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The Effect Of Femoral Nerve Block on Pain Management in TKA Patients

Kyoungho Shin, Sungho Choi, Junho Oh, Changhee Lee
Department of Physical Medicine and Rehabilitation, BornTop Rehabilitation Clinic
Department of Physical Medicine and Rehabilitation, Myongji Hospital

INTRODUCTION

• Knee osteoarthritis(OA) is a prevalent condition, affecting 4% of South Korea's population, with 40% of OA cases involving the knee.
• The aging population has led to a rise in knee OA cases, with total knee arthroplasty(TKA) procedures increasing from 72,626 in 2021 to 75,626 in 2022.
• TKA is a major surgery often accompanied by significant postoperative pain, which can hinder rehabilitation and recovery.
• Current pain management strategies include NSAIDs, opioids, and acetaminophen, but these may be insufficient in some cases.
• Femoral nerve blockade**(FNB)** is an adjunctive intervention used to manage pain when standard methods fail.
• Despite studies on postoperative pain management, no standardized protocol exists. This study evaluates the effectiveness of FNB in pain management following unilateral TKA.

METHODS

• This **retrospective study** analyzed 478 cases of FNB performed between January 1, 2023, and November 16, 2024
• After applying inclusion and exclusion criteria, 100 cases were selected
• **Inclusion criteria**
(1) Inpatients receiving FNB
(2) Patients undergoing unilateral TKA with unilateral FNB
• **Exclusion criteria**
(1) FNB without subsequent surgery
(2) Non-TKA surgeries
(3) Missing VAS scores
(4) Discharge within one day post-FNB.
• Pain relief was assessed using VAS scores, measured daily. Pre-blockade VAS scores were recorded, and follow-up measurements were taken at 8 AM the day after the procedure.
• The time to achieve maximal pain reduction was also monitored.
• Patients were stratified into groups with and without comorbidities to evaluate the impact of underlying conditions on FNB efficacy.
• FNB was performed under ultrasound guidance using 1% lidocaine and dexamethasone.

Table 1: Summary of Outcomes

Total Knee Arthroplasty	**Total (N=100)**	**Patients Without Underlying Conditions (N=34)**	**Patients With Underlying Conditions (N=66)**
- Right Total Knee Arthroplasty	47 cases (47%)	16 cases (47.1%)	31 cases (46.9%)
- Left Total Knee Arthroplasty	53 cases (53%)	18 cases (52.9%)	35 cases (53.1%)
Average VAS Reduction (1 Day Post-Treatment)	1.34 points (CI 99%, 1.06 – 1.62)	0.91 points (CI 99%, 0.40 – 1.42)	1.56 points (CI 99%, 1.24 – 1.88)
Average Time Until Maximum Pain Reduction	4.69 days (CI 99%, 3.47 – 5.91)		

RESULTS

• The study population had a median age of 70 years, with 86 female and 14 male patients. Of the 100 cases, 34 patients had no comorbidities, while 66 had at least one, including hypertension, hyperlipidemia, diabetes, hypothyroidism, and osteoporosis. Right TKA was performed in 47 cases, and left TKA in 53 cases.
• In patients receiving unilateral FNB, the average reduction in VAS scores one day post-treatment was 1.34 points (99% CI: 1.06-1.62). The average time to achieve maximum pain reduction was 4.69 days (99% CI: 3.47-5.91). Patients without comorbidities experienced an average VAS reduction of 0.91 points (99% CI: 0.40-1.42), while those with comorbidities showed a greater reduction of 1.56 points (99% CI: 1.24-1.88).

FIG 1. Inclusion and Exlusion Criteria

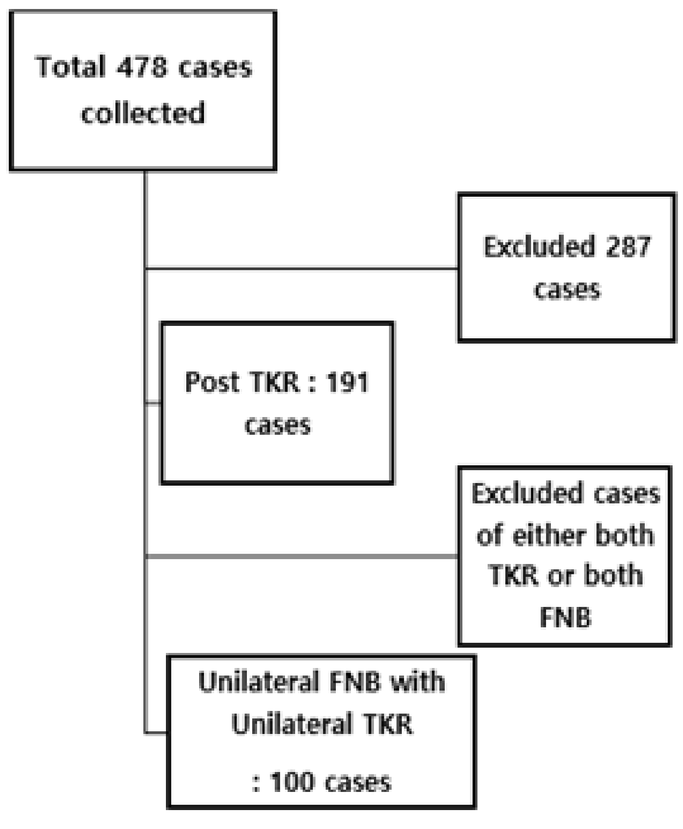

FIG 2. Patient characteristics

Number of Patients	Male 7
	Female 53
Number of cases	Male 14
	Female 86
Past medical history	None 34
	At least 1 66
Age	Median 70

CONCLUSION

• FNB significantly reduces pain following unilateral TKA, with an average VAS reduction of 1.34 points one day post-treatment and a mean duration of 4.69 days to achieve maximal pain relief.
•Patients with comorbidities experienced greater pain reduction, suggesting FNB may be particularly beneficial for this subgroup. These findings support FNB as an effective adjunctive pain management strategy in TKA patients, warranting further investigation into its broader application and and long-term outcomes.