Akut postoperative smärta

Vad är nytt?

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Disposition

- Epidural analgesi
- Paravertebral blockad
- Intravenös lidocaine
- Lokal infiltration analgesi (LIA) *vs*. Femoral block (knä/höftplastik)
- Transvers Abdominis Plane (TAP) Block

Epidural analgesia

Cochrane 2016

Epidural pain relief versus systemic opioid-based pain relief for abdominal aortic surgery

Joanne Guay[1], Sandra Kopp[2]

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Analysis 1.12. Comparison 1 Epidural versus systemic opioid (overall comparison), Outcome 12 Visual analogue scale (VAS) score at rest on day 1.

Review: Epidural pain relief versus systemic opioid-based pain relief for abdominal aortic surgery

Comparison: 1 Epidural versus systemic opioid (overall comparison)

Outcome: 12 Visual analogue scale (VAS) score at rest on day 1

Pain at rest day 1

Study or subgroup	Epidural N	Mean(SD)	Systemic opioid N	Mean(SD)	Mean Difference IV,Random,95% CI	Weight	Mean Difference IV,Random,95% CI
Bois 1997	55	1.2 (1.6)	59	2.5 (2)		25.0 %	-1.30 [-1.96, -0.64]
Boylan 1998	19	1 (1.3)	21	2.5 (1.7)		19.3 %	-1.50 [-2.43, -0.57]
Broekema 1998	9	1.32 (1.27)	5	2.04 (1.99)		7.7 %	-0.72 [-2.65, 1.21]
Park 2001	184	3.8 (2.6)	190	4.7 (2.5)		28.2 %	-0.90 [-1.42, -0.38]
Peyton 2003	59	2.1 (2.77)	54	1.74 (2.17)		19.7 %	0.36 [-0.55, 1.27]
Total (95% CI)	**326**		**329**			**100.0 %**	**-0.85 [-1.46, -0.25]**

Heterogeneity: $Tau^2 = 0.27$; $Chi^2 = 10.33$, df = 4 (P = 0.04); $I^2 = 61\%$

Test for overall effect: Z = 2.75 (P = 0.0059)

Test for subgroup differences: Not applicable

Cochrane

Epidural pain relief versus systemic opioid-based pain relief for abdominal aortic surgery

Joanne Guay[1], Sandra Kopp[2]

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Analysis 1.3. Comparison 1 Epidural versus systemic opioid (overall comparison), Outcome 3 Myocardial infarction.

Review: Epidural pain relief versus systemic opioid-based pain relief for abdominal aortic surgery

Comparison: 1 Epidural versus systemic opioid (overall comparison)

Outcome: 3 Myocardial infarction

Study or subgroup	Epidural analgesia n/N	Systemic opioid n/N	Risk Ratio M-H,Fixed,95% CI	Weight	Risk Ratio M-H,Fixed,95% CI
Bois 1997	2/55	5/59		15.8 %	0.43 [0.09, 2.12]
Boylan 1998	1/19	1/21		3.1 %	1.11 [0.07, 16.47]
Davies 1993	2/25	1/25		3.3 %	2.00 [0.19, 20.67]
Garnett 1996	3/48	5/51		15.9 %	0.64 [0.16, 2.52]
Norris 2001	5/116	0/35		2.5 %	3.38 [0.19, 59.75]
Park 2001	5/184	15/190		48.4 %	0.34 [0.13, 0.93]
Yeager 1987	0/11	3/12		11.0 %	0.15 [0.01, 2.70]
Total (95% CI)	**458**	**393**		**100.0 %**	**0.54 [0.30, 0.97]**

Total events: 18 (Epidural analgesia), 30 (Systemic opioid)

Heterogeneity: $Chi^2 = 4.71$, $df = 6$ ($P = 0.58$); $I^2 = 0.0\%$

Test for overall effect: $Z = 2.05$ ($P = 0.040$)

Test for subgroup differences: Not applicable

Cochrane

Epidural pain relief versus systemic opioid-based pain relief for abdominal aortic surgery

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Analysis 1.7. Comparison 1 Epidural versus systemic opioid (overall comparison), Outcome 7 Acute respiratory failure.

Respiratory failure

Review: Epidural pain relief versus systemic opioid-based pain relief for abdominal aortic surgery

Comparison: 1 Epidural versus systemic opioid (overall comparison)

Outcome: 7 Acute respiratory failure

Study or subgroup	Epidural n/N	Systemic opioid n/N	Risk Ratio M-H,Random,95% CI	Weight	Risk Ratio M-H,Random,95% CI
Yeager 1987	1/11	3/12		1.0 %	0.36 [0.04, 3.00]
Davies 1993	1/25	1/25		0.6 %	1.00 [0.07, 15.12]
Garnett 1996	5/48	8/51		4.0 %	0.66 [0.23, 1.89]
Park 2001	26/184	53/190		24.2 %	0.51 [0.33, 0.77]
Norris 2001	17/116	6/35		6.0 %	0.85 [0.37, 2.00]
Peyton 2003	44/86	52/78		64.3 %	0.77 [0.59, 0.99]
Total (95% CI)	**470**	**391**		**100.0 %**	**0.69 [0.56, 0.85]**

Total events: 94 (Epidural), 123 (Systemic opioid)

Heterogeneity: $Tau^2 = 0.0$; $Chi^2 = 3.64$, $df = 5$ ($P = 0.60$); $I^2 = 0.0\%$

Test for overall effect: $Z = 3.49$ ($P = 0.00049$)

Test for subgroup differences: Not applicable

0.005 0.1 1 10 200

Favours Epidural Favours IV/IM

Cochrane

Epidural pain relief versus systemic opioid-based pain relief for abdominal aortic surgery

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Analysis 1.9. Comparison 1 Epidural versus systemic opioid (overall comparison), Outcome 9 Cerebrovascular complication.

Review: Epidural pain relief versus systemic opioid-based pain relief for abdominal aortic surgery

Comparison: 1 Epidural versus systemic opioid (overall comparison)

Outcome: 9 Cerebrovascular complication

Cardiovascular complications

Study or subgroup	Epidural n/N	Systemic opioid n/N	Peto Odds Ratio Peto,Fixed,95% CI	Weight	Peto Odds Ratio Peto,Fixed,95% CI
Davies 1993	1/25	0/25		7.1 %	7.39 [0.15, 372.38]
Garnett 1996	1/48	1/51		14.0 %	1.06 [0.07, 17.26]
Norris 2001	1/116	1/35		10.0 %	0.22 [0.01, 5.92]
Park 2001	1/184	9/190		69.0 %	0.20 [0.06, 0.70]
Total (95% CI)	**373**	**301**		**100.0 %**	**0.33 [0.12, 0.93]**

Total events: 4 (Epidural), 11 (Systemic opioid)

Heterogeneity: $Chi^2 = 3.76$, $df = 3$ ($P = 0.29$); $I^2 = 20\%$

Test for overall effect: $Z = 2.09$ ($P = 0.037$)

Test for subgroup differences: Not applicable

Epidural analgesia
(following open abdominal aortic surgery)

Conclusions:
*EDA (compared to PCA) offers better pain relief (day 1-2 specifically on movement),
*lower risk of MI,
*lower risk for acute respiratory failure and
*short ICU stay

Min åsikt:
Detta stämmer även för övrig bukkirurgi om man har en väl fungerande thorakal EDA som testas före sövning

Paravertebral blockade
(vuxna)

Thoracic paravertebral blocks in abdominal surgery – a systematic review of randomized controlled trials

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We identified **20 published randomized controlled trials** examining the role of TPVB in **adults undergoing abdominal surgery**. The largest number of studies (eight) were in **open inguinal herniorrhaphy**, with a limited number of studies (one to three) for other types of surgery.

Conclusion: Our systematic review identified a **relatively small number of studies** examining the analgesic efficacy of TPVB in abdominal surgery. The evidence indicates that single-shot TPVB provides postoperative analgesia in the first 12 to 24 h, reducing pain scores, opioid consumption, and PONV ***compared with patients who receive no block***. Although the majority of published studies were in open inguinal herniorrhaphy, we would not consider this a major indication for TPVB given the availability and widespread use of other less-invasive anesthetic approaches.

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Anesthesiology
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2006

Anesthesiology 2006; 105:660–4

Can Anesthetic Technique for Primary Breast Cancer Surgery Affect Recurrence or Metastasis?

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165 medical records examined; localized, palpable tumours
Patients operated between Sep 2001 and Dec 2002
Follow-up done in Aug 2005 (2.5 – 4.0 years follow-up)

The first (retrospective) study in humans (2006)

Table 3. Cancer Recurrence

	Paravertebral (n = 50)	General Anesthesia (n = 79)
Crude recurrence	3 (6)	19 (24)
Percent of patients recurrence-free at 24 months (95% CI)	94 (87–100)	82 (74–91)*
Percent of patients recurrence-free at 36 months (95% CI)	94 (87–100)	77 (68–87)†
Recurrence location		
Local or axillary nodes	1	11
Liver metastasis	1	3
Bone metastasis	1	3
Lung metastasis	0	2

Data are number (%) or Kaplan-Meier survival estimate (95% confidence interval).

* $P = 0.038$ comparing groups on Kaplan-Meier estimates at 24 months (z test). † $P = 0.007$ comparing groups on Kaplan-Meier estimates at 36 months (z test).

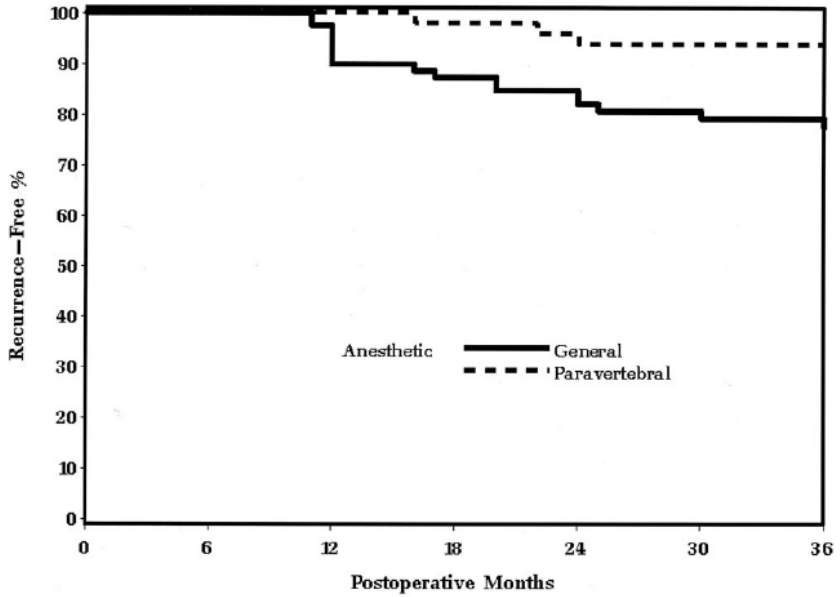

Fig. 1. Univariable association between paravertebral block and cancer recurrence, $P = 0.013$ log-rank test. The association remained significant ($P = 0.012$) in a multivariable model adjusting for histologic grade and number of axillary nodes.

Lower risk of cancer metastases after:

- 24 months
- 36 months

in the group receiving paravertebral block

Paravertebral block

- Sammanfattning
  - Bra smärtlindring första 12-24 t efter en “single-shot” PVB jämfört med ingen blockad
  - Mindre illamående (mindre morfin)
  - Flesta studier gjorda på ljumskbråck operation där PVB sällan används idag
  - Kan eventuellt vara en fördel vid bröst cancer kirurgi. Dock baserad på retrospektiv data

Lokal infiltration analgesi

(knä och höftplastik)

The analgesic efficacy of local infiltration analgesia vs femoral nerve block after total knee arthroplasty: a systematic review and meta-analysis

BJA 2016; 116: 597-609

E. Albrecht[1,*], O. Guyen[2], A. Jacot-Guillarmod[3] and K. R. Kirkham[4]

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Pain scores at rest (analogue scale, 0–10)											
two postoperative h	Ashraf 2013[12]	1.6	2.4	19	3.6	3.2	21	−0.7 [−2.4, 0.9]	88	0.39	Low
	Chaumeron 2013[14]	1.7	5.8	29	3.5	5.4	30				
	Moghtadaei 2014[38]	3.0	1.5	18	4.0	1.5	18				
	Uesugi 2014[40]	1.2	2.4	100	0.2	0.5	100				
12 postoperative h	Moghtadaei 2014[38]	6.0	1.5	18	5.0	0.9	18	0.6 [−0.1, 1.2]	57	0.08	Very low
	Uesugi 2014[40]	0.9	1.4	100	0.6	0.9	100				
Postoperative day one	Affas 2011[41]	1.6	1.5	20	2.1	1.7	20	−0.1 [−0.4, 0.3]	72	0.80	Moderate
	Ashraf 2013[12]	2.9	2.3	19	4.4	2.3	21				
	Carli 2010[13]	4.0	2.7	20	2.7	2.2	20				
	Chaumeron 2013[14]	1.7	2.9	29	1.7	3.2	30				
	Fan 2016[37]	3.4	0.7	79	3.4	0.7	78				
	Kovalak 2015[42]	3.2	2.0	28	1.9	1.4	32				
	Kurosaka 2015[43]	3.4	1.0	21	4.2	1.3	21				
	Kutzner 2015[44]	5.1	2.5	60	4.6	2.6	60				
	Moghtadaei 2014[38]	6.0	0.7	18	6.0	0.7	18				
	Ng 2012[45]	2.8	0.9	16	2.7	1.1	16				
	Spangehl 2014[46]	2.8	1.8	81	2.4	1.6	79				
	Uesugi 2014[40]	1.6	1.8	100	2.7	2.3	100				

Rest:
0.1 – 0.7 cm
(2 h – 2 days)

Pain scores on movement (analogue scale, 0–10)								
two postoperative h	Chaumeron 2013[14]	2.6	4.4	29	3.7	5.25	30	−1.1 [−3.6, 1.4]
12 postoperative h	-	-	-	-	-	-	-	-
Postoperative day one	Affas 2011[41]	2.4	1.3	20	2.4	1.7	20	0.2 [−0.5, 0.8]
	Carli 2010[13]	5.8	2.9	20	5.2	2.2	20	
	Chaumeron 2013[14]	4.9	2.1	29	4.7	3.3	30	
	Fan 2016[37]	6.9	0.5	79	7.1	0.6	78	
	Kovalak 2015[42]	5.6	1.5	28	4.5	1.2	32	
	Ng 2012[45]	7.3	1.0	16	6.4	1.0	16	
	Toftdahl 2007[47]	3.0	3.0	40	5.0	3.0	37	
Postoperative day two	Carli 2010[13]	4.4	2.5	20	4.6	2.3	20	−0.1 [−0.4, 0.3]
	Chaumeron 2013[14]	5.1	4.4	29	3.9	4.1	30	
	Fan 2016[37]	6.6	0.5	79	6.5	0.6	78	
	Kovalak 2015[42]	4.5	1.3	28	4.3	1.1	32	
	Ng 2012[45]	5.9	1.1	16	6.6	0.8	16	
	Toftdahl 2007[47]	4.0	2.2	40	4.5	3.0	37	

Movement:
0.1 – 1.1 cm
(2 h – 2 days)

The analgesic efficacy of local infiltration analgesia *vs* femoral nerve block after total knee arthroplasty: a systematic review and meta-analysis

E. Albrecht[1,*], O. Guyen[2], A. Jacot-Guillarmod[3] and K. R. Kirkham[4]

[1]Department of Anaesthesia, [2]Department of Orthopaedic surgery, [3]Department of Anaesthesia, Lausanne University Hospital, Lausanne, Switzerland, and [4]Department of Anaesthesia, Toronto Western Hospital, University of Toronto, Toronto, Canada

BJA 2016

Conclusion: Both techniques equally good for Total knee arthroplasty (TKA)

Local infiltration analgesia *or* 3-in-1 block for postoperative pain management following total hip arthroplasty. A double-blind, randomized study

Kuchalik, Gupta et al (submitted)

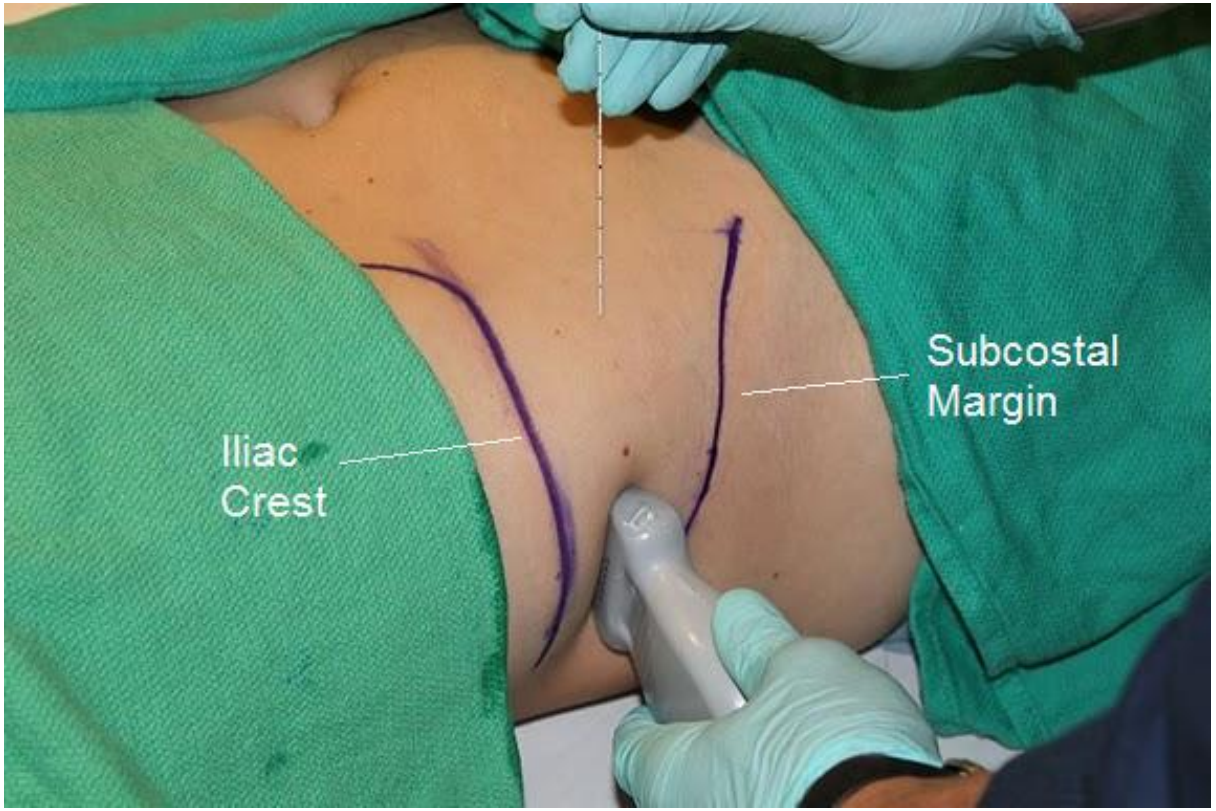
Conclusions: Local infiltration analgesia reduces pain intensity up to 48 h after THA and rescue analgesic consumption during 0-24h compared to 3-in-1 block (femoral block), without causing significant side effects.

Transverse abdominis plane (TAP) block

Transversus abdominal plane block for postoperative analgesia: a systematic review and meta-analysis of randomized-controlled trials

Le bloc dans le plan du muscle transverse de l'abdomen pour réaliser une analgésie postopératoire: revue systématique et méta-analyse des études randomisées contrôlées

Etrusca Brogi, MD · Roy Kazan, MD · Shantale Cyr, PhD · Francesco Giunta, MD · Thomas M. Hemmerling, MD



Can J Anesth 2016

TAP Block

- Gyn kirurgi: **TAP block signifikant minskade**
  - Smärta efter 6 t med 1,2 (95% CI, -1.8 to -0.6; P = 0.001)
  - Smärta efter 12 t med 1,1 (95% CI, -2.0 to -0.3; P = 0.007)
  - Smärta efter 24 t med 1,1 (95% CI, -2.1 to -0.2; P=0.001).

  Jämfört med placebo
- Större bukkirurgi: **ingen skillnad i**
  - Smärta efter 6 t (-0,1 cm) (95% CI, -1.4 to 1.3; P = 0.95)
  - Smärta efter 12 t (+1,9 cm) (95% CI, -4.2 to 0.4; P = 0.11)
  - Smärta efter 24 t (-0,8 cm) (95% CI, -2.0 to 0.4; P = 0.18)

Conclusion: Even if TAP block is not as effective as ITM or epidural analgesia, TAP block might be used to provide analgesia when neuraxial techniques or opioids are contraindicated.

Intravenös lokalanestesi (lidocain)

Efficacy and safety of intravenous lidocaine for postoperative analgesia and recovery after surgery: a systematic review with trial sequential analysis†

S. Weibel[1,*], J. Jokinen[1], N. L. Pace[2], A. Schnabel[1], M. W. Hollmann[3], K. Hahnenkamp[4], L. H. J. Eberhart[5], D. M. Poepping[6], A. Afshari[7] and P. Kranke[1]

Methods: IV infusion of lidocaine started before incision and continued at least till end of surgery

Table 1 Primary outcomes – comparison: lidocaine vs control (placebo/untreated). Effect sizes were reported as MD or RR with 95% CI. Effect sizes <0 for continuous data (MD) and <1 for dichotomous data (RR) indicate 'favour of' lidocaine treatment. Pain data were presented at 'early' (1–4 h), 'intermediate' (24 h), and 'late' (48 h) time points postoperatively. Statistical heterogeneity between trials was reported using I^2. IV (inverse variance)

Outcome	No. of studies (participants)	Lidocaine (*n*)	Placebo (*n*)	Statistical method	Effect size	Hetero-geneity (I^2)
Pain 'early', (VAS 0–10)	23 (1286)	645	641	MD (IV, Random, 95% CI)	−0.84 [−1.10, −0.59]	86%
Pain 'intermediate', (VAS 0–10)	25 (1393)	696	697	MD (IV, Random, 95% CI)	−0.34 [−0.57, −0.11]	91%
Pain 'late', (VAS 0–10)	19 (1077)	538	539	MD (IV, Random, 95% CI)	−0.22 [−0.47, 0.03]	92%
Postoperative ileus (dichotomous)	3 (205)	104	101	RR (IV, Random, 95% CI)	0.38 [0.15, 0.99]	0%
Time to first defecation (h)	4 (214)	108	106	MD (IV, Random, 95% CI)	−9.52 [−23.24, 4.19]	85%
Time to first flatus (h)	11 (566)	283	283	MD (IV, Random, 95% CI)	−5.49 [−7.97, −3.00]	88%
Time to bowel movement/sound (h)	6 (288)	145	143	MD (IV, Random, 95% CI)	−6.12 [−7.36, −4.89]	0%

Resultat: Mindre smärta (0,2 – 0,8 cm) på VAS "tidigt – sent smärta"
Kortare tid till tarm motilitet

BJA 2016; 116: 770-83

LA and Cancer

- Possible mechanisms for LA effects on cancer
  - Amide-linked local anaesthetics inhibit inflammatory Src signaling
  - Inhibition of migration of cancer cells
  - Blocking of Voltage-Gated Sodium Channels (as well as potassium and calcium channels)
- It is likely that they inhibit proliferation and migration of mesenchymal stem cells
- Effects seen only when used in therapeutic concentration (not after EDA administration)

IV Lidocain

- Sammanfattning
  - There is **limited evidence that, when compared with placebo, IV lidocain has an impact on pain scores**, especially in the early postoperative phase (0.8 to 0.2 cm on VAS, early – late pain scores).
  - There is also **limited evidence that this has further impact on other relevant clinical outcomes**, such as gastrointestinal recovery (5 – 10 h), postoperative nausea.
  - May prevent proliferation of cancer cells. *In vitro* model and retrospective studies in human melanoma

Forskning och klinisk erfarenhet

- Forskningsresultatet inte alltid överens med klinisk erfarenhet
  - Många inklusion/exklusion kriteria (ej klinisk praxis)
  - Små studier (ofta) gjorda på ett kontrollerad sett
- Systematisk review (metanalys) ge inte alltid ett definitivt svar, trots högsta bevis värde (LoE)
  - Alla studier som ingår i metanalys är inte gjort lika
  - Endpoints och outcomes skiljer sig mellan studier

Utvärdera egna (sjukhuset) resultatet på ett systematisk sett. Fungerar tekniken bra på flertals patient är det säkert en bra teknik, just på ditt sjukhus!

Sammanfattning

- Epidural analgesi
  - ”Gold standard” för större bukkirurgi
  - Morbiditet och komfort vinst för patient
- Paravebral block
  - Begränsad antal studier, mest ljumskbråck
- Transversus abdominal plane block
  - Bättre smärtlindring *jämfört med placebo* (lägre VAS 0-2 cm)
  - Inte lika bra jämfört med ITM eller EDA
- Local infiltation analgesi
  - Lika bra som femoral N block för knäplastik
- Intravenös lidocaine
  - Mindre smärta (0,8 – 0,2 cm VAS, tidigt – sent efter kirurgi)