

Issue # 10: June 2013

Sacroiliac Joint Pain

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Definition: Sacroiliac joint pain (SI Joint Pain) refers to pain arising from disruption in normal architecture, biomechanics or function of the SI Joint

Etiology: SI Joint Pain results from abnormal loading and excessive stress secondary to trauma (i.e. fall landing on buttock, motor vehicle accidents with foot of affected SI joint on the brake), fracture, inflammation (ankylosing spondylitis), degenerative changes (osteoarthritis), during pregnancy and at times following a lower lumbar spine fusion surgery.

Epidemiology: The Sacroiliac Joint has being implicated as the primary source of pain in 10% to 26% of cases with suspected SI Joint pain based on the International Association for the Study of Pain criteria.

Risk factors and primary prevention: SI Joint pain appears to occur predominantly in women, however there are no definitive epidemiologic studies. Maintaining a healthy body weight and good conditioning can reduce the chances of developing SI joint dysfunction and other forms of arthritis. By reducing the loads on the joints, there is less chance for cartilage damage and subsequent arthritis.

Patho-anatomy/ physiology: Synovial auricular- shaped diarthrodial joint considered the largest axial joint in the body. The anterior third is a true synovial joint with the rest of the junction formed by ligamentous connections more extensive dorsally. The ligaments function is to limit motion in all planes. The SI joint is also supported by muscles (i.e. gluteus maximus, Piriformis, Psoas, Biceps Femoris) and these muscles actions can affect joint mobility. Vilensky et al. demonstrated nerve fibers and mechanoreceptors in the Sacroiliac Joint ligaments. The posterior SI Joint is innervated through the lateral branches of L4 to S3 dorsal rami and the L5 to S2 ventral rami innervate the anterior joint.

Disease progression including natural history, disease phases or stages, disease trajectory (clinical features and presentation over time):

New onset/ acute- (Dysfunction). Duration-1 to 4 weeks. Minor pathology with abnormal motion. Clinical features include pain, spasm of gluteal, pelvic SI joint related muscles and abnormal SI joint motion.

Subacute- (Instability or Intermediate). Duration- 1 to 3 months. There is further disruption in SI joint mobility and gait dysfunction resulting in more prolonged episodes of pain. Clinical features include pain and restrictions on occupational / recreational activities.

Chronic / stable- (Stabilization). Duration- more than 3 months. Degenerative changes can occurred and manifest as sclerosis, joint erosion and eventually fibrous ankylosis which may lead to further functional impairment and impact on activities of daily living.

Specific secondary or associated conditions and complications: SI joint dysfunction is commonly present in patients with arthritic conditions (i.e. Ankylosing Spondylitis, Reiter's Syndrome and Psoriatic arthritis), hormonal changes during pregnancy, and after Lumbosacral spine fusion. Also associated with leg length discrepancies, scoliosis, gait abnormalities and with trauma such as direct fall in the buttocks or MVA with same side foot on the brake.

Essential of assessment

History: No specific history in identifying SI joint pain. Fortin et al in 1994 published pain referral maps for SI joint with pain distribution to the medial buttock, lateral aspect of the buttock, greater trochanter and superior lateral thigh. SI Joint can at times mimic pain distribution similar to Sciatica.

Physical Examination: Include inspection (asymmetry, shift, leg length discrepancy). Palpation -Fortin Sign Test (point tenderness immediately inferomedial to the PSIP within 1 cm), SI joint abnormal motion during gait assessment. Laslett et al in 1994 study the reliability of selected pain provocation tests for detect sacroiliac joint pain with five of the seven tests shown to be reliable. They were the distraction (or gapping) test, compression test, posterior shear (or thigh thrust) test, left and right pelvic torsion (or Gaenslen's) test. Also McKenzie Mechanical evaluation and 3 or more positive SI joint provocation test was more accurate in diagnosing SI joint problems than SI joints provocations only.

Functional assessment: Posture, pelvic balance, mobility, transfers and gait assessment. Also evaluate lifting of light objects and note deficits on body mechanics. Look for signs of inappropriate illness behavior as well as signs of depression/anxiety.

Laboratory studies: Laboratory studies only obtained if suspicious underlying Rheumatologic condition, Inflammatory disease or infectious process.

Imaging: No imaging study is diagnostic for SI joint dysfunction. Plain radiographs are a good screen to detect fractures, abnormal lesions and osteoarthritis. Computed Tomography (CT) Scanning- for more detail evaluation of the joint and can be done together with arthrogram to further evaluate the integrity of the joint. MRI to exclude lumbar spine disc pathology and to evaluate for soft tissue (ligaments and muscles injuries) and inflammation such as excessive fluid in the joint.

Bone Scan is not specific but can be of help in selected patients to evaluate for insufficiency fracture of the sacrum (i.e. osteoporotic patient with acute sacral pain) and to evaluate for tumor.

Supplemental assessment tools: Pain diagram obtained from the patient on initial evaluation should be compared to established SI joint referral pain diagrams. Fluoroscopic guided SI Joint diagnostic intra-articular arthrographic-confirmed anesthetic injections can be of help to diagnosed SI joint mediated pain and are considered the "gold standard" for diagnosis since history, physical examination and diagnostic imaging studies are often inconclusive. To minimize false positive responders (20 % to 22%) comparative local anesthetics blocks using 2 different local anesthetics of different duration of action on 2 different occasions are the only mean of confirming the diagnosis and reduce false positive rates.

Impairment-based measurements: In the 6th Edition of the AMA Guides to the Evaluation of Permanent Impairment, when an individual with Sacroiliac Joint dysfunction is found to be at the point of Maximal Medical Improvement it will be rated as per Table 17-4, page 570 and classified under Class 0 or Class 1 depending on symptoms, physical exam, non-organic findings, Pain Disability Questionnaire. This results in a whole person impairment of 0% for Class 0 or 0 to 3% for class 1 depending on net adjustment equation results. Table 17-11, page 593 is used in cases involving SI joint dislocations and fractures.

Early prediction of outcomes: Psychiatric comorbidity can be associated with diminished pain relief after injections.

Environmental: Low socioeconomic status and lower level of education are associated with disability retirement from back pain. Poor ergonomic positioning, worker dissatisfaction, monotonous tasks, obesity, tobacco use and perceived poor general health status are factors that make a patient vulnerable to low back pain disability.

Social role and social support system: Psychosocial variables, such as poor attitude, passive coping and fear-avoidance beliefs have more impact than biomedical factors on back pain disability. These factors also determine and with transition from acute to chronic pain disability. Such patients often adopt a “sick role” whereby interaction with their environment, social obligations and everyday responsibilities become more difficult.

Ethical and legal consideration: Sacroiliac Joint pain is commonly present in Motor Vehicle and Work accidents involving a fall in the buttocks with questions on causal relationship, maximal medical improvement and Impairment Ratings. Unethical treatment can be present at times with providers performing repeated interventions without improvement in pain or function.

Rehabilitation Management and Treatments

Available or current treatment guidelines: Maugars et al 1996 (randomized controlled trial), Pereira et al 2000 (prospective study) and Slipman et al 2001 (retrospective study) shows positive short term and long term relief from Sacroiliac Joint Steroid injections. There is limited evidence of Radiofrequency Ablation for SI joint due to paucity of studies. However, the limited studies available suggest promising results favoring lateral branch RF ablation.

At different disease stages:

New onset/ acute –Initial treatment emphasizes on education, local pain control with NSAID’s, topical creams, ice and electrical stimulation modalities. Patient education including postural awareness, proper pelvic and spinal body mechanics, and activity modification. SI joint belts or kinesiotaping can be helpful.

Sub-acute- (Recovery phase). The main focus of this phase is to increase increased mobility, flexibility, stability and restore healthy gait. Manual medicine technique including muscle energy , SI joint mobilization and manipulation. Rehabilitation exercises include pelvic and spine stabilization, core strengthening and postural re-education. This should be follow by a maintenance exercise program. If residual pain limits function, SI joint injection under fluoroscopic guidance will then be indicated .

Chronic Stable- (Maintenance phase).This will be the maintenance phase in which more muscle balance, strengthening exercises follow by functional exercises (standing in multiple planes) with transition to a home program indicated.

If pain persists on this phase and positive response to diagnostic and therapeutic SI joint injections on 2 occasions (75%-90% relief), then Radiofrequency Ablation is indicated. Judicious use of medications such as NSAIDs, narcotics on selected patients can be necessary to maintain function and quality of life. If pain is persistent over 6 months and unresponsive to conservative treatment, surgical consultation can be considered.

Patient and family education: Patient education is very important throughout the stages of rehabilitation of SI joint. In the acute stage, patient education includes understanding of postural awareness, proper pelvic and spine mechanics and activity modification. In the subacute stage, further education focuses on exercises and activity modification. In the chronic stage, education should address coping mechanisms and the importance of maintaining function.

Measurement of Patient Outcomes: Oswestry Low Back Pain Questionnaire, Pain Disability Questionnaire, SF 12 or 36, McGill Pain Questionnaire facilitate evaluation on effectiveness of treatment interventions, functional improvement and quality of life.

Translation into Practice: practice “pearls”/ performance improvement in Practice (PIPs)/ Changes in clinical practice behaviors and skills: Standard of care remains education, activity modification, Physical Therapy including manual therapy and medications. Diagnostic and therapeutic use of Sacroiliac joint injections and Radiofrequency Ablation are interventional treatment options. It is important to follow available established guidelines to minimize false positive results and unnecessary treatments.

Cutting edge concepts and practice: The I Fuse implant system inserted under “minimally” invasive techniques offers a less invasive alternative to open surgical procedures in patients with chronic persistent and well documented SI joint pain (over 6 months duration) unresponsive to conservative treatment interventions. Further research is necessary to further establish short term and long term benefits from this procedure. Surgery should be the last resort.

Gaps in evidence – based knowledge: chiropractic or osteopathic manipulation, SI joint belts and orthoses, acupuncture, prolotherapy and SI joint interventions (injections, ablation procedures and surgical interventions) are treatment interventions that can be of help for Sacroiliac joint pain. Further research is necessary to further establish the short term and long term benefits of these interventions.

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