



Cooled Radiofrequency Ablation for Chronic Shoulder Pain in Inflammatory Demyelinating Peripheral Neuropathy: A Case Report

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ABSTRACT

Introduction: Shoulder pain is a prevalent condition in the U.S., with a point prevalence of 26% and a lifetime prevalence of up to 67%. Cooled radiofrequency ablation (CRFA) is emerging as a promising alternative to traditional treatments like radiofrequency ablation (TRFA). This case report presents a patient with inflammatory demyelinating peripheral neuropathy (CIDP) and left shoulder osteoarthritis (OA) who underwent CRFA, resulting in significant pain relief.

Materials & Methods: The study was conducted at a tertiary care academic center with informed consent. A 66-year-old male with CIDP and left shoulder OA underwent diagnostic nerve blocks before CRFA.

Results: The patient experienced 100% pain relief for three months after CRFA, targeting nerves innervating the glenohumeral joint.

Discussion: CRFA shows promise in managing both OA and CIDP-related pain. Early intervention with CRFA may benefit similar patients, but further research and larger studies are needed for validation and optimization.

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INTRODUCTION

Shoulder pain is a common issue in the United States, affecting up to 67% of the population, with 26% experiencing it at any given time. Managing this pain can be challenging due to the complex joint anatomy and everyday movements. Treatment options include medication, therapy, injections, neuromodulation, and surgery.

Cooled radiofrequency ablation (CRFA), which cools the probe, offers potential advantages over traditional radiofrequency ablation (TRFA) for chronic pain. CRFA creates larger lesions at lower temperatures. While it has been effective for glenohumeral osteoarthritis, its use for inflammatory demyelinating peripheral neuropathies is less explored. This case report presents a patient with CIDP and left shoulder OA who experienced 100% pain relief for three months after CRFA.

Case Presentation

A 66-year-old male with a complex medical history, including a right brachial plexus injury, presents to a pain clinic with 15 years of left shoulder pain. He also experiences numbness and tingling radiating to the fourth and fifth fingers, similar to symptoms he had in his right upper extremity after a brachial plexus injury from a motorcycle accident 40 years ago. This shoulder pain began 15 years ago after a monkey bite. A neurologist diagnosed him with CIDP with axonal motor and sensory neuropathy in both upper and lower extremities, and he received IVIG treatment with mild improvement. Ten years later, he was diagnosed with shoulder osteoarthritis (OA) (figure 1) due to throbbing pain and crepitations during overhead activities. Traditional treatments like NSAIDs, gabapentin, pregabalin, and opioids provided minimal relief. Physical examination revealed numbness, tingling, atrophy in both upper extremities, and limited hand closure. Left shoulder x-ray confirmed advanced OA.

METHODS AND MATERIALS

This study was performed at a single tertiary care academic medical center. As the case report is devoid of patient-identifiable information, it is exempt from IRB review requirements as per Baylor College of Medicine policy. Informed consent was obtained from the patient prior to CRFA and prior to the penning of the case report.

DISCUSSION

Eckman et al. reported a study on chronic shoulder pain caused by various pathologies, including OA and tendonitis. They used TRFA or CRFA on specific nerves, resulting in a 47.4% responder rate, with pain relief lasting over five months on average. They also proposed a novel TRFA technique targeting the lateral pectoral nerve for anterior pain relief. Tran et al. later performed CRFA on 12 patients with shoulder OA, achieving significant pain reduction without complications. Our patient's sustained pain relief at three months aligns with these findings, supporting CRFA's effectiveness in the shoulder.

Initially, it was uncertain whether CRFA would provide significant relief in our patient with OA, given the pre-existing neuropathic pain from CIDP. However, the targeted CRFA treatment not only addressed musculoskeletal OA pain but also concurrently treated neuropathic pain likely originating from the same nerves.

CONCLUSIONS

This case report demonstrates successful management of chronic left shoulder pain in a patient with multiple comorbidities, including CIDP and OA, using diagnostic nerve blocks followed by CRFA. This approach significantly reduced pain and improved the patient's quality of life. It suggests CRFA could be a viable option for similar patients with refractory neuropathic pain secondary to conditions like CIDP. Early CRFA intervention may enhance short and long-term outcomes (mobility, strength, and pain) while reducing the risk of long-term sequelae like OA and adhesive capsulitis. However, further research and larger studies are needed to validate and optimize this approach.



Figure 1: Left Shoulder XR.

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