



PRACTICAL ISSUES ON LOWER LIMB REGIONAL ANAESTHESIA (IN COLLABORATION WITH SIGRA, MALAYSIA)

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Upper Limb Block



Lower Limb Block



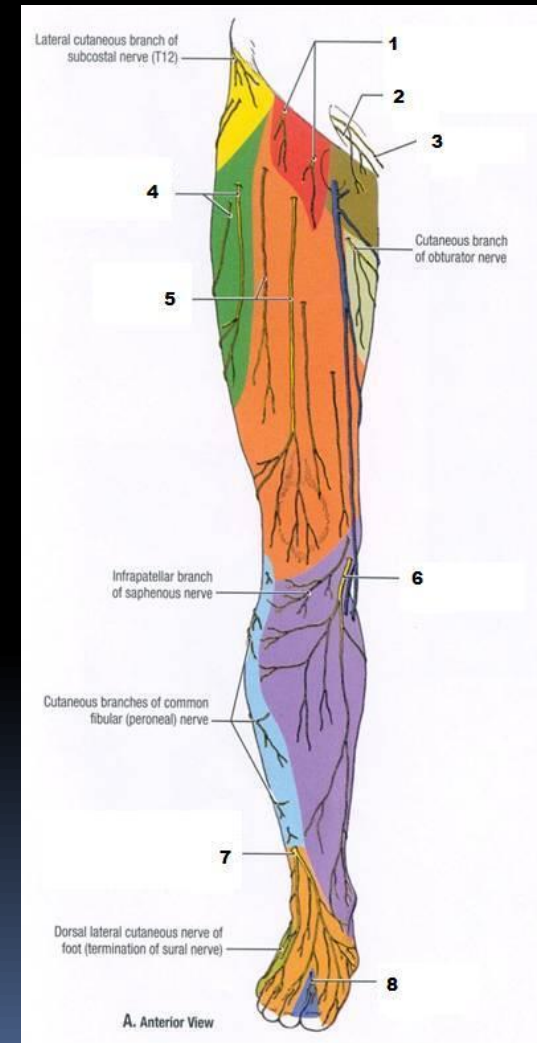
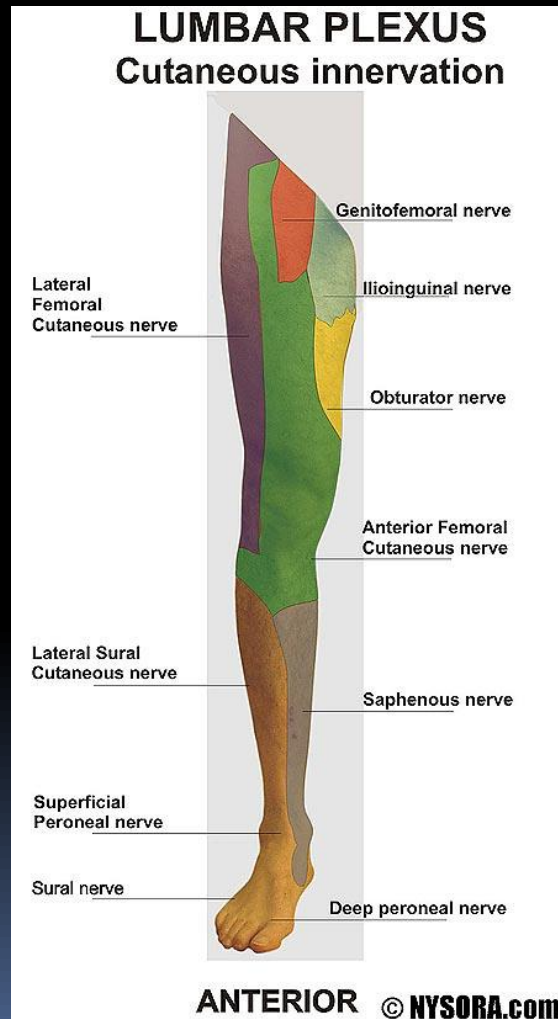


Quick Review on The Lower Limb Anatomy



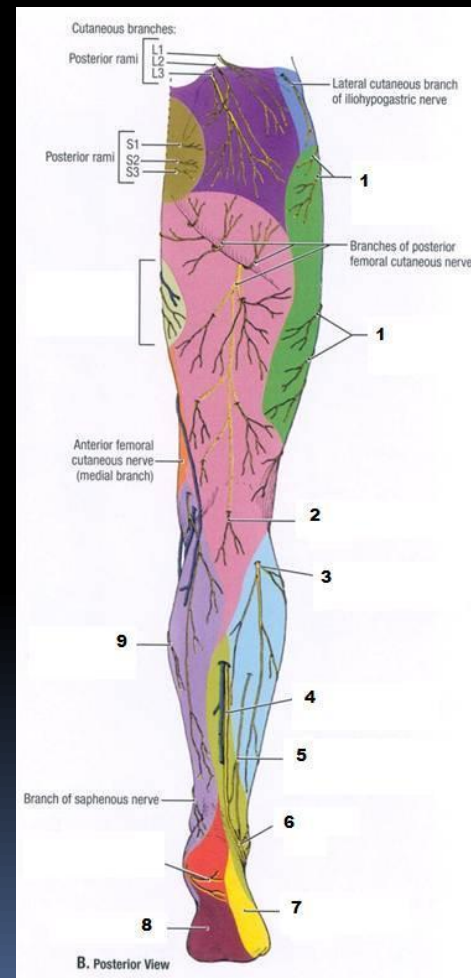
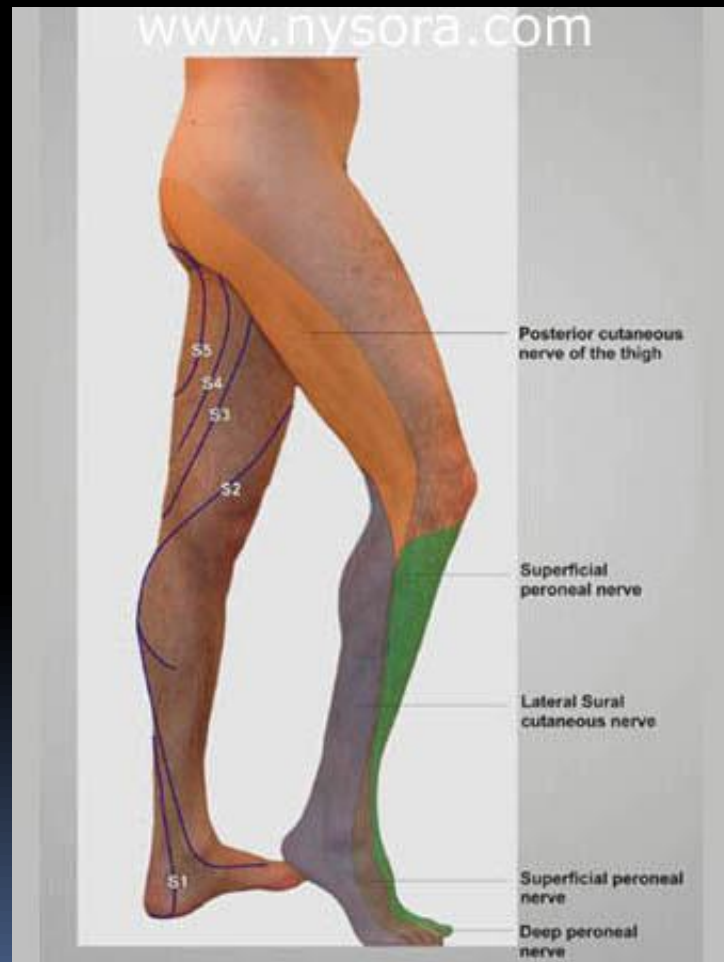
Cutaneous Innervation

Lumbar Plexus



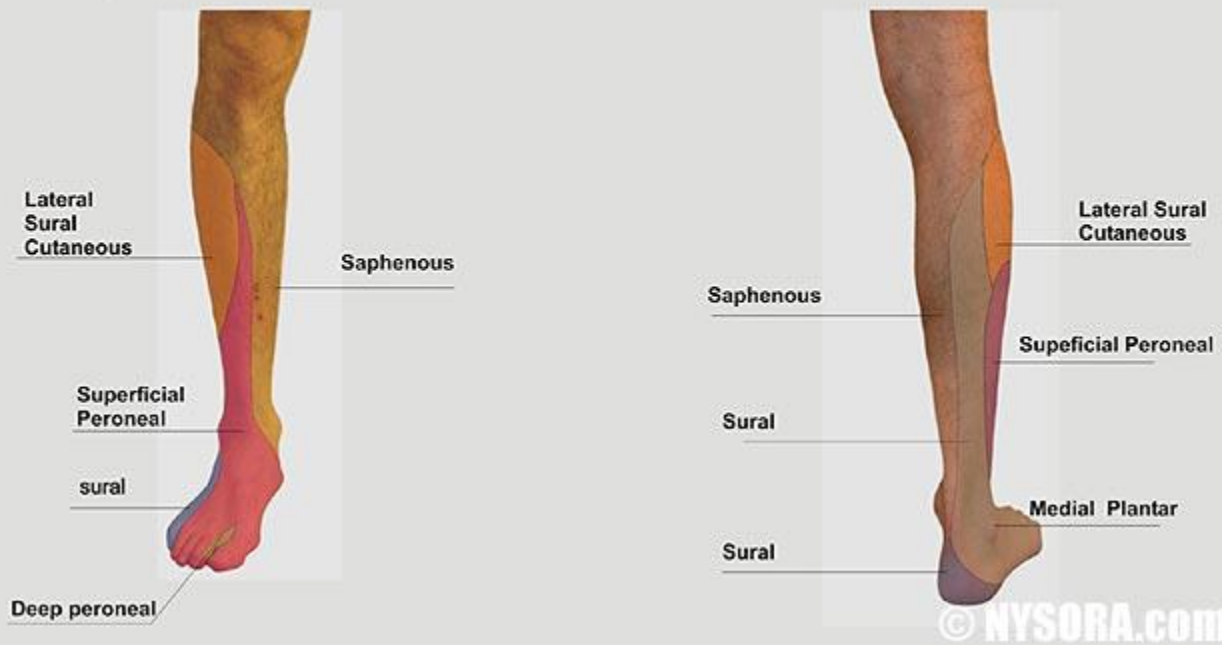


Sacral Plexus

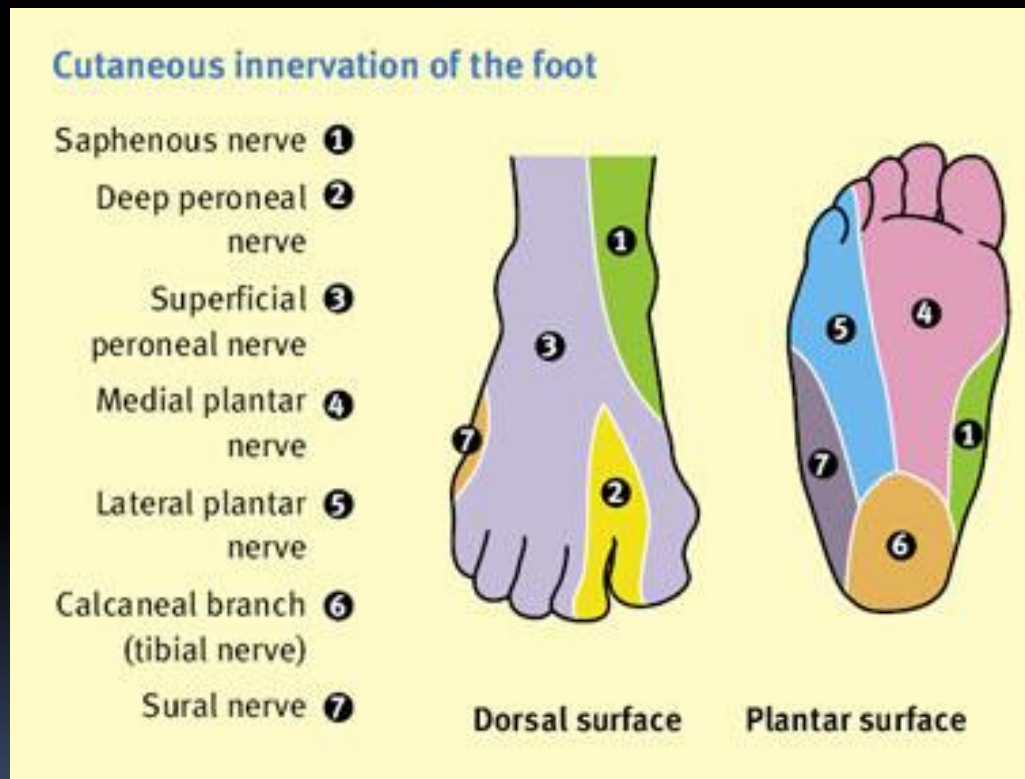


Popliteal Block

Popliteal Block: Distribution of Anesthesia



Cutaneous Innervation of the Foot





Innervation of The Joint

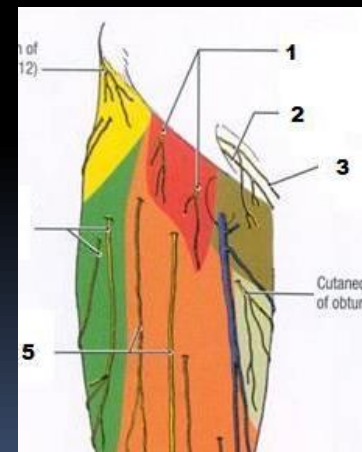
Innervation Of The Hip

Hip Joint

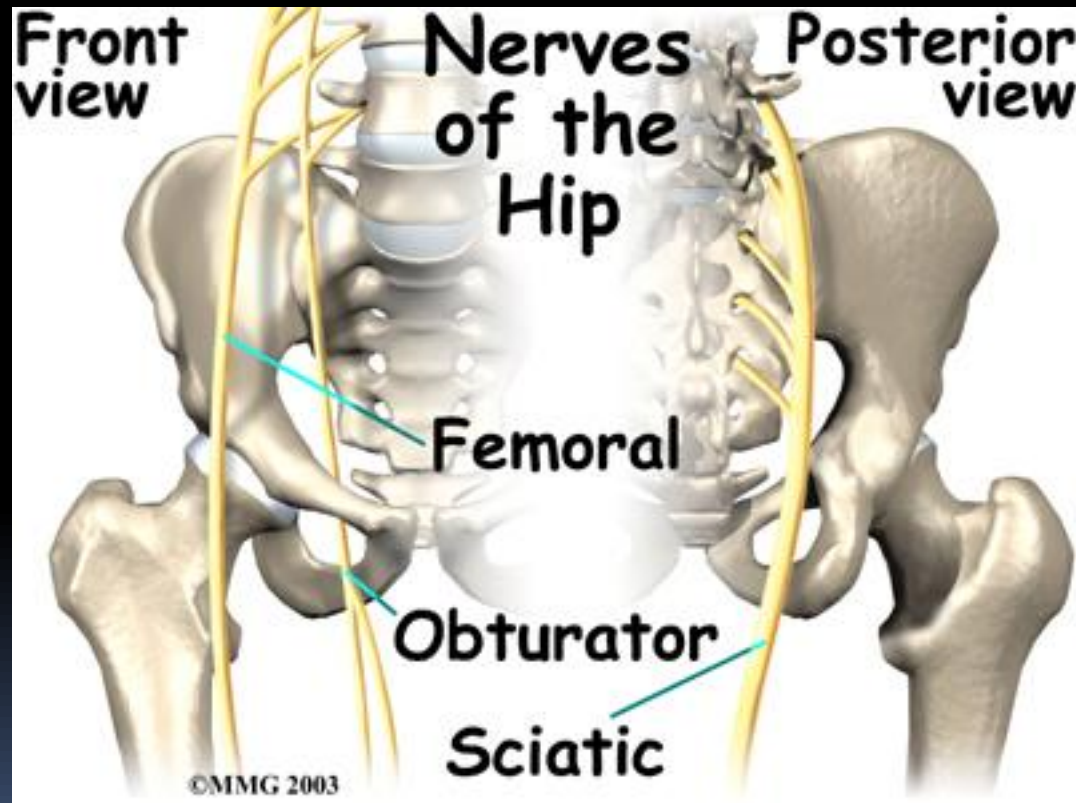
1. Femoral nerve (nerve to the rectus femoris)
2. Sciatic nerve (nerve to quadratus femoris)
3. Obturator nerve (anterior division)

Cutaneous innervation

1. LFCN
2. Subcostal nerve (T12)



Nerve To The Hip Joint



Innervation Of The Knee

Knee Joint

1. 60% from the femoral nerve (br. to vastus medialis), → anterior aspect of the joint capsule
2. 25% from the sciatic nerve (genicular br of both the tibial and common peroneal component), → posterior aspect of the joint capsule and the intraarticular structures
3. 15% from the obturator nerve(br from its posterior division

Cutaneous Innervation

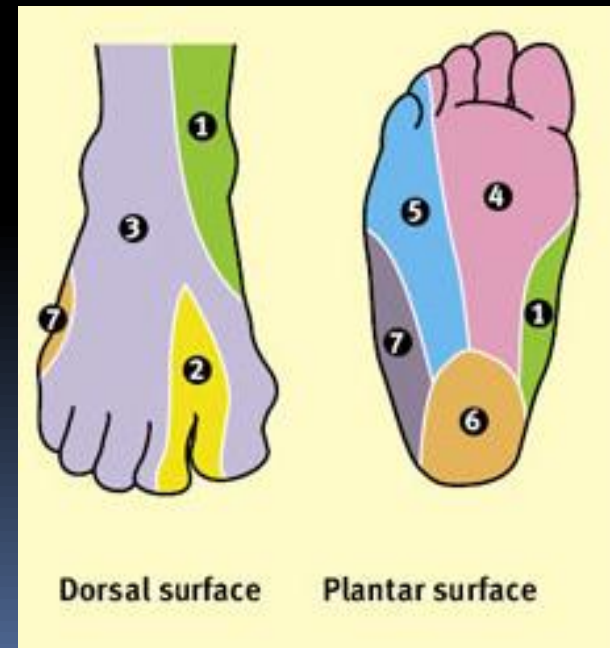
1. Femoral nerve → anterior aspect of the knee
2. Obturator nerve→ medial aspect of the knee in < 40% of the population.



Innervation Of The Ankle Joint & The Foot

- Almost entirely by Sciatic nerve
- except the skin of the medial aspect

(saphenous nerve)



Commonly asked Q: Which nerve to block?





Foot Surgery

- Ankle block
- Especially surgery of the distal half of the foot.



Foot Surgery

Ankle Block

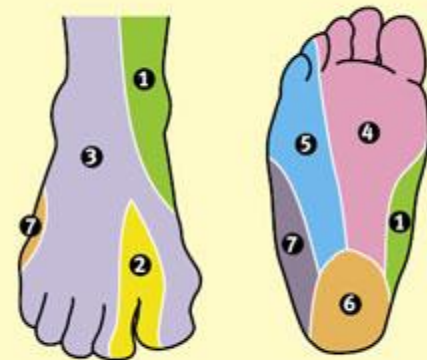
- 5 nerves to block

1. Saphenous nerve (femoral nerve)
2. Superficial peroneal nerve
3. Deep peroneal nerve
4. Sural nerve
5. Posterior tibial nerve

Sciatic nerve

Cutaneous innervation of the foot

- Saphenous nerve ①
- Deep peroneal nerve ②
- Superficial peroneal nerve ③
- Medial plantar nerve ④
- Lateral plantar nerve ⑤
- Calcaneal branch (tibial nerve) ⑥
- Sural nerve ⑦

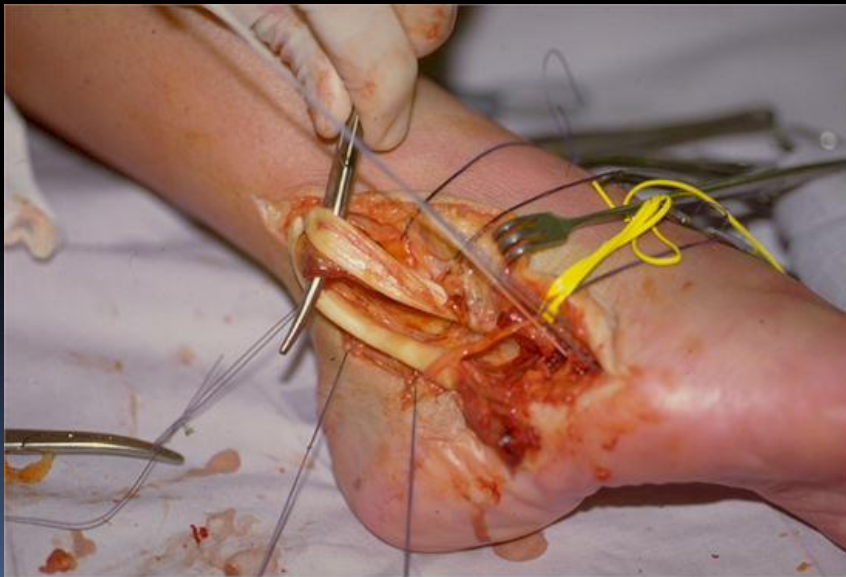


Dorsal surface

Plantar surface

Ankle Joint & Below Knee Surgery

Ankle Surgery



BKA





Ankle Joint & Below Knee Surgery

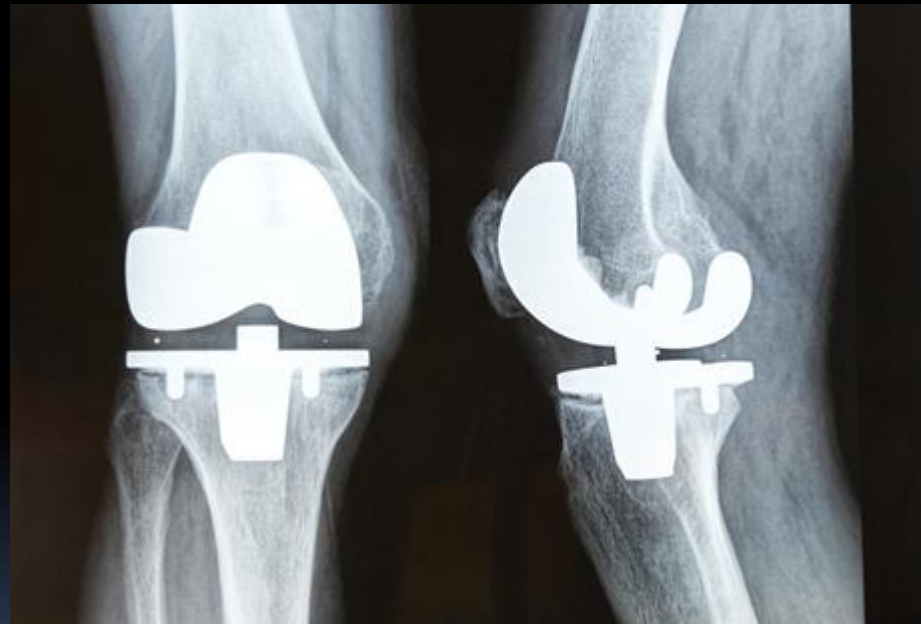
Without Tourniquet

- 1) Popliteal Block &
- 2) Saphenous nerve block at the knee

With Tourniquet

- 1) Sciatic nerve block at the subgluteal region or above
- 2) Femoral nerve block

Knee Surgery





Knee Surgery

Surgical Anaesthesia

1. Femoral nerve block (continuous)
2. Sciatic nerve block
3. Obturator nerve block

Tourniquet pain

1. Plus LFCN block
2. Posterior cutaneous nerve of the thigh (the sciatic nerve block has to be at least at the subgluteal region or above.)



Knee Surgery

Alternative block

1. Lumbar Plexus block
2. Sciatic nerve block

Knee Surgery

(short case)

- 105 year , fragile, multiple medical problem
- Soft tissue tumour at the medial aspect of the right knee
- For excision of tumour
- Block:
 1. Femoral nerve
 2. Sciatic nerve
 3. Obturator nerve





Thigh Surgery

(eg:AKA)


1. Lumbar plexus block
2. Sacral plexus block

If Lumbar plexus block is contraindicated:

1. LFCN block
2. Femoral nerve block
3. Obturator nerve block
4. Parasacral sciatic nerve block.(to cover the PCN)

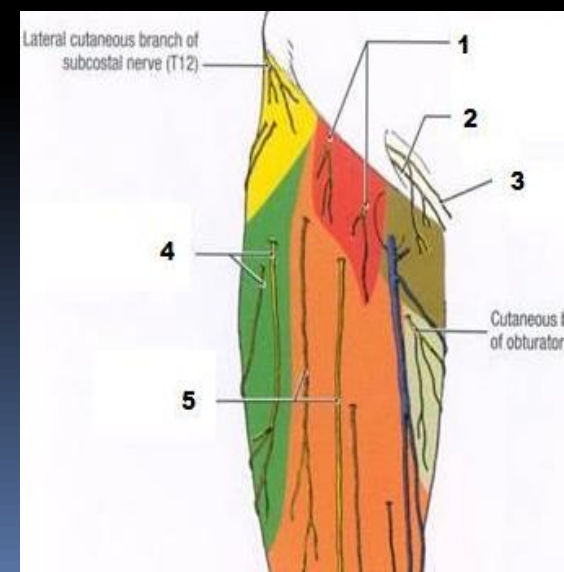


Hip Surgery

1. Lumbar Plexus block
 2. Parasacral sciatic nerve block (Mansour or Labat's approach)
 3. Iliac crest block (subcostal nerve T₁₂ block)
 4. + good sedation
- 



Iliac Crest Block (T12)





Hip Surgery

Case 1

- 83 yr lady
- #NOF, left
- Pmh: old MI(3VD), DM, HTN
- ope: Bipolar Hemiarthroplasty
- RA:
 1. Continuous Lumbar Plexus Block --25ml LA
 2. Sciatic nerve block (Labat's) --20ml LA
 3. Iliac crest block --10ml LA

(total 55ml of 0.375% Ropivacaine)



Hip Surgery

Case 2

- 67 yr lady
 - pmHx: AF, CAD, severe MS(0.6cm²)
 - Ope: THR
- RA:
 1. Lumbar plexus block – 25ml LA
 2. Sciatic nerve block – 20ml LA
 3. Iliac crest block – 10ml LA
(total 55ml 0.375% Ropivacaine)



Hip Surgery under PNB

Disadvantages:

- Failure rate : 7%
 - Incomplete block: 20%
- complex innervation of the hip



Planning The Dose And Volume Of LA

**Never exceed
the maximum
recommended
dose!**






Planning The Dose And Volume Of LA

The maximum recommended dose:

- Bupivacaine: 2.0-2.5mg/kg, no added value by adding adrenaline
- Ropivacaine: 3-4mg/kg
- Levobupivacaine: 2.0-2.5mg/kg, (inadequate data)
(the above doses should not be repeated within 12 hour)
- Lignocaine: 4mg/kg; 7mg/kg when adrenaline is added.



Planning The Dose And Volume Of LA

- If large doses of LA are used, it is safer to use ropivacaine or levobupivacaine.
 - There is little clinical advantage in mixing LA.
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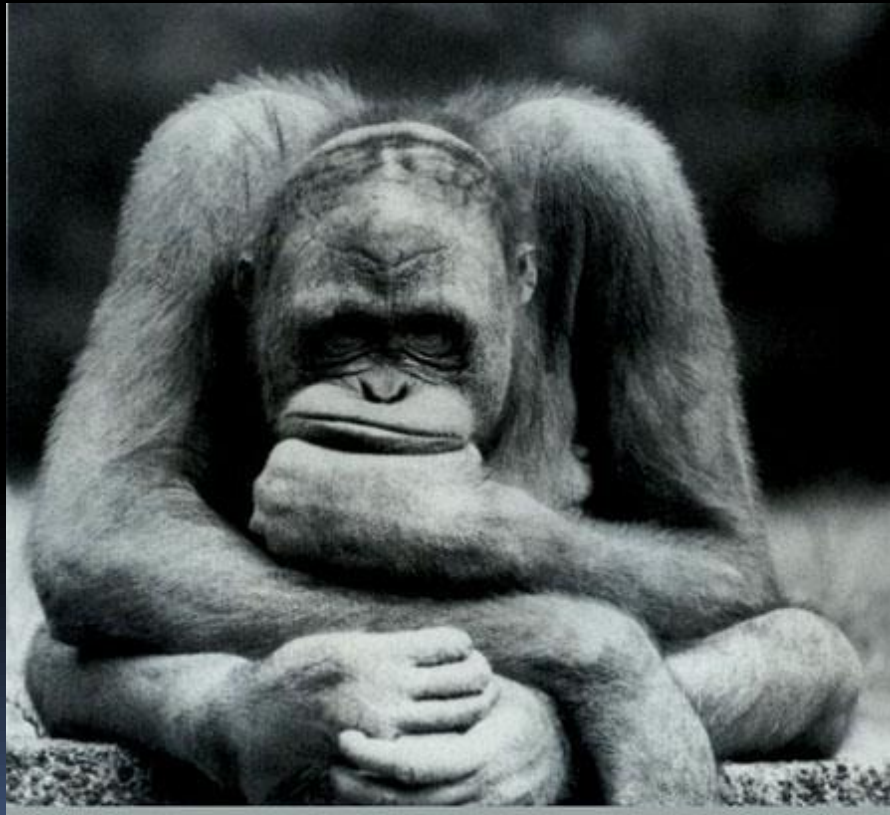
Planning The Dose And Volume Of LA (eg:AKA under PNB)

1. Sciatic nerve block —20ml
2. Femoral nerve block —15ml
3. LFCN --- 5ml
4. Obturator nerve block—10ml

=> 50ml of 0.375% Ropivacaine =187.5 mg.

Planning The Dose And Volume Of LA

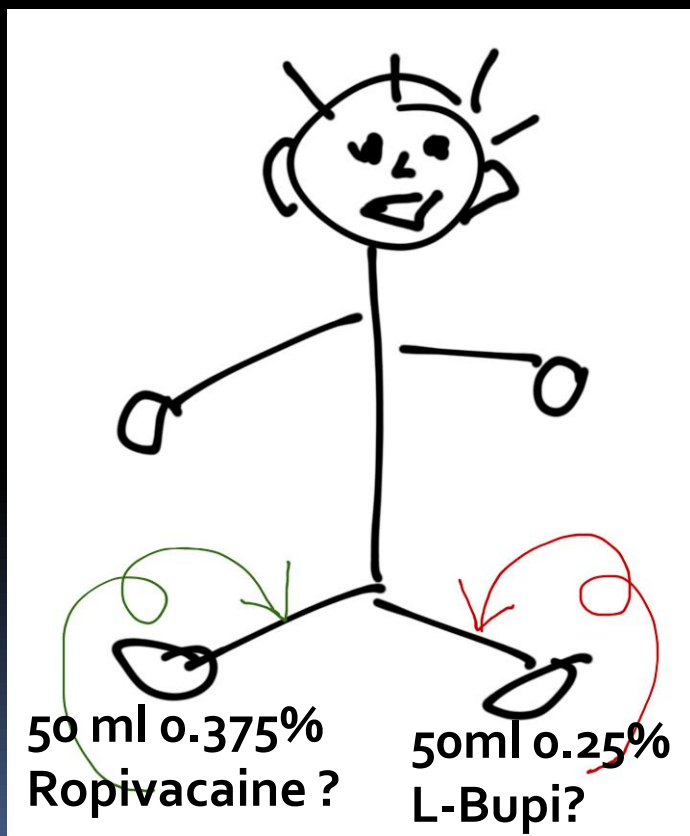
B/L AKA under PNB ?!???



Oh what to do, what to doooo?



Planning The Dose And Volume Of LA – B/L AKA





B/L AKA under PNB

- One leg at a time
- At least 12 hour apart



Why PNB ?



Advantages of PNB

1. Unilateral block
2. Less hypotension
3. No urinary retention
4. No worry of spinal haematoma
5. Avoidance of GA in high risk group
6. Stable intraoperative condition (CVS)
7. Provide perioperative & postoperative pain relief
8. Avoid PONV
9. Reduce risk of DVT / thromboembolism
10. Avoidance of opioid
11. Provide preoperative pain control
12. Less ileus



Advantages of PNB

- 13) Early mobilization /
physiotherapy
- 14) Less delirium & cognitive
impairment post op.
- 15) Maintain respiratory
function better
- 16) Patients can give feedback
intraoperatively (cold,
pressure point,
hypoglycaemia, fluid
overload)



Disadvantages of PNB

1. Time consuming
2. Failure rate is 5% even in best hand
3. Lack of skill & training
4. L.A toxicity (0.01%)
5. Allergic to L.A (preservative)
6. Nerve injury (0-5%)
- 7) Severe nerve injury 0.4%
- 8) Infection:
 - localised inflammation 0-13.7%
 - local infection 0-3.2%
 - abscess formation 0-0.9%

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A black and white photograph of two men sitting on a beach, holding a large fish. The man on the left is wearing a wide-brimmed hat and sunglasses. The man on the right is wearing sunglasses. The fish is large and dark, with a prominent dorsal fin. The background shows the ocean and a clear sky.

Thank You !

(in collaboration with SIGRA, Malaysia)

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