Continuous Transmuscular Quadratus Lumborum Block and Femoral Nerve Block for Total Hip Arthroplasty: A Randomized Controlled Study

POSTOPERATIVE PAIN MANAGEMENT

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INTRODUCTION & OBJECTIVE

- Continuous femoral nerve block (FNB) has been effectively used after total hip arthroplasty (THA).
- Recently, transmuscular quadratus lumborum block (QLB) has been introduced to produce postoperative pain relief after THA.
- Continuous QLB would benefit from the catheter insertion site that is farther away from the surgical site compared with FNB.
- No studies have compared analgesic effects of continuous QLB and FNB.
- In this randomized controlled study, we compared the two techniques in patients undergoing THA.

METHODS

A prospective randomized controlled study (UMIN 000028928).
Thirty patients (20-85 years, ASA-PS 1-3) scheduled for unilateral THA under general anesthesia were enrolled.

Study groups:

Group Q, QLB (in-line technique) **0.25% levobupivacaine 30 ml**

Group F, FNB (short axis view, out-of-plane technique) **0.5% levobupivacaine 15 ml**

All patients received continuous infusion of 0.125% levobupivacaine 4 ml/h (bolus of 3 ml for PCA) postoperatively .

Ultrasound image of QLB
LDM, latissimus dorsi muscle
QLM, quadratus lumborum muscle
PMM, psoas major muscle
LP, lumbar plexus
ESM, erector spinae muscles
Red arrow, needle pass

Measurements: VAS pain scores, cutaneous sensory blockade, demands for analgesics, and motor strength of the thigh and adverse events for 48 h.

RESULTS

Patient flow diagram

Demographic

	Group Q (n=13)	Group F (n=11)
Gender (male/female), n	2 / 11	3 / 8
Age, yr	70 ± 9	67 ± 11
Height, cm	152 ± 6	156 ± 6
Body weight, kg	53 ± 7	55 ± 7
BMI, kg/m ²	23 ± 3	23 ± 3
ASA-PS (1/2/3), n	2 / 11 / 0	1 / 10 / 0
Surgical time, min	110 (97-120)	110 (106-115)
Intraoperative fentanyl, mcg	323 ± 103	314 ± 75

Data are expressed as mean±SD, median (IQR) or number.
No difference was found between the two groups.

Pain scores at rest

Pain scores on movement

Cutaneous sensory blockade

Demands for analgesics and troubles related to block

	QLB group (n=13)	FNB group (n=11)	P-value
PCA, time	4 (0-5)	4 (1-7)	0.42
Rescue analgesics, time	4 (1.5-5.5)	3 (2-5)	0.61
Trouble related to catheter, n (%)			
- Leakage	3 (23.1%)	6 (54.5%)	0.21
- Bleeding	1 (7.7%)	1 (9.1%)	1.00
- Withdrawal	1 (7.7%)	3 (27.3%)	0.30

Data are expressed as median (IQR) or number (%).
No severe complications related to blocks were observed.

Muscular strength of the quadriceps

	QLB group (n=6)	FNB group (n=8)	P-value
Preoperative (%)	84 (77-110)	72 (66-102)	0.28
POD 2 (%)	58 (39-68)	58 (45-65)	0.45

Handheld dynamometer was used, and the results of the operated leg were calculated as a percentage of those of the non-operated leg.

CONCLUSION

Analgesic effects of continuous QLB were inferior to those of FNB in patients undergoing THA.