

Low back pain: Diagnosis by six newly discovered sacral tender points and treatment with counterstrain

MAURICE ANTHONY RAMIREZ
JERRY HAMAN, DO
LEONARD WORTH, DO

Although counterstrain and exercises reestablished relative lumbar stability in a patient with chronic low back pain and lumbar hypermobility on gross and segmental motion testing, the patient still had tender points in the middle of the sacrum. After initially ignoring these tender points, we tested various release positions in an attempt to relieve the patient's discomfort. Next, we discovered that 14 patients with low back pain had tenderness at one or more of the tender points. Eventually, we discovered what we believe to be six previously undocumented medial sacral tender points. Two are located 1.5 cm directly medial to the inferior aspect of the posterior iliac spine bilaterally; two are located 1 cm medial and 1 cm superior to the inferior lateral angles bilaterally; one lies on the midline between the first and second spinous tubercles of the sacrum; and one lies on the midline on the cephalad-most border of the sacral hiatus. We describe the use of these tender points in diagnosis and their release by counterstrain technique.

Separate English and American studies suggest that manipulation reduces the period of disability and shortens the course of treatment for low back pain.¹⁻⁷ Evans and coworkers,³ Grayson,⁶ and Burton,⁸ in independent studies, indicated that manipulation is most effective for the treatment of

low back pain when administered as early as possible after the onset of symptoms. The problem with direct techniques such as rotatory lumbar manipulation, thrust, or muscle energy when applied early after the onset of low back pain is that they may cause more pain.³ Hooper¹ proposed that rotatory lumbar manipulation may herniate subclinically herniated, radiographically normal intervertebral disks, causing paraparesis and necessitating laminectomy. It may be theorized that this damage is a direct result of the rotatory forces involved.^{1,9,10} Therefore, early treatment of low back pain is best accomplished by the use of a nontraumatic, indirect technique.¹⁰⁻¹¹

Counterstrain technique

A specific, nontraumatic, indirect technique that applies positional release to relieve somatic dysfunction is counterstrain.¹¹⁻¹⁵ This technique was first introduced and characterized by Jones¹² in 1964 and has been applied to the treatment of both the outpatient by Jones^{12,13} and the acutely ill inpatient by Schwartz.¹⁴ The key to posturing for this positional release is the decrease of tension and thus tenderness at specific points in the body; these points are logically called tender points.

Travell and Simons¹⁶ described musculotendinous swellings that, on stimulation, cause both local and distally referred pain as well as occasional distally referred hypoesthesia or paresthesia. The tender point characterized by Jones and Schwartz have palpatory findings and anatomic positions similar to those of Travell's trigger points,¹²⁻¹⁸ but are tender only at the site of stimulation and cause

little or no distally referred sensations.^{12-15,18} Chapman described deep fascial tissue abnormalities that he associated with visceral pathologic abnormalities.¹⁵⁻¹⁹ These plaquelike tissue changes are described as giving a stringy texture to the tissues on palpation^{15,19} and are generally considered to be more superficial and of a different palpatory character than tender points^{15,19}.

Jones¹³ and Schwartz¹⁴ have reported that tender points are characteristically associated with sudomotor changes such as local hot or cold spots, sweating, erythema, or blanching (either singly or in combination) of the skin over the tender point. The other characteristics of tender points and the techniques for diagnosis and treatment using tender points as a guide for positional release have been well described in the literature.¹²⁻¹⁴ This paper describes what we believe to be six heretofore undocumented medial sacral tender points and their positions for release by counterstrain technique.

A discussion of vertebral segment motion and body positioning, which is key to the treatment of the medial sacral tender points, requires the use of standardized terms for the description of anatomic position. *Sidebending* and *rotation* of individual vertebra and of the whole body have commonly accepted meanings,^{15,20,21} so they need not be defined here. *Flexion* is defined as forward bending of the whole body and thus the individual vertebra.^{15,20,21} Conversely, *extension* is defined as backward bending of the whole body and therefore the individual vertebra.^{15,20,21} At the level of the sacrum, *flexion* refers to the movement of the sacral base anteriorly and the sacral apex posteriorly¹⁵; whereas *extension* refers to the movement of the sacral base posteriorly and the sacral apex anteriorly.¹⁵ These definitions of *flexion* and *extension* are presented to differentiate our whole-body-motion frame of reference from the definitions of *flexion* and *extension* used by other treatment modalities such as the cranial technique. Vertebral segments are denoted by abbreviations that indicate the region of the spine and level of the vertebra within that region²¹.

Discovery of the new tender points

The first of the new sacral tender points was originally observed in a patient who was first seen with chronic low back pain and lumbar hypermobility on gross and segmental motion testing. Diagnosis of somatic dysfunction of the lumbar spine and pelvis by the use of tender points as defined by Jones¹² and Schwartz^{13,14} was especially easy and efficient

in this patient. He had anterior and posterior lumbar tender points as well as several tender points in the middle of his sacrum. Counterstrain and exercises reestablished relative lumbar stability after several months of treatment, but he was left with tender points in the middle of his sacrum. The tender points were associated with no acute problems and initially we ignored them.

Schwartz did not list the sacral tender points in a series of lectures on counterstrain (University of Health Sciences College of Osteopathic Medicine, Kansas City, Mo, Jan 12, 1987) nor in his article on counterstrain in JAOA.¹⁴ Further, in his book *Strain and Counterstrain*, Jones¹³ did not discuss these tender points. It was decided, after a telephone conversation with L.H. Jones, DO (August 1987) and correspondence with H.R. Schwartz, DO (September 1987), that these tender points were heretofore unrecognized counterstrain tender points.

Recurrence of the patient's low back pain led us to reevaluate the significance of the unnamed tender points. We began to clinically test various release positions in an attempt to relieve the patient's discomfort. We recognized the generality of folding the body segments around the tender point to achieve the necessary relaxation at the tender point, but the tender points were midsacral and the sacrum cannot fold.

Examining the problem from the perspective of sacral biomechanics,^{15,20-23} we determined that, to "fold" around a tender point at the S-2 level, S-1 must be placed into extension. Extension at S-1 was induced by applying sufficient pressure anteriorly at the sacral apex to relieve the tender point at the level of S-2. Similar positional release techniques were applied to release the patient's other sacral tender points.

In the 3 weeks following this initial encounter with the unnamed sacral tender points, 14 patients with the presenting complaint of low back (sacral or lumbar pain or both with or without sacroiliac pain and with or without radicular pain) demonstrated tenderness at one or more of the new tender points. Ultimately, we found six new tender points, all of which were relieved by positional release techniques applied to the sacrum.

Locations and characteristics of new tender points

The names for the tender points are derived from their anatomic positions on the sacrum plus the positions of release associated with each of the

points. Collectively, we refer to these tender points as the *medial sacral tender points* to differentiate them from the more lateral tender points associated with the borders of the sacrum and described by Jones¹³ and Schwartz.¹⁴

The Figure shows the location of these six sacral tender points. The first four are lateral to the midline but medial to those tender points described by Jones^{12,13} and Schwartz.¹⁴ The cephalad two tender points we have named lateral PS-1 sacral base posterior tender points (left and right), while the caudad two tender points are the lateral PS-5 inferior lateral angle posterior tender points (left and right). Clinically, these four tender points are located by their positions relative to bony landmarks. The two lateral PS-1 sacral base posterior tender points are located 1.5 cm directly medial to the inferior aspect of the posterior superior iliac spine bilaterally. The two lateral PS-5 inferior lateral angle posterior tender points are located 1 cm medial and 1 cm superior to the inferior lateral angles bilaterally.

The remaining two tender points are located on the midline, one between the first and second spinous tubercles of the sacrum; and another on the cephalad-most border of the sacral hiatus. We have named the former tender point PS-2 sacral extension tender point; and the latter PS-4 sacral flexion tender point. According to a telephone conversation with Schwartz (April 1988), he has located a seventh sacral tender point between the second and third spinous tubercles of the sacrum. Following our nomenclature scheme, he has named this tender point the PS-3 sacral extension tender point.

Diagnosis

Initially, we used sudomotor changes such as local hot or cold spots, sweating, erythema, or blanching of the skin (singly or in combination) as an indicator of the possible presence of the medial sacral tender points; however, we have found that when these tender points occur in groups, the associated sudomotor change is frequently confluent over the midsacrum. For this reason, we have begun to check all six tender points on all patients with low back pain, even in the absence of sudomotor changes. Because of the proximity of the tender points to one another and to the bony landmarks used in structural examinations of the pelvis, this procedure is rapid and has allowed us to diagnose these tender points in patients with low back pain who do not demonstrate sudomotor changes.

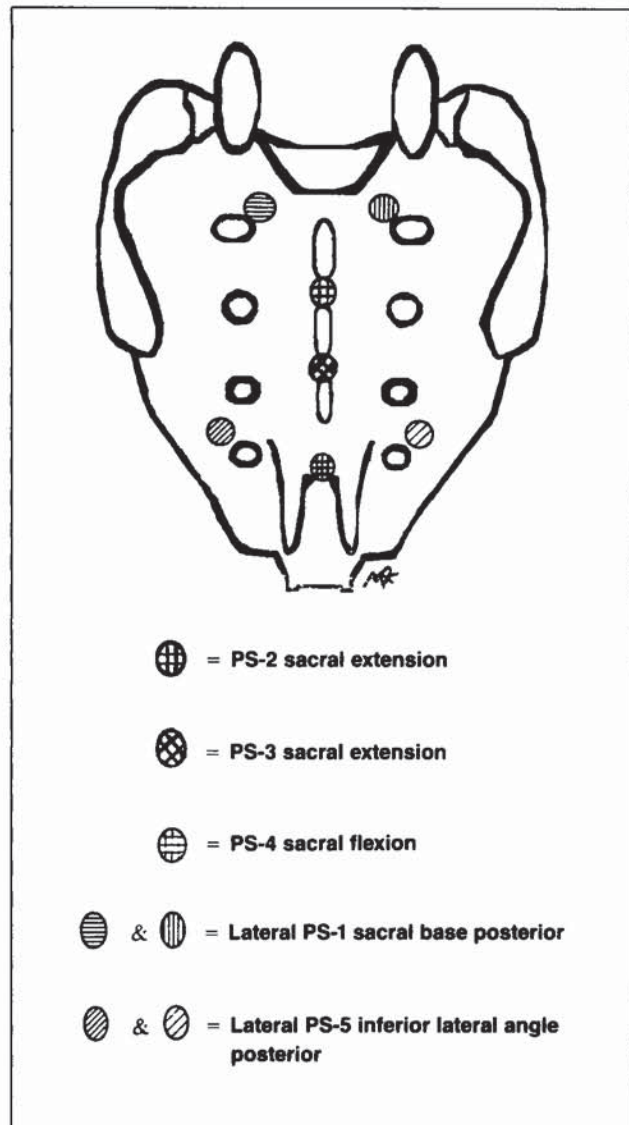


Figure. Positions of medial sacral tender points, including PS-3 sacral extension point located by Schwartz.

Treatment

The releases for these tender points are straightforward and are carried out with the patient prone; all pressure on the sacrum is directed downward toward the table. The pressure applied to the sacrum is used to induce rotation around either a perceived transverse or oblique axis of the sacrum. (The axes of rotation indicated are based on our palpatory experience and are presented, not as an attempt to define the axes of rotation, but to facilitate the application of treatment.) For the sake of clarity, the release for each pair of tender points is presented separately.

The releases for the lateral tender points require the application of pressure to the corner of the sacrum opposite the corner on which the tender point is found. For example, in the presence of a left lateral PS-1 sacral base posterior tender point, pressure is applied to the right inferior lateral angle; conversely, for a right lateral PS-5 inferior lateral angle posterior tender point, pressure is applied to the left side of the sacral base, just medial to the sacroiliac joint. The release for a PS-2 sacral extension tender point requires the application of pressure to the apex of the sacrum in the midline; conversely, for tenderness at the PS-4 sacral flexion tender point, pressure is applied to the sacral base in the midline. As Schwartz indicated in a telephone conversation in April 1988, the PS-3 sacral extension tender point is treated in the same fashion as the PS-2 tender point.

Occasionally, groups of medial sacral tender points occur in a pattern that prevents the release of one tender point without application of pressure to another tender point, which thus causes extreme pain. Our first encounter with this phenomenon involved a patient who had a PS-2 sacral extension tender point and a PS-4 sacral flexion tender point. The patient could not tolerate pressure to either the sacral apex or the sacral base. In this case, the PS-2 sacral extension tender point was more sensitive, so it was the first of the tender points to be treated.¹³

With the patient prone on a McManis table, both the head and leg sections were elevated so that the patient was hyperextended with the pelvis on the horizontal center panel of the table. This position relieved 40% of the initial tenderness at the PS-2 sacral extension tender point. Sidebending was induced in an attempt to further reduce sensitivity at the point, but the patient would not tolerate the position without tensing the paraspinal musculature, so the patient was returned to neutral with respect to lateral flexion and the hyperextended position was maintained until changes in the tender point were no longer palpable. Although resolution of the tenderness at the PS-2 sacral extension tender point was substandard,^{13,14} tenderness at both the PS-2 sacral extension tender point and the PS-4 sacral flexion tender point was reduced and several previously unresponsive tender points had resolved spontaneously after the patient was returned to the nonextended position.

Our experience with this and similar group tender point lesions has resulted in the development of some alternate release positions. These releases are performed with the patient prone on a McMa-

nis, Jones, or similar table so that the patient's pelvis and sacrum will remain horizontal regardless of the extension or flexion induced to the upper part of the body or to the legs.

Tenderness at one of the three more cephalad tender points is treated by initially raising the upper part of the patient's body so as to induce extension. Further reduction in tenderness may be accomplished by raising or lowering the patient's legs as indicated by tender point response. Tenderness at one or more of the caudal tender points is treated by lowering the patient's legs, thus inducing flexion. In this case, tenderness may be further reduced by raising or lowering the upper part of the patient's body, again with the use of the tender point response as a guide to positioning. Final positioning for optimum pain relief in both cases may be achieved by sidebending the part of the patient's upper body or the legs or both.

Both the standard and alternate release positions are held for 90 seconds or until change in the tender point is no longer palpable.^{12,14} The amount of pressure on the sacrum, or degree of flexion, extension, and sidebending of the patient should be that amount or degree necessary to relieve between 70% and 75% of the initial tenderness in the tender point being palpated. The requirement that 70% to 75% of the tenderness be relieved is another standard measurement of the accuracy of positioning in counterstrain technique^{12,13} (H.R. Schwartz, telephone conversation, January 1988). We have found the oral analogue system for the report of tenderness described by Schwartz in lectures, (University of Health Sciences College of Osteopathic Medicine, Jan 12 1987) and in a telephone conversation (January 1988) to be especially efficient for determining the residual tenderness at a given tender point. In this system, the original degree of tenderness is defined as "a dollar's worth of pain." The release position is "fine tuned" until the patient, when asked, reports that less than "30 cents worth of pain" remains.

The standard releases for the two midline tender points are remarkably similar to a treatment for sciatic neuritis described by Wilson.²⁴ According to Wilson, the diagnosis of sciatic neuritis is established by the presence of radicular leg pain with the finding of either: (1) decreased mobility in the sacroiliac joints or the sacral and lumbar articulations up to the thoracolumbar junction; or (2) tissue texture abnormalities over the sacrum, sacroiliac joints, or lumbar spine.²⁴ Somatic dysfunction of the spine and pelvis from the level of the thoracolumbar junction to the sacroiliac joints and

greater sciatic notch is frequently associated with sciatic neuritis, or may mimic the radicular pain of sciatic neuritis.^{18,24-30}

Wilson's treatment includes pressure applied at the apex of the sacrum to correct "lumbar extension."²⁴ Pressure is applied, intermittently, for 12 to 15 minutes, or until "relaxation" of the tissues is detected (H.R. Schwartz, DO, telephone conversation, January 1988). Lumbar extension causes a concomitant sacral extension; that is, the sacral base and sulci assume a posterior position.^{22,23} Although we arrived at our release independently, Wilson's procedure serves as excellent independent verification for our treatment. The correlation between the treatment of somatic dysfunction of the pelvis and thoracolumbar spine and the alleviation of sciatic neuritis and low back pain^{18,24-30} punctuates the significance of our medial sacral tender points as an extension of counterstrain technique for the treatment of these conditions.

Summary

The medial sacral tender points, like all tender points associated with low back pain, are specific indicators of somatic dysfunction. The use of counterstrain to release these tender points, thus indicating relief of the associated somatic dysfunction, provides a safe, specific, nontraumatic means of treating any patient regardless of age, sex, pregnancy, or the presence of acute trauma. Our newly recognized tender points and their release add yet another facet to the diagnosis and treatment of low back pain, reducing further the expected morbidity in both the chronic and acutely injured low back pain patient.

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- A list of additional references is available from Mr Ramirez.

From the University of Osteopathic Medicine and Health Sciences College of Osteopathic Medicine and Surgery, Des Moines (Mr Ramirez and Dr Worth) and the University of Health Sciences College of Osteopathic Medicine, Kansas City, Mo (Dr Haman).

Reprint requests to Maurice Anthony Ramirez, 1201 Office Park Rd, Suite 1804, West Des Moines, 50265.