included in the final analysis. Three trials investigated mastectomy, four trials partial or segmental mastectomy, and three trials breast reduc-tion, excision of benign lump and unspecified breast surgery, respectively. Six trials demonstrated a small and short-lasting, but statistically significant reduction of post-operative pain scores, and four trials observed a statistically significant reduction in post-operative, supplemental opioid consumption that was, however, of limited clinical relevance. **Conclusion**: Wound infiltration with local anaesthetics may have a modest analgesic effect in the first few hours after surgery. Pain after breast surgery is, however, generally mild to moderate, and other non-invasive analgesic methods may be preferable in this surgical population.	**The analgesic effect of wound infiltration with local anaesthetics after breast surgery: a qualitative systematic review** N. Byager, M. S. Hansen, O. Mathiesen and J. B. Dahl *Acta Anaesthesiol Scand 2014; 58: 402–410*
Background: In this systematic review, we evaluated double- blind, randomized and controlled trials on the effect of wound infiltration with local anesthetics compared with the effect of placebo on post-operative pain after lumbar spine surgery. **Methods**: Medline, the Cochrane Library and Google Scholar were searched for appropriate trials. Qualitative analysis of post- operative effectiveness was evaluated by assessment of significant difference ($P< 0.05$) between study groups regarding pain relief using pain scores, supplemental analgesic consumption and time to first analgesic request as outcome measures. Data on adverse effects were extracted and evaluated. **Results:** Nine trials including 12 comparisons and 529 patients met the inclusion criteria. Ten comparisons presented data on pain scores. In only three of these 10 comparisons (30%), a reduc-	**Wound infiltration with local anesthetics for post-operative pain relief in lumbar spine surgery: a systematic review** M. Kjærgaard, S. Møiniche and K. S. Olsen *Acta Anaesthesiol Scand 2012; 56: 282–290*

tion in pain score using local anesthetic infiltration was observed averaging between 8 and 40 mm on a 100 mm visual analog scale. In six out of 12 comparisons, the local anesthetic infiltration significantly reduced the supplemental opioid consumption after surgery. Observed reductions in analgesic consumption over the first 24 h averaged between 2.5 mg and approximately 15 mg of morphine. Data on opioid-related adverse effects were incomplete and difficult to interpret. **Conclusion:** Interpretation of the results was difficult because of diversity of the studies. However, clinical significance was in general questionable, with only a few trials showing a small or a modest reduction in pain intensity, which was observed mainly immediately after the operation. Similarly, although more frequently observed, only a minor and probably not clinically relevant reduction in opioid consumption was shown	
Background: Novel local anesthetic blocks have become increasingly popular in the multimodal pain management following abdominal surgery, but have not been evaluated in a procedure-specific manner in colorectal surgery. **Objective:** This study aims to evaluate the efficacy of novel local anesthetic techniques in colorectal surgery. **Data sources:** Electronic literature search of PubMed, EMBASE, and Cochrane databases (date range, January 1990 to February 2013) STUDY SELECTION: Randomized controlled trials comparing a novel local anesthetic technique with placebo/routine analgesia in adults undergoing open or laparoscopic colonic or rectal resection were selected. **Interventions:** This is a meta-analysis of randomized controlled trials evaluating novel local anesthetic wound infiltration techniques such as wound catheter, transversus abdominis plane block, and intraperitoneal instillation in colorectal surgical procedures. The comparator group was defined as placebo/routine analgesia. **Outcome measures:** The primary outcome was opiate requirement at 24 hours. Secondary outcomes included opiate requirements at 48 hours, pain numerical rating score at 24 and 48 hours at rest and on movement, recovery (length of stay, nausea and vomiting, time until bowel movement and diet resumption), and complications. Subgroup analysis was performed to evaluate specific local anesthetic techniques and open and laparoscopic surgery. **Results**: Twelve randomized controlled trials compared local anesthetic techniques with placebo/routine analgesia. Local anesthetic techniques demonstrated a significant reduction in opiate requirement at 48 hours. Local anesthetic techniques were also associated with lower pain scores on movement at 24 and 48 hours, shorter length of stay, and earlier resumption of diet. **Limitations:** The diverse study design led to statistical heterogeneity in several analyses. **Conclusions**: Novel local anesthetic wound infiltration techniques in colorectal surgery appear to reduce opiate requirements, to reduce pain scores, and to improve recovery in comparison with placebo/routine analgesia.	**Evaluation of novel local anesthetic wound infiltration techniques for postoperative pain following colorectal resection surgery: a meta-analysis.** Ventham NT, O'Neill S, Johns N, Brady RR, Fearon KC. *Dis Colon Recrum 2014; 57:237-250*

Background: Local anaesthetic wound infiltration techniques reduce opiate requirements and pain scores. Wound catheters have been introduced to increase the duration of action of local anaesthetic by continuous infusion. The **aim** was to compare these infiltration techniques with the current standard of epidural analgesia. **Methods:** A meta-analysis of randomized clinical trials (RCTs) evaluating wound infiltration versus epidural analgesia in abdominal surgery was performed. The primary outcome was pain score at rest after 24h on a numerical rating scale. Secondary outcomes were pain scores at rest at 48h, and on movement at 24 and 48 h, with subgroup analysis according to incision type and administration regimen (continuous versus bolus), opiate requirements, nausea and vomiting, urinary retention, catheter-related complications and treatment failure. **Results:** Nine RCTs with a total of 505 patients were included. No differences in pain scores at rest 24 h after surgery were detected between epidural and wound infiltration. There were no significant differences in pain score at rest after 48 h, or on movement at 24 or 48 h after surgery. Epidural analgesia demonstrated a non-significant a trend towards reduced pain scores on movement and reduced opiate requirements. There was a reduced incidence of urinary retention in the wound catheter group. **Conclusion:** Within a heterogeneous group of RCTs, use of local anaesthetic wound infiltration was associated with pain scores comparable to those obtained with epidural analgesia. Further procedure-specific RCTs including broader measures of recovery are recommended to compare the overall efficacy of epidural and wound infiltration analgesic techniques.	**Systematic review and meta-analysis of continuous local anaesthetic wound infiltration versus epidural analgesia for postoperative pain following abdominal surgery** N. T. Ventham, M. Hughes, S. O'Neill, N. Johns, R. R. Brady and S. J. Wigmore *British Journal of Surgery Volume 100, Issue 10, pages 1280–1289, September 2013*
Background: Caesarean section delivery is becoming more frequent. Childbirth is an emotion-filled event and the mother needs to bond with her newborn baby as early as possible. Any intervention that leads to improvement in pain relief is worthy of investigation. Local anaesthetics, either on their own or in combination with opioids or nonsteroidal antiinflammatory drugs, have been employed as an adjunct to other postoperative pain relief strategies. Conflicting reports were noted. **Objectives:** To assess the effects of local anaesthetic agent wound infiltration/irrIgation and/or abdominal nerve blocks on post-caesarean section pain and the mother's well being and interaction with her baby. **Search strategy:** We searched the Cochrane Pregnancy and Childbirth Group's Trials Register (April 2009). **Selection criteria:** Randomised controlled trials of pre-emptive local analgesia during caesarean section. **Data collection and analysis**: One author extracted data. The second author checked the data. **Main results:** Twenty studies (1150 women) were included. Women who had caesarean section performed under regional analgesia and had wound infiltration had a decrease in morphine consumption at 24	**Local anaesthetic wound infiltration and abdominal nerves block during caesarean section for postoperative pain relief.** Bamigboye AA, Hofmeyr GJ. *Cochrane Database Syst Rev. 2009 Jul 8;(3*

hours (SMD -1.70mg; 95% confidence interval (CI) -2.75 to -0.94) compared to placebo.In women under general anaesthesia, with caesarean section wound infiltration and peritoneal spraying with local anaesthetic (one study, 100 participants), the need for opioid rescue was reduced (risk ratio (RR) 0.51; 95% CI 0.38 to 0.69). The numerical pain score (0 to10) within the first hour was also reduced (mean difference (MD) -1.46; 95% CI -2.60 to -0.32).Women with regional analgesia who had local anaesthetic and non-steriodal anti-inflammatory cocktail wound infiltration consumed less morphine (one study, 60 participants; MD -7.40 mg; 95% CI -9.58 to -5.22) compared to local anaesthetic control.Women who had regional analgesia with abdominal nerves blocked had decreased opioid consumption (four studies, 175 participants; MD -25.80 mg; 95% CI -50.39 to -5.37).For the outcome of visual analogue scale 0 to 10 over 24 hours, no advantage was demonstrated in the single study of 50 participants who had wound infiltrated with a mixture of local analgesia and narcotics versus local analgesia.Addition of ketamine to the local analgesia in women who had regional analgesia does not confer any advantage. **Authors' conclusions:** Local analgesia infiltration and abdominal nerve blocks as adjuncts to regional analgesia and general anaesthesia are of benefit in caesarean section by reducing opioid consumption. Nonsteroidal anti-inflammatory drugs as an adjuvant may confer additional pain relief.	
Background: Local anesthetics (LA) are injected via catheters placed in surgical wounds for post-operative analgesia. **The primary aim** of this systematic review was to assess whether LA reduce pain intensity when injected via wound catheters. **Search strategy:** A literature search was performed from Medline via PubMed, EMBASE and the Cochrane database from 1966 until November 2009. The search strategy included the following key words: pain, postoperative, catheters and local anesthetics. Two co-authors independently read every article that was initially included and extracted data into a pre-defined study record form. **Results:** A total of 753 studies primarily fit the search criteria and 163 were initially extracted. Of these, 32 studies were included in the meta-analysis. Wound catheters provided no significant analgesia at rest or on activity, except in patients undergoing gynecological and obstetric surgery at 48 h (P=0.03). The overall morphine consumption was lower (≈13 mg) during 0-24 h (P<0.001) in these patients. No significant differences in side effects were found, except for a lower risk of wound breakdown (P=0.048) and a shorter length of hospital stay (P=0.04) in patients receiving LA. A statistically significant heterogeneity was seen between the studies in most end-points. **Conlusions:** LA injected via wound catheters did not reduce pain intensity, except at 48 h in a subgroup of patients undergoing obstetric and gynecological surgery. Rescue analgesic consumption was also lower in this group at 0-24 h. The magnitude of these effects was small and compounded by pronounced heterogeneity.	**A meta-analysis of the efficacy of wound catheters for post-operative pain management.** Gupta A, Favaios S, Perniola A, Magnuson A, Berggren L. *Acta Anaesthesiol Scand. 2011 Aug;55(7):785-96.*

Background: Tonsillectomy is one of the most commonly performed procedures in otolaryngology. Pain is a significant aspect of post-operative patient morbidity. The use of local anaesthetic, by infiltration or topical application, has been advocated as a way of reducing post-operative pain. **Objectives**: To review the current evidence for the use of local anaesthetic as a means of reducing post-tonsillectomy pain and reducing supplemental analgesic requirements. **Type of review:** A systematic review of the literature pertaining to the use of local anaesthetic agents for post-tonsillectomy pain and meta-analysis of randomised control trials assessing pain scores. **Search strategy:** Systematic literature searches of MEDLINE (1952-2008), EMBASE (1974-2008) and the Cochrane Central Register of Controlled Trials. **Evaluation method:** Review of all randomised controlled trials by two authors and grading of articles for quality. **Results:** Thirteen studies were included. Overall, local anaesthetic, applied topically or infiltrated, significantly reduces pain scores compared with controls at 4-6 h, -0.66 (95% CI: -0.82, -0.50); 20-24 h, -0.34 (95% CI: -0.51, -0.18) and on day 5, -0.97 (95% CI: -1.30, -0.63) (standardised mean differences). These changes approximate to a reduction in pain of between 7 and 19 mm on a 0-100 mm visual analogue scale. Most studies did not report a difference in supplemental analgesia or in adverse events. **Conclusion**: Local anaesthetic does seem to provide a modest reduction in post-tonsillectomy pain. Topical local anaesthetic on swabs appears to provide a similar level of analgesia to that of infiltration without the potential adverse effects and should be the method of choice for providing additional post-operative analgesia.	**Local anaesthetic for post-tonsillectomy pain: a systematic review and meta-analysis.** Grainger J, Saravanappa N *Clin Otolaryngol. 2008 Oct;33(5):*411-*9*
Background: Postoperative pain after hip arthroplasty (HA) is very common and severe. Currently, use of routine analgesic methods is often accompanied by adverse events (AEs). Local infiltration analgesia (LIA) for controlling pain has been a therapeutic option in many surgical procedures. However, its analgesic efficacy in HA and its safety remain unclear. **Methods:** Data from 9 randomized controlled trials, involving 760 participants, comparing the effect of LIA with that of placebo infiltration or no infiltration on patients undergoing HA were retrieved from an electronic database, and the pain scores, analgesic consumption, and AEs were analyzed. Effects were summarized using weighted mean differences, standardized mean differences, or odds ratio with fixed or random effect models. **Results:** There was strong evidence of an association between LIA and reduced pain scores at 4 hours at rest ($P < .00001$) and with motion ($P < .00001$), 6 hours with motion ($P = .02$), and 24 hours at rest ($P = .01$), and decreased analgesic consumption during 0 to 24 hours ($P = .001$) after HA. These analgesic efficacies for LIA were not accompanied by any increased risk for	**Local Infiltration Analgesia for Postoperative Pain After Hip Arthroplasty: A Systematic Review and Meta-Analysis** Jun-Bin Yin, Guang-Bin Cui,Ming-Shan Mi, Yu-Xia Du, Sheng-Xi Wu, Yun-Qing Li, and Wen Wang *The Journal of Pain, Vol -, No -(-), 2014: pp 1-19 (article in press)*

AEs. However, the current meta-analysis did not reveal any associations between LIA and the reduced pain scores or analgesic consumption at other time points. The results suggest that LIA can be used for controlling pain after HA because of its efficacy in reducing pain scores and thus can reduce analgesic consumption on the first day without increased risk of AEs. Perspective: This is the first pooled database meta-analysis to assess the analgesic effects and safety of LIA in controlling pain after HA. The derived information offers direct evidence that LIA can be used for patients undergoing HA because of its ability to reduce pain scores and analgesic consumption without any additional AEs.Total hip replacement is a major surgical procedure usually associated with significant pain in the early postoperative period. Several anaesthetic and analgesic techniques are in common clinical use for this procedure but, to date, clinical studies of pain after total hip replacement have not been systematically assessed. Using the Cochrane protocol, we have conducted a systematic review of analgesic, anaesthetic and surgical interventions affecting postoperative pain after total hip replacement. In addition to the review, transferable evidence from other relevant procedures and clinical practice observations collated by the Delphi method were used to develop evidence-based recommendations for the treatment of postoperative pain. **Conclusion**: For primary total hip replacement, PROSPECT recommends either general anaesthesia combined with a peripheral nerve block that is continued after surgery or an intrathecal (spinal) injection of local anaesthetic and opioid. The primary analgesic technique should be combined with a step-down approach using paracetamol plus conventional non-steroidal anti-inflammatory drugs, with strong or weak opioids as required.	
Background: In recent years, there has been an increasing interest in local infiltration analgesia (LIA) as a technique to control postoperative pain. **Methods:** We conducted a systematic review of randomized clinical trials investigating LIA for total knee arthroplasty (TKA) and total hip arthroplasty (THA) to evaluate the analgesic efficacy of LIA for early postoperative pain treatment. In addition, the analgesic efficacy of wound catheters and implications for length of hospital stay (LOS) were evaluated. **Results:** Twenty-seven randomized controlled trials in 756 patients operated on with THA and 888 patients operated on with TKA were selected for inclusion in the review. In THA, no additional analgesic effect of LIA compared with placebo was reported in trials with low risk of bias when a multimodal analgesic regimen was administered perioperatively. Compared with intrathecal morphine and epidural analgesia, LIA was reported to have similar or improved analgesic efficacy. In TKA, most trials reported reduced pain and reduced opioid requirements with LIA compared with a control group treated with placebo/no injection. Compared with femoral nerve block, epidural or intrathecal morphine LIA provided similar or improved analgesia in the early postoperative period but most trials had a high risk of bias due to different systemic analgesia between groups. Overall, the use of wound catheters for postoperative administration of local anaesthetic was not supported in the included trials, and LOS was not related to analgesic efficacy. Despite the many studies of LIA, final interpretation is hindered by methodological	**Analgesic efficacy of local infiltration analgesia in hip and knee arthroplasty: a systematic review** L. Ø. Andersen and H. Kehlet *British Journal of Anaesthesia, 2014*

insufficiencies in most studies, especially because of differences in use of systemic analgesia between groups. However, LIA provides effective analgesia in the initial postoperative period after TKA in most randomized clinical trials even when combined with multimodal systemic analgesia. In contrast, LIA may have limited additional analgesic efficacy in THA when combined with a multimodal analgesic regimen. Postoperative administration of local anaesthetic in wound catheters did not provide additional analgesia when systemic analgesia was similar and LOS was not related to use of LIA with a fast-track set-up.	
Abstract **Context And Objective:** Pain following craniotomy has been demonstrated to be frequent and moderate-to-severe in nature. In recent years, the focus on the challenges in treatment of postoperative pain following craniotomy has increased. Fear of using opioids because of their wide array of side-effects has led to the search for alternative analgesic options. The objective of this systematic review was to evaluate current evidence about analgesic therapy following craniotomy. **Data Sources:** PubMed database, Embase, Cochrane library, Google scholar and the Cumulative Index to Nursing and Allied Health Literature. **Eligibility Criteria:** Randomised double-blinded placebo-controlled trials (RCTs) with pain or supplemental postoperative analgesic consumption as an endpoint were included in the analysis**.** **Results:** A total of 34 RCTs were identified, and nine RCTs were included in the final analysis, with a total of 519 patients (251 control vs. 268 active treatment). Four treatment modalities - scalp infiltration (five RCTs), nerve scalp block (two RCTs), parecoxib (one RCT) and patient-controlled analgesia with morphine (one RCT) - were evaluated. Scalp infiltration with local anaesthetic may provide adequate analgesia in the first few postoperative hours, and nerve scalp block may provide longer lasting analgesia for about 6h. Morphine was found to reduce total analgesic rescue doses with no significant effect on nausea and no other side-effects. No significant evidence was found to support the use of parecoxib in the treatment of postcraniotomy pain. **Conclusion:** No firm recommendations on analgesic therapy following craniotomy can be given because the number of well performed RCTs is limited and the study populations are very small. However, evidence on scalp infiltration suggests an analgesic effect in the first few postoperative hours. There is an urgent need for well performed RCTs on pain therapy following craniotomy.	**Pain treatment after craniotomy: where is the (procedure-specific) evidence? A qualitative systematic review.** Hansen MS, Brennum J, Moltke FB, Dahl JB. *Eur J Anaesthesiol. 2011 Dec;28(12):821-9*

LAPSED

Süstemaatilised ülevaated:

Baird 2013: Metaanalüüsis 6 uuringut, halva kvaliteediga (keskmine Jadad skoor 2)
Sakraal blokaad vs haava infiltratsioon või perifeerse närvi blokaad
Tulemused:

- **Ei ole vahet valu tugevuses** 1 postoperatiivsel tunnil gruppide vahel (- 0.09; 95% CI: -0.32,0.13, p = 0.41)
- **Lisavaluvaigisti vajaduse ei** erinenud gruppide vahel (0.80;95% CI: 0.56, 1.13; p = 0.45)

Ravijuhendid:

1. Good Practice In Postoperative and Procedural Pain Management 2nd Edition, 2012
   Soovitused operatsioonide kaupa.

Operation	**Recommendation**	**Degree of recommendation**	**Description of studies**
Tonsillectomy	Topical application or injection of local anesthetic in the tonsillar fossa improves early pain scores	A	2 SR
Dental procedures	Swabs soaked with LA on exposed tooth sockets following extraction produce no or minor improvements in pain in the immediate postoperative period	B	2 RCTs
Sub –umbilical surgery (inguinal hernia, orchidopexy, orchidectomy, circumcision, hypospdia et cet)	LA should be used whed feasible: wound infiltration, TAP block, ilio-inguinal nerve block, caudal analgesia are efeective in the early postoperative period following sub-umbilical surgery	A	Wound infiltration : 2 RCTs
Inguinal hernia repair (open)	LA wound infiltration, ilio-inguinal nerve block, paravertebral block or caudal analgesia are effective in early postoperative period		6 RCTs Timing of wound infiltration (pre or post), did not influence efficacy (3 RCTs)
Laporoscopic surgery	Infiltration of port sites with LA as part of a multimodal analgesic strategy may reduce postoperative pain following laparoscopy	Good Practice Points*	3 RCTs

Operation	Recommendation	Degree of recommendation	Description of studies
Craniotomy	A multi –modal analgesiac approach is suitable , which may include the use of LA infiltration, paratcetamol , NSAID (when not contraindicated) and parental or oral opioid	Good Practice Points	

** Good practice points indicate best practice based on the clinical experience and opinion of the guideline development committee but not necessarily supported by research evidence; they are provided in situations where published evidence is insufficient to make a formal recommendation but the committee wish to emphasize an important aspect of good practice.*

2. Acute Pain Management: Scientific Evidence 2010 (AU-10)

Haava infiltratsiooni üldiselt ei käsitleta, on mainitud mõningate operatsioonide juures:

- Similar analgesic efficacy following inguinal hernia repair has been found with wound infiltration, ilioinguinal / iliohypogastric nerve block or caudal analgesia (Splinter et al, 1995 Level II; Machotta et al, 2003 Level II)
- Local anaesthetic by topical application or infiltration produced moderate reductions in pain (mean reduction 7 to 19 mm on 0 to 100 mm VAS) following tonsillectomy (Grainger & Saravanappa, 2008 Level I)
- Local anaesthetic infiltration reduced pain following dental extractions (Anand et al, 2005 Level III-2)

Autor, aasta, tõestuse aste	Uuritavate arv, operatsioon	Grupid	Tulemus
Anand 2005, III-2	30 pt, purihammaste ekstraktsioon	LA infiltratsioon ühel pool vs teisel pool ilma LA infiltratsioonita	Laste rahulolu parem LA grupis, VAS ↔
Machotta 2003 , II	58 pt (30 vs 28), 0-5 aastased, ühepoolne kubemesong	Sakraalblokaad vs haava infiltratsioon	VAS, opioidi vajaduses ↔, tüsistusi ei olnud
Splinter 1995, II	202 pt, 1-13 a, kubemesong	N. ilioinguinalis ja n.iliohypogastr blokaad + haava infiltratsioon vs sakraalblokaad	VAS ja opiaadi vajadus ↔ , taastumisaeg haava infiltratsiooni grupis kiirem
Grainger, I	13 RCTd, 777 pt, laste tonsillektoomiad	Haava infiltratsioon vs platseebo	VAS ↓, analgeetikumi vajadus , tüsistuste arv ↔

Üksikuuringud:

Autor, aasta	Uuritavate arv, vanus, operatsioon	Grupid	Tulemus
Sahin 2013	57 pt, 2-8 a, ühepoolne kubemesong	TAP blokk vs haava infiltratsioon lokaalanesteetikumiga	Aeg esimese valuvaigistini oluliselt pikem TAP grupis (17± 6.8 vs 4.7± 1.6 h, p < 0.001) Valuvaigisti vajadus ↓ TAP grupis (1.3 ± 1.2 vs 3.6 ± 0.7, p < 0.001) VAS ↓ TAP grupis (p< 0.001)
Leelanukrom 2012	34, vastsündinud ja väikelapsed,	Haava infiltratsioon enne haava sulgemist	Opioidi vajadus ↔ (p= 0.255)

Autor, aasta	Uuritavate arv, vanus, operatsioon	Grupid	Tulemus
	kõhukirurgia	bupivacainiga vs ilma	NIPS (Neonatal Infant Pain Scale) ↔
Edwards 2011	88 pt, 5-16 a, appendektoomia	1. Haava infiltratsioon bupivacainiga 2. Haava infiltratsioon füsiloogilise lahusega 3. Ilma infiltratsioonita	VAS ja valuvaigistite vajadus ↔
Matsota 2007	30 pt, poisid, 2-12 a, kubemesong	Haava infiltratsioon LA-ga vs p/rect paratsetamool 30 mg /kg	Aeg esimese valuvaigistini pikem uuringugrupis (p< 0.001), VAS ↔

Abstract CONTEXT: The transversus abdominis plane (TAP) block is a new regional anaesthesia technique applicable to infants and children. OBJECTIVE(S): The present study was designed to evaluate the analgesic efficacy of ultrasound-guided TAP block with high volume local anaesthetic (0.5 mlkg) during the first 24h after surgery in children undergoing inguinal hernia repair. DESIGN: Randomised comparative study. SETTING: Gaziantep University Hospital between December 2010 and May 2011. PATIENTS OR OTHER PARTICIPANTS: Fifty-seven children between 2 and 8 years of age undergoing unilateral inguinal hernia repair were randomised to TAP block (group T, n=29) or to wound infiltration (groupC, n=28). INTERVENTION(S): A TAP block using ultrasound guidance with 0.25% levobupivacaine 0.5 mlkg(-1) or wound infiltration with 0.2 mlkg(-1) 0.25% levobupivacaine, was performed on the same side as the hernia under general anaesthesia. MAIN OUTCOME MEASURES: Time to first analgesic, cumulative number of doses of analgesic, pain scores and adverse effects were assessed over the course of 24 h. RESULTS: The time to first analgesic (mean±SD) was significantly longer in group T than in group C (17±6.8 vs. 4.7±1.6h, respectively; P<0.001). Thirteen (45%) patients in group T did not require any analgesic within the first 24h. The cumulative number of doses of analgesic was significantly lower in group T than in group C (1.3±1.2 vs. 3.6±0.7, respectively, P<0.001). Pain scores were significantly different between the groups at all time points except at 1, 20 and 24 h (P<0.001). CONCLUSION: Ultrasound-guided TAP block with high volume (0.5mlkg) 0.25% levobupivacaine provides prolonged postoperative analgesia and reduced analgesic use without any clinical side-effects after	**Ultrasound-guided transversus abdominis plane block in children: a randomised comparison with wound infiltration.** Sahin L, Sahin M, Gul R, Saricicek V, Isikay N *Eur J Anaesthesiol. 2013 Jul;30(7):409-14. doi: 10.1097/EJA.0b013e32835d2fcb.*

unilateral hernia repair in children.	
Abstract PURPOSE: Postoperative pain management is essential in the perioperative care of neonates and infants but it requires a high level of care. Wound infiltration with bupivacaine, a long-acting local anesthetic, is a simple method with minimal complications. However, studies on the effectiveness of wound infiltration in neonates and infants are lacking. The purpose of this study was to investigate the effectiveness of wound infiltration with bupivacaine for postoperative analgesia in neonates and infants undergoing abdominal surgery. METHODS: A prospective, randomized controlled trial was conducted in 34 neonates and infants. The patients were randomized into two groups: the bupivacaine (B) group and the control (C) group. A standardized anesthetic protocol was used for each patient. Before wound closure, the surgical site of each patient in the B group was infiltrated with 2 mg/kg of bupivacaine, whereas no surgical site anesthetic infiltration was used in the C group. The neonatal infant pain scale (NIPS) score was used to evaluate postoperative pain, and fentanyl 0.5-1.5 μg/kg was administered when the NIPS score was ≥4. In regard to the fentanyl requirement, the NIPS score and the numbers of patients whose NIPS score was ≥4 were compared between the two groups. RESULTS: The median fentanyl dose requirements in the B group and C group were 1 and 0.5 μg/kg, respectively; and the difference was not statistically significant (p = 0.255). The postoperative NIPS scores in the two groups were not significantly different. In addition, there were no significant differences in the numbers of patients whose NIPS score was ≥4 at 6, 12, 18, and 24 h postoperatively. CONCLUSIONS: In neonates and infants, wound infiltration with bupivacaine had no significant effect on pain relief or fentanyl requirement during the first 24 h after major abdominal surgery.	**Effect of wound infiltration with bupivacaine on postoperative analgesia in neonates and infants undergoing major abdominal surgery: a pilot randomized controlled trial.** Leelanukrom R, Suraseranivongse S, Boonrukwanich V, Wechwinij S. *J Anesth. 2012 Aug;26(4):541-4. doi: 10.1007/s00540-012-1355-0. Epub 2012 Mar 4.*
Abstract OBJECTIVE: This study sought to determine the efficacy of post-operative wound infiltration with local anaesthetic following paediatric appendicectomy. METHOD: In a randomised, controlled, prospective, clinical trial children aged between five and sixteen years were assigned to one of three treatment arms; infiltration of the surgical wound with bupivicaine, saline, or no infiltration. Anaesthetic and analgesic protocols were employed. Patients and observers were blinded to the treatment group. The primary end-points were post-operative pain, scored at intervals during the first twenty post-operative hours, and additional post-operative analgesic requirements beyond that which was provided	**Local anaesthetic wound infiltration following paediatric appendicectomy: a randomised controlled trial: Time to stop using local anaesthetic wound infiltration following paediatric appendicectomy?** Edwards TJ, Carty SJ, Carr AS, Lambert AW *Int J Surg. 2011;9(4):314-7. doi: 10.1016/j.ijsu.2010.09.012. Epub 2011 Feb 13.*

by a standard protocol. In addition, adverse wound outcomes were recorded. RESULTS: Eighty-eight children were recruited. There were no differences in age, sex or other confounding variables between groups. There was no significant difference in mean pain scores or analgesic requirements between groups through-out the post-operative period. CONCLUSION: Wound infiltration with local anaesthetic following appendicectomy in children provides no additional benefit over regular simple analgesia. Its routine use represents dogmatic practise which ought to be challenged for this patient group.	
Abstract The aim of the study is to evaluate the efficacy of post-incisional wound infiltration with levobupivacaine in preventing the postoperative pain associated with inguinal hernia repair in children. Thirty boys, ASA I - II, aged 2 - 12 yrs., undergoing unilateral inguinal hernioplasty under general anaesthesia as day-case patients were allocated randomly to have postoperative analgesia either with post-incisional wound infiltration with levobupivacaine 1.25 mg/kg or with paracetamol 30 mg/kg administered rectally. Postoperative pain was assessed initially in the Post-Anaesthesia Care Unit and on the ward by an observer and afterwards for the next 24 h by the parents, using the Poker Chip Tool for preschoolers and the Visual Analogue Scale for older children, respectively. Postoperative pain was managed by giving paracetamol. The duration of the postoperative analgesia was estimated based on the time when rescue analgesia was first given. Assessment of the quality of postoperative analgesia was based on the children's behaviour. The wound infiltration group showed an increased duration of postoperative analgesia ($p < 0.001$) and early mobilisation, while the efficacy of postoperative analgesia tended to be more adequate, although no statistically significant difference was noted	**Wound infiltration with levobupivacaine: an alternative method of postoperative pain relief after inguinal hernia repair in children.** Matsota P, Papageorgiou-Brousta M, Kostopanagiotou G. *Eur J Pediatr Surg. 2007 Aug;17(4):270-4.*
Background: The optimal analgesic strategy for pediatric inguinal hernia repair (IHR) remains undefined. We evaluated the available evidence comparing caudal blockade to alternative analgesic strategies in achieving post-operative analgesia. Methods: A systematic review of prospective studies comparing analgesic practices for open unilateral pediatric IHR was performed by searching Medline, Embase, and the Cochrane library from 1950–2011. Articles were critically appraised and included if adequate description of experimental (caudal) and control (nerve blockade or wound infiltration) groups were performed. Pain scores were standardized and evaluated 1 hour after procedure as was the need for rescue analgesia using REVMAN. Results: Three hundred and seventy articles	**A systematic review and meta-analysis of caudal blockade versus alternative analgesic strategies for pediatric inguinal hernia repair** Robert Bairda, Marie-Pier Guilbaultb, Rachel Tessierb, J. Mark Ansermino *Journal of Pediatric Surgery (2013) 48, 1077–1085*

were identified via our search strategy, thirteen of which were included for analysis. Articles identified were all single-institution, generally small (mean N=29 subjects/arm) and of poor quality (median Jadad score: 2). There was no significant difference in pain scores (−0.09, 95% CI: −0.32, 0.13, p=0.41) or the need for rescue analgesia (0.80, 95% CI: 0.56, 1.13, p=0.46). Conclusion: There is no demonstrable difference in post-operative pain scores or rescue analgesia when comparing caudal blockade with alternative pain management strategies after pediatric IHR. This equipoise suggests that caudal blockade may be obviated for lower risk and less time- consuming maneuvers in patients barring supplementary indications for pain control.	

Otsing:
30.01.15
Recent queries in pubmed:
("wound infiltration"[All Fields] OR "wound infiltration analgesia"[All Fields]) OR "local anaesthetic wound infusion"[All Fields] AND ("2005/02/02"[PDat] : "2015/01/30"[PDat] AND "humans"[MeSH Terms] AND ("infant"[MeSH Terms] OR "child"[MeSH Terms] OR "adolescent"[MeSH Terms]))
Results: 37
Child: birth-18 years",37,14:26:09
Humans
Child: birth-18 years",1,14:26:06
Meta-Analysis
Cochrane
(((wound infiltration or wound infiltration analgesia) and postoperative pain) or postoperative pain treatment).mp. [mp=title, short title, abstract, full text)
Results: 0