Anaesthesia and Systemic Analgesia for lower limb arthroplasty

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ERAS 2011
11th September
Bath
Pain prevents some patients from mobilising following lower limb arthroplasty BUT

- Attitude
- Staff attitudes
- Ambience
- Motivation
- Fear
- MORBIDITY

- Stiffness
- Dizziness
- PONV
- Systems
- Attachments
“Although pain management contributes to global satisfaction, its influence is far less than... continuity of care.”
The role of pain for early rehabilitation in fast track total knee arthroplasty.

Holm B et al

Disability & Rehabilitation. 32(4):300-6, 2010
Pain has a limited influence on the functional recovery beyond the first postoperative day after TKA......
Sub-acute pain and function after fast-track hip and knee arthroplasty

Andersen LO et al

Anaesthesia 64(5): 508-13, 2009
• Fast-track THA resulted in acceptable levels of pain ............ in over 95% of patients after discharge.

• However, after TKA 52% patients reported moderate pain and 16% severe pain when walking 1 month after surgery. These results emphasise the need for improvement in analgesia after discharge following total knee arthroplasty.
Analgesia is a quality issue

So is PONV
Analgesia is a quality issue

All forms of RA have more to offer
Primary aims of anaesthesia and analgesia are to provide/ensure low morbidity and near-immediate post-operative mobilisation

Good balance between analgesia and ability to mobilise
NB

Level 1 evidence against the use of opioids as a primary (sole) analgesic regime
Non-opioid Multimodal Analgesia

- Pre-emptive
- Preventive
- Practical
Multi-modal “balanced” analgesia
Opioid - sparing drugs
20 – 100% reduction in opioid requirements

• NSAID’s
• COX-2 inhibitors
• Paracetamol
• Magnesium
• Preconditioning
• Esmolol

• Mobilisation
• Clonidine
• Ketamine
• Gabapentin/pregabalin
• Local anaesthetics NB 100%
• NB Dexamethasone
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Gabapentin/Pregabalin


Premedication

Dexamethasone 8-16mg IV

- Analgesic/Happy Pill
- Anti-inflammatory
- Anti-emetic
- Hyperglycaemic
- And is useful in

- Aspiration
- Anaphylaxis
- Hypoxia
- Does not cause wound problems
- So just give it!!!
Perioperative Single Dose Systemic Dexamethasone for Postoperative Pain: A Meta-analysis of Randomized Controlled Trials

De Oliveira GS et al

Anesthesiology
2011 Jul [Epub ahead of print].
Twenty-four randomized clinical trials with 2,751 subjects were included.

‘Dexamethasone at doses between 0.1 – 0.2 mg/kg is an effective adjunct in multimodal strategies to reduce postoperative pain and opioid consumption after surgery.’

• Eberhart LH et al Impact of a single perioperative dose of dexamethasone on the incidence of surgical site infections: A case-control study. 2011 [Epub ahead of print]
Premedication

$\text{A}_2 \text{ agonists}$

150mcg clonidine as effective as 10 mg morphine
“underused by UK anaesthetists”

- Sedation
- Sympatholysis
- Reduced analgesic requirements
- Reduced PONV and ileus
- Reduced secretions
- Reduced shivering
- Facilitate glycaemic control in diabetics
- Decreased blood loss
- Decreased cvs morbidity
Clonidine (Epidural)

- Forster GA, Rosenberg PH. Small dose of clonidine mixed with low-dose ropivacaine and fentanyl for epidural analgesia after total knee arthroplasty. BJA 93 (5):670-677, 2004
Low-dose Ketamine

- Adam F et al. Small-dose ketamine infusion improves postoperative analgesia and rehabilitation after total knee arthroplasty. Anesthesia & Analgesia. 100(2):475-80, 2005
IV lidocaine

Lack of impact of intravenous lidocaine on analgesia, functional recovery, and nociceptive pain threshold after total hip arthroplasty.


Martin
RA
Spinal
Epidural
CSE/SSE
Infiltration
MMRA
Spinal/Epidural LA

- Reduced blood loss
- Reduced thromboembolism
- Reduced PONV
- Reduced SSI
- ‘Universal standard of care’
Spinal/Epidural LA

- Reduced blood loss
- Reduced thromboembolism
- Reduced PONV
- Reduced SSI !!
- ‘Universal standard of care’
Can we improve spinal for LLA?

- NB minimal block
- Remove opioid
- ?unilateral
- ?prilocaine
- ?? low dose clonidin
Can we improve spinal for LLA?

- NB minimal block
- REMOVE opioid
- ?unilateral
- ?prilocaine
- ?? low dose clonidine
• low dose IT morphine results in PONV and pruritus.
• Urinary retention is more common after intrathecal opioids than after IV or IM administration and does not appear to be dose-related.
Does continuous peripheral nerve block provide superior pain control to opioids? A meta-analysis
Richman JM et al.
Anesth Analg 2006;102:248-57

Efficacy of postoperative patient-controlled and continuous infusion epidural analgesia versus intravenous patient-controlled analgesia with opioids: a meta-analysis.
Wu CL et al
Anesthesiology 2005;103(5):1079-88
NB

Level 1 evidence against the use of opioids as a primary (sole) analgesic regime

REMOVE opioid
Peripheral Nerve Blocks
Ambulatory continuous femoral nerve blocks decrease time to discharge readiness after tricompartment total knee arthroplasty: a randomized, triple-masked, placebo-controlled study.

Ilfeld BM et al

Anesthesiology. 108(4):703-13, 2008
Health-related quality of life after tricompartment knee arthroplasty with and without an extended-duration continuous femoral nerve block: a prospective, 1-year follow-up of a randomized, triple-masked, placebo-controlled study.

Ilfeld BM et al

Health-related quality of life after hip arthroplasty with and without an extended-duration continuous posterior lumbar plexus nerve block: a prospective, 1-year follow-up of a randomized, triple-masked, placebo-controlled study.

Ilfeld BM et al

• ‘We found no evidence that extending an overnight continuous ..........block to 4 days improves (or worsens) subsequent health-related quality of life between 7 days and 12 mo after TKA’
Complications of femoral nerve block for total knee arthroplasty.

Sharma et al

• 709 single-shot FNBs for TKR
• 12 pts (1.6%) treated with FNB sustained falls
• 3 pts (0.4%) underwent reoperations.
• 5 pts had postoperative femoral neuritis, which may have been secondary to the block.
• ‘Femoral nerve block before TKA is not a harmless intervention’
Determination of the EC50 of levobupivacaine for femoral and sciatic perineural infusion after total knee arthroplasty.

Macleod GA et al.  

BJA 102(4):528-33, 2009
Wound infiltration
Philosophy

• Positive attitude by all staff
• Clear description of technique
• Emphasis on early mobilisation
• “Not a disease, not ill” ACTIVE PARTICIPANT
• INDEPENDENCE – nurses available but not overly protective
GJNH Technique – MMA
Pre-operative

Gabapentin 600mg
Dexamethasone 8 - 16mg
12mcg fentanyl patch
Ketamine 15-30mg
(Clonidine 100mcg)
GJNH Technique – MMA
intra-operative

Spinal + LIA
Ketamine supplements
GJNH Technique - Post-op

Hips
- Ibuprofen 400mg tds for 4 days
- Paracetamol/Acetaminophen 1gm qid for 4 days
- Gabapentin 600mg PON1
- 12mcg Fentanyl patch
- LIA

Knees as above plus I-A ropivacaine 0.2% 40ml x3
Summary

- Excellent technique
- National Standard of Care
- Strict adherence to technique
- Team sport
- Good balance between analgesia and ability to mobilise
- Any proposed ‘alternative’ technique must have lower morbidity!