

## Unexplained Lower Abdominal Pain Associated with Sacroiliac Joint Dysfunction: Report of 2 Cases

Daijiro Morimoto<sup>1</sup>, Toyohiko Isu<sup>1</sup>, Kyongsong Kim<sup>2</sup>,  
Ryoji Matsumoto<sup>1</sup> and Masanori Isobe<sup>1</sup>

<sup>1</sup>Department of Neurosurgery, Kushiro Rosai Hospital, Hokkaido

<sup>2</sup>Department of Neurosurgery, Nippon Medical School

### Abstract

A 25-year-old woman and a 31-year-old man presented with chronic lower back pain and unexplained lower abdominal pain. Both patients had groin tenderness at the medial border of the anterior superior iliac spine. The results of radiographical and physical examinations suggested sacroiliac joint dysfunction. Sacroiliac joint injection relieved their symptoms, including groin tenderness. In our experience, groin tenderness is highly specific for sacroiliac joint dysfunction. We speculate that spasm of the iliac muscle can cause groin pain and tenderness. Groin pain and a history of unexplained abdominal pain, with lower back pain, are symptoms that suggest sacroiliac joint dysfunction. Additionally, compression of the iliac muscle is a simple and useful maneuver; therefore, it can be used as a screening test for sacroiliac joint dysfunction, alongside other provocation tests.

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**Key words:** sacroiliac joint dysfunction, referred pain, groin pain

### Introduction

Sacroiliac joint (SIJ) dysfunction is a significant source of lower back pain and can cause symptoms in others anatomic regions, such as the buttocks, groin, and lower extremities. We describe 2 cases of SIJ dysfunction with unexplained lower abdominal pain and speculate on the mechanism of groin pain associated with SIJ dysfunction.

### Case Reports

#### Case 1

This 25-year-old woman had a 2-year history of lower back pain, right-sided lower abdominal pain, and paresthesia of the right outer thigh. She had no relevant past history, such as pregnancy or trauma. Although the lower abdominal pain had been evaluated in departments of internal medicine and gynecology, the cause of the symptoms was not identified. Physical examination at our institution revealed that the abdominal pain was localized in the right groin; there was tenderness at the medial

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Correspondence to Daijiro Morimoto, MD, PhD, Department of Neurosurgery, Kushiro Rosai Hospital, 13-23 Nakazono, Kushiro, Hokkaido 085-8533, Japan  
E-mail: dai\_sampo@yahoo.co.jp  
Journal Website (<http://www.nms.ac.jp/jnms/>)



Fig. 1 The first finger of the examiner compresses the groin at the medial border of the ASIS (arrow).

border of the anterior superior iliac spine (ASIS) (Fig. 1). When we asked her to indicate the main site of her lower back pain with her index finger (one-finger test)<sup>1</sup>, she pointed to the right posterior superior iliac spine (PSIS). Positive results were obtained for only Newton's test. Lumbar and pelvic radiography yielded no abnormal findings. Magnetic resonance imaging (MRI) of the lumbar spine disclosed mild lumbar spinal canal stenosis at the level of L3/4 and L4/5. Pelvic MRI revealed no abnormalities.

We suspected SIJ dysfunction and administered a fluoroscopically guided SIJ injection of 1% lidocaine using the technique of Murakami (Fig. 2)<sup>2</sup>. After the first injection, the patient reported a 75% decrease in SIJ pain (a decrease from 8 to 2 on a visual analogue scale), right groin pain, and paresthesia of the thigh. In addition, the tenderness in the right groin adjacent to the ASIS disappeared. Based on the effectiveness of the injection, a diagnosis of SIJ dysfunction was made. The administration of 3 additional injections resulted in complete symptom relief. During 1 year of follow-up, symptoms did not relapse.

### Case 2

A 31-year-old man had complained of lower back pain and right groin pain for 5 years. He had no relevant past history, such as trauma. He had undergone a thorough examination, including colonoscopy, for right groin pain. However, the cause of the symptoms remained unidentified. On the one-



Fig. 2 An oblique view (left side) of the spinal needle being inserted between the ilium and the sacrum, and a lateral view (right side) showing the tip of the spinal needle correctly located at the posterior sacroiliac ligament. The procedure of SIJ injection was as follows. The patient was placed in the prone position under a fluoroscope. A 90-mm 23-gauge spinal needle was inserted, and the tip of the needle was placed at the posterior ligamentous structures of the SIJ. One to 2 milliliters of 1% lidocaine was injected into the dorsal periarticular regions of the SIJ.

finger test, the patient pointed to the bilateral PSISs. Physical examination revealed that the right groin pain and the tenderness were adjacent to the bilateral ASISs (the right side was more painful than the left side). Both Newton's test and Gaenslen's test were positive. Radiography and MRI of the lumbar spine and pelvis showed no abnormal findings. SIJ dysfunction was suspected, and SIJ injection was performed. After the SIJ injection, 80% of the SIJ pain (a decrease from 5 to 1 on a visual analogue scale) and the right groin pain and tenderness were relieved. On the basis of the effectiveness of the injection, SIJ dysfunction was diagnosed. The symptoms were completely after two injections. Lower back pain and groin pain occasionally recurred to a mild degree for 10 months after treatment, and, thus, the patient needed SIJ injections once every few months.

### Discussion

SIJ dysfunction is increasingly recognized as a source of intractable lower back pain and is reported to account for 3.5% to 30% of cases of lower back pain<sup>3-5</sup>. SIJ dysfunction can cause pain in other anatomic regions, such as the buttocks, groin, and

lower extremities; therefore, SIJ dysfunction can mimic lumbar spinal disorders, such as lumbar spinal canal stenosis and lumbar disc herniation. The present 2 cases exhibited groin pain, which was treated as unexplained lower abdominal pain associated with SIJ dysfunction diagnosed by means of SIJ injection. Norman has described unexplained abdominal pain or groin pain with SIJ dysfunction that was relieved by SIJ injection<sup>6</sup>. Some subsequent reports have documented abdominal pain and groin pain associated with SIJ dysfunction. Slipman et al. have reported that groin pain was observed in 14% of cases of SIJ dysfunction and that abdominal pain was observed in 2% of cases<sup>7</sup>. Fukui and Nosaka have reported that groin pain was observed in 9.3% of cases of SIJ dysfunction<sup>8</sup>. These reports suggest that abdominal pain and groin pain are not rare symptoms of SIJ dysfunction. However, most clinicians have a lack of understanding about abdominal pain or groin pain associated with SIJ dysfunction.

With regard to the mechanism of the pain caused by SIJ dysfunction, a relationship of the variable innervations of the SIJ and the surrounding ligaments has been reported. Solonen has reported that the anterior aspect of the SIJ is innervated from L3-S2 and that the posterior aspect is innervated from S1-S2<sup>5</sup>. Bernard and Kirkaldy-Willis have reported that the anterior innervations are supplied from the posterior rami of L2-S2 and that the posterior innervations are supplied from segments L4-S3<sup>3</sup>. These complex innervations are considered a reason why SIJ dysfunction can induce the several reported symptoms.

With regard to the mechanism of groin pain, only Schwarzer et al. and Wurff et al. have documented that a ventral tear in the capsule of the SIJ could produce groin pain (L1-L2 dermatome)<sup>4,9</sup>. However, there was tenderness in the groin adjacent to the ASIS, unlike the other referred symptoms in the buttocks or lower extremities. There is a question over whether groin pain or tenderness involves the same mechanism as the other referred symptoms. Slipman et al. have reported that piriformis syndrome, which is entrapment neuropathy of the sciatic nerve by the piriformis muscle, could be

associated with SIJ dysfunction<sup>7</sup>. The piriformis muscle originates from the ventrolateral aspect of the sacrum and inserts upon the greater trochanter. In particular, the piriformis muscle is near the SIJ. On the basis of this close anatomical relationship, spasm of the piriformis muscle can be induced when SIJ dysfunction occurs. We speculate that groin pain and tenderness can be produced by spasm of the iliac muscle as well as that of the piriformis muscle. The iliac muscle arises from the iliac fossa, proceeds through the medial border of the ASIS, and inserts upon the lesser trochanter of the femur; it mainly acts for flexion of the hip. The medial border of the iliac muscle reaches over the anterior aspect of the SIJ. Therefore, SIJ dysfunction can produce spasm of the iliac muscle, as well as that of the piriformis muscle.

Physical examinations and radiological studies for diagnosing SIJ dysfunction have not been established. The only diagnostic method considered readily available is injection of the SIJ. In our experience with SIJ dysfunction, groin tenderness adjacent to ASIS (iliac muscle tenderness) has been observed, including cases without groin pain or abdominal pain. In cases of bilateral SIJ dysfunction (such as case 2), groin pain and groin tenderness tend to be more severe where SIJ dysfunction causes more pain. Compression of the iliac muscle is extremely simple and useful as a screening test for SIJ dysfunction, as are other typical provocation tests, such as Gaenslen's test, Newton's test, and Patrick's test<sup>10-12</sup>.

Generally, examinations for abdominal and hip disease will be performed in cases of abdominal pain and groin pain. SIJ syndrome should be considered if patients have unexplained abdominal pain or groin pain with lower back pain. With regard to the mechanism of groin tenderness, other mechanisms can stem from other causes. Therefore, further investigations are needed to clarify the mechanisms involved.

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