Kliiniline küsimus nr 10 lapsed

Kas patsiendi postoperatiivse ägeda valu ravis on regionaalanalgeesia (epiduraal-analgeesia, närviblokaadid) vs parenteraalne ja enteraalne analgeesia tulemuslikum?
Kriitilised tulemusnäitajad: valu tugevus, valu vähenemine, lisavaluvaigisti vajadus, aeg esimese lisavaluvaigisti vajaduseni, aeg valuvaigistava toime saabumiseni, postoperatiivsete tüsistuste esinemissagedus, rehospitaliseerimine valu tõttu, patsiendi (eestkostja) rahulolu valuraviga, meetodi ohutus

Süstemaatilised ülevaated

Laste uuringutest jäid sõelale 3 süstemaatilist ülevaadet. Nendes leitakse, et lehterrinna lõikustel epiduraalanalgeesia vähendab valu tagasihoidlikult paremini kui PCA, samas statistiliselt olulist erinevust secondary outcome osas ei olnud. Valuvaigistav meetod soovitatakse valida lähtuvalt haige eelistustest ja olemasolevatest vahenditest.
Skolioosi lõikustel annab parema valuvaigistava toime epiduraalkateetri kasutamine kui i/v opioidi kasutamine, samuti on vähem iiveldust ja patsientide rahulolu suurem.

1. Black KJL, Bevan CA, Murphy NG, Howard JJ. **Nerve blocks for initial pain management of femoral fractures in children.**
Cochrane Database of Systematic Reviews 2013, Issue 12. Art. No.: CD009587. DOI: 10.1002/14651858.CD009587.pub2.

Võrreldi omavahel **femoral nerve block (FBN)/facia iliaca compartment block (FICB) ja süsteemseid opioide alla 18-aastastel lastel reieluu murdudega.** Kõik ei ole opereeritud lapsed. Randomiseeriti 55 last. **Väga madal tõendus, et FICB annab parema analgeetilise toime väiksemate kõrvaltoimetega kui i/v opioidid.** Vajalikud oleksid edasised uuringud.

2. Andrea M. Stroud, Darena D. Tulanont, Thomasena E. Coates, Philip P. Goodney, Daniel P. Croitoru. **Epidural analgesia versus intravenous patient-controlled analgesia following minimally invasive pectus excavatum repair: a systematic review and meta-analysis.**
Journal of Pediatric Surgery 49 (2014) 798–806

Epid vs PCA, 6 uuringut, kokku 430 patsienti. **Keskmised valuskoorid olid tagasihoidlikult madalamad epiduraaliga kohe peale ja 48 t peale lõikust võrreldes PCA-ga. Statiliselt olulist erinevust secondary outcome osas ei olnud.** Secondary outcome – üldine maksumus (opitoa aeg, haiglas viibimise aeg), haiglas viibimise aeg, ravi pikkus ja lisavaluvaigistute kasutamine (rescue), epiduraaliga seotud tüsistused, epiduraali paneku ebaõnnestumine, opiaatidest tingitud kõrvaltoimed. Võiks olla rohkem paremini disainitud uuringuid. **Praegune analgeesia tehnika valik peaks sõltuma haige eelistustest ja vahenditest.**

3. Andreas H. Taenze, Cantwell Clark. **Efficacy of postoperative epidural analgesia in adolescent scoliosis surgery: a meta-analysis.**
Pediatric Anesthesia 2010 20: 135–143

Epiduraal vs i/v opioid, hindasid valu skoori ja secondary outcomes. 4 uuringut, 120 haiget. **Soovitavad kasutada epiduraali, kuna see vähendab valu 24, 48 ja 72-tundi peale operatsiooni, vähendavad iiveldust ja suurendavad patsidentide rahulolu.** Parem tulemus saavutatav, kui kasutada kahe kateetri meetodit (dual catheter) ja kõrgemaid lokaalanesteetikumide kontsentratsioone.

Viited

Kokkuvõtte (abstract või kokkuvõtlikum info)	Viide kirjandusallikale
BACKGROUND: Children and adolescents with femoral fractures are almost always admitted to hospital. They invariably start their hospital experience in the Emergency Department, often requiring transfer to a specialist children's hospital. They require analgesia or anaesthesia so that radiographs can be obtained and for management of their fractures. The initial care process involves from two to six transfers from stretcher to stretcher/imaging/operating-suite table or hospital bed within the first few hours, so prompt pain relief is essential. Systemic analgesia can be provided orally or parenterally. Alternatively, a nerve block may be used where local anaesthetic is injected around a nerve to block sensation or freeze the involved area. OBJECTIVES: To assess the effects (benefits and harms) of femoral nerve block (FNB) or fascia iliaca compartment block (FICB) for initial pain management of children with fractures of the femur (thigh bone) in the pre-hospital or in-hospital emergency setting, with or without systemic analgesia. SEARCH METHODS: We searched the Cochrane Bone, Joint and Muscle Trauma Group Specialised Register (11 January 2013), the Cochrane Central Register of Controlled Trials (2012 Issue 12), MEDLINE (1946 to January Week 1 2013), EMBASE (1980 to 2013 Week 01), Google Scholar (31 January 2013) and trial registries (31 January 2013). We handsearched recent issues of specialist journals and references of relevant articles. SELECTION CRITERIA: Randomised and quasi-randomised controlled trials assessing the effects of FNB or FICB for initial pain management compared with systemic opiates in children (aged under 18 years) with fractures of the femur receiving pre-hospital or in hospital emergency care. Primary outcomes included failure of analgesia at 30 minutes, pain levels during procedures and transfers (e.g. to a stretcher or hospital ward) for up to eight hours, and adverse effects. DATA COLLECTION AND ANALYSIS: Two review authors independently extracted data	Black KJL, Bevan CA, Murphy NG, Howard JJ. **Nerve blocks for initial pain management of femoral fractures in children.** Cochrane Database of Systematic Reviews 2013, Issue 12. Art. No.: CD009587. DOI: 10.1002/14651858.CD009587.pub2.

using a pre-piloted form. Two authors independently assessed the risk of bias for the included study and assessed quality of the evidence for each outcome using the GRADE approach; i.e. as very low, low, moderate or high. Meta-analysis of results was not possible as we found only one trial that could be included in the review. MAIN RESULTS: We included one randomised trial of 55 children aged between 16 months to 15 years. It compared anatomically-guided FICB versus systemic analgesia with intravenous morphine sulphate. The small sample size and the high risk of bias relating to lack of blinding resulted in a low quality rating for all outcomes.Overall, the trial provided low quality evidence for better pain management in the FICB group. Fewer children in the FICB group had analgesia failure at 30 minutes than in the morphine group (2/26 (8%) versus 8/28 (29%); risk ratio (RR) 0.33, 95% confidence interval (CI) 0.09 to 1.20; P value 0.09). The trial did not report on pain during procedures or transfers, or application of analgesia. The trial provided low quality evidence that FICB has a better safety profile than morphine, with only four (15%) reports of redness and pain at the injection site, and no reports of the type of adverse effects of systematic analgesia that occurred in the morphine group, such as respiratory depression (six cases (21%)) and vomiting (four cases (14%)). No long-term adverse events were reported for either intervention. Clinically significant pain relief was achieved in both groups at five minutes; with limited evidence of greater initial pain relief in the FICB group. Based on an inspection of graphically-presented data, at least 46% (12/26) of children in the FICB group had no supplementary medication (mainly analgesia) for the six hours of the study, while only 5% (1 or 2/28) of children in the intravenous morphine group went without additional analgesia. There was insufficient evidence to determine whether child or parental satisfaction with the method of analgesia favoured either method. Resource use was not measured. AUTHORS' CONCLUSIONS: Low quality evidence from one small trial suggests that FICB provides better and longer lasting pain relief with fewer adverse events than intravenous opioids for femur fractures in children. Well conducted and reported randomised trials that compare nerve blocks (both FNB and FICB) with systemic analgesia and that use validated pain scores are needed.	
The minimally invasive pectus excavatum repair	Andrea M. Stroud, Darena D. Tulanont,

(MIPER) is a painful procedure. The ideal approach to postoperative analgesia is debated. We performed a systematic review and meta-analysis to assess the efficacy and safety of epidural analgesia compared to intravenous Patient Controlled Analgesia (PCA) following MIPER. **Methods:** We searched MEDLINE (1946–2012) and the Cochrane Library (inception–2012) for randomized controlled trials (RCT) and cohort studies comparing epidural analgesia to PCA for postoperative pain management in children following MIPER. We calculated weighted mean differences (WMD) for numeric pain scores and summarized secondary outcomes qualitatively. **Results:** Of 699 studies, 3 RCTs and 3 retrospective cohorts met inclusion criteria. Compared to PCA, mean pain scores were modestly lower with epidural immediately (WMD −1.04, 95% CI −2.11 to 0.03, p = 0.06), 12 hours (WMD −1.12; 95% CI −1.61 to −0.62, p b 0.001), 24 hours (WMD −0.51, 95%CI −1.05 to 0.02, p = 0.06), and 48 hours (WMD −0.85, 95% CI −1.62 to −0.07, p = 0.03) after surgery. We found no statistically significant differences between secondary outcomes. **Conclusions:** Epidural analgesia may provide superior pain control but was comparable with PCA for secondary outcomes. Better designed studies are needed. Currently the analgesic technique should be based on patient preference and institutional resources.	Thomasena E. Coates, Philip P. Goodney, Daniel P. Croitoru. **Epidural analgesia versus intravenous patient-controlled analgesia following minimally invasive pectus excavatum repair: a systematic review and meta-analysis.** Journal of Pediatric Surgery 49 (2014) 798–806
Scoliosis surgery is one of the most painful operations performed. Postoperative pain management has been historically based on the use of intravenous opioids. Many of the adolescents who undergo these procedures are at increased risk for opioid-related side effects because of underlying medical problems. Epidural analgesia has been demonstrated to provide superior pain control with fewer side effects for chest and abdominal surgery in children as well as adults. We **aim** to analyze the available literature for sufficient evidence to allow recommendations regarding the use of epidural analgesia with parenteral opioids vs. intravenous opioids only. **Search strategy**: Public Medline and the Cochrane database were searched (1966-10/2008) using scoliosis-related and epidural analgesia-related terms. In Medline, the intersection of these results was combined with Phases 1 and 2 of a highly sensitive search strategy recommended for identifying randomized trials. No limits were used in any search. Additionally, professional journals and	Andreas H. Taenze, Cantwell Clark. **Efficacy of postoperative epidural analgesia in adolescent scoliosis surgery: a meta-analysis.** Pediatric Anesthesia 2010 20: 135–143

proceedings of meetings were screened, and nationally recognized experts in the field of pediatric pain management were asked for further sources of data. **Selection criteria:** Randomized, controlled trials comparing the use of a continuous infusion of epidural local anesthetics plus intravenous opioids vs. intravenous opioids only for postoperative pain management in adolescent scoliosis repair were eligible for inclusion in the meta-analysis. All studies had to include at least the primary outcome of interest, postoperative pain scores. **Data collection and analysis**: After the development of a data collection and extraction form, two independent reviewers extracted all. No data conflicts were encountered. Data were analyzed with Review Manager when possible, significance for difference between relative rates between groups was analyzed by chi-square tests. **Main results** : Average pain scores were lower in the epidural group than no epidural group at 24, 48 and 72 h after surgery. Pain scores (0–100) were lower on all first three postoperative days (POD) in the epidural group:) 15.2 on POD1,) 10.1 on POD2 and) 11.5 on POD3. Differences were significant in the summary analysis for all 3 days ($P < 0.05$). **Authors'Conclusion : Epidural analgesia is beneficial to patients in terms of improving pain control and reducing side effects. The influence on respiratory depression, length of stay in the intensive care unit, or mortality is not available in the literature at this time.**	

Ravijuhendid

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

Ravijuhendis leiti et, poiste ümberlõikusteks vajasid patsiendid kaudaalse analgeesia kasutamisel vähem lisavaluvaigistit kui parenteraalne analgeesia puhul (Allan et al 2004, Level I).
Mastoidektoomiaks n. auricularis major´i blokaad sama efektiivsusega kui morfiin, aga esines vähem iiveldust ja oksendamist (Suresh et al, 2004 Level II). Kombineerituna n.occipitalis minor´i blokaadiga, oli see blokaad efektiivne ka otoplastikaks (Pardey et al, 2008 Level II).
Infraorbitaalne blokaad on suulaelõhe lõikuste järgselt parem kui intravenoosne fentanüül (Rajamani et al, 2007 Level II).
Peribulbaarne ja sub-Tenoni blokk vähendasid strabismi lõikuseaegset okulokardiaalset refleksi ja PONVi esinemissagedust võrreldes intraoperatiivsete opioididega, kuid postoperatiivsete valuvaigistite vajadus oli varieeruv ning nende protseduuride relatiivne risk pole samuti lõplikult teada (Chhabra et al, 2005 Level III-1; Steib et al, 2005 Level II; Gupta et al, 2007 Level II).
Katarakti lõikuste järgselt vajasid sub-Tenoni blokiga lapsed vähem lisavaluvaigistit võrreldes intravenoosse fentanüüliga (Ghai et al, 2009 Level II).

Pidev epiduraalne bupivakaiini infusioon on lastel efektiivne ja turvaline (Llewellyn & Moriarty, 2007 Level IV) ja omab sarnast analgeetilist toimet kui süsteemsed opioidid (Wolf & Hughes, 1993 Level II).
Hingamissageduse ja hapniku saturatsiooni langus olid väiksemad epiduraalanalgeesia ajal võrreldes süsteemsete opioididega, kuid erinevuse suurus oli kliiniliselt ebaoluline (Wolf & Hughes, 1993 Level II).
Haigusjuhud näitavad paranenud hingamisfunktsiooni ja/või väiksemat vajadust mehhaanilise ventilatsiooni järele regionaalanalgeesia korral (McNeely et al, 1997 Level IV; Hodgson et al, 2000 Level IV; Aspirot et al, 2008 Level IV; Raghavan & Montgomerie, 2008 Level IV).

2. **Good Practice In Postoperative and Procedural Pain Management 2nd Edition, 2012**
Soovitused on antud operatsioonide kaupa:

Operatsiooni liik	Soovitus	Soovituse tugevus
Mastoidektoomia ja keskkõrva operatsioonid	N.Auricularis majori blokaad sama efektiivsusega, vähem PONV-i võrreldes morfiiniga	B
Strabismi operatsioonid	Operatsiooni aegsed LA blokaadid vähendavad PONV-i ja võivad parandada postoperatsiivset analgeesiat, ei ole eelist lokaalanalgeesia ees	B
Alakõhu ja uroloogilised operatsioonid (väiksed)	LA kasutamine soovitav: haava infiltratsioon, TAP blokaad, ilio-ingvinaalne blokaad ja sakraalblokaad on efektiivsed varajases postoperatiivses perioodis	A
Tsirkumtsiisio	Sakraalblokaad ja dorsaalnärvi blokaad on efekrtiivsed väheste kõrvaltoimetega	A
Hüpospaadia	Sakraalblokaad või dorsaalnärvi blokaad vähendab postoperatiivset opioidi vajadust	A
Songa operatsioonid	Haava infiltratsioon, ilio-ingvinaalnärvi blokaad paravertebraalblokaad või sakraalblokaad on efektiivsed varajases postoperatiivses perioodis	A
Suured avatud kõhuõõne operatsioonid	I/v opioidid püsiinfusioonina, NCA või PCA meetodil on efektiivsed	A
	Tuleks kaaluda epiduraalanalgeesia kasutamist	B
Fundoplikatsioon (avatud)	Epiduraalanalgeesia on soovitav teatud patsiendigruppidel (kõrge riskiga patsientidel)	D
Alajäsemete operatsioonid	Perifeersed närviblokaadid on efektiivsemad ja seotud vähemate kõrvaltoimetega võrreldes i/v opioidiga	B
	LA püsinfusioon on efektiivne ja ohtu, valu tugevus väiksem	B
	Epiduraalanalgeesia puhul on valu tugevus väiksem võrreldes i/v opioididega	C
Ülajäsemete operatsioonid	Plexus brachialise blokaad on efektiivne ja mõju kestab postoperatiivses perioodis	B
Seljakirurgia	Epiduraalanalgeesia puhul mõju postoperatiivsele valule mõõdukalt tugevam võrreldes i/v opioidiga	B
Suulaelõhe operatsioonid	Infraorbitaalne blokaad on efektiivne varajases postoperatiivses perioodis	A
Sternotoomia	Epiduraal- ja intratekaalsed meetodid on efektiivsed kuid nende puhul on leitud ainult vähene eelis ja ei ole piisavalt andmeid otsustamaks tõsiste kõrvaltoimete esinemise üle	B

Torakotoomia	Epiduraalanalgeesia on efektiivne	D