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Posterior Approach to Sacroiliac Joint Fusion as a Salvage Procedure: A Case Report

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Background: Sacroiliac joint (SIJ) pain is a prevalent cause of chronic low back pain (LBP), affecting many adults in the United States. The SIJ provides stability and proper weight distribution from the trunk. Degenerative disruption to this joint can result in shearing and tension that can lead to significant pain and force imbalances. Previous treatment often failed to provide complete and long-term pain relief.

Case Report: This article follows a 72-year-old woman with a medical history of chronic right-sided LBP. The patient received a corticosteroid injection, a T10-S1 fusion, conventional therapies, such as physical, nonsteroidal anti-inflammatory drugs, and tizanidine without sustained relief. Patient reported complete relief after the LinQ procedure (PainTEQ, Tampa, FL).

Conclusions: This case report highlights the emerging evidence on the sustained safety and efficacy of a salvage posterior SIJ fusion technique using the LinQ device (PainTEQ, Tampa, FL) in a patient with persistent back pain, following multiple unsuccessful treatments.

Key words: Sacroiliac joint fusion fusion, posterior approach, case report, LinQ, low back pain, posterior approach to sacroiliac joint fusion

BACKGROUND

Sacroiliac joint (SIJ) pain is a common cause of chronic low back pain (LBP). It is estimated that 70% to 85% of adults in the United States will experience LBP at some point in their lives, and from that sample 15% to 30% will also suffer from SIJ pain (1). The SIJ is the largest synovial joint in the body. Despite significant individual differences regarding shape and size, the surface area of the SIJ is approximately 17.5 cm², with volume ranging from 0.6 to 2.5 mL. The synovial cleft narrows and reduces with age, measuring 1-2 mm in younger adults and 0-1mm in adults over 70 years old (4,6). The SIJ is an irregularly shaped serpentine joint structure bordered by strong anterior and posterior sacroiliac ligaments. The joint functions for stability and works on 3 axes to allow for movements like flexion/extension, rotation, and translation. The SIJ serves as an effective pivot, facilitating smooth movement and distributing loads from the upper body efficiently. Interruption to this system can result in shearing, torsion, rotation, and tension that can lead to significant pain and force imbalances (2). The etiologies for SIJ pain can be divided into intraarticular (arthritis and infection) and extraarticular (fractures, ligamentous injury, and enthesopathy) causes. Prolonged exercise, pregnancy, spinal fusion, and hip pathologies may increase the risk of developing SIJ pain (3,4). Traditional management of SIJ pain involves oral anti-inflammatory medications, physical therapy, SIJ steroid injections, and radiofrequency ablation. Patients who have failed these interventional therapies are considered for SIJ fusion: lateral and posterior approach, bar stabilization (1,2,5). The minimally invasive posterior approach to SIJ fusion has been beneficial in minimizing complications and improving pain recovery

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(1). This study aims to present the posterior approach to SIJ fusion as a salvage procedure for our patient who did not achieve enough pain relief from trans-iliac-sacral-iliac bar stabilization.

Health Insurance Portability and Accountability Act (HIPAA) privacy regulations requirement is met, patient provided a written consent/HIPAA authorization.

CASE PRESENTATION

A 72-year-old woman presented to the pain management clinic with a past medical history of chronic right-sided LBP. She reported chronic back pain that has worsened in intensity this year. The patient stated that she underwent T10-S1 fusion with a trans-iliac-sacral-iliac bar stabilization complicated by a T12-L1 hardware fracture in 2018. The preoperative examination revealed classical features of SIJ LBP, including isolated pain below the belt line, with radiation to her right hip, groin, and buttocks, especially with standing and walking. The patient's prior interventions for LBP included conventional therapies, such as physical and aqua therapy, nonsteroidal anti-inflammatory drugs, Tylenol, and tizanidine. She also tried interventional treatment, such as right hip bursa corticosteroid injection and epidural steroid injection without sustained relief. The patient underwent a diagnostic SIJ block with 1.5 mL of 0.5% bupivacaine with > 75% relief on 2 separate occasions before symptoms recurred within 1-2 days. As such, she agreed to undergo a posterior approach for right SIJ fusion using the LinQ procedure (PainTEQ, Tampa, FL), which resulted in complete and sustained pain relief.

The patient was placed in a prone position and received 600 mg of clindamycin. The lumbosacral region was prepped with chlorhexidine, and a 1.5 cm midline incision was made. Fluoroscopy was then used to guide the insertion of a Steinmann pin and tissue dilators, allowing for proper placement of a joint decorticator to create a cavity fit for the allograft implant. The implant was inserted, positioned, and secured under fluoroscopy (Fig. 1), then the wound was then irrigated and closed.

CONCLUSIONS

It has been estimated that up to one-third of patients with chronic LBP may have concomitant SIJ pathology contributing to the pain, with SIJ being implicated in 10% to 38% of LBP across numerous studies (2,3). The SIJ has a rough surface surrounded by durable ligaments and muscles bridging the pelvis and spine, allowing the joint to function for weight transfer, impact absorption, stability, and strength (4). There are numerous factors that can disrupt the SIJ, including infection, arthritis, and fracture. Additionally, certain conditions also increase the risk of SIJ pathologies, such as previous lumbosacral fusion, spinal stenosis, and hip disorders (2). Considering the substantial impact of SIJ dysfunction in society and the health care system, continuous efforts are being made to develop effective therapies that minimize morbidity.

Recent studies have shown that the posterior SIJ fusion technique using the LinQ device (PainTEQ, Tampa, FL) is both safe and effective. Patients who underwent this procedure saw significant reduction in pain with improved and sustained mobility (6,7). Subsequent research has supported and showcased this approach's superiority, compared to the traditional lateral approach. Using the LinQ implant (PainTEQ, Tampa, FL), patients reported > 80% returned mobility and pain relief at 12 months follow-up, with no adverse event related to the implant device (7). Similarly, our patient

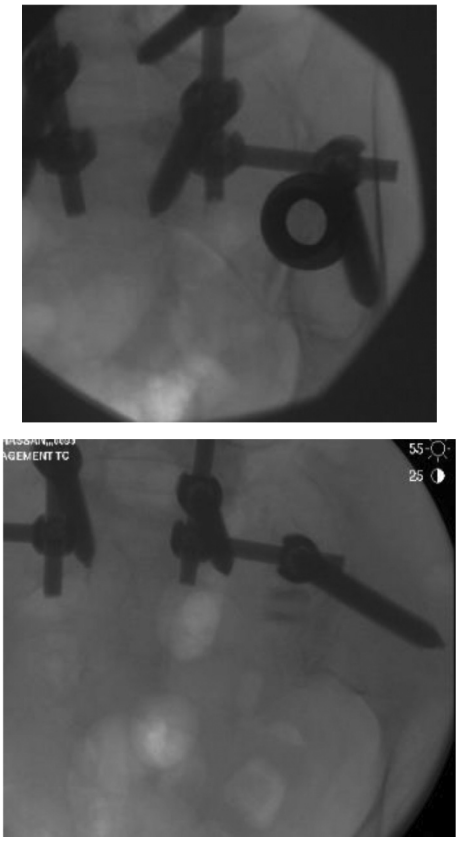

Fig. 1. The insertion of the LinQ implant under fluoroscopy.

experienced substantial pain relief and prominent return of functionality after the procedure. These results support the conclusion that the LinQ device (PainTEQ, Tampa, FL) is dependable and is an effective option for other patients suffering from sacroiliitis-related chronic LBP refractory to other treatments.

Our case report discusses the safety and long-term efficacy of a salvage posterior SIJ fusion technique for our patient with right sacroiliitis, who previously had trans-iliac-sacral-iliac bar stabilization. She was refractory to other conservative management and therapeutic SIJ injections. We saw significant improvement in this patient's pain a few days after the salvage posterior SIJ fusion surgery, as evidenced by her reported ability to perform daily activity without discomfort. Further research is needed to augment the growing evidence supporting the favorable safety of the posterior SIJ fusion technique.

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