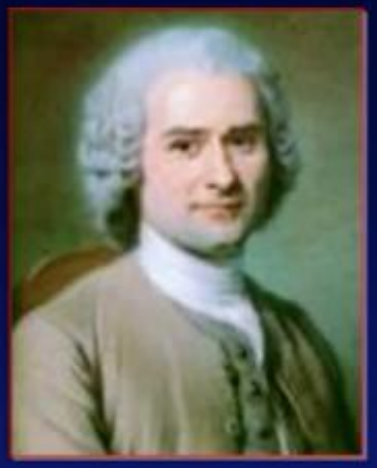
ICJR – Beijing COA 2016

Multimodal pain management. What's in your serynge ?

Sébastien LUSTIG MD, PhD, Prof *

**Albert Trillat Center- Lyon, France*

"Happiest is the person who suffers the least pain…"



- Jean Jacques Rousseau

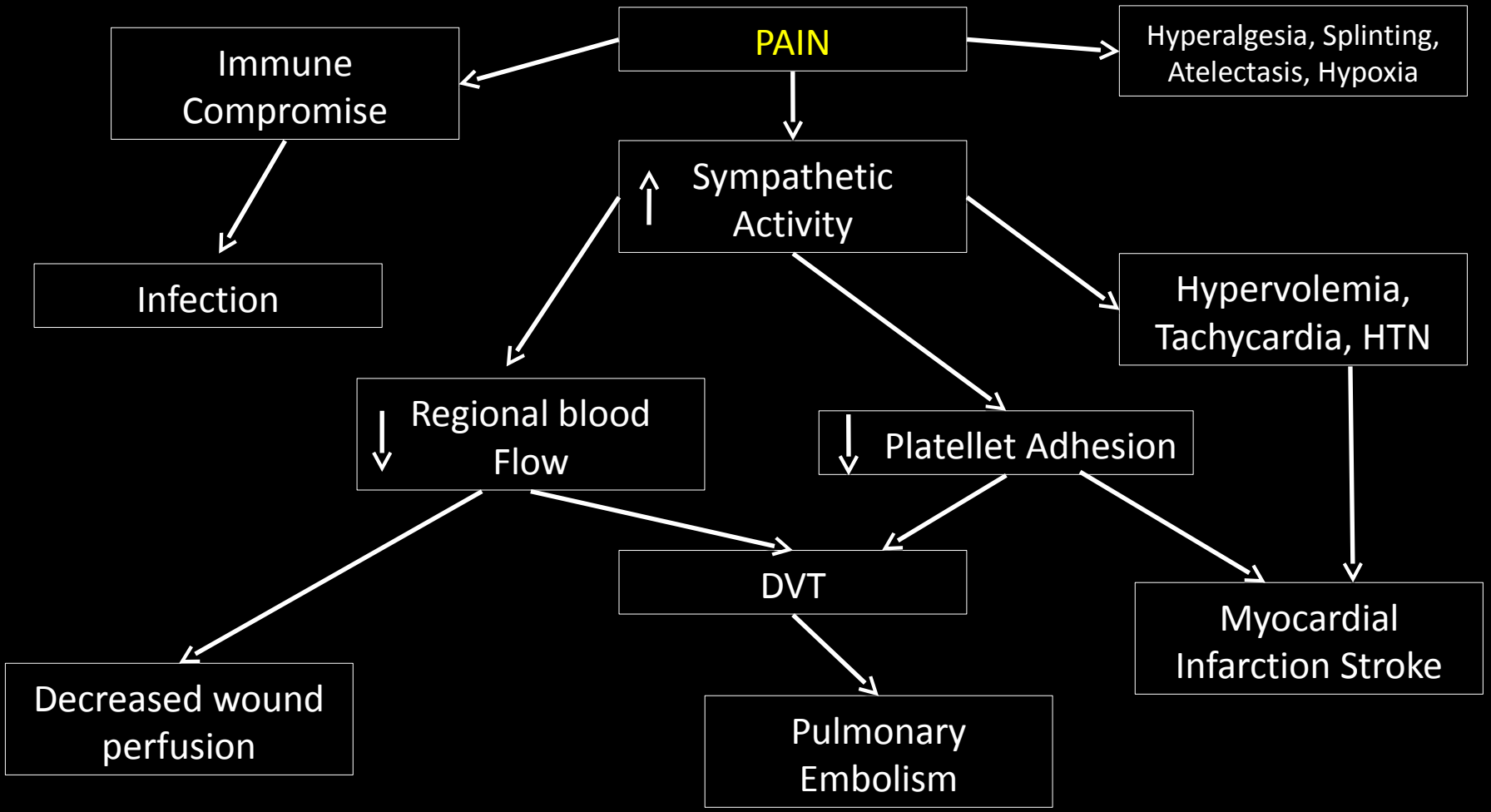
"The next great advancement in the practice of surgery will be improvements in post-operative pain management."

- C. S. Ranawat, MD
2004

Pain and Total Joint Arthroplasty

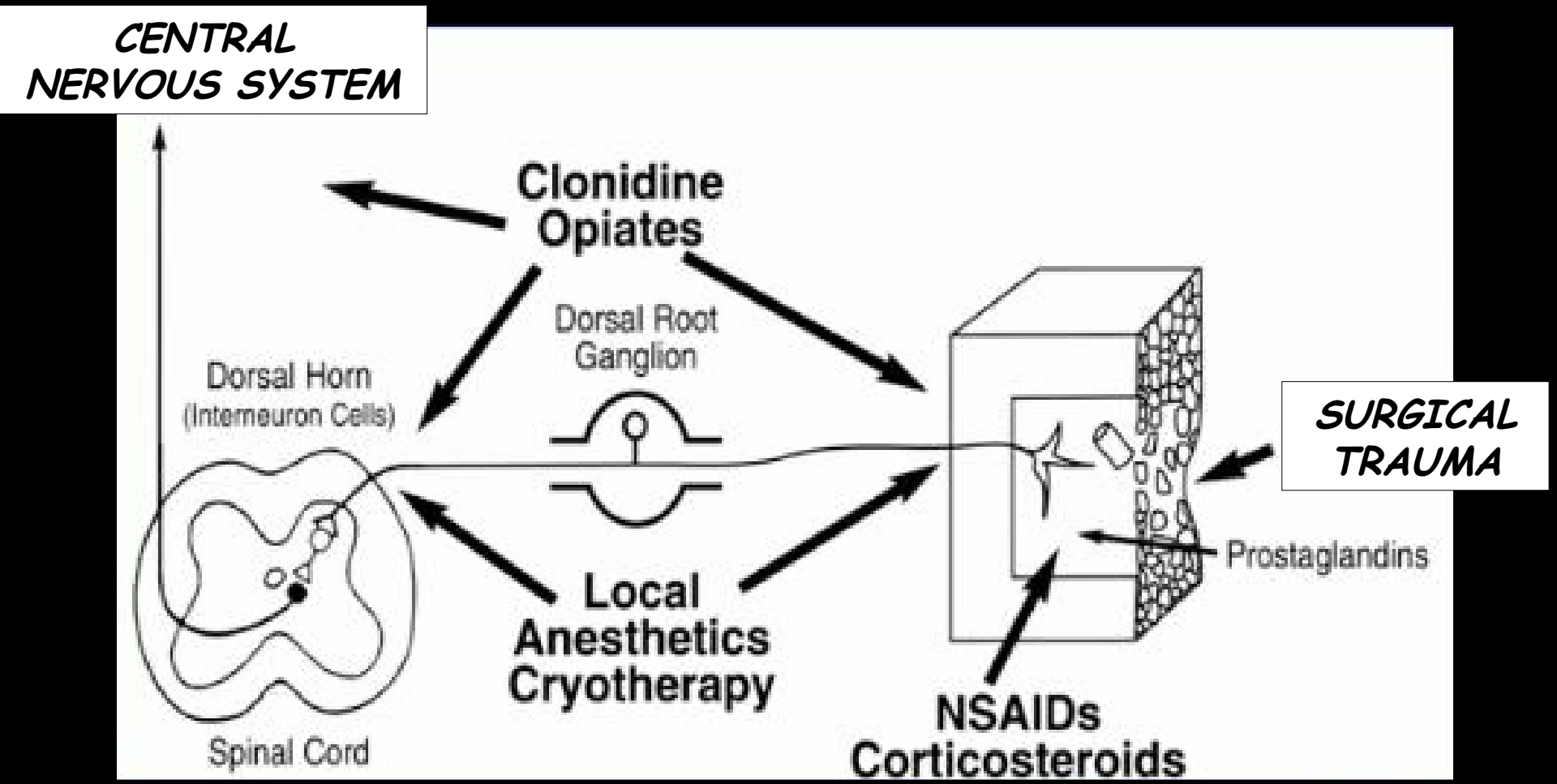
- « 5th vital sign »
- Most common reasons for fear/avoidance of TJA
- Definitive association for poor outcome after TJA

Harmful Effects of Poorly Controlled Surgical Pain



Courtesy of Ray Sinatra, MD ,PhD

A multimodal Approach Adresses the Complex Nature of Pain Transmission



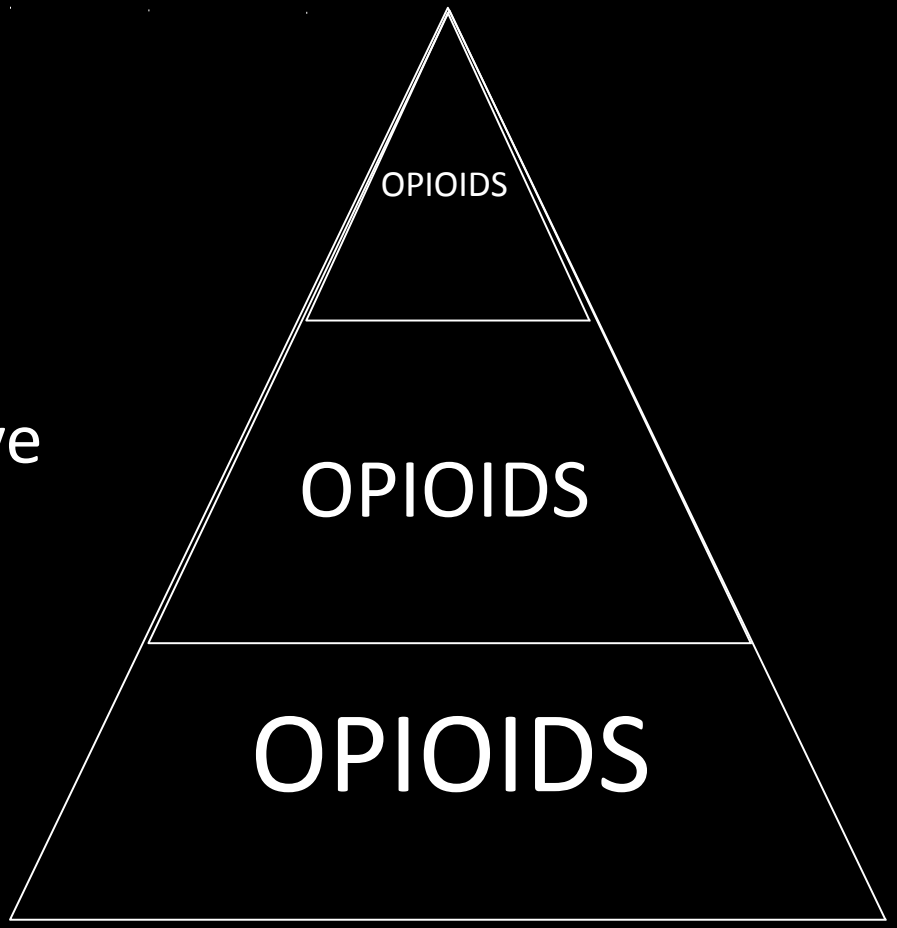
Pain Control

Most previous pain control methods were aimed to modify the pain pathway to the central nervous system

Morphine being the opiate of choice

Traditional Paradigm for Acute Pain Management

- If all else fails, try more opioids
- If that does not work give more opioid
- First try an opioid



Multimodal Pain Management

- Any effective post-operative pain control protocol for total joints should address all mechanisms.

- Therefore, a multimodal approach is logical.

Parvataneni HK, Ranawat CS et al. *J of Arthroplasty 2007*
Pagnano M et al. *AAOS 2006*
Vendittoli PA et al. *JBJS 2006*
Gan. *Spectrum of Pain 2004*
Skinner HB et al. *Am J Orthop 2004*

Multimodal Pain Management

- NSAID's (Celebrex)
- Tramadol
- IV Tylenol
- Oxycodone
- Lyrica
- Dexamethasone

- Peripheral nerve blocks

Good pain control Equals :

- If you get up and around quicker
  - Rapid Mobilization
- Lower risk of VTE
- Shorter Hospital Stay = Less infection Risk

PreOperative Pain Control

- Oxycodone (Oxycontin) 10mg
- Celecoxib 400 mg
- Gabapentin (Neurontin) 600 mg
- Tramadol (Ultram) 50 mg
- Clonodine Patch, 0,1 mg per 24hr 1 patch

- Select Patients :
  - Lyrica 75 mg PO
  - Dexamethasone 10mg IV x 1

Peripheral Nerve blocks and analgesia

- Paul et al. Anesthesiology 2010
  - Metanalysis of femoral nerve blockade
  - 23 Randomized studies
  - Single-Shot FNB and continuous FNB
    - Reduced opioid consumption (24 and 48h)
    - Superior to PCA alone

Nerve block concerns : Falls

- Give our patients conflicting informations
- Delayed Mobilization
  - Special protocols
  - Knee Immobilizers
- Fall risk
  - 2.6% (paper 374 AAOS 2015)

Number 1 complication after TKA

Nerve Blocks : Concerns

Rebound pain :

- unadressed pain

12% sequela of peripheral nerve blocks

Spangehi and Clark JOA

Contents lists available at SciVerse ScienceDirect

The Knee

Incidence and severity of complications due to femoral nerve blocks performed for knee surgery

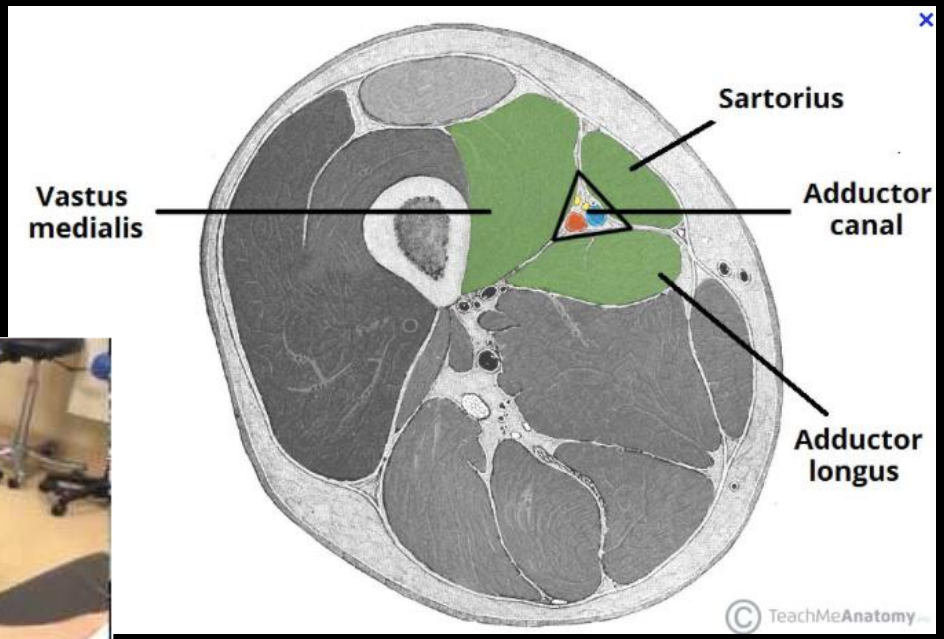
Benjamin Widmer [a], Sébastien Lustig [a,b,*], Corey J. Scholes [a], Allen Molloy [c], Sean P.M. Leo [a,d], Myles R.J. Coolican [a], David A. Parker [a]

[a] Sydney Orthopaedic Research Institute, Chatswood, NSW, Australia
[b] Albert Trillat Center, Lyon Nord University Hospital, Lyon, France
[c] Anesthesiology, Royal North Shore Hospital, St Leonards, NSW, Australia
[d] Singapore Armed Forces, Army Medical Services, Singapore

Adductor Canal Block

10 cm proximal to the patella

5% Bupivacaine 30 cc / US Technique



Periarticular injections : Data

Can a Periarticular Levobupivacaine Injection Reduce Postoperative Opiate Consumption During Primary Hip Arthroplasty?

Clinical Orthopaedics and Related Research®
A Publication of The Association of Bone and Joint Surgeons®

Terence P. Murphy MCh, Damien P. Byrne PhD,
Paul Curtin MCh, Joseph F. Baker MCh,
Kevin J. Mulhall FRCS (Tr and Orth)

Local Infiltration Analgesia for Postoperative Pain Control following Total Hip Arthroplasty: A Systematic Review

Denise McCarthy and Gabriella Iohom

Periarticular injections : Data

- Reduced Opioid consumption
- Reduced Post operative pain
- Improved early mobility

Peri-articular injections

Contents lists available at ScienceDirect

The Journal of Arthroplasty

journal homepage: www.arthroplastyjournal.org

Efficacy of Multimodal Perioperative Analgesia Protocol With Periarticular Medication Injection in Total Knee Arthroplasty: A Randomized, Double-Blinded Study

Todd C. Kelley, MD [a], Mary Jo Adams, BSN [b], Brian D. Mulliken, MD [b], David F. Dalury, MD [b]

[a] Department of Orthopaedics, University of Cincinnati, Cincinnati, Ohio
[b] Towson Orthopaedic Associates, Towson, Maryland

ARTICLE INFO

Article history:
Received 27 December 2012
Accepted 14 March 2013

Keywords:
total knee arthroplasty
multimodal pain management
periarticular injection
outcomes
ketorolac
clonidine

ABSTRACT

Pain control is necessary for successful rehabilitation and outcome after total knee arthroplasty. Our goal was to compare the clinical efficacy of periarticular injections consisting of a long-acting local anesthetic (ropivacaine) and epinephrine with and without combinations of an α2-adrenergic agonist (clonidine) and/or a nonsteroidal anti-inflammatory agent (ketorolac). In a double-blinded controlled study, we randomized 160 patients undergoing total knee arthroplasty to receive 1 of 4 intraoperative periarticular injections: Group A, ropivacaine, epinephrine, ketorolac, and clonidine; Group B, ropivacaine, epinephrine, and ketorolac; Group C, ropivacaine, epinephrine, and clonidine; Group D (control), ropivacaine and epinephrine. Compared with Group D, Group A and B patients had significantly lower postoperative visual analog pain scores and nurse pain assessment and Group C patients had a significantly greater reduction in physical therapist pain assessment. We found no differences in other parameters analyzed.

Improved VAS scores and nursing assessment scores

Peri-articular injections

Different mixtures could be used :

I. 0.25% Bupivacaine with Epinephrine 30ml + Ketorolac 30mg (1ml) + Morphine 10mg (1ml)

II. Ropivacaine 180 mg (24mL) + Morphine 5 mg (5mL) + Ketorolac 30 mg (1mL) + 0.9% Normal Saline (30ml)

III. Ropivacaine 5mg (49.25mL) + Epinephrine 1mg (0.5mL) + Ketorolac 30mg (1mL) + Clonidine 1mg (0.08mg to 0.8mL)

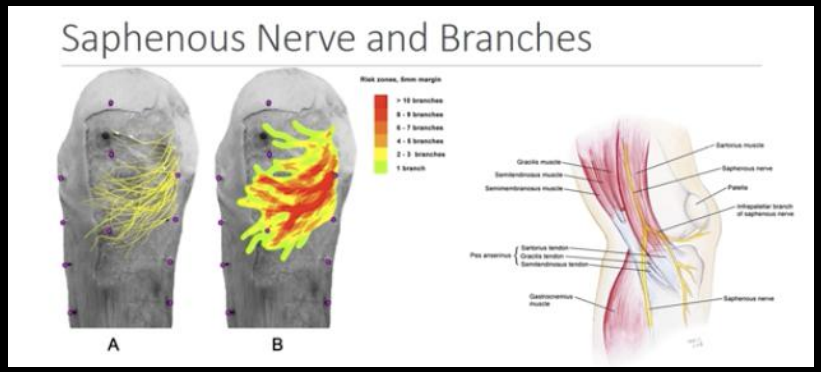
Ropivaine : less cardio toxic
Volume is important

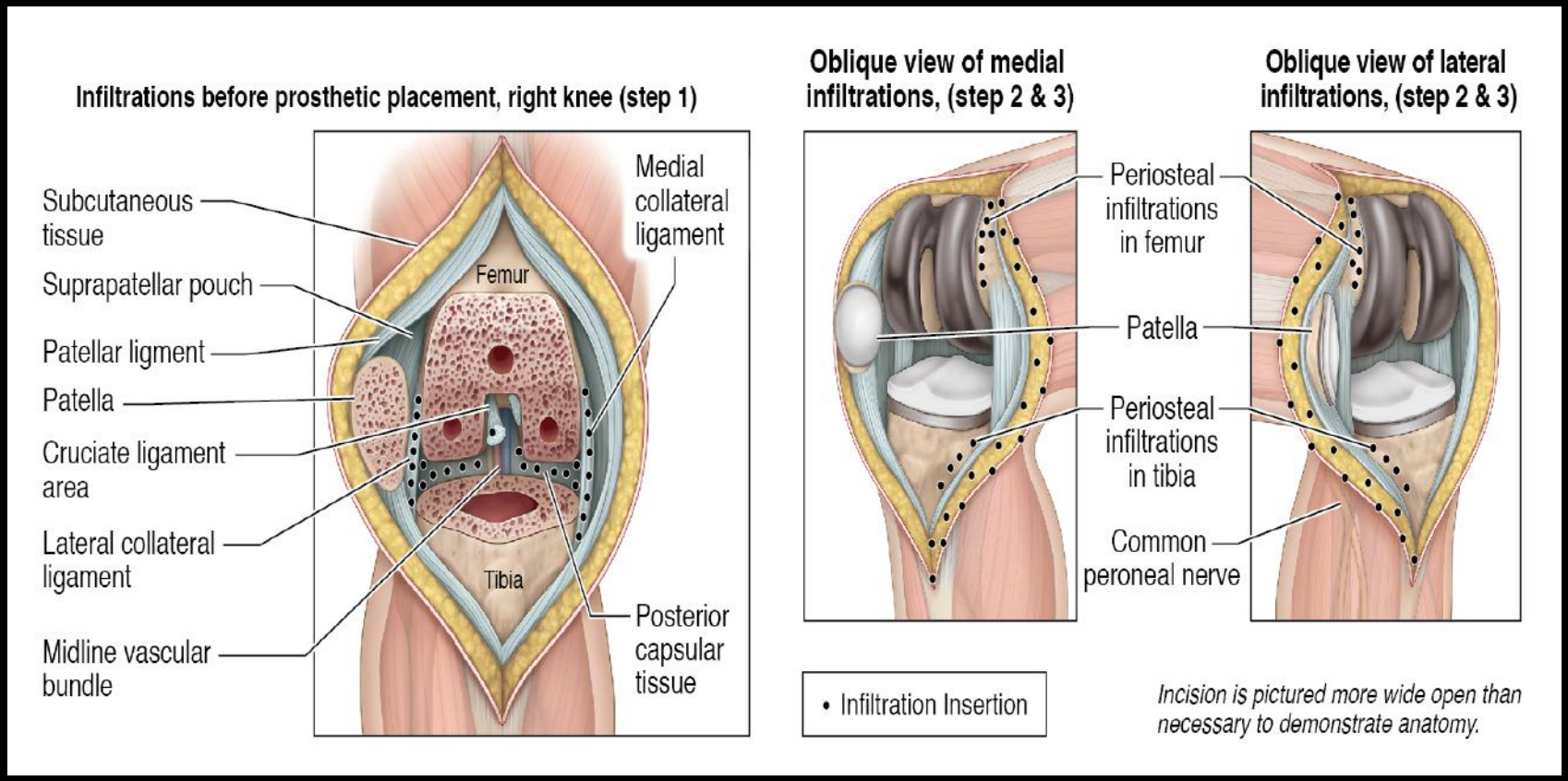
The Ranawat Orthopaedic Cocktail (ROC)

1) **M** arcaine 0.5% (5mg/cc)	200-400 mg
2) **M** orphine Sulphate (8mg)	0.8cc
3) **A** drenaline (Epi) 1/1000 (300 µgm)	0.3cc
4) **A** ntibiotic (Zinacef)	750mg
5) **C** orticosteroids (Depo)	40mg
6) Normal Saline	22cc
7) **C** lonidine patch	100µg

No steroids in diabetics, immunocompromised, age > 80 yrs.
Maximum marcaine dose 400mg/day

Multiple injections are needeeds

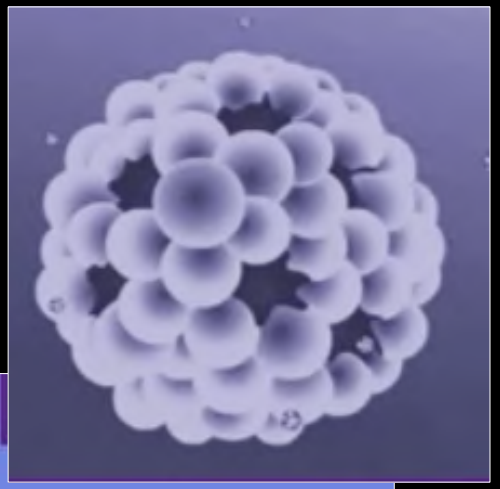


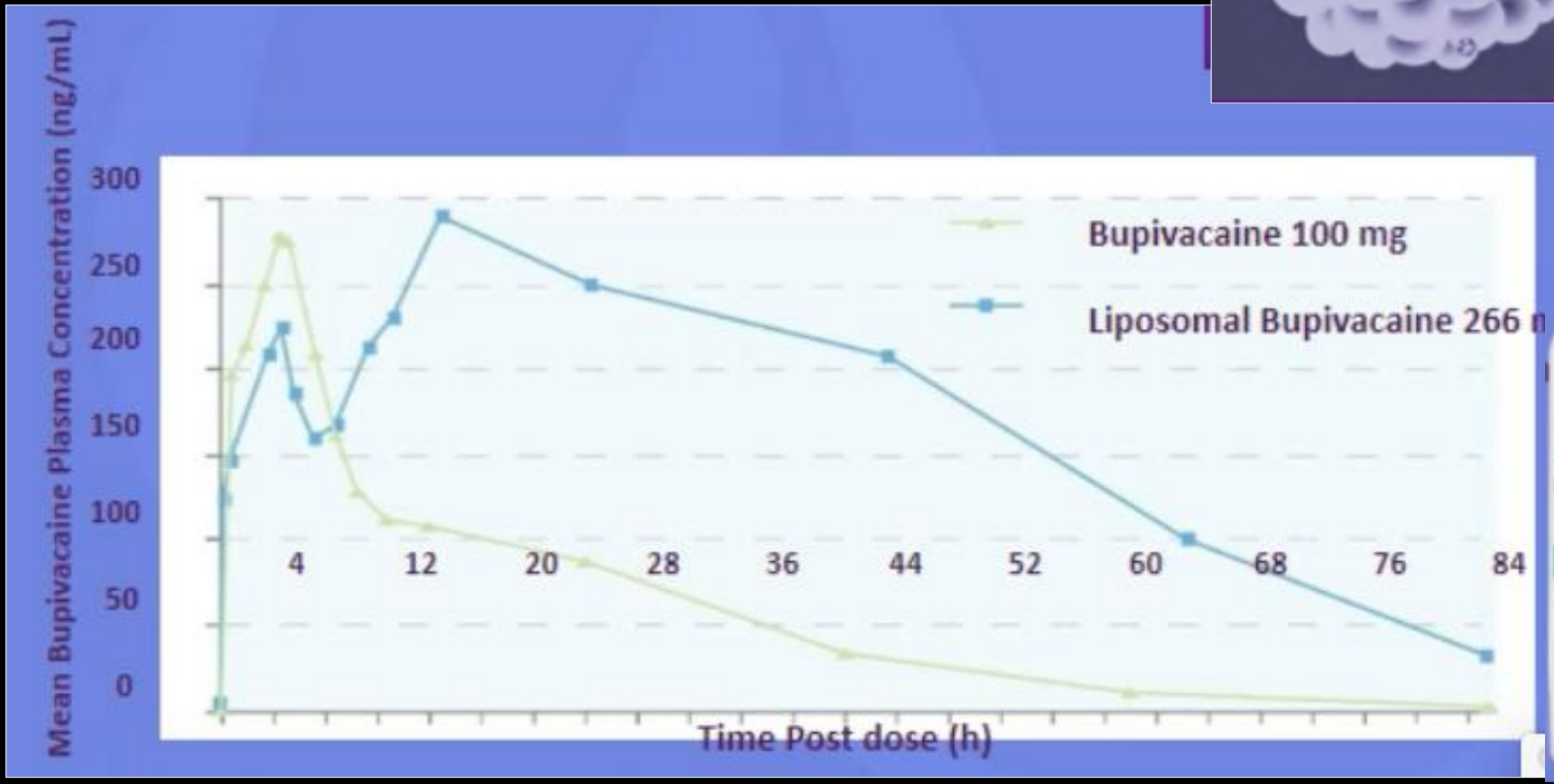


Locations of Knee Injection

- ***Prior to trial components*** :
  - Posterior capsule
  - Posteromedial structures
- ***After cementation :***
  - Extensor mechanism
  - Synovium, capsule
  - Pes Anserinus, anteromedial capsule and periosteum
  - Iliotibial band
  - Collateral ligaments and origins

Liposomal Bupivacaine





Preoperative pain control – Nerve blocks - Periarticular injection – Post operative pain control

Contents lists available at ScienceDirect

The Journal of Arthroplasty

journal homepage: www.arthroplastyjournal.org

The Use of Exparel (Liposomal Bupivacaine) to Manage Postoperative Pain in Unilateral Total Knee Arthroplasty Patients

Jonathan W. Surdam, MD, David J. Licini, MD, Nathan T. Baynes, PA-C, Britney R. Arce, BSN, RN, CRRN

Department of Orthopedics, Indiana University Health Bloomington, Bloomington, Indiana

ABSTRACT

Efforts continue to improve pain after total knee arthroplasty (TKA) in order to allow for accelerated rehabilitation. The purpose of this study was to evaluate pain control after TKA. A randomized prospective study of 80 consecutive patients was performed comparing Exparel versus femoral nerve block (FNB). Inpatient pain control was the primary outcome. Secondar
vomiting, narcotic consumption, a
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FNB group had greater flexion but
provided similar pain relief to a Fl

Liposomal Bupivacaine Versus Traditional Periarticular Injection for Pain Control After Total Knee Arthroplasty

Deren T. Bagsby, MD, Phillip H. Ireland, MD, R. Michael Meneghini, MD

Department of Orthopaedic Surgery, Indiana University Health Physicians, Indiana University School of Medicine, Indianapolis, Indiana

Does Extended-release Liposomal Bupivacaine Better Control Postoperative Knee Pain than Bupivacaine?

William C. Schroer, MD, Paul Diesfeld, PA-C, Angela LeMarr, RN, Diane J. Morton, MS, Mary Reedy, RN

Peri-articular Injection Following Tka Using Liposomal Bupivacaine Versus a Modified Ranawat Suspension: A Prospective Randomized Study

Multimodal Post-op Pain Control

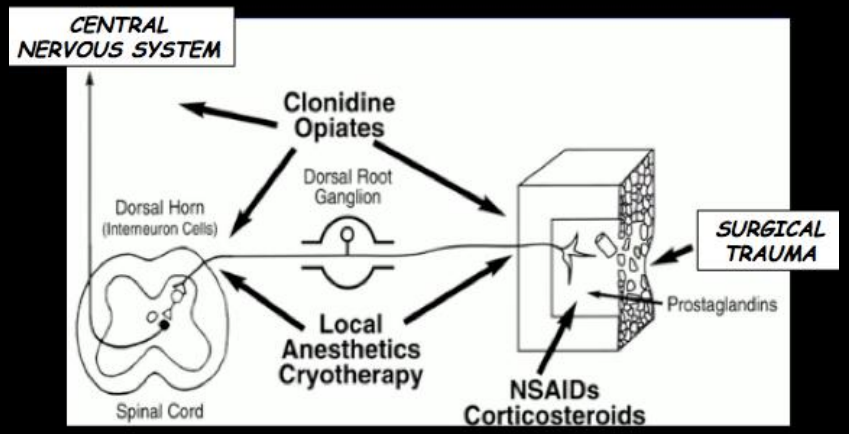
- Celecoxib (Celebrex) 200mg/Daily
- Omeprazole (Prilosec) 40mg/Daily
- Tramadol (Ultram) 50 mg/q 6h
- Oxycodone CR (Oxycontin) 10 mg/Daily
- Acetaminophen (Tylenol) 650 mg/q 6h
- Dexamethasone (Decadron) 10mg (PACU and 1st POD)

Conclusion

Multimodal pain management

**Preoperative pain control*
**Nerve blocks*
**Periarticular injection*
- *ropi/ Bupi*
- *Epinephrine*
- *Ketorolac*
- *Morphine / CLonidine*

**Post operative pain control*



Thank You

sebastien.lustig@gmail.com