

Utilization of Cooled Radiofrequency Ablation for the Treatment of Uncomplicated Total Knee Arthroplasty Chronic Pain and Stiffness: Initial Single Institution Pilot Study

PURPOSE

To introduce percutaneous image-guided cooled radiofrequency ablation for the treatment of chronic pain and stiffness after total knee arthroplasty with no hardware complication and to establish the clinical efficacy, technical feasibility, and safety profile of this technique.

METHODS AND MATERIALS

This retrospective pilot study includes a total of 19 consecutive patients experiencing persistent chronic pain after total knee arthroplasty, without underlying hardware complications, that failed conservative care. Patients initially underwent anesthetic blocks of the genicular nerve branches to determine C-RFA candidacy. After adequate response to the anesthetic blocks consistent of >50% immediate pain relief, patients were subjected to cooled radiofrequency ablations 2-3 weeks later. Treatment response was evaluated utilizing clinically validated questionnaires (KOOS: Knee injury and Osteoarthritis Outcome Score) and Visual Analog Score (VAS) in order to assess pain severity, stiffness, functional activities of daily living and use of pain medication. Follow-up outcome scores were collected up to 1 year after C-RFA procedure.

RESULTS

A total of 19 knees were treated consecutively between 4/2019 and 1/2020 (mean patient age 70.5 years; 5M:14F). The mean total KOOS score improved significantly from baseline at 36.2 ± 14.1 to 61.9 ± 26.5 at a mean of 10.2 months after treatment ($p < 0.0001$), with significant improvement in mean pain score from 36.5 ± 15.2 to 72.45 ± 25.2 ($p < 0.0001$) and mean stiffness score from 47 ± 21.9 to 68.5 ± 24.9 ($p < 0.0001$). No major complications were encountered. No patients went on to re-treatment, surgical revision, or other intervention.

CONCLUSIONS

Image-guided genicular nerve cooled radiofrequency ablation is a safe and effective treatment method for chronic pain/stiffness, which can be seen after TKA with an intact hardware.

CLINICAL RELEVANCE/APPLICATION:

Currently, there is no effective way to treat symptoms such as pain and stiffness in patient's status post TKA with an intact hardware refractory to conservative interventions. Cooled radiofrequency ablation offers an alternative treatment methodology for these symptoms without significant complications.