Effect of lateral femoral cutaneous nerve block combined with femoral nerve block on postoperative pain after total hip arthroplasty: A retrospective study

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Background: There is no gold standard pain management after total hip arthroplasty (THA). There are controversial reports whether lateral femoral cutaneous nerve-block (LFCNB) combined with opioid and NSAID is effective for postoperative pain after THA^{1,2}). This retrospective study was carried out to determine whether LFCN combined with femoral nerve-block (FNB) is effective for postoperative pain after THA.

Methods: The Institutional Research Committee approves this retrospective study and to waive informed consent because study procedure was routine examination after THA. This study was conducted in Nagasaki Rosai Hospital from June 2015 to November 2015 (pre-LFCNB period) and June 2016 to November 2016 (post-LFCNB period). We started LFCNB combined FNB in the all patients underwent THA before general anesthesia from April 2016. We included consecutive 39 patients underwent THA by the posterior approach without LFCNB combined with FNB (NB group) in pre-LFCNB period and 45 patients underwent THA by the posterior approach with LFCNB and FNB (B group) in post-LFCNB period. Exclusion criteria were spinal anesthesia, allergy against local anesthetics, revision arthroplasty and bilateral arthroplasty. Ultrasound guided LFCNB and FNB with each 0.25% levobupivacaine 20 ml were performed before general anesthesia in B group. Anesthesia was induced with thiamylal or propofol followed by sevoflurane, or total intravenous anesthesia with propofol. Fentanyl and remifentanyl were used as the analgesic agent, and rocuronium was used as the neuromuscular blocking agent during anesthesia. 50mg of flurbiprofen or 1000mg of acetaminophen was administrated intravenously before skin closure. The pain score was evaluated by numeric rating scale (NRS) from 0 to 10 at 0 (T0), 1 (T1), 3 (T2), 6 (T3) and 9 (T4) hour after surgery, and in the next morning (TN). The patients were administrated diclofenac sodium, loxoprofen or pentazosine for postoperative pain, if needed. We evaluated the number of administration of them until 12 hour and 24 hour after surgery. Surgeons evaluated the satisfaction degree of postoperative pain managements by NRS from 1 to 5 in the one postoperative day. The results are expressed as median (IQR). Statistical analyses were performed by Mann-Whitney *U* test or Chi square test. A *p*-value <0.05 was considered statistically significant.

Results: Height, weight and number of male out of patient's characteristics were more in NB group compared with B group (Table 1). Operative time, anesthetic time, the amount operative blood loss, the amount of fentanyl and the frequency of TIVA in B group were more than those in NB group (Table 2). NRS scores for postoperative pain at T0 [0 (0, 4) vs 5 (0, 8)], T1 [0 (0, 2) vs 5 (2, 7)], T2 [1 (0, 2) vs 4 (2, 5)], T3 [1 (0, 3) vs 3 (2, 4)] and T4 [2 (0, 4) vs 3 (0, 5)] were lower in B group compared with NB group (Figure). There are no significant differences in the frequency of analgesics between two groups. NRS score for satisfaction in B group was superior to NB group (Table 3).

Conclusion: LFCN combined with FNB is effective for postoperative pain management during early postoperative period after THA.

References:

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Competing Interests: We have no competing interests.

Table 1. Patient characteristics

Group	NB (39)	B (45)	p
Age (yr)	66 (61, 70)	68 (61, 79)	0.17
Height (cm)	155 (152, 160)	151 (147, 156)	<0.01
Weight (kg)	60.1 (52.3, 70.0)	53.0 (47.5, 62.3)	0.01
BMI	25.1 (23.2, 26.7)	22.9 (21.5, 25.9)	0.12
Male	14/39	6/45	0.02
Right	17/39	27/45	0.13
Hypertension	21/39	23/45	0.80
Diabetes	6/39	7/45	0.98

Table 2. Operative variables

Group	NB (39)	B (45)	p
Operative time (min)	51 (49, 62)	75 (64, 93)	<0.01
Anesthetic time (min)	109 (102, 121)	131 (120, 149)	<0.01
TIVA: Sevoflurane	16:23	36:9	<0.01
Blood loss (g)	120 (93, 200)	170 (130, 245)	0.02
Fentanyl (mL)	5 (5, 7)	10 (7, 10)	<0.01
Remifentanyl (mcrg/kg)	5.8 (3.1, 8.6)	5.1 (3.6, 9.1)	0.56
Flur: Aceta	38:1	40:5	0.12

Flur:Aceta; flurbiprofen:acetaminophen

Figure. Individual numeric rating scale during study period.

NB, no nerve block; B, femoral and lateral femoral cutaneous nerve block

Table 3. Postoperative variables

Group	NB (39)	B (45)	p
Blood loss (g)	110 (70, 193)	130 (70, 173)	0.92
PONV	9/39	16/45	0.21
analgesics frequency-12hr	1 (0, 1)	1 (0, 1)	0.66
analgesics frequency-24hr	2 (1, 3)	2 (1, 2)	0.17
Satisfaction NRS	4 (2, 4)	2 (2, 3)	<0.01

PONV, postoperative nausea and vomiting