

# Genicular Nerve Radiofrequency Ablation for Chronic Knee Pain: Early Outcomes from a Prospective Cohort

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## INTRODUCTION

Genicular nerve radiofrequency ablation (RFA) is a treatment option for chronic knee pain, most often caused by osteoarthritis. Standard protocols typically target three genicular nerves. We describe a refined RFA approach using a dual-tined electrode to target four to six genicular and capsular nerves and report early outcomes from a prospective cohort.

## MATERIALS AND METHODS

This IRB-approved study (#24-012748) enrolled patients who provided written informed consent. RFA was performed with 18-gauge tined probes (10 mm active tips) using bipolar and monopolar modalities. Unlike traditional three-nerve protocols, we employed a comprehensive four- to six-nerve approach (superomedial, superolateral, inferomedial, inferolateral genicular nerves; additional branches as indicated). Ablations were performed under fluoroscopic guidance at 80–85°C for 150–245 seconds per site. Diagnostic blocks with ≥50% pain relief were required prior to RFA. Outcomes were collected prospectively via questionnaires assessing pain relief, duration of effect, and satisfaction.

## RESULTS

- Eleven RFA procedures were performed in 10 patients (one bilateral).
- Two-week follow-up was available for all interventions.
- At least 50 % pain relief occurred in 73 % of procedures.
- Among unilateral cases, 83% of left knee and 60% of right knee RFAs improved.
- Mild transient events (bruising or paresthesia) occurred in two patients; no serious complications were reported.
- Long-term follow-up at 3, 6, and 12 months is ongoing.

**FIGURE 1**



**Figure 1.** Target sites for superomedial, superolateral, and inferomedial nerves

**FIGURE 2**

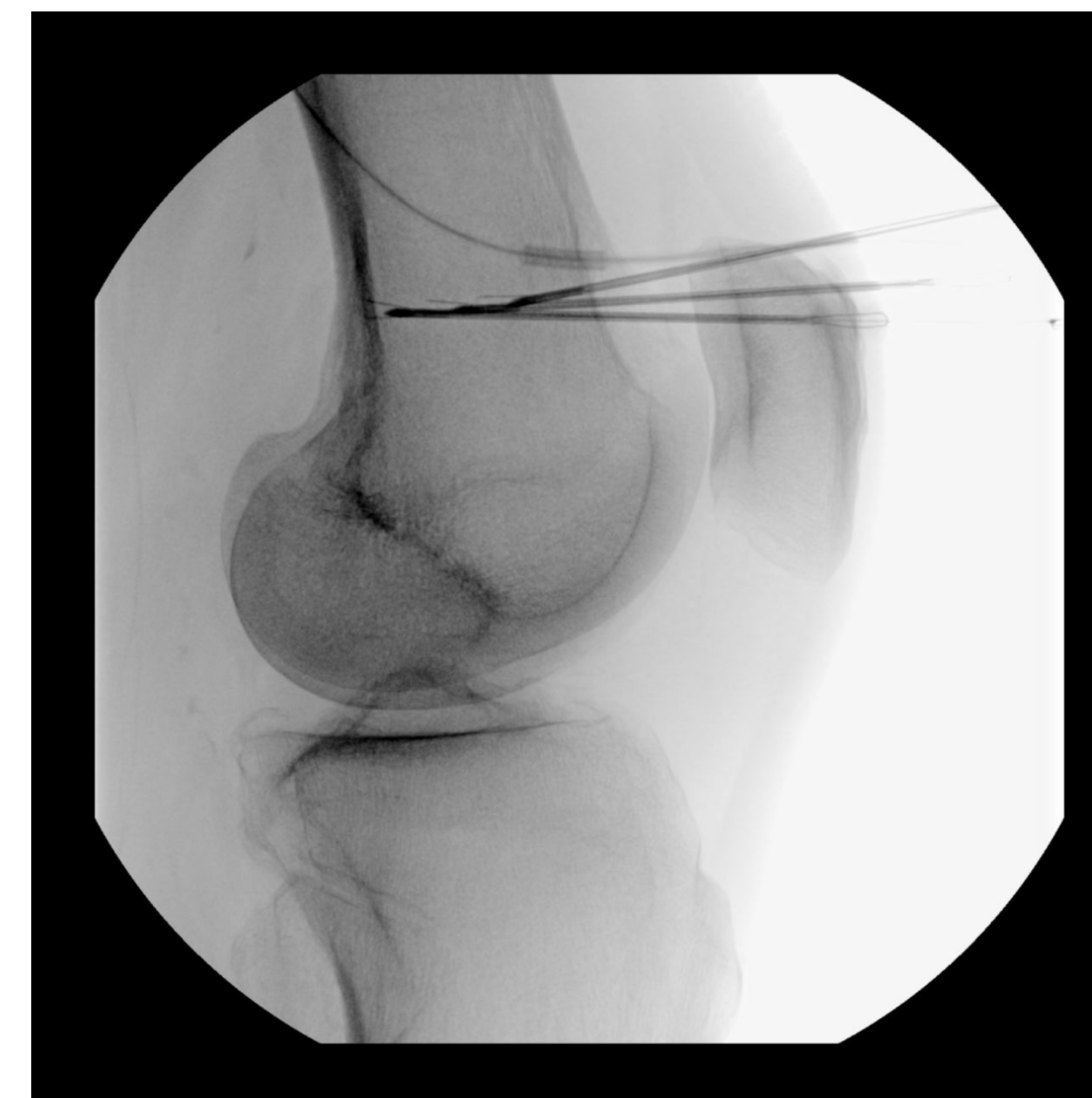


**Figure 2.** Lateral view: needle depth and alignment with the patella

**FIGURE 3**

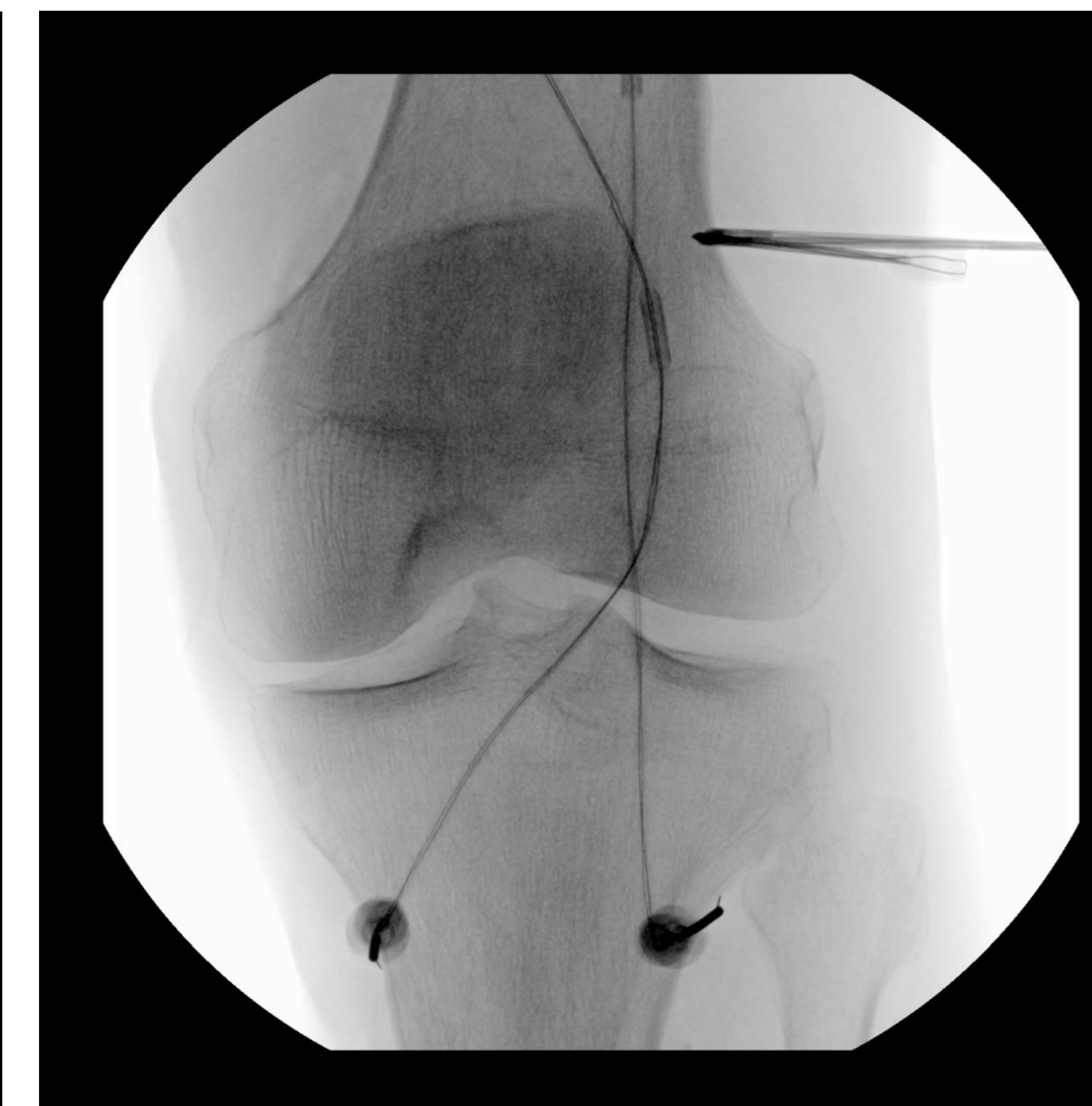


**Figure 3.** Electrodes placed at 4–6 genicular/capsular branches

**FIGURE 4**



**Figure 4.** Dual-tined electrodes at genicular and capsular branches.

## DISCUSSION

The expanded four- to six-nerve RFA protocol using a dual-tined electrode was safe and feasible. By incorporating additional genicular and capsular branches, this approach may provide broader denervation and improve treatment effectiveness. Most patients reported clinically meaningful pain improvement within two weeks. These findings are consistent with the hypothesis that more comprehensive nerve targeting can enhance outcomes. Continued follow-up will help determine the durability of pain relief and confirm long-term safety.

- Technique was safe and feasible.
- 73% achieved ≥50% pain relief.
- Supports refinement of ablation protocols.

## REFERENCES

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