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Abstract: 5874

Scientific Abstracts > Chronic Pain

Tined versus internally cooled needles in sacroiliac joint radiofrequency ablation for chronic pain: a retrospective review

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Introduction

Dysfunction of the sacroiliac joint (SIJ) is a common cause of chronic low back pain [1]. Radiofrequency ablation (RFA) of the lateral sacral branches is a procedure that may be recommended after patients fail to respond to conservative treatments [2]. This procedure utilizes a needle to create a thermal lesion at lateral branch nerves that are carrying nociceptive signals from the posterior SIJ [2]. Cooled and tined RFA needles create distinct types of lesions [3]. Cooled needles create a single ellipsoid shaped lesion that extends beyond their tip while tinned needles contain deployable electrodes that can create a wide bipolar lesion across the nerves [3]. There are few studies that have compared cooled and tined RFA needles. We believed that the tined RFA needles would provide a greater and longer lasting analgesic effect due to the larger potential lesion size. This retrospective analysis compared the effectiveness and safety of cooled and tined RFA needles.

Materials and Methods

This retrospective comparative study compared radiofrequency ablation (RFA) procedures using cooled versus tined needles at a tertiary care center (November 2023 – February 2024). The primary outcome was pain improvement (NRS 0-10). The secondary outcomes were adverse events and medication changes. Descriptive statistics were utilized: T-tests for normally distributed continuous data and Mann-Whitney U tests for non-normal distributions. Chi-square tests compared adverse events and medication changes between groups. This study was exempt from IRB review requirements as per Mayo Clinic policy.

Results/Case Report

A total of 112 patients undergoing SIJ RFA with cooled needles and 145 patients undergoing SIJ RFA with tined needle patients were included in the cohort. Groups were similar in baseline characteristics. Pain scores were significantly lower in the cooled vs tined group at 3 months (4.82 vs 5.61, p=0.0137) but not at 6 or 12 months. Proportions changing medication use were not statistically different between groups (8.04% cooled vs 12.41% tinted, p=0.3524). Adverse event rates were very low overall and not statistically different between groups (3.57% cooled vs 2.07% tinted, p=0.7283).

Discussion

This study is the first to compare the effectiveness of tined needles with traditional cooled needles in sacroiliac joint (SIJ) radiofrequency ablation (RFA). Our hypothesis that tined needles would better address anatomical variability and provide greater pain relief with longer-lasting effects was not supported by the data. We found that cooled needles offered superior short-term pain relief at three-months. An ex vivo study comparing lesion volumes generated by cooled RFA and tined needles in chicken breast specimens found that the lesions produced with cooled RFA were significantly larger, supporting the potential superiority of cooled needles [5]. Additionally, a single-center retrospective study reported significant pain reduction and improvements in quality-of-life measures with tined needles for chronic lumbar zygapophyseal joint pain; however, this study did not include a control comparison [6]. This single-center retrospective study revealed that the effectiveness of pain reduction using tined needles versus cooled needles in sacroiliac joint radiofrequency ablation remained consistent at 6 and 12 months. Cooled needles may better decrease pain scores compared to their tined counterparts at 3-months post procedure.

References

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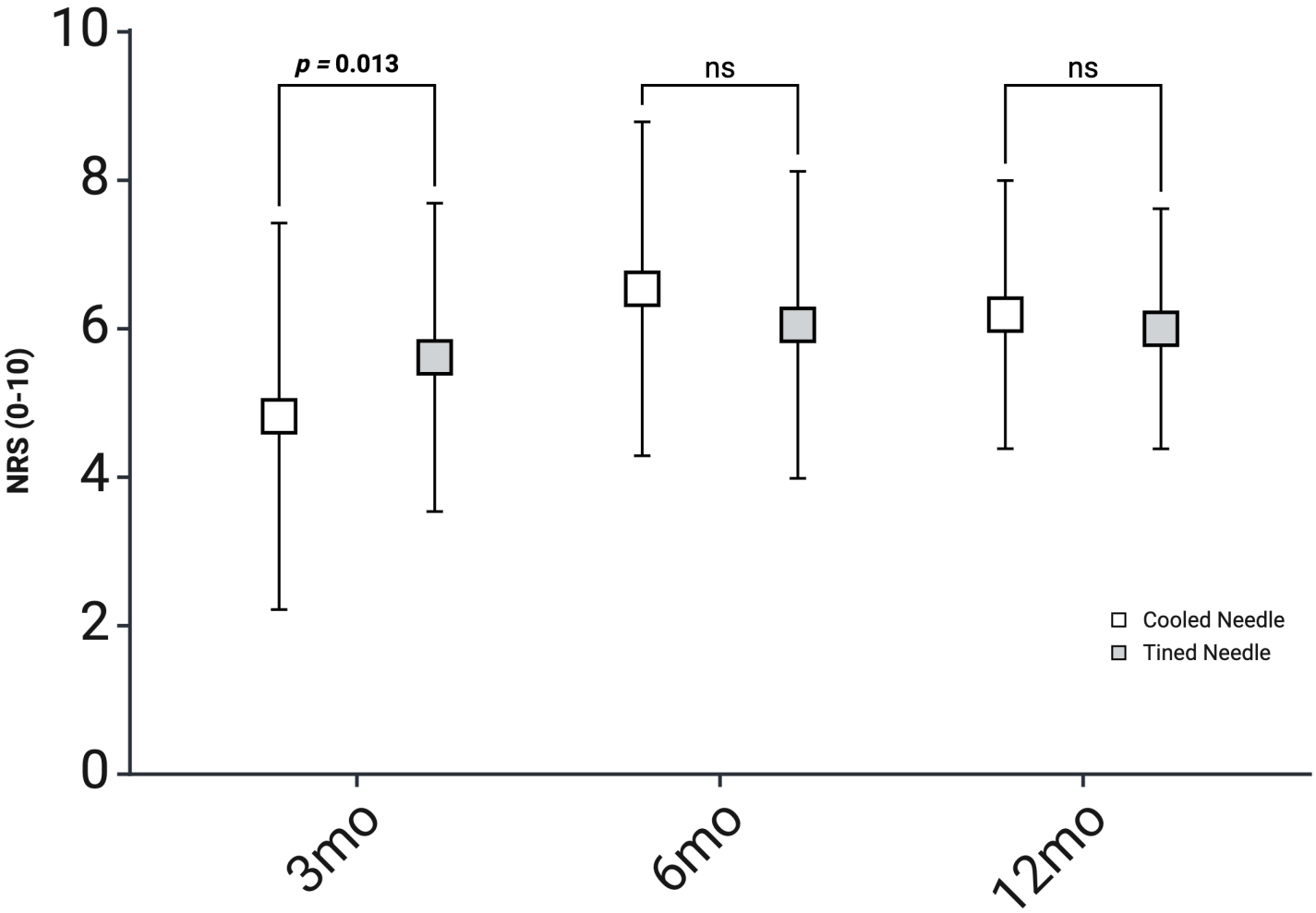
Disclosures

No

Tables / Images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NRS (0-10)
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Cooled Needle
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