



# SACROILIAC JOINT –PELVIS SERIES

A variety of contrasting theories exist as to how musculoskeletal conditions in the sacroiliac–pelvic region should be managed. *In Touch* has asked some of the leading physiotherapists in the field to explore the issues around this area of the body and present their different treatment approaches.

In the first article of this series, Dr **DARREN BEALES**, FACP, and Professor **PETER O’SULLIVAN**, FACP, discuss the assessment and management of pelvic girdle pain.

## HOW COMMON IS PELVIC GIRDLE PAIN?

Pelvic girdle pain (PGP) is considered to be a subset of lumbopelvic disorders defined as musculoskeletal pain disorders of the pelvic structures as distinct from the lumbar spine. The exact prevalence of these disorders is difficult to differentiate from low back pain (LBP) disorders as they often co-exist, and misdiagnosis is high due to the proximity of the structures and common referral of spine structures to the pelvic region. Recent Australian figures show 71 per cent of pregnant women develop lumbopelvic pain during pregnancy, of which 8–15 per cent may become chronic post partum, which is consistent with international rates. In non-pregnant clinical caseloads, PGP is far less common than LBP and is frequently related to direct trauma to the pelvic structures.

## WHY DIFFERENTIATE PGP FROM LBP?

A primary reason to differentiate PGP from LBP is to negate unnecessary treatment. For example, a 39-year-old woman with a nine-month history of left buttock pain had received multiple lumbar facet joint injections, rhizotomies and a nerve root sleeve injection that were

unsuccessful in reducing her buttock symptoms. Examination identified that there were no lumbar spine impairments and pain provocation tests of the lumbar spine were negative. In contrast, pain provocation tests of the left sacroiliac joint (SIJ) reproduced the patient’s buttock pain and she presented with impaired motor control strategies related to her hip/pelvic structures. An accurate diagnosis could have prevented the expensive and ineffective procedures and associated distress for the patient.

## IS PELVIC MOTION RELATED TO PGP?

The gold standard of measuring SIJ movement is radiostereometric analysis, where tiny ball-bearings are implanted in the sacrum and ilium and visualised with X-rays. These studies find no difference in motion from side to side in subjects with unilateral symptoms. Furthermore, using radiostereometric methodology has shown that manual therapy techniques do not result in repositioning of the SIJ as reported by some practitioners. Purported changes in position with clinical tests following manual therapy are likely attributable to neurophysiological effects including changes in muscle tone, rather than SIJ positional changes.

These radiological studies cannot be conducted in pregnant subjects;

however, measurement of symphysis movement with ultrasound during pregnancy shows that severe pain is just as likely to develop in those with and without significant increased symphysis gapping and motion.

Adherence to PGP paradigms based on intra-pelvic movement dysfunction, positional faults and pelvic instability is not evidence based. The tests have no validity and very poor reliability, and therapists frequently report losing confidence in their manual therapy skills because of a self-perceived inability to 'feel intra-pelvic motion' like the experts who teach them.

Studies investigating motor control strategies in chronic PGP patients report increased activation of the pelvic floor and transverse abdominal wall muscles associated with bracing strategies, challenging the belief that more core stability is required. This is reinforced by studies that have shown stabilising exercises for chronic PGP to be no more effective than general exercise, further challenging these commonly held beliefs.

### **BUT MY MANUAL THERAPY TECHNIQUES FOR PGP HELP. DOES THIS MEAN I HAVE TO THROW THEM OUT?**

No. The analgesic effects of manual therapy techniques are well known. The likely mechanisms of action of manual therapy relate to neurophysiological effects reducing pain and muscle tone. If immediate pain reduction is a goal of therapy then manual therapy can be considered in PGP as a window of opportunity to enhance functional capacity and normalise movement.

However, when patients are told that the treatment technique 'puts the pelvis back in', this can reinforce fear of movement, avoidance behaviours, a loss of confidence in their body and hyper vigilance. These factors can reinforce chronicity. Many patients demonstrate this by statements such as 'I can't go for a walk because it will put my pelvis out of place' or 'I can't lift my baby because I have an unstable pelvis and it will cause more damage'. These non-evidence-based beliefs are generally transferred to patients by well-meaning healthcare practitioners; however, they risk leaving patients fearful, avoidant and reliant on passive treatments, or developing muscle-guarding strategies and reliance on pelvic belts in a vain attempt to control their pain.

### **WHAT ABOUT RELAXIN DURING PREGNANCY?**

Multiple studies have consistently shown there is no relationship between relaxin levels and PGP, nor disability or pain provocation tests. However, hormone levels during pregnancy may be one of multiple factors contributing to increased pain sensitivity. Recent in-vivo pain modeling by Palsson et al using injection of hypertonic saline into the long dorsal SIJ ligament of healthy individuals resulted in increased pain sensitivity to pain provocation tests and a positive active straight leg raise test (ASLR). The ASLR has long been erroneously considered to be associated with increased SIJ motion, but this data shows that pain on its own may be enough to reproduce these positive tests. In line with this research, we now have unpublished data showing a generalised increase in pain sensitivity in pregnant women compared to non-pregnant

controls. Furthermore, higher levels of pain sensitivity are present in pregnant subjects with higher levels of disability, associated with poorer sleep, higher stress and lower mood levels—factors all linked to increased pain sensitivity. These findings suggest that PGP is a disorder associated with sensitised rather than 'unstable' or 'dysfunctional' pelvic structures, and motor control changes are associated with this.

### **HOW DO I DIFFERENTIATE SIJ PAIN FROM LBP?**

The work of Laslett et al provides a basis for identification of the SIJ and its ligamentous structures as a source of symptoms that has reasonable validity and reliability.

1. Differentiate from the lumbar spine: there should be an absence of lumbar impairments and negative lumbar pain provocation tests (while remembering there may be co-existent lumbar pain).
2. Area of pain: SIJ pain will be localised primarily over the posterior superior iliac spine and inferior SIJ. Clinically, the SIJ does not tend to refer pain proximally into the lumbar region although experimental pain studies suggest that it can. Conversely the lower lumbar spine can refer pain into the region of the SIJ.
3. Three out of five positive SIJ pain provocation tests: these tests represent mechanical stress tests that are positive when the SIJ and associated structures are sensitised. Essential testing should comprise:
  - sacral thrust via posterior to anterior pressure over the sacrum
  - thigh thrust via anterior to posterior pressure through the femur flexed to 90 degrees in supine
  - torsion via full hip flexion on one side and simultaneous hip extension on the other
  - distraction via force directed outwards at the anterior superior iliac spines
  - compression via force directed inwards at the anterior superior iliac spines.

An important issue with these tests is that in contrast to sacroilitis where the compressive tests are often highly positive, many patients with PGP report relief with ilium compression, not provocation. This may suggest that the pain is associated with sensitisation of the ligamentous structures rather than the SIJ itself. Palpation of the long dorsal sacroiliac ligament and inferior joint line can also be added to this cluster of tests as an identifier of pain emanating from these structures.

The ASLR is a test of load transfer of the lower limb. A positive test is reflective of disrupted motor control associated with pain in the lumbopelvic region. The test is sensitive to levels of pain and disability, but it is not specific to the SIJ and, contrary to popular belief, it is not an indication of 'instability' of the pelvic structures.

A diagnostic process has not been validated for the symphysis. However, pain is localised to the symphysis, palpation is provocative and physical and functional tests that load the symphysis are generally provocative.

## WHAT FUNCTIONAL TESTS ARE IMPORTANT?

The SIJs and pelvic structures are primarily designed for stability rather than mobility. Consistent with this, functional impairments of the SIJs and pelvis typically involve difficulties with loading rather than movement per se. This commonly includes sitting, standing, transition from sit to stand, single leg stance, walking and jumping/hopping. Rolling and load transfer are also frequently involved, most likely due to translation of forces through sensitised pelvic structures during these tasks. (In very acute presentations with significant pain, movement impairments may exist secondary to pain and associated muscle spasm.)

## HOW IS PGP TREATED?

Chronic PGP, as per best practice for pain disorders in general, should be rationalised from a multidimensional, biopsychosocial perspective. Table 1 highlights cognitive and functional factors

frequently contributing to chronic PGP presentations. A number of the factors commonly contributing to pain and disability in PGP have been discussed above. The mixture of contributing factors should be ascertained on an individual patient basis and addressed accordingly.

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TABLE 1

DIAGNOSIS AND CLASSIFICATION BASED ON A COGNITIVE-FUNCTIONAL APPROACH TO INFORM THE MANAGEMENT PLAN AND SPECIFIC INTERVENTION STRATEGIES:	
<p>→ individually tailored program</p> <p>→ +/- medical management and psychological support if indicated</p>	
COGNITIVE ASPECTS	FUNCTIONAL ASPECTS
<ul style="list-style-type: none"> <li>• Educate the patient regarding their vicious cycle of pain</li> <li>• Address faulty beliefs regarding causes, mechanisms and necessary treatment</li> <li>• Address fear, specifically related to the aggravating activities</li> <li>• Use personally meaningful strategies to reduce stress and anxiety</li> <li>• Address pacing issues/avoidance behaviours</li> <li>• Address coping strategies</li> <li>• Address lifestyle factors</li> </ul>	<ul style="list-style-type: none"> <li>• Correct maladaptive, aberrant movement patterns and postures in a personally meaningful manner by focusing specifically on the aggravating activities and postures, or specific components of these tasks as necessary*</li> <li>• Address fear, specifically related to the aggravating activities, by graduated exposure</li> <li>• Adopt personally meaningful strategies to reduce excessive muscle tone/activation</li> <li>• Address issues related to avoidance, deconditioning and inactivity</li> </ul>
<p>This leads directly to individualised and targeted strategies for self-management of symptoms based on the cognitive and functional deficits of the disorder</p>	

\* Consistent with task specificity in motor control and movement patterns and acknowledging inherent individual variation in motor behaviour