

# Anterior Femoral Cutaneous Nerve Blocks in Total Knee Arthroplasty

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## Introduction

### •Clinical Challenge:

- Significant postoperative pain persists in TKA patients despite multimodal analgesia.
- Anterior distal knee pain (anterior femoral cutaneous nerve distribution) is a common unmet need.

### •Institutional Practice:

- First-line treatment: IV diazepam (for muscle spasms), followed by opioids and rescue blocks.

### •Key Observation:

- Anterior femoral cutaneous nerve block (AFCNB) rescue blocks effectively addressed anterior knee pain.

### •Intervention:

- Quality improvement project to integrate **preoperative AFCNB** into standard TKA protocol (IPACK + Adductor blocks).

### •Hypothesis:

- Preoperative AFCNB reduces reliance on postoperative pain medications (e.g., diazepam, opioids) and interventions.

### •Primary Endpoint Focus:

- Shifted from IV morphine equivalents to **postoperative diazepam administration** (reflecting institutional practice).

### •Goal:

- Reduce postoperative pain scores and opioid consumption through proactive AFCNB use.

## Methods

### •Standard Protocol:

- *Preop*: Femoral Triangle + IPACK blocks.
- *Intraop*: Spinal anesthetic + IV acetaminophen/ketorolac.

### •Intervention: Preop AFCNB added ( $n=105$ ).

### •Control: Historical controls (no AFCNB).

### •Exclusion: Chronic opioid users.

### •Outcome: PACU diazepam use.

### •Analysis: T-test (AFCNB vs. control).

## Results

### •Reduced Diazepam Use:

- AFCNB group ( $n=105$ ) showed a statistically significant reduction in postoperative diazepam requirements ( $p \approx 0.039$ ).
- Fewer rescue doses required in PACU vs. historical controls (**see Figure 1**).

### •Mechanism & Clinical Impact:

- Targets anterior knee sensory innervation, addressing gaps in traditional analgesia (femoral triangle/IPACK blocks).
- Potential reduction in sedative-related complications (e.g., respiratory depression), enhancing recovery.

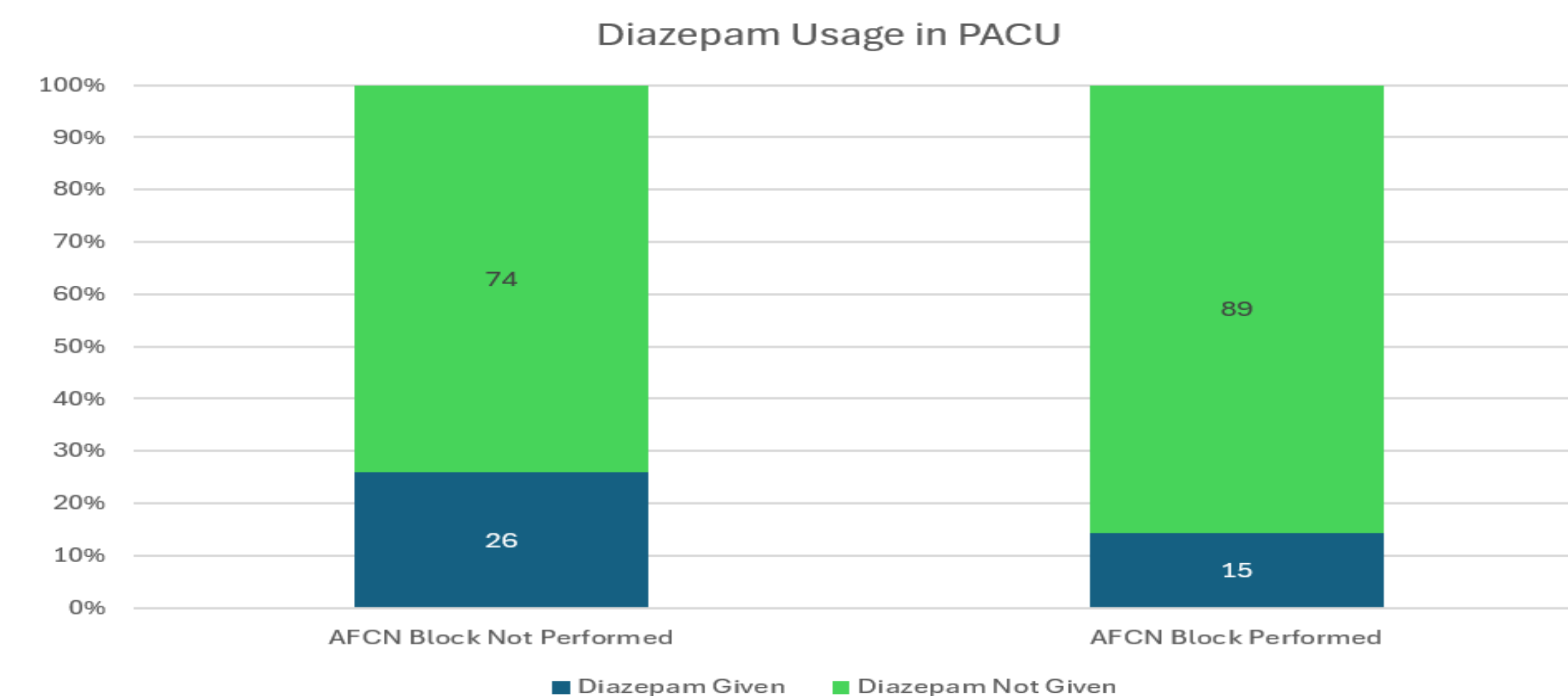
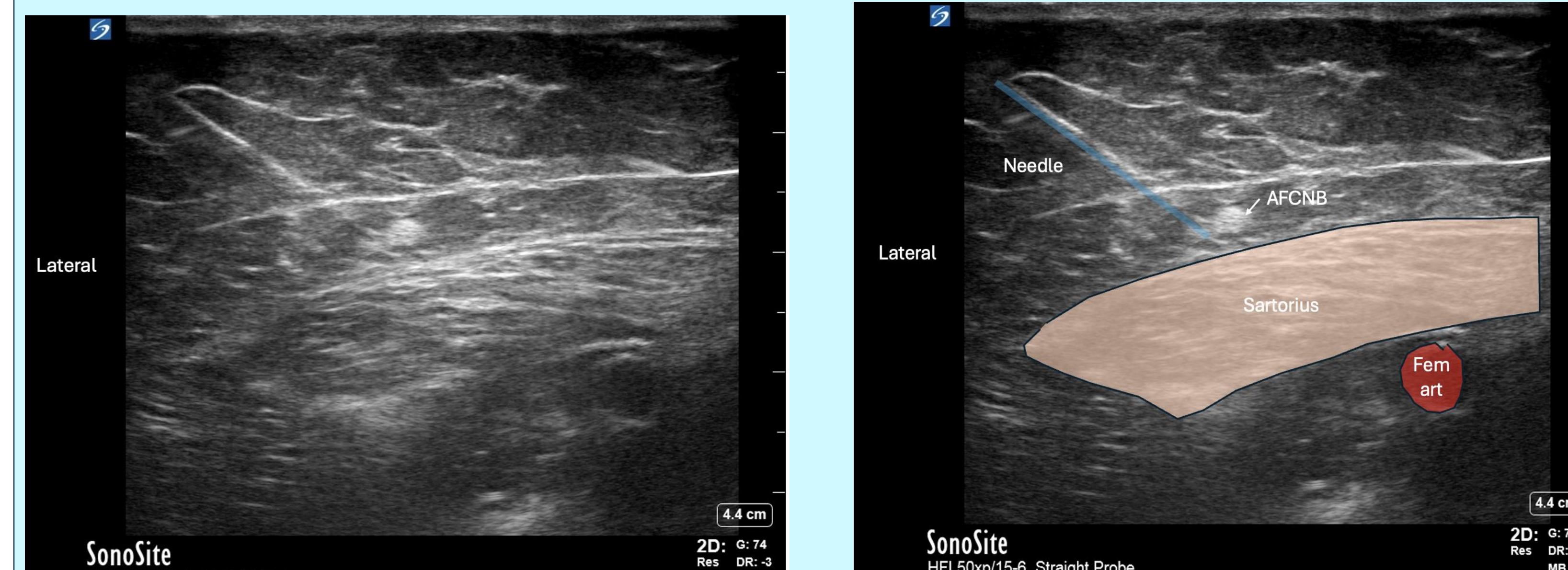


Figure 1

## Discussion

The integration of the anterior femoral cutaneous nerve block (AFCNB) into total knee arthroplasty (TKA) protocols significantly reduced postoperative diazepam requirements ( $p \approx 0.039$ ), supporting the hypothesis that preoperative AFCNB mitigates anterior distal knee pain originating from femoral cutaneous nerve distribution, thereby decreasing reliance on diazepam.

By targeting anterior knee sensory innervation, AFCNB addresses postoperative pain inadequately managed by traditional femoral triangle and IPACK blocks. Reduced diazepam use reflects improved pain control and potential reductions in sedative-related complications, enhancing recovery.

These findings align with Kampitak et al. (2021), whose randomized trial demonstrated AFCNB's superiority over femoral triangle blocks in reducing opioid consumption and anesthetizing critical surgical incision areas. Similarly, Bjorn et al. (2019) confirmed AFCNB's efficacy in anesthetizing anteromedial knee and midline incision pathways, highlighting limitations of relying solely on femoral triangle blocks.

AFCNB has now been adopted institutionally as a proactive component of TKA protocols, replacing prior rescue use. Early observations suggest improved patient satisfaction and PACU efficiency, though formal evaluation of secondary outcomes continues.

## References

- 1.Kampitak W, Tanavalee A, Tansatit T, Ngarmukos S, Songborassamee N, Vichainarong C. The analgesic efficacy of anterior femoral cutaneous nerve block in combination with femoral triangle block in total knee arthroplasty: a randomized controlled trial. Korean Journal of Anesthesiology. 2021 Dec 1;74(6):496-505.
- 2.Bjørn S, Nielsen TD, Moriggl B, Hoermann R, Bendtsen TF. Anesthesia of the anterior femoral cutaneous nerves for total knee arthroplasty incision: randomized volunteer trial. Regional Anesthesia & Pain Medicine. 2020 Feb 1;45(2):107-16.