

Spondylolisthesis and T4 Syndrome

with Simeon Niel Asher

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TRANSCRIPT

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Simeon:

So let's start with the T4 syndrome. T4 is one of those strange syndromes which we osteopaths are absolutely certain exists. I'm pretty certain they exist and yet the literature doesn't really substantiate it a huge amount, but, certainly if it does exist, this is the best I could find in terms of literature searches. So it's based on the premise that there's a dysfunction in the joints of the thoracic spine, the zygoapophyseal joints, the costovertebral and costotransverse joints themselves. And that these joints have a nociceptive kind of relationship and they can start causing pain. So also the symptoms are very much automatic or autonomic rather. We have this kind of a glove parasthesia, often bilateral. It can be ipsilateral and something to do with the sympathetic flow of the upper limb between T2 and T5.

Simeon:

We also think that sensitization has a key role and we've explored sensitization before with relationships to trigger points and the other lectures that we've done. And it's three times more common in women than in men. So there is something to do with you know, possibly breasts or something to do with the anterior sort of pull, the fascial pulls that go through the upper thoracic spine. But in general as we know, patients that have come to us with a range of symptoms, and actually I want to move to the next slide, so some of the symptoms are paresthesias. So we get this altered sort of temperatures and temperature perception in the hands. People talk about a change in the perception of hot and cold and a glove distribution in both hands, we've got that image in the next slide, often as we said can be bilateral.

Simeon:

But there's usually a history of posterior thoracic or periscapular pain. Sometimes it can be worse at night. Sometimes patients are sort of taken to using different pillows up and down but definitely lying flat on the back seems to be the sort of position that patients mostly want to be in. What I've done here is I've just shown you some some ideas of some narrowing around the vertebrae. So, in terms of the literature, this was taken from a 2016 general bodywork movement therapy article. And some of the literature suggests this, it says that we've got this as we said, this sort of change in cervical lordosis and kyphosis a kind of flattening. And we do see that, you know, clinically there's a kind of a loss of kyphosis, a flattening of the upper thoracic spine, especially between T2 and T7.

Simeon:

And also there's a kind of change in mobility. So certainly in my experience we can feel that there's a reduced mobility around that T4 zone. There's restriction in thoracic movement and as we said before, this kind of particular, peculiar glove-like distribution of arm and volar forearm pain not like a glove and stocking dysautonomia from diabetic neuropathy. There's something different. There's certainly a sort of an autonomic, sympathetic nervous system symptom, tenderness, and also tenderness over that T4 area when we palpate it. One thing I do, which I'm sure you guys, if you haven't done it, it's a really good thing. It's a really cool thing is the draw test where you're drawing two lines down on the skin, and you just draw them two or three lines going down the skin.

Simeon:

And generally what happens is, when you do that on the skin, that the skin goes red and then it goes white again, but you will see that if there is a facilitation around T4, as you're drawing down, that you'll see a patch of red that just doesn't go away. So it's to do with the lymphatics and the drainage.

And also a positive slump test, so when we get people to sit and slump forward has often an objective finding of T4, so they're the kind of thing. So in terms of diagnosis, I think that palpation is important. I'm quite into palpation, and generally I find it fairly reliable for identifying the structures around this T4. But remember there are other structures, like we said at the beginning, there's the costovertebral, costo-trans, zygapophyseal joints there.

Simeon:

You've also got a range of ligaments and we've also, don't forget, the multifidus. Now the multifidus group have these inter-transversales, interspinales, rotatores, and remember all these deep groups, and we're finding out a lot more about those, especially in trigger point medicine, in terms of their importance in referring symptoms. We also know that the erector spinae in that area can refer anterior symptoms as well. But symptoms don't appear to be wholly somatic. That's the point is that there's some kind of sympathetic or autonomic component towards it, and the pain patterns are non-dermatomal, so they're not specifically from a T4 dermatome.

Steven:

Simeon, can I just ask you about the slump test that you mentioned a minute ago.

Simeon:

Yeah.

Steven:

Although it's interrupting your flow there. You said that a slump test is one possible indicator, but what is it you're finding with the slump test?

Steven:

You're getting pain with it?

Simeon:

Yeah. You're getting pain with it because they're going from a flat kind of kyphotic, loss of kyphosis. And then as you slump forward, they feel a jab of pain around that T4. I mean sometimes we think of it sometimes associated with the scalenes because the scalenes have got a lot of referred pain. Also the pects as well can refer a little bit down pec minor sometimes, but certainly with what I call a classic T4, it would be someone is coming into this sort of parasympathetic sort of sensations in the hands, pain when they're dropping their head forward. And definitely that stroke test where we can see that there's a kind of reddening and this loss of lymphatic drainage around that area. Yeah. Good so far.?

Steven:

Absolutely.

Simeon:

Okay. So in terms of differential diagnosis, so as we said, there's a bunch of things that can also be a little bit like, especially thoracic outlet syndrome.

Simeon:

So we know with thoracic outlet we can also get this kind of distribution into the upper extremity. Carpal tunnel, which we covered last time. Also cervical disc disease, so cervicopathy, cervical disc disease, vascular disorders Anky Spond of course an interesting one. It's something that we do see clinically and often that whole thoracic area. Even they can have a T4 syndrome as well as an anky spond and also, people that have asthma, people that have COPD or asthma sort of compromising the thoracic mobility. The other things are intercostal neuralgia, DISH, which is this diffuse idiopathic skeletal hyperostosis, and some referred visceral pain. There's a actually was a little debate going on in one of your, one of your groups about a visceral, somato-visceral referral.

Simeon:

I put a couple of references up some really good research, done by the trigger point people. So there are things that have to be differentially diagnosed, but I think when you're coming down to a T4 syndrome most of us, kind of through this differential kind of pathological sieve, can get it down. And the thing about them is, as you all know, I'm not telling anything, is they're quite tricky to treat. I should've probably started with that Steven.

Steven:

Before you go on, a couple of questions come in again about the slump test, which is does it exacerbate pain just in the T-spine or does it exacerbate symptoms elsewhere? A positive slump test?

Steven:

The other question about postcode patients suffering from upper thoracic pain. Is that just lung referral or you have other theories?

Simeon:

So kind of one of the reasons that I wanted to talk about the T4 was to do with COVID. I don't know if we're allowed to mention it. Is it like Darth Vader or something? Sorry, because again, I've got a sense that we're going to see more T4 syndrome after these epidemics, which is we should do with kind of the respiratory mechanisms between the ribs and the thoracic spine. In terms of slump test, what you tend to see is as people go, as you ask them to slump forward and drop the head - bang - as they drop through, as they rotate through the upper thoracics, we tend to see a very pinpoint specific 'ouch' around the T4 area. So that's what I would say.

Steven:

Okay. I've moved on to the treatment slide.

Simeon:

Okay. So like I said, it is a little bit tricky to treat. I did get good results with it, he says. I get reasonably good results with it, but, and I'm being honest with you, it takes me around about four to six, sometimes even seven sessions. So I think the first thing is to explain to the patient what you think is happening. I actually think sometimes it's really good to take a photo of that. I should have brought some water. So had I been in the studio, we would have water, right?

Steven:

You would.

Simeon:

To do that stroke test and then take a photo. Obviously ask for their permission, use their camera, take your photo and you can show them what happens as you stroke down the spine and say to them: "Look, you see this patch of redness that isn't going away, normally this should go away".

Simeon:

And that can really help them understand that there's something going wrong in that level. But in general the idea would be to do some manipulation, so HVT of the T4 area. Now I usually do it standing as a lift off, as well as to do it in a dog or modified dog technique, or a sitting lift off as well. And for me it's almost like, I want to make sure I get the HVT in various planes of the facet joint. Because for me it kind of feels like we know that the facet joints have multiple kind of planes, is that they kind of get stuck in one specific plane of motion, which is often quite tricky to get into. And then where the membranes of the synovium is, we get this kind of synovial adhesion perhaps in that area.

Simeon:

That's kind of how it feels to me. So I like to try and hit it in different planes with an HVT if possible. The other thing is some targeted localized exercises, which I've included the next slide, which really can help with the range of motion, but to talk about functional positions in terms of work and sport and sitting it could be an average of three months. I think that's around about right actually for me, it takes around about three months to improve things, if I'm being totally honest. And the other thing is IMS needling. Now I've been loathe to share IMS needling with you particularly because obviously when we're needling into the thoracic spine, there are some - wait for one second - there are some safety considerations to be thought about.

Simeon:

Obviously it's an area where there are lungs. Now this is a video taken from the software. And inside the software we also have the safety video that goes with this, which we probably should have included. However this is just for demonstration purposes. Those of you that have never done needling, please do not do this at home.

Steven:

And just before we go on suing you, you said this was taken from the software. What do you mean? Is this taken from trigger points 3D which is the software.

Simeon:

Yeah. We had Dr Bob Gerwin who's a neurologist and the ex-head of pain medicine at Johns Hopkins and the founding father, in fact, of the trigger point movement, the last living father has done 500 videos, which are all embedded in the software. And when you come to a muscle, what you can do is select the muscle and then you can select four videos for each muscle from the Gerwin suite, which are trigger point overview, functional anatomy. His functional anatomy is like second to none everywhere, the best I've ever experienced, and needling and safety. So what we're

going to do now is, we're going to ask doctor Gerwin to explain how needling might look if we're going to look around that T4 thoracic spine

Dr Gerwin:

Needling the iliocostalis muscle, the tube will be placed over the rib and once the needle is inserted, it will be angled, so I'll be needling towards me. The needling will be done only between my fingers and will not deviate to the right or the left side. If it appears that the needle is going deeper than I think it should, I will stop because that would indicate that the needle may have slipped off the rib.

Dr Gerwin:

The needle is tapped in place over the rib. Once again, ensuring that I am right over the rib and the intercostal spaces are blocked and I am putting the needle at an angle towards me in the narrow space between my fingers over the rib and that is needling the intercostal space. It may be possible to touch the rib, which indicates that you are on top of the rib. There's no need to actually accomplish that.

Simeon:

Thank you, Dr Gerwin. Yeah. So what's really important of course with the needling technique is that you want to make sure that you've got your fingers in the intercostal spaces so that when you're needling, you're needling toward a rib. And what we're looking for when we're needling is something called the Twitch response. Now those of you who've have done it know it well, those of you that haven't, it's a little bit of a shock. And the Twitch response is you actually see physically the muscle twitch. And often when we get that it's accompanied by some pain for a few hours and then incredible relief from symptoms. And so certainly for T4 syndrome, I like to do, of course, telling the patient what's wrong with them, mobilizing with exercise, doing various HVT techniques that we're getting it in different planes of motion and to do needling around that area.

Simeon:

So that's the T4 covered. So let's just go through these exercises quickly and again. I think we're going to include this for people aren't we when they're

Steven:

Yeah, all these will come out in the handouts. Obviously they won't get the video, so just get a picture a Dr Gerwin.

Simeon:

Okay. So we can see that there's some mobilization area techniques here for the thoracic spine. One of them that's quite nice, you can see, is this foam roller against the wall leaning backwards. In general people quite like foam rolling and they can get kind of self-HVT mobilization adjustment occasionally. The other thing in here, we can see with the rotation, this sort of stretching all the way up the erector spinae. Of course the cat and the dog stretch are quite useful for mobilizing.

Simeon:

And remember, at college we did the, I'm sure most of you did it where you're sitting down and drawing the figure-of-8 technique or drawing circles with the elbows as well. So all of those are

pretty good for mobilizing upper thoracic spine. So probably not telling you all anything far different to what you're doing, but hopefully a good refresher there. But I thought what we'd move on to now is something a little different

Steven:

Not just yet. I've got some questions for you and I'm trying not to interrupt, but we've come to the end of a section so it seems like a good time. The first one was not a question. It's an observation if you like contribution from Elizabeth who says she's had three or four patients in the last year diagnosed with T4 syndrome by A&E doctors, which actually is quite impressive that that sort of thing is recognized outside our profession. Simon Narramore says he did an online course on breathing techniques for chronic pain that's influenced by the vagus nerve and says for some reason Santana's drummer, but that's a reference that's lost on me and.

Simeon:

I love Santana but that's lost on me too.

Steven:

And Sam Craig-Wood says she's had a number, a similar number of treatments to get them better. Simeon, I think you said three months, didn't you?

Simeon:

Yeah.

Simeon:

She wonders whether perhaps there's an annulus involvement given the time period.

Simeon:

Well, it's interesting isn't it? Why does it take three months? I mean, I'd be interested to hear your theories on that guys as well. I think what's interesting about the T4 is that there is some kind of autonomic involvement. And I've talked about this, remember we talked about the long head of biceps, we talked about the sympathetic parasympathetic. I see that especially with frozen shoulder syndrome, we talked about night pain going away with a rumbling stomach, you remember, when we're hitting that long head of biceps. So there's definitely something of the sympathetics around it. And again, T4 there's something of the sympathetics around that. And I think for me that would explain perhaps why it takes sort of three months to go away because we're working on the autonomies as well. That would make sense to me.

Speaker 4:

And Claire has asked me to mention so that people don't send in lots of observations that we're very well aware that AP adjustments of the thoracics, the dog technique as many of us call it is not necessarily a good idea right at the moment where the forcible exhalation might squirt droplets into practitioners' face. So you'd have to be very careful with that. Masks and shields and all sorts. So as you said, there are other ways of achieving the same thing.

Simeon:

Definitely good point Claire. She's very safety conscious. I'm back at work by the way. It's very strange. I've got like the mask and the vibe(?). It's hard to breathe in those masks, you know, you're kind of gasping for oxygen. Anyway, we talk about that later. Well before we do, I just go back to what I just say a little something for everyone here. So it's kind of hard being back at work, but it's actually lovely to be back at work as well. And my experience thus far is that patients are incredibly grateful to be back with having some hands on therapy. A lot of people have said to me, Oh God, someone's touching you the first time in months. So remember we did that language of touch thing at the beginning. I kind of felt that that's what would happen.

Simeon:

So there's going to be a lot of good stuff as well. So hang in there. It's going to be all right. Let's go to the spondylolisthesis. This is now, so spondylolysis. I'm going to go out on a limb if I may, on a lightsaber, and say that I think I might have found an effective treatment for spondylolisthesis. You know, like I said for the frozen shoulders, so frozen shoulders, I'm pretty sure we've got something like 86% of patients get a hundred percent better or somewhere in the nineties in terms of a cure if you like for frozen shoulder syndrome. I know difficult words, but I'm kind of feeling that I'm roundabout the 70s 80s is for spondylolisthesis now, I've done a lot of them a lot. And the nice thing about spondylolisthesis is that people are incredibly grateful.

Simeon:

There's not a lot of options out there for them. The treatment I'm going to show you actually works and it works well and it lasts for about six to eight weeks, sometimes 10 weeks. So people do need to come back on a sort of regular basis. But during that time they are generally symptom-free. And what happens is, is over the couple of weeks coming up to their treatment, they start to feel things building up and we'll do a treatment and they'll be good again. And I would say I've done over a hundred cases, well over, probably coming up for a couple hundred cases now. Now I haven't published this. I haven't done a randomized placebo controlled trial. I'm opening myself up to all sorts of trouble. But I would just say to you that I've got a feeling that the whole idea of the Niel Asher technique that I came up with for the frozen shoulder has a definite relationship to spondylolisthesis, this as well.

Simeon:

And what we talked about, remember, especially people that have been to my workshops is holding patents. I'm very into holding patents. It's kind of shut down patterns of the nervous system in a protective way around a particular, especially peripheral joint. This sign is really the holding pattern of the nervous system for a spondylolisthesis, which is very tight hamstrings. Apart from that step we've got this very sort of tightening of the thoracic erector spinae, the buttock muscles and the piriformis muscle. So this is, I would say, the holding pattern the spondylolisthesis. Now it's a whole interesting area because clearly what I'm not doing is I'm not correcting a forward slippage of a vertebra and I'm not correcting that. No way. So therefore, ipso facto, what am I doing to help people?

Simeon:

And how does it work? Well, that takes us into the realm of Star Wars I think, right? The force. Okay. So, all right, sorry. But I thought before we go into the technique, we'll explore like spondylos

in little bit more depth because they're very interesting. As we know spondylolisthesis is a sort of forward slipping of one, but we also have this, the ideas of anterolisthesis and retrolisthesis as well and sometimes it can be felt as a powerful step, but certainly not always. Can develop for a range of reasons from traumatic degenerative, vast majority degenerative. And we're going to have a look now into more depth. So let's do that.

Simeon:

So let's start by talking about some anatomy, because we love anatomy don't we. I do. The pars interarticularis. So the region of the vertebral body between the joints adjacent to the facets is called the pedicle. And the pars interarticularis is this area by the pedicle here. So we can see that. I don't know, can you point to it on the screen?

Steven:

No, I can't.

Simeon:

That's fine. So the pedicle between the superior facet above and the inferior facet underneath in this area. So this is the area of the pedicle and this is where we get a spondylolisthesis occur, a fracture dislocation. So let's carry on.

Simeon:

So this is called the Phalen Dixon sign and it is a real thing. And as I said, this really is a holding pattern of the nervous system for a spondylolisthesis. And much in the way that when I look at a frozen shoulder, I look at the super trigger points in infraspinatus. And remember we said subscapularis holds the arm like this. So what we're really getting is a shutdown pattern of the nervous system to protect the spine from more slippage. And of course the main areas that we're seeing now are in the hamstring, in the piriformis, in the erector spinae, multifidus a little bit as well, and some of the upper chest as well. So the Phalen Dixon sign, which is well noted in the literature actually is the holding pattern for the spondylolisthesis.

Simeon:

A large percentage of patients with spondylolisthesis are asymptomatic. Progression usually does occur, but it can occur without symptoms. The main thing is difficulty standing straight, pain, buttock pain. And what's really important is pain in the buttocks and down the legs, psychotic or sciatic pain. Patients often talk about one side more than the other side, but certainly buttock sciatic pain is a thing that really, really upsets them. Pain, difficulty on walking leg, buttock pain that gets worse on bending or twisting. Occasionally, rarely, we get kind of cauda equina type bladder symptoms. That's usually as things progressed to stage four. Pain getting up from a chair, generally speaking, by the way, just from a trigger point perspective, pain from sitting to standing is quadratus lumborum muscle. So I throw that in as a bonus. Morning pain, morning stiffness, back pain, getting worse as the day goes on, pain after activity.

Simeon:

And poor tolerance to exercise. Usually people prefer sitting and what we're going to do, I won't cover it all, but I put some advice and information on one of the slides about what to talk to your patient about, about soft chairs, are better than hard chairs, et cetera, et cetera. So we will cover that

shortly. So the point here is that patients are in pain. They can't walk for long distances. They get pain sitting, standing, they're getting pain or numbness or weakness into the buttock and down one leg, and they're in a lot of discomfort. And then of course they've been for an X Ray, which has shown them that they've got a slippage of a vertebra and it might just slip and sever the spinal cord, which is not what happens, obviously. I'm just saying it's what their fantasies are.

Simeon:

And what I'm going to say is, I think it's actually the pain is a functional condition. So spondylolisthesis pain is functional rather than structural. In terms of the classification, and let's get down into some of the nitty gritty, there are actually six types of spondylolisthesis in the literature. Type one, congenital or dysplastic and that's where we're getting some kind of loss of integrity of the pars generally due to an incomplete closure of the osseous bone structures themselves, usually from folic acid deficiency or one of those deficiencies. Type two, which certainly is more common, is this isthmic spondylolisthesis and we'll cover the isthmic one shortly. The isthmic one tends to be after the trauma. We all remember learning in college of young people falling on their bottom and then something happening there.

Simeon:

Certainly, though by far the most common is the degenerative spondylolisthesis type three. Traumatic, again, associated with the isthmus. Generally traumatic because there is a weakness in the pars interarticularis, and trauma is enough to cause a fracture there. Sadly, there's pathological spondylolisthesis and, of course, it's something we have to explore in our differential diagnosis. We know a lot of metastases secondary do go to the spine and sadly they do go to the pars area fairly frequently and also postsurgical. So people that have had spinal surgery can go into spondylolisthesis as well. So again, I've put the references there for that. Let's carry on. In terms of the mechanism, the traumatic and the isthmus kind of are similar as I said before, so they are rare, but usually it's due to a spondylolysis, which is an inherent small fracture in the pars interarticularis.

Simeon:

Pars defects often occur as we said, because from infantile cartilage there's a lack of full fusion folic acid during pregnancy amongst other things. In terms of traumatic or isthmus trauma onto that spondylolysis, almost all of them are at the L5 level most commonly, 82% of them. So when we're looking at the traumatic onset or the isthmus, most of them are 82% at the L5, but sometimes they can go they L4 and occasionally up to L3. So when you're making a differential diagnosis and someone's coming in with an L5, you can recon probably, it might be worth thinking of it's an isthmus or traumatic one, because what we're going to find out is the degenerative is by far and away L3/4. So the usual mechanism, as we said earlier, is that the child or youth falls heavily onto the coccyx region.

Simeon:

The cartilaginous pars splits. This usually occurs between five, seven years of age, but it's actually not uncommon for the symptoms to not to be felt until adulthood, even though the trauma occurs early on. And there's one of our clues, by the way, into I think how spondylolisthesis works because these kind of events of the traumatic isthmus ones are very well tolerated. And actually patients don't usually feel symptoms until they've got adult changes, secondary bone growths. So here's our hint: the past. The slippage itself may not be causing the symptoms unless of course it's a very large

slippage. Usually it's grade one or two and it's well adapted, well compensated over time, however, it's not uncommon to see young boys, mainly 14, 15 coming to you with acute spondylolisthesis induced back pain. Younger patients are at higher risk than older ones for developing progressive spondylolisthesis, that's important. We know that if the younger they are, when it happens, the more chances of them going into a great four. We'll talk about those grades shortly. Just to highlight, just to flag here that pain doesn't always follow on immediately from when the trauma originally occurred.

Steven:

Can I ask a question from Alvina before we move on to the next slide.

Simeon:

Yeah.

Steven:

She said the Phalen's, not Phalen's, the standing posture that you illustrated earlier on she said that that's very similar to someone who's got spinal stenosis and has asked the question, which I think you answered earlier on, which is without x-rays a spondylolisthesis is always easily palpable.

Simeon:

Yes not easily palpable. It's much easier in people that are skinny, obviously not so good in people that are overweight, and it's called the Phalen Dixon sign. And actually it's a really good point because there is a crossover between intermittent claudication, well spinal stenosis and spondylolisthesis, and actually we're not covering them in this lecture today, but there is a similar holding pattern for both and it's a very good observation. Yeah.

Steven:

And can I just drag you back to T4 for a second? Because a couple of questions came in after you'd moved on Annette Weir says with that skin stroke test of yours, is that more likely to do with a sympathetic overactivity causing prolonged vasodilation rather than locally impaired lymphatic drainage?

Simeon:

Yeah, absolutely. Well, it's things to do with the lymph and the autonomies absolutely. Completely. And actually when you stroke down and it's gone, you can be pretty sure that they're okay.

Steven:

And one final one on that, Jill's asked whether that T4 syndrome is more likely in peri- or postmenopausal women. She says she notices it more in that demographic in her own clinic.

Simeon:

It's a good observation. I haven't really thought about it. I don't know if anyone else has got a

Steven:

Yeah, I thought it was quite significant in pregnancy to be honest. Have you noticed that?

Simeon:

I'm just thinking about the last ones I've seen. I've got a couple on at the moment. I've got a couple of guys on at the moment. I'm seeing it with people that are sitting doing computers a lot. You know, it's one of those things also people that are lifting sort of bracing themselves and lifting, but certainly I've seen it in that perimenopausal 50 year old age group.

Steven:

Okay. So, sorry, I'll let you go back to spondylolisthesis.

Simeon:

Just let me clear my throat. So, we said that the majority of those isthmus traumatic ones are L5, but by far the largest group of spondylolisthesis' are the degenerative spondylos and these happen where the spinal support system, especially the ligaments, we've got these very strong anterior and posterior longitudinal ligaments, the ligamentum flavum, all these ligaments get weak due to under-activity and they're no longer able to maintain alignment.

Simeon:

And we get this degenerativeslippage. So generally more common in the fifth decade onwards, almost always the L4/5. And because that's the area of maximum mechanical weakness, that's where the lordosis is. And that's really where things that tend to suffer from these kinematics Sometimes called a stress fracture, but far more common in females with a five to one female to male ratio. And as we said, generally over the age of 40, so more common with women because they tend to have a deeper lordosis in general than men, and it's to do with the biomechanics of the hips and pelvis. So L4/5, 40 year old plus and they're coming in to you with this kind of Phalen Dixon sign back pain, leg pain. And again, you've got to have to think about spondylolisthesis as one of the onsets.

Simeon:

Just to complete that, that was an X-ray over a grade three spondylo. So a pretty nasty actually, but in many ways the symptoms aren't actually completely concurrent with the X-rays, which is why I've got this other theory, this functional theory. Okay. So the next slide is this. So we said that there can also sadly be pathogenic spondylolisthesis. Any bone disease that can weaken the lesion, that can weaken the spine, can cause changes in that pars interarticularis. We can see a couple of different tumors here vertebral partial collapses, stress fractures, crush fractures, partial wedge fractures osteomalasia, osteomyelitis, syphilitic diseases, but of course, primary or secondary metastases as well. So just always worth bearing that in mind in terms of potential causes for spondylolistheses.

Simeon:

Okay. So in terms of the mechanics there, it's usually grouped into different groups in terms of how the mechanism of spondylo occurs. We have type 1 and then we've got three types of type 2, type 2 ABC is important. Then type 3, 4 and 5. So let's just run through those together. So generally it starts with a slippage at the joint that's Type 1. Then we get this fracture because of this incredible momental pressure that goes through this very weak small area, not really weak but vulnerable small area the pars interarticularis. So in terms of group 2, we get fibrous tissue that either has been replaced from a spondylolysis or from a fracture that's been hidden there, all the way through to a complete fracture through the pars, it becomes elongated and then in type 2c.

Simeon:

You can see the articular parts of that pars are coming apart. Now on an X Ray, we all remember the Scottie dog appearance, and here you can see the Scottie dog. What you're looking at there as you're taking an oblique view of the spine, you can see the fracture in the neck of the Scottie dog there. Can you see that? You're with me? Okay. So as we come on to type 3, this is where we've got an actual slippage and we get the forward slippage of the vertebra on the one below. Group 4 is when both sides, because sometimes it can be unilateral, it doesn't have to be bilateral, but type 4 is when we get frank fractures all the way through the pedicle, finally, and then we get this completely free or attenuated pedicle in type 5.

Simeon:

So, usually this is the progressive mechanics of the spondylo, the pars under pressure gets stressful, becomes fibrous, that then fractures and then we get the forward slippage of the pedicles for various reasons, this is, I showed it, due to a tumour as well. Okay. So that is the mechanisms. We're doing good, I think right now, no Star Wars lately.

Steven:

Ah, we had some more. Somebody has already sent one of those in, Simeon. Christina says at the end of this we will all be Excellent, Workable Overall Knowledge Practitioners or EWOKS for short.

Simeon:

Beautiful. Now in terms of grades of spondylolistheses - keep them coming by the way - there are four grades of spondylolisthesis depending on the percentage of slippage. So a grade 1 we'd say is less than a 25% slippage. A grade 2 between 25 and 49% slippage, a grade 3 50 to 75%, and beyond 75% is a grade 4. Now we have to remember biomechanically that the cauda equina has already kind of finished around the L2/3 area.

Simeon:

If we're talking about someone that's had a degenerative sort of L3/4, a lot of the nerves would have exited already out of the spinal canal. If we're talking about some with an L5 fracture, even with a grade 4 slippage, there's a good chance that the nerves won't be affected. And we said before that grade 4 slippage tend to occur in younger people that have had their spondylo for a longer time from the isthmus degenerate congenital spondylolisthesis, so the body's had a lot of time for those nerves to become adapted. Nerves are quite amazing structures, you can pull on them and twist them and tug them and they don't always misfire symptoms. They've got Schwann cells around them in this fatty sheath. Generally speaking, the technique I'm going to show you works best on grade 1 and grade 2. Grades 3 and 4.

Simeon:

You're thinking perhaps to be a little bit more cautious with them. Certainly it's not good to do any HVTs down there, but I remember learning HVTs of the sacroiliac joint. I think I might've done a few here and there, very hard to localize the force because of that spondylolisthesis. It's possible, but it's quite an expert technique. Although I do remember Stephen Sandler (?) was pretty good at it. I know it was on one of your lectures and he's an amazing technician. Generally I avoid HVT down there.

Steven:

Given the fact that we can't determine these things without x-ray, by and large, we've probably all done one or two in our time without realizing it.

Simeon:

Yeah. Well, I'm not sure if I should mention it because it's on camera, but I think even I might have caused one once, maybe, I can't say for sure, but I think it's possible.

Simeon:

So we've gotta be careful with the HVT work. I'm not saying for sure, but it's possible.

Steven:

While we're having a chat here, Fionnuala's asked whether if you palpate a shelf or a step in the lumbar spine, is it always a spondylo or could it be something else?

Simeon:

No, it's certainly not always a spondylo. Sometimes I feel them likely, I say to the patient, you've definitely got a spondylolisthesis and they'll go for an X-ray and it's completely not. So for sure it's not a fail safe sign. My mother who unfortunately is in lockdown in London, she has the most terrible spine and you feel down it and you feel steps all the way, but we took an X-ray and it's not, it's more of a scoliosis. She'd be very happy we're speaking about her, to be fair, she loves to be spoken about. Moving on the force is with her. So let's get on to some treatments and some facts. So, this is a really good fact sheet. This is what I managed to glean from the literature and I think you might find it quite interesting. As we said, in terms of spondylos, L4/5 interspace is 6-10 times more common than any other level. 82% as we said are isthmic spondylos at L5/S1

Simeon:

And then another 11.3% at L4/5. Degenerative spondylolisthesis is more frequently with age, especially after the age of 40. Congenital or dysplastic has been documented in children as young as 3.5 months. Heavy activities requiring athletics predispose athletes to developing pars interarticularis defects. Isthmic spondylo affects roughly 1.1% of all black females. So that's another group to be aware of, black females again because of this exaggerated lordosis and sometimes steatopygia. Remember that one? I don't know where that came from. Beautiful steatopygia, you can look it up. The most commonly affected group is a white male with 6.4% in terms of spondylos. But look at this, the Ankara Plains Indians and the Aleut peoples have very high incidence of spondylo defects due to a combination of genetic and environmental factors. And as you said, degenerative spondylos affect black females more commonly than white females, and females in general more common than males. So there's some facts to look up.

Steven:

Above that you said the most commonly affected group is the white male.

Simeon:

Yeah.

Steven:

But that's for isthmic spondylos.

Simeon:

Correct, that's for isthmic spondylolistheses. So there's some facts. Let's move on and see where we're up to now. Good. So I'm not going to go through this slide cause it's a little bit droll. But I have put it there in your notes. This is just stuff that you can discuss with your patient about lifestyle changes. For completion, you can have a look at that if you're interested after. So let's move on to trigger points and spondylolisthesis. This is my magical technique, which I'm delighted to start sharing with you guys. As we've said before, trigger points are exquisitely sensitive spots embedded within a taught band of muscle. Actually, Bob Gerwin, it's going to send me his - he's published a absolute definitive study on sarcomeres that prove triggerpoints exist.

Simeon:

So it should lay to rest a lot of the criticism. They generally occur in clusters ranging from a small pea up to a large lump they are sensitive and when you hold them for more than five to 10 seconds, they can cause referred pain. And just remember that trigger points are part of the myofascial continuum. And this is a diagram from the Myers book "Anatomy trains". Muscles don't work in a unit on their own. They work as part of a myofascial continuum and they have anterior and posterior agonist fixators and antagonists. Important to remember. So the thing about trigger points is that when they are there, they cause a nociceptive burden on the spinal cord and they keep firing and firing and that tends to lower the threshold for pain to be felt. Now over time, generally it's peripheral sensitization, which is between one and three segments above.

Simeon:

Also relevant of course for T4 syndrome, but over time, the longer it's been there, and we have to remember that the spondylos are going to be there for years and years, there will be a degree of central sensitization. What that means is that the threshold for pain generally is lowered. So that what might be a sub-threshold action potential might be enough to trigger pain in someone that's had chronic ongoing central sensitization. So trigger points themselves are part of the whole neurological neurogenic pain pathway.

Simeon:

So let's explore the muscles that are involved and we're going to do this from a screenshot from the software. We're going to look at the erector spinae, multifidus piriformis, glute medius, maximus, and the hamstrings. So let's have a look at that together. So we're going to start with the erector spinae. So erector spinae, as we said, three groups: spinalis, longissimus, iliocostalis starting from the sacrum and iliac crest going up to the occipital bone, spinous processes, transverse processes. Again, very much something to do with extension of the spine. It used to be thought that they were erector spinae, hold the spine erect, but we now know they're electronically silent when it comes to posture, they're much more connected with spinal extension for the muscles to find extension. Usually important with the spondylolisthesis of course, because that's what's happening. Here I've included the rotatores. This is part of the multifidus deep muscles. Again, all the way up from the sacrum as we said, three groups for rotatores iliocostalis (inaudible)

Simeon:

So multifidus here. Let's move on to the piriformis, very important muscle. We're going to cover it a lot next week if you're interested in sciatica, which I hope you are. Piriformis has a very distinct map of pain in the buttock, down into the hip and it can actually press on the sciatic nerve. There are various variations of the anatomy you can see that in the Gerwin videos if you're interested. Moving on to the maximus. Now glute maximus has got three different trigger point maps, upper, middle and lower, and you can see each of the maps as a slightly different variation. The medius is a large muscle and it has three different trigger point maps, which generally the one we're looking at is the superior one. And just finally, we're going to come to the hamstrings. So hamstrings, semimembranosus, semitendinosus, biceps femoris. This is the bi fem map biceps femoris tends to radiate into the buttock and it very much like the pain of a spondylolisthesis. That is almost exactly where patients feel it, ischial tuberosity, also all the way down to the lateral side of the head of the fibula.

Simeon:

Something about the hamstring, again, there's just some of the Gerwin videos embedded for you to look at. So these are the muscles we're going to look at and these are the ones that I'm going to share with you my technique that I've found helpful. So let's move on to the next slide. So in terms of my technique, I look at holding patterns and for me that Phalen Dixon sign is the holding pattern of the nervous system. And very much what we're seeing there is two groups of muscles that are holding and we're seeing the piriformis and buttocks and we're seeing the erector spinae. And why is that? Well, if you think about what's happening, as the vertebra slips

Simeon:

The erector spinae are trying to desperately do two jobs and they're not doing them both well. They're trying to stabilize the spine and they're not designed as postural muscles and then they're trying to also move the spine. Now we know in terms of posture that we have this interblend of ligaments and muscles, each one switches on for five to 10 minutes, switches off and lets another one take over. So what we found on EMG studies is you get ligamentous holding, then you get muscular holding, then ligamentous. But as the day goes on, generally when you have a postural anomaly or difficulty, things tend to get more tired because the body is essentially fighting. And that's definitely what's happening with the spondylolisthesis. The muscles are being asked to do a job they're not designed to do and they start to fatigue and they start to form trigger points.

Simeon:

Then what happens is, and these are specifically the erector spine muscles, then what happens is the buttock muscles kick in and we start to see very much the piriformis, glutes, minimus, sorry, usually the medius and the maximus start to form trigger points there. And in terms of treating you know that I use a lot of deep stroking massage, is that we're using the pain pathways in an algorithm to change the way the brain and the body are speaking to each other. Now we've explored that a lot with the frozen shoulder. I haven't explored it with you with a spondylo, but we're going to have a look at it now. So I don't know if you want to get to the next slide. So remember that the Niel Asher Technique is about stimulating a neural sequence rather than making sure you've stretched out every single muscle.

Simeon:

This is not about stretching muscles. This is about thinking "what I'm doing is, I'm going to change the neurological relationship between that muscle and the brain". So the depth, the velocity, the amplitude I use are absolutely crucial. I'm not massaging a muscle. I'm using the trigger points to change the relationship between the brain and the area. In the case of a spondylo you don't want to relax the muscles particularly because they're doing an important job of holding, protecting the spine. So the depth is absolutely crucial and I'm going to show it to you. It's more like squeezing toothpaste from a tube. Go back one more.

Steven:

Sorry.

Simeon:

I passed one. So actually what we're trying to do here is we're using trigger points as feedback inputs to change the relationship between the brain and the holding pattern around that spondylolisthesis.

Simeon:

So what we're going to look at now is the technique, and we're going to see this. So I'm going to talk to you afterwards about how I think it works and it does work and I'm getting terrific results. I will publish it in a journal if anyone will have me. Suppose I've got a bit more time to write it up now. So let's have a look at this and then we're going to talk about sensation modification. So here we are. This is an actual spondylo patient I treated actually yesterday who was a dancer. We can see the erector spinae. We've actually almost see as active plane. You're having to go back.

Steven:

I don't know why that video is not playing, it was earlier on.

Simeon:

Interesting. Well this is my technique guys. Brilliant. Tantalizing. The force is with me. Well just to let you know that I did actually share the technique, didn't I. I'm not making it up.

Steven:

And it was playing 5 minutes before we went on air.

Simeon:

Okay. So you know what, it is as it is. I'm happy to show it.

Steven:

Can you talk us through it on my slide?

Simeon:

Here we go. Perfect. So this is looking - I want you to notice his erector spinae. Video: "What we'll do is, we're going to work on the erector spinae". So what we're going to do is we're going to come in one direction only much like we did with the deltoid, but we're going to start on the top and we're

going to work down and we're going to work all the way down in three strokes along the erector spinae, all the way to the sacral fibers. It's really important you go all the way to the sacral fibers three times and this is more of a stimulatory procedure. So we're not going all the way to relax the muscles, more to sort of change the neurology and stimulate it.

Simeon:

Three and remember we said it does vary from patient to patient, the speed, depth and amplitude, but we're going to do three strokes down, starting at the head and going down only. Only one way. Really important. You don't go any other way. Okay, now from there, perfect. So handsome and fat. From there, we're going to look now at the piriformis. Now what's really important is look, I'm drawing a line with an aim towards the opposite sacroiliac joint and I'm going to drive in through the pelvis through the piriformis and I'm literally going to push around about 60% of my force towards the opposite sacroiliac joint, L5, L4 depending where the spondylo is. And sometimes, in fact fairly commonly, you'll hear a little click of the spondylo when you do that, on the opposite side. So I'm holding through and inhibiting through the piriformis there, driving towards the sacrum, towards the opposite sacroiliac joint. So I've done three strokes down. I'm holding. You can see this is a real case, so this is exactly how I treat it. I'm not doing anything. I'm not doing that. I'm holding and holding, waiting for a change.

Simeon:

I hope I didn't pick my nose. So that's how long it takes for this piriformis to let go in this particular patient. Slowly coming away. As I come away there, I'm just going to repeat the whole thing three times. Step 2, I'm going to repeat, that three times each side. Step 2, what I'm doing is coming ipsilaterally, holding it through the pelvis, through the gluteus minimus, sorry, medius, holding down and then I'm holding on the hamstring on the same side and I'm inhibiting. So I'm inhibiting the hamstring and the medius on the same side. So I've done three strokes on the left, three strokes on the right and the piriformis. I'll show you here what I'm doing on this side. I'm inhibiting through holding the medius and the hamstring at the same time on the same side

Simeon:

So steps 1-3 downwards stroking massages. And step 4, I'm doing a harmonic technique (oh God, I've put weight on Steven and the camera adds at least 20 pounds, right?). We've got this articulation, this harmonic technique, beautiful technique while I'm fixing through the opposite hamstring and the contralateral pelvis and I'm just generally sort of doing some harmonics there just to ease the neurology. So that's what we're doing. As I go, the lower I go in the hip the higher I go. So you can see I'm working my hands apart from each other, higher up in the hip, lower down in the hamstring. So again, just to talk you through it again, I'm doing three strokes down on the left, then inhibiting through the piriformis, rolling a little bit onto the glute medius there, holding it there, waiting for a change, doing the same thing on the right side.

Simeon:

Step 2 is I'm coming ipsilaterally holding through the glute minimus and medius and the hamstring and just inhibiting through there doing some inhibition compression. And then step 3, I'm doing harmonic technique. Now the whole thing takes honestly 15 to 20 minutes. And the idea is not that we're going to be massaging it, but what we're doing is we're creating an algorithm which changes the neurology. We do the same treatment every time. After the third treatment patients usually feel

90-100% reduction in symptoms. And then I usually do three treatments a week apart, one a month later, and then I spread it out between a month to six, eight weeks depending on how they can go between them. So that is the technique. And I know it sounds very simple, but you know, my techniques are simple, but they do work.

Steven:

We've got a number of slides left on here. Do we need to run through it given that we've now come to the end of your shift?

Simeon:

Let's just do one more slide. I'll tell you which one I want to do. Just this one. Perfect. So I'm just going to finish with this because this really is what it's all about. So this was a paper that was produced by a guy called Wepler, and what it says is this, and it talks about stretching. I'm just going to finish on this one, Steven, which is this.

Steven:

Yeah.

Simeon:

Actually, there's a lot of theories about stretching, but when you get into the nitty and gritty of stretching, there is no real biomechanical model for stretching. Straight, short stretching over a six-day week doesn't lengthen the muscle. It doesn't actually, because the muscle works in three dimensions.

Simeon:

So actually what they think it does, but it does work. We know people feel better from stretching. So how does it work? It works through something called sensation modification. So actually the way stretching works is sensation modification only. And it's a fascinating piece of research, which I would urge people to read and I've got a feeling that that's certainly how this technique works. That's how NAT works. And really what we're doing is actually working on sensation modification.

Steven:

Is that freely available? That paper?

Simeon:

Yeah, it's a web plug.

Steven:

If it is, we put it on the website.

Simeon:

Yeah, I'll give you the link to it. Absolutely, really guys, it's a brilliant read and it changes a lot of the way we think about everything, certainly the way I think about things.

Steven:

Can I run through some questions before we finish?

Simeon:

Yeah.

Steven:

Well first of all, a number of people have sent their love to your mum. Hope she's okay.

Simeon:

Thank you.

Steven:

Emily says, she loves your honesty and these sessions. I think she sent that in after you admitted that you might've caused a spondylolisthesis at some point in the past, which is obviously, it's a very

Simeon:

I may have been caused, there probably was a defect. Carry on. Sorry,

Steven:

Mike Bourne says he's surprised that psoas wasn't mentioned as part of the holding pattern.

Simeon:

Yeah, it's a good point. A good point. I'm thinking that the psoas absolutely is involved, but there's a kind of reciprocal inhibition effect when we're working on that piriformis and the erector spinae.

Steven:

Jono has asked whether the percentages that you gave earlier on for incidents of spondylolisthesis were only the lumbar spine or for the spine as a whole.

Simeon:

Lumbar spine.

Steven:

Okay. And Christopher said, do you know if the congenital cases make patients more prone to traumatic exacerbation?

Simeon:

Yes, the answer is yes. The answer is yes, they're usually well-tolerated up to teenagers and then they start to progress. But yeah, the answer is yes. You know, the longer it's there, the more sensitization there is.

Steven:

And the final one from Sami is, do you do IMS trigger point needling? And if so, can you recommend somewhere where we can do courses?

Simeon:

Well, that's very interesting. I certainly do. IMS I teach it, I'm part of a group that teaches it internationally. I think best is she contacts us, we're all covering it in the software, but in order to unlock the needling, you have to have done a course obviously for safety and professionalism.

Steven:

And you and I, Simeon, have talked for a long time about running a course in conjunction with your cousin.

Simeon:

I would dearly love to do an IMS course for osteopaths because we have got a chance to be right at the forefront of this thing like you can't imagine.

Steven:

So are you excluding chiropractice from this?

Simeon:

No for sure. Chiro and physios, we love you, we love you. But what would Donald Trump say like, we've got a chance to run the show on this. Actually what's happening, certainly where I live, is a lot of medical doctors, MDs, are jumping on the trigger point bandwagon because they're fed up with giving drugs out. They want something simple and quick they can do in their office with the patients. And we must've trained over 600 GPs now.

Steven:

And finally we've got some evidence, some good evidence that they do exist and hopefully can put to bed the criticism from various sources.

Simeon:

It's very, very substantially good evidence now that they've been photographed.

Steven:

Okay. I got another question sent in just after I said it was the last question. You've got 20 seconds on this one. Lots of people asking, why are you stretching from the top of the spine downwards instead of the other way?

Simeon:

Okay. Quite simply one way relaxes the muscle, the other way stimulates it. That's what I'm going to say. They have a different neurological effect.

Steven:

Okay. Interesting. And the evidence for that is?

Simeon:

Completely my own. It's the truth.

Steven:

And you do the same in your frozen shoulder techniques.

Simeon:

If you want to simulate it, we go from insertion to origin and vice versa if we want to relax it. Yeah.

Steven:

Brilliant. Simeon thank you very much.