

# Sacroiliac joint dysfunction

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## Introduction

Low back pain is one of the most commonly encountered ailments in medicine, and in orthopaedics in particular. It is a common cause of activity limitation in all demographics of patients with a lifetime prevalence of up to 80%.<sup>1</sup> Low back pain is responsible for 3% of all emergency room visits and \$30-\$50 billion is healthcare costs annually.<sup>2</sup> While there are many causes of low back pain, the sacroiliac (SI) joint has been implicated and often goes underappreciated. Additionally, pain originating from the SI joint is often misunderstood, or attributed to other sources such as the hip or spine. Diagnostic injection of SI joint is the only means to truly confirm the diagnosis. Adding to the diagnostic challenge, pain from the spine, hips, or SI joint can present concomitantly and be associated with each other which can cloud the clinical picture.

## Anatomy

The sacroiliac articulation is a weight-bearing joint. It distributes weight from the spine to the lower extremities by way of the hips. Ventrally, the SI joint is supported by the anterior sacroiliac ligaments. While important, these ligaments are not the primary ligamentous stabilizers of the SI joint. Strong muscles course anteriorly such as the psoas and iliacus muscles which function to primarily flex the hip. The lumbosacral plexus also passes anterior to the SI joint, with the L5 nerve root passing over the sacral ala anteriorly.<sup>3</sup> Dorsally, there are strong posterior ligaments that give the greatest amount of ligamentous support to the pelvic girdle.<sup>4</sup> These ligaments must be evaluated in the setting of pelvic trauma. The piriformis originates from the anterior sacrum and passes posterior to the hip joint as it inserts on the greater trochanter of the femur. The sciatic nerve crosses inferior to the piriformis muscle as it exits the pelvis and courses down the posterior thigh and leg. Strong back muscles cover the posterior SI joint such as longissimus thoracis and iliocostalis muscles which function to extend the spine (Figure 1).



**Figure 1** Sacroiliac joint dysfunction and pain.

## Etiology

There are multiple reasons patients may experience SI joint pain. Limb length discrepancy can be one of the causes and should be evaluated by observing the patient's gait and comparing limb lengths on the exam table. Mechanical dysfunction is another possible cause. The SI joint allows for minimal movement in the normal setting, but excessive or abnormal movement may lead to dysfunction of the joint with instability and pain. SI joint infection can be a cause of pain and is often occult, or difficult to diagnosis. Ankylosing spondylitis is the most common rheumatic cause of SI joint pain. A blood test is needed to identify the HLA-B27 protein in afflicted patients. Other causes include crystal arthropathy, pyogenic arthropathy, post-spinal fusion pain, and stress fracture of the sacrum.

## Clinical presentation

Patient symptoms of SI joint dysfunction include low back, buttock, posterior thigh, and knee pain. Occasionally groin pain may be reported as well as difficulty and discomfort while assuming a sitting position and the need to frequently change positions due to discomfort. Radiating radicular-type pain is not a typical presentation of SI joint dysfunction and can be used to differentiate lumbar stenosis from SI joint pathology.

## Diagnosis

Physical exam techniques used to determine the presence of SI joint pain are not specific. The finger test is helpful in differentiating SI joint pain from other causes. Patients usually point with one finger to either side of their low back, in contrast to midline pain, corresponding to the painful area of the SI joint. If the patient points to the exact area of pain each time, the pain is likely coming from the SI joint. The FABER test is helpful in determining the presence of SI joint pathology. The purpose of this test is to stretch the SI joint to reproduce pain. To perform, press down towards the floor gently but firmly on the flexed knee as the hip is flexed, abducted, and externally rotated. Pain in the sacroiliac area may indicate a problem with the SI joint.

The straight leg raise is performed to determine if a patient with low back pain has an underlying herniated disc. This test can be used to differentiate low back pain caused by the SI joint from other causes. Other possible causes of low back pain that must be considered include trochanteric bursitis, piriformis syndrome, myofascial pain, lumbosacral disc herniation, lumbosacral facet syndrome, lumbar radiculopathy, and cluneal nerve entrapment (Figure 2).



**Figure 2** Sacroiliac joint dysfunction and pain clinical examination.

## Treatment

Non-steroidal anti-inflammatory medications are the frontline of treatment. A short trial of NSAIDs is indicated in most cases; however continued use can have adverse renal and gastrointestinal effects. Activity modification, physical therapy, manipulation, massage, yoga, exercise, and acupuncture are other conservative measures that can be effective. SI joint injections remain an option in persistent SI joint pain. Corticosteroids are the traditional medication, but some report success with platelet-rich plasma (PRP) or prolotherapy. Radiofrequency ablation (RFA) remains another treatment option. RFA uses radio waves to produce heat to destroy tissue. This is directed at the specific nerve that is believed to be the pain transmitter in SI joint dysfunction. Lastly, a SI joint stabilization procedure, or fusion, may be attempted to stabilize the SI joint and prevent bony movement. This procedure can be performed percutaneously with proper placement of cannulated screws inserted over a K-wire under fluoroscopic guidance (Figure 3).



**Figure 3** Sacroiliac joint dysfunction and treatment of SI joint pain.

## Summary

Sacroiliac joint dysfunction is a neglected source of low back pain in many patients. The patient with SI joint pathology often complains of low back, buttock, posterior thigh, or knee pain. Physical exam can aid in diagnosis but maneuvers are often non-specific. There are multiple causes of SI joint pain, but other sources of low back pain must be investigated as well. Conservative treatment is often successful, but other more invasive measures remain as treatment options. Low back pain is a common and complex patient complaint, but a systematic approach and consideration of the SI joint as a pain generator can allow the clinician to sort through low back pain with confidence. Patients should consult with their doctor before determining a course of treatment.

## Acknowledgments

None.

## Conflicts of interest

None.

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