Beyond Expectations: Durable Five-Year Analgesia Following Temporary Femoral PNS for Advanced Knee Osteoarthritis

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FIGURE 1. Clinical Timeline

Pre-Procedure
Chronic bilateral knee pain; failed conservative therapies; poor surgical candidate for TKA.

Genicular RFA Denied by Insurance
Genicular nerve RFA considered/planned but denied by insurance.

October 2021
Temporary left femoral PNS implant
Ultrasound-guided implantation.

December 2021
PNS explant (after 60 days)
Completed planned 60-day treatment.

January 2022
1-month follow-up
70–100% pain improvement.

August 2022
Follow-up
70–100% pain improvement maintained.

June 9, 2025
Follow-up (~3.5 years post-explant)
70–100% pain improvement maintained.

June 15, 2026
Follow-up (~4.7 years post-explant)
70–100% pain improvement maintained; considering right knee PNS.

Nearly 5 years of durable analgesia after 60-day PNS treatment.

INTRODUCTION

Knee osteoarthritis (OA) is a leading cause of chronic pain and disability worldwide. Temporary peripheral nerve stimulation (PNS) is an emerging treatment for refractory knee pain in patients who have failed conservative therapy or are poor surgical candidates. Although studies demonstrate improvements in pain and function, evidence of durable analgesia following device explantation remains limited. We present a patient with nearly 5 years of sustained pain relief after temporary femoral PNS.

FIGURE 2. Clinical Response Over Time

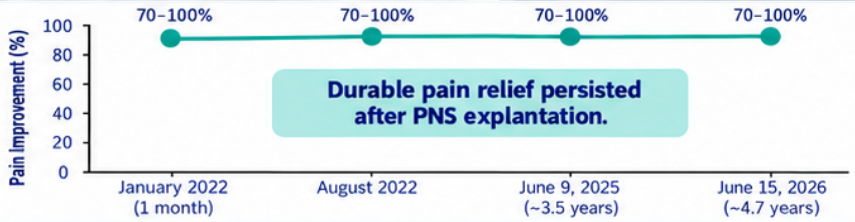
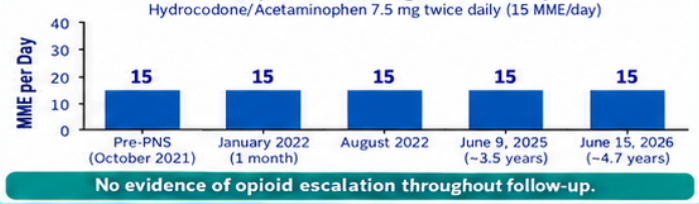


FIGURE 3. Opioid Utilization Over Time

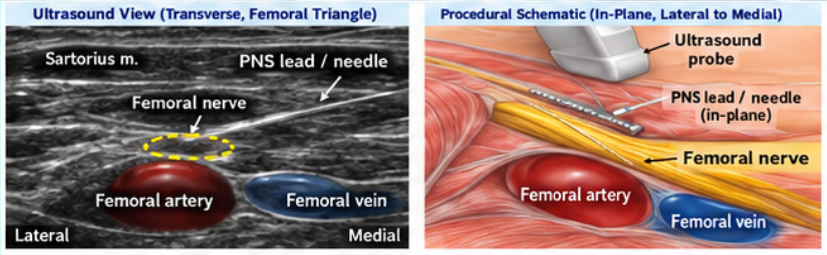


No evidence of opioid escalation throughout follow-up.

MATERIALS & METHODS

Written informed consent was obtained for publication and presentation. A 70-year-old female with advanced bilateral knee osteoarthritis had chronic, debilitating knee pain refractory to multimodal conservative management. Comorbidities included type 2 diabetes mellitus, paroxysmal atrial fibrillation, hypertension, and dyslipidemia, making her a poor candidate for total knee arthroplasty. Prior treatments included activity modification, physical therapy, topical diclofenac, NSAIDs, cyclobenzaprine, hydrocodone, corticosteroid injections, and hyaluronic acid injections without durable benefit. Genicular nerve RFA was conisidered but denied by insurance. Therefore, ultrasound-guided temporary left femoral PNS was pursued.

Ultrasound-Guided Temporary Femoral PNS Placement



Representative ultrasound-guided femoral PNS image/schematic adapted from open-access literature.

RESULTS / CASE REPORT

A temporary ultrasound-guided left femoral PNS was implanted in October 2021 and explanted after the planned 60-day treatment in December 2021. At 1-month follow-up in January 2022, the patient reported 70–100% improvement in left knee pain. This response was maintained at follow-up visits in August 2022, June 9, 2025, and June 15, 2026, despite device explantation. Opioid utilization remained stable at 15 MME daily (hydrocodone/acetaminophen 7.5 mg twice daily), with no evidence of escalation on the Indiana INSPECT prescription drug monitoring program. The patient maintained functional indepnddence, avoided total knee arthroplasty, and elected to pursue temporary PNS treatment of the contralateral knee.

DISCUSSION

Temporary peripheral nerve stimulation (PNS) is an emerging treatment for refractory knee osteoarthritis, yet evidence of durable analgesia after device explantation remains limited. This case demonstrates sustained 70–100% pain relief for nearly 5 years after a 60-day temporary femoral PNS treatment, with stable opioid use and preserved function, in a patient who avoided total knee arthroplasty. These findings support further investigation into temporary PNS as a potential long-term neuromodulation strategy for carefully selected patients with advanced knee osteoarthritis.

KEY TAKEAWAYS

- Durable analgesia (nearly 5 years)
- Stable opioid use (15 MME/day)
- Maintained function and independence
- Avoided total knee arthroplasty
- Supports further investigation of temporary PNS

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