Dr. Scott Tauber (Chief Clinical Advisor) Interview with Dr. Bernard Landry

THE TECHNOLOGY OF OBJECTIFYING & QUANTIFYING SPINAL LIGAMENT INJURIES

DRIVING FORCE
COMPANY

Dr. Scott Tauber:

Welcome everyone and thank you for your time.
My name is Scott Tauber, DC, and I am the Chief Clinical Advisor for the Driving Force Company.

Today we are going to discuss the technology of objectifying and quantifying spinal ligament injuries, and we're honored to have a special guest, Dr. Bernard Landry, who's a medical radiologist. In just a moment he is going to share his experience with the VMA® technology.

Beforehand however, I want to begin by giving a little background about spinal ligaments, why it's important and what you can do clinically to identify this injury.

As you already know, the spinal ligaments are there to help to keep the spine in alignment.

However, in a motor vehicle crash or a trauma, these ligaments can get overstretched. When they get overstretched, it allows the spine to become hypermobile or move too much and it creates a lot of issues. Not only current pain, but into the future as well.

Spinal ligament injuries and instabilities often go undiagnosed because many providers are mainly looking for disc pathology. However, it actually takes less force to injure a ligament than it does the disc. So, if you're looking for disc and you identify a disc injury, there's an excellent chance there's going to be a spinal ligament injury as well. And this ligament sub-failure, or overstretching, creates a lot of pain and even chronic pain for the patient.

Just a few more facts about this spinal ligament pathology. If the spine is moving too much, and what we know about the spine is that when you affect one area of the spine, over time, other areas are going to be affected as well. This creates what's called adjacent segment disease. If a patient has an issue in one area of the spine, it's just a matter of time where this will affect those other areas and create possible degeneration and long-term symptoms. This ligament injury has been documented in the AMA Guides to the Evaluation of Permanent Impairment.

Unfortunately, it goes undiagnosed or misdiagnosed in a lot of trauma cases or diagnosed as a simple sprain or strain or maybe even a disc when this injury could also be there as well.

As a provider, you should be aware of a few of the symptoms that patients may present with indicative of a spinal ligament injury. These can include headaches, neck pain, low back pain restriction of motion, upper or lower extremity tingling, numbness, muscle stiffness, muscular weakness.

However, most providers are only utilizing or diagnosing with standard x-ray or possibly an MRI and not using the most current available technology.

When your patients come in and they have this series of symptoms, you should also begin to consider the need to look at the spinal ligaments as well. ***I want to introduce you to the Vertebral Motion Analysis or the VMA®. To evaluate the spinal ligaments integrity, we need a motion test.***

Static x-rays are essential, but not really a fully motion-based test. They're taken at endpoints of flexion and extension, where the VMA® follows the patient through their entire flexion and extension and records it just like a movie.

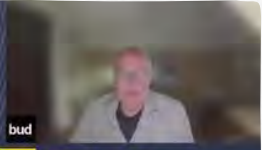
It’s the difference between looking at two still pictures, for example, the opening credits and closing credits screen versus watching the whole movie from start to finish.

The VMA® is a functional motion test, which is really the best way to identify spinal ligament instability.

VMA® technology eliminates the issues of standard X-ray; patient movement, bending with their knees when trying to flex and extend for lumbar films, using accessory portions of their spine, it's just not as specific, consistent or reliable as the VMA®.

And because the VMA® eliminates all of that, it gives the provider a much greater opportunity to find this injury.

That's a little bit of a background about the injury and why it's important to use the best available technology.



Why Evaluate: Long-Term

- Poor Blood Supply for Healing (scar tissue)
- Predisposed to Re-injury (weak area)
- Accelerated Spinal Degeneration
- Possible Permanent Injury
- Chronic Spinal Weakness

Interview:

Dr. Scott Tauber:

I want to introduce Dr. Bernard Landry, a medical radiologist. Dr. Landry, thank you so much for being here today and taking the time to share your experience with the VMA®. Before we get into the nuts and bolts of the VMA® and why it's important, please share with our audience a little bit about yourself and your experience.

Dr. Bernard Landry:

Thank you, Scott, and I'm glad to be here. I'm a board-certified radiologist, boarded in 1990.

I have been reading a heavy dose of MRI and CT in my practice over that time. ***I've got clinical appointments at major medical centers, teach radiology to both medical students and residents, and to the PA program, locally here in New Orleans at LSU Medical Center.*** I did a lot of pain intervention initially in my practice, because the anesthesiologist didn't want to do it and so I learned how to do it. Worked with some neurosurgeons and established a pretty good following from doctors who evaluated post-trauma, spine injuries. In so doing, I trained a lot of the physicians that do pain management today in the city of New Orleans at the medical center.

So, I've had a great deal of experience in injuries to the spine, in assessment, but also in teaching others how to evaluate that. But because I did pain management for such a long period of time when I evaluated an MRI, I looked for injuries to soft tissues and soft tissue abnormalities. I also noticed a lot of my colleagues evaluated the disc and realized that initially it was the facet joints that really were the thing that we knew were abnormal with post-traumatic imaging.

Then we got into the disc and forgot about the facet joints. But in so doing, we forgot about just basic soft tissue injuries.

Once we remembered that soft tissues are important and that in imaging with MRI, sometimes we don't appreciate the amount of abnormality in the soft tissues because we put patients in the most comfortable position that we can for CT and MR. So that we can image them without motion. But when we do that, we're not assessing the possibility of instability as we do with VMA®.

I've been shocked at the number of abnormal findings I've been able to see and therefore protect the patient from unnecessary or unrecognized, potential injury with manipulation of the spine or adjustments. This has been really beneficial to post-traumatic patients.

Dr. Scott Tauber:

You bring up a great point. With MRI, patients are encouraged to lay still as possible, and if you're looking for a motion injury, it's probably not going to happen with the patient completely still and encouraged not to move at all.

How many VMA® tests approximately have you evaluated over the years?

Dr. Bernard Landry:

Probably over the last three years, 2,000 to 2,500 studies. But I also go back and review the initial reports again, going back and re-bracketing the vertebral bodies, sometimes I can reassess it better. But what I've been struck with the VMA® is the reproducibility. It's consistent. And when we try to do the other options, ***DMX, digital motion x-ray or passive and active range of motion radiographs that doctors do in their offices, I find that it is not as reproducible as the VMA®. The VMA® has been very reproducible.*** In fact, I'm seeing pretty much the exact same numbers every time.

Minimal change 0.01 change, not one degree, but 0.01, degree of translation. It's been very consistent and it's not subjective. It's an objective measurement. There's no subjectivity. There's no chance that one radiologist or one spine surgeon or one chiropractic physician can look at that and measure it differently than the next person. And then you get into disagreement to the significance of the translation or angulation. This is a consistent non-subjective reproducible modality that is so reproducible that treating physicians, spine surgeons and neurosurgeons rely on, to plan their therapy.

Dr. Scott Tauber:

In the past, the standards have been flexion and extension, radiographs or x-rays, and you described there's a lot of potential for inaccuracy. If we took films on a patient on Monday and brought them back on Wednesday and did the exact same flexion and extension, there probably would be a significant amount of variability. But with the VMA®, we're able to eliminate that significantly. And as you mentioned down to 0.01 millimeters.

Dr. Bernard Landry:

Yes, and what I didn't bring up was the possibility that a different technologist takes the x-ray. ***Now you've brought in the subjectivity of variability in the person obtaining the image, the VMA® doesn't change, the machine doesn't change the angulation, the degree of flexion and extension is documented, and it does not change. It can't change.***

Dr. Scott Tauber:

You mentioned MRI, and obviously that's standard. It's been around for many years and it’s the go-to technology. What are the top three or five things that MRI actually looks for? What is MRI going to show or tell us?

Dr. Bernard Landry:

What MRI does basically allow us to, with a great deal of sensitivity and soft tissue resolution, evaluate soft tissues, the intervertebral discs, the ligaments, anterior and posterior longitudinal ligaments or interspinous ligaments. We can see if they're abnormal, they will have a different signal, they'll have a different amount of water.

The problem with MRI in evaluating the spine and its soft tissues is the ligaments and tendons and the cortical bone of the vertebral bodies. They bind the hydrogen so tightly that when you put someone in a magnetic field and you stimulate or you excite that proton, they don't get excited. In other words, they appear dark or black in all sequences.

You can't discern is it bone, is it disc annulus, is it a ligament, posterior longitudinal ligament, it's difficult to differentiate those. An MRI though it's very sensitive in soft tissue assessment, sometimes it's not specific.

There are a lot of ways to evaluate the spine and ligaments, but VMA® lets us know that we need to look differently at the spine, add another modality to assess the integrity of the spine and the soft tissues, to then determine whether the patient has a disability now and a future disability.

Dr. Scott Tauber:

It's important that you mention those other tests. I go back to, none of those are motion tests, and none of them can really, and correct me if I'm wrong, quantify the ligament. They can identify it, but they can't put a number on it, right?

Dr. Bernard Landry:

There's no quantification. What you'll see in a lot of reports, there's mild, moderate, severe, there's extremely severe. Different interpreters will use different words. There's been some standardization in the literature, spine societies. But it's not quantified. And we can quantify it with exact percentages based on the literature and the AMA guidelines.

That’s important, to be able to then assess somebody, to go ahead and determine whether they have it, what is the DRE, the diagnostic related estimate. We know it’s established in the AMA fifth edition. This allows us to do that. VMA® does, what the other modalities don't. And you're right, there's no motion. In a static image, we get static information.

Dr. Scott Tauber:

Of course, if somebody says it's a moderate ligament, what does that mean? And what does that do for treatment? As a treating provider, what do you do with that information as opposed to somebody that has a 3.5mm or 3.6mm translation? Which would be a surgical consultation.

Dr. Bernard Landry:

You're right and every radiologist has that conundrum on plain films, CT, MR, to the orthopedic spine surgeon, or the neurosurgeon, the word mild to them, they actually might look at that same image and say, it's moderate.

There's the subjectivity coming into the nomenclature we use, and it's not standardized. ***If I can give somebody a report that gives a quantifiable number that's reproducible time and time again, and it's based on the literature and standards already established by the AMA, then that's an actionable imaging modality.***

Dr. Scott Tauber:

That’s a great point. You're doing an objective test, objectifying an injury and you're giving it a heavy dose of subjectivity when it comes to reading. In the past, when somebody mentioned video fluoroscopy, if they do any sort of PI especially, providers minds will race right to DMX, that VMA® is the same as DMX. Of course, it’s not, but what are some of the limitations related to DMX when identifying spinal ligament injuries?

Dr. Bernard Landry:

Well, ***in DMX, you've had a problem with abnormal motion. In acquiring it, you have some variability, so you're not consistently reproducing or depicting the abnormality.*** Limitations include that a lot of referring physicians don't really take it seriously. I've noticed some of them say, okay, thank you for the report. But they look at the film in their own office and they don't see what it is. It really doesn't assess the laxity. If the patients stop their motion when they feel pain you're not getting a true assessment of the presence or absence of instability. Therefore, you're limited by the patient's ability.

VMA® will make sure that we're fully evaluating that patient's flexion, extension, and lateral bending to include the pathology, to demonstrate it. Whereas when left to the patient themselves in DMX, they likely will stop as the body wants to protect itself. With DMX, I see that limitation plus the fact you must establish a good radiation dose in order to take a diagnostic image. I find when patients move with DMX, I noticed that the image quality changes.

You're consistent with the VMA®, I'm noticing that we've got consistent radiation, good image quality, which allows us not only to determine the stability and instability possibilities, but also to diagnose other clinically unrecognized issues such as a tumor perhaps in the bone itself, or adjacent bone or erosion of bone from other conditions.

Dr. Scott Tauber:

A couple of other things that I've noticed about DMX when compared to the VMA® is the patient is still freeform bending. It's basically like they're doing an x-ray, which we already talked about a patient doing all kinds of different motions just to bend. Correct me if I'm wrong, but with DMX we're not putting any sort of quantification on there.

Dr. Bernard Landry:

When we move, we might incorporate other adjacent structures to assist that because of pain or disability. You might have rotation, more rotation on flexion. When you look at the lateral view with rotation, it's difficult to determine subluxation because you're seeing the posterior cortical line in two different lines. The right and left cortical line, posterior and anterior cortical line. So which lines do you measure? There you have the uncertainty of measurement. Even if you try to quantify, you're limited by motion degrading the image.

Dr. Scott Tauber:

Another question sometimes we hear providers say, I diagnose using a cine lateral view. Do you have any thoughts about that or providers that try and do that?

Dr. Bernard Landry:

Two words, non-reproducible results. Because it's inconsistent and it's not reliable. You're not quantifying anything. Patients are tickled that you're doing more than just a standard x-ray. But what information are you gleaning from that?

I have not had much success in assessing, reviewing those, and then looking at the films that I've done in my office, and then comparing that to the MRI findings and then ultimately to a VMA® study. ***I think providers should really evaluate with VMA® because it's reproducible, quantifiable and consistent.***

Dr. Scott Tauber:

How does the VMA® in technical and non-technical terms determine spinal instability? How would you describe the way it looks for spinal instability?

Dr. Bernard Landry:

The way we look at it is, we assess both angulation of the spine in flexion, extension, lateral bending, and looking at vertebral translation. One vertebral body is relative to the other. We know that the posterior, anterior cortical lines in their spinous line at the base of the spinous process, spinal laminar lines should be consistent. You should be able to see no change from C1 all the way down and T12 and down to S1 in flexion, extension and lateral bending.

The VMA® allows us to look at it and say, there is a step off, and the step off is measurable and reproducible and it exceeds 3 millimeters or 2 millimeters or 4 millimeters. Quantify that and then correlate it with the patient's symptomatology, the presence or absence of radiculopathy, neck pain or low back pain.

I should have stated earlier in talking about MRI, you said disability and about patients having accelerated spinal degeneration.

A lot of times we evaluate patients subsequent to their injury months later, and the argument's always, well, it's a degenerative spine, the disc is already losing signal, it's losing water. The ligament is thickened, that is going to happen. Some people heal better than others. Some people heal more slowly than others. ***But VMA® will show you there is still instability or that injury, more likely than not, occurred with the motor vehicle accident, falling downstairs on the job, slipping on something in a mall and landing on your back.***

Even later you're seeing the result of that with instability of the spine because the ligaments and the tendons, etcetera, are not normal, they've degenerated.

Also, you're seeing with VMA®, the ability to look at level by level. It's rare for an acute injury to affect every level of the lumbar spine and every level of the cervical spine, though some people want to say that if 5 levels are affected in the lumbar spine or 4 in the cervical spine, this person's 75 years old and this appears degenerative.

Usually in injuries after trauma, it's localized one level, two adjacent levels, but rarely more than that. The VMA® will show instability angulation deformity at a couple of levels, but not at all. The examples you showed were C4/C5 and C5/C6. The levels above and below are normal.

That's more likely than not going to be related to an injury, to a focal injury, to a discernible injury rather than long living life changes of the spine that you hear a lot of people want to say.

I hear that all the time. They want to argue with me that this is all because the person's 70 years old, but when it's localized, I tend to say no, I would expect more levels to be involved, not the one. ***The VMA® will show that,*** and it will reproduce that and will get quantification of the amount of subluxation, angulation instability and translation.

Dr. Scott Tauber:

Those are great points and clinical pearls. When I showed that example of 3.5 and 3.6mm, that's the threshold for permanency, but what could be considered significant spinal instability in your experience?

Dr. Bernard Landry:

I have to rely on the referring physician who's relating to me the results of any testing. ***I've found that even more subtle, 2 millimeters, 3 millimeters, may in fact be significant for that particular patient.*** I think 2 millimeters to me is something I would want someone to really look at that patient further, certainly in the cervical spine. In the lumbar spine 2.5, maybe 3mm is less than the numbers that most people talk about, which is 4mm.

Dr. Scott Tauber:

Why should providers such as a physical therapist, chiropractor, pain management, or anyone working with the spine refer for VMA® testing? How is it going to influence the treatment decisions of these providers based on a positive VMA® finding or result?

Dr. Bernard Landry:

Talking with the spine surgeons, when I see a result that's pretty significant to me, there is abnormal translation and it exceeds a number, you know, certainly 3.5, 3.6 millimeters, I'm going to certainly call a referring physician and say, Hey, this one's a pretty significant abnormality.

The chiropractic physician's going to need to know that any sort of manipulation or adjustment may actually cause more harm than good. This is a case where it's a no-touch lesion and the neurosurgeon may have to, in fact, stabilize the spine, externally or internally, put in particular screws or rods to stabilize it, because it’s an unstable spine.

With the VMA® it has a “red light” that goes off and phone calls are made so that this is a significant abnormal finding. The chance of spinal cord injury or nerve injury stretching with that significant amount of motion, I certainly want to stabilize that spine, and I'm going to have to let somebody know that. The patient is going to be treated appropriately and their spine's going to be protected with this information.

Dr. Scott Tauber:

Are you aware of any other diagnostic available out there that does everything the VMA® can do or does?

Dr. Bernard Landry:

No, I mean, it's the ability to quantify the abnormality. Everything else has a static image. We know that this is abnormal motion because of the ligaments, and this is showing it, demonstrating it, quantifying it, as opposed to just stating the other modalities say, this is likely present. We say it is present with VMA®, which is something that is actionable. The doctors can take action on that without questioning whether or not it's real.

Dr. Scott Tauber:

I have an acronym, I call it SWAG, which stands for scientific wild-ass guess. Sometimes when you don't know, you just SWAG it and you hope for the best. In your time reading VMA®, just in your experience, have you seen it impact PI cases from a diagnostic perspective?

Dr. Bernard Landry:

What I've seen is attorneys not being able to wordsmith in a deposition a subjective opinion. When they get an objective assessment like VMA®, there's nothing that I can say, there's nothing they can ask me. I just refer back to the image, I refer back to the quantified measurements that are not refutable.

Usually, my deposition stops immediately. Then what I'm told is a lot of times discussions for settlement occur because again, there's no more subjectivity, there's no more, he said, she said, this IME said this.

There's a patient sitting there being bounced back and forth, ***when in fact they have an abnormality that we've proven with VMA®*** and we know what the disability is, and long-term disability assessment likely is based on the measurements and based on the literature.

I think the attorneys would benefit, both the defense and the plaintiffs because this happened, this is the result of what happened, this is how it affected this patient and therefore let's move forward and let's handle it in the appropriate way.

Dr. Scott Tauber:

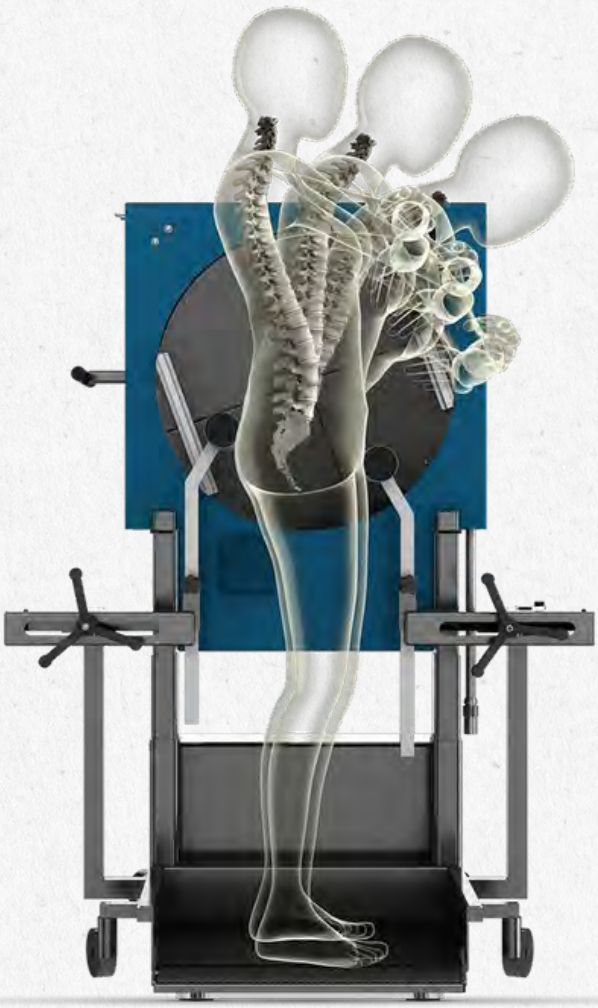
You eliminate opinions. Everybody has an opinion, and you go from an opinion to objective. When it happens to somebody else, it may be questionable, but when it happens to you, it's real. When you're the patient, it's real. Is there anything else that maybe I haven't asked that you just want to tell our audience about the VMA® or the importance of the injury and why they really should work this into their natural course of case management for Personal Injury and other patients?

Dr. Bernard Landry:

No, I think we've pretty much covered everything. ***It's the segmental instability that we can assess now and really raise people's awareness*** of that. We can look at abnormal MRIs, plain films and CTs as physician radiologists and what we've always said for years is nothing's really changed.

MRs have gotten better, soft tissue resolutions are better, the modality is better. Ultrasound for soft tissue injuries is better than it used to be. But what we hope to do ***with VMA® is to confirm and to give a quantification as to the abnormality***. We just need to make people aware that this is available.

It doesn't take those other things away from the diagnostic armamentarium, but it compliments it. Then it quantifies those abnormal findings, which may or may not be demonstrated as well.



On a static x-ray, static MRI, we put patients on their back, who lives their life on their back?

No one lies flat on their back and lives a life, well, almost no one. We have to have motion. We're, standing up, reaching, twisting, turning, driving a car. You can't drive a car without moving. ***VMA® allows us to assess a living position, a standing position, a flexion extension position, and quantify the presence or absence of instability translation and angulation.***

VMA® ***contributes to the evaluation, it should be any injury not necessarily just a significant motor vehicle injury*** or a slip and a fall. I've been shocked at the number of abnormalities I'm seeing in young people with this technology that I probably wouldn't have seen on CT or MRI.

They had a subsequent VMA®, I was really surprised. I always go back and look at the image and say, what did I miss? And lots of times I don't see what I missed, because the patient was comfortable. We, we tell our technologists, make them as comfortable as possible so they don't move so we can get a good quality image. I think people just should be aware of what this is able to show and in treating their patients.

Dr. Scott Tauber:

You're absolutely right. It's about, capturing, identifying, documenting, objectifying, quantifying a different injury that many providers just don't look for, and that's important.
Thank you so much Dr. Landry, we appreciate your time, your expertise, your knowledge, your insight, everything.