Comparison of ultrasound guided continuous transmuscular quadratus lumborum block with ultrasound guided continuous psoas compartment block for total hip arthroplasty – a randomised controlled trial

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Background and Aims:

- Transmuscular quadratus lumborum block (QLB) may be used as an alternative to psoas compartment block (PCB) for providing analgesia in patients undergoing unilateral, total hip arthroplasty (THA) under general anesthesia (GA).¹⁻³

Primary objectives

- Comparison of visual analogue pain scales (VAS) (0-100) at rest & mobilization (walking) at 6hr postoperatively

Secondary objectives:

- Time needed to perform either block
- Sensory dermatomes blocked & motor weakness 30 min post block
- VAS at rest and movement every 15 min for 2 hr, 4, 12 and 24 hr postoperatively
- Perioperative fentanyl consumption
- Complications ~ bruising, hematoma, hypotension
- Quality of Recovery score 24 hours post operatively

Methods

- Randomised, parallel design, observer blinded trial
- Consenting, 18-70 year old, ASA I-III patients → unilateral, posterior total hip arthroplasty under GA
- Patients turned to lateral position, prepped & draped
- USG QLB: needle tip directed between QL and psoas³
- USG PCB: Needle tip directed to lumbar plexus, confirmed by quadriceps twitch
- Drug: 0.25% ropivacaine: 0.4ml/kg bolus
- GA administered and 0.1ml/kg/hr ropivacaine infusion given for 24hr
- Supplemental analgesia administered by blinded anaesthesiologist*
- Blinded postoperative nurse assessed VAS**

*Intraoperative ↑ MAP/ HR > 20% above post-induction values
0.5mcg/kg IV fentanyl

**Postoperative VAS>3
PCA fentanyl
Rescue with 3mg morphine

Results

Screened=88
Excluded (n=25)
Inclusion criteria not met (n=5)
Declined to participate (n=12)
Logistic reasons (n=8)

Allocated to PCB (n=31)
Could not receive PCB (logistics) (n=2)
Included: 29
Analysed ITT: 29, PP: 24

Allocated to QLB (n=32)
Could not receive QLB (logistics) (n=2)
Included: 30
Analysed ITT: 30, PP: 26

Demographic Parameter	PCB group (n=29)	QLB group (n=30)	P value
Age (year) (mean ± SD)	42.2±15.9	39.3±16.3	0.70
Weight (kg) (mean ± SD)	60.1±12.07	62.4±11.7	0.73
Primary/Revision THA(n)	25/4	26/4	1.0
Duration of surgery (min) (mean ± SD)	70.51±28.51	82.66±44.40	0.21
Anaesthesia time (min) (mean ± SD)	105.51±31.88	113.16±44.34	0.45

Secondary Outcomes	PCB	QLB	P value
Time for block (min) (median - range)	30 (15-150)	20 (10-40)	0.0001
Sensory dermatomes blocked (%patients) ⁴	L1, L2, L3 96.6, 100, 89.7	T12, L1, L2 86.7, 63.3, 30	<0.05
Motor power 5/4/3/2 (%patients)	62/13.5/20.7/3.5	100/0/0/0	0.003
Total fentanyl (mcgs)	635 (100-1645)	1212.5 (300-2345)	0.0004
Rescue - morphine bolus [n (%)]	1 (3.44%)	7 (23.33%)	0.052
QoR 24 hours	15.72±1.96	13.83±2.82	0.002
Complications	None	None	NS

Conclusion

USG continuous QLB was found to be non-inferior to USG continuous PCB in patients undergoing THA under GA, but pain scores may have been affected by the significantly increased total perioperative consumption of fentanyl in the QLB group.

References

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2. Capdevila et al. Anesth Analg. 2002:1606-13.
3. Børglum et al. Br J Anaesth. 2013. Source: <http://bja.oxfordjournal>
4. Dam et al. Anesth Analg 2017: 303–12.