Cryoneurolysis of Bilateral Anterior Femoral Cutaneous Nerves for Severe Knee Osteoarthritis Awaiting Arthroplasty

Cassandra Leonardo, MD, PhD[1]; Elizabeth Kasparov, MD[2]; Shivani K. Patel, BS[3]; Sidharth Sahni, DO, DPT[4]; Anishinder Parkash, MD[5]; Arun Kalava, MD[6]

South Shore University Hospital, Northwell, Bay Shore, NY[1]; HCA Florida Blake Hospital / USF Morsani College of Medicine, Bradenton, Florida, USA[2]; University of Central Florida College of Medicine, Orlando, Florida, USA[3]; NYU Langone Health, New York, New York, USA[4], Northwell Health Pain Medicine, New York, USA[5], TampaPainMD, Tampa, Florida, USA[6]

ASRA Pain Medicine 25th Annual Pain Medicine Meeting November 6-9, 2024 | Tampa, Florida #ASRAFALL24

Introduction

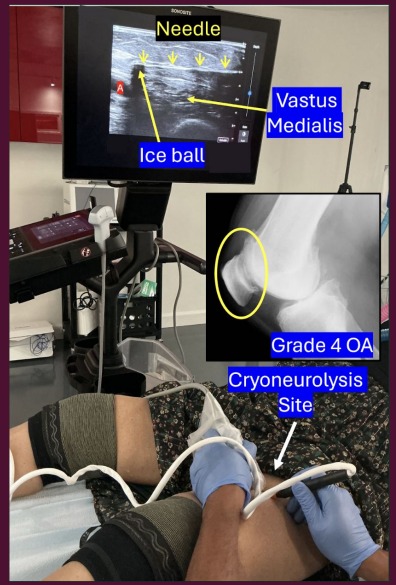
Osteoarthritis (OA) is a major cause of pain and disability, with a burden expected to increase as the population ages and obesity prevalence rises.[2] Knee OA contributes substantially to chronic pain, impaired mobility, and healthcare utilization.[1,2] Although total knee arthroplasty offers definitive surgical treatment for advanced disease, delays or contraindications can create a clinically important therapeutic gap for patients with severe movement-evoked pain. Peripheral nerve interventions may provide a minimally invasive approach to interim pain management, with diagnostic blockade informing individualized target selection. We describe diagnostic block–guided bilateral anterior femoral cutaneous nerve cryoneurolysis in an 84-year-old woman with severe bilateral knee OA and an anticipated four-month delay before arthroplasty.

Case Presentation and Procedure

An 84-year-old woman with hypertension and diabetes presented with over five years of progressive bilateral knee pain from advanced osteoarthritis. Pain reached 8/10 with weight-bearing but was minimal while seated. She required a cane or walker but remained independent in daily activities. Radiographs showed near-complete left knee joint-space loss and severe right medial-compartment and patellofemoral narrowing. Bilateral arthroplasty was recommended, with an anticipated four-month delay.

Bilateral anterior femoral cutaneous nerve blocks produced 100% patient-reported pain relief lasting approximately 10-12 hours. Two days later, bilateral cryoneurolysis was performed using ultrasound and nerve stimulation for target localization. Local anesthesia was administered with 2-3 mL of 1% lidocaine, followed by treatment using a 16-gauge, 3-cm Epimed cryoprobe at -70°C with a two-minute freeze and 30-second thaw. The patient tolerated the procedure well.

Case Report Results



- **Diagnostic-block response:** Bilateral anterior femoral cutaneous nerve blocks produced 100% patient-reported pain relief lasting approximately 10–12 hours.
- **Treatment decision:** The complete temporary response informed target selection for bilateral cryoneurolysis, performed two days later.
- **Immediate outcome:** Cryoneurolysis was completed without reported immediate complications.
- **Follow-up limitation:** Post-cryo pain scores, walking tolerance, functional improvement, analgesic use, and duration of benefit were unavailable at abstract submission. The reported 100% relief reflects the diagnostic-block response; sustained benefit after cryoneurolysis remains unestablished.

References

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Discussion

This case illustrates response-guided bilateral anterior femoral cutaneous nerve cryoneurolysis intended to provide interim analgesia before arthroplasty. Knee sensory innervation is complex and anatomically variable; diagnostic blockade may inform individualized target selection, although complete temporary relief does not establish sustained benefit after cryoneurolysis.

Cryoneurolysis disrupts axons while preserving supporting connective tissue architecture, permitting regeneration and potentially prolonged analgesia.[4] Randomized evidence in knee osteoarthritis is mixed: a 2017 trial targeting the infrapatellar branch of the saphenous nerve demonstrated benefit in mild-to-moderate disease, whereas a 2025 trial targeting both anterior femoral cutaneous and infrapatellar saphenous nerves did not demonstrate superiority over sham for its primary 14-day pain endpoint.[3,5]

The single-patient design and unavailable longitudinal outcomes limit conclusions about analgesic durability, mobility, and opioid reduction. Further studies should evaluate optimal targets, the predictive value of diagnostic blockade, and functional outcomes.

Diagnostic blockade informed individualized target selection; sustained analgesic and functional benefit after cryoneurolysis require follow-up.