
Adductor Canal Block and Periarticular Cocktail Injection and its Combination in Pain Management after Anterior Cruciate Ligament Reconstruction

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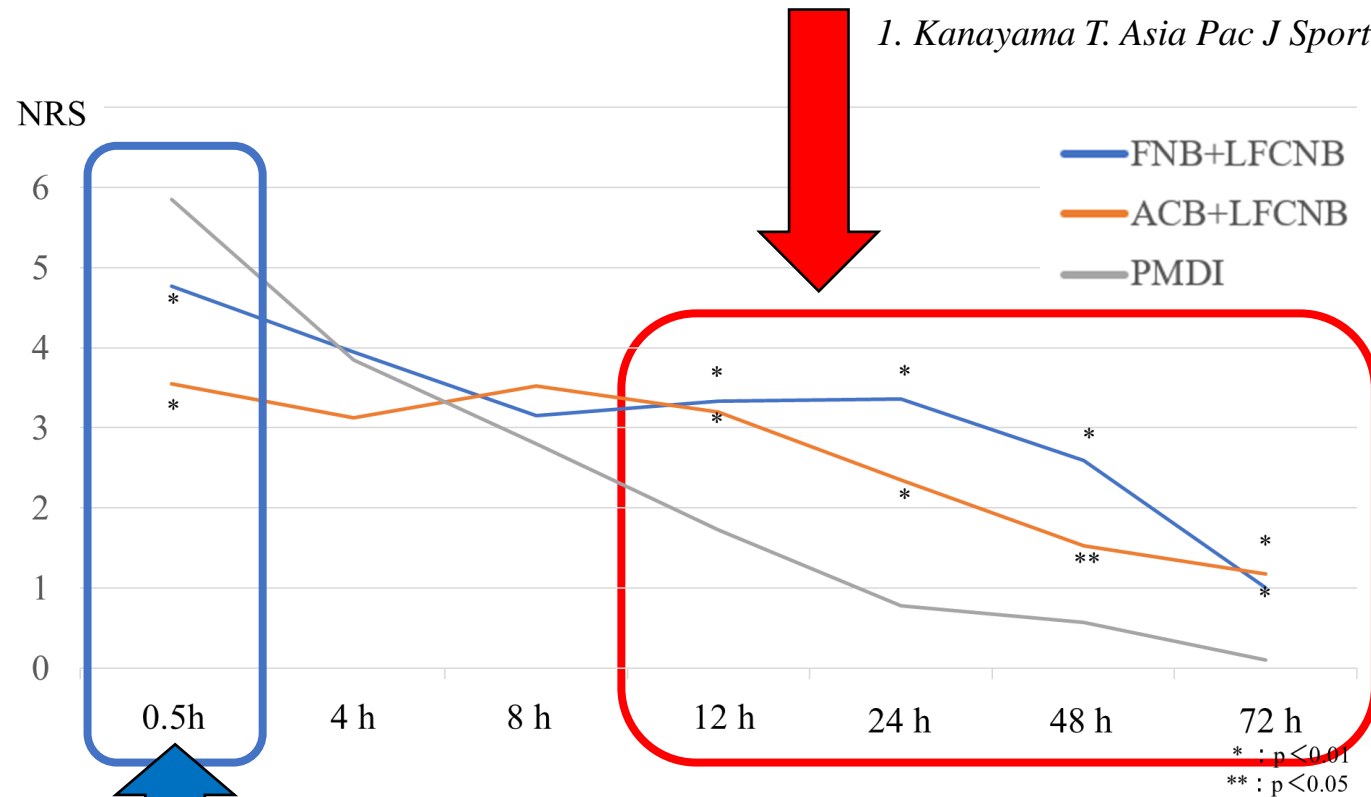
Disclosure

We have nothing to disclose

Background

Periarticular multi-drug cocktail injection (PMDI) significantly reduced postoperative pain compared with nerve block combinations after 12 hours postoperatively.

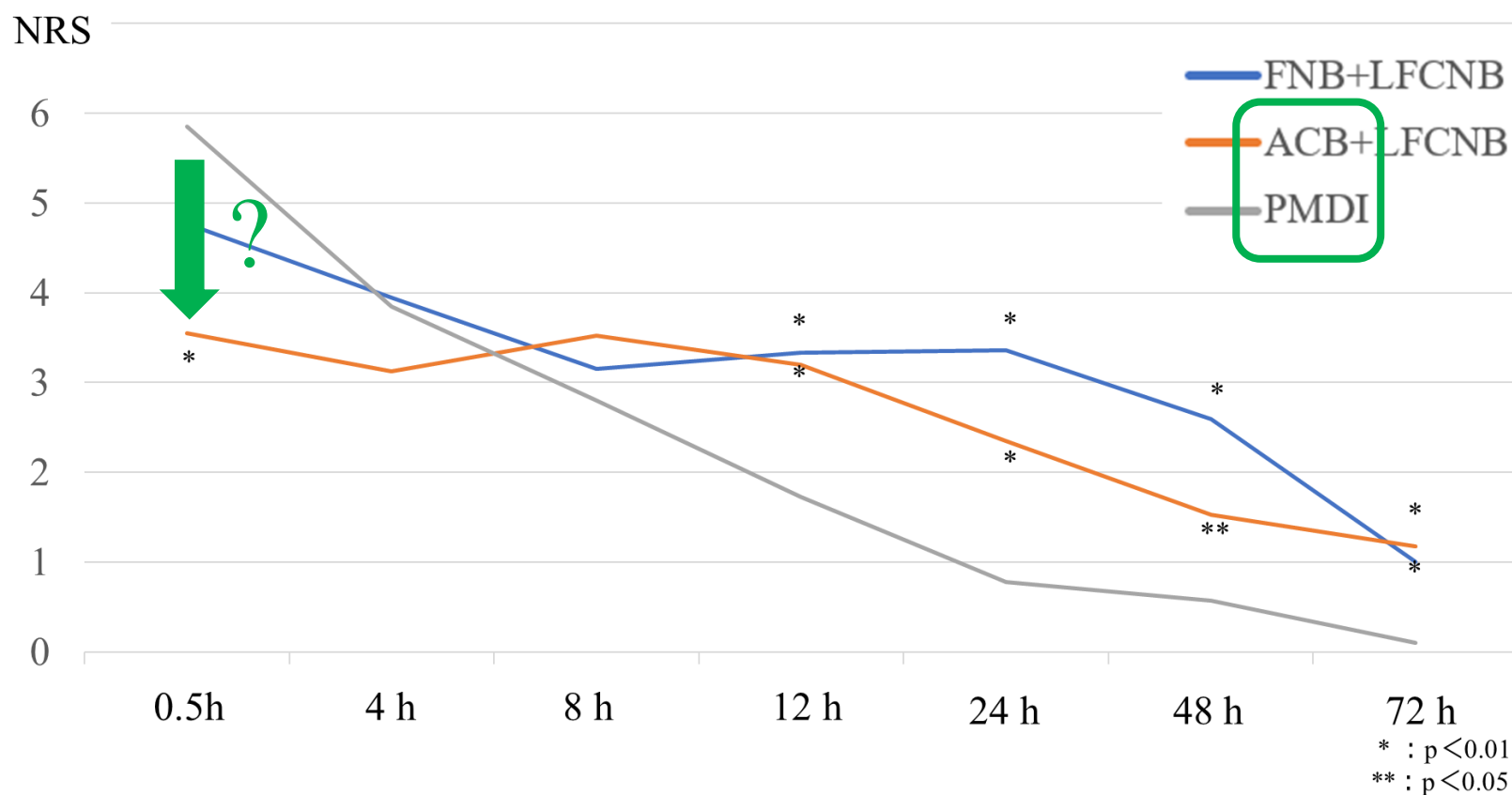
1. Kanayama T. Asia Pac J Sports Med Arthrosc Rehabil Technol. 2024.



On the other hand, immediate postoperative pain was stronger in the PMDI group

Hypothesis

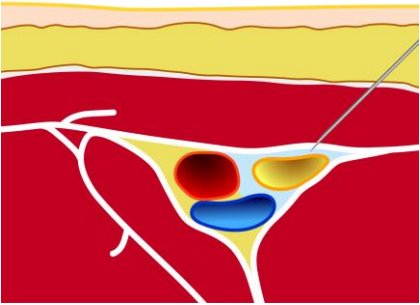
Addition of Adductor canal block (ACB) to PMDI would provide superior postoperative pain relief ?



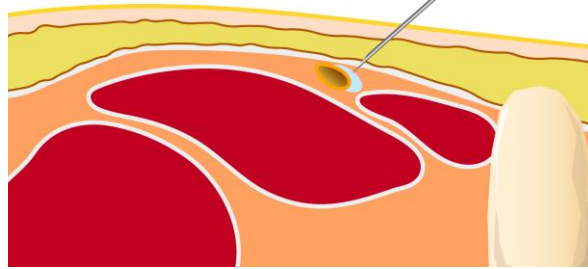
Objective

- To compare postoperative pain control in patients undergoing ACL reconstruction

40 cases

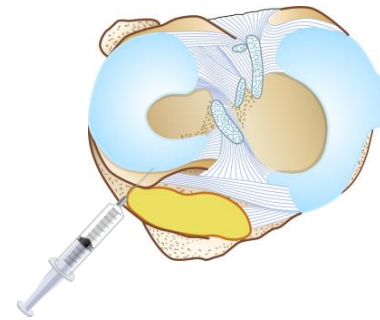


ACB



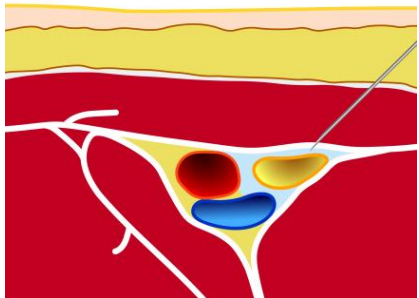
LFCNB

40 cases

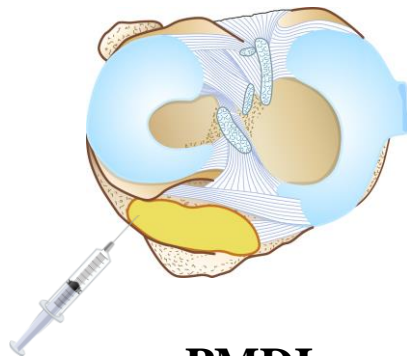


PMDI

30 cases



ACB



PMDI

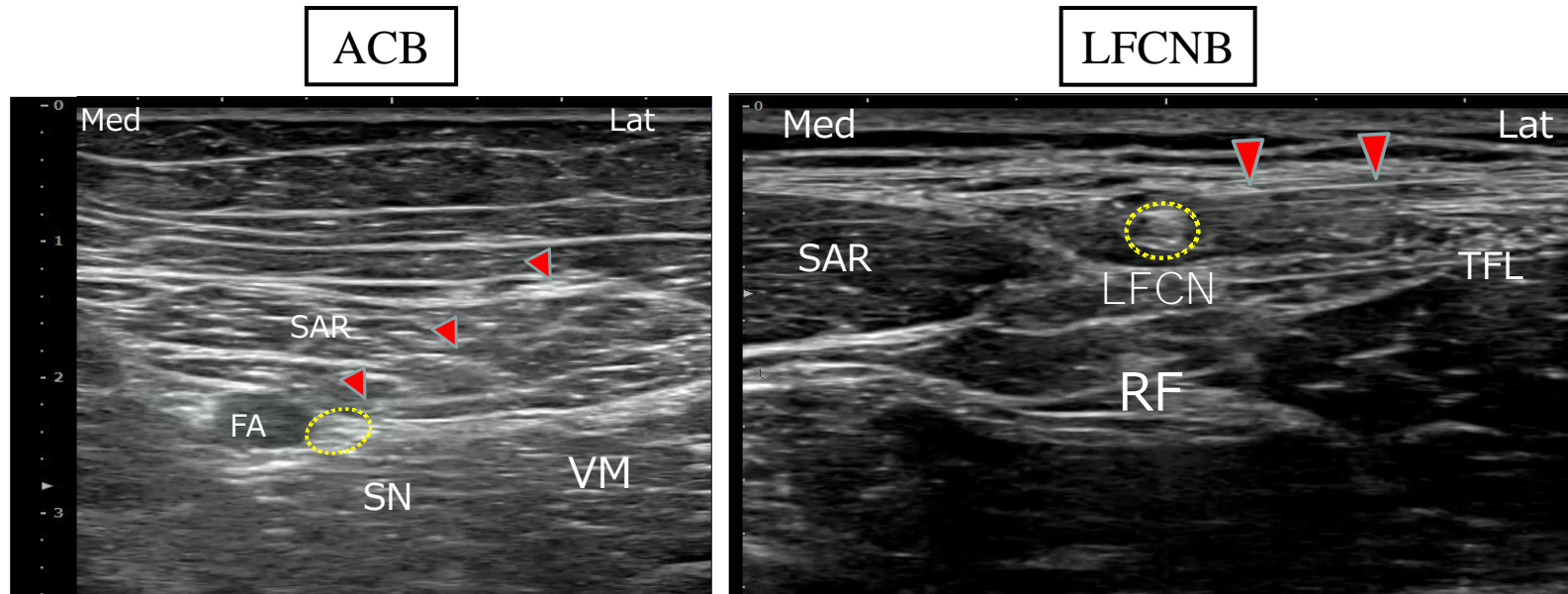
ACB : adductor canal block

LFCNB : lateral femoral cutaneous nerve block

PMDI : periarticular multi-drug cocktail injection

Nerve block procedure

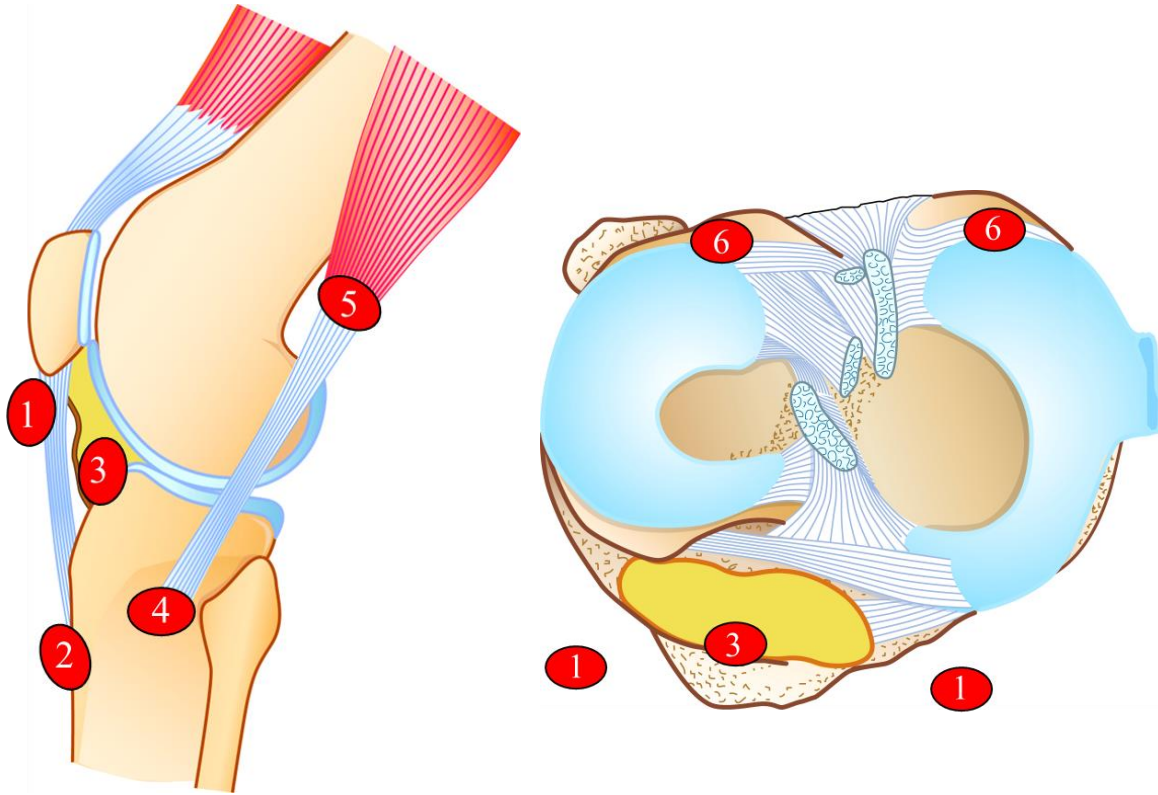
- ✓ A high-frequency linear-array ultrasound transducer
- ✓ A 25-gauge needle was inserted lateral to medial using an in-plane technique
- ✓ ACB : 10 mL 0.75% ropivacaine
- ✓ LFCNB : 5 mL 0.75% ropivacaine



FA: Femoral artery, SAR: Sartorius, RF: Rectus femoris, TFL: Tensor fascia Lata,
SN: Saphenous nerve, LFCN: lateral femoral cutaneous nerve VM: Vastus medialis, Arrow head: needle

Periarticular injection

0.75% ropivacaine 20ml + serine 20ml+ Dexamethasone 6.6mg : total 42ml



at the start of the surgery : 21mL

- ① 5mL: portal's subcutaneous tissue
- ② 5mL: skin incision's subcutaneous tissue
- ③ 11mL: Infrapatellar fat pad

before wound closure : 21mL

- ④ 5mL: every visible region around the hamstring harvest site
- ⑤ 11mL: around the hamstring muscle-tendon transition area
- ⑥ 5mL: medial and lateral synovial capsule above the meniscus

For the ACB with PMDI group, Ropivacaine was reduced by half dose in PMDI.

Data collection / Statistical analysis

- ✓ Patient demographics (age, sex, height, body weight, and BMI)
- ✓ Surgical data (requirement for meniscal repair, operative time, and tourniquet inflation time)
- ✓ 0- to 10-point pain numerical rating scale (NRS)
 - recorded 0.5, 4, 8, 12, 24, 48, and 72 h after returning to the hospital room
- ✓ The administration and use of analgesic suppositories
 - 50 mg diclofenac sodium or 200 mg acetaminophen
- All statistical analyses were performed using SPSS version 29.0.
- Differences in patient demographics, surgical data, and clinical evaluations among the three groups were assessed using analysis of variance

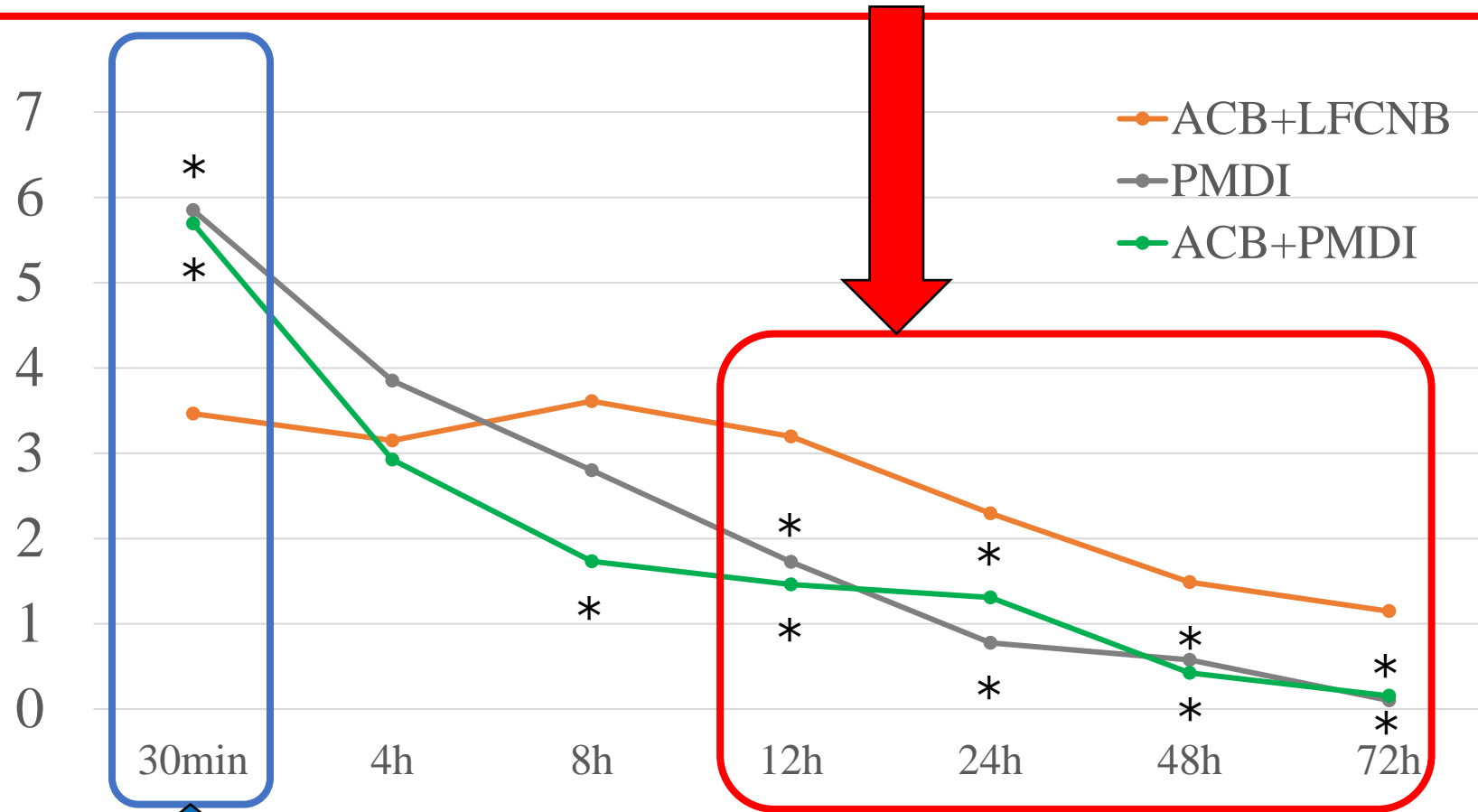
Results

	ACB+LFCNB n=40	PMDI n=40	ACB+PMDI n=30
Age (y.o.)	26.4±13.7	26.2±12.2	32.5±14.4
Gender male / female	18 / 22	13 / 27	8 / 18
Height (cm)	165.4±8.5	166.4±7.2	169.1±6.8
Weight (kg)	64.0±12.4	64.3±13.6	68.5±11.3
BMI (kg/m ²)	23.3±3.6	23.2±4.2	23.9±3.2
Presence of meniscal repair	55% (22/40)	57.5% (23/40)	53.8% (14/26)
Operation time (min.)	102.8±21.4	106.0±25.2	87.3±18.1
Tourniquet inflation time (min.)	89.9±19.3	85.7±18.7	71.0±17.4
Number of suppository use (times)	1.0±0.9	0.9±1.2	0.7±0.9

There were significantly lower differences in Operation and Tourniquet inflation time.

Postoperative NRS

PMDI groups had superior pain relief after 12 hours postoperatively

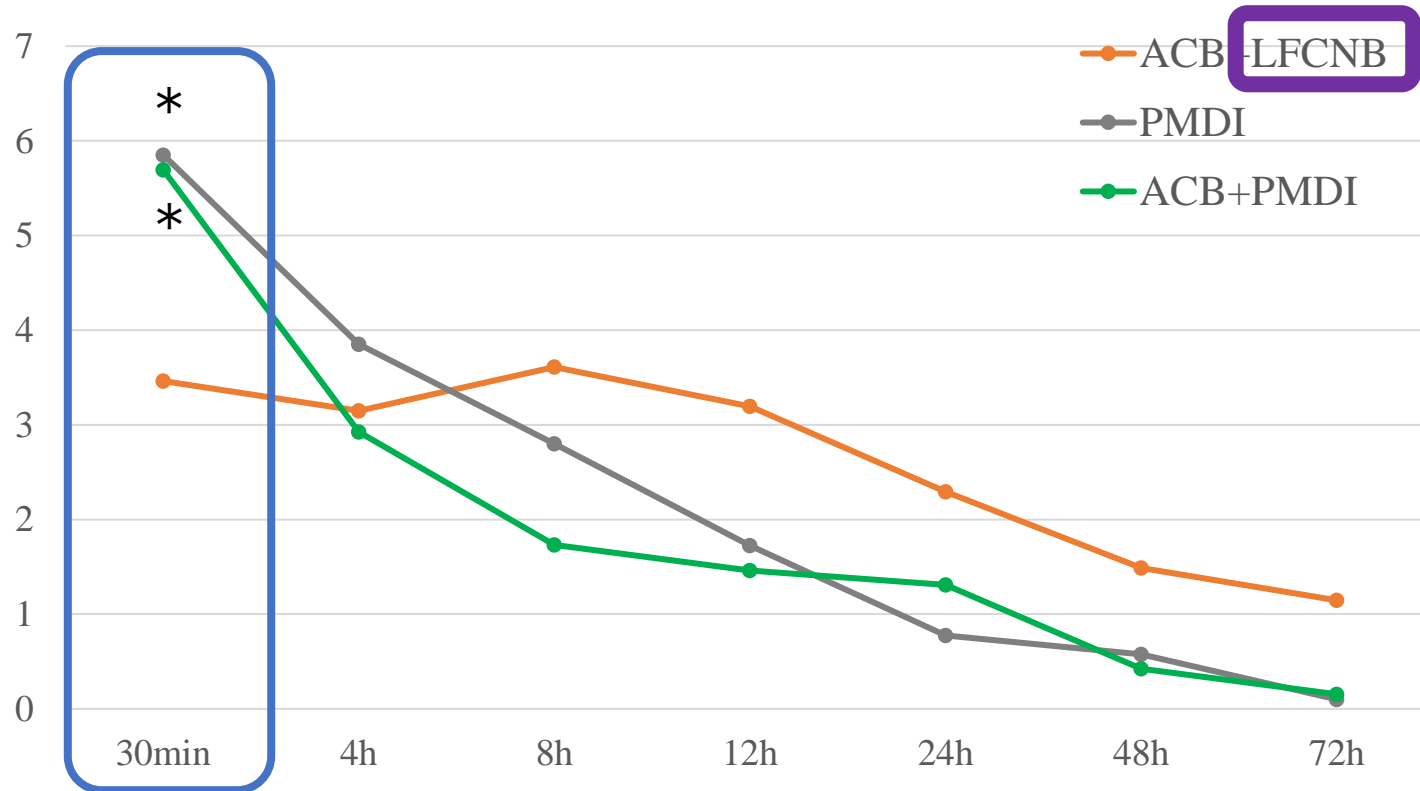


Adding ACB to PMDI did not provide immediate postoperative pain relief

Causes of acute postoperative pain

- ✓ Nociceptive pain : Pain due to surgical invasion, Inflammatory pain
- ✓ Neuropathic pain : **Tourniquet pain**

Krithika K. Clin J Traumatol 2021.



PMDI anaesthesia is localised and cannot cover large areas
Adding ACB is not enough to cover tourniquet pain

Next

Whether adding LFCNB may work to relief immediate pain?

Conclusion

After single-bundle ACL reconstruction with hamstring autograft, periarticular cocktail injection significantly reduced early postoperative pain compared with nerve block combinations.

Adductor Canal Block was added with the expectation of pain relief immediately after surgery, however, no effect was observed.

Reference

1. Kanayama T et al. Periarticular cocktail injection is more useful than nerve blocks for pain management after anterior cruciate ligament reconstruction. Asia Pac J Sports Med Arthrosc Rehabil Technol. 2024.
2. Kamath K et al. Incidence and factors influencing tourniquet pain. Chin J Traumatol. 2021