

Sacroiliac Joint Fusion using Single Compressive Lateral Transfixing Implant in a retrospective case series of Ten Veterans

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Introduction

Sacroiliac joint (SIJ) dysfunction is a common source of chronic low-back pain, implicated in approximately 15% to 30% of cases. It is especially prevalent among individuals with prior lumbar fusion, spinal deformity, or biomechanical instability. Minimally invasive surgical approaches to SIJ fusion, most commonly lateral and posterior have gained popularity for patients who fail conservative therapy. However, questions remain regarding the optimal surgical technique, particularly with respect to the number and type of implants required to achieve durable stabilization. Biomechanical models suggest that a single transfixing lateral implant may achieve equivalent or superior primary stability when compared to multi-implant constructs. While promising, limited clinical evidence exists to validate this hypothesis. This retrospective series evaluates short and mid-term clinical outcomes following SIJ fusion with a single compressive lateral trans iliac implant in a cohort of veterans with refractory SIJ-mediated pain.

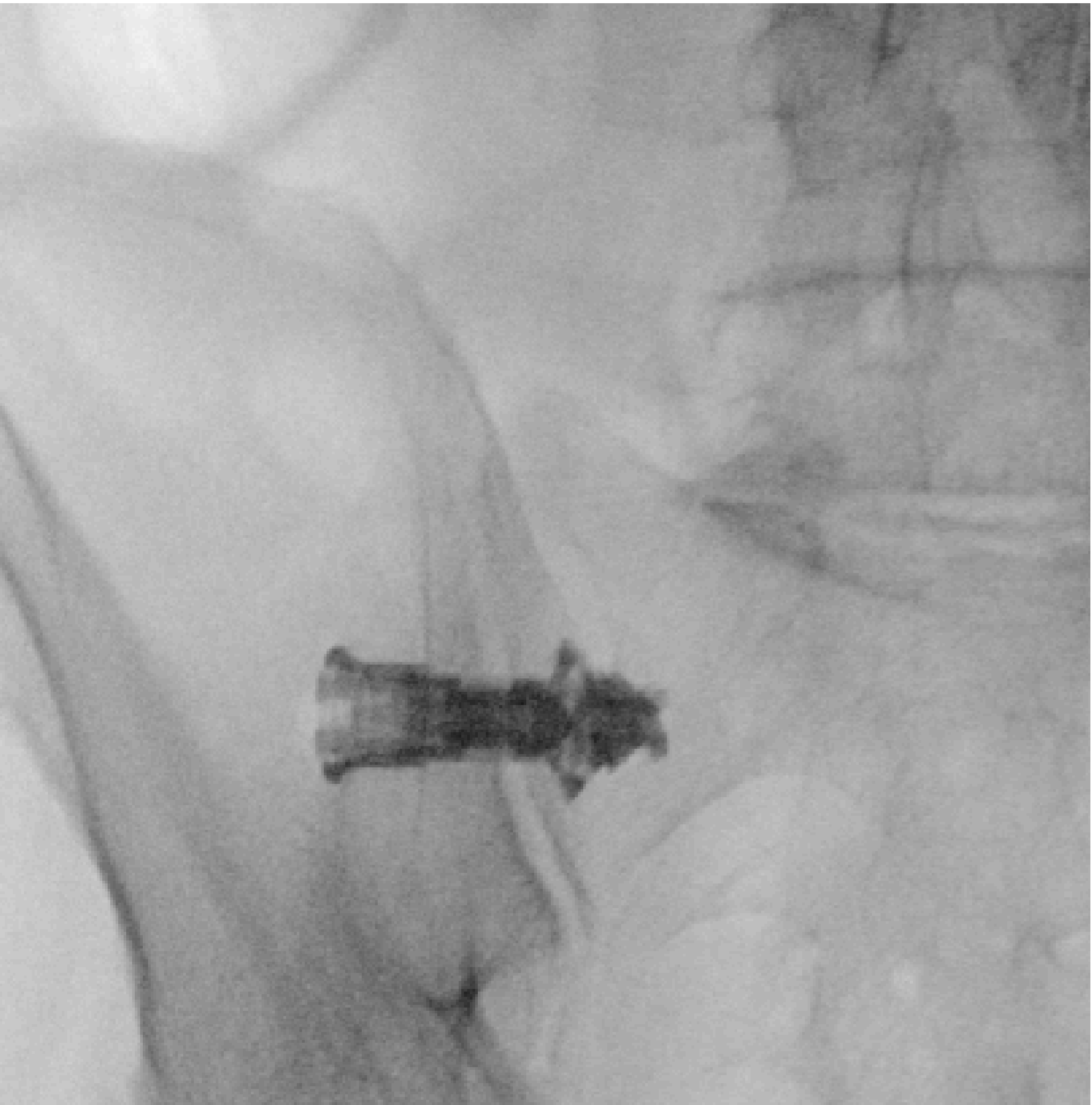


Figure 1: Single Compressive Lateral Transfixing Implant in outlet view.



Figure 2: Single Compressive Lateral Transfixing Implant in Lateral view

Materials & Methods

Patient informed consents were obtained for submission of case report. All patient Protected Health Information has been de-identified. This retrospective review included ten consecutive patients (age range 44–66 years; 60% male) who underwent percutaneous lateral SIJ fusion between July 2024 and July 2025 at a Veterans Affairs facility. Inclusion criteria required ≥ 12 months of axial pain, failure of multimodal conservative treatment (including physical therapy, medications, and injections), ≥ 3 positive SIJ provocative maneuvers, and $\geq 75\%$ relief following diagnostic fluoroscopy-guided SIJ block. All procedures were performed under fluoroscopic guidance with insertion of a single Lateral compressive and transfixing titanium implant (Liberty) augmented with demineralized bone matrix (DBM) putty. Patients were followed at 2 weeks, 3 months, and 6 months postoperatively. Primary outcomes included changes in Numeric Pain Rating Scale (NPRS) and Oswestry Disability Index (ODI). Secondary outcomes included return to function, opioid discontinuation, and perioperative complications. Descriptive statistics and repeated-measures ANOVA were used to assess change over time.

Results

Baseline NPRS averaged 7.6 ± 1.1 , decreasing to 3.4 ± 1.3 at 2 weeks, 2.3 ± 1.5 at 3 months, and 2.1 ± 1.4 at 6 months ($p < 0.001$). ODI improved from 35.8 ± 6.4 to 24.6 ± 5.8 (2 weeks), 19.2 ± 6.9 (3 months), and 17.9 ± 7.1 at 6 months ($p < 0.001$). All patients achieved MCID (100%), Eight patients (80%) achieved $\geq 50\%$ pain reduction. Seven (70%) discontinued opioid use. No implant migration, neurologic injury, or need for revision was reported. One case of superficial wound erythema was successfully treated with oral antibiotics. Average operative time was 32 ± 9 minutes; all procedures were completed on an outpatient basis.

Discussion

This series supports the safety and efficacy of single-implant lateral SIJ fusion in patients with chronic SIJ dysfunction, demonstrating pain and disability reduction, low complication rates, and avoidance of hardware-related failures. Compared to historical data for multi-implant systems, outcomes appear comparable or favorable. These findings are consistent with biomechanical literature suggesting adequate stabilization from a single transfixing construct. Benefits may include shorter operative time, reduced radiation exposure, and decreased implant cost. Limitations include small sample size, retrospective design, and follow-up limited to six months. Nonetheless, results warrant further evaluation through prospective, comparative studies.

IRB and Disclosure

Lexington VA Healthcare IRB # 1893573-1; Informed consent obtained and is on file. All patient data are de-identified. No external funding or industry sponsorship. Device name mentioned once for procedural clarity.

List of Abbreviations

SIJ: Sacroiliac Joint	DBM: Demineralized Bone Matrix
SIJF: Sacroiliac Joint Fusion	CSI: Corticosteroid Injection
BMI: Body Mass Index	

References

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