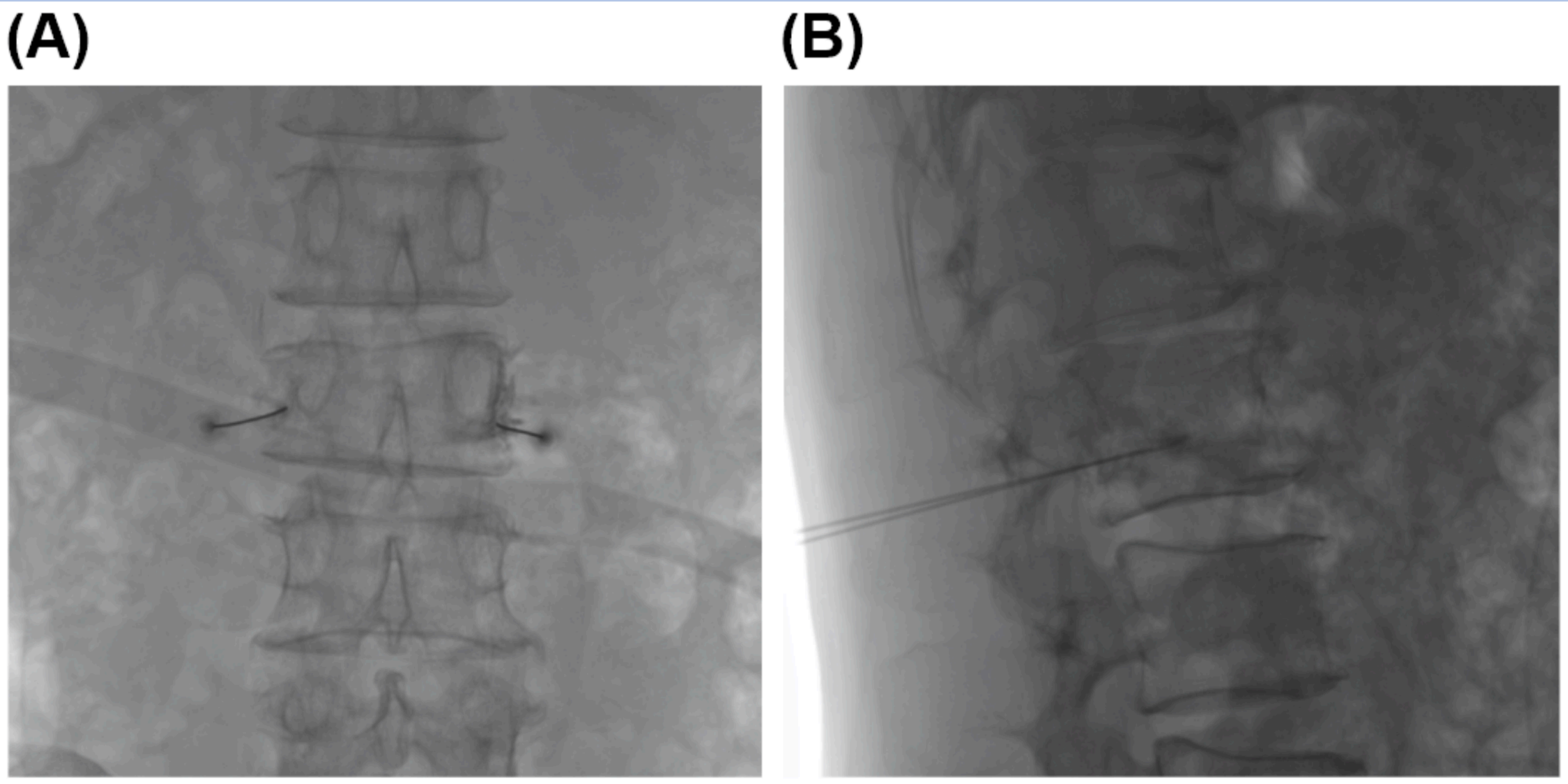


Introduction

The use of percutaneous radiofrequency thermoregulation of the ramus communicans nerve for treating patients suffering from chronic discogenic pain and acute pain from a vertebral compression fracture is not widespread in clinical care settings. Multiple studies have revealed effectiveness of radiofrequency lesioning of the L2 ramus communicans nerve, and/or radiofrequency thermoregulation. Patients are required to be monitored by trained medical staff for changes in ECG and blood pressure throughout the injection process, and procedures are performed in the OR under fluoroscopic guidance. In the context of chronic discogenic back pain, RF thermoregulation has gained attention as a potentially effective strategy to alleviate pain and improve patients' quality of life. Similarly, in acute settings like compression fractures, RF thermoregulation holds promise as an adjunctive treatment to enhance pain relief and expedite the healing process. Despite the potential benefits of RF thermoregulation in both chronic and acute pain settings, there is a need for a comprehensive synthesis of the existing evidence surrounding its effectiveness, safety, and outcomes, which this systematic review aims to explore. If safe and effective, this alternative treatment could provide an alternative treatment to lasting relief from lower back pain.

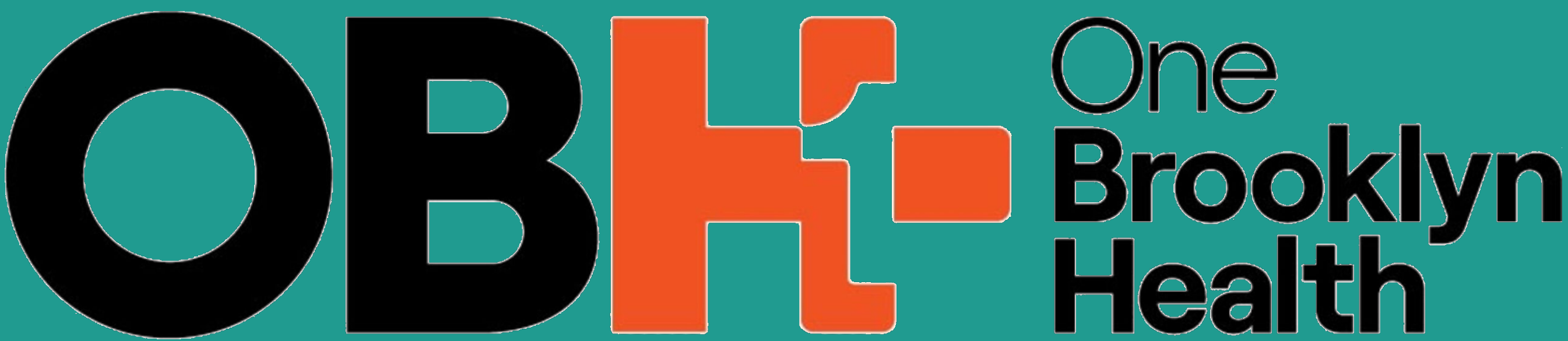
Methods

A comprehensive scientific literature search was conducted through specialized databases such as MEDLINE, EMBASE, CINAHL, PubMed, MedlinePlus, PsycINFO, and Cochrane Library. The search terms used to retrieve the relevant literature in each of these databases were “radiofrequency lesioning” OR “ramus communicans nerve” OR "discogenic low back pain”.



Assessing the Efficacy of Radiofrequency Thermocoagulation of the Ramus Communicans Nerve for Chronic Discogenic Low Back Pain

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Results/Evidence Table

Study	Therapy or Exposure	Outcome/Results
Randomized Controlled Trial	- Sample size 49 - RF Thermocoagulation versus Lidocaine	- Significant VAS pain score reduction in lesion group - Improved SF-36 bodily pain and physical function sub scales by 14.5 points and 15.2 points respectively - One case of mild lower limb weakness, resolved in 15 days
Randomized Controlled Trial	- Sample size 60 - RF Thermocoagulation versus Sham Procedure	No significant differences in pain reduction or global perceived effect between groups
Retrospective Cohort Study	- Sample size 63 - Gray Ramus Communicans Nerve Block	- Significant pain improvement at various time points (3, 14, 30, 90 days) - Resting pain improvement for 3 days - Overall improved quality of life after six months
Retrospective Cohort Study	- Sample size 22 - RF Neurotomy of Gray Ramus Communicans Nerve	- Significant VAS pain score reduction post-RFN 18 patients showed excellent or good outcomes
Retrospective Cohort Study	- Sample Size 52 - Gray Ramus Communicans Nerve Block	92% reported 1 point pain score improvement 63% reported 4 point pain score improvement 88% physicians reported similar improvements 42% patients required fewer analgesics
Case Series	- Sample Size 5 - L2 Ramus Communicans Radiofrequency Lesioning	- Consistent pain relief after at least two treatments 80% reduction in pain medication usage

Discussion

The literature review suggests the potential efficacy of percutaneous radiofrequency thermocoagulation of the ramus communicans nerve for chronic discogenic low back pain and vertebral compression fracture pain. Consistent pain reduction was observed in five out of six studies. Complications were infrequent and mostly mild, indicating a generally safe procedure. Notably, while one randomized controlled trial demonstrated significant pain reduction and improved quality of life, another trial showed no significant differences between treatment and sham groups. This highlights the importance of considering factors like patient demographics, disease severity, procedural techniques, and follow-up duration in interpreting outcomes. While promising, further research, especially larger trials with extended follow-up, is warranted to refine the intervention's clinical application.