

General

Evaluation of Landmark-Based and Fluoroscopic-Guided Sacroiliac Joint Injections-A Pilot Series

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Background

Sacroiliac joint (SIJ) dysfunction is a frequently underdiagnosed contributor to chronic low back pain. Although fluoroscopic-guided SIJ injections remain the gold standard for both diagnostic and therapeutic purposes, their availability may be limited by insurance barriers or logistical constraints. In such cases, alternative approaches such as ultrasound-guided or landmark-based injections may offer practical, rapid solutions in outpatient settings. This case series aims to compare outcomes between landmark-based and fluoroscopic-guided SIJ injections in patients presenting with clinical findings suggestive of SIJ-related pain.

Methods

Ten patients with suspected SIJ-related pain were identified based on a positive Fortin's Finger Test and FABERs examination. Five patients underwent landmark-based SIJ injections, performed by palpating the posterior superior iliac spine (PSIS) and directing the needle slightly inferior to this landmark. The remaining five patients received fluoroscopic-guided SIJ injections using standard imaging protocols. All injections consisted of 2 mL of 0.25% bupivacaine combined with 40 mg of triamcinolone. Pain relief was assessed at a 2-week follow-up using patient-reported percentage improvement.

Results

Among patients who underwent landmark-based injections, reported pain relief at two weeks was 50%, 40%, 50%, 90%, and 50%, with an average relief of 56%. In contrast, patients receiving fluoroscopic-guided injections reported pain relief of 80%, 50%, 75%, 100%, and 75%, with an average relief of 76%. No procedural complications were reported in either group.

Discussion

Fluoroscopic-guided SIJ injections were associated with greater and more consistent pain relief at short-term follow-up. However, landmark-based injections provided meaningful clinical benefit in the majority of patients and may serve as a practical option when immediate intervention is needed, particularly when imaging resources are unavailable or delayed due to insurance approval. The absence of complications in either group supports the relative safety of both approaches when performed by trained interventionalists. Notably, we maintain that fluoroscopic-guided injections remain the gold standard and should be utilized to confirm sacroiliac joint pain or when assessing patients for potential advanced interventions.

Conclusion

While fluoroscopic guidance offers superior accuracy and therapeutic efficacy for SIJ injections, landmark-based techniques can be a viable solution in specific clinical scenarios. Fluoroscopic-guided injections remain the gold standard and should be

utilized to confirm sacroiliac joint pain or when assessing patients for potential advanced interventions.

INTRODUCTION

Sacroiliac joint (SIJ) dysfunction is a recognized contributor to chronic low back pain, with estimates suggesting it may be responsible for up to 15–30% of cases in patients with chronic low back pain complaints.^{1,2} Despite its clinical relevance, SIJ-related pain remains underdiagnosed due to its nonspecific presentation and overlap with other lumbosacral pathologies. Accurate diagnosis and effective management of SIJ dysfunction are important for a comprehensive and effective treatment.^{3,4}

Treatment typically begins with physical therapy and behavior modification. Oral analgesics such as anti-inflammatory medications can also provide benefit. Fluoroscopic-guided SIJ injections are widely regarded as the gold standard for both diagnostic confirmation and therapeutic relief.^{3–6} These procedures offer the advantage of precise delivery of injectate. However, in many outpatient and resource-limited settings, access to fluoroscopy may be delayed due to logistical constraints or insurance authorization barriers. As such, alternative approaches, including ultrasound-guided or landmark-based techniques may be utilized.^{7–9}

Landmark-based SIJ injections rely on palpation of anatomical landmarks, such as the posterior superior iliac spine (PSIS), to approximate needle placement in the region of the SIJ. While this method lacks the visual confirmation provided by imaging, it offers the potential for rapid intervention in patients with significant pain who require timely symptom control.⁹

This series aims to compare clinical outcomes between landmark-based and fluoroscopic-guided SIJ injections in patients with suspected SIJ-related pain, based on standardized physical exam findings.

METHODS

This retrospective series evaluated ten adult patients presenting with suspected SIJ related pain. All patients were assessed and selected based on consistent clinical findings, including a positive Fortin's Finger Test and a positive FABERs (Flexion, Abduction, and External Rotation) examination, which are commonly used provocative maneuvers suggestive of SIJ pathology. While additional SIJ provocative tests were performed in most cases, only the Fortin's Finger Test and FABERs were consistently documented across all patient records.

Landmark-based SIJ injections were performed by palpating the PSIS and directing the needle slightly inferior to this landmark to approximate the SIJ region. No imaging was used during these injections. The second group received fluoroscopic-guided SIJ injections to confirm needle placement in the inferior aspect of the joint. An example is shown in [Figure 1](#).

In both groups, the injectate consisted of 2 mL of 0.25% bupivacaine combined with 40 mg of triamcinolone. All



Figure 1. Fluoroscopic image demonstrating sacroiliac joint (SIJ) injection. A 22-gauge spinal needle is positioned within the inferior aspect of the sacroiliac joint under fluoroscopic guidance.

procedures were performed under sterile conditions by trained interventional pain physicians.

Pain relief was evaluated at a two-week follow-up visit using patient-reported percentage improvement in pain symptoms compared to baseline. No imaging or repeat injections were performed during this short-term follow-up period. Any adverse events or complications related to the procedure were documented.

RESULTS

A total of ten patients with suspected SIJ related pain were included in this pilot case series. Five patients underwent landmark-based SIJ injections, while five received fluoroscopic-guided SIJ injections. All procedures were performed without complication, and there were no reports of infection, neurologic injury, or adverse reactions in either group.

In the landmark-based injection group, patient-reported pain relief at the two-week follow-up was 50%, 40%, 50%, 90%, and 50%. The mean pain relief for this group was 56%. In the fluoroscopic-guided injection group, reported pain relief at two weeks was 80%, 50%, 75%, 100%, and 75%, with a mean pain relief of 76%. Results are displayed visually in [Figure 2](#).

While both groups experienced measurable improvement in pain symptoms, the fluoroscopic-guided group showed greater and more consistent relief. No procedure-related complications were noted between the two groups.

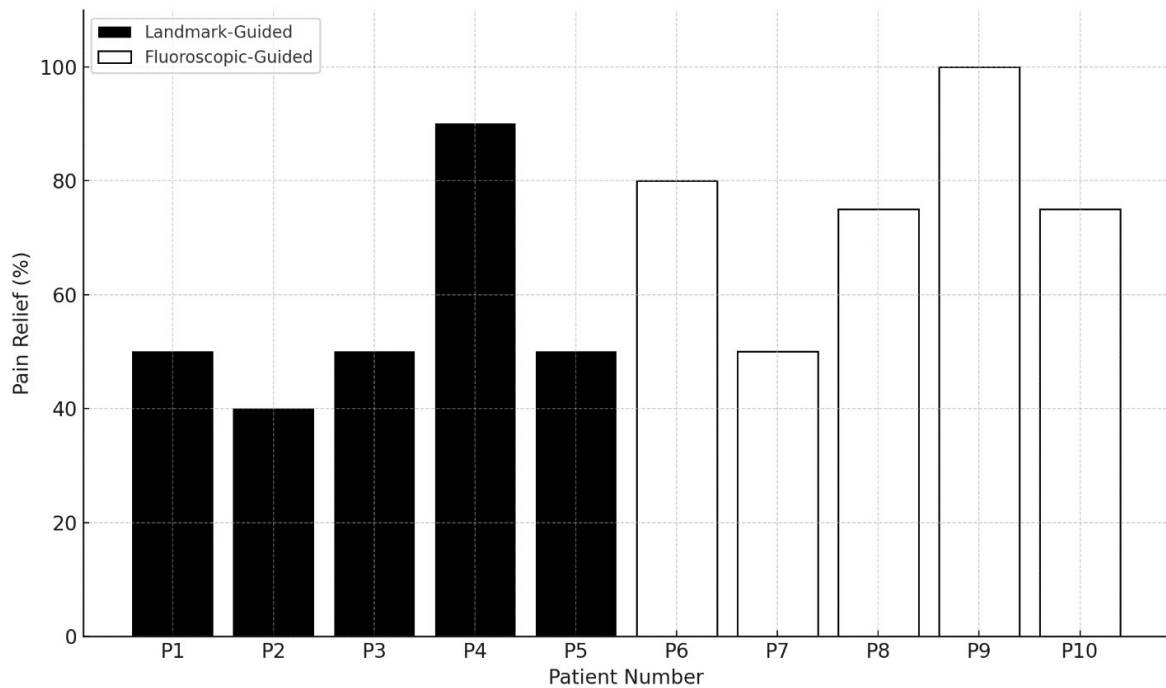


Figure 2. This bar chart displays individual patient-reported pain relief percentages at 2-week follow-up after sacroiliac joint (SIJ) injections.

The left five black bars represent patients who underwent landmark-guided SIJ injections, and the right five white bars represent those who received fluoroscopic-guided SIJ injections.

DISCUSSION

This pilot series compares clinical outcomes of landmark-based and fluoroscopic-guided SIJ injections, providing early insights into the practical application and limitations of each approach in a small outpatient cohort.

Fluoroscopic-guided SIJ injections remain the diagnostic and therapeutic gold standard due to their precision in confirming accurate needle placement and delivering medication directly to the joint space. In our series, the fluoroscopic group demonstrated superior mean pain relief (76% vs. 56%) with more consistent patient-reported outcomes. These findings are aligned with existing studies emphasizing the importance of image guidance to enhance accuracy and improve clinical outcomes, particularly for diagnostic blocks that may guide subsequent interventional decisions, such as radiofrequency ablation.^{9,10}

In contrast, landmark-based injections, though lacking imaging confirmation, still produced moderate symptom relief in most patients, with one patient reporting as high as 90% improvement. This suggests that landmark-based approaches may still have value, particularly in resource-limited settings, when fluoroscopy is not readily available, or when insurance or scheduling barriers delay image-guided procedures. Their utility may also extend to patients with a well-established diagnosis seeking temporary symptom relief.

The absence of complications in both groups suggests that, when performed by trained proceduralists, both tech-

niques carry a favorable safety profile. However, it is important to acknowledge the potential for inaccurate needle placement and suboptimal injectate delivery with landmark-based injections, which could lead to reduced efficacy or misdiagnosis if used as a primary diagnostic tool. As such, due to the absence of visual confirmation, landmark-guided injections should not be used to confirm sacroiliac joint involvement when evaluating patients for surgical interventions such as SIJ fusion.

CONCLUSION

This study highlights the continued importance of fluoroscopic-guided SIJ injections as the preferred method for diagnostic accuracy and therapeutic efficacy, particularly when evaluating patients for advanced interventions such as SIJ fusion. However, landmark-based injections may provide a practical option for symptom relief in carefully selected patients with clear clinical indicators of SIJ dysfunction, especially when imaging resources are limited or delayed. Further research is needed to define their role more clearly, including studies with larger sample sizes, objective outcome measures, and longer-term follow-up.

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