

Sacrum and its effect on the lumbar spine, especially for potential spondylolisthesis of L5 and L4

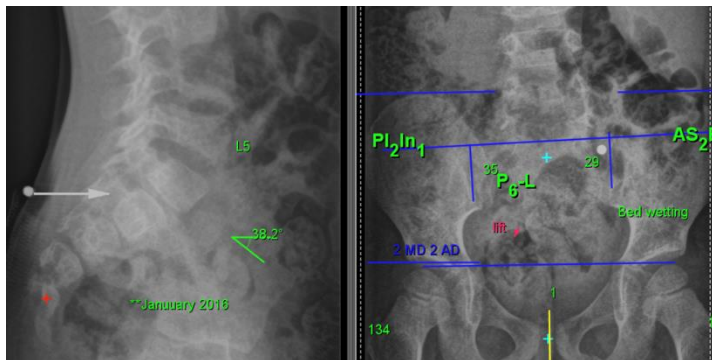
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(This is a follow-up article to “Spondylolisthesis” by Steven T. Tanaka, D.C. published in the March 2017 issue of The “G”Note)

Let me begin here. Since 2011, I have been on a journey with the sacrum. I started by way of a spinal injury that made it very difficult to adjust patients side lying. I knew with the help of the KC table, and specifically the Hilo, I would use them to fine tune my specificity in ALL of my adjustments in the pelvic and sacrum regions. That meant I palpated my patients twice, checked their leg length and points of contact twice. With the sacrum, I challenged my points of contact as well as palpation both seated and lying on the HiLo, I continued to find some discrepancy with simple listings of P-R or P-L, or tubercle segments. I was finding that the specific point of contact on each sacrum adjustment was vital for the correction of the subluxation, including how it affected leg length and the integrity of the rest of the spine – especially the lumbar spine.

Since this time, I have been on the fast track of learning and developing a specific listing system for the sacrum. I have also understood how much a sacrum subluxation can affect leg length, often more than a pelvic subluxation, and not just a P-R or P-L.

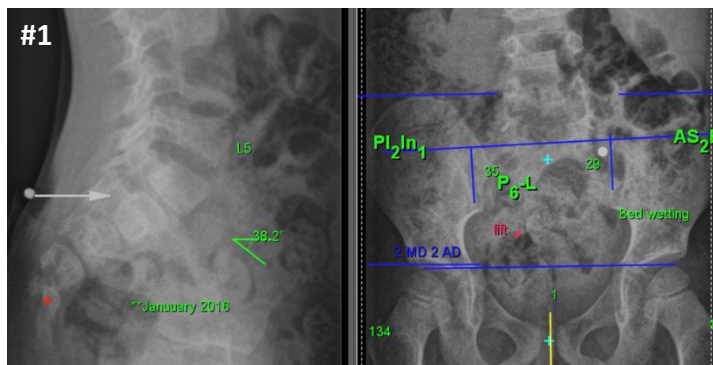
Now, it’s my time to discuss something different from what I have focused on the last 6 years. I intend to discuss how the sacrum can affect L5, specifically, the anterior movement of L5 from the sacrum and is meant to stimulate discussion. If you want me to discuss the sacrum, I could spend days explaining what I have found. This article has been more difficult because I haven’t compared it to L5 directly, but have compared it to how when the sacrum is improved, how it improves the pelvic and lumbar spine . . . and often, thoracic and cervical.



Here is what I know. The sacrum although it is supposed to be fused in adulthood, doesn’t fuse fully in some people at all, and if it does, it’s years into adulthood. The reason it doesn’t fuse in some, is because in order to fuse it must be weight bearing. When a sacral segment shifts to the posterior and

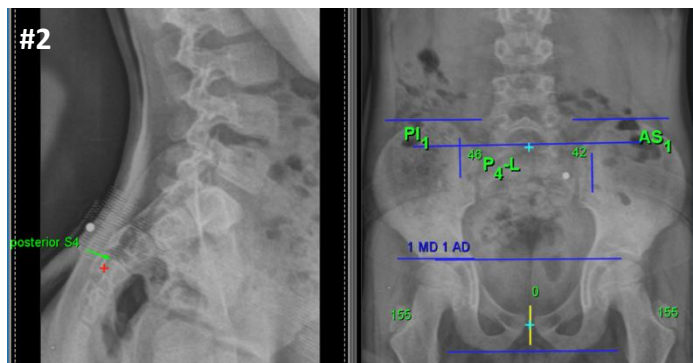
opens in the back, it causes the spine to move forward above that point. And not just the lumbar spine, but often the entire spine. As it shifts forward, the weight bearing is placed forward of the sacrum as far as the spine is concerned. This allows less weight bearing on each specific sacral segment, and in like understanding, causes forward motion on the lumbar spine. HOWEVER, early in life it actually causes L5 and L4 to come backwards, and pinches L3 in the posterior, causing what appears to be a plane taking off. See x-ray below.

The first image (#1) is a 4.5-year-old boy with incontinence. You can clearly see that he has posterior sacral segments on the lateral x-ray, specifically at S5 where the red plus mark is. Lifting that segment on the left (PR-C CW is the listing at S5) helps to stabilize the sacrum base line and will help with the lumbar spine. L3 looks like it is going to take off like a plane on a runway. It is not the subluxation but the compensation here.



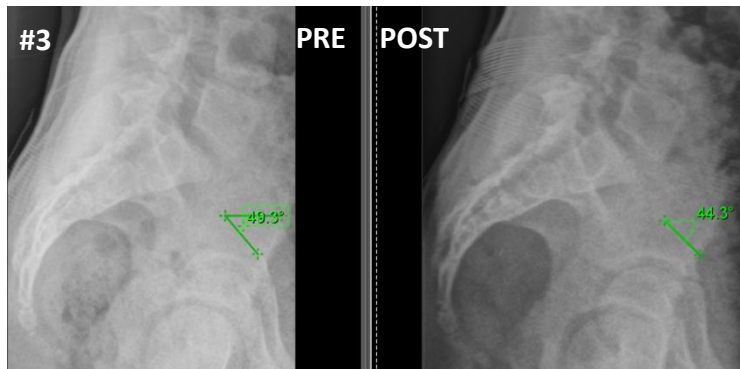
Also, what may happen in the future is his lumbar spine, due to the facet strain, is more prone to injury from sports. Specifically those that involve jumping or running or bouncing (horse riding) can in this case cause a defect in the pars at L5 causing a spondylolisthesis. He would be pre-disposed to having that show up, even though it's not there yet.

The second is a similar case (Image #2) of a boy who is 9 years old. L3 is perched up again, and the sacrum now has posterior segments at S4, S3 and S2. See how L5 is working even harder, most likely because the boy is older and like the first x-ray, had those problems when he was 4.5 years old. It appears L4 is open in the back. Many people would set a Base Posterior sacrum here, and I would too, but set it at S4 as a BP, not S1. He is also prone to a spondylosthesis with a lot of activity and potentially not just at L5 but at L4. These two cases with instability of the lower lumbar spine created both twists in their spines on their full AP spine views. However, with care, both of those improved with focus on their sacrum.



Overall, when looking at sacral segments, take note of the lowest posterior sacral segment on the lateral film. Compare it to the AP film, scope low and palpate there as well. Paying attention to and adjusting these areas will help prevent problems at L5 and L4 when the child begins to run or be more active.

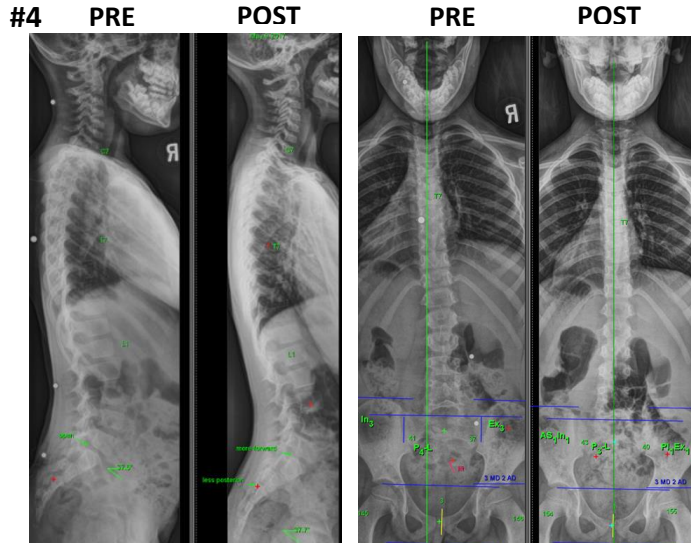
Thirdly, I am going to show an 11-year-old girl (Image #3). Her X-rays are interesting in that she has a spondylolisthesis. After adjusting her a dozen times as a PLEX right pelvis, here are her improvements. L5 and L4 are now showing less forward translation. We were able to do this while she still trained on a horse. We changed her position while riding to help her stabilize as well. The PLEX helped align the sacrum more as you can see on the lateral. There are no major posterior wedged segments visible in the sacrum on this example. A PLEX pelvis or PI or EX will help a hyperlordosis sacrum, which long term can cause a spondylolisthesis. Notice her Ferguson's angle has improved, as well.



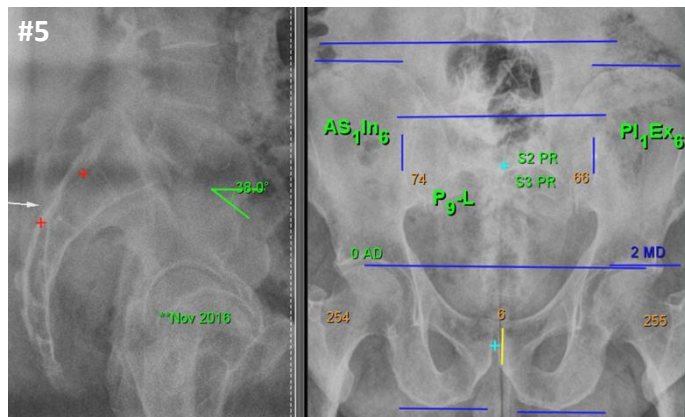
Especially in younger years, when the gap between segments has not made much of a move towards fusion, it is easier to affect the lumbar spine with posteriorly open sacral segments. For example, when younger, facet joints may have more motion. Also, with more childhood activities including running and jumping, instability is often found. However, often if the lumbar spine is not stable it is because of the sacrum or pelvis, most likely sacrum. So, whenever there are forward lumbar segments, we should ALWAYS look to the sacrum and see if there are any posteriorly open sacral segments. If there are, this is key to help a spondylolisthesis of L5 or L4. You may need to find a pelvis subluxation. Working in the lumbar spine or thoracic spine when the sacrum and pelvis is not stable will cause worsening of the foundation of the pelvis, sacrum and L5 (especially if the sacral segments are open in the posterior). You may get away with it once or twice, but long term your X-rays will not show the improvements you would expect and symptoms may worsen. What a difference with adjustments in the lumbar and thoracic region regarding a spondylolisthesis when the foundation is stable! When I use the word foundation, I include the sacrum, pelvis and L5.

Here is an example (Image #4) of a 7-year-old female. Her S3 segment on her lateral x-ray has improved (post x-rays are on the right after about 14 adjustments in a 1-year period). I have adjusted her S3 as a P-L. As the segment has improved, her entire spine has improved except her L5 disc. Her L5 is starting to slip more forward and could be a potential future spondylolisthesis. This means there

is also a PIEX pelvis to address. In this situation, we need to monitor her, as attention will be needed at both.



Lastly, here (Image #5) is a 73-year-old male. He has an L5 spondylolisthesis that is secondary to his S2 and S3 sacral sublaxations. I have had the opportunity to work on him for several months. When I started to adjust his sacral segments his lower back pain subsided. He also had much less of a Nervo-scope reading over his lower back. He is a medical minded patient and wanted to also see an MRI, as he couldn't believe he had this L5 condition. Upon reviewing the MRI, it was great to see the opening at S2 and S3 and how there was truly a disc there that was bulged. Even though S3 is more of a closed space, note how the entire segment of S3 is still posterior to S2. And note how S4 and S5 are lined up well. I also want to point out how when a sacrum is involved affecting a spondylolisthesis, often the segment will have the same rotational listing, otherwise it would be contraindicated to adjust. This is a great case in that a new X-ray in the future will show less sacral rotation and pelvic rotation and should help his lumbar rotation as well. These adjustments are not aggressive, but gentle. I do them prone on a slot table that is firm and supportive.



In conclusion, a spondylolisthesis is often caused when there is instability of the sacrum and/or pelvis, direct injury or repetitive motions that may damage the pars of the lower lumbar segments, especially if there are open sacral segments. The open sacral segments can be caused from a pelvic issue (often PIEX component causing hyperlordosis of the lumbar and sacral regions) or from sacral segments themselves. Usually in children, the sacral segment problem will look like it is causing a L3 segment to drop posterior and inferior. It is important to note that the lumbar segments are strong and that it takes repetition or a major trauma to cause a pars fracture. This is why it is so important to have the weight bearing load off the pars and evenly distributed in the entire lower back.

I believe the pelvis and sacrum issues go hand in hand in causing weakness of the lumbar spine and potential spondylolisthesis problems of L5 and L4. The pelvis subluxations often come from not crawling or walking correctly, and the sacrum segments from childhood falls. We can help prevent these isthmic spondylolisthesis cases. For example, we can help prevent what we found on the last x-ray of the 73-year-old male. Also of note, that you cannot see on this x-ray, is that he has bent forward posture when he stands and walks and exhibits limited cervical range of motion. His mid back and neck posture problems are also secondary to this sacral segment (I have come to find out) that could have been addressed when he was young. Each time I adjust his sacrum his entire body improves!

So, let us look to the foundation as we adjust patients, making sure that not only is the pelvis improving, but the sacral segments as well—the foundation of foundation in my opinion. Then, we can find lumbar spine improvements and stability to adjust this region if necessary.

I have seen that improving the pelvis and sacrum is the biggest help we chiropractors can do for stability of the lumbar spine and prevention or help of the spondylolisthesis cases. Foundation, foundation, foundation! Let's not leave out these sacral segments! I am happy to address that in a future article.