



# Pain Management

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## SACROILIAC DYSFUNCTION

The sacroiliac joint is a commonly overlooked cause of lower back pain. Recent studies have found that Sacroiliac dysfunction was the cause, or a major component, in a high percentage the cases of mechanical back pain. Dysfunction in the sacroiliac joint not only causes back pain but also may mimic pain seen in lumbar disc herniation or a facet joint with pain referred into the buttock and thigh.

The sacroiliac joint is a complex formed by a synovial joint anteriorly with strong ligamentous attachments posteriorly to provide motion and stability during the transmission of loads from the axial spine to the pelvic girdle. The sacroiliac joint articulates on a large surface, which has limited movement. The major movements of the joint come in the form of gliding and stretching and thus it is termed a viscoelastic joint. The main function of the SI joint is two fold: first to provide stabilization for balance during ambula-

tion. (The SI joint locks on one side as weight is transferred from one leg to the other.) The second function is shock absorption for the spine during ambulation.

One interesting fact about the SI joint is that not only is it unique in shape but it is the only joint covered by two different kinds of cartilage that rub against each other, hyaline and fibrocartilage. The cartilage of the SI joint is highly innervated by mechanoreceptors and nociceptors that sense and transmit pain, pressure and proprioception. Thus inflammation or abnormal motion in the joint causes these nerve fibers to fire and create a pain cycle (nocioception). Unmyelinated free nerve endings terminate in the joint capsule and overlying ligaments. Various studies have also demonstrated the close physical relationships between the sacroiliac joint capsule and adjacent neural structures, including the lumbosacral nerves. Given

the wide range of innervation of the SI joint and its adjacent neural structures, capsular stimulation may refer various pain patterns to the buttock, groin, thigh, calf, or foot.

The most common causes of problems at the SI joint are injury. The most common injury is torsion force from twisting while lifting or pulling. Also, since the SI joint is involved in the kinetic chain of walking or running, gait changes can often times cause dysfunction from repetitive stress or shear forces such as stepping off a curb. Patients with pes planus (fallen arches) often develop sacroiliac pain from the changes in mechanics affecting the kinetic chain. Pregnancy is also known to commonly cause SI joint syndromes as progesterone softens supporting ligaments.

When considering sacroiliac pain, there are 2 main etiologies of dysfunction that leads to pain; hyper-

### Points of Interest

- ... Pain Management Consultations
- ... In office procedure room with fluoroscope Guided Injections Including:
  - ... Epidural Steroid Injections
  - ... Facet Injections
  - ... Discograms
  - ... Nerve Blocks
  - ... Sacroiliac Injections
  - ... Sympathetic Blocks
  - ... Celiac Plexus Blocks
  - ... Radiofrequency Neural Ablation
  - ... Onsite X-ray
  - ... Musculoskeletal Diagnostic Ultrasound
  - ... DEXA Bone Density
  - ... Physical Therapy
  - ... Nerve conduction/EMG

## SACROILIAC DYSFUNCTION (CONTINUED)

mobility or hypomobility. Injury to the ligaments of the SI joint can lead to too much motion in the joint (hypermobility), which causes instability, and thus pain. The excessive motion can eventually lead to wear and tear of the joint and pain. Interticular adhesions, rotation of the sacrum, or muscle spasm surrounding the joint can limit the movement of the joint (hypomobility or fixated). Hypomobility of the joint causes irritation and abnormal firing of mechanoreceptors, which leads to an adverse maladaptive nociceptive proprioception (i.e. chronic pain cycle). Loss of motion in the joint will also cause accelerated degenerative changes due to loss of nutritional uptake in the cartilage known as imbibition.

Typically patients with Sacroiliac Syndromes complain of pain in the low back that is aggravated by sitting, standing and bending at the waist. This intolerance of sitting and standing is sometimes referred to as Theater-Cocktail Party Syndrome. The patient requires frequent changes in body posture to avoid prolonged tension on the SI joint capsule and ligaments. When SI joint dysfunction is severe, there can be referred ligament and joint pain into the hip, groin and leg. This referred pain pattern is frequently mistaken for a nerve injury in the low back, muscle sprain, or hip bursitis. Because the SI joint is part of a kinetic chain, patients may report a history of ankle, foot, knee, hip, or spine injuries before the SI pain syndrome manifests.

An accurate diagnosis of sacroiliac joint dysfunction can be difficult since symptoms can mimic other common conditions, such as disc herniation, facet syndrome, piriforms syndrome

and radiculopathy. Diagnosis is usually from clinical examination. Symptoms are typically lower back pain that is around the SI joint with possible referred pain into the posterior or lateral thigh or possibly the groin. Examination usually reveals tenderness over the SI joint. Changes in side-to-side motion palpation of the SI joints. Forced extensions of the hip will often times reproduce the pain. The best way to perform the examination is to have the patient lying prone. Place your hand over the base of the sacrum to keep the sacrum from moving. Have the patient actively extend each leg one at a time. Note how high the patient can lift each leg off of the table by observing the heels. A significant discrepancy in active hip extension

*Diagnosis of sacroiliac joint dysfunction can be difficult since symptoms can mimic other common conditions.*

indicates that there is a mechanical SI dysfunction usually on the side with the most restricted motion. Pain on the side of involvement is also an indicator of involvement during active extension. The examiner should then passively force extension of each leg while stabilizing the sacrum. (Keep the



leg straight during passive extension. Flexing the leg during this maneuver adds stress to the anterior thigh and is not as accurate). An increase in pain over the involved side during forced extension would indicate a Sacroilitis. This maneuver is a modification of an orthopedic test known

as Gaenslen's. Straight Leg Raising test may be positive for pain over the SI joint without any radicular symptoms. Patients with SI dysfunction should have normal neurological finding. If neurological findings are present it suggests the patient has something else going on. Keep in mind that there is no law that limits an individual to one affliction at a time. Leg length discrepancies and pes planus is often a causative factor and should be evaluated. Unfortunately, not all patients present with the obvious rotated pelvis, leg length discrepancy, and pain over the SI joint and supporting ligaments.

Pelvic x-rays should be taken to assess the joint for degenerative changes, mal-alignment, and also

for abnormalities such as transitional vertebra. Attention to femur height with weight bearing x-rays is important. A discrepancy in femur head height

might give you a clue that mechanical stress is being placed on the SI joint. Most often x-rays will be normal in SI dysfunction. If the X-rays suggest something may be affecting the SI joint, a CT scan may show more detail about the joint surfaces and the surrounding bone. A bone scan can be useful in determining if the joint is inflamed. An inflamed SI joint usually shows up as a hot spot on a bone scan of the pelvis. MRI may also be helpful in assessment. Unfortunately, these diagnostics are generally normal, but can be useful in eliminating other causes of back pain such as herniated discs, infection, insufficiency fracture and stress fractures of the sacrum.

A sacroiliac joint injection sometimes called an arthrogram or sacroiliac block is a useful diagnostic

test. Fluoroscopic guidance is used to insert a needle into the sacroiliac joint to inject an anesthetic. If the injection relieves the patient's pain, it can be inferred that the sacroiliac joint is the source of the pain. Usually, a steroid solution is injected at the

same time to decrease

inflammation in the sacroiliac joint and decrease pain.

Sometimes post-low-back fusion surgery can lead to irritation in the sacroiliac joint in the pelvis, which in turn can lead to obscure low back pain and deep buttock pain. A diagnostic and therapeutic injection into the sacroiliac joint can identify if the SI joint is the source.

Treatment for sacroiliac joint dysfunction is usually conservative and focuses on trying to restore normal motion in the joint while avoiding activities that cause symptoms. SI joint syndrome is a structural/mechanical condition and treatment depends on whether the joint is hypermobile or hypomobile.

Hypermobile joint needs to be stabilized. Stabilization can be accomplished through use of a specific brace called the sacroiliac belt. The belt wraps around the hips to squeeze the SI joints together. This supports and stabilizes the pelvis and SI joints while they heal. Aggressive therapy for strengthening the muscles to stabilize the joint and pelvis must be performed. If the ligaments have been damaged and improvement cannot be obtained with stabilization, therapy and rehabilitation, Prolotherapy may be helpful. Prolotherapy is a nonsurgical treatment for damaged ligaments that relieves musculoskeletal pain by injecting an irritant solution

into attenuated ligaments and tendons. The solution creates a mild, controlled inflammation that stimulates the body to lay down new tendon or ligament fibers, resulting in a strengthening of the weakened structures. We have had great success with this treatment and it

may be the subject of a future article.

Sacroiliac syndrome associated with hypo-

mobility requires mobilization of the joint to restore normal joint motion and mechanics. Mobilization is done through manual techniques usually performed by a chiropractor, osteopath, or physical therapist. Therapeutic modalities are also incorporated in treating a hypomobile SI Joint Dysfunction. The therapies include treating the pain and muscle spasm with modalities such as ultrasound, electrical stimulation, massage, and heat.

Rehabilitation to reeducate and recondition the surrounding muscle structures is paramount to lasting relief.

Abnormal posture or leg-length discrepancy can cause the sacrum to sit askew and contribute to excessive shear force. To help distinguish functional from true leg-length discrepancy, a standing anteroposterior radiograph of the pelvis is indicated. The distance from the top of the femoral head to the bottom of the film is measured and compared side-to-side. Heel lifts and custom-made foot orthotics can help correct true leg-length discrepancy. Biomechanical aberrancies from acquired pes planus also changes gait and shear forces in the SI joint thus requiring foot orthotics to correct pedal causes. If these causes are not addressed the condition tends to return. SI joint injection blocks are very help-

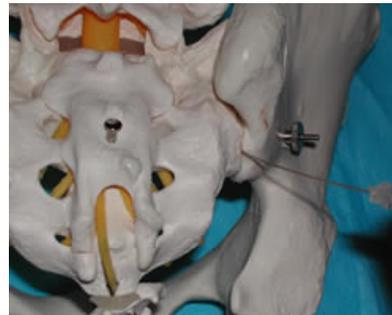
ful especially in cases where the patient's pain level is such that it interferes with their ability to undergo therapies and rehabilitation. We often recommend SI blocks during therapy if the patients are not responding or if the pain is so acute that they can't carry out normal activities of daily living.

In an SI joint block injection, fluoroscopic guidance must be used to insert a needle into the sacroiliac joint to inject anesthetic and/or a steroid. Some physicians attempt this injection blind. Our research indicates that most physicians are not in the joint during blind injections and therefore the procedure should only be done under fluoroscopy. An SI joint block injection may be repeated as needed. For the treatment to be successful, the injection should be followed by physical therapy and/or chiropractic

manipulations to provide mobilization and range of motion.

If the patient gets only temporary relief from injection blocks and therapy it may be necessary to perform a procedure called radiofrequency neurotomy. A radiofre-

*Pain associated with SI joint is relieved quickest with Sacroiliac joint injections.*



SI Injection Model



Fluoroscopic Image of SI Injection

quency neurotomy is a type of injection procedure in which a heat lesion is created on certain nerves that innervate the SI joint with the goal of interrupting the pain signals to the brain, thus eliminating pain.

These nerves do not control any muscles or sensation in the arms or legs so there is no danger of negatively affecting those areas.

If all conservative methods of treatment fail, surgery may become an option. Surgery on the SI joint usually consists of a fusion of the joint (also called an "arthrodesis"). Fusing the two sides of a joint together to reduce pain has been used for many years as a treatment for arthritic joints. Today, the fusion of the SI joint is not a common operation, but when necessary can reduce the pain associated with SI joint syndrome. Surgical fusion of the SI joint should be performed only in cases of severe debilitating instability.



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## MEET THE PAIN DOCTORS

Lisa Mancuso, MD is a New Jersey native who earned a Bachelors degree in Mechanical Engineering from Rensselaer Polytechnic Institute in Troy, New York. As an engineer she successfully completed Naval Nuclear Power School. She earned her M.D. degree at the Medical College of Pennsylvania in Philadelphia and completed an anesthesiology residency in Pittsburgh. She completed an interventional pain management fellowship at West Virginia University.



Dr. Thompson earned a BS in Pharmacy from the Medical University of South Carolina. He then completed his medical degree from the Medical University of South Carolina in 1973 and did a residency in anesthesiology at Duke University Medical Center. He has been Board certified in anesthesiology and has practiced anesthesia and pain management in Florence since 1977.



### Firstchoice Healthcare PC

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FirstChoice Healthcare is a multidisciplinary clinic that offers an interdisciplinary approach for the treatment of pain.

FirstChoice Healthcare offers the areas most comprehensive program of treatment for your patients suffering with chronic pain. We focus on the diagnosis and treatment of patients with difficult and progressive pain, and work with our patients on an individual program of integrated pain management therapy, drawing on our expertise and the wide range of treatments available.

FirstChoice Healthcare is committed to efficiently delivering cutting edge service to our patients in a caring environment through the latest technologies and a team oriented approach to problem solving. Our goal is to continually improve the lives of each person with whom we come in in contact everyday.

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**Welcome the new doctor**

After completing his medical degree, George Bitting MD did a residency in Physical Medicine & Rehabilitation at Kentucky Medical University. He specializes in pain management and diagnosis and treatment of musculoskeletal diseases. Dr Bitting also performs EMG and Nerve Conduction Studies.

