

Shoulder

with Simeon Niel Asher
20th April 2020

TRANSCRIPT

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Steven:

Well. Good afternoon and welcome back to the non-working week. Hope you've had a good weekend. We are back now to our lockdown learning lunchtimes of CPD every day of the working week. This week we've actually got two additional broadcasts. We've got one at eight o'clock tomorrow morning and we've got a members only one. It's seven thirty on Wednesday evening, but more about those a little bit later on it being Monday. We've got Simeon Neil Asher joining us again for number three in his series of lectures on trigger points. Today we're going to be looking at the shoulder and subacromial pain syndrome, rotator cuff problems, the shoulder of course being the area where Simeon first became famous. Simeon, welcome back to zoom and to the Academy and you Um fair to say you became famous for frozen shoulder treatment, I think, didn't you? But today we're going to talk about trigger points and subacromial pain and rotator cuff. Is that right?

Simeon:

Yeah. Yeah, because you know, a lot as I've come to explore the shoulder alot, Ua lot of the themes that come up with frozen shoulder, I mean, in fact, frozen shoulder is almost like the end point of all shoulder problems. And then when you kind of unlock that kind of,uenigma, it sort of tells you a lot about how the shoulder works as well. So I thought we'd explore,ucertainly a couple of muscles, especially the bicep love the bicep and the subscapular so, yeah.

Steven:

Okay. So the end of this, we're going to, what will we, what will people have got to take away off the end of this Lecture today?

Simeon:

Actually I don't want to give too much away, but I think that's I hope that they, get a deeper understanding of the role of the bicep for sure and shoulder pain and subscapularis as well, and the role that trigger points the way we can, we can work them through reciprocal inhibition and other reflexes.

Steven:

Okay. Well, having looked at your slides? I'm guessing you know quite a bit about the prevalence of shoulder pain in the population? So,

Simeon:

Yeah, let's get started. So shoulder pain is very common. It's like the second or third most common complaint that doctors see. I would put some, I've tried to put some evidence based here, so one in three people will get it at some point in their life and it's also associated with high morbidity rates, low 50% resolve within six months, 40 to 50% of people that report symptoms for one to three years. In fact we, the adhesive capsulitis or frozen shoulder that can last up to 30 months on average. So the thing about shoulder problems are that they have been very common in the population and they're more common as people get older. In fact, you know, we do a bit on our workshop for the older shoulder and it's something that we tend to see longer.

Simeon:

So as you've got on your slide here, why did, why do people, why are we seeing more shoulder problems and, well, first of all is that they tend to come after the age of 40. So, obviously age, it seems to be that the, the kinematic function of the most joints, especially the shoulder is optimal up to the age of 40. And after that we start to see degenerative changes. It's almost like, you know, that was our, our optimal sort of evolutionary age but of course people live longer. And so obviously we're seeing more shoulder problems. One of the things I put there is this lack of metabolic activity. What we're going to see is we're going to start looking at a bit later proteoglycan aggregate. And what happens is, is that the amount of tendon, and especially type one collagen is laid down up to the age of 18.

Steven:

And we're starting to see some particularly interesting metabolic things with the underloading of tendons now where kids are not exercising like they were. There's computer games on phones. And we started to see sort of tendinopathies from underloading. And of course unloading and overloading is a disaster for tendons. I didn't write it but a 5% sudden acceleration on the tendon can rupture it. The other thing of course is the occupation. And we're going to explore that, and also lifestyle factors. It's a, it's a fact that nicotine, type one collagen will not repair in the presence of nicotine. So if anyone's going to have a rotator cuff repair and then go smoke, you're going to undo all the good work of the surgeon.

Steven:

Um can I just ask Simeon, you said at the beginning of this particular slide that you're seeing shoulder degeneration after the age of 40.

Steven:

You might be covering this later, but what is degenerating because there's quite a few bits and pieces involved in the shoulder.

Simeon:

Well, thank you for tantalizing the audience. We shall be exploring that later. So let's get to the next light by where we are so look, I mean, I think the other thing that's worth saying is this is, this is an interesting slide here. Look here we're looking at the gorilla, the chimpanzee and the human. Now we talked about the language of touch at the beginning. And one of the things about the human shoulders that as we've moved upright to two legs it's given us huge advantages in terms of sort of able to knit that environment, but, but what we can see is that the, the spine of the scapular has become more horizontal. And what that means is that in terms of swinging from branches, the human shoulder is great, up to 90 degrees.

Simeon:

Anything beyond 90, it starts to get compromised. So if we look at the supraspinus fossa and infraspinatus fossa, you can see how incredibly different are across these species. And, and what that does create is this kind of mechanical disadvantage in the subacromial space. And we see a lot of subacromial pain syndromes. That's what used to be called impingement and sort of rotator cuff. So, so that is an area of compromise. So it also reflects through on the AC joint and the, the, the clavicle as well. So, but, but what it does, it kind of interesting, shocking, bit of research that was done about

Occupation. So the, this was a piece of research that was done by a Swenson in 2004, and they looked at people working in the same job for over 10 years. And those jobs were with the arm.

Simeon:

The hand arm is held elevated above 90 degrees. So calm mechanics, health painters, machinists people that had these kinds of occupations, overhead activities, and the results show that 100% of them had a rotator cuff or a severe shoulder pathology after this kind of occupation. So, so what is clear is that things get worse with age and that now relate to occupation, but it's not just occupation, it's things like sports. So I think the next slide we've got the sports. There was a guy called Yana that explored swimming and he showed that when people take, go to the end of range with a swimming stroke they're more likely to get a rotator cuff pathology. And if they're less, if the shoulder is not placed towards the end of range. So, so we can see that age, occupation and activity.

Simeon:

There was another interesting study done by I'm not sure if we put it on here. No we didn't, but there was another interesting study done a little bit later on. I'm going to show you one about pitching by a guy called Keebler. And he looks at rotator cuff tears. You won't believe it and since this in, u18 to 21 year old baseball pro baseball players and these guys were professional baseball players and almost everyone had a full thickness tear of their rotator cuff between 18 to 21. So it's clear that when, when we're seeing someone that's coming in with these degenerative or these kinds of conditions, if it is not, everything is as it sounds. And I think one of the things I've learned is to be less scared of what comes in with MRIs and CTS and, and to, to learn to use my hands a little bit more and my, you know, osteopathic skills to look at them.

Steven:

So we had a, we had a lecture last Friday by Chris Miller who was talking about ultrasound diagnosis. He showed exactly the same thing. There's lots and lots of people, with full, we're full thickness tears. But of course what he reminded us was that a full thickness tear is not the same as a rupture, right? So it doesn't get a full width. So you can still use the muscle and it might even be asymptomatic.

Simeon:

Again. You know, one of the questions is what turns something from asymptomatic to symptomatic. And I think that's where it trigger points have a role to play. Also I put this slide up here, the next one in terms of like looking at context, because of course, you know, it's all very well to, sort of say this is the anatomy. But we have to put, in terms of the context, especially with the thoracic spine, what we're starting to see now is that, moor thoracic mobility is very much connected with rotator cuff problems.

Simeon:

There was a, there's a couple of quotes here from some research that we found postural abnormality representative independent predictor for both asymptomatic and symptomatic rotator cuff tears. The literature substantiates that imbalances in the GH and scapulothoracic muscles, are there in patients with Subacromial impingement and head forward posture or upper cross pattern as we like to say with shoulder protraction have been associated with subacromial impingement. So we've got to look at the context of that shoulder in terms of posture, that's for sure, especially in terms of the,

this is pictures of an upper cross pattern, which was suggested by him, a Syriac, which is the weak deep neck flexors, tight pecs, tight upper traps, weak lower traps. So it's this kind of round shoulder posture, and that is definitely associated with rotator cuff pathologies.

Simeon:

So lets carry on. So this was a really interesting slide. So, so again, we talked about it before this pitching there. There was so Cuba was studying how the body works and what's clear is that in a tennis serve, when we look at actually where the energy from the body is being transferred, we see that in a serve 54% comes from the Leg and the trunk, 21% from the shoulder, 15 from the elbow and 10 from the wrist. So the shoulder is actually delivering about 21% of the energy. So that serve now of course, what that means in terms of osteopathically or holistically, or sorry, I know you've got a lot of Chiro's and physios here as well. And I don't mean to negate their skills. So what this means is that if someone's coming in with an ankle problem or a foot problem it will affect the way that they recruit the muscles.

Simeon:

And in fact, we looked at this further on, which it says pitching, it says like a 24% energy decrease from a hip and trunk requires a 34% increase at the shoulder to deliver the same amount of force. So what we can see here is that let's say you've got a patient that's coming with a shoulder problem. They've got the sort of upper cross pattern that actually if they've got problems going on elsewhere and knee problems, gait problems, spinal problems, certainly even an arthritic big toe, what's going to happen is they're going to have to work that much harder to, to maintain forces going through the shoulder. So, so again, that's a beautiful thing for us to look holistically and look at the body and an holistic way.

New Speaker:

Do we have evidence so they actually do that or do they simply reduce the power?

Simeon:

Well, again, this was studying, you know, athletes, professional athletes.

Simeon:

I think probably in a keen amateur. But of course it's something we do see. You know, we see it when people go to the gym and they push themselves too hard. And that's when we see a lot of tendinopathy or tendon pathology, like I said before, 3% sudden load and cause a tear and 5% can cause a rupture and in a tendon. And, and I'll show you why in a second. When we look at some of the pathophysiology. How's it? So far, my lovelies doing all right? Thank you very much. Okay, so let's look at the rotator cuff so that the cuff itself is not perhaps as we have learnt it at college. One of the key factors is the weakness. So that's the most common thing when someone comes to us with a rotator cuff problem is shoulder weakness. The facts are that there is a lack of special tests for orthopaedic tests to, to make an accurate diagnosis, poor correlation between structures identified on imaging the symptoms as we said before.

Simeon:

And what's very cool is that there's a lot of evidence and increasing that evidence to show that graduated exercise programs are equal to, if not better than those achieved with surgery for rotator

cuff tendinopathy as well as a traumatic partial or full thickness tears. And at the end of this workshop, I'm going to give you some great resources and where to find some fantastic exercise programs the Torbay protocol and et cetera. And the basically educating the patient is a really big part of how we approach rotator cuff, telling them what's wrong, sending them what to expect and how to sort of get back to out of isolation. But there's still a lot that we don't, we don't know about the rotator cuff. There's a lot. So where are we up to now? So I thought now we'd explore the trigger point referred pain patterns and we'd look at the muscles themselves.

Simeon:

And this is on the software. Trigger point 3D software. So if you want to roll that, let's just look quickly at the at the referred pain. So we're going to start by looking at the supraspinatus. So let's just select that. So supraspinatus as we know it is in the supraspinous fossa and inserts into the greater tubercle of the humerus there and obviously elevates the shoulder, brings it up. Now this is the pain pattern. So mostly with the shoulder pain, there's two real paint patterns. We've also got the attachment, which is there and the belly. The belly, when that goes then the pain can go all the way down the back of the wrist into the sort of index finger. So it can look a little bit like C5/6 dermatome and it can often be associated with what looks like a kind of a radiculopathy.

Simeon:

So I'm just exploring software then. So that's supraspinatus that abducts the arm terms of infra. So infra sits in the infraspinatus fossa. In fact, you see there, that's really where the trigger points are in the front. And we can see the pain maps are quite extensive. We've got regimental patch area, we've got pain in the back of the neck, that sort of periscapular area, but look all the way down into the back of the hand, right into that back of that middle finger. And also by the way into the front of the middle finger. So very much like a C7 dermatome. So, again, to be differentially diagnosed with radiculopathy sometimes as well. A subscap is hugely important with shoulder function as are some of the others, obviously serratus anterior but, but what's really cool about the subscap pain map is this map is this part in the back of the wrist. And we're going to my colleague Dr Gerwin and he is going to talk to us about it shortly in a video that he made for us.

Steven:

So regarding your software there, I take it that the blue dots that we could see on the muscles on the right hand image there, they're the trigger points,

Simeon:

Correct? They're are the trigger points. Yeah. So in the software you can, you can look at the anatomy and the trigger point maps. So and also self-help that you can send to your patient as well. It's nice to explore this with the patient, just to show them what you think is happening. Now Teres minor is interesting because it's actually almost really part of the infraspinatus. What we can do here is we can sort of just animate the model and we can look at it in different movement planes. And you can see that the referred pain pattern for Teres minor is very much sort of triceps, posterior shoulder capsule of the shoulder. So, so that's, I'm just taking a few screenshots from the software just to show us a little bit about the rotator cuff. So that's the four muscles supraspinatus infraspinatus, subscap teres minor. Teres minor and infra sort of blends together. In fact in situ. They're quite hard to tease apart.

Steven:

I was just tell us quick question. I mentioned Chris Maya's earlier on, you might know Chris, he's an osteopath and a physiotherapist. He was the guy talking about ultrasound diagnosis last week. He's asked what the evidence is for those referral patterns, which is probably a very good question.

Simeon:

Yeah. Again we were asked this last time as well. So the referred pain patterns were, were really in 1933, they started to be put forward as a theory and published. And it was the, there were patients with these trigger points were injected with anaesthetics and the Anaesthetised maps with pain or that map was sort of mapped out with people and drawn. So, so that's where the evidence started. And there are, there are quite a few published studies now about these. I'm not saying that there's, that, there is still some controversy, but in general, most people rate the travell and simons maps. So the maps that I use in the software I've taken from three sources. There's a guy called Sharkey who's got his maps. There's the calor maps, which are the original ones and the travell and simons, one of the nice things about the software is that as new evidence comes out, we can modify those maps in a way you can't in books.

Simeon:

For example, we've put one in here with the longus colli muscles. So the longus colli map was only published a couple of years ago. And that was actually a nice piece of research that was done and we were able to sort of put that penned up in software. But yeah, , the original doctor who looked at the pain maps before Travell and Simon started in 33 using anaesthetic to, to map out where people, sort of.

Steven:

A lady called Rebecca has asked, what is this software you're using? And I know we're probably taking it for granted that everyone realizes that it's your trigger point 3D software.

Simeon:

I mean, I haven't really, I'm sort of just in the process of launching, I was, I was talking to you before how this kind of Corona thing has sort of accelerated things, but what we've got on, on the trigger point 3D website, we put an APM page which tells you about it for your members, special discounts.

Simeon:

And we're in the process of launching it bear with us. And yeah, so trigger points three D I want to take up your time too much now, but it's a, it's a very exciting project. I've been doing it with Dr Gerwin and neurologists. And what we do is we cover all the trigger points in the body and we look at, we've got go and doing full videos. Functional anatomy by the way, Gerwins functional anatomy is incredible. Trigger point pain maps. And also we have a trigger point of hub where we have videos. We upload videos every month about trigger points if it's exciting really. So thanks for asking. Wasn't the purpose, but yeah, so, so let's look at the cuff again. So we said, we said supra, infra. Subscap now, traditionally, the way I was taught is that the, these muscles that's what, that's what the rotator cuff is.

Simeon:

But actually it's a lot more complex. So the majority of anatomical texts describe this as a distinct sort of structures, but actually they form aponeurosis over the humeral tuberosities and you've got to remember that what the function of the cuff is to, to pull this large ball onto this small socket. We've got this inherent instability within the glenohumeral joint. So the way that the body compensates for that is to put this huge amounts of force so that the rotator cuff itself is a five layered structure. It's interwoven with Sinovia with ligaments and also with also with the capsule itself. So, so it's kind of an inter blend if you like, of the tendons and a lot of other soft tissues the superficial coraco humeral ligament the joint capsule itself and what does on a basically on a.

Simeon:

The other thing I wanted to show you here is in terms of number four and five is that the joint surface is at the bottom. So that's going to be where the [inaudible] is, and number four is going to be what we call the bursal side or bursa. So you've got an articular side and a bursar side of the capsule, of the, of the, of the rotator cuff tendon. So what the tendon does is it, it reacts to loads and it's made from type one collagen, which is very special stuff. And type one collagen is incredibly good at in terms of the way the way to lined up. And anatomically so I think we can look at that now. So there are 22 types of collagen in the body. Some people say 27 times 29, but that's basically 22. Think about the rotator cuff is it's mainly type one collagen and actually stronger than industrial steel.

Simeon:

Now why is that important? Because Type one collagen goes in parallel and we can see here, it's almost like they can thin bits of spaghetti. These blue things are fibroblasts and they comb through, the, the collagen to, to align it. So what we're seeing here is this idea of this, this is the kind of the idea of transferring energy from the bone through to the muscle or vice versa. So this is what a tendon is doing. It's taking the load and it's putting it through to the bone. And type one collagen, as we said, is this got this interesting alignment. And as we said before, there's a bursar side and articular side. Now, what's interesting is that the way a lot of us have been taught, and I'm sure not everyone, but a lot of us have been taught that the tendons go through rubbing.

Simeon:

It's like, you know, the rubbing of the AC joint and it, and it causes friction and rubbing. But actually the evidence is not that the evidence is that the, bursa aside is twice as likely to to rupture then the articular side. In other words, the bone side where you'd think something had been rubbing is far less likely to get the rupture. So, so this already takes us into an interesting point, which is if it's the bursar side that's rupturing why not sort of rubbing and wear and tear as we've been taught? What is it that is causing the rupture and why is it weak there? And I think the answer to that, and this is by the way, similar folks from any other tendons, is to look at some of the pathophysiology. It's so what we're going to do now is we just, again, I'm taking a lot of this stuff from Lewis, Jeremy Lewis, who's fantastic.

Simeon:

So if we go to the next slide. So the idea here is this, is that when someone comes to us, they are coming to us on a spectrum. So the rotator cuff is a spectrum disorder. If they're coming to us with pain and weakness, the chances are they're on a kind of either a reactive tendinopathy or a disrepair.

We're going to talk about that. But way before you get that you get this situation, what we call asymptomatic overload. And this I think is where we can do a lot of good as osteopaths, as hands on therapists I should say. And we can do a lot of good, I think when trigger points play a huge role. But let's go back. Let's look at the normal tendon. So the normal tendon is, is made by a dynamic pressure within the within the fibroblasts itself of proteoglycan aggregates.

Simeon:

We don't get there quite yet, but just hold that. Okay. You can stay there for now. Alright, so this is a normal tendon. So what we have is this, this interstitial pressure of this kind of hydrostatic pressure. So we have this hydrophilic kind of inside and we have a hydrophobic kind of capsule. And what happens is water is drawn into the, the cells. Now this is really important when you have a tendinopathy because what you start to see is if we get a real swelling of the tissues and that these proteoglycan aggregates start to actually line up differently and the tendon, the actual cartilage, itself starts to line up differently and, and can start to fracture. So really what we're seeing with a tendinopathy is an increase in water or kind of swelling usually of the bursa as well of the, of the tendon.

Simeon:

And what that does is it puts enormous amounts of pressure on the tendon. And if anything, the reason we get a rupture of the bursa rather than the articular side is because of this, this swollen tendon of water. If we go back to this slide before. So, so in the normal tendon has this, this, this dynamic of water coming in and water coming up. Then we've got the situation about underloaded tendon and that that's what we talked about before, which is this, this idea that the amount of a tendon that we lay down type one collagen is up to the age of 18 and not beyond. So if you're underloading a tendon, then you're going to cause some long term effects. Then we get to from the norm. So that the asymptomatic overload, and this is where, as you said before, you can see pathologies on MRIs and CTS that are asymptomatic.

Simeon:

And one of the big questions here is, you know what tends something asymptomatic to symptomatic by the time they come to us with pain, they're already in this reactive tendinopathy phase. So it's worth saying here that each of these stages we can bring someone back towards a normal. And the way we do that is actually by bringing down the amount of force on that tendon. So rest very much. In fact, rest and the NSAID, nonsteroidal anti-inflammatories, they're very, very good for helping tendonopathy. So to take someone from a reactive tendonopathy down towards a normal, again, or asymptomatic overload is relative rest. Now, this will become clearer as we look at this, this idea of a tendon disrepair, because when we get to towards this degenerative tendon and full rupture, we're into something very different.

Simeon:

And here this slide we're looking at, what we're seeing is this kind of spaghetti that we saw before and you can see what's happened to it. So it's become boiled. So instead of this nice long kind of tendon, that's this transforming force from, from bone to muscle. What we've got is this kind of almost kind of boiled spaghetti appearance. And by the time the tendon goes into that, we're already in the degeneration stage. There's not a lot we can do to bring it back to homeostasis or back towards a normal tendon. And that's where you're going to get ruptures. And that's, that's classically

what's going to happen. So, like we said, we get this, when we start getting degeneration, we get a loss of sensory motor control, loss of proprioception of the joint, and then the, the tendon starts to rupture.

Simeon:

Generally the tendon will rupture around the supraspinatus. And again, there's a lot of different nomenclature. There's like a partial thickness tear, full thickness tear, supraspinatus tear. So those are all things that we like. We're going to explore an app course hopefully when one day I come over and do my next course of reading. But, but just to show you that what we can do is to bring the tendon back from the brink towards normality. Now, in fact, because of this proteoglycan aggregate and this, this sort of formation of collagen, it's almost worth thinking about a tendinopathy as a fracture because actually what's tends to happen is that the, the, the collagen lines up in such a way that we actually get literally you can see them, fractures in the collagen. So what you have to say to the patient is this, if if you broken your ankle, you would, we would put you in a plaster cast for six weeks.

Simeon:

So effectively that's what we need to think. You have to have them think about if they've gone so far, we need to split them or which obviously has other risks, but to give them the idea that actually they're dealing with something as like a fracture of the tendon rather than sort of thinking about, Oh, it's a muscle. Then I pulled a muscle, it's going to go away. And I think that the pathophysiology is such that it helps us to think about that. So what we call relative rest. So to unload that tendon to only load it very gradually to give them a loaded program that we're going to, I'm going to show you later what to do in terms of rehab and physio and exercises and with anti-inflammatories and of course osteo sort of hands on interventions. And for me, the natural hands on inventions to look at the trigger points because we know that trigger points, the muscles causes to be inefficient and make them short and fat. They affect the, the, the kinematics of the muscle. So anything that's going to sort of impact that. Plus of course peripheral and central sensitization, which you really don't want in a rotator cuff problem. So anything that we can do to, to unload that tendency is that is going to really help.

Steven:

You mentioned anti-inflammatories there, I think Sue asked your view on them possibly causing poor tendon repair due to dumping down the inflammatory process.

Simeon:

Look, it's a whole big question. It's a whole big question. I think there's evidence both ways. There's certainly, I think used in the proper way and used, on someone that doesn't have allergic reactions or underlying sort of other conditions. It can be incredibly helpful. I'm not suggesting a long-term use of anti-inflammatories. And I do think that there is some evidence that that is both is evidence both ways. But in my experience clinically, it's a good thing. Uh do recommend a short dose five days, ho really in the right case. Of course, you know, we're not allowed to recommend medication, but I would suggest, I can't remember the reference for this.

Steven:

I mean, but I'm pretty sure that I read ages ago that actually what research has been done shows the anti-inflammatories slow the repair process, but they don't actually change the outcome. It just takes longer to get there.

Simeon:

Yeah. I think in general tendons like things to be slow. I mean, that's what a tendinopathy wants. It's sending a slow down so slowly, you know, the worst thing is lifting up a shopping bag full of fruit and vegetables on someone with a rotator cuff or a heavy suitcase. You know, the classic is that they've gone on holiday, they've got an underlying rotator cuff problem and then they yank it off the belt and then bang it goes. They don't they don't like sudden change tendons. They're a bit like you and me, you know, it's just gradual. Sorry, what are you then to be to be fair?

Simeon:

I'm moving on. So by the time they come to us this is how they're going to present a rotator cuff tear usually presents like this. This is someone's comes to the end of that spectrum. Usually the over 40 a sudden onset of pain. It can be severe. Usually they talk about band like you know, around the deltoid insertion. Again, maybe associates with trauma or perhaps sometimes no apparent reason, weakness. That's the predominant feature. And pain and restriction of motion. So usually they have, and this is important, a full passive range of motion and limited painful active range of motion with a weakness on muscle testing usually to have it. What sort of positive drop arm test? The drop arm test is very easy to do. It's absolutely pathomenomic for a rotator cuff tear, which is you ask the patients come up above sort of as high as they can and then slowly lower the arm down. And then as they get to about there, it just drops. It's like the glenohumeral sensoring has all been lost of so classic drop arm test. There are a bunch of orthopaedic tests which are usually on their own not good used to together can be quite helpful.

Steven:

Bob Allen's asked about the special specificity or lack thereof, of shoulder test and which ones do you prefer?

Simeon:

The, I think to test power in terms of sort of specifically isolating the powers is probably not so good. That's what we usually talk about now is clusters of tests and normally there is a cluster of tests, which is the Horners sign, the drop arm and the, the scarf test sometimes, but it's normally if you get three together then that's really where your you're, you're going to have usually some success. But we've got to look at some tests shortly from the bicep as well. The speed test who I had the great pleasure of working with professors Speed. Go on. Carry on. Sorry. We're going to talk about her now. That's perfect. So talking about, so talking about the tears in terms of the tears. So again, rotator cuff tears start around about the age of 25 or lower and they start with swelling, oedema.

Simeon:

And like we said before, this, this idea that the collagen is starting to line up because of this increase in fluid and water really inside the fibroblasts. And then we get this stage two, which is between 25 and 40 years of age, stage three, usually involves a tear of the rotator cuff either partial or full

thickness because over the age of 40 years of age. Now in terms of surgery, and again, this is a whole big thing. I, I'm really squashing a lot of stuff in a, in a small lecture. It tends to be more, the outcomes tend to be better with the younger people than older people. And that's because if you imagine, if you look at this image here, if you're going to be sewing together, which is what they do with anchors, the degenerative tendon onto another bit of degenerative tendon, then you're not going to have a nice healthy bit of tendon to sew whereas in a younger person that the vascularization is better and healthier. However, research has demonstrated that 10% of partial thicknesses heal, 10% becomes smaller and 53% will propagate and 28% will go to a full thickness tear. So there's not no hope. And as I said before, even though a full thickness tear will not heal spontaneously, there's a lot of evidence to show that exercise and some, some good sort of education, physical therapy intervention can be as effective as surgery for these things. So do not despair your patients.

Simeon:

Okay. So coming back to your problem, your, your, your question earlier on Steven. So this was a really interesting study done by Geareh in 2011 and they were looking at the, the ultrasound of the shoulder and as we said, shoulder ultrasound and an MRI in fact is not as it seems because they looked at two groups of people. They looked at 25 shoulders, they looked at 51 asymptomatic men. So this is men between the ages of 40 and 70 who had no symptoms. And look what they found. So they found here 78% had a subacromial bursopathy or bursal thickness. 65% had acromial clavicular joint degeneration, 39% supraspinatus tendinopathy, 25% subscapularis tendonopathy, five 22% partial fitness supraspinatus and 14% had the posterior glenoid labral abnormality. So anomaly. So you know, things like slap posts, superior labral sort of labral tears.

Simeon:

So this is asymptomatic men and in fact all the evidence shows that actually shoulder pathology is related to age more than anything else. There was, I'm not sure if I quoted it here, but there's another study that said, I think it's something like 90% of men over the age of 70 or 96% would have moderate to severe shoulder pathology as, as sort of visualized on MRI or CT or MRI or ultrasound. So, so to come back to your question, yes, this is asymptomatic men, 40 to 70 year olds. So like we said at the beginning, age, occupation, posture and, and also trigger points. I think trigger points have a huge role to play. So that's where we're going to explore now. So hopefully we're going to get to look at a couple of trigger points as well. So this is slide we put in last time as well.

Simeon:

Just to refresh people trigger points are taught, bands of muscle, that inhabit within that band, you'll find an exquisitely tender place that if you, if you push on, it reproduces the patient's symptoms. And that's hugely important is to, to find that type out of muscle, find the trigger point and hold it and reproduce the patient's symptoms, which has if you saw my language of touch lecture, which if you didn't, I highly recommend we explore some of those ideas there. And the idea with the other slides is that this referred pain map is often not where we think it will be an especially low. This is subscapularis Mapbox put there, you can see this band of pain around the wrist, which is not what you would expect at all. And professor Goldman's going to talk about that in a second. And then I put this slide in for Myers anatomy trains just to show you that also that you have to look at the true point in context of, of the my fashion meridians or the kind of kinematics if you like, the movement patterns.

Simeon:

So trigger points, hugely important for not just for activating a pain, but also for perpetuating, relieving shoulder pain. And this idea that when a trigger point is there, it increases what we call nociceptive drive. So it drives up um, the input to the, to the dorsal horn. And that can cause what we call Dorsal horn wind up, which leads to a sensitization. And we said that last time or the time before as well, which is this idea that as things become sensitized, the threshold that you need to trigger pain becomes reduced. So what might be a threshold, a trigger for someone with a rotator cuff problem, which might not have caused pain by the time that these trigger points are there and there's this central sensitization, maybe enough to send them over into that sort of painful place. Okay. So, so trigger points have a role to play.

Simeon:

So the other thing that I want to show you is, this is one of the main areas of pathology for the shoulder is the subacromial space. And the subacromial space is where we have the supraspinatus tendon and the supraspinatus tendon is the most commonly effected one in the rotator cuff family. And there's a zone called the codman zone critical zone, which is about a finger or two fingers beneath that sort of before the insertion. And that area is an area of, of hyper vascularity. And again, you know, many of us remember this back in college, which is the basic with the supraspinatus, the kinematics are thus, that the weight of the arm itself shuts off a lot of the blood supply to the supraspinatus tendon during the day and then when at night when people are elevating their arm, when they don't have the gravity on it, that's the time that the repair starts.

Simeon:

So night pain, pathonemonic of many shoulder problems, especially frozen. That's certainly rotator cuff or supraspinatus tendonopathy and impingement syndromes because of this mechanical compromise of the supraspinatus. Again, an evolutionary to be changed from, from coming from four legs to two, the other thing there is the bicep and I'm just going to tantalize it now. What we've got here is the subscapularis and this bicep. And you can you see there's a, there's a sheath that goes over the bicep or a transverse ligament there. Well, turns out that the trans went onto the one before but doesn't have the transverse ligament. It's actually two layered structure and the, you see what it says, biceps tendon as a transverse ligament, often the source of a lot of painful frozen shoulder syndrome. And the lower part of that is made from fibres of the subscapularis tendon.

Simeon:

So subscap and biceps have got an intimate relationship in any case in terms of the anatomy. So moving on. So now subscapularis, I, I'm going to kind of dwell more on the bicep if we have time, but subscap is hugely important in terms of its function with all shoulder problems. That's what we call a super trigger point. Now, one of the things is that, I don't treat, as you remember, when I do work with the subscapularis, I don't treat it. I know some people, they get right to the onset. And I've been to some of the lectures where we're sort of moving in, but actually what I use is a technical reciprocal inhibition. And I use it find a trigger point in infraspinatus, which is somewhere sort of a, again, I can't really show you on this picture, it's a shame, but you see what that picture says?

Simeon:

Infraspinatus muscle. That line is about an inch above there. And what there is is a super trigger point in there, which when you hold it is exquisitely sensitive at the patient's supine. They have their

own flex. You find that super trigger. But that's the one you were talking about. Well, yeah, and when you hold that, it actually has this incredible thing, which is that if you have a shoulder that's internally rotated or they're protecting us because that's what subscapularis does, you start to see it open. So we're using reciprocal inhibition, which is causing pain on the trigger point in one muscle to release another. And that's something that, as you know, we explored our courses together. Hugely important, hugely relevant. So subscap is part of what we call here the holding pattern. And we talked about this last time holding pattern but Just run through it quickly. Where are we up to now? We've got Dr Gerwin going next. Okay. So, so what, so what Dr Gerwin is going to tell us about is the subscapularis.

Dr Gerwin video:

The subscapularis muscle the referred pain pattern of the subscapularis muscle is over the back of the shoulder, which is not unexpected with some spill over into the upper arm, but there is also a bracelet of pain around the wrist with more pain over the dorsum of the wrist. So that at times there is a partial bracelet that does not completely encircle the wrist. So a patient that presents with pain in the shoulder and pain in their wrist should be considered a prime suspect for having trigger points in the subscapularis muscle.

Simeon:

Thank you. Dr Gerwin interesting. Hey, so what's one of the fascinating things with trigger points is that often the pain is remote from, from where you think, especially things like quadratus lumborum, which we'll be covering in one of our next lectures. The, so the idea of a holding pattern really came to me with a frozen shoulder, which is when, when someone comes into us, and I think for me, I've taken this forward into many other problems, hip problems, back problems, ankle problems, peripheral joint, generally this idea that we have this, this the body comes to us not in its physiologically normal place. So certainly what we see with the shoulder is this idea of the arm being folded in front of the body. It's an internal sort of internal rotation some elevation. And in fact this is what we do when someone has a shoulder pathology.

Simeon:

When someone breaks their arm or dislocates the shoulder, this is what we do to them. So I think this is a kind of holding pattern if you like, of the, of the shoulder. Also, I put here at this kind of default posture, which was looked at and this is someone that's had a stroke. So I think that the, the very much this idea of there's a holding pattern that we see people come in with. So when we, when we're addressing a shoulder, certainly what we've got is, is overactive subscapularis and of course bicep cause biceps, the flexor as well. So there are two what we call super trigger points. I always look at in terms of when I look at the rotator cuff and when I look at frozen shoulders as well. So we looked a little at the subscapularis there.

Simeon:

I just want to, so if we go to the next slide just to show that it's not just humans that have these holding patterns that actually I think it's, it's we see it across the whole range in horses, in four legged animals as well. It's this idea of, of sort of unloading the joint and internally rotating and flexing. So when someone comes to me or us in a, in a shoulder pathology, we've got to remember that there's going to be a range of things going on, agonist, antagonist and fixators, but perhaps not in the way that we were taught. So physiologically, for example, as I said before, infraspinatus

subscapularis definitely have this kind of reciprocal relationship. So what, what I thought we'd do now is we're going to look at one of my favourites and we're going to look at the bicep because I said it's just such a incredibly fascinating muscle.

Simeon:

I mean, there are books, literally books written on the bicep, which sadly I've read. So what a lovely picture. So, so here's from the software, biceps two heads as you know, Stephen that's why it's called bicep. Correct. And we, we see we have the short head. Now the short head is the place where most ruptures take place. When we have a rupture, the long head only present prevents only gets 15% of the power of the biceps. So 85% of the power from the short head. But the long head has an incredible proprioceptive role in the shoulder. And also we're going to look at the, the long head tendon. It's the only tendon in the body that's intracapsular. It's hugely important. So any pathology in the biceps can migrate into the capsule such as Granulomatous inflammation, which is what we believe, which I believe happens with a frozen shoulder, certainly in frozen shoulder syndrome, the bicep is absolutely key to unlocking that frozen shoulder, but also really in the, in the rotator cuff pathologies as well because as we delve deeper, deeper into that bicep let's have a little look at the anatomy again.

Simeon:

Okay. So this was a short head, long head, a short head goes into the coracoid process along with coraco brachialis, pec minor. And a lot of the power comes from there. The long head though it, and again, it's obviously a flexor of the arm. So as we said, when, when someone's coming in in this kind of physiological holding pattern, we're going to see this active bicep. The other thing about the long head though is that it stabilizes the shoulder and it prevents external rotation or tries to, and a lot of shoulder surgeons that I talk to say often they like just to cut the long head of biceps away because they feel that it's kind of not helping shoulder function. So that is something we see a lot of. Looking at more depth now, the long head, you can see that it's intracapsular so it comes up through the bicipital groove, inserts into the top of the labrum.

Simeon:

Now some of you I'm sure know a lot about shoulders and then there's a thing called a slap lesion. So you know, not everyone knows what it is. So a slap lesion is thus a superior labral AP. So the upper part of the labrum, AP, anthro posterior. So what happens there is that the long head of bicep pulls on the labrum where it inserts and it creates an anterior or posterior lesion. So that's what a slap lesion is. And again, very much a key muscle for sort of trying to stabilize the joint as well. So coming back to the next slide. This is really cool. This is actually taken out of the long head of the bicep and let's just look at that long head. We can see that there's a huge amount of tendon there. Again, type one collagen fibres mainly, and that's where the bicipital groove is, where it says out of the groove and look, this is very many centimetres of tendon there and you can see, so it has this incredible proprioceptive function.

Simeon:

The other thing is that there's a massive web of sympathetic fibres around it, so it has a very large sympathetic ganglia sort of plexus that innervates it as well. And innervated also by the muscular skeletal nerve there. So we can move ahead from that slide, but you can see there that that's a huge amount of tendon. The next slide we're going to look at here quickly is this transverse humeral

ligament, as we said before, made up a whole supply second place made up in two layers. The second layer, the underlayer of subscapularis itself. On the right here, I just want to talk about the, what we're seeing here. So that another thing is called the rotator interval. And again, that's something surgeons throw that offer makes us feel a bit confused. So the rotating support is basically that there's a gap between subscapularis and supraspinatus.

Simeon:

So whilst the rotator cuff tendon goes all the way around, there's a kind of a, a gap where subscapularis and supraspinatus end when they insert and inside that gap, we call it the rotator interval and the rotator interval, because there's an interval in the rotator cuff is where the long head of biceps inserts so long head so rotator interval pathologies, long head biceps, pathology or sort of subacromial space pathology. The other thing I want you to note there is the bursae a subacromial bursa subscapular bursa. So they absolutely, and the articular cartilage, everything into where interweaves and everything goes. We've seen with the rotator cuff as well. So moving on relatively good. So, Oh, go back, go back, go back. So the slide before, so how many heads of bicep are there? Did we say, I told you one thing and there's two.

Simeon:

You should know that. Well, it's very funny you should say that because actually some really interesting studies coming out. I think a hugely relevant for certainly for me, for, for frozen shoulder syndrome may actually tell me a lot about why frozen shoulders come. But there was some interesting papers published about supernumerary heads, so it turns out, but there are up to five heads of the Biceps and many of them are small. You can get extra slips of the long head and the short head. Here in some of these pictures we've got a third head of biceps brachii. And the other thing that you can get is something called a vincular and a vincular. We've got a picture of it here. Is this a thread of a connective tissue which can run alongside the bicep And I'm pretty convinced that because frozen shoulder is two to 5% of the population, that probably we're dealing with something like this kind of supernumerary a biceps problem.

Simeon:

And in fact, maybe with a whole range of, of, of shoulder problems, but, but actually up to 25% of the population have these extra heads of the biceps as well. So let's just move on a little bit I think, which is going to explore the symptoms. So yeah, aching over the front of the shoulder. Decreased range of motion inability to reach behind the back. So, so certainly people putting their arm into extension would cause biceps tendon pain reaching behind the back. Could the apleys scratch tests very much related to bicep pathology. In general, the trigger points tend to occur in the belly of the muscle. So we would tend to see two trigger points because there were two bellies of the muscle. In fact, even though we've drawn it as one, painted it as one here, functionally kind of acts as two muscles with a sort of very tough intermuscular septum between them.

Simeon:

And very much part of rotator cuff tendinopathy and frozen shoulder syndrome, obviously weakness if ruptured. How are we doing? Good. So, so this is just showing you again where we'd find a, I think this is also sort of brachioradialis, just underneath and the biceps on top of that. So there's the bicep yeah the neurovascular bundle medial to the biceps as well. In fact, if we look at this picture, we can see a very nice aponeurosis of where the biceps inserts. And you can see it

comes over sort of brachioradialis and under/over the wrist flexors So that's, that's quite a nice picture really. Is that mine or yours? Thank you. In terms of a clinical testing, so this is the device the stretch test, arm, extended, abducted and short head, basically will cause the elbow to flex if there's a trigger point or Biceps problem. So you won't be able to fully hyper extend or extend the elbow.

Simeon:

And I think we're nearly there for the bicep. Good. So yeah, so, so in terms of trigger points in the bicep as we said, there are, there's usually one in the short head, one in the long head. And often personally I find them really important for improving external rotation. So if someone's got limited external rotation or apleys stretch, reaching behind the back of their shoulder. We work into the Bicep belly to work on that. Now I should say, cause she's probably watching it was my, I've had the great privilege of working with many wonderful Osteopaths. And Sarah Weldon if you're there. She, she was the one that was working a lot with me on frozen shoulders and found that by working through the bicep belly, we were able to get external rotation of the arm improve shoulder function. So biceps belly, subscapularis, infraspinatus in terms of using reciprocal inhibition in that nasty trigger point that we explored when I met you are all really important things for shoulder pathologies. And that kind of takes me to the end of what I wanted to talk,

Steven:

Which is good because we've got quite a few questions that have come in, which I've been reserving because there were been a few people who've been annoyed because I've interrupted you in the, in previous lectures. So we're going to have to go back a little way. Cause Amanda has asked about the, I think it was Amanda asked about upper cross syndrome. She remembers it being talked about, but she can't remember what it is. Could you just explain what's meant by that?

Simeon:

Yeah, so I'm just trying to, I think it was Syriacs, maybe I'm wrong, a cross pattern basically is there are, there are various, there were five various postures that of pathological postures, the flat back, lordotic, sway back, kyphotic and neutral. So, so in terms of sway back, the, the upper cross pattern and there's a lower cross pattern as well. I know a lot of pieces, there's a lot of stuff out there about it, but basically it is a pathological state where people are slouched in a kind of shoulder forward posture, so underactive muscles in some areas, overactive and overstretched in other areas as well.

Steven:

Okay. Amanda has also asked about the business of resting the shoulder. Rather, as you mentioned, you would rest or you would immobilize a fracture. And what would be your preference given you talked about the, picking up luggage or shopping bags or whatever. People tend not to rest it, don't they?

Simeon:

Yeah, so absolutely. So this is where education comes in. And, and this is where, you know, really explaining, firstly, you have to know where your patients come in on that spectrum. Are they in a degenerative state? You know, how old are they? Are they in kind of a symptomatic asymptomatic? So where are they on that spectrum? And then remember that we talked about a thing called relative rest, which means it doesn't mean resting it completely, but it certainly means no aggressive sports

or no sudden loading, because tendons really don't like sudden loading. So relative rest means sort of doing things gradually and slowly rather than sort of sudden, sudden acute.

Steven:

You particularly asked whether you would, you would use a sling for example.

Simeon:

So the thing with the sling is it can be useful at some stages, but it has been associated with a frozen shoulder, a actually making frozen shoulders. You got to remember that when you put someone in a sling position. So what we do, what's great is to use pillows liberally at night to put a pillow in the armpit, put a pillow under the arm. Using ice can also be helpful, especially with biceps, long head biceps, pathologies, ice there. But yes, but basically slow everything down and then teach them and, I'm going to give you some links, some great resource links. The, the protocols for looking at exercise and stuff like that.

Steven:

Martin's asked about the importance of the sympathetic nerve supply to the long head tendon.

Simeon:

Well, did I plant you there? So I have this fantasy of doing a PhD because basically as you know, when I treat the frozen shoulder on, around about the third session, when we're digging into the long head of bicep, we start to get the stomach making rumblings. Sounds and demonstrates this a lot. Certainly, you know, you remember it during our lectures that we've done so, so this is really interesting side. So I actually went a long way towards doing this PhD in terms of preparing stuff for it. Now a rumbling stomach, when you, when you get that with when you are inhibiting through the long of bicep trigger point with the attachment trigger point is because you're getting a change in the Parasympathetic nervous system or the Vegas nerve. But of course, one of the interesting things about the shoulder as we said before, the bicep is this sympathetic plexus.

Simeon:

So it turns out that the musculoskeletal nerve C5/6 actually has a pathway connecting the sympathetic and the parasympathetic together. Not quite sure on that pathway Martin, I mean it is there, it is in the literature, but that actually was something I really wanted to explore in much more depth. I'm hoping this is Martin Collins. He wants to.

Steven:

No Martin Sheeran.

Simeon:

Okay. Never mind. I mean, that's good as well, but yeah, it's so, so, so relevant. Well, I think it's relevant because of this, because actually as I've matured in my osteopathic sort of work, I've come to realize that the autonomic nervous system that plays a huge role in, in maintaining, especially these holding patterns. I think once you start getting into a holding pattern and they're there for months and months, then you start to get this sympathetic overlay parasympathetic. And that actually what's interesting when you get the rumbling stomach and see as I told you in our class with

the frozen shoulder, 99 times out of a hundred they're going to say I could sleep at night immediately my sleep got better. So there's something to do with holding and pain and modulation of pain that goes on there. So I bring that up in terms of the sympathics because I'm, because I think there's a whole other layer of anatomy that we're missing out on.

Steven:

We're really nearly at a time Simeon but ages ago you talked about nonsteroidal and of course a steroid injections are common protocol in general medicine for shoulder problems. Robert sent in a question asking your opinion on those.

Simeon:

Okay. So you know, I'm not, I'm not hugely in favour of them. I think it depends if they are pain dominant or stiffness dominant people. However, I would say about 5% of my patients go on to have a steroid injection and when they're done properly under guided ultrasound, they can be very useful. So I'm not a huge fan of them. But sometimes when you're stuck and the patient's in a lot of pain and this, there's not a lot of other options, remember again that they have uncertain unwanted side effects, especially if the patient's diabetic, they can really screw up blood sugar control. And they can cause palpitations and facial flushing, but done correctly under guided ultrasound conditions. They can be useful.

Steven:

Okay. Thank you. Alright, I'm going to give you two more questions if you don't mind. Lee has asked about a full thickness tears of supraspinatus. He's asked whether you would still have full ABT abduction or whether there would be some sort of impingement under the acromion.

Simeon:

So, so the thing about our full thickness tear is that there's a loss of centering of glenohumeral joint. And a loss of proprioception is really, really important, is that this loss of proprioception. So generally when there's a full thickness tear, people, I didn't believe that you could rehab a full thickness tear without surgery, you know, for a long time. But I've seen it done dozens of times by amazing physical therapists. But basically you, you won't get an impingement at all because the gleno-humeral joint is just not in the right place. So no you won't get impingement with a full thickness tear. You get loss of sensoring.

Steven:

And final one is a second bite of the cherry for miles. And he asks your opinion on shockwave therapy for rotator cuff and subacromial.

Simeon:

So look I don't know. Shockwave has been shown useful for calcium deposits in kidney stones. Right? And that's what I'm going to say. I'm going to leave it there.

Steven:

Thanks very much. Thank you for joining us. And see you all soon.