



6th Advanced Course on Knee Surgery

January 31st – February 5th, 2016 Val d'Isère - France

www.kneecourse.com



Faculty:

J. Barth - France
R. Becker - Germany
F. Benazzo - Italy
M. Bonnin - France
M. Carmont - UK
M. Clworthy - New Zealand
G. Felmet - Germany
N. Gravelleau - France
M. Hantes - Greece
F. Kelberine - France
B. Klos - Netherlands
P. Landreau - Qatar
J. Menetrey - Switzerland
JC. Monllau - Spain
P. Neyret - France
S. Parratte - France
R. Seil - Luxemburg
B. Sonnery Cottet - France
P. Verdonk - Belgium
A. Wilson - UK

Featuring with:

JN. Argenson - France
O. Courage - France
JL. Prudhon - France
D. Washer - US



Peri-operative Pain Management

Dr Albertini S.

Anesthesiology

Grenoble - France



Pain management : Context

Objectives of optimizing analgesia for knee arthroplasty and ligamentoplasty

Less adverse post operative events (cardio/pulm/neuropsych)

Lynch and al. The impact of postoperative pain on the development of postoperative delirium. *Anesth Analg* 1998

Liu and al. Epidural anesthesia and analgesia : their role in postoperative outcome. *Anesthesiology*

Mangano and al. Postoperative myocardial ischemia: therapeutical trials using intensive analgesia following surgery. *Anesthesiology* 1992

Beattie and al. Epidural morphine reduces the risk of postoperative myocardial ischemia in patients with cardiac risk factors. *Can J Anaesth* 1993

Optimal Physiotherapy Decrease of Length of Stay/ Cost

Watters and al. Preventive measures in the elderly surgical patient. *Can J Surg* 1991

Tsui SI and al. A clinical audit for postoperative pain control on 1443 surgical patients. *Acta Anaesthesiol Scand* 1995

Ifeld and al. 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. *Anesth Analg*. 2009

Larsen and al. Cost-effectiveness of accelerated perioperative care and rehabilitation after total hip and knee arthroplasty. *J Bone Joint Surg Am*. 2009

Barbieri A and al. Effects of clinical pathways in the joint replacement: a meta-analysis. *BMC Med*. 2009



Functional result / Satisfaction



(Come back for the other side?)

Pain management : What we know today

Pre Habilitation ++

Multi disciplinary approach prior to surgery : physiotherapy, nutrition, anemia

Berge and al. Pre-operative and postoperative effect of a pain management program prior to total hip replacement: a randomized controlled trial. Pain 2004

Beaupre and al. The effect of a preoperative exercise and education program on functional recovery, health related quality of life, and health service utilization following primary total knee arthroplasty. J Rheumatol 2004

Topp and al. The effect of prehabilitation exercise on strength and functioning after total knee arthroplasty. PM R. 2009

McKay and al. The effect of a prehabilitation exercise program on quadriceps strength for patients undergoing total knee arthroplasty: a randomized controlled pilot study. PM R. 2012;

Pre Medication

Gabapentinoid : literature still poor but in favor of use

Pain management : What we know today

Intra-operative

GA vs Spinal

still difficult to say which is best...

Spinal + opioid + low dose LA seems better regarding overall outcomes (pain / opioid use / mobilization / thromboembolism...)

Epidural:

better than opioid PCA but *difficult to recommended* = risk of falling, urinary retention, respiratory depression, muscular palsy, pruritus, PONV...

Pain management : What we know today

Intra-operative

Femoral block +++

+++ Continuous Nerve Block +++ compared to Single Shot Nerve Block

Fisher and al. PROSPECT working group Anaesthesia 2008

Surgical intra-articular or/and wound infiltration

(beware of overdose !!! Max Levobupivacaine is 3mg/kg and 200mg)

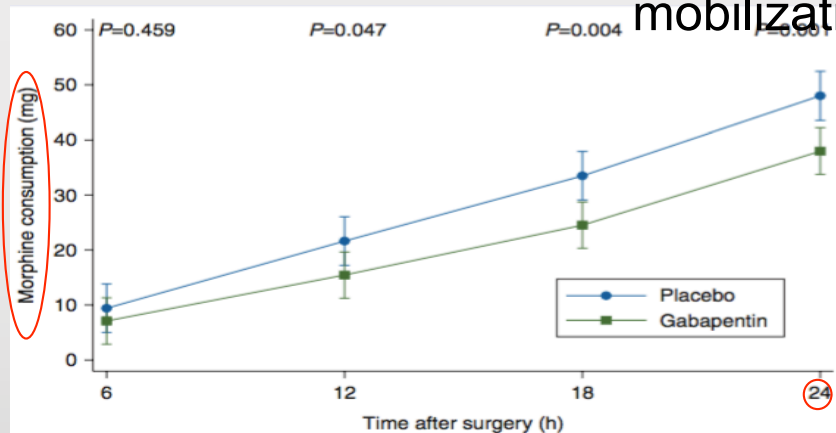
Toftdahl and al. Comparison of peri- and intraarticular analgesia with femoral nerve block after total knee arthroplasty: a randomized clinical trial. Acta Orthop. 2007

Andersen and al. Reduced hospital stay and narcotic consumption, and improved mobilization with local and intraarticular infiltration after hip arthroplasty: a randomized clinical trial of an intraarticular technique versus epidural infusion in 80 patients. Acta Orthop. 2007

Pain management : What we know today

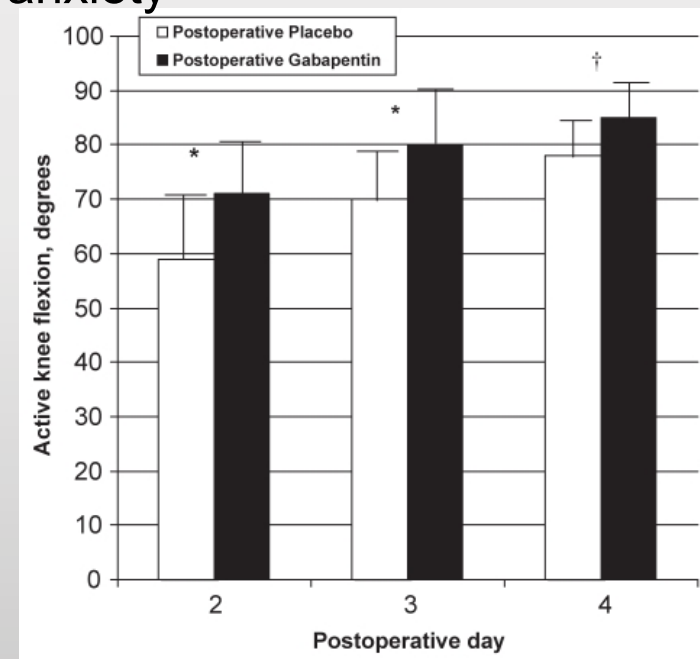
Gabapentinoid

Still unclear... Intuitively appealing though with mild effects on opioid use, early mobilization and anxiety



	Placebo		Gabapentin		Adjusted difference (95% CI)	P-value
	n	Mean (st)	n	Mean (st)		
Knee flexion range† (°)						
POD1	76	55.1 (2.2)	83	60.8 (1.8)	5.9 (0.9, 11.0)	0.020
POD2	74	62.8 (1.9)	85	69.1 (1.4)	7.9 (2.9, 13.0)	0.002
POD3	77	75.0 (1.6)	84	79.5 (1.5)	5.9 (0.9, 10.9)	0.021
POD4	70	80.9 (1.3)	80	83.8 (1.3)	4.1 (-1.1, 9.3)	0.123
6 weeks	74	102.5 (2.1)	81	105.1 (1.4)	0.9 (-4.2, 6.0)	0.724
3 months	74	115.2 (1.6)	79	116.2 (1.3)	0 (-5.1, 5.1)	0.997
Knee flexion pain* (0-10)						
POD1	74	5.6 (0.3)	85	6.0 (0.2)	0.8 (0, 1.6)	0.050
POD2	77	5.7 (0.3)	84	5.5 (0.3)	0.2 (-0.6, 1.0)	0.665
POD3	70	5.5 (0.3)	80	5.6 (0.3)	0.5 (-0.3, 1.3)	0.255
POD4	75	2.3 (0.2)	75	2.6 (0.2)	0.3 (-0.6, 1.2)	0.493
6 weeks	78	1.0 (0.2)	74	1.3 (0.2)	0.6 (-0.2, 1.5)	0.139

Gabapentin 600mg preop + 200mgx3/4 days + NSAID + FNB + SNB
 DJA 2014



Pain Res Manag 2009

Pain management : What we know today

Postoperative

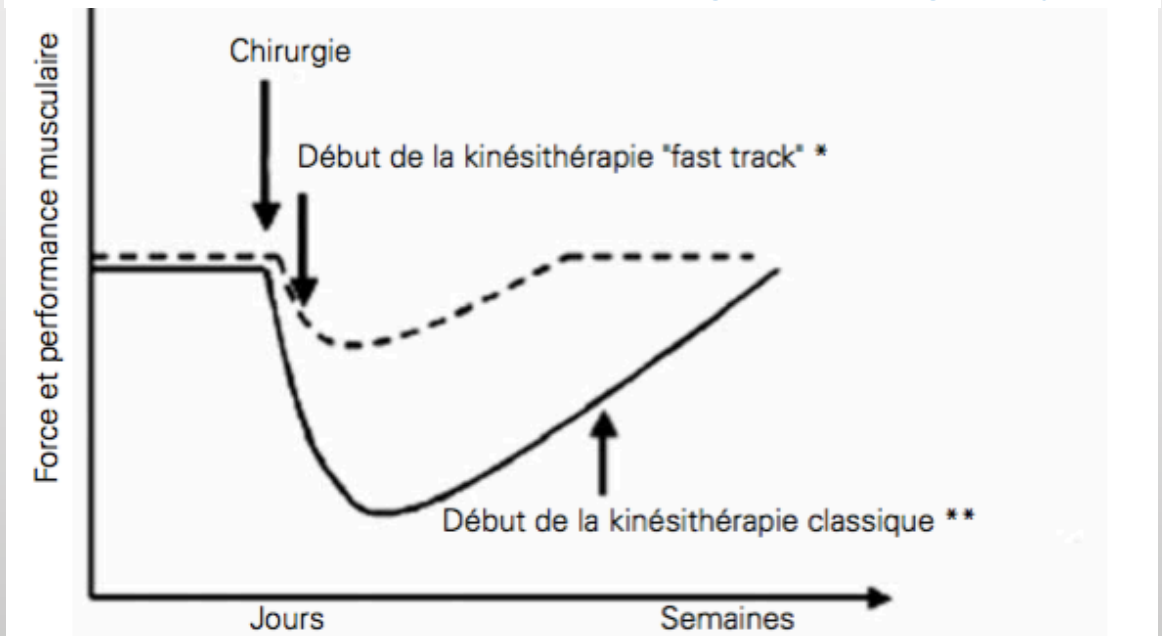
Enhanced Recovery After Surgery

Cryotherapy and intermittent compression

Favour early, intense but short, repetitive active physiotherapy sessions

Mechanical passive physiotherapy

Post op muscular performance and strength according to physiotherapy



Pain management : the Future?

Adductor canal block (ACB) = saphenous nerve block



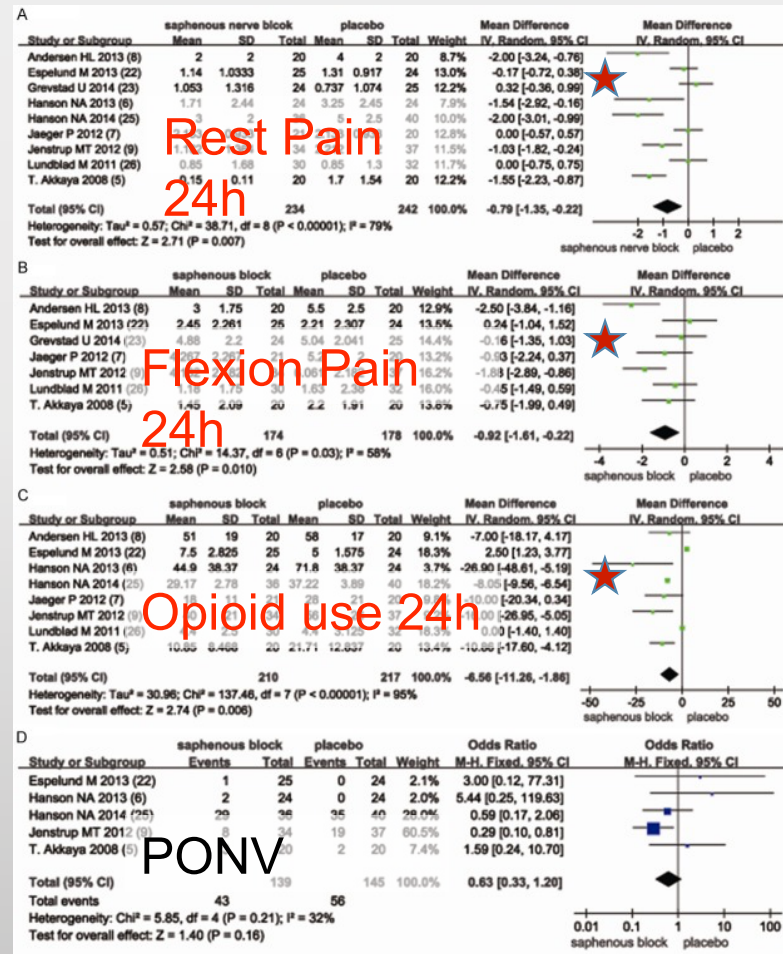
Exclusively sensitive
No quadriceps weakness
Continuous nerve block possible



Pain management : the Future?

Adductor Canal Block ★ vs placebo

Shu-Qing Jin and al. Int J Clin Exp Med 2015



Pain management : What we do

Knee Ligamentoplasty (ACL) - Day hospital basis -

- Preoperative Day 0 : GA or Spinal (no opioids) + no nerve block
- Intraoperative : IV = acetoaminophen + NSAID + Dexamethasone
Wound infiltration by surgeon : LevoBupi 5 mg/ml 20ml
- Postoperative : Single shot femoral block in recovery room if VAS remains > 6 : Levobupi 1,5 mg/ml + clonidine 75mg
Cryotherapy with intermittent compression (GameReady)
- Postoperative and out of clinic prescription : PO acetoaminophen + NSAID +/- rescue Level 2 analgesic drugs
Stand up on Day 0 with physiotherapy + Exit

Pain management : What we do

TKA

- Premedication Day -1 : Gabapentin
- Preoperative Day 0 : GA or Spinal (no opioids) + always SPNB (Levobupivacain + clonidine)
 - Intraoperative : IV = acetoaminophen + NSAID + Dexamethasone
Wound infiltration by surgeon : LevoBupi 5 mg/ml 20ml
- Postoperative : IV then PO acetoaminophen + NSAID + Opiod PCA for 48 to 72h + Gabapentin
Cryotherapy with intermittent compression (GameReady)

Stand up on Day 1 / First steps on Day 2

Pain management : What we do

Results

ACL: above 90% successful same day discharge

TKA : up to 24 hours of femoral nerve blockade, day one physiotherapy OK

Multimodal analgesic technics allow more than acceptable results in our everyday practice

with no requirement for continuous nerve block i.e. catheter which we consider to be a obstacle to patient's mobilization and comfort

Single Shot Adductor Canal Block in this scheme seems to have a place...to be continued...

Pain management : What we do

No continuous nerve block... But enhanced single block

Single shot femoral nerve block with LevoBupivacaine with Clonidine (systematic in TKA, on demand in ACL)

+

Dexamethasone IV intra operative (increase axonal penetration of LA + prevents PONV)

+

Surgical wound infiltration with LA

+

Immediate post op cryotherapy / intermittent compression

Pain management : at the end of it all

Multimodal pain strategy

Including pre intra and post operative global management

No “Magic Bullet” but solid evidence exists :

Pre habilitation and preparation (including anemia!)

Continuous nerve block (Adductor Canal Block?)

Surgical infiltration

ERAS with cryotherapy/ early intense short physiotherapy sessions

Gabapentinoids ?

Small stones make the big mountain

You can now
awaken,

Thank you

Useful link

PROSPECT 2013 – Procedure Specific
Postoperative Pain Management –

www.postoppain.org



Unfortunately your HMO doesn't cover anesthesia so we're going to have to use our low-budget procedure to put you out.