

Analgesic efficacy of daily single-shot versus continuous adductor canal block after total knee arthroplasty

- An open-label, randomized controlled trial

M. Jang, H. Kim, S. Yoo, S. Kwon, Y. Kim, J. Bae, Y. Kim, Y. Cho, J. Kim, Y. Lim

Minjung Jang

✉ sdnmj61@gmail.com

Hansol Kim

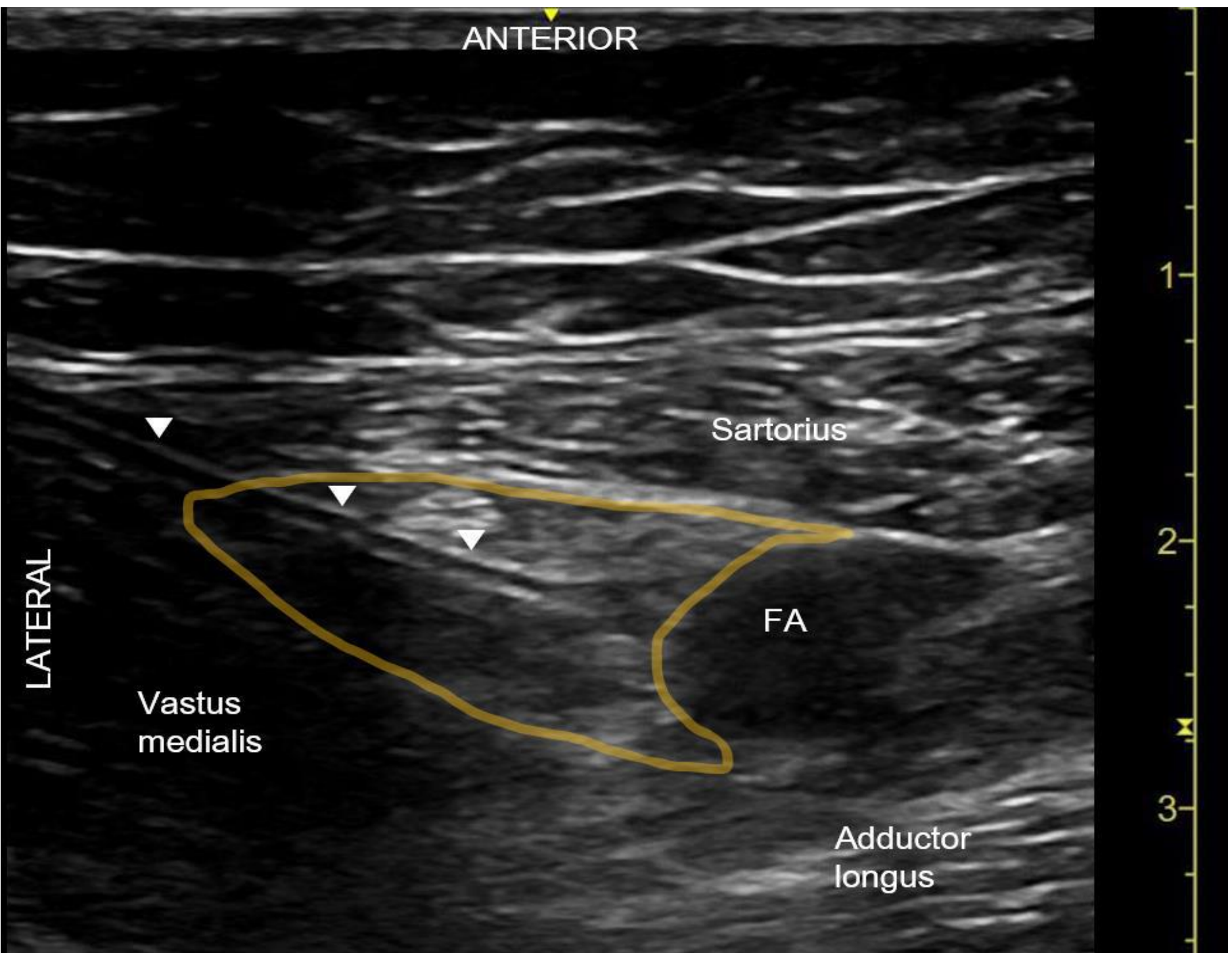
✉ hansolfrkr@gmail.com

Background

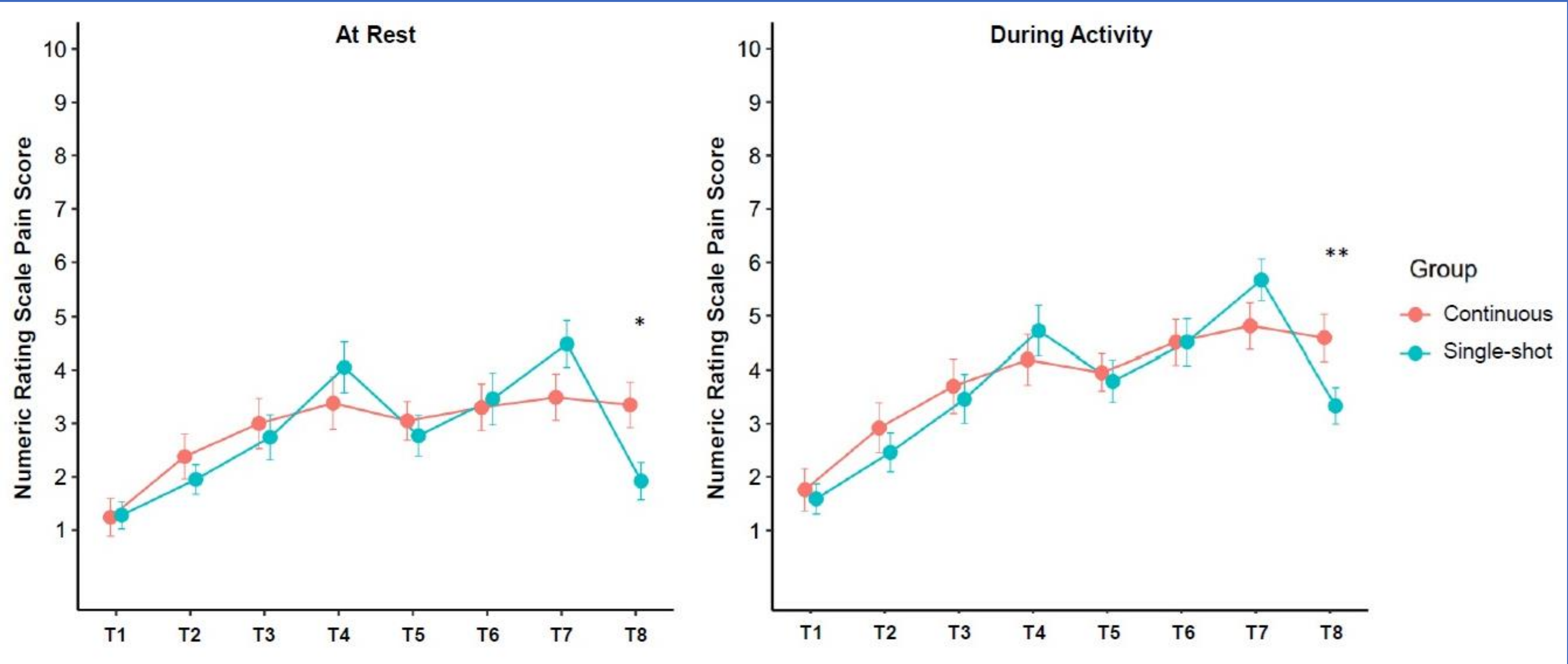
- Total knee arthroplasty is frequently associated with postoperative pain.
- Continuous adductor canal blocks are widely used for postoperative analgesia.
- The high dislocation rate of nerve block catheters often leads to ineffective pain control.

Method

1. Patients who underwent total knee arthroplasty under spinal anesthesia (n=67) were randomized to receive daily single-shot (n=39) or continuous adductor canal block (n=37).
2. The primary outcome was the time-weighted average pain score at rest, assessed using the numeric rating scale, until the second postoperative day.



No significant difference in the analgesic efficacy until the second postoperative day between the daily single-shot and continuous groups.



Take a picture to download the full paper



The analgesic effectiveness of continuous adductor canal blocks may be improved by reduction of catheter dislodgement!

Results

Table 2. Primary and secondary outcomes.

	Single-shot adductor canal block (n = 39)	Continuous adductor canal block (n = 37)	P-value
Primary outcome			
Time-weighted average pain score at rest; NRS, 0-10	2.9 ± 1.9	3.1 ± 2.1	0.842
Secondary outcomes			
Time-weighted average pain score during movement; NRS, 0-10	3.9 ± 1.8	4.0 ± 2.1	0.77
Total opioid administration; MME	15 [0-34]	10 [0-20]	0.165
Additional analgesic requirements ^a	10 (25.6%)	12 (32.4%)	0.514
Quadriceps femoris muscle strength; kgf			
Baseline	19.5 ± 5.0	18.1 ± 4.7	0.455
Postoperative day 1	7.6 ± 4.9	8.1 ± 4.2	0.618
Percentage from baseline; %	38.4 ± 21.5	47.6 ± 24.9	0.102
Postoperative day 2	7.9 ± 4.0	7.1 ± 4.4	0.476
Percentage from baseline; %	41.6 ± 19.5	41.6 ± 24.5	0.991
Skin numbness; NRS, 0-10			
Postoperative day 1	5 [0-10]	4 [0-9]	0.995
Postoperative day 2	4 [0-10]	2 [0-5]	0.061
Range of motion of the knee joint; degrees			
Postoperative day 1	76.5 ± 13.1	79.5 ± 16.8	0.675
Postoperative day 2	81.6 ± 16.0	76.8 ± 16.7	0.158
Sleep disturbance due to pain			
Day of surgery	20 (51.3%)	15 (40.5%)	0.348
Postoperative day 1	14 (35.9%)	14 (37.8%)	0.861
Overall patient satisfaction; NRS, 0-10			
	9 [7-10]	8 [6-9]	0.32

a. Non-opioid analgesics. Values are mean ± SD, median [IQR] or number (proportion). NRS; numeric rating scale, MME; morphine milligram equivalent

Discussion

- We administered single-shot ACBs daily in conjunction with a multimodal analgesic protocol unlike previous studies.
- We compared the analgesic effects of single-shot and continuous ACBs over a longer period by assessing pain between 24 and 48 h after the operation, which has received less attention.

Conclusion

- Both daily single-shot and continuous adductor canal block provided effective analgesia during the first 2 days after total knee arthroplasty in terms of the average pain score.
- Considering the high dislocation rate of nerve block catheters, reduction of catheter dislodgement may improve the analgesic effectiveness of continuous adductor canal blocks.