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Protocol for Sacroiliac Joint Stabilization

by
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Overview:

It has been my experience that many patients suffer disabling low back pain and/or pelvic pain as a result of chronic sacroiliac (S-I) joint dysfunction and instability that often goes undiagnosed and ineffectively treated. Therefore, a non-surgical treatment protocol has evolved in my office that integrates the following: the principles of osteopathic manual medicine; a regenerative injection treatment method; and the use of a digital C-Arm fluoroscope (a low dose x-ray machine used to help localize injections). The purpose of S-I joint stabilization is to restore strength and stability to the S-I joint thereby restoring proper biomechanics resulting in reduction of pain and improved function.

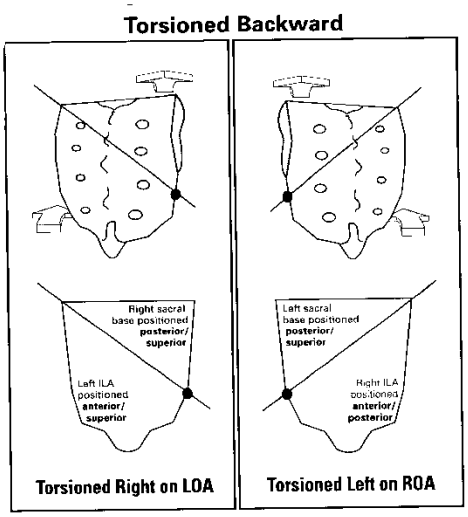
One method used for recognizing patients that may benefit from S-I joint stabilization involves the use of osteopathic principles. The use of the osteopathic paradigm permits the identification of patients with significant painful dysfunctions of the S-I joint. Another significant group of patients that has shown benefit from S-I joint stabilization are those with persistent low back pain after lumbar fusion surgery. A diagnostic injection of the S-I joint and its major supporting ligaments has been found to be a useful tool in sorting out those patients that may benefit from S-I joint stabilization.

One strategy of regenerative injections involves the injection of chemical irritants into the attachments of connective tissue in order to cause a controlled inflammation and initiate a wound-healing cascade resulting in improvement of connective tissue strength. S-I joint stabilization uses a mechanical irritant (pumice flour) injected into the sacroiliac joint capsule and major supporting ligament attachments with fluoroscopic guidance. It has been repeatedly shown that accurate intra-articular injection of the S-I joint capsule requires fluoroscopic guidance.

There are several common osteopathic sacroiliac somatic dysfunctions that are typically associated with a significant degree of pain and instability. These dysfunctions, which can be readily identified by osteopathic physical exam methods, are listed below:

1. Posterior Sacral Torsion
2. Sacral Shear
3. Upslipped Innominate

Posterior Sacral Torsion



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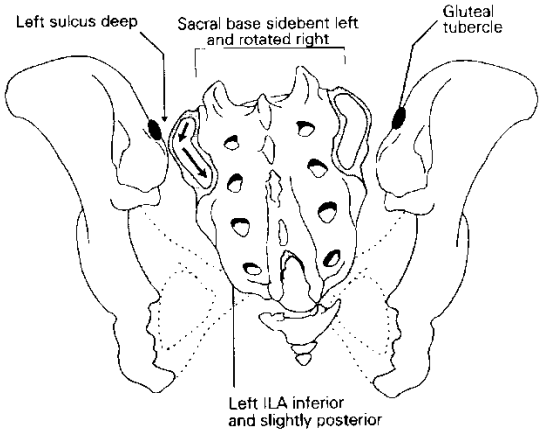
Left Sacral Shear



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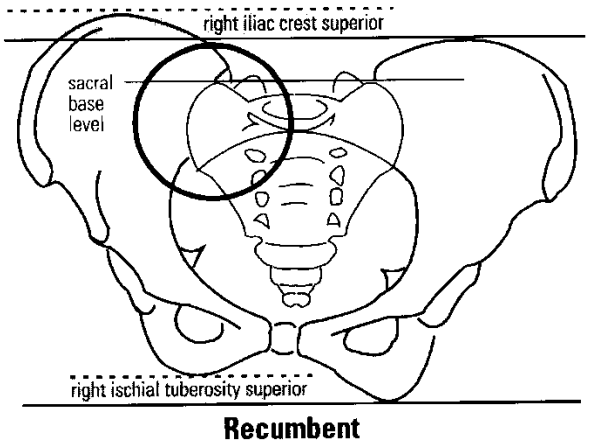
Right Upslipped Innominate



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The etiology of these problems is often the result of a significant fall, childbirth, motor vehicle accident or other injury causing ligament laxity resulting in instability and dysfunction. The vast majority of these patients are females whose condition often goes unrecognized for extended periods of time. The above dysfunctions biomechanically interfere with many daily activities including walking, standing, sitting, etc. These patients typically cannot stay in one position for any length of time. This phenomenon is sometimes referred to as the "theater-cocktail party" syndrome since these patients have difficulty at both types of social settings. Their pain is often quite severe despite lack of traditional allopathic physical exam findings or imaging abnormalities implicating lumbar spine or other pathology. If an MRI scan has been performed on one of these patients, it is often are read as normal or minimally abnormal.

In the acute phase, up to a 3 to 6 month timeframe, manipulation alone often provides substantial relief. It has been my experience that after a 6-month time period, manipulation is usually no longer effective by itself. Only after failure of more conservative treatment methods are these patients deemed candidates for S-I joint stabilization.

Patient Evaluation:

A complete Low Back Pain Evaluation is performed including a complete history (Chief Complaint, History of Present Illness, Review of Systems, Past Medical History, Family History, and Social History). The patient completes a pain diagram and a visual analog scale. Prior imaging studies and medical treatment reports are reviewed as available. Missing medical information is requested when necessary. A complete examination of the patient is performed, including the use of the osteopathic paradigm, with emphasis on the low back and neurological exams. Significant medical pathology is excluded and the S-I joint dysfunction and instability is included in the differential diagnosis when appropriate. A clinical impression is made and a therapeutic plan is formulated.

If the patient is a potential candidate for S-I joint stabilization, the treatment plan is outlined for the patient including the details of the injection procedure, expectations for the treatment and potential complications. A copy of our S-I Joint Stabilization Survey Results is given to the patient for their review. Treatment alternatives are also discussed. The patient is brought back on a separate day for treatment.

Treatment Protocol:

The first step of the injection treatment process often involves a diagnostic and therapeutic injection of corticosteroid and lidocaine into the symptomatic side (unilateral or bilateral). If indicated, manipulation to normalize the S-I joint dysfunction is performed after the injection and prior to discharge. If the initial diagnostic injection results in a significant relief of pain, then the patient is a candidate for S-I stabilization injection with pumice solution (containing pumice flour and local anesthetic). If the patient remains relatively asymptomatic after this first step (corticosteroid and lidocaine injection), then nothing further is done until their pain starts to recur to a significant

degree. If the patient does not demonstrate a significant response to the initial injection, then a repeat injection procedure with corticosteroid and lidocaine may be considered.

If the patient has a significant response to the corticosteroid/lidocaine injection, then the patient is considered to be a candidate for S-I joint stabilization with pumice solution. The injection with pumice solution as described below is then usually repeated 3 times at approximately 6-week intervals in order to achieve an adequate level of stabilization. A follow-up visit to assess response to treatment is recommended after the first treatment with pumice at 2 to 3 weeks to evaluate the patient's response. A re-evaluation of their progress (pain and function) is made after each treatment session. Any time the patient receives an acceptable level of pain relief, further treatment is held and the patient brought back for reassessment at periodic intervals. After the 3 treatment series, the patient is reassessed in 6 to 8 weeks to decide on the plan for future treatment efforts.

Procedural Details:

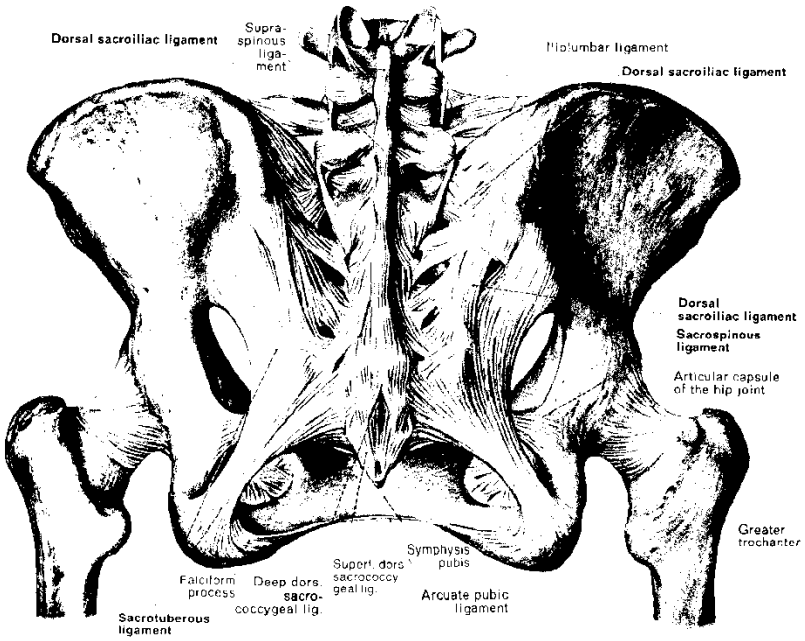
On the day of treatment, the procedural details are once again reviewed and an attempt is made to answer all the patients questions. A consent form is reviewed with and signed by the patient. It is determined whether are not premedication (minimal conscious sedation) will be used.

The patient is brought to our fluoroscopy room. Vitals signs are taken including BP, pulse, and O2 saturation (oximetry). If desired by the patient, premedication is administered to the patient in the supine position on the fluoroscopy table. Meperidine (Demerol) and Zofran (odansetron) administered intravenously at appropriate doses are the most commonly used medications in our office for conscious sedation. Continuous monitoring of O2 saturation and pulse are continued for the entire duration of the procedure. Physician and nursing personnel have been trained in basic cardiac life support (BCLS) and a code cart and AED (automated external defibrillator) are immediately available in case of emergency. Naloxone (Narcan) and epinephrine (adrenaline) are also immediately available.

The patient is then placed in the prone position with a pillow under the pelvis to minimize lumbar lordosis. The areas to be injected over the S-I joint and supporting ligaments are cleansed with chlorhexidine solution. The posterior joint line of the S-I joint is located via fluoroscopy. Buffered 1.0% lidocaine is injected for local anesthesia in the skin and subcutaneous tissue with a 30-gauge one-inch needle. A 22-gauge 3.5-inch spinal needle is inserted under fluoroscopic guidance into capsule of the S-I joint using an Anterior-Posterior view. 10 degree Oblique images are sometimes used as well. Optiray-240 dye is used to obtain an arthrogram of the S-I joint. Vascular flow of dye is avoided. Observation for leakage of dye and other abnormalities of the S-I joint are also noted. Up to 2 cc's of solution is injected (either 0.5cc's of triamcinolone 40 mg per ml (Kenalog-40) plus 1.5cc's lidocaine for the diagnostic injection or 2 cc's of the pumice/D5W solution for the S-I Stabilization Injection). The opposite S-I joint is then injected if indicated in a likewise manner. The pumice/D5W solution must be remixed thoroughly immediately prior to injection to avoid clogging of the needle.

The superior aspect of the S-I joint is the injected without the use of fluoroscopy with a 22-gauge 3-inch and/or 4-inch traditional needle. Local skin anesthesia is again used. 12 cc's of solution is injected on each side (1 cc of Kenalog-40 with 11 cc's of 0.5% lidocaine or 12 cc's pumice/D5W). The upper areas injected include the interosseous ligaments of the S-I joint, the iliolumbar ligament attachment to the ilium and the upper and lower posterior sacroiliac ligament attachments (Hackett points A through D). The patient is brought to the recovery room for observation (minimum of 20 minutes) and is discharged when stable. Prior to discharge the patient is re-examined and the region of the S-I joint is manipulated as indicated by osteopathic methods.

Sacroiliac Joint Ligaments – posterior view



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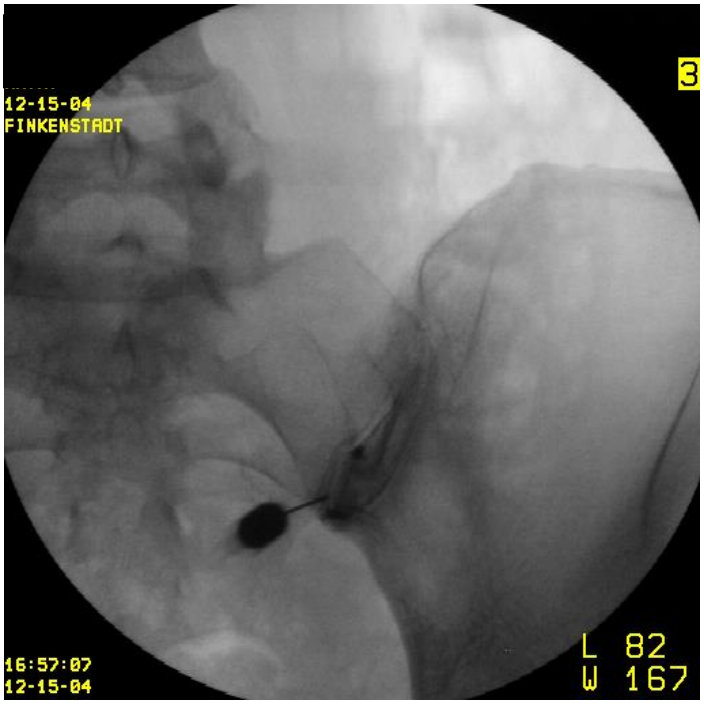


S-I Joint Injection:

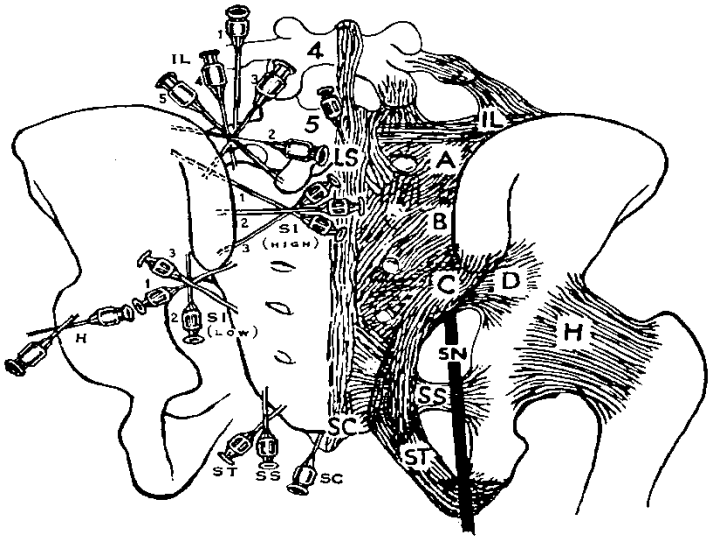
- using C-Arm fluoroscopy and Optiray - 240 dye

Hackett Diagram –

demonstrating the injection sites for:

Iliolumbar Ligaments and Interosseous Ligaments (IL)

Posterior Sacral Ligaments (A, B, C, D)



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Complications:

No major complications have occurred since the first patient was treated using this protocol in May 2003. Since that time, several thousand procedures have been performed using pumice solution. We have had patients who have not benefited from treatment but no one to my knowledge has been made worse long term. Prolonged post procedure soreness has been the only significant complication encountered thus far.

Patients are offered a short course of narcotic pain medication to help with post procedure pain. All patients are now instructed to call if they have intolerable pain at any time after the procedure or if they experience significant soreness lasting more than a week. A short course of oral corticosteroids (e.g. Medrol Dosepak or similar) has been very effective eliminating prolonged post procedure pain without noticeably decreasing the effectiveness of the procedure.

Results:

A retrospective office survey of the first 40 out of 42 patients treated with this protocol has been performed. A copy of the data is available on request for your review. Please do not hesitate to call my office with any questions you may have concerning this method of treatment or to discuss specific cases.

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Additional References available upon request.

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