Clinical Case Report Competition

West Coast College of Massage Therapy, Victoria Campus

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Second Place Winner

Stephanie McDowell

Effects of massage therapy on chronic idiopathic sacroiliac & acetabulofemoral joint pain
The Effects Of Massage Therapy For Chronic Idiopathic Sacroiliac & Acetabulofemoral Joint Pain

Conflict Of Interest Notification:

The author and subject of this Case Study were acquainted prior to the start of the study process. However, to the author’s knowledge, no conflict of interest exists.
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Effects Of Massage Therapy On Chronic Idiopathic Sacroiliac & Acetabulofemoral Joint Pain, A Case Report

Abstract: This study evaluated use of massage therapy in treatment of chronic sacroiliac (SI) and acetabulofemoral (hip) joint pain. The exact pathology affecting these structures in this case is unknown, requiring medical imaging to fully diagnose. The working hypothesis being: the SI joints were hypermobile, pulled into a range of pain and dysfunction and anchored in pathological position by the thoracolumbar fascia, causing hip joint pain. The goal was to reduce or eliminate the patient’s pain, allowing return of previous levels of activity. Treatments utilized multiple techniques, focusing on myofascial release (MFR) and therapeutic exercise. Specific therapeutic exercises were initiated to increase function of quadriceps, hamstring, adductor, and gluteal muscle groups, addressing right side muscle imbalance affecting the pelvis. Protocol was a course of 10, 70-minute massage therapy treatments, spaced over 9 weeks. The treatments were conducted at WCCMT Victoria at varying times of day. This evaluation was approached as a prospective, before and after case study. Results were positive; the patient experienced a dramatic equalization of muscles acting on the pelvis, as well as reduction and eventual elimination of pain. This case was quite unique, and further study is required to assess effects of this approach for the general population.

Keywords: Massage Therapy, Sacroiliac Joint, Acetabulofemoral (AF), Hip Joint, Hypermobility Disorder, Thoracolumbar Fascia, Myofascial Release, Therapeutic Exercise, Muscle Imbalance
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**Introduction:** Three components, the sacroiliac joints (SI joints), acetabulofemoral joint (AF or hip joint) and thoracolumbar fascia all combine and interact together and with the addition of hypermobility disorder form the hypothesis for this study: that a pathology with the SI joints, either a congenital abnormality, joint laxity, a lesion, or a combination of these caused the patient pain and altered gait patterns which in turn resulted in muscular imbalance affecting the hip. This combination was further complicated by a pathological tightening of the thoracolumbar fascia. Or perhaps the reverse occurred: a chronic muscle imbalance, causing abnormal lines of pull on the thoracolumbar fascia and SI joints, creating altered forces on the hip, resulting in pain of hip and SI together. Did the patient’s diagnosed hypermobility initiate the SI and AF pain, or did muscle imbalance cause both, assisted by a laxity of the joints?

In the early part of the twentieth century, the sacroiliac joints (Fig: 1-5) were frequently implicated and treated in cases of low back or acetabulofemoral (hip) joint pain. With the subsequent discovery of the importance of disc herniation in the 1930s by Drs William Mixter and Joseph Barr, the medical community experienced an alteration of focus to the extent that the SI joints were then commonly overlooked as a source of pain in the hip and low back region. This was due in part to the new science of spinal disc involvement and in part to the fact that there was often a great deal of controversy and debate regarding the amount of movement available to the SI joints and the direction or axis of that movement. Even today, medical students are occasionally taught that these joints are immobile, and therefore the SI continues to go unnoticed as a source of pain and dysfunction to the lumbar/pelvic/hip complex (Hertling & Kessler 2006). This situation is compounded by the fact that SI
lesions can be difficult to image, even with the use of radiograph or MRI technology. Though sources are hard to substantiate, some statistics put SI Joint malfunction as a source for low back and acetabulofemoral pain as high as 30% of cases. It is clear that though the movement available to the SI joints is small, even minute, it does have profound effect on the surrounding structures.

**Anatomy & Physiology:** The SI joints are paired joints forming a link between the two pelvic bones and the sacrum, completing the pelvic ring or girdle. These joints allow flexibility and assist with shock absorption between the lower limbs and the spine (Magee 2008). The SI joints are partially synovial and partially fibrous or syndesmosis joints. The iliac portion of the articular joint surface is covered in fibrocartilage, while the opposing sacral portion of the joint is covered in a much thicker (1.75 – 5 times) hyaline cartilage. These joints change with age, morphing from smooth surfaces in infancy and childhood with motion possible in many directions, to become irregularly shaped in adulthood with motion restricted to anterior/posterior. The irregular shape developed by the bones with age contributes greatly to the substantial strength of these joints. There is great variety in SI joint shape from individual to individual, with less motion generally available in the male. With increasing age the joints tend to become further fibrosed and are commonly fully ankylosed in elderly men (Hertling & Kessler 2006). The SI joints are convex/concave structures with the concave sacrum receiving the convex iliac surface in the vast majority of the population. In approximately 5% of the population, the reverse configuration occurs with the ilium receiving the sacrum. This opposite shape to the joint can create an unusual axis of movement, allowing additional possibility for pain and dysfunction.
In addition to the boney structure, the SI joints are further supported by several strong ligaments (Table 1, Figure 2-3); anterior sacroiliac ligaments, long & short posterior sacroiliac ligaments, posterior interosseous ligament, sacrotuberous ligament, and sacrospinous ligament. Though not always considered part or the SI joint, the iliolumbar ligament is also of critical importance and often exhibits tenderness if there is a lesion within the joint (Magee 2008).
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Table 1: Sacroiliac Joint Ligaments

<table>
<thead>
<tr>
<th>Ligament</th>
<th>Attachment</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anterior Sacroiliac</td>
<td>Anterior sacrum-anterior ilium</td>
<td>Limits outflare</td>
</tr>
<tr>
<td>Short Posterior</td>
<td>TVP’s 1-2 of sacrum – tuberosity of ilium</td>
<td>Limits all pelvic or sacral movement</td>
</tr>
<tr>
<td>Sacroiliac</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Long Posterior</td>
<td>TVP 3 of sacrum – superior posterior iliac spine</td>
<td>Limits counternutation and anterior pelvic rotation</td>
</tr>
<tr>
<td>Sacroiliac</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Posterior Interosseous</td>
<td>Tuberosities of sacrum to tuberosities of ilium (deep to L &amp; S posterior sacroiliac)</td>
<td>Forms portion of articular syndesmosis</td>
</tr>
<tr>
<td>Sacrotuberous</td>
<td>TVP 4-5 of sacrum, lateral border of sacrum, coccyx – ischial tuberosity</td>
<td>Limits nutation and posterior pelvic rotation</td>
</tr>
<tr>
<td>Sacrospinous</td>
<td>Lateral sacrum &amp; coccyx – spine of ischium</td>
<td>Limits nutation and posterior pelvic rotation</td>
</tr>
<tr>
<td>Iliolumbar</td>
<td>Iliac crest – TVP L4-L5</td>
<td>Stabilizes L5 on the ilium</td>
</tr>
</tbody>
</table>

Figure 2: Sacroiliac Joint and Ligaments, anterior view

Source: wikiMedia/Gray’s Anatomy, (1918)
The motions of the SI joints are small, only involving a distance of a few millimeters, though important even so. Likewise, when movement is not available in these structures, as in cases when these joints become fibrosed or fused, the effects can be far reaching. The synovial portion of the SI forms an inverted ‘C’ or ‘L’ shape with movement in an inferior-posterior direction during nutation or flexion of the sacrum and in an anterior-superior direction during counternutation or extension. This motion of the sacrum is often described as “nodding”, as the sacral promontory tips in an anterior direction.
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during nutation and in a posterior direction in counternutation (Magee 2008, Hertling & Kessler 2006). In weight bearing, the body’s mass creates a force that tends to separate sacrum and ilium, pushing the sacrum into nutation; this action can be magnified in a pregnant or obese patient (Hertling & Kessler 2006). There are no muscles that act directly on the SI joints though they, and the pelvis as a whole, are influenced by muscles of the hip and lumbar spine (Magee 2008).

An SI Joint lesion or dysfunction is evidenced by local pain and tenderness that increases with position changes. The pain is often described as a transient dull ache, and due to the ring-like nature of the pelvic structure can be felt additionally in the area of the symphysis pubis and adductor attachments. Over time, pain can become of a deep, boring nature (Hertling & Kessler 2006). It is also common for SI pain to refer out over the outside of the hip region, into the groin, down the posterior leg to the knee or posterior/lateral calf, or lower abdomen. These referral patterns can potentially mimic pain of a sciatic or visceral nature. Common causes of SI joint pain are leg length discrepancy, lower limb muscle imbalance, trauma, weight gain (particularly pregnancy), poor posture or scoliosis, and altered or antalgic gait patterns.
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**Figure 4: Sacroiliac Joint, Adult, anterior view**

Source: wikiRadiography

**Figure 5: Sacroiliac Joint, Adult, oblique view**

Source: wikiRadiography
The acetabulofemoral (AF), or hip joint, (Fig: 6-8), is a ball and socket synovial joint formed by the head of the femur inserted into the acetabulum of the innominate bone of the pelvis. The joining of the ilium, ischium, and pubic bones form the twinned innominate bones of the pelvic ring. The point of union for these three bones creates the acetabulum or concavity that receives the femoral head. Each acetabulum faces laterally, anterior and inferiorly from the pelvis. One of the strongest and most stable joints in the human body, the AF allows multiaxial motion and links the lower extremity to the pelvic girdle. The unique stability of the AF joint is further increased by the acetabular labrum, a semi-circle or horseshoe shape of fibrocartilage similar to that found in the glenohumeral joint of the shoulder, which adds additional depth to the socket (Magee 2008, Hertling & Kessler 2006, Kisner & Colby 2007). The acetabular notch is completed by the transverse ligament that allows passage of the acetabular artery, which ultimately becomes the artery of the head of the femur.

Figure 6: Acetabulofemoral (Hip) Joint, posterior view
Source: wikiMedia/Gray’s Anatomy, 1918
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In addition to the already stable boney structure, a thick joint capsule and three powerful ligaments also support the AF joint. The capsule fibers run laterally, parallel to the neck of the femur as far as the intertrochanteric line anteriorly on the femur and approximately as far as the intertrochanteric crest posteriorly. This configuration means that a large portion of femoral neck is intracapsular, adding to strength and stability of the joint (Hertling & Kessler 2006). The ligaments providing support are: iliofemoral, ischiofemoral, and pubofemoral. (Table 2) The iliofemoral ligament, also known as the Y ligament of Bigelow, is generally thought to be the strongest ligament in the body and twists in upon itself when the hip is in close pack position, locking the joint. The ischiofemoral, also known as the ligament of Bertin, is the weakest of the three hip ligaments (Magee 2008, Hertling & Kessler 2006). In addition to these ligaments, the AF joint is further stabilized by the ligament of the head of the femur or ligamentum teres femoris deep within the acetabulum, though this ligament is thought to be more significant in supplying vascularization and possibly lubrication to the head of the femur than structural support (Hertling & Kessler 2006).
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Figure 7: Acetabulofemoral (Hip) Joint & Ligaments, anterior view
Source: wikiMedia/Gray’s Anatomy, 1918

Figure 8: Acetabulofemoral (Hip) Joint & Ligaments, posterior view
Source: wikiMedia/Gray’s Anatomy, 1918
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### Table 2: Acetabulofemoral (Hip) Joint Ligaments

<table>
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<tr>
<th>Ligament</th>
<th>Attachments</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iliofoemoral, aka: Y Ligament Of Bigelow</td>
<td>Ilium – intertrochanteric line of femur, anterior portion</td>
<td>Prevent excessive extension, limits medial rotation of femur and maintains upright posture of hip</td>
</tr>
<tr>
<td>Ischiofemoral, aka: Ligament of Bertin</td>
<td>Ischium – intertrochanteric line of femur</td>
<td>Stabilizes hip in extension, limits medial rotation of femur</td>
</tr>
<tr>
<td>Pubofemoral</td>
<td>Pubic bone – intertrochanteric line of femur (blending with deep band of iliofemoral ligament)</td>
<td>Prevent excessive abduction of femur, limits medial rotation of femur</td>
</tr>
<tr>
<td>Ligament Of Head Of Femur, aka: Ligamentum Teres Femoris</td>
<td>Acetabular notch – head of femur</td>
<td>Vascular supply to head of femur, minor stabilization of head of femur</td>
</tr>
<tr>
<td>Transverse</td>
<td>Completes labrum</td>
<td>Deepen acetabulum</td>
</tr>
</tbody>
</table>

Due to the inherent strength and stability of the AF joint when it exhibits pain or pathology, particularly without history of direct trauma, it is important to assess the sacroiliac joints and lumbar spine for involvement (Magee 2008). Despite their stability, the AF joints bear an enormous amount of pressure when weight bearing, particularly when standing on one leg. The body’s centre of gravity, located at approximately S2, is significantly medial to the support of the femoral head in the acetabulum. This generates a torsion on the femoral head that must be resisted by the hip musculature and the angle of pull in addition to the body’s weight creates a force up to three times the weight of the body (Hertling & Kessler 2006). Changes in gait due to an injury or due to pain referred to the hip region can magnify the effects of this force on the joint. The thoracolumbar or lumbodorsal fascia, (Fig: 9) is a multilayered fascial system in the back that envelopes and attaches to multiple bone and muscular structures. This fascial system is key to stability and equilibrium of the lumbar
spine, pelvis and torso as a whole. Its balanced support is essential to upright posture and motion of the body in walking/running/standing and in the lifting of objects. Its muscle and boney connections create an important link between the lower body and the upper (Hertling & Kessler 2006). The thoracolumbar fascia is composed of three layers: anterior, middle and posterior. The anterior layer blends with the anterior longitudinal ligament of the spine, surrounds the psoas major & minor muscles and the crura of the diaphragm, and blends with the middle fascial layer to surround the quadratus lumborum muscle. It is the thinnest of the three layers. The middle layer, blending with the anterior layer, forms a posterior envelope to the quadratus lumborum muscle and attaches to the transverse processes of the spine. This middle layer becomes the aponeuroses of the internal oblique and transverse abdominis muscles. The posterior layer, the thickest of the three, surrounds the erector spinae, interspinalis, serratus posterior muscles, forms part of the origin of the latissimus dorsi muscle, and blends with the fibers of the gluteal muscles. It is this thick posterior layer of the thoracolumbar fascia, which is involved in load transfer. Overall, the thoracolumbar fascia extends over the back muscles from the sacral region up as far as the splenius muscle and the ligamentum nuchae at the base of the skull (Hertling & Kessler 2006, Magee 2008, Kisner & Colby 2007). Contraction of the muscles held within the thoracodorsal fascia fills the fascial space, causing a tightening of the fascia as a whole, adding to postural stability. A pathological tightening of portions of this fascial network will have a direct affect on the structures it contains and attaches to. In addition, the thoracolumbar fascia also contains nerve endings and vascular supply that must be considered when evaluating low back and hip pain (Hertling & Kessler 2006).
Hypermobility disorder or syndrome is a generalized ligamentous laxity, which allows joints to move beyond their normal range. Sometimes referred to as “double joints” or “loose joints”, it can involve many joints in the body or only few. This disorder is more common in females and particularly in post-menopausal women. It is also frequently seen in patients with Down Syndrome. Hypermobility disorder is considered a separate condition from other diseases characterized by ligament laxity, such as Ehlers-Danlos syndrome, RA, or Marfan’s syndrome. Exact etiology of this disorder is not known, though it does tend to run in families and a dominant inherited connective tissue disorder is suspected. A decreased ratio of Type 1 to Type 2 collagen in connective tissue appears to be involved (Goodman & Fuller, 2009). Diagnosis of hypermobility disorder involves assessment of affected joints, a score of 4 or higher out of the maximum 9 possible on the Beighton Score, (Table 3), and pain in 4 or more joints lasting greater than 3 months. The Beighton Score is a factor in the Brighton Criteria, which is a modified Carter & Wilkinson scoring system, a 1964 test for quantification of joint
laxity. While many people with hypermobility disorder have no pain or other symptoms other than the excessive mobility of multiple joints, the disorder can lead to conditions associated with unstable joints such as pain, dislocations & subluxations, sprains, and the early development of osteoarthritis. Exercise is key for individuals with hypermobility to minimize the potential for these complications, as laxity of the hypermobile joints must be reinforced by the muscles surrounding them.

Table 3: Beighton Score For Hypermobility Assessment

<table>
<thead>
<tr>
<th>Joint</th>
<th>Mobility Found</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>MCP, 5th Digit</td>
<td>Passively extend beyond 90 degrees</td>
<td>1 point each hand</td>
</tr>
<tr>
<td>Knee</td>
<td>Passively extend beyond 15 degrees</td>
<td>1 point each knee</td>
</tr>
<tr>
<td>Elbow</td>
<td>Extend beyond 10 degrees</td>
<td>1 point each elbow</td>
</tr>
<tr>
<td>1st Digit, hand</td>
<td>Passively abduct to touch flexor surface of the forearm</td>
<td>1 point each hand</td>
</tr>
<tr>
<td>Hip</td>
<td>Standing forward flexion of the trunk, knees fully extended, palms resting flat on floor</td>
<td>1 point</td>
</tr>
</tbody>
</table>
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Case History: The participant in this study is a 34 year old, physically active, non-smoking female. Occupation is as a RMT and administrator, involving a mix of physical and desk/computer work.
Previous medical history includes asthma, diagnosed at age 8 and requiring periodic treatment of corticosteroids, both inhaled and oral.
The participant suffered an idiopathic grand mal seizure at age 13 resulting in concussion causing frontal lobe brain damage.
A second unexplained illness at age 17 involving a high fever resulted in a mitral valve heart murmur. Subsequently, the participant was diagnosed with hypermobility disorder at age 28 as well as primary anti-phospholipid disease, an autoimmune disease, hypothetically contracted due to the mystery illness suffered at age 17. A dose of 81mg aspirin is administered daily to counteract blood clots formed by this anti-phospholipid disease.
Degenerative disc disease of L4-5 has been asymptomatic for greater than 5 years with the exception of lingering neurological deficit to the 1st digit of the left foot.
The participant has somewhat low blood pressure with readings typically in the 100/60 range.
The participant was previously an endurance runner, having completed multiple half-marathon distance races prior to the onset of SI and hip pain. At the beginning of this study, running had become impossible due to pain, and exercise was limited to a boot camp regime 3 times weekly. Boot camp involves a multidisciplinary, military-type workout, focused on core strength, cardio, resistance and interval training.
Pain began approximately 15 months prior to the start of the study as a dull ache in the right hip region, only appearing after long runs. At its worst, the pain spread down the lateral side of the right leg as far as the knee and generally resolved with stretching and massage of the Iliotibial band (ITB). Pain increased with time to become an intense burn in the right hip with exercise and constant dull ache in the left SI joint. By the time this study began, the participant had not been running for approximately 6 months due to pain, and pain remained constant in the left SI and was felt post exercise in the right hip with a “freezing” or “locked” sensation of the right ITB.

Method:
Assessment
Postural Exam: (Please see: Photos Appendix B & C) Initial postural exam was done as a ‘soft eye scan’ and showed a few minor postural anomalies. These include holding the right arm internally rotated and adducted slightly across the abdomen. The patient also holds the head slightly to the right of the midline; this is particularly noticeable from the rear view. When the patient is tired, for example after a hard workout, there is a tendency to adopt a head-forward posture. Viewed from the rear, the line of the patient’s shirt level rides high on the left, likely due to the rotated and adducted right arm. Upon completion of the study, there were no dramatic changes to the patient’s posture.

Palpation Exam: An examination of the patient’s pelvic alignment was completed on the 1st treatment, 5th treatment, and 10th treatment, including
ASIS, PSIS levels and angles, sacrum position and leg length assessment. All were within normal ranges with the exception of on the 5th treatment when sacral and innominate anomalies were detected. At this point in the course of the study, the patient presented with what appeared to be a right on left anterior sacral torsion and the right innominate was in a posterior, inferior and lateral position.

**Physical Testing:** Due to the patient’s hypermobility disorder, assessment was done as resisted global movement and functional movement rather than as special tests or range of motion measurements. Standard range of motion testing was pointless in this study because the patient’s range was always within the normal degrees for each joint. Even bilateral range of motion comparison did not yield useful data. Therefore, these assessments were abandoned as of treatment #3. Likewise, the usual special tests (Gillets, seated/standing flexion, etc) were consistently negative due to motion always being available at the joints tested. Instead, resisted isometric movements of the acetabulofemoral (AF) joint (Chart 1, results section) were assessed prior to each treatment, including flexion, extension, abduction, adduction, internal rotation and external rotation (Magee 2008, page 670). There was a marked discrepancy in strength of muscles acting on the AF joint, with the right side weaker than the left. Though the patient was in constant pain with the ache in the left SI joint at the beginning of this study, additional pain was only felt when resisted isometric testing was done in treatment #2 with resisted adduction of both right and left hip joints and with resisted external rotation of the left hip joint. In this instance pain was felt in the left SI with the exception of right hip adduction, when the pain was felt in the right hip. Each resisted isometric movement was recorded using the manual muscle testing grades 1 -5.
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(Table 5, results section), using the unaffected left side (always grade 5) for comparison.

Also prior to each treatment, the patient was asked to perform a Single Leg Sit To Stand Test (Magee 2008, page 549) to monitor gains in quadriceps strength and improved balance. (Please see Appendix A for photos) Initially the patient found this test difficult on the right leg, and would veer heavily to the right side on rising. As treatments progressed, the right side equalized with the left, with motion smoothing and balance becoming steadier. This test was invaluable as it enabled the patient to feel progress and clearly showed functional gains in the quadriceps muscles.

Throughout this study, the participant was asked to keep a calendar log, recording each day’s pain level and exercise. Pain level was recorded using the Visual Analog Scale (VAS) (Please see Appendix A for example). The VAS is a visual colour and word gradient scale of 1-10 allowing the patient a consistent reference point to rate their current level of pain.

**Treatment Details:** The patient was scheduled for 10 massage therapy treatments spanning 9 weeks over all. The treatments were for the most part weekly, though some unavoidable scheduling conflicts meant some fluctuation of timing, with a gap of 2 weeks between treatments 2 & 3 and treatments 3 &4, while treatments 9 & 10 were both in one week. Each treatment was of 70 minutes in length and involved a period of assessment lasting approximately 10-15 minutes. All treatments took place at WCCMT Victoria student clinic and were at varying times of day in various treatment rooms.
Hydrotherapy moist heat was applied in the form of a thermophore to pre-treat tissue during each treatment. Each treatment focused on assessment and release of the thoracolumbar fascia in the area of the lumbar spine, quadratus lumborum muscles and fascial tissue over the gluteal region. Fascial techniques used were shearing off the spine, and C & S bend holds. Each technique was held for varying amounts of time, until a release of the fascial tissue was felt. After an area was treated with fascial release, and reassessed for further restrictions, the region and surrounding tissue was thoroughly flushed with the use of effleurage and general Swedish techniques. Multiple massage therapy techniques were employed on an ‘as needed’ basis, including golgi tendon release, muscle energy, isolytic release, petrissage, and general Swedish massage.

Therapeutic exercise was prescribed as homecare beginning with the first treatment. (Please see appendix D-F for photos.) This was geared to equalizing muscle imbalance of the right quadriceps group, hamstring group, and gluteal muscles.

Remedial exercise began with an open-chain, resisted range of motion for the hip. Using a Green Theraband Loop of 8” diameter in resistance level 10, or heavy resistance, placed proximal to knee level around both legs. It was considered safe to start the patient at a higher resistance level due to an existing intense workout regime. In a less strong patient it would be advisable to start with a lighter weight of resistance band. Initially the patient was instructed to work the weaker right side, though this instruction was changed to work bilaterally at treatment 2. This change in
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instruction was due to concern that one-sided workouts would pull the pelvis further out of alignment.

Starting exercises were of 15 reps hip flexion and hip abduction – to sub maximal effort – daily. The patient was instructed to stop if pain increased and to increase repetitions if the exercise felt easy.

At treatment 3, the exercise was changed to a closed-chain version, still with resistance band at knee level, now working on a quadrant pattern to encompass four hip ranges: flexion, extension, abduction, adduction. Repetitions were kept at 15 each direction. The patient was instructed to do these exercises on non-bootcamp days and to decrease the reps if pain increased.

At treatment 4 the patient was instructed to add wall sits to the exercise routine, starting with knees flexed to 90 degrees, hold until maximum fatigue, then rise a few degrees, hold until fatigue, rise again, progressing from most difficult to least. This was prescribed for 3 times weekly, and to be modified as needed for pain. (Note: this exercise was dropped from the plan after the patient attempted it twice, as it seemed to aggravate the SI pain.)

At treatment 6 gluteal strengthening exercises were added to the routine. (Please see Appendix D for photos.) This was in the form of “clamshell” in sidelying to strengthen gluteus medius and hip extensions while in the prone position to work gluteus maximus. Each was to be done for 15 repetitions daily, reducing repetitions if pain increased. At treatment 7 this was increased to 3 sets of 15 repetitions daily for each exercise.
At treatment 8 the gluteus medius exercise was changed from the “clamshell” to a straight leg hip abduction in sidelying with the back to a wall to increase resistance. Repetitions were dropped to one set of 15. Also at treatment 8 the resisted hip Theraband exercises were altered to be functional walking type movements, moving both forward and backward still with the resistance at slightly proximal to knee level.

Table 4: Method – Treatment Details

<table>
<thead>
<tr>
<th>Treatment Number</th>
<th>Patient Feedback/Subjective Information</th>
<th>Treatment Details</th>
</tr>
</thead>
</table>
| #10 Dec 10, 2011 | No more flu  
Pain after boot camp this am – R Glute Med insert, P2  
Feels “just like long workout pain” | Fascial C&S Bend to QL/L-Spine fascia  
TPPR to R Glute Med/ R Piriformis  
Isolytic Release to R Piriformis  
Pettrissage to Gastrocs/Tib Ant - bilat  
GSM to Glutes/QL/Hams/Quads/ITB – bilat |
| #9 Dec 7, 2011 | No pain  
Had flu this week – in bed all day 1 day – no exercise until this am  
Abs sore from sickness | Thermophore to Legs/Glutes/Back  
Fascial Shear off L-Spine/T-Spine  
Fascial C&S Bend to QL region - bilat  
GSM to QL/Erectors/Glutes/Hams/ITB/Gastrocs - bilat  
Friction to R Glutes insertion |
| #8 Dec 3, 2011 | No Pain Today  
Area of slight tenderness to touch over R SI | Thermophore to SI/Legs  
Fascial Shear to full back – off spine - bilat  
Fascial C&S Bend to L-Spine/QL/Glutes - bilat  
GTO Release to R Distal ITB  
Pettrissage to R Piriformis/Glutes  
GSM to Glutes/Sacral tissue/Traps - bilat  
Leg Flush bilat (long effleurage, strokes)  
Frictions to Iliolumbar lig bilat/Glutes insert - bilat |
<table>
<thead>
<tr>
<th>Date</th>
<th>Description</th>
<th>Treatment Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>#7 Nov 30, 2011</td>
<td>Slight ache in R SI = P1/P2 Doing lots of walking – seems to be loosening SI Joints/Hams/Quads/ITB Stress slowly improving</td>
<td>Thermophore to SI/Glutes/Abs Fascial C Bend to QL region bilat GTO Release to R Distal ITB GSM to Quads/Hams/Adductors/QL/Glutes – bilat (Continued reduction in tonicity of legs – bilat)</td>
</tr>
<tr>
<td>#6 Nov 23, 2011</td>
<td>Improved after last tx – rolled over in bed that night – loud “crack”, R SI back in place. Mild ache since, but no significant pain. Boot camp 4x since tx with no pain. Stress still high, but improving</td>
<td>Thermophore to R Hip/Glute/ITB/Abs Fascial C&amp;S Bend to Thoracolumbar fascia Petrissage to Tib Ant/Gastrocs/Traps - bilat GSM to Hams/Glutes/Erectors/Traps – bilat (Palpable reduction in bilateral tonicity of Glutes/Hams/Gastrocs/Quads/ITB)</td>
</tr>
<tr>
<td>#5 Nov 17, 2011</td>
<td>Patient in pain – new regions R SI/LB =P5 No pain L SI/R Hip Ran 4 days ago, no pain on run, then sat for 1 hr – pain on rising Pain refers down R Quad to lateral Gastrocs Stress very high, long hours working</td>
<td>Pelvic Shotgun MET to sacrum (ant sacrum correction) pain decrease immed. Thermophore to T-spine/Abs Fascial C&amp;S Bend to thoracolumbar fascia Isolytic Release to R TFL/Piriformis TPR to QL – bilat (R worse) GSM to Quads/ITB/Glutes/Hams - bilat Strum Sacrotuberous Lig - bilat</td>
</tr>
<tr>
<td>#4 Nov 10, 2011</td>
<td>No pain in L SI for 1 week. New pain R SI for 2 days after last tx</td>
<td>Thermophore to R Hip/Hams/Back/Abs Fascial C&amp;S Bend to L-spine region/Hips/Glutes - bilat GSM to Erectors/Traps/Glutes/Hams/Adductors/ITB/Quads - bilat Petrissage to Traps/ITB</td>
</tr>
</tbody>
</table>
The Effects Of Massage Therapy For Chronic Idiopathic Sacroiliac & Acetabulofemoral Joint Pain

| #3 Nov 2, 2011 | Time off exercises for 1 week Long drive = pain increase P4 @ worst | Thermophore to R Glute/Hams/Back Fascial C&S Bend to QL region/Glutes - bilat Petriissage to Traps/QL/Erectors/Gastrocs - bilat GSM to Glutes/ITB/Hams/Quads/Adductors - bilat |
| #2 Oct 19, 2011 | Sore after last tx, P3, next day boot camp, no pain Pain return after long day standing on pavement, P5, Pain increases with next workout, P6 | Thermophore to Glutes/Back Fascial C Bend to Glutes/QL region – bilat GTO Release to R Distal ITB GSM to Erectors/QL/Traps/Glutes/Hams – bilat (Palpable increase in mobility of fascial tissue LB/Glutes) |
| #1 Oct 7, 2011 | Current pain a constant dull ache in L SI, becomes burning pain with exercise. Stress – moderate to high Patient feels balance and proprioception decreased on R side | Thermophore to glutes/hams/back Fascial shear/C&S Bend to L-spine/T-spine/Glutes -bilat Knuckle knead to glutes - bilat Effleurage (Fascial tissue very restricted) |

**Results:** By the completion of this study, the patient’s pain was eliminated, and muscle strength of the right quadriceps, hamstring, and gluteal muscle groups had equalized with the left. Any residual pain in the area of the right acetabulofemoral joint appeared to be merely normal muscle ache after a hard workout.

Once the treatment regime was initiated, physical changes in the patient were noticeable immediately. These changes continued throughout the course of the study, with new data at virtually every treatment. In treatment 1, thoracolumbar fascial tissue was hypertoned and restrictions were felt in multiple directions. The first fascial treatment was quite uncomfortable to the
patient and it was difficult for the therapist to get enough mobility in the fascia to achieve a good hold. Each release was slow, and extensive flushing was performed of the areas treated. The patient reported feeling sore the evening after the treatment, but that the next day’s boot camp workout was pain free for the first time in months. The second treatment was 11 days after the first and, despite the length of time between treatments, the thoracolumbar fascial tissue was much more pliable to palpation and treatment and less uncomfortable for the patient. These gains continued through the course of the study, with tissue becoming increasingly more mobile, less restricted and less painful by degrees.

In the week after treatment 3, the long-standing left SI pain was gone, but a new area of pain developed in the right SI joint. Previously pain had always been localized to the left SI and right hip. This pain increased, and by the halfway point in the course of the study, the week of treatment 5, right SI pain was debilitating and extended into the lumbar spine region. The loosening of the thoracolumbar fascia and release of the hypertoned muscles around the pelvis seemed to be working in the manner of “peeling the layers off the onion” allowing access to the real problem: the right SI. Though the long-term pain had been felt in the left SI, it appeared the real problem was the right SI. On assessment in treatment 5, the patient’s sacrum initially seemed to be in the position of a right on left posterior sacral torsion, however when the patient was asked to perform the sphinx pose, the sacrum moved into nutation and equalized, in the manner of an anterior torsion. The patient’s pain also decreased with the spinal extension of the sphinx pose. At the same time, the right PSIS, and therefore the entire innominate bone, was found to be posterior, inferior, and lateral as compared to the left. Administration of a pelvic shotgun immediately reduced the pain, and muscle energy to correct anterior right on
left sacrum also allowed some relief. Treatment 5 continued with a long application of fascial release and general Swedish massage to the muscles surrounding the sacrum and pelvis. Subsequently, the patient reported that during the night she rolled over in bed and was awakened by a loud “crack” in the right SI. The pain was gone, with the exception of a faint ache in the area and the right SI joint appeared to be back in the correct position. Thus, treatment 5 was the turning point in the study, with gains coming much faster afterward. Pain reduced, tissue continued to gain mobility, and the patient’s homecare and exercise regimes began to improve.
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Chart 1: Right Acetabulofemoral - Resisted Isometric Muscle Test

Table 5: Manual Muscle Testing Grade System

<table>
<thead>
<tr>
<th>Grade</th>
<th>Result</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>Normal, 100%</td>
<td>Patient can complete full range of motion against gravity with maximum resistance applied by therapist</td>
</tr>
<tr>
<td>4</td>
<td>Good, 75%</td>
<td>Patient can complete full range of motion against gravity with moderate resistance applied by therapist</td>
</tr>
<tr>
<td>3</td>
<td>Fair, 50%</td>
<td>Patient can complete full range of motion against gravity, resistance causes patient to give way</td>
</tr>
<tr>
<td>2</td>
<td>Poor, 25%</td>
<td>Only partial range is available against gravity, no resistance</td>
</tr>
<tr>
<td>1</td>
<td>Trace</td>
<td>Muscle contraction is detectable, no range of motion, no resistance</td>
</tr>
<tr>
<td>0</td>
<td>Zero, No Trace</td>
<td>No evidence of muscle contraction</td>
</tr>
</tbody>
</table>
Discussion: This case showed the necessity of treating the SI Joints, acetabulofemoral joints, pelvic ring, and overlying fascia as a complex rather than as a group of separate entities. While it is always tempting to focus in on the perceived source of a patient’s pain, the surrounding components not only influence the pathology, but can also offer sometimes surprising indications as to the true source of dysfunction. Such was true in this case, with the correct origin of the patient’s pain being the right SI joint as opposed to the left, though this was not indicated until the surrounding tissue had been sufficiently released. The interactions of these structures were clear from the start, and the changes in one would cause a ‘domino effect’ on adjoining tissues.

One of the more interesting things derived from this study came purely accidentally. At treatment 7 a dramatic change was noted bilaterally in leg and gluteal reduced tonicity. This alteration was noticeable both to therapist upon palpation and to the patient. The change was likely due to the fact the patient had recently acquired a new puppy and had that week initiated a minimum of 2 daily half hour walks added to the exercise regime. It was hypothesized that these walks morning and evening were serving to increase vascular return and lymphatic flow, while gently mobilizing lower limb musculature. It would be intriguing to do a further study of the benefits of adding regular gentle walking to more robust athletic regimes in similar cases.

Though this study was clearly successful for the patient, as pain was reduced within the first 3 treatments and eventually eliminated for the first time in a year, it was not an ideal case study structure. Assessment methods were really only measures against this patient’s individual normal, rather than a measurable norm applicable for the general population. Also of note is that this patient was highly motivated and compliant with exercise and treatment protocols, and results would not have been as clear if this were not the case.
The Effects Of Massage Therapy For Chronic Idiopathic Sacroiliac & Acetabulofemoral Joint Pain

Reference:

Print:

Photographic:

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Reference continued:

Web:


Appendix A

Assessment – Single Leg Sit To Stand Test

Start Position          Finish Position

Assessment – Visual Analog Pain Scale (VAS) Example

<table>
<thead>
<tr>
<th>10</th>
<th>9</th>
<th>8</th>
<th>7</th>
<th>6</th>
<th>5</th>
<th>4</th>
<th>3</th>
<th>2</th>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unbearable Distress</td>
<td>No Distress</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Task __________________________

Date ___________ Start _______ End _______
Appendix B

Postural Photos, Pretreatments
Appendix C

Postural Photos – Post Treatments
Appendix D

Therapeutic Exercise Examples: Gluteus Medius “Clamshell”

Start Position

Finish Position

Therapeutic Exercise Examples: Gluteus Medius Side Lying Abduction Lift

Start Position

Finish Position
Appendix E

Therapeutic Exercise Examples – Gluteus Maximus Extension Lifts
Appendix F

Therapeutic Exercise Examples – Theraband Resistance

Open-chain abduction

Open-chain flexion

Closed-chain flexion/extension