

## Brief Report

# Sacroiliac Joint Debridement: A Novel Technique for the Treatment of Sacroiliac Joint Pain

SCOTT M.W. HAUFE, M.D.,<sup>1</sup> and ANTHONY R. MORK, M.D.<sup>2</sup>

### ABSTRACT

**Objective:** This study was a retrospective analysis of 38 patients who underwent sacroiliac joint debridement (SJD) as a treatment for confirmed sacroiliac joint (SI joint) pain. **Background Data:** This is a new, unpublished, minimally invasive (we define minimally invasive as a surgery with an incision of less than 1 inch) surgical technique. There are no prior studies on this surgery, but the surgery is compared to SI joint fusion surgery, which offers a success rate of 50–70% in larger studies. **Methods:** Thirty-eight patients with confirmed SI joint pain via a preoperative modified SI joint injection underwent SJD. These patients were followed up at 12-month intervals to determine their degree of pain relief from this surgery. **Results:** Of the 38 patients, 61% of these patients had 50–100% reductions of their VAS and 53% had >75% improvement for >2 years. No complications were noted. Histology sections of the removed tissues revealed a non-inflammatory degenerative musculo-tendinous tissue similar to a chronic tendonitis. **Conclusions:** SJD is a reasonable treatment option for SI joint pain, which has a low complication rate and a success rate similar to SI joint fusion. Sacroiliac joint pain may be related to a degenerative musculo-tendinous condition of the surface of the joint on the iliac side.

### INTRODUCTION

SACROILIAC JOINT (SI joint) pain is a significant cause of low back pain.<sup>1–3</sup> Some authors place the significance of SI joint pain at 15% of the population, which would make it a very significant problem.<sup>4</sup> Traditionally, SI joint pain has been treated with an SI joint injection, which usually provides only short-term relief. Recently, SI joint fusions have been utilized, with questionable results. One of the troubling questions is whether the pain arises from the joint itself or the tissues around the joint. Our study investigates whether or not a significant portion of SI joint pain is due to the outer tendinous insertions of the iliac crest and posterior superior iliac spine (the outer SI joint region) and that this problem can be treated with sacroiliac joint debridement (SJD).

SJD is a new minimally invasive technique (we define minimally invasive spine surgery as a surgery with an incision that is less than 1 inch) that utilizes specialized tubular retractors for the treatment of SI joint pain.

### MATERIALS AND METHODS

Our study is a retrospective analysis of 38 patients who underwent an SJD. For study purposes, patients were at least 2 years post-SJD, and no one was eliminated from the study unless they were deceased or they were unable to be located. Baseline VAS and Oswestry scores were obtained on all patients in the study prior to surgery but after the diagnostic SI joint injection. The age range for the patients spanned all age groups, and included those 43–81 years of age. Median age was 68, and mean age was 66. The study included 17 (46%) males and 21 (54%) females. Patients had an average duration of pain of 10.4 years (median = 7.5). Patients underwent the SJD only if they had excellent relief (75% or greater reduction in pain) of their SI joint pain with a modified diagnostic SI joint injection of 5 cc of 0.25% Bupivacaine in the outer surface of the joint region near where the tendinous insertions are located on the pelvic side of the joint. Thus, the injection is not a true SI joint injection but attempts to anesthetize the region to

<sup>1</sup>Pain Management and Anesthesiology, <sup>2</sup>Spine Surgery, MicroSpine Center, DeFuniak Springs, Florida.

be treated with the SJD surgery and thus the injection was focused on the outer surface of the joint itself. The injection would be better classified as a posterior superior iliac crest tendon injection and for the purpose of this study we are referring to it as a modified SI joint injection. The criteria for a successful preoperative diagnostic injection was at least a 75% or greater reduction in the patients pain for a period of at least 1 h. The diagnostic injection was temporary in all the patients treated by the SJD surgery and thus, the injection itself was not considered a long-term treatment modality. The SI joint injection was utilized as the diagnostic criteria since it has been shown to be a good confirmatory diagnostic test for SI joint syndrome.<sup>5</sup> Patients with successful temporary diagnostic blocks underwent the SJD surgery and were followed-up at 12-month intervals. The surgery is performed as an outpatient procedure and lasted approximately 30 min per side. Patients only had the SI joint surgically treated that was painful preoperatively and thus surgeries were either bilateral or unilateral depending on the patient's complaints. The procedure begins with the utilization of fluoroscopy to identify the joint region. Local anesthesia with 0.25% Bupivacaine is utilized to anesthetize the skin but not the deep tissues. The patient is sedated but awake during the procedure for communication purposes. Purposely, the patient is awake and therefore he can help determine if the region is devoid of pain at the conclusion of the surgery as well as any stimulation of any nerves. A small incision approximately 1.5 cm is made in the skin. Through this incision, a specialized dilating system is inserted into the back to dilate the soft tissues to approximately 1 cm in diameter. Through this 1-cm portal, pituitaries were utilized to remove the soft tissues. The electrocautery unit was set at 40 watts and was utilized to destroy the capsular tissues overlying the joint and to destroy the dorsal rami nerves of the joint. Once the iliac bone is visualized, electrocautery and a holmium laser set at 15 watts and 10 Hz was utilized to denude the bone of the ligamentous insertions on the crest of the ilium and to complete the removal of the capsular and nervous tissues of the joint. The holmium laser utilized a straight-firing fiber and was held in place via a metal supporting tube. Once the painful region of the ilium is denuded of the soft tissues, a hand-burr is utilized to smooth the iliac surface. Finally, a probe is inserted in an attempt to sensitize the region and confirm with the patient that the pain was eliminated. After confirming the pain had been eliminated, the dilating tube is removed and the incision is closed (Fig. 1).

## RESULTS

Of the 38 patients who underwent the SJD procedure, 23 patients (61%) reported a 50 to 100% VAS reduction in their pain. Of these, 20 patients (53%) had greater than 75% reduction of their pain. Three patients (8%) claimed a 25–50% reduction in their VAS scores. Nine patients (23%) demonstrated mostly poor results (25% or less improvement), and three patients (8%) claimed an increase in their VAS pain scores. Therefore, most patients either developed a good result or a poor result with few individuals (16%) in the 25–75% improvement range. The average baseline VAS was 7.5 and changed to 3.4 at 12 months for all groups. Thus there was an

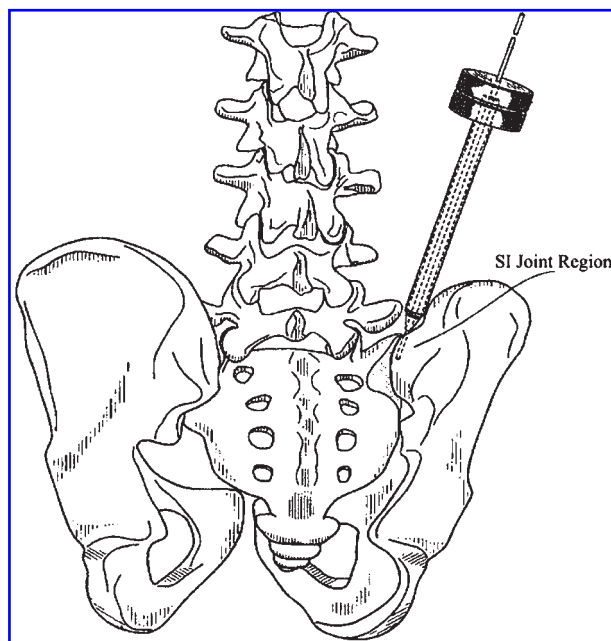


FIG. 1. Electrocautery of SI joint.

average reduction in the VAS by 4.1 for all patients. There were no complications noted for any of the 38 patients. Oswestry scores revealed a similar story with 60% having a relative improved impairment score, 38% unchanged and 2% with increased impairment. Histology studies of tissues removed from two patients who underwent SJD were reviewed by an independent pathologist and revealed evidence of a non-inflammatory degenerative condition of the extra-articular tendinous attachments to the SI joint region. This is a similar histological pattern as seen in lateral epicondylitis. This lends some evidence that for at least some of the patients with SI joint dysfunction that there may be an extra-articular source for their pain.

In the literature, the only comparable surgery for the treatment of SI joint related pain is the SI joint fusion. Our surgery is believed to treat the outer tendinous insertions on the out pelvic crest and thus is somewhat different than the SI joint fusion. Nonetheless, both surgeries are used to treat similar pain disorders and possibly the SI joint fusion works because it alters the same tissues of the pelvic ridge. We present it as a comparison since it currently is the only other surgical solution offered for SI joint related pain. The fusion surgery involves incisions of approximately 6–12 inches, and there are no larger scale studies on the efficacy of the SI joint fusion. Most of the data on SI joint fusions are anecdotal at best. These anecdotal reports mostly listed 100% success rates for small groups (less than three patients).<sup>6,7</sup> Such success rates for spinal problems are highly improbable given what larger studies reveal. A presentation by the Keating group of 26 patients undergoing SI joint fusions revealed a success rate of closer to 50% with average pain reductions from VAS of 6.1 to 3.4 for patients.<sup>8</sup> Another study by Waisbrod et al. of 22 patients undergoing SI joint fusions revealed a success rate of around 70%.<sup>9</sup> There are not any large-scale studies on SI joint fusions, and the current

studies that are available place the success rate for SI joint fusions somewhere between 50% and 70%. As noted previously, it is possible that the SI joint fusion offers success due to the extensive division of the musculo-tendinous attachments in the area of the iliac crest and not by fusion of the joint itself. Thus, the SI joint fusion surgery may alter the same soft tissues that we treated with the SJD surgery.

## CONCLUSION

Several issues can be concluded from our literature review and our SJD study. Besides SI joint fusion, there are no other permanent surgical treatments for this disorder. The literature suggests a lack of studies on SI joint fusion operations and their long-term outcomes, since the best studies include only 26 patients and the anecdotal reports give unrealistic 100% results. SI joint fusion surgery is dissimilar to SJD in that it fuses the joint but some of its success may be from the alteration of the more superficial tissues of the iliac crest. It is possible that many people who are diagnosed with SI joint pain really have an external tendonitis source of pain that is being treated with the extensive fusion surgery. Our study reveals that some patients who are diagnosed with SI joint syndrome actually have a posterior superior iliac tendonitis. SI joint injections may involve leakage of the local anesthetic onto these adjacent tissues and thus may explain success with SI joint injections for these problems. We do not mean to imply that all patients are suffering from this but that it is a causative agent. Finally, SJD may be a viable alternative, minimally invasive approach to the treatment of SI joint-related pain, with a success rate similar to SI joint fusion.

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Address reprint requests to:  
*Dr. Scott M.W. Haufe*  
*MicroSpine Center*  
*100 Coy Burgess Loop*  
*DeFuniak Springs, FL 32435*

## EDITORIAL COMMENT

I have read Dr. Haufe's paper with interest. Those of us who perform Percutaneous Laser Disc Decompression (PLDD) have encountered the problem of SI joint inflammation in about 2% of the time. The mechanism may be as follows: the body locks the SI joint when there is sciatic pain. When the pain is relieved by PLDD, the body responds by "unlocking" the SI joints. Now the joints rub together, and inflammation results. There is no proof of this, but it does sound reasonable.

At any rate, both Martin Knight in Manchester (Spinal Foundation), and I, in New York (Laser Spine Center) have independently encountered this complication. While crossing the bay in Sydney, Australia a number of years back at a SICOT meeting, we happened to discuss this, and agreed on the 2% figure.

Also independently, we started treating these patients with local infiltration with Depo-Medrol.

The technique is as follows: the caudad point of the SI joint is identified with fluoroscopy and a radioopaque object (letter opener!). An "X" is marked on the skin. The area is prepped with Betadine. It is then sprayed with Ethyl Chloride until the skin blanches. A spinal tap needle is then inserted into the most point of the SI joint and 1.0 ml Xylocaine, followed by 3.0 ml of Depo-Medrol injected into the joint. Normal fluid flow carries the infiltrate cephalad to fill the entire SI joint. Patients generally begin to feel relief as early as two hours. Pain relief can last 24 hours to 1 week. A second injection may be required, but rarely three. We have not kept careful statistics, but I estimate my series to be in the neighborhood of 50 cases, with almost 100% responses.

Now, isn't that easier and less invasive than surgery?

—*Daniel S.J. Choy, M.D.*  
*Senior Editor*

## AUTHOR'S RESPONSE

We find Dr. Choy's comments about his and Dr. O'Knight's experiences very interesting. Possibly his techniques are unique, since most of us in the pain management realm only have short-term results with SI joint cortisone injections. Nonetheless, SI joint pain is a significant issue, and any advancement that leads to a cure is always noteworthy. We encourage him to validate his findings and publish them. A superior solution to SI joint pain would be welcomed by all.

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