Academy of PHYSICAL MEDICINE

Transcript

Median Nerve Entrapment Neuropathy in the Forearm Ref 284

Steven Bruce
Simeon is an osteopath eminent in his own right as an osteopath. But he's also well known for his frozen shoulder treatment and the connected hip treatment which is demonstrated on courses, but also for all the work that he's done on trigger points. Joining him though, he pales into insignificance next to Professor Bob going, who is a Professor of Neurology at Johns Hopkins in Baltimore. The two of them have run a course for us here in the UK, I think it was November last year, which was incredibly popular. It was such a good course. And we'll talk about that a little bit later. But today, we're going to be well, not sure we're going to be talking about because I was told it was going to be anterior interosseous syndrome. And now it seems to have morphed into that plus all sorts of other things similar to what we're gonna be talking about, and welcome.

Simeon Niel-Asher
Well, thank you very much. Well, thank you for inviting us. And it's always lovely to share the platform with the doctor go in, I will tell you now, that is my guru. And when we did the course together, they say never work with children or animals on TV, and I never worked with your guru, because I always feel a bit nervous around him. Nevertheless, we we will. Well, we're going to talk a little bit about trigger points and how they relate to sort of nerve, the relationship with nerve or sort of neurology. I think I was just going to introduce how I came to meet Bob and how I got into the whole sort of trigger points story. So I've been qualified 30 years now. So this in my second year university, I had the great fortune of working with one of the professors took a shine to me. And he started to teach me about trigger points, which were fascinating. I didn't put a needle in them really, for many years until I met Bob. So this was sort of manual therapy of trigger points. And I remember we had a patient came to the clinic and I was so excited. I did this deep sort of myofascial release on her sort of iliotibial band, lateral quads, and she came back the next week black and blue, from her hip to her knee. And I thought, Oh, God, that isn't good. So I suddenly realised that actually, these trigger points this deep myofascial stuff is isn't quite so simple. And I refined my technique, I'm happy to say no more bruises. And for many years, I was I was using manual techniques, really. The I had the great fortune of going to one doctor go into courses in the UK, but I didn't really talk to him very much. We sort of briefly spoke after, he was a

little bit more austere in those days. And and then he came to Israel, I have a clinic in Israel. And we ended up doing a workshop together and we've talked on workshops since and listen, when I saw the phenomenon the doctor go in did of putting a needle in in a trigger point. And you're gonna understand I'm pretty into trigger points. I've written books on them and I've taught courses on them and you know, my whole shoulder techniques a trigger point. When I saw that muscle twitch with the IMS, something just I couldn't quite believe what was happening. I thought there's a whole system. That was

Steven Bruce
second Semyon because you said IMS Intramuscular Stimulation. Yes.

Simeon Niel-Asher
Correct. Yeah. And again, we're talking little bit later about the difference. So so so I attended Dr. Goins course. And then we ended up teaching together. And you know, I've ended up so I started working on my sort of interactive sort of 3d software. And I already sort of had come a quite a way forward. I remember we went for lunch, or one of the courses, I was very excited to show, Bob what I was doing, and he loved it. And he said, listen, he said, Could you put videos in it? I said, that that's one of the plans. So we got our heads together, and we put on these, you know, highly, very well recorded for K videos in the software. So yeah, that's, that's how I met doc to go in. And really, I'm very pleased to say we've worked lovely, really well together. And it's really

Steven Bruce
I don't think we need to pick up your credentials or bugs, to be honest, because we were apparently maxed out the server with people joining us for this particular webinar. Hopefully, that's all ironed out now. And everybody's got back into the into the system. But clearly, there are lots and lots of people who want to listen to the two of you. And my initial question was, what are we talking about? Yeah, so

Simeon Niel-Asher
thank you. Yeah, that brings me to the subject. So Bob, and I were talking about, you know, what, what we might share today. And, you know, I've been on a few of Bob's neurology conferences where he talked very interesting about the relationship between nerve pain, nerve compression, myopathy, compression, and, and we got thinking about the median nerve and some of those conditions. And Bob, being a neurologist has a very interesting ideas about how the neurology and trigger points relate. So I'm gonna, I'm gonna hand it over to Dr. Goodwin.

Bob Gerwin
Well, thank you both. It is a pleasure to join you, Simeon and Steven. No, it's interesting to eat to hear how different people came to to have some familiarity and interest in in myofascial trigger points. And in the whole concept of myofascial pain syndrome, and then added to what they've already known about the management of the variety of kinds of pain. And this is true with my own background as a, I would say an orthodox neurologist, practising regular neurological medicine, but being rather flummoxed by a number of different kinds of problems that classical neurology couldn't answer. I remember, one young lady with neck pain, had no idea what she had, I gave her some kind of treatment, which clearly didn't work. And it was years later that I found out that thinking back that she really had a myofascial trigger point problem in her sternocleidomastoid but at the time, I had not the faintest idea. I happen quite by accident, to meet Janet ravel. And when I was introduced through her to the whole concept of, of myofascial pain syndrome and myofascial trigger

points, sort of like a light went with turned on. And I could see many of these neuro muscular pain syndromes that were very difficult to understand became, understand understandable

Steven Bruce
album, hoping that nobody in who's watching these three told who Janet travail is, but she's

Bob Gerwin
sorry, I was going to talk a little bit more about her a little bit later bye. In brief, Janet Treville was John F. President John F. Kennedy's White House physician when when she was in private practice, as a she was a professor at Cornell University Medical Centre in New York City. And she had a office for private practice walked down below street level office on 12th Street in Manhattan. And a friend of hers a physician friend came in with a US senator who had not been able to attend the Senate meetings for seven years. Once John F. Kennedy hobbled into her office and he walked out afterwards, and that big began a long term friendship, she was invited down to the family compound in Florida to treat him. And when he was elected president five years later, he asked her to be his White House physician. She was the first woman, White House physician and the first civilian White House physician, which did not make her beloved among the Admiralty. The traditionally medical care for the president was provided by the Naval medical staff, the admirals and the National Naval Medical Centre. But she became her name became well known because of that, she moved from New York to Washington. And I happen to meet her quite by accident because I happen to move across the street from a dentist, who was treating who was teaching about facial pain to dentist and had gotten asked Janet Treville, to lecture to these people. And he asked me to join and I met Janet travail that way. And she became my mentor. And what I found was that there are a considerable number of neuromuscular syndromes and neurologic conditions, including migraine headache, and we can talk about this a little bit later, but my migraine radiculopathy peripheral nerve disorders, that were either resistant to normal treatments, or difficult to understand and diagnose. And I very quickly saw from my contact with Dr. Ravel, that the concept of myofascial trigger points, particularly the concept of referred pain from trigger points, was extraordinarily helpful in understanding these neuromuscular and chronic pain syndromes. As we thought simula nine talking about this, we thought that a good way to illustrate that relationship would be to talk about entrapment, neuropathies and see the relationship of myofascial trigger points to entrapment. neuropathies. And the reason for that relationship comes from the fact that myofascial trigger points exist in muscle that has developed a an abnormality in which there is a, a well defined, tie tight or taught t au T taught man of muscle, we say contracted band of muscle, but I think that's not true, I think it's adenomatous. But in any case, it's a a hardened band of within muscle that prevents the muscle from lengthening. But it also means that that muscle is shortened and that muscle can constrict and compress other structures. And the one structure of course of interest to me as a neurologist is the compression of nerve. So, clearly, nerve entrapment can occur from a mass of any sort, whether it's a bony mass from arthritis or a tumour as math mass and inflammatory mass, but what is most common I think, is a constriction of the nerve by an overlying muscle. So, when considering nerve entrapments as a as an example of a relationship between myofascial pain trigger points, and an entrapment syndromes, the median nerve entrapment syndrome comes immediately to mind because carpal tunnel syndrome is the most common entrapment syndrome that that we encounter. Carpal Tunnel Syndrome itself is not immediate nerve entrapment by muscle It's an entrapment in the carpal tunnel at the wrist where the median nerve passes under the flexor retinaculum, or carpal tunnel ligament in association with nine tendons to the muscles in the the hand, and the nerve which is rather superficial and this is easily compressed when the tunnel becomes tight for a variety of reasons. Pregnancy which

causes swelling, diabetes, thyroid, hypothyroidism, a number of conditions, rheumatoid arthritis can all lead to compression of the median nerve at the wrist of the carpal tunnel. But the intriguing thing to me as I learned about myofascial trigger points, and entrapment was the fact that you can have immediate nerve entrapment in the forearm as the nerve passes, in close proximity through the two heads of the pronator teres muscle. And this presents a picture which can be mistaken for carpal tunnel syndrome. But it also not infrequently occurs in conjunction with a carpal tunnel syndrome. You can call it a double crush, if you want to use that terminology where the nerve is in trapped at two or more places double crushed in two places. And it explained why some people who had carpal tunnel syndrome and were adequately treated for carpal tunnel syndrome never really cleared completely still had symptoms. And that is because they had immediate nerve entrapment, which was proximal, further up the arm, to the carpal tunnel or to the wrist. And that had been overlooked. And that was fascinating to me to to discover that because that is something which is actually rather easily treated if you could identify the problem. And if you had some idea how to palpate muscle. So just very quickly, to show you some of the anatomy of what we're talking about. I'll show you a slide of have the hand dermatomes because the first symptom of median nerve compression that the carpal tunnel is usually pain in the in the hand in the wrist, and if it gets continues to get worse, the pain may go up the forearm into the shoulder. But there is a sensory abnormality, which is tingling, initially paraesthesia is abnormal sensations in the part of the hand which is innervated by the median nerve. And that is the the thumb or part of the thumb, the index finger, the long finger and the radial half of the ring finger. So the the localization of the sensory abnormality is diagnostic for median nerve and separates that from the ulnar nerve, as you can see in this diagram. Please

Steven Bruce
it's just I've always puzzled about this and having a an eminent neurologist on the show was great because just how well defined are those dermatomes we always draw them with nice distinct lines halfway down a finger and so on, but presumably there is variation between individuals.

Bob Gerwin
Oh, there there, there is some there. There are, is there's some cross innervation between the ulnar nerve or the median nerve, but they're actually that's actually rather rare. And from a practical point of view, when you actually identify sensory loss as opposed to paraesthesia is paraesthesia is or are not that well defined. But sensory loss is very well defined. And it is highly useful to take a pin and ask an individual if the pinprick is sharp on the radio half of the ring finger compared to the older half of the ring finger that that is extraordinarily reliable test. And it's very simple to do. That really is very useful in identifying the the sensory loss. The other feature in carpal tunnel syndrome in terms of sensory loss. And we'll repeat this as when we summarise this at the end of the of this presentation, but the innervation to the skin over the theentire eminence over the base of the thumb of the nerve for that does not go through the carpal tunnel so that in carpal tunnel syndrome, there is generally no sensory loss. In the theentire Eminence the sensory loss is confined largely to the half of it to the to the polymer surface of the thumb, to the index fingers long finger on our half of the excuse me radial half of the ring finger, and the distal portions of the dorsal surface of these affected fingers. So from a sensory point of view, you can pretty well identify abnormalities caused by compression of the sensory nerve as the sensory component of the median nerve as it goes through the wrist now other features diagnostically speaking are to tap the nerve of you if you tap a an injured nerve with a percussion hammer, it reproduces it induces the bear seizures and pain. So you tap the volare surface of the or the Palmer surface, if you will of the of the wrist technique called a tonnelle sign, and you will get the reproduction of tingling

electric shock into the fingers and local local pain. And then if you bend the wrist, if I can show this you can bend the wrist compressing the median nerve at the risk of failing and again, you hold that for 30 seconds or so and you induce tingling in the affected hand. So these are diagnostic signs that help you identify a median nerve compression at the at the wrist. There are other diagnostic studies the most useful one is is electro diagnostic testing, but the patient's become symptomatic well before electro diagnostic testing can identify slowing of nerve conduction through the carpal tunnel. Now the interest in the pronator teres muscle comes because the median nerve passes between the two heads of the pronator teres muscle. So now the pronator teres muscle has a a humeral head, which arises from the medial epicondyle of the humerus, and then inserts on the radius. The other head the the humeral head, by the way, is the largest head then more superficial, the deeper head of the pronator teres is the on our head which originates approximately on the ulnar bone on the ulna, and then attaches to the radius just below the supinator muscle and then the humeral head attaches just below the on our head of the pronator teres muscle so there are two muscles that are distinct that both have the function and you can see for yourself if you have fixed the Osmo and the humerus and you can wracked the pronator teres muscle, you're going to roll the radial bone or the radius over and medially to the ulna. And you'll protonate, the the the forearm, the wrist and then the hand. So, in which the pronator teres is not the major pronator muscle, the pronator quadratus. And the wrist is, but it is a potent assist to the pronation of the forearm. Well, but the main point here is that there are two heads, and there's a space between them. And the median nerve passes between the humeral head and the, on our head of the pronator teres muscle and can be entrapped.

Simeon Niel-Asher
Now income Steve has a question, please.

Steven Bruce
Yeah, I'm sorry. I hate to interrupt your flow because it is fascinating stuff. And everybody we absorbed by the detailed anatomy, which is hugely interesting. But ages ago, Trish sent in a question about dermatomes. And I wanted to put it to you before we move too far on from that. She said that she'd always thought the distal symptoms were more serious than proximal within a dermatome. Is that true?

Bob Gerwin
The distal symptoms more proximal with other hand doesn't have. You're talking about fingers and the and the palm. I think the paraesthesia is, first of all, the diseases and pairs seizures are much more typically typically found in the fingers, which are more says more active in terms of sensation in the palm of the hand. In any case, paying into the palm of the hand and into the fingers is a significant finding regardless. But he I think that it's an it's an interesting question, and I think worthwhile to make the point that the Pharisees isn't this as the issues are primarily found in the fingers. You don't expect them so much in the in the poem. But I think that when you're talking about sensory changes in the in the palm of the hand, you hit you again have to be aware when you're testing the hand, that the thin our eminence is innervated the skin is innervated by a nerve that does not go through the carpal tunnel. However, that nerve to the to the hand actually is part of the median nerve as it goes between the two heads of the pronator teres muscle so the pronator teres muscles can compress the median nerve a when there is a trigger point in the either the l&r or the humeral head, contracting the muscle or to in both heads for that matter, and narrowing that space and and so that when you then activate the muscle and bulk up that muscle by protonating the forearm, the median nerve becomes compressed repeatedly. If you're doing an activity for example, like turning a screwdriver, or repeatedly turning pages in a book or a

manual so that your hand is repeated, the forearm is repeatedly protonated and then you get symptoms of pain. Usually in the volare surface of the forearm, down into the into the hand and into the fingers. If the compression of the nerve the median nerve in the wrist, goes on long enough and is severe enough, you will get weakness of muscles particularly of the flexor pollicis brevis, that's the flexor the short flexor of the thumb and the opponent's publicus so that the test for this weakness is to attempt to touch the tip of the thumb to the tip of the small finger and then you can with the examiner can run the egg and pull their their index finger through the that circle. And if there's weakness in these muscles, you will find that the thumb and middle finger can be easily separated. Normally It's difficult to do when there is compression of the median nerve or the, as it passes through the print pronator muscle and that compression is continues long enough and is severe enough to actually develop nerve impairment, you get the same symptoms as you would in carpal tunnel syndrome. But then you get additional one so you get this because the nerve fibres that are involved are the same fibres that go through the carpal tunnel, but there are also the fibres that do not go through the carpal tunnel, so that you get involvement of the nerves to the muscles, the flexor muscles in the forearm that flex the deep flexors of the fingers and the superficial flexors of the fingers. So that the flexor digitorum become weak so that you cannot flex the distal joints in the fingers. And this leads to a an inability, as we can see in in this slide. Here we have an inability of making an okay sign because you can't flex the distal failings of the index finger when you ever pronator teres induced muscle weakness.

Steven Bruce
Also, anterior cruciate syndrome often burden seen over fit.

Bob Gerwin
Well, you know, it's interesting the carpal tunnel syndrome occurs at some time in one's life in roughly 10% of the population, so one in 10 will have at some point in their life, symptoms of carpal tunnel syndrome pronator Terry's syndrome is much less common. The statistics on that are much harder to come by. I've seen it said anywhere from 1/5 1/10 up to as many as one half of people with carpal tunnel ever pronator I think it's much more likely to be somewhere maybe 20% of people with carpal tunnel syndrome may have a coexistent pronator syndrome. You can also get pronator syndrome on its own. The statistics, the prevalence is much harder to identify because the syndrome is not identified. As as often so, the best statistics actually come from people who've looked for coordinators syndrome and people with carpal tunnel syndrome and in some studies is as high as 50%. But by and large, it's lower than that. Then they there is a syndrome involving the forearm muscles alone, giving weakness to the flexor muscles of the fingers. And that's the anterior Chassidus nerve syndrome, which at one time was thought to be a nerve entrapment syndrome by by muscle. It the pronator teres muscle can entrap that the anterior interosseous nerve leaves the main body the median nerve below are distal to the pronator teres muscle but recent thinking suggests that by and large, the majority of cases of anterior interosseous nerve syndrome arise because of an autoimmune disorder. A variant of parsonage Turner Syndrome with the involvement in the brachial plexus rather than in the forearm. Although I think there are likely to be some cases such as the one that Simeon has told me about, in which the anterior interosseous nerve was selectively involved as a went through the pronator teres muscle.

Steven Bruce
Base based on what you've said there, Lauren sent in a question, saying that he's seeing patients in the past who've been diagnosed with carpal tunnel syndrome by nerve

conduction tests but Tinnell saying was no guessing, does that suggest that maybe it wasn't the carpal tunnel at all?

Bob Gerwin
Well, if you if you do a proper electrodiagnostic study and show that there is a normal conduction time, in the median nerve proximal, both motor and sensory, proximal to the carpal tunnel, there's a delay through the carpal tunnel, then I would say that that has to be carpal tunnel syndrome. If you do a median nerve can nerve conduction velocity test and you stimulate the nerve above the the median nerve above the elbow, then you do it below the elbow, and then you do it below the pronator teres muscle and then you do it across the wrist, then you can do a differential diagnosis and it takes more time more difficult. The clinical symptoms clearly come before you can identify slowing in electro diagnostic tests of nerve conduction velocity. So that the this the patient complained of symptoms is actually more than electro diagnostic testing, a failure to obtain a tonnelle sign I don't know if that is thick. It's a gross physical sign. I think there may be variations you may not be hitting squarely over the media nerve. Buying large I think patient's clinical symptoms are evident before any of these diagnostic signs can be elicited. So I put together a chart here by the way, the top of the line is the top series of three x's is carpal tunnel the middle with all the x's is the pronator teres and the bottom is the anterior interosseous and across the top we have this is our tummies we have pain. We have the sensory loss in the theatre eminence which is only found in the pronator Terry's syndrome because the ADGER interosseous nerve is only muscular and not sensory, the carpal tunnel syndrome as a sensory loss in the fingers and in the radial half of the index finger is indicated pronator teres has that but also has the sensory loss in the phenol remnants of the of the hand. The last column the last vertical column has the motor loss in the ponens polyketides. And then the abductor pollicis brevis which is those muscles required in order to bring the thumb around so the tip of the thumb can touch the tip of the little finger and that you find in the carpal tunnel syndrome but you also find that in pronator Terry's syndrome because the pronator teres syndrome as basically everything on physical finding that you get in the anterior interosseous nerve and carpal tunnel syndrome, but the first vertical column has is the fact that the carpal tunnel syndrome pain complaint is largely nocturnal. So people with carpal tunnel syndrome complain of pain in their wrists, their hand and their fingers at night. People with pronator teres syndrome and anterior interosseous nerve syndrome generally complain of pain. This is the second vertical column complaint of pain during the daytime. And that is a useful clinical historical bit of evidence which helps direct Just so what this chart is an attempt to do is to help you separate pronator Terry's from carpal tunnel syndrome, and anterior interosseous nerve syndrome. So the point I think that I, that semi I want to make from this is that myofascial pain syndrome, can, indeed, lead to nerve entrapments that mimic other neuromuscular nerve conditions. And if you learn how to palpate muscle and you learn how to treat this with trigger point, dry needling, for example, that allows one to quickly treat these, the treatment is both diagnostic because it tells you that you're right and your diagnosis. And it's curious. So, Simeon, you found this to be useful in your practice?

Simeon Niel-Asher
Totally. Thank you, Bob. I mean, brilliant. You know, one of the things that I've seen a lot, obviously, as this mobile phone, use people playing games and using their mobile phone and holding it up, you know, pronating and supinating, all the time. And I'm seeing more of that. I've certainly recently had a patient with a pronator teres syndrome, which responded beautifully, to the needling, I think, Steven, what's really important is that, and one of the things that, you know, we're keen on in terms of education is really being able to identify the anatomy to a very precise level, being able to identify the top band. And I think, you know,

one of the great things with a hands on physical therapists, is that we're able to fill these tight bands in, I'm sure Bob will agree and when we train MDs, they don't, they haven't got the palpatory skills. So in some ways, well, in some ways, you know, trigger points are one of the few platforms where an osteopath and a neurologist can sit together and a physical therapist and actually have a conversation about these things. And as you can see, with the doctor go ins, you know, knowledge base, that he's come to the whole trigger point story through that neurology setting and I've come to it through the osteopathic setting. And, and we we can have that conversation together.

Bob Gerwin
Yeah. My best teachers were physical therapist, osteopaths and manual therapists who knew how to palpate and you are quite right, that of allopathic physicians do not know well, out of pelvis, palpate, and certainly do not know how to palpate muscle.

Simeon Niel-Asher
Yeah, palpate patient, like when we when we work with the doctors is not an active process. You know, it's not about doing it's about feeling. But sorry, over to you, Steve.

Steven Bruce
Hello, I was just gonna say Simeon with the knowledge of anatomy is really refreshing to see that in what Bob was just explaining. Just you've got very little time. I've got three minutes left. The app that you've developed, as far as I recall, gives us a good into introductions as an illustration of that.

Simeon Niel-Asher
Yeah, well, I think the thing is that what we've demonstrated already is that you know, this is a complex subject. And when you come on the courses, especially with the needling, and again, Steven, when we talked about doing a needling course, together, Steven said, Oh, we've had a few needling courses, what's different about yours? And I think it's true to say when we finished our needling course, you said this is nothing like what we've done before. And I think the point is, there is no we think this is the gold standard. This is needling done by neurologist, who was head of pain medicine, if you don't mind me saying so in Johns Hopkins for years. And this is a very different approach. And when you leave these courses, when you when you when you qualify with these needling techniques, it's very easy to forget what they are. The these are complicated things. So we've developed this app together so that when you when you leave the course you've basically got Bob in your pocket. Yes.

Bob Gerwin
Do have that video that shows us the app that shows you.

Simeon Niel-Asher
I can just maybe I'll just do a quick share. I'll see if I can

Steven Bruce
one minutes. I mean, and I know that you take quite a while. But

Simeon Niel-Asher
yeah, so Okay, so

Bob Gerwin

do you have any other questions, Steven?

Steven Bruce
Yeah, we've got a couple of questions, which I think I'll have to send you outside of this and I'll feed them back to the audience in my email afterwards.

Bob Gerwin
Okay

Steven Bruce
Simeon's got a video of the app briefly showing there on his screen. Yeah, well, let's let me I can, I can share a video of the app in the follow up email. The one thing that we ought to point out to people is that for all the reasons you've just explained, we have got you and Doctor going back over here on the 19th 20th and 21st, of May to run another needling course, Intramuscular Stimulation course, and the details of that there should be a shortcode up on the screen while I'm talking. But I will certainly send it out in the email that follows this broadcast. But you know, I was more or less I was an observer on the last course. And it was streets ahead of any of the courses that I've been on before that we run before and that I've heard about from others. And the feedback from everybody on that course, was just fantastic. You know, people coming back to me afterwards saying how it had been a real revelation using the techniques that you've described. So trigger.

Simeon Niel-Asher
Trigger points are a game changer and knowing how to use them, you know, just to finish on this point, which is an osteopath, we have a limited toolbox, and how knowing how to use IMS, not only is it an efficiency in terms of treating and actually delivering treatment, and efficiency in terms of symptom relief, but it's a fabulous tool for the box.

Steven Bruce
Well, I mean, we've got to finish now