



Myogenic Thoracic Outlet Syndrome –

Ref 292

with Simeon Niel Asher & Dr. Bob Gerwin

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TRANSCRIPT

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Steven Bruce

Good afternoon and thank you for joining us for the second of this week's live broadcasts. My guests today, joining us by video link from Tel Aviv and from Baltimore, and they are respectively Simeon Niel-Asher and Professor Bob Gerwin. Now Simeon, I'm sure you know, is an osteopath. He's made his name, really in treating frozen shoulder and on the topic of trigger points. Professor Gerwin, on the other hand, is an MD, he's a neurologist from Johns Hopkins Medical School out in Baltimore, and he is a world expert on trigger points and has used them to great effect in his many years in clinical practice. Between them they have also run a number of face-to-face courses on needling around the world, including right here in the APM studio, and in fact, they're running another one here in May this year. What's more, they have developed an amazingly helpful app which I'm sure we're going to hear more about as we go through things this afternoon. So gentlemen, great to have you with us. Simeon, I think you were going to lead off, weren't you, with sort of an osteopathic or a physical therapy take on this before Bob does some of the scientific stuff.

Simeon Niel-Asher

Yeah. So first of all, thank you again for inviting us in, it's always a pleasure.

Steven Bruce

You're very polite.

Simeon Niel-Asher

We're looking forward to the course, the last course we felt went quite well. But that was only the start. Hopefully, the next one will be even better.

Steven Bruce

Sorry, I have to take issue with you there. The last course didn't go quite well. The last course went amazingly well, the feedback was astonishing.

Simeon Niel-Asher

Okay. Look, Bob and I have come to talk to you today about thoracic outlet syndrome. Now as an osteopath, when I was at college a lot was spoken about the first rib, elevated first rib. And, of course, I love doing the prone side bending rotation HVT of the first rib, that very satisfying manipulation, and it does actually improve for me, once we've screened the patient properly, symptoms of thoracic outlet syndrome, but of course, the question is, is it true thoracic outlet syndrome or is it something else? And really, what are we doing when we're doing the HVT? So clearly, we're having an effect on the scalenes, that we all agree on. The anatomy of the scalenes is the anterior and middle scalene start on the first rib and the posterior scalene on the second rib. And the brachial plexus does go through it, I'm not going to go into the neurology, I'm going to save that for Professor Gerwin. But one of the things obviously, that I've been passionate about is trigger points and trigger points make the host muscle less efficient, they make it fatter, they shorten it and they can have a kind of compressive effect, a watershed effect, on the vasa nervorum and also on the plexus itself, plexopathy. So certainly, from an osteopathic perspective, assessing it properly, getting that first rib moving, looking at the whole thoracic spine. But the question is, is it true thoracic outlet, what's true thoracic outlet? And I'm happy to pass it over to Bob, just to say that when Bob and I were talking about this, he said to me that for the longest time one of the most

commonly performed operations in America was removing the first rib. So of course, as I said, the screening, Adson's and the Roos procedures. And with that, I'm going to pass it over to Professor Gerwin.

Bob Gerwin

Oh, thank you. First of all, Steven, thank you for inviting me to join you today. We're going to talk about thoracic outlet syndrome, which is a topic that really has a great deal of controversy associated with it. I'm going to show the first slide, which is simply the title slide, but thoracic outlet syndrome really is a problem of shoulder, arm and hand pain. And associated in true thoracic outlet syndrome are neurologic abnormalities related to nerve compression, nerve entrapment, resulting in loss of sensation, weakness, and atrophy. So the clinical diagnosis of true thoracic outlet syndrome has nonspecific symptoms of pain in the shoulder, arm and hand, nonspecific because they occur in other conditions. For example, in a non nerve compression condition and an autoimmune disorder of the brachial plexus called Parsonage-Turner syndrome, you will get pain in the shoulder, arm and hand, and with musculoskeletal disorders, you get pain in the shoulder, arm and hand. So those are not specific. But in thoracic outlet syndrome, the specific symptoms are neurologic: paraesthesias, sympathetic irritation causing Raynaud's phenomenon, weakness, sensory loss, and ultimately atrophy.

Steven Bruce

Bob, can I just ask a quick question? Can you just tell me what Parsonage-Turner is?

Bob Gerwin

Parsonage-Turner syndrome is an autoimmune disorder which affects some or all of the brachial plexus, usually on one side. What triggers it is unknown, why it's localised to the brachial plexus is unknown. It presents usually with pain in the shoulder and the arm, with sensory loss in the hand, there may be weakness associated with it. It is not steroid responsive, but it is auto immune. And it is clearly not a nerve entrapment syndrome. So it is simply another brachial plexopathy or brachial plexitis, if you will, that is neither caused by muscle trigger points nor caused by nerve entrapment. And the nerve entrapment is really what I'm going to be focusing on in the next few slides. So this slide is simply a picture or cartoon of the anatomy and at the top in the neck, you see the arrows pointing to the anterior scalene muscle, the middle scalene is hiding behind it. And then you can see the clavicle and you can see the first and second ribs and you can see the pectoralis minor muscles that run from the ribs to the coracoid process of the scapula on either side. And I think if we then look at this a little more closely, in the figure on the right side, you can see where it says A, there's a space between the anterior and middle scalene muscles. And you can see the nerve roots from the cervical spine passing between those. Then at B, you can see the clavicle and below that is the neurovascular bundle and below the neurovascular bundle is the first rib, so that the neurovascular bundle passes between the first rib and the clavicle. And C is the pectoralis minor muscle and the neurovascular bundle passes between the pectoralis minor muscle and the thoracic cage. Or if you will, it passes underneath, below the pectoralis minor muscle. And this anatomy is helpful in understanding the concept of true neurogenic thoracic outlet syndrome, where nerves are entrapped. There is a vascular thoracic outlet syndrome that we're really not going to talk about, where the compression is in either the artery or the vein but not so much the brachial plexus. There is a traumatic form of thoracic outlet syndrome which is really caused by a fracture of the clavicle with a malunion which causes a large callus to form that compresses the brachial plexus. And finally there is a disputed, which is everything else, if you will, including what I call myogenic thoracic outlet

syndrome or thoracic outlet syndrome of muscle origin. Just to spend a moment on true neurogenic thoracic outlet syndrome, it is almost always associated with a cervical rib, which is a long transverse process of the C7, and you can see that in the X-ray image on the upper right of this part of the screen. And it is very often associated with the ligamentous band that goes from the tip of the cervical rib down to the first rib. And the brachial plexus then is draped over the cervical rib or draped over the ligamentous band, and the lower fibres or the lower elements of the brachial plexus to the cervical roots are then stretched and stretched to the point they become dysfunctional. So true neurogenic or neurologic thoracic outlet syndrome is not common. It occurs more in women than men. You may see it in women, or men for that matter, with sloping shoulders, that is a predisposing anatomic variation. As I mentioned in talking about the illustrations here, it's most often associated with a bony abnormality in the cervical rib or the ligamentous band where the lower trunk is stretched over the rib or the band. But again, that is not very common, true neurogenic thoracic outlet syndrome is not so common.

Steven Bruce

Can I just ask about that, Bob? In your surgical history, when you get cervical ribs would you remove the whole cervical rib or just remove the ligamentous band?

Bob Gerwin

Well, really you could remove the cervical rib, but what you really do is remove the ligamentous band, and you usually will remove the first rib. And that speaks to the relationship of the scalene muscles to the first rib, which really doesn't speak to the ligamentous band or the cervical rib. The answer your question is yes, you would certainly remove the ligamentous band and the offending cervical rib.

Steven Bruce

What do you do with the scalenes?

Bob Gerwin

Well, you have to do a scalenotomy when you remove the first rib. So you basically disconnect the scalene muscle from its connection to the first rib, and it no longer attaches to anything. So you just basically do without it. There is a blending, if you will, of neurogenic and what I call myogenic. I have to say that I'm probably the only one in the world to use the term myogenic thoracic outlet syndrome, although I've tried to correct that, meaning that this is the thoracic outlet syndrome related to muscle problems. And they arise in three out of these four sites that are on the screen. You have two scalene muscles attaching to the first rib, the anterior and medial scalene muscles, and between them is the interscalene space. Now if you have a trigger point in a muscle with a tight band of muscle that shortens the muscle, the volume of that muscle has to remain the same, muscle being 75-80% water, you change the shape of a vessel, but the volume is the same. So if you shorten the scalene muscle then the cross sectional diameter has to increase, so the muscle gets thicker. And you if you have trigger points in the anterior and medial scalene muscles, you can squeeze or obliterate the interscalene space. Well, that space has the brachial plexus elements, it has the proximal nerve roots from the cervical spine passing through it, so those nerves are compressed. The brachial plexus passes under the clavicle and above the first rib. So if you take the scalene muscles and shorten them, and the anterior and medial scalene muscles are attached to the first rib, you elevate the first rib, bringing the first rib up against the clavicle and then you compress the neurovascular bundle elements that passed between the clavicle and the first

rib. The final place of nerve entrapment that's related to muscle is the space underneath the pectoralis minor muscle. What we call the retro pectoralis minor space. And when you raise your arm or abduct or elevate your arm, you're stretching that and we'll see that in the next the slide after this you'll see that hyperabduction syndrome. So those these are three places where muscle trigger points will cause a nerve compression or a true, if you will, neurogenic thoracic outlet syndrome, which is not related to a cervical rib and which is not related to a ligamentous band.

Steven Bruce

I know we've got a lot to get through, Bob. I'm sorry, the time delay makes it difficult asking questions like this, but somebody did ask earlier on, Atsuko asked, how do you distinguish between vascular and neurological thoracic outlet from the symptoms?

Bob Gerwin

Well, the vascular thoracic outlet syndrome is associated usually with ulceration in the fingers and embolus. You get flame shaped hemorrhages underneath the fingernails, you get small ulcerations in the fingertips for an arterial thoracic outlet syndrome and you will also get pain on use of the arm. You get essentially claudication symptoms. For venous entrapment, you get swollen veins, edoema. So that's an entirely different picture. It may be present concomitantly with neurologic symptoms, but they often occur by themselves. So when you have muscle involved, or what I call myogenic thoracic outlet syndrome, you have a cause of neurovascular compression, as I mentioned in the interscalene space, in the space between the first rib and the clavicle, and the space underneath the pectoralis minor muscle. But the other and I think much more common cause of thoracic outlet syndrome symptomatology causing pain in the shoulder but without neurologic symptoms is a mimicry of thoracic outlet syndrome where the only symptom is pain, and it's caused by referred pain from trigger points in any of these 26 shoulder related muscles or in the scalene muscles in the neck. And we'll see that in the final slide. The present slide simply shows the anatomy a little bit more clearly. In the left-hand picture under the heading interscalene compartment, you can see the two scalene muscles running from the neck down to the first rib, the clavicle has been removed here, you can see a cervical rib attached directly with a short ligamentous band to the first rib and you can see the artery with a post compression delatation, an enlargement of the subclavian artery. There is no nerve bundle shown in that left picture. In the right cartoon under costoclavicular syndrome, you can see the elements of the brachial plexus as they go between the first rib and the clavicle. And then you can see that if you elevate the clavicle by the scalene muscles shortening and pulling that clavicle up, and you can see the two scalene muscles in that right hand cartoon. So you can see how the neurovascular bundle can be compressed in the costoclavicular space. In this cartoon, you can see the neurovascular bundle as it passes beneath the pectoralis minor muscle. And as you raise or abduct the arm, you can see how that neurovascular bundle will be compressed under the pectoralis minor muscle causing what's called the hyperabduction syndrome. But I think what most of us will see is illustrated in this slide that simply brings together many of the muscles that control the shoulder. I do not intend anybody to look at each picture and try to dope it out, figure out what it is. But using the technology from the Trigger Point 3D programme that Simeon has developed you can see that referred pain patterns from these muscles will reproduce all or part of pain in the shoulder and in the arm that you will see with a compression of the neurovascular bundle. So you can see pain in the proximal shoulder, pain down the arm, pain into the hand. And since trigger points usually involve more than one muscle, you can see how a combination of trigger points in a number of these muscles will produce a

pain syndrome that will mimic thoracic outlet syndrome. You'll also get with trigger points transient weakness which goes away when you get rid of the trigger point, but you do not get the sensory loss or atrophy the way you get with true neurogenic thoracic outlet syndrome. So that in conclusion, I would say that the true thoracic outlet syndrome is rare has neurologic signs of sensory loss, weakness, sympathetic nerve irritation, known as Raynaud's phenomenon. There are objective laboratory abnormalities, MRI scan, and electro diagnostic testing. And they're often associated with cervical rib, or trauma such as the fracture of the clavicle with a malunion and callus formation. But myogenic thoracic outlet syndrome is not rare, it is very common, it's associated with trigger points. There are no neurologic abnormalities unless you have significant entrapment of the neurovascular bundle in the interscalene compartment or in the costoclavicular space or under the pectoralis minor muscle. And all the laboratory studies, MRI scans, for example, and electro diagnostic testing is normal. And the treatment for the myogenic thoracic outlet syndrome is to treat the trigger points either by stretching or lengthening the scalene muscles, or by inactivating the trigger points. So that in a nutshell is the thoracic outlet syndrome. Now, I will tell you just a very brief anecdote about the acceptance of myogenic thoracic outlet syndrome. I was at the first Aspen conference on the medical problems of musicians and dancers. This is many years ago, and they had the folks from the University of Colorado, both the neurologists and the thoracic surgeons, there talking about thoracic outlet syndrome and they made the point that this was rare and that the most common problem was disputed, which is what I would call myogenic. And I got up and I made the comment that much of what we see is related to muscle and not nerve compression. To which all of the ballerinas present at the conference, and there were many applauded. but the neurosurgeons and the thoracic surgeons looked at me and said, a) you're crazy and b) this is a highly controversial disputed topic. So the neurologists and the thoracic surgeons went out to lunch with each other and I went out to lunch with the ballerinas.

Steven Bruce

Sounds like a win to me.

Bob Gerwin

They appreciated the problems of muscle because they deal with muscle pain all the time and they're aware of these issues. And Simeon, you treat this manually and with needling?

Simeon Niel-Asher

Absolutely. You know, there are two manual techniques that we employ, trigger point techniques. One is called inhibition compression and the other one's called deep stroking massage. I'm just wondering if it's possible to try and share my screen.

Steven Bruce

While Simeon is trying to work out the technology, we could be here for a long time. Bob, you talked about this mimicry of true thoracic outlet syndrome, does that mean that people are having scalenotomies and first ribs removed unnecessarily?

Bob Gerwin

Well, at one time, the answer was absolutely yes. As Simeon mentioned, in the 1960s removal of the first rib was the most common surgical procedure performed in the United States. Sort of hard to believe that.

That was before the era of MRI imaging. Now I think you really want to look for anomalies anatomically before you do that, however, I still think that in many of the cases where pain persists, and I think it's because people are not being treated appropriately, they're missing the muscle component. And I think they don't understand the role of trigger points in the scalene muscles for example. There's a tendency if you can't get rid of it with what they call standard physical therapy, which does not involve trigger point treatment, and it persists, I think the tendency is then out of desperation you go ahead and you do a first rib removal and a scalenotomy and release the anterior...

Simeon Niel-Asher

I'm going to jump in now just quickly. I can't figure out how to share my screen. However, one of the interesting things about the scalene muscles is that the maps that Travell and Simons developed, getting trigger points can mimic C5/6 radiculopathic pain. So there there's a kind of confluence of symptoms that you can get from the trigger points, you can get the myogenic sort of compression symptoms and you can also get referred pain that can mimic C5/6 radiculopathy as well. I actually am treating someone that had a scalenotomy at the moment. And I think the other thing that is important to say with the scalenes is that we always have this relationship between agonist and antagonist. So you're going to have some sternocleidomastoid problems, if you're going to get the scalenes, also the upper trapezius, there's this kind of triangle between the three muscles. Remembering that the middle scaling as the most middle part sits on the vertebral bodies. So with the trigger point work, we're always looking at, I'm sure Bob will agree, it's never in isolation. And then just to pick up one other thing, which is absolutely what I see a lot, is this first rib elevation and this is with the pec minor clavicle. Of course, pec minor comes from the coracoid process, quite next to the short head of bicep, short head of bicep, coracobrachialis. So, we're always gonna get with a pec that's tight as well trigger points there, compression of that neurovascular bundle. I think Bob calls it like a double crush. So we're getting the interscalene space, getting bits kind of under the pec minor, retro pec minor. But again, not to treat it in isolation.

Steven Bruce

Simeon, we had a question from, it says Anto here. Could there be muscle atrophy due to nerve entrapment by pec minor? Or other muscles, I guess?

Simeon Niel-Asher

It just depends on the degree of nerve entrapment, doesn't it? Depends how far down that sort of axon or whatever is being compressed. Generally, as I understand it, Bob's gonna correct me, I'm sure, pain is the first symptom, or paraesthesia after that, and then of course, weakness and the motor component of the nerve has to be compressed for for weakness and muscle atrophy.

Steven Bruce

Yeah, you were talking earlier, about vasa nervorum being affected. I wonder what the overall effect of that might be?

Bob Gerwin

That certainly leads to nerve damage. But it's an interesting question about the pec minor because with scalene muscle trigger points and obliteration of the interscalene compartment, the compression of the neurovascular bundle is more constant. That's also true of the costoclavicular space between the

clavicle and the first rib when the first rib is elevated. But for the neurovascular bundle passing beneath the pectoralis minor muscle. It's really aggravated when the arm is abducted. So it's really much more intermittent. I can't say that I've actually ever seen atrophy that I could really relate to pec minor alone. But on the other hand, I can't tell you that we often see pec minor alone without scalenes. Now the one condition where that would be a real problem would be people with forward shoulder positioning and with shortening the pec minor, but more than that, people with chest breathing rather than abdominal breathing. And when you have chest breathing, you use the scalene muscles to elevate the first rib and elevate the ribcage and use the pec minor is one of the many muscle groups to expand the ribcage.

Simeon Niel-Asher

I'll come in on that also, which is I know you had that very interesting conversation with Matt Walden about middle crossed syndrome. So of course, the upper cross pattern, sorry my cat's about to appear, the upper cross pattern involves often the head forward postures, sternomastoid/scalene shortening. And again, can lead to that kind of false thoracic outlet syndrome, which, again goes back, clinically, it's one thing to treat the trigger points, putting everything in context, obviously, is what it's all about. Just to pick up on another thing. Sorry, last thing, we missed a segue, Bob, which is the pain maps that you put up there are from the software, from the app, which is Trigger Points 3D, which we would love you to have a look at. But one of the things about them is that often these trigger points wrap around the body in three dimensions, especially the scalenes, you can have referred pain in the posterior periscapular, anterior. So one of the great advantages with the software is that you're able to sort of look into 3D and turn the body around and look at where those maps are.

Steven Bruce

Yeah, and every time we do a show with you, I do recommend this to people because it is a superb app. And it's a wonderful, wonderful visualisation of how these things happen. And very, very user friendly, I think. And I'll point out to everybody, I don't get any commission on the use of the app either, so that's just a genuine opinion. Can I give you a question or two from the audience please, Simeon? Darcy's asked whether Botox is being used to treat thoracic outlet syndrome, if there's a problem of muscle contraction, do you know?

Simeon Niel-Asher

Yeah, for sure. Botox. We use IMS needling a lot. And in fact, you can needle quite comfortably into the scalenes. I think on our course we even cover the middle scalene. And in terms of dry needling, IMS, we can use that. In terms of wet needling, Botox for sure is one of the ways of treating it. I think Bob's looking keen to speak on Botox. Botulinum toxin, Bob.

Bob Gerwin

No, I think that's absolutely correct. If you can get temporary relief with dry needling or needling with lidocaine, but it tends to come back over and over again for whatever reasons, structural or work related or whatever the reasons are, it tends to keep coming back, and you do not wish to proceed to scalenotomy and first rib removal, you can treat with botulinum toxin, it lasts anywhere from three to six months for this condition. Sometimes as long as a year you get relief from this. It is under those circumstances cost effective. Although individual treatment seems to be high cost in many places. But

when you compare it to scalenotomy and removal of the first rib, it then becomes cost effective. So the answer is yes, botulinum toxin is a reasonable approach.

Steven Bruce

Okay. Kim's asked an interesting one, do you find that the problem is usually on the left side with the first rib? Is there a bias to one side or the other?

Bob Gerwin

I'm not aware of that.

Simeon Niel-Asher

I know in general shoulder problems tend to appear more on the left side. That I know for sure.

Bob Gerwin

If you're a major league baseball pitcher in the United States, it's the pitching arm that's the problem.

Steven Bruce

So it's an activity related thing rather than a bias to one side anatomically?

Bob Gerwin

Right, because if you're activating trigger points in the scalene muscle, anything where you are medially tilt your neck, activating the scalene muscles on one side more than the other.

Simeon Niel-Asher

I know you were talking about ballet dancers, Bob, but of course the other group that you've mentioned, violinists, people that have these occupational postures where they're holding the head to one side. Actually, dentists often work unilaterally only on one side, their head to the side. But for sure violinists. Violas tend to have the worst out of all of it, because that's an awkward instrument to play. And they're the butt of all the jokes in the orchestra always as well. So it's like a double crush syndrome.

Bob Gerwin

I had a practice built on treating dentists to eventually move to working at the head of the patient rather than the side of the patient.

Simeon Niel-Asher

That's very good advice, actually.

Steven Bruce

We did have somebody send the question in earlier on, Simeon, Chris asked whether osteopaths have an adjustment for rib one, please? And I thought, well, we've got Laurie Hartman here in a couple of weeks' time and he'll have 17 different adjustments for rib one but it's outside the scope of this show.

Simeon Niel-Asher

I must say though, it's incredibly satisfying that rib one adjustment. I do it prone. I learned it, Laurie was thankfully one of my great teachers, as is Dr Gerwin, I've been very blessed, but the rib one adjustment when you get it right, it's a very, very useful technique. And of course, there's a question I haven't really run past Bob, you don't have to answer it now, but it seems to me that when we're doing an HVT, a high velocity thrust, we're changing the sort of neuro dynamics to the local reflex loop which is maintaining these trigger points and that somehow we're kind of overloading or we're increasing the sort of temporal summation, if you like, at the sort of axonal level, and somehow, we're getting a reflex change in the scalenes. It's certainly true in my experience that a good HVT on the first rib, sort of C7, here comes Willow, I apologise, a good HVT can actually have a reflex change in the scalenes. You can palpate the difference in the scalenes immediately. So I don't know if you've got any thoughts. HVT, by the way, is high velocity thrust. It's a manipulative technique, as you know, sorry.

Bob Gerwin

I would agree with that. I will also tell you that palpation, one has to be careful, I was told by a physiotherapist from Switzerland that the most common muscle palpated in the neck by Swiss physiotherapists was the first rib. So you have to make the distinction about what you're palpating but yes, you will always...

Simeon Niel-Asher

That's the difference between physios and osteopaths, Bob.

Bob Gerwin

You lower the first rib, and you increase the space between the clavicle and the first rib and you relieve the nerve compression and neurovascular bundle compression.

Simeon Niel-Asher

And again, I think Bob mentioned it before this kind of hyperventilation syndrome, very much connected because the scalenes are accessory muscles of respiration. So we wouldn't use them generally, unless people have chronic COPD, or they have some kind of chest pathologies, or hyperventilation syndrome. And again, the corollary is that if you increase the tension in the scalene, you can elevate the first rib and then you can get into this kind of syndrome as well.

Bob Gerwin

And then Steven, I think one message here is that, when you have shoulder pain and you detect the scalene muscle trigger points as relevant to shoulder pain, or thoracic outlet syndrome, or what looks like it, look at the way the person breathes, and pay attention to the pattern of breathing and see if they're just breathing. They should be abdominal breathing.

Steven Bruce

Yeah. Charlotte actually asked earlier on whether you could tell us why you think one structure would be affected more than another in these points of compression? For example, why neurological compression, not vascular or so on? Is that just anatomical variation?

Bob Gerwin

I think that's correct. I think it's just anatomical variation.

Steven Bruce

Okay. Darcy says, nerve roots tend to cause symptoms when being stretched or tense, just as much as compressed. Is that true?

Bob Gerwin

Yes.

Steven Bruce

Okay. But the problem here is with compression?

Bob Gerwin

Well, with the exception of the cervical rib and the ligamentous band, where the nerves are actually stretched across the ligamentous band to the cervical rib.

Steven Bruce

Okay. And we got a couple of observations came in. Evelyn says that she has thoracic outlet syndrome. It was diagnosed before she trained as an osteopath. She had a scalenotomy and removal of a partial cervical rib on one side and it didn't resolve. So she was offered a sympathectomy, which she refused, and she's still symptomatic. And if she'd known then what she knows now, she'd never had the surgery, but she's looking forward to hearing what you said could be done to improve things.

Simeon Niel-Asher

I mean, coming back to the needling, Bob, of the scalenes. It would seem quite, when you understand the anatomy, quite a dramatic thing to do. But of course, with the proper technique, you can needle the middle and the posterior scalene. I think Bob very cleverly on our course talks about the sniff test to palpate the second rib, how you can actually focus on the posterior scalene. I've done posterior scalene needling and had incredibly good results with that on the second rib as well. So yeah, personally, I think it's always worth trying the non-operative stuff first and it can also be, of course, that after the operation she's got some mechanical dysfunction in the neck where some of the structures are compressing secondary trigger points to that.

Bob Gerwin

But the real question I would have is whether the problem remains pain, which could be trigger points in any of the shoulder muscles radiating referred down into the arm, having nothing to do with the neurovascular bundle at all.

Simeon Niel-Asher

On that point, Bob, and again, forgive me, but one of the things about trigger points is that they're quite complex to remember all the maps. And I've been doing this for 32 years now, sometimes I can't remember all the maps. So it is handy to have some sort of aide memoir, where you can look at these things, we put some of those maps, you'll see them on the slide. But the thing about trigger points is that

often the referred pain map is distal to the trigger point itself. Scalenes is a classic one, you're getting pain into the thumb, pain into the digit. And Bob and I have sat and talked about why the pain maps of trigger points map in these ways. I don't know if you remember, Bob, I showed you the person on all fours and we looked at some of those maps, if you imagine us as a kind of four-legged creature. So in terms of referred pain, I think, as Bob said at the beginning, it might be better to call this neck shoulder arm syndrome, as opposed to thoracic outlet.

Steven Bruce

Well, Simeon, here's a quick case for you then before we close. Wallace has said, I have a patient with swelling in their hands, fingers and thumbs. She describes a fizzing sensation and pins and needles except for the little fingers. Insidious onset, and she's due to have a cervical spine MRI, could these symptoms be some form of thoracic outlet?

Simeon Niel-Asher

I'm gonna answer first. Bob, I'll go first. My instinct is to look at complex regional pain syndrome 1. In terms of CPRS 1 and again, Bob, forgive me, I have a technique that I use on that which involves the scalenes, involves also the subclavius. So subclavius also brings down the clavicle, can also have an effect on that. So I would definitely think worth looking at the scalene and the subclavius, and also some of the other muscles, but I would definitely want to rule out some kind of sympathetic tonus.

Bob Gerwin

I think complex regional pain syndrome is part of the differential diagnosis, but certainly venous thoracic outlet syndrome is a possible diagnosis.

Steven Bruce

Well guys, we've had 475 people paying close attention to you today. And I'm getting lots of feedback through my chat line here saying that everybody's, they've lapped up the anatomy, they love it. They love the theory behind it and everything else. And I can only say thank you very much for your time today. And I'm looking forward to seeing you again in May properly when we get in the studio. So thank you very much. Thank you, Bob. Well, as always, 45 minutes just flies by, doesn't it? Which is why we're running that three-day course in May, of course. There's just so much more to cover than this. Anyway, we're done for today, for this week, in fact. Don't forget that face to face course in May, 19th to 21st. It's going to be all about needling of a large number of trigger points. And one of the things that struck me as we were talking just a moment ago is the safety element of needling. I've done a number of dry needling courses, I've run some needling courses using external instructors and I've heard about others, and I was really impressed with the safety aspects that were taught when Simeon and Bob were here previously. There were really good ways to needle points which other people might regard as quite difficult. So anyway, I've said it before, I'll say it again, this is the best course on dry needling you're ever likely to go on. So whether you've never needed it or whether you've done it loads, you really should consider it. These guys will show you they absolutely nail treatment with dry needling. I think there might be a link on the screen now to the booking page, if not go to the website, and you can still pay in four instalments if it's cash flow that's holding you back. I thought it was three when I announced this a couple of days ago but it's actually four. The course is now well over half full, it's gone up again since Tuesday, so please don't hang around if you want to attend this course, it's brilliant. And before I go, just want to remind you

about the case-based discussion next Tuesday. This one's a lunchtime show. Again, we're looking at headaches and we do have a couple of cases lined up but let us know if you've got an interesting one of your own. We've got a number of experts on the show to help out with differentiation, diagnosis and treatment options, all backed up by the excellent research which emerged from the EdACHE trial. The online course, which emerged from the EdACHE trial is now open, and it's all about building your confidence in assessing and treating headaches. I can thoroughly recommend that. A tiny bit further ahead, 3rd of April at lunchtime, we're looking at diet and cancer prevention. And then on the evening of the 5th, we've got a show which will be all about concussion issues. Okay, that's it. Enough from me, enjoy the rest of your week. And I hope we'll see you soon. Good afternoon.