

The AS Ilium Fixation, Nutation, and Respect

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In my first article¹ written for Dynamic Chiropractic, I spoke about the AS ilium and its relationship to groin injuries. I would like to mention that the types of complaints that I wrote about did not necessarily include those arising from isolated thigh abduction/adduction injuries, but were related to general activities, such as athletic situations involving running. However, the AS ilium may also be involved in these types of groin injuries involving isolated thigh abduction.

I think it is appropriate to get down to basics in all discussions. The causes of AS ilium fixations are most fascinating. I will list the probable causes of AS fixations, according to my observations and accumulated understanding:

1. hyperabduction motions of the thigh;
2. hypertonicity of the lumbar musculature;
3. trauma, such as falling onto the buttocks;
4. involvement in the process of counter-nutation.

I am sure that there are or may be other contributing processes. One of these is advocated by Mr. Lyn Taylor and kinesiologists as hypertonicity of the hip flexors. I do not wish to get into a discussion regarding the hip and thigh muscles at this time, so I will leave it at that.

Of most interest to me is the process of "nutation and "counter-nutation" as described by I. A. Kapandji (The Physiology of the Joints, Volume Three, published by Churchill Livingstone, 1974). The original French edition is Physiologie Articulaire, published by Librairie Maloine, Paris. Kapandji's text is an in-depth coverage of the joints and musculature, with descriptions of motion. The section dealing with nutation directly describes sacroiliac motion, that of that sacrum in relation to the ilia. For me, this descriptive process has been and continues to be crucial in the understanding of low back, hip, and lower extremity mechanics and physical complaints. The processes of nutation/counter-nutation were related to me by Dr. Bertrand Faucret, DC, about 15 years ago. The basics of most of my discussions arise from his most knowledgeable communications involving the anatomy and functions of the SI joints.

Nutation, as described by Kapandji, is the anterior inferior motion of the sacral base. It is simultaneously accompanied by an ilium or ilia moving posteriorly and inferiorly, with the PSIS as the point of reference for the ilium. Kapandji goes on to describe counter-nutation as the movement of the sacral base posteriorly and superiorly. An ilium or ilia then moves oppositely, in an anterior and superior direction. This nutation and counter-nutation motion of the sacrum is a pivoting type of motion, so that when the base moves forward, the sacral apex (inferior part of the sacrum) moves posteriorly. In other words, there has to be reciprocal and opposite motion at each SI joint between sacrum and ilium.

This reciprocal motion can be palpated and visualized simultaneously. It can be learned and mastered, as long as one is disciplined. When I used to teach, I taught the procedures to thousands of students, and I realized the frustrations involved in motion palpation. It is even more frustrating here because one has to master tissue slack control with feel and visualization, but once learned, it

is simple. However, I remember 16 years ago discussing forward flexion with Dr. Faucet. I told him that the sacral base moves forward during flexion of the trunk at the waist. "No!" he said, "The sacral base moves backward during seated flexion." Again, I disagreed. Well, he simply got a patient to sit in front of us. He told me to place one thumb under the right PSIS and my other thumb under the first or second sacral tubercle. The patient flexed forward, and guess what happened -- the thumb under the sacral tubercle moved posteriorly and superiorly, while the PSIS moved anteriorly and superiorly. I scratched my head and Faucet smiled. In his French accent, he told me to read Kapandji.

Since that time, I have used motion analysis to direct my understanding, interpretation, and adjusting of the spine and SI joints. At that time, again Dr. Faucet came to my rescue and showed me how to motion palpate and visualize the SI joints for proper and improper motion.

In the beginning of my practicing, I believed that the doctor should find the fixation, then adjust it. Then, I learned about major and minor fixations. I now believe that it can be difficult for even the most skilled to choose from minors. However, I did arrive at a point where I began to see patterns created innately regarding the SI joints and lower lumbar spine. By innate, I mean a self-regulating mechanism. The patterns, or self-regulating mechanisms, incorporated the processes of nutation and counter-nutation.

Let me begin with broader concepts and go onto more specific detailed issues as examples. The following represents what I have observed or interpreted as basic happenings. I will offer opinions of what I do or recommend should be done, based on my experience alone.

1. The processes of nutation and counter-nutation have the following purposes:

1. To allow greater ease of walking while taking stress off the hip joints. Walking involves simultaneous movement at the SI joints and hip joints. As the left leg goes forward, the left ilium goes in a PI direction, allowing nutation on the left side. Simultaneously, the right leg is extended backwards, the right ilium has moved in the AS direction, and the right sacral base has counter-nutated posteriorly.

It is not clear in Kapandji's discussion that opposite processes may go on at each SI joint regarding nutation and counter-nutation, but practice will verify this. You can have nutation at one SI joint, usually the left; and counter-nutation at the other SI joint, usually the right. Or, both SI joints can have simultaneous nutation or counter-nutation.

I will digress at this point, and please excuse me, but I do not know where to place this next bit of information except here. The AS ilium results from innate compensating mechanisms, self-regulating mechanisms. I believe this to be the case most of the time, and therefore it deserves respect. As I have stated, other causes may be from injury or external causes or forces. Left-sided innate fixations appear mostly to protect left-sided lumbar weaknesses. Right-sided innate fixations appear to protect right and left-sided lumbar weaknesses.

2. To allow greater ease of lumbosacral motion during flexion and extension. Flexion and extension involve simultaneous motion between the L/S junction and the SI joints. During flexion, properly and freely moving SI joints should allow counter-nutation to occur. During extension, freely moving SI joints should allow nutation to occur bilaterally.

2. When there is abnormal stress at L-4 or L-5, the process of counter-nutation is activated as a

protective mechanism. As stated before, this can be at one or both SI joints. Examples of abnormal stress are:

- thinning of the L-4 or L-5 disc levels;
- DJD with facet stress at L-4 or L-5 levels;
- disc annular sprain/derangement;
- joint fixation with or without misalignment at L-4 or L-5.

3. There is a sidedness factor, with the PI ilium fixation tending to be left-sided and the AS ilium fixation right-sided, and the last or 5th lumbar fixated posterior left and anterior right. It has no relationship to handedness. There may be a relationship to upper cervical lateral fixations.

In the past, I hated to be involved in systems which had pat little subluxation patterns, which made it easy for the doctor to practice quickly with no thinking. So, I hated to say what I said in #3 above, but I had to say it. It is because it is what I see and experience day after day, year after year. I can only offer it as my experiences.

The following represent more specific situations:

4. Left-sided low back pain, right AS fixation, LP L-5 fixation, swelling/tension over the L-5 facet. In the earlier days, I would adjust the L-5 as needed, then release the AS fixation. This would be on the same visit. However, that presented a problem when a few cases would come back the next day in more pain. Eventually, I concluded or realized that the AS fixation was a protective mechanism with left-sided lumbar pain. It brought the sacral base backward on that side, added to the spine's stability, and created a more solid foundation. What was more amazing was that by adjusting the L-5 on the left for its' LP listing, the AS would often self-release. Motion palpation after the L-5 correction would often show a freely moveable right AS ilium.

5. The next example is the same as #4, except that there is also a fixed left PI ilium. Adjustment of the LP L-5 would often result in correction of both SI joints. Briefly, it is my belief that the left PI fixation did not result from a self-regulating mechanism, but from weakness of the tissues on that side, secondary to the lumbar problem. There often is self-correction of both SI joints with the lumbar correction.

6. Right low back pain, right ilium fixation, left L-5 LP fixation, swelling/tension over the left L-5 facet region. Be cautious; this can be a wolf in sheep's clothing. Consider the mechanism. There is an L-5 problem. If the AS is adjusted, the sacral base on that side goes forward and takes the rest of the base with it to some degree. This results in a loss of stability for L-5. Therefore, adjusting the AS fixation can exacerbate the disorder. The body knew what to do and did it. If L-5 is adjusted, the ilium will probably self-release. If not, do not release it until you are sure the L-5 is stable, after several L-5 corrections. If the pain goes away, you may choose to leave the AS uncorrected as is. It may later lead to right hip and groin problems, as discussed before, and you may choose to correct it. I cannot say what is best, but I only recommend that you work with the understanding of the mechanics involved so that you can make a more well-informed decision. For example, it may not be possible in some cases to correct and L-5 fixation with a right AS fixation present and intact. This is because the iliolumbar ligaments of the right iliac crest have pulled L-5 into a right anterior position and will not allow a good L-5 release until the AS is released. However, keep in mind that in releasing the AS fixation on the right, the patient may get initially worse. On a subsequent visit, go back to the L-5 to complete the correction. Exact formulas are not always there.

7. Left PI fixation, right AS fixation, generalized L/S pain, minimal L-5 fixation or misalignment. In general, I have better luck treating the left-sided pain by treating the left side first. Imagine what is going on here. The left ilium is down, with the iliolumbar ligaments pulling L-4 and L-5 bodies posteriorly on the left. There is stress on the SI ligaments, iliolumbar ligaments, left facet capsule, and left annular fibers. On the right side, there is an AS fixation misalignment. It pulls the iliolumbar ligaments and L-4 and L-5 right anteriorly. There is compression or increased approximation of the L-4/L-5 and L-5/S-1 facet joints. The right upper SI joint is compressed/approximated, while the left upper SI joint is opened and stretched. The left facet capsule is also opened and stretched (i.e., the joint is opened). Stress is on both sides, so there is great opportunity for generalized bilateral pain/discomfort. It is difficult to say which side should be fixated first. I usually adjust the left side first, then I re-evaluate and adjust the right AS fixation if necessary. With very tired or stressed individuals, I usually see the left side fixating first as the PI, but fatigue must be present.

8. L-4 or L-5 disc derangement, DJD, and thinning discs; bilateral AS fixations. I used to adjust both AS fixations. Now I evaluate the symptoms and overall condition. If you consider the principles of counter-nutation, the body did a very smart thing in fixing both ilia as AS fixations. In the presence of a compromised lumbar disc, it created stability on both sides of the spine. I am not saying that AS fixations should not be adjusted in these situations, but I am recommending that the situation be closely evaluated. If there is no pain, it seems that the AS fixations should be left alone as is. If there is discomfort from the lumbar region, evaluate the possibility of adjusting or tractioning a lumbar or other region. If there is buttock, hip joint, or groin discomfort, it will probably be necessary to free to AS joint on that side or both sides. But remember that the sacral base will nutate forward in so doing, creating some probable lumbar discomfort/stress. The process of counter-nutation can also go too far. In counter-nutating, the sacral facets are brought posteriorward. The ilia move forward, pulling L-5 forward, with its inferior facets more approximating the sacral facets. There may be an inflammatory reaction resulting from the jamming effect upon cartilage or portions of the L-5/S-1 capsule, held in a long-time taut position. A decision has to be made, based on the overall case. The AS fixes may again have to be released, even if the spine loses some stability.

9. Left-sided lower lumbar level and sacral pain, LP L-5 fixation misalignment, tension and swelling over the left L-5 facet joint, bilateral AS fixations. This is a trap; however, it is not designed to be so. It is designed as a bilateral stabilization to L-5. If you adjust the left AS, you run the risk of worsening the situation to the point of even creating L-5 or S-1 root irritation and radicular patterns. If you have a left posterior to anterior fixation at L-5, and you adjust the left ilium down, then the iliolumbar ligaments pull the L-4 and L-5 in a posterior direction on that side, while the sacrum nutates in an anterior direction. The L-5 body loses its support on the left side. The left IVF becomes compromised. Since everything is relative, all cases will differ in negative response degrees, so just understand your risks. The major here would be L-5. Adjust L-5 on the left. Both ilia should release completely or partially with each adjustment. Almost never adjust the left AS fixation where there is a lower lumbar involvement, especially with posterior rotation on the same side. It is even risky to adjust the right AS fixation, but proper evaluation will direct you.

10. Left lower lumbar/sacral pain, LP L-5 fixation, swelling over the left L-5 facet joint, left AS fixation, and the right SI joint moves freely. This is like the previous example. There is an L-5 problem. In my own observations and analysis, I see the left ilium fixing in an AS direction most of the time in response to a left L-5 or L-4 problem or instability. I am extremely cautious in ruling out a lumbar disorder before touching a left AS fixation. I am not saying that the AS fixation should not be adjusted, just closely scrutinized. For me, a left AS fixation is a red flag. It signifies danger; beware. In this case, a lumbar fixation misalignment was prominent and easy to evaluate, so the

decision is clear. Adjustment to L-5 on the left for and LP listing brings the best relief. There may be a lateral flexion component on the right side which may need correcting as well. Since the right side is not jammed with an AS fixation, an L-5 lateral flexion move can be more safely performed.

11. Left PI fixation misalignment under a left lumbar disorder, fixation misalignment. The right SI is freely moveable. There are two ways to approach this. You can adjust the L-5 as determined by motion analysis and examination. The left PI ilium may self-correct. However, it may not do also, and you may have to adjust the PI secondly. A second way is to adjust the PI, not the L-5. In doing so, the sacral base would counter-nutate posteriorly, providing a more stable base. At a later date, begin correcting the L-5 problem. There is a danger with this second plan, as well as a benefit. The side posture position with the lumbar torque position can, with repeated PI adjustments, cause an unstable LP fixation misalignment listing to become worse. That is, it can worsen the existing lumbar listing/status. This is because as the ilium is adjusted posterior to anterior, it pushes the sacrum away from the L-5, even as it counter-nutates. It is hard to see. You have to just sit down and think about it. One way to minimize this adverse effect is to take a palmer contact on the PSIS or ilium with the second through fourth fingers on the L-5 TP or mammillary process. You can adjust both simultaneously. This is especially useful for hyperlordotic lumbar regions or with stubborn or inflammatory type situations.

12. Hyperlordotic lumbar curve with bilateral AS fixations. According to nutation principles, this process does render support to the lower lumbar region, that is, the process of creating a bilateral AS fixation. If there are not lumbar rotation, lateral flexion, or posterior to anterior fixation listings, or lumbar disorders, then it is the call of the practitioner. With no lumbar or low back symptoms present, a correction to one or both ilium fixations could create lumbar stress and disorder due to nutation. If hip or groin problems result from the AS on either side, treat as needed. There may be side-effects to each decision, and each case has to be evaluated for the merits of doing nothing or to adjusting one or both AS fixations.

13. Sciatic radiation or radiculitis. A lot of judgment is required here. An AS adjustment on the side of a posteriorly rotated L-5 or L-4 probably will exacerbate the problem due to the pulling in the iliolumbar ligaments. As I said, this is most likely to occur on the left. Adjusting an AS fixation under an L-5 or L-4 disc disorder probably will exacerbate this disc disorder, especially on the left. If the radiation is not from a lumbar disorder, and there is an AS fixation present, then correct the AS fixation. Then, perform the appropriate soft tissue treatment if soft tissue trigger points or inflammation has secondarily developed, causing the radiation (see my previous article). If an AS fixation is present long enough, a gluteal syndrome may develop and remain independent of the AS. I utilize the techniques of Lyn Taylor to locate and treat these soft tissue problems.

Mr. Lyn Taylor, RPT, treats these problems commonly in his clinic in Los Angeles. He is successful, even without chiropractic intervention. I have the benefit of seeing that correction of the AS fixation may remove the symptoms without the therapies. However, severe soft tissue involvement or soft tissue problems which have developed their own independence do require specialized work. Without the AS correction, if needed, there is the risk of an earlier return of the same symptoms or of hip disorders.

I do not want to forget to mention that on the radicular syndromes, the practitioner cannot get so wrapped up in looking for AS fixations and soft tissue disorders that he/she misses a bona fide lumbar nerve root entrapment disorder or irritation.

I would like to comment on my use of the term "misalignment." I realize that this term may be offensive to some and not to others. When skillful in static and motion palpation, one can easily view sacroiliac misalignment disorders. This is done with the palpating fingers and with the eyes.

In the case of L-5, motion of the ilium causes pulling on the iliolumbar ligaments, which do pull on L5 and L-4, to some degree. My position on this is based upon my practical observations, and I take the position that L-5 can and does misalign simultaneously as it fixates in rotation. Because the other lumbar do not have iliolumbar attachments, they are not as subject to positional changes during fixation processes.

I want to conclude this article with some advice. Be especially respectful of the AS ilium fixation pattern. Although I speak from practice rather than double blind trials, it is all I have to offer. Although I am subject to errors and bias, I believe you can find some truth in what I have communicated. Good luck in your searches. If I have challenged you to find me right or wrong, you will still be ahead.

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References

1. J. "AS Ilium Fixation and Its' Production of Groin, Buttock, and Extremity Disorders," *Dynamic Chiropractic*, 14:24;12,40.

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