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## Pain, Sacroiliac Joint

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## Introduction

The sacroiliac (SI) joint lies between the sacrum and the ilium bones of the pelvis. There are two joints, one on each side of the sacrum. They are classified as synovial joints between the articular surface of the sacrum which are covered with hyaline cartilage. The joint is broader cephalad and becomes narrower as the joint becomes more caudad. The joint serves to transfer weight from the upper body to the lower limbs. Strong ligaments and muscles stabilize the joints. The motion of the sacroiliac joint is minimal and limited to 2 mm to 4 mm in any direction.

## Etiology

The sacroiliac joint is a synovial joint with dense fibrous connections between the sacrum and the ilium. This joint is relatively immobile, and its main function is to transfer weight to and from the lower and axial appendicular skeleton. Also, the synovial articulation does allow for minimal rotation and gliding. The symmetrical sacroiliac joint is located at S1 to S3 and has a slight oblique coronal orientation.

The sacroiliac joint experiences the most movement during pregnancy when the ligaments become lax from the effects of the sex hormones. After the fifth decade of life, the sacroiliac joint does fuse.

## Epidemiology

Approximately 90% of the population will at some experience or present to the clinic with some form of low back pain/pathology. About 10% to 25% of these patients are thought to be experiencing pain from the SI joint. The majority of SI joint pathologies affect the adult patient population.

The posterior sacral ramus innervates the SI joint, and when compressed or inflamed, it is a source of significant pain. The majority of individuals affected by sacroiliac joint pain are adults. The disorder is most common in individuals who lead a sedentary lifestyle. Overall, obese patients are more commonly affected by sacroiliac joint pain. The disorder is seen in both genders and people of all races.

## Pathophysiology

Sacroiliac joint dysfunction or sacroiliitis are common terms used to describe the pain of the sacroiliac joint. It is usually caused by abnormal motion (i.e. hyper- or hypo-mobile) or malalignment of the sacroiliac joint. The joint can be hyper or hypo-mobile which can cause pain. Pain is usually localized over the buttock. Patients usually describe the pain as sharp, dull, achy, stabbing, or shooting pain directly over the affected joint. Patient's can often complain of sharp, stabbing, and/or shooting pain which extends down the posterior thigh usually not past the knee. Pain can frequently mimic and be misdiagnosed as radicular pain. Patients will frequently complain of pain while sitting down, lying on the ipsilateral side of pain, or climbing stairs.

## Histopathology

SI joint pathology can arise from a variety of clinical conditions. A thorough history of clinical symptoms and past medical conditions should be a routine part of the comprehensive evaluation of a patient presenting with SI joint disorders:

- High energy trauma (e.g. MVA, falls) -- can lead to pelvic ring injuries with a spectrum of injury to the SI joint ligaments
  - Ligament strain and/or stress or occult fractures
- Degenerative arthritis
- Inflammatory arthropathy (i.e. sacroiliitis)
  - Spondyloarthropathies such as Ankylosing spondylitis, reactive arthritis, psoriatic arthritis, and inflammatory bowel disease (Crohn disease and Ulcerative colitis) should be considered with sacroiliac joint pain especially those with systemic manifestations
- Infection
  - rare cause of SI joint pain
- Moderate impact exercise (e.g. lifting, jogging)
- Secondary conditions
  - secondary to previous spinal fusion procedures
  - secondary to scoliosis and/or leg length discrepancy

## History and Physical

Patients with isolated SI joint dysfunction often localize their pain distal and medial to the PSIS. This is not always reliable presentation, as a 2000 study reported 18 different pain referral patterns from the SI joint. Among these other patterns included pain down the posterior/lateral thigh (50%), pain distal to the knee (28%) and pain in the foot (14%) [1].

A comprehensive physical examination for evaluating SI joint dysfunction. The patients' hips should be evaluated for symptom elicitation, and ROM should be performed and documented. Trendelenburg testing is also helpful. Direct palpation over the SI joints will often elicit discomfort.

Muscle strength testing and neurologic testing (including reflexes, Babinski, and sensation to pinprick and light touch) should be normal. Any abnormalities with muscle strength, neuro exam, or complaints of bowel and/or bladder dysfunction should prompt examiner to suspect spinal cord or spinal nerve pathology. Leg length should be measured as unequal leg lengths can lead to sacral unleveling causing sacroiliac joint dysfunction.

Patrick's test or FABER (flexion, abduction, and external rotation) is a physical exam finding of hip or sacroiliac joint pathology. FABER is performed with the patient supine on the exam table. The hip is flexed, knee flexed to 90 degrees, thigh abducted, and hip is externally rotated. Pain elicited over contralateral sacroiliac joint is considered a positive test for sacroiliac joint pathology. Pain in the groin on ipsilateral side is considered positive for hip pathology. The examiner should also perform the Gaenslen's test when sacroiliac joint dysfunction is considered. The test is performed with the patient supine on the exam table. One hip is flexed to the patient's chest while the opposite leg is allowed to drop off of the table. The examiner should provide a force to the anterior knee of the flexed hip on the ipsilateral side while the contralateral knee off the table is forced downward toward the ground.

Because the sacroiliac joints transfer forces from the upper body to the lower extremities, they are subject to trauma and chronic degenerative changes. The most common cause of sacroiliac joint pain is osteoarthritis. Sacroiliac joint pain is also common in pregnancy. During pregnancy, hormones, such as relaxin, are increased leading to

ligamentous laxity and joint hypermobility. Hypermobile sacroiliac joints in conjunction with the increased anterior weight of pregnancy and altered gait lead to sacroiliac joint pain. Leg length discrepancy is also a cause of sacroiliac joint pain. Leg lengths should be measured in all patients with suspected sacroiliac joint dysfunction.

## Evaluation

The diagnosis of sacroiliac joint pain is quite difficult as there are many other causes of pain around the hip and lower back. Some of the provocative tests that may help make the diagnosis include the yeoman test, gilet test, FABER (Flexion, Abduction, and External Rotation) test, Laguerre's, and sacroiliac tests. There are no specific signs or symptoms besides from the pain. The laboratory investigations are not revealing.

Imaging studies are recommended to help rule out other possible sources of pain. Radiographs are often less than ideal as the sigmoid shape and oblique orientation limits visualization. CT and MRI are more helpful in ruling out other causes of pain -- these include but are not limited to arthritis (of the hips or lumbar spine), multiple myeloma, spinal stenosis, ankylosing spondylitis, piriformis syndrome, trochanteric bursitis, tendinopathies, hip fracture, and disc herniations.

Ultrasound guided injections are an invaluable tool in the diagnosis (and therapeutic management) of SI joint pathology. Some authors advocate that patients presenting with 3 or more provocative examination maneuvers for SI joint pathology, or in patients with isolated and localized SI joint pain be considered the ideal candidates for diagnostic injections [2][3].

## Treatment / Management

The initial step in the treatment of sacroiliac joint syndrome is reducing the pain with NSAIDs and ice. Once the pain is relieved, it is important to emphasize the need for ambulation using an assistive device, and begin physical therapy or some form of exercise. If the patient complains of instability, then one may want to use a sacroiliac belt to support the pelvis temporarily. At the same time, the patient should undergo rehabilitation exercise to regain strength and function of the pelvic muscles. The posture should be corrected, and the patient should be taught how to lift weights safely to prevent recurrence. Many types of manipulations are performed by therapists to increase the mobility and provide pain relief.

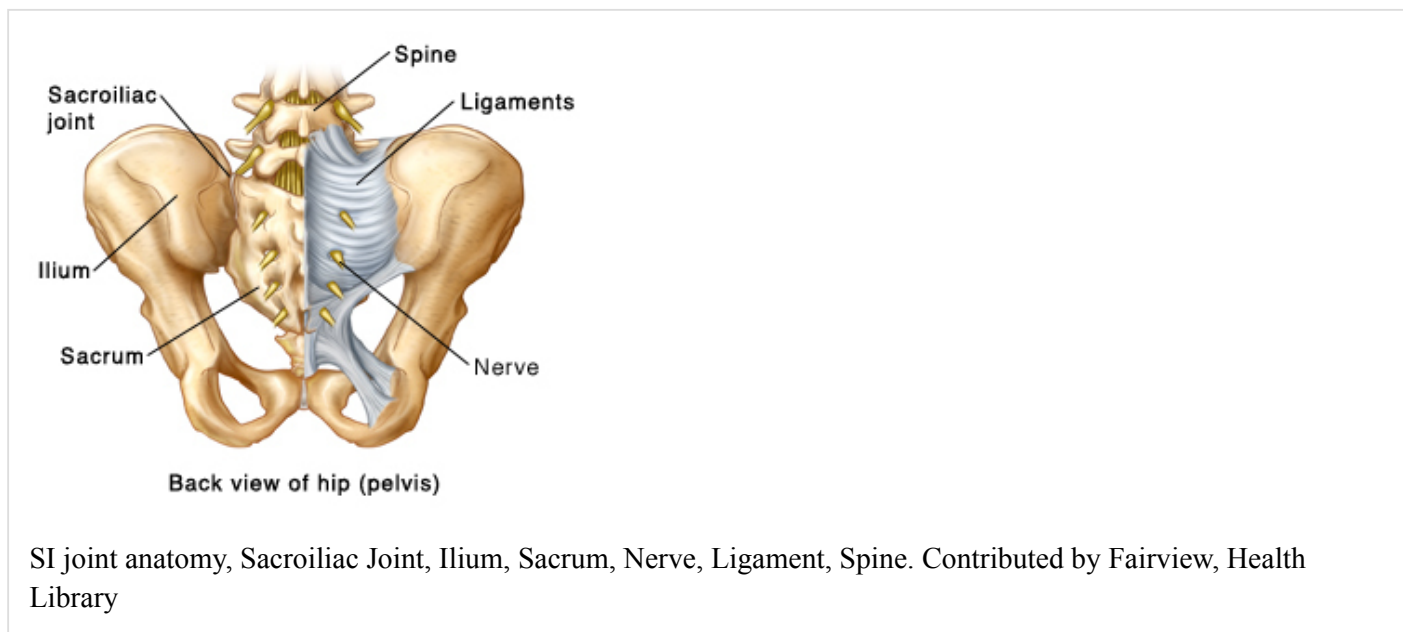
## Questions

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## Figures



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