

INTRODUCTION

- Chronic elbow pain due to post-traumatic elbow osteoarthritis is a complicated condition to treat and can be a cause for significant functional impairment for the patient. Frequently these patients do not respond well to basic conservative management such as activity modification, over-the-counter pharmacological treatment (NSAID, acetaminophen), and physical therapy. Standard interventional treatments such as intraarticular steroid injection and orthobiologic treatment can be helpful but are generally limited in their effect and durability. Surgical treatments such as debridement and arthroplasty frequently have limited utility due to their technically challenging nature (1).
- Joint denervation by radiofrequency ablation is a well-known technique that has been applied to the management of chronic joint pain due to advanced osteoarthritis. It is well-validated in the pain treatment of lumbar and cervical facet syndrome, knee pain and hip pain. To date, no technique for elbow radiofrequency denervation has been reported due to the complexity elbow joint innervation.
- Here we present a case report of elbow joint denervation by radiofrequency ablation to for the management of chronic pain due to post-traumatic elbow osteoarthritis.

Case Report

- Patient informed consent was obtained for submission of a case report. A 43 year-old male with chronic elbow pain due to post-traumatic osteoarthritis after a distant history of traumatic elbow dislocation was seen in the Physical Medicine & Rehabilitation Pain Clinic. The patient had chronic stiffness and pain in his elbow, chronically rates at 7/10 with activities of daily living, and worse with heavy loading such as carrying, push-up, pull-up. The patient was previously managed with periodic intraarticular elbow steroid injection, alcohol denervation, and orthobiologic treatment (platelet-rich plasma and chorionic products) but their treatment effect was transient. The patient was not interested in pursuing surgical treatment. The patient elected to undergo a trial of elbow radiofrequency denervation.

PROCEDURE/ RESULTS

- Under ultrasound, the following articular branches from the median nerve, radial nerve, ulnar nerve, musculocutaneous nerve, and ulnar collateral nerve were identified. After a positive prognostic block (7/10 drop to 2/10), radiofrequency ablation was performed under direct ultrasound guidance. The baseline VAS score improved over the course of 6 months (7/10 baseline, 3/10 at 4-weeks, 0/10 at 8-weeks and 12 weeks, and 4/10 at 6-months), along with the UEFI-15 (upper extremity functional index-15; 43/60 baseline, 51 at 4-weeks, 54 at 8 weeks, 56 at 12 weeks, and 49 at 6-months). The patient did not have any sensory or motor deficits from the treatment. The patient continued to be limited with higher-level activity such as push-up and throwing, however, he was very satisfied with the baseline pain and functional improvement to ADLs (activities of daily living).

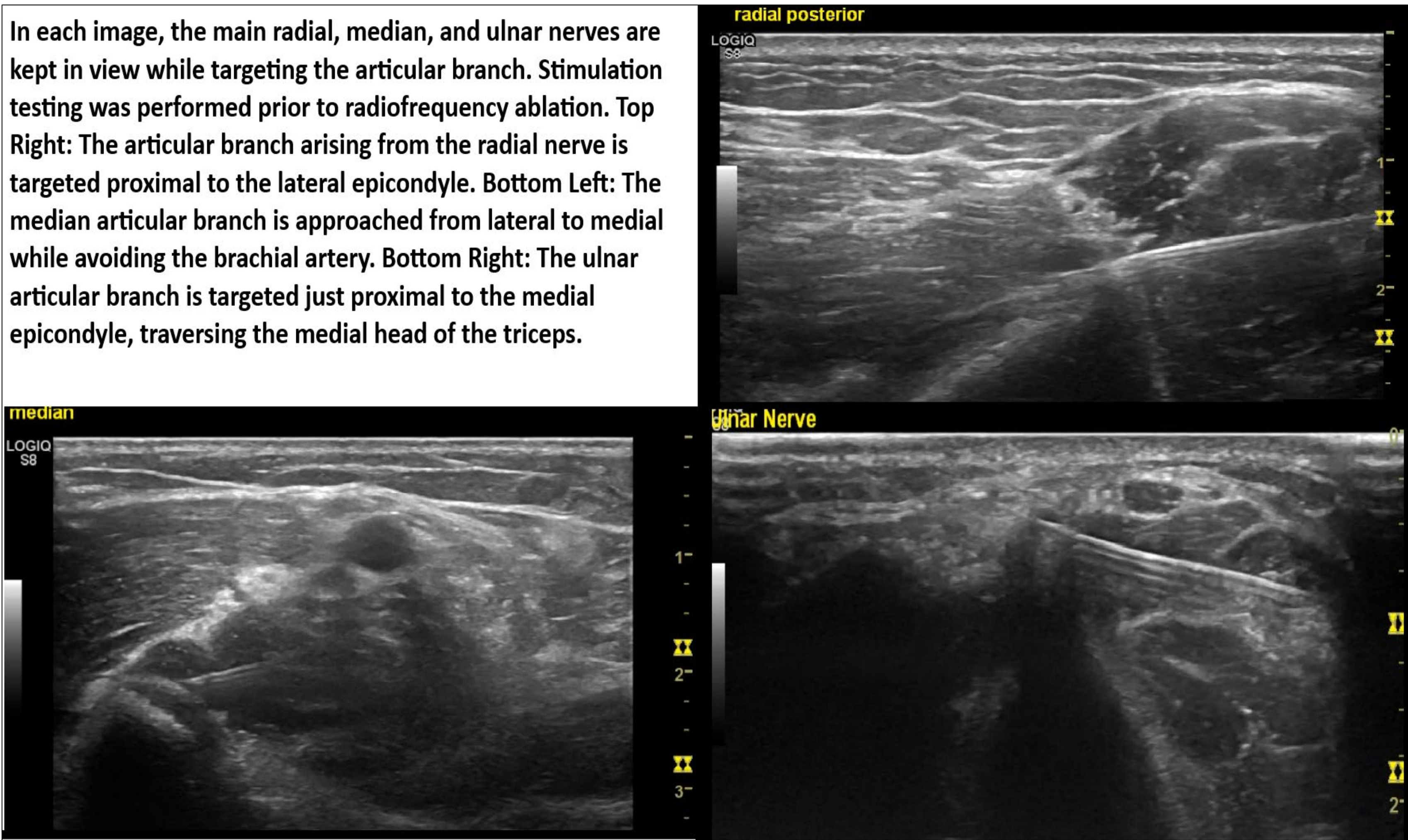


Table:

	Baseline	Block	4 weeks	8 weeks	12 weeks	6 months
VAS	7	2	3	0 baseline, 6-7 on exacerbation	0 baseline, 6-7 on exacerbation	4
UEFI-15	43		51	54	56	49

DISCUSSION

- Periarticular radiofrequency ablation has demonstrated improvement in pain and function in other regions of the body (knee, hip, shoulder, elbow lateral epicondyle) and this same approach was utilized in this case of post-traumatic elbow osteoarthritis (2). Ultrasound was utilized for precision and safety given the multiple motor nerves and blood vessels that cross the elbow joint. In addition, treating as many periarticular nerves as possible has proven beneficial for knee osteoarthritis (ie 3 sites does not seem to work as well as 8) (3). Ultrasound-guided periarticular nerve ablation shows promise in treating recalcitrant post-traumatic elbow arthritis and warrants further study.

CONCLUSION

- This report is the first step toward non-surgical elbow RF denervation. This is a technically challenging treatment due to the complexity of elbow joint innervation. The described technique requires five different nerves to be ablated at multiple locations. The articular nerves are small and can be difficult to visualize under ultrasound. The treatment achieved significant improvement in baseline pain but the pain with activity the loads the elbow joint suggests incomplete elbow denervation. Nevertheless, the patient achieved functional improvement and was satisfied with the treatment. Further study is required to improve and validate the procedure.

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- 2- Umapathy S, Miller M, Chen YT. Novel Ultrasound-Guided Radiofrequency Ablation of the Epicondylar Branch of the Posterior Cutaneous Nerve of the Forearm for Recalcitrant Lateral Epicondylitis. Cureus. 2024 May 28;16(5):e61222. doi: 10.7759/cureus.61222. PMID: 38939254; PMCID: PMC11210423.
- 3- Kim PY, Cohen SP. Genicular Nerve Blocks and Radiofrequency Ablation for Knee Osteoarthritis: More Nerves, More Questions. Pain Med. 2021 May 21;22(5):1019-1021. doi: 10.1093/pm/pnab022. PMID: 33538816.

