

Knee and Meniscal Injuries

with Ian McDermott

3rd June 2020

TRANSCRIPT

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Steven:

I am joined this evening, once again, by a Consultant Orthopaedic Surgeon, Ian McDermott's been a consultant now for something like 15 years, I think, and specializes in nothing but knees for the last 10 and founded London Sports Orthopaedics about 12 years ago. Is that about right?

Ian McDermott:

Yeah, that's right, Steven.

Steven:

And last time you were with us, we talked about septic knees, locked knees and arthritic knees. And today we're turning our attention, I think, to the meniscus.

Ian McDermott:

Yes. I'm pretty much anything. Anybody wants to talk about the meniscus, if we the more questions the better,

Steven:

Of course. Yeah. Just as a quick update, last time when we spoke, I mean, you weren't working much at all. Are you back in practice yet?

Ian McDermott:

It's gradually very slowly beginning to resume towards, I wouldn't say normal. No, not even nearly normal. We're just beginning to start going. We're doing remote consultations still. We're now doing a few more face to face consultations. And this Monday, Monday of this week, we've just been given the, go ahead to wear it out, to start some limited elective surgery again but only on a priority basis. And working around the space that's being taken by the NHS.

Steven:

I know you were saying before we came on air that actually it's having a pretty catastrophic effect on many orthopaedic surgeons, particularly in private practice.

Ian McDermott:

Yeah. There's been a survey recently by the London Consults Association. And I can't give you the exact figures because it's been embargoed until tomorrow it is about to be released in the press tomorrow, actually but what it does show generally speaking, is that a significant percentage of private consultants are actually contemplating just giving up because it's become so difficult that it's, it's becoming financially untenable.

Steven:

Yeah. What's the impact of that going to be on general patient health, patient welfare. I mean the NHS presumably wouldn't be able to cope if all of those seeing private consultants suddenly ended up on its doors.

Ian McDermott:

Sure. Well, we're heading towards a mighty big catastrophe to be quite honest. I think everybody's attention has been focused on the COVID-19, the actual virus, the effects and of actual deaths from the virus itself. And whilst we've been focusing on that behind people's backs, the second crisis has been creeping up on us. And that's the crisis of all of the additional morbidity and mortality, that results from the almost complete cessation of normal medical and surgical care for a whole three month period. I've got some scary statistics on that published recently in the British Journal of Surgery. And well, if you look at the statistics from last year, July, 2019, there were 4.4 million people waiting on NHS waiting lists. It's anticipated that by autumn this year, there's going to be 8 million people waiting because currently the figures are going up by 250,000 people per week.

Ian McDermott:

So that's a million per month going up. And the number of cases they're actually being done at the moment is absolutely tiny. It's been estimated that if we manage to resume work and work at 120% of normal through, so to an additional 20% compared to previously that it would take 45 weeks to clear the waiting list. The reality is the moment because of all the additional PPE restrictions, where there is surgery happening, it's happening at less than significantly, less than 50% of normal efficiency rates. So if we're working half less than half as efficiently as normally, and the waiting lists has gone up to 8 million, it's hard to see how the waiting lists will ever actually come down.

Steven:

Do you have a feel for how many of those 8 million need surgery as opposed to having elective surgery?

New Speaker:

If you have surgery, you don't need surgery.

Ian McDermott:

And then seeing the only people who fit that category are people who are mad or well, having cosmetic.

Steven:

I could have survived without my knee replacement, probably stop cycling my bike.

Ian McDermott:

Yeah. So I can't tell you off the top of my head, what number are emergencies like cancer cases versus what are what you could like knee replacement? You could call it lifestyle surgery, but if you've got a severe, arthritic knee, severe pain, that's keeping them awake at night. It's more than just lifestyle.

Steven:

Yeah, sure. Yeah. shall we talk about meniscuses?

Ian McDermott:

Are you happy for me to put my slides up?

Steven:

I'll try and follow them with my screen as well.

Ian McDermott:

So, okay. So this is what we are planning to cover today, which is what are the menisci? So what are they, how they actually function and what's their purpose.

Steven:

We're not seeing your screen yet.

Ian McDermott:

You're not. Sorry. Give me a second.

Ian McDermott:

Can you see my screen now? Yep. Yep. Sorry about that. So what are the menisci? What do they do? What's their function? Then, how do they tear? Then talk about the symptoms and the signs of a meniscal tear and then move on to a discussion really about when to leave alone, when to operate and then finish with a little bit more technical stuff, a bit more orthopaedic, which is how to repair and how often when to replace a missing meniscus. So focusing on what they are and how they function. This is a tibial plateau of a left knee looking from the top so that the front of the knee is down here at the bottom. So here we have the medial tibial plateau, here we have the lateral tibial plateau. Sitting on top of them you have the meniscal cartilages, the medial meniscus is more C shaped, a lateral meniscus, sorry.

Ian McDermott:

The medial meniscus is more ear shaped. Lateral meniscus is more a circular or more C-shaped. When you look at their blood supply and this is of relevance. We broadly speak speaking about two zones, a white zone and the inner two-thirds, which has got pretty much no blood supply, which is why it doesn't heal and a red zone, which is the outer third, where there are capillaries, even though they're quite sparse and it does have some healing potential and we'll come back to why that's relevant later. In terms of function the way to think of the menisci is that in a knee joint, you've got a curved surface of your femoral condyle sitting on a relatively flat surface of the tibial plateau and the meniscal cartilages sit like wedges in between that gap. And what they do is they spread the load. So by increasing the contact surface area, what they're doing is lowering the peak contact pressures. And you can see that most clearly when you take the meniscus away, if there's no meniscus, then you've got point loading curved surface on a flat surface, small contact surface area, a much higher peak contact surface pressures.

Ian McDermott:

Also in terms of functioning, if you think of the meniscus as being like a slippery wedge, then as you load the meniscus, it wants to be extruded peripherally. It wants to be popped sideways out the joint. However, the meniscus is attached firmly to the bone at the back and the front by the insertional ligaments. So from the front, you've got an anterior insertional ligament, which is very strong and very stiff. Then you've got the anterior horn, the body, the posterior horn and the poster insertional ligament. And the way that the meniscus functions is that there are collagen type two collagen fibres.

I'm sorry, what am I talking about? Type one type one collagen fibres running around like cables going all the way from bone through the insertional ligament around the meniscus and back to bone. So as you load the meniscus, it wants to be peripherally extruded, but it can't be because it's fixed at the front and the back.

Ian McDermott:

So what happens is you develop tension in those circumferential fibres and people describe this as converting an axial load into hoop stresses within the collagen fibres. The relevance of this is that if there's any discontinuity in those, in those circumferential hoop fibres, then you will dysfunction the meniscus. In terms of demonstrating that these are some pictures from one of the studies that I did with Andrew Amos(?) and Imperial College quite a few years ago. And this was pressure sensitive film placed into the lateral compartment of the cadaver knee and then the knee loaded. So with the meniscus intact, we have low contact pressures and the bottom picture shows the scenario when you take the lateral meniscus out, you have a small contact surface area of very high peak pressures, and those pressures exceed 3.5 megapascals. And that exceeds the yield strength of articular cartilage.

Ian McDermott:

So straightaway, you can see that if you look, if you don't have a meniscus, the pressures will be so high that it will exceed the healed strength of the cartilage, cartilage will fail, cartilage starts to wear and tear, and you'll get eventually degeneration and ultimately arthritis. And that's what an arthritic knee looks like, where there's no meniscus. And the cartridge is worn away down to bare bone. And in terms of quantifying that risk, the best paper out there is probably that by Ruce and Ruce and that paper was published in the Journal of Rheumatology back in 1998. And what they showed is that if you have a total meniscectomy, then there's a relative risk of arthritis of 14, 21 years later now to put that into easier terminology it's the same as saying that roughly 20 years later, if you lose your meniscus, roughly 20 years later, the risk of arthritis goes up by a factor of 15. Now, if the patient still doesn't take that seriously, then another way of putting it is that the risk is 1500%, which is obviously massive.

Steven:

So in terms of explaining that to a patient. You can say, well, the risk goes up, but what's the risk. Otherwise, I mean, what was my chance because I had my meniscus completely removed back in 1981, took me, I think, 20 years before I had my knee replaced with something like that. But what would it have been otherwise?

Ian McDermott:

I'm trying to give you an accurate stat, but a highly significant proportion of the population, maybe 40% of people over the age of 60, have got radiographic signs of osteoarthritis. That doesn't mean they're symptomatic. It doesn't mean they need a knee replacement. In terms of knee replacements currently there's about a hundred thousand knee replacements done per year in the UK. So, that doesn't directly answer your number in terms of percentage risk, actual incidents and prevalence, but it's a very, very high number.

Steven:

Yeah, does anybody actually do total meniscectomy these days?

Ian McDermott:

I'm not quite, not quite the, the old fashioned total meniscectomy really meant removing absolutely the whole of the meniscus and nowadays, we all do partial, even if it's a major, major partial meniscectomy, you'd normally refer to it as a subtotal meniscectomy, cause it normally be something left behind. But when you hear the term major partial or subtotal meniscectomy, remember if there's been any discontinuity in those collagen fibres in their circumference then it's defunctioned. So even if you lose, even if you take away a segment of meniscus, then you may have completely functionally, you may have completely defunction to the meniscus, even if there is some meniscal tissue remaining, if that makes sense.

Steven:

Yes. Yeah, yeah. Sorry. I interrupted you.

Ian McDermott:

No, no, that's fine.

Ian McDermott:

So how do they tear? Well, this is very simple and you can divide it into two broad categories. The first is traumatic and the classic way of tearing the meniscus is to twist on a bent knee. And one of the most dangerous sports in the world is actually netball. And the biggest risk of major knee injury in netball is actually ACL tear, but the mechanism is very simple, similar, sorry, it's twisting on a loaded bent knee. Now, very importantly, as you get older, your meniscal cartilages begin to degenerate and there's a recent paper that use carbon 14 dating that proved that your collagen in your menisci does not remodel as you get older, it simply gets older. So as you get older, your meniscus become more degenerate, which means I become softer more friable poor blood supply, more liable to tear.

Ian McDermott:

So 50% of degenerative meniscal tears occur spontaneously with no history of any specific trauma at all. And if there is a history, then again, it's most frequently twisting on a bent knee or getting up awkwardly off the floor. For example, if you've been kneeling cleaning the floor or kneeling down on the floor for whatever reason, very important to appreciate that 50% of degenerative meniscal tears occur spontaneously with no history of any trauma.

Steven:

You are going to come onto signs and symptoms a little bit later on. I will save the questions. Sorry.

Ian McDermott:

Okay. So with the types of tears, there's lots of different types that are referenced to. There's radial tears, horizontal tears, flapped tears, as parrot beak tears, bucket handle tears, complex tears, and the list goes on. It's, it's quite useful, but the more descriptive you have, so the more descriptive you are in terms of how flamboyant your language may be in describing these things, then the harder it is to, to categorize them if he you want to do research projects and categorizing terms is very difficult.

Ian McDermott:

So yes, symptoms and signs. This is hopefully very, very familiar to everybody. So we should be able to race through this. So, first of all, joint line joint line pain. Now, very importantly, one thing that is perhaps not quite fully appreciated is that it's very common to get pain around the back of the knee with a meniscal tear, the meniscus, both menisci go all the way from the front round, the sides and all the way to the back of the knee. The most common place to have a meniscal tear is the posterior horn of the medial meniscus. And if your knee is bending and your meniscus is sitting here, then as you bend your knee, you squeeze the back of the meniscus. So in deep flexion, you compress the posterior horn of the medial meniscus. And so if you have pain at the back of the knee with forced deep flexion, then that's a prime symptom or sign of a potential meniscal tear. Clicking, clicking, almost a useless thing to ask, ask a patient, unless you'd quantify it because every needs, you know, everybody's knees, click your fingers, click.

Ian McDermott:

You could hear that. That was quite loud. You know, just clicking mean anything. Is it, is it gas being released in a joint? Not so sure don't really know. I don't really care because it doesn't really matter cause everybody's joints click. But what does matter is if the clicking is painful and if it's new, if it's a new painful clicking, but it's irrelevant. So you have to qualify your question. Catching and locking again. If you say to somebody, does your knee lock or most normal people don't really know what the word locking means. It's not, it's not an average word that most people use on a day to day basis. So I would say is trying to straighten your leg out and does it get stuck? So you can't straighten it. You give it a wiggle and it may clunk and then go fully straight.

Ian McDermott:

That's classic, temporary locking. Obviously if the knee is locked and it's stuck, that's a different matter. Giving way. Again, it's not enough just to say to somebody does your knee give way? You have to explain to them what you mean by that. And there's two real types of giving way. They crossover, but they're slightly distinct. So the first kind of giving ways you've got a wobbly knee, my knee feels wobbly, unstable. I don't trust it. It gives way fairly randomly intermittently, particularly if I'm running and change direction. The second, as soon as you hear that, you think that's a ligament. It's probably an ACL tear. If somebody says every now and again, I get a sudden sharp pain in my knee and it gives, well, that's probably giving away due to muscle contraction due to pain. So it's a pain reflex.

Ian McDermott:

You put your weight on your knee. It hurts you load a torn meniscus and you go, Oh, I want to get the weight off. Just like putting your finger on something that's hot. So it's useful to try and differentiate or to try and clarify and elucidate from the patient, what kind of giving away they're getting, not just to use the term, giving way. Swelling puffiness, swelling. Yes. More often than not. You do tend to get an effusion with a meniscal tear. If you have an injury in your knee, swells up massively straight away within the first 20 minutes. Well, that's probably a Hemarthrosis. And that indicates you probably got something more significant. For example, like an ACL tear, if your knee swells up a bit and it swells up maybe that evening or the following day after an accident, and it's more likely to be in a fusion and that's more in keeping with a meniscal tear. Interestingly, lots of people say that the swelling, they notice it most above their knee and they think there's a problem on their kneecap or a problem with their quads. Well, all they're doing is pointing to their supra patella

pouch. And the knee is one continuous compartment. And the fluid gap is predominantly in the supra patellar pouch. And that's where it's most visible. So that's why a lot of people say, yes, it's puffy and it's a bit swollen above my knee cap.

Ian McDermott:

And then you've got the locked knee. So if somebody says my knee is locked, then everything changes. Just like we said, in the, in the previous talk that we gave about what's urgent in orthopaedic. Well, this is something, it becomes an urgent problem. If they have a locked knee.

Ian McDermott:

Signs. Joint line tenderness and that's probably very straightforward. Now, the patient says it hurts here. And so you poke there and you say, does that hurt? And they say, yes, that's exactly what I told you. So joint line tenderness. Decreased flexion. And again, that's about squeezing that torn posterior horn, which is uncomfortable. Therefore they don't want to do it. And if they do it then it hurts so pain posteriorly with deep flexion and a fusion, you'll notice that hopefully, and then we've got McMurray's test and then got Thessaly's test. Now, going back McMurray's test is a real shame that everybody talks about McMurray cause he doesn't deserve it.

Ian McDermott:

So McMurray is famous or in my books infamous for publishing a paper called the semilunar cartilages in 1942 in the British journal of Surgery. And in that paper he described his test and it's two paragraphs and it's so poorly worded. I defy anybody to have a proper understanding of exactly what he may have been talking about. And it's so badly worded, but every single description of McMurray's test that you see in each different textbook that you may have read is different. The descriptions are different. That's why all of us do it differently. Everybody's got their own version of the McMurray's test. Now the McMurray's test will come up to the numbers as to what's the value of the test. I do think it's a valuable test to do, but I think you've got to do it cautiously because what you're doing is you're trying to inflict pain on somebody.

Ian McDermott:

Who's told you that their knee is painful. Then that leads on to Thessaly's Test. I'm going to show you a video of that. And that's, probably more sensitive and more specific. And I do Thessaly's test. When I find somebody who's got an equivocal McMurray's test or if their history sounds like a meniscal tear, but that the McMurray's test is negative. And the Thessaly's test is more of a functional test. So if somebody has got a reasonably positive McMurray's test, then I wouldn't subject them to trying to do a Thessaly test. I'm going to show you the video. And then again, the signs locked knee. Game-changer you know, this isn't, this is no longer let's have a look and see what's going on. This is an emergency. So if somebody presents to you with a locked knee and quite simply, it is a displaced locked bucket handle meniscal tear until proven otherwise.

Steven:

Run this past me an emergency to me means life threatening. And that doesn't sound life threatening.

Ian McDermott:

No no. Sorry. I used the wrong word. It should have been urgent. Definitely. It's only presents with an emergency. A septic knee is an emergency, right? A septic knee needs to be admitted to hospital then and there, needs to have the knee washed out on the first list available on the emergency list. That day, that night. A locked knee is an urgent, which means they need an MRI scan within a day or two. Certainly no more than a few days not weeks. And if the MRI scan confirms that it is a displaced locked bucket handle meniscal tear, and then they need surgery with an arthroscopy within again, a few days not weeks, because if it's caught within the first six weeks, then you've got a reasonably good chance of being able to reduce and repair and salvage and save the meniscus. A Very artificial cut off point.

Ian McDermott:

But roughly six weeks, if a locked knee with a displaced locked bucket handle meniscal tear has been left more than six weeks, then it's rarely if ever reduced to repairable. And you'll simply end up having to take out the bucket handle fragment the buckets handle fragment nearly always involves virtually the whole volume of the meniscus. So you're going to end up with a subtotal or total meniscectomy. So that's why coronavirus is a problem.

Steven:

Before Corona problem, how often would people meet various criteria of two days to imaging in two days to surgery?

Ian McDermott:

It completely depends on the environment. If you walk into my clinic with a locked knee, you're going to get an MRI scan, basically the same day, the same visit. You won't leave our clinic without an MRI scan. Even if that means cancelling somebody, who's got a non-urgent scheduled slot and you'll be booked in for surgery within one to three days.

Steven:

If you are in the NHS do you know what the statistics there are.

Ian McDermott:

Oh God. Good luck. No, I left the NHS 10 years away to get away from the environment where you can't do things properly. Yeah.

Steven:

Yeah. Things are not going to get better are they as you described earlier on.

Ian McDermott:

It's going to get much, much worse.

Ian McDermott:

Yeah, absolutely. Even now I'm aware of colleagues who had people turn up with a locked knee during the lockdown period, and they've been told they're not priority one or two emergency cases. And therefore, because the NHS is control is, has control of the private hospitals at the moment.

They've not been allowed to have surgery. So these people, by the time they do have their surgery, that they're stuffed it is going to be a total meniscectomy. And then as you, as you, well know, 10, 20 years later, they're going to have an arthritic knee.

Steven:

Yeah.

Ian McDermott:

So science, when we talk about clinical signs, every single clinical test that we do has got a sensitivity, specificity, positive, predictive value, accuracy. There's lots of different statistical phrases that describe the value and the, the value of each individual test. So just sticking purely to sensitivity and specificity, cause they're easy to understand joint line tenderness. Is it sensitive? Well, yeah, fairly. And it depends on what study you read as to what number you get because obviously different people find different things. Broadly speaking, roughly 60 to 95% sensitive. So if you have a meniscal tear, you are probably going to have joint line tenderness, but just be aware that 42 is that right. 58 42. That's why I'm not a mathematician. Worst case scenario, 42% of people with a meniscal tear, according to one of the studies had no joint line tenderness, but they did have a meniscus tear in terms of specificity.

Ian McDermott:

This is not so good. This varies from 5% to roughly 75%. And what that means is just because you are tender doesn't mean it's a meniscal tear. There are other things in the knee. There are things in the knee other than a meniscus, that could cause the tenderness. McMurray's test. So bending the knee, twisting the knee Varus, valgus, internal, external rotation. For me, I would only say a positive is where there's pain localized to a joint line with a palpable click or clunk whilst you're doing your McMurray's. And that's what, that would be a definite positive. If somebody says my knee hurts whilst you're doing McMurray's test, but it's a bit less specific. The pain is more vague and it's not localized for joint line and you can't feel a click or a clunk. Then I'd say that's an equivocal positive, but this is not a great test. Sensitivity, fairly shocking 20 to 60%. I mean, that's really, that's really quite worrying. So you can easily miss a meniscal tear whilst doing your McMurray's test. You can easily have a false negative. In terms of specificity.

Steven:

So in terms of its sensitivity, you said earlier on that the McMurray's test is done differently by virtually every, not every practitioner, but it's described differently in all the different textbooks. Do you have a version of it which you think is likely to be more sensitive or is the test regardless of who does it and how always going to be that variable?

Ian McDermott:

No, I think it's going to vary enormously between individuals. I think the, the more experienced you are then the more likely you are to do a better McMurray's test, but it's very, very variable. And I think those figures just emphasize it. You know, the, the variation within the published literature is enormous, you know, 20 to 66 and 57 to 96. That's, that's a massive variation. So and in terms of specificity, yeah, 57 to 96. So it, it can be pretty good. It's more specific than sensitive. In other words, if you have a positive, then it's more likely to be an actual meniscal tear, but just be very, very aware of your false negatives and your false positives. Which then leads on to the Thessalys test.

Now, this was an interesting one because I first saw this published in the JBGs in 2005 and I saw the paper and I went, wow.

Ian McDermott:

So these guys are saying that 89% sensitivity and 92% sensitivity for medial or lateral tears and specificity of 97 or 96 medial or lateral. Well that's, that sounds too good to be true. Right. And if something sounds too good to be true, it's probably not true. So this is a fantastic video. These are a couple of physios, they're German, they've got fantastic videos online. And this is how you do Thessaly's tests, take the patient's hand and basically do like a jive with them. You're holding onto their hands. But if they suddenly catch giveaway, then sudden pain, you know, they're not going to drop. You want them to load the knee to about 20 degrees or so, and then you want them to actively twist their pelvis around not just their shoulders, but their whole pelvis. And they're twisting on that knee in a loaded position.

Ian McDermott:

So this is a bit more realistic Journal Orthopaedic Sports, Physical Therapy that's a mouthful and this paper, which is a bit more recent show sensitivity and specificity of 64 and 53. Well, I think that's probably more realistic or just based on personal experience and also based on common sense. I'm not sure there's, there's many clinical signs apart from how somebody had an amputation or has their head chopped off where you've got a sensitivity and specificity, that's close to a hundred percent. So I would, I would probably put more weight on Gossen's paper. It's still a useful test to do in conjunction with McMurray's if your McMurray's is not clearly positive. Yeah. But at the end of the day, if you think somebody has got a meniscal tear then for God's sake, just get an MRI scan. All right. You may think somebody's got a meniscal tear. Well, it may be an osteochondral defect. It may be osteochondritis dissecans it may be a tumour. It could be anything right. Just because you think they've got something you don't know, they've got something. An MRI is an incredibly useful and terribly important tool. Two reasons. Number one, it's a screening tool is to make sure that they haven't got something weird, wonderful, nasty, horrible, unexpected, as well as number two diagnostic. And there's an MRI scan showing a tear of a medial meniscus. There was some bone bruising in the medial tibial plateau.

Steven:

Can you just point out the bits you referred to on that image?

Ian McDermott:

Yep. So can you see my cursor moving? Yes. Yep. Yep. So here's the medial femoral condyle, medial tibial plateau. And that's a medial view. So we're not close to the middle of the knee. We're coming towards the medial edge of the knee, anterior here, posterior here. So medial gastric there, here's your medial femoral condyle down and here's the articular cartilage on the joint surface that pale grey layer, the anterior horn of the medial meniscus is here. The body portion is here, the posterior horn is here. And this line is a tear going through from the body into the postural horn. And you've got some bone bruising from pressure overload on the medial tibial plateau, which is why this bone here is paler. Right? And this is a three importantly, this is a three T three Tesla MRI. And there's an enormous difference.

Ian McDermott:

I could show you some shocking pictures of really poor quality MRI scans, but you just can't see. What's what, so the value of a scan depends on the quality of the scanner. And it also depends on the person looking at it. So again, a very, very scary figure. But this is just an, a personal opinion. I think I disagree with about 50, 50% of the MRI reports that I read on the MRIs of the knees of the patients that I scan. And I go through every single scan myself. I think if you're an orthopaedic surgeon, if you can't interpret your own MRI scans, then you should not be allowed to pick up a scalpel. It means you don't know anatomy, you don't know pathology very important to still liaise with your consultant radiologists, and to make sure that you've got a very good MSK specialist radiologist, not just Mr. Average, who's a generalist because there will always be times where there's something that's equivocal or something unusual and you'll need to discuss the MRI with the radiologist. So you need to have that radiologist on speed dial on your, on your mobile so that the minute there's anything, you're not sure of you discuss it with them. And then in addition to that, I look at every single MRI report as well, just to be absolutely sure that I haven't missed something. This is a safety net as a safeguard, but if you rely on the MRI report rather than rely on the actual pictures, you are setting yourself up for a big, big, big, fall, because they are absolutely not a hundred percent, right. A hundred percent of the time far from. So I think the take home message.

Steven:

We look at MRIs of the lumbar spine. We're always very conscious that you can get lots of abnormalities there, which can be asymptomatic. And this one actually somebody has already asked, somebody who refers to himself as the potato viewer asked can a locked bucket handle spontaneously unlocked, and then be no problem. And I guess he means by that indefinitely, I mean, can you see things on an MRI which could be asymptomatic for the rest of the patient's life,

Ian McDermott:

Right? It is definitely possible to get a, an unstable meniscus with intermittent locking. And if you do the MRI scan, when the knees unlocked without a recent locking episode, so there's no effusion, you may see nothing because the meniscus itself may appear to be intact because the tear may be so peripheral and it may be the meniscal tibial ligament that you might not notice. The fact that there's a tear particularly applies to instability of the posterior horn of the lateral meniscus, just a separate clinical entity. Under normal circumstances. If there's been a major meniscal tear, then you will see it normally on an MRI. Second part of that question is, would it never become a problem? Not a chance if somebody has had a locked knee, then just, and they're lucky enough, and it's due to a meniscal tear not due to a loose body. And if they're lucky enough that their knee has popped back in the meniscus and popped back into place, and it's no longer locked, then the likelihood of them no longer having any further problems. And it's not kind of re-displacing, this is minimal. So it takes, if their knee becomes unlocked, then it takes the urgency out of the situation, which is a good thing. But would I, for one minute have any sense of security that meniscus will stay in place. In other words, will it heal on its own then extremely unlikely,

Steven:

But surely from what you said earlier on, if they've got two days before they need imaging and then two days for surgery, if it is locked, the damage is the same. Even if it is spontaneously unlocked. So surely they still need to get it repaired quickly.

Ian McDermott:

No, no, because if, if a, if a bucket handle tear is, is displaced, so the meniscus is sitting here. I don't know how this, how well this is going to show up,

Steven:

Can we lose the screen. Share Justin, please. Yep. We've got you back on screen.

Ian McDermott:

Okay. So there's your meniscus, here's the tear and this fragment flips over. So that's why it's referred to as a bucket handle fragment. Yup. Number one, that fragment is being macerated by your femoral condyle, every time you move your knee. So it's going to get shredded. If it stays there too long. Number two, it's going to scar up and therefore contract. And if it's contracts, then you won't be able to push it all the way back in place because it's scarred up. So that's why if it remains displaced for too long, then it will be irreducible. If it's irreducible, it's a repairable. If it's sitting in the right place and that's not going to happen. So yeah, if it flips back in place, then that's a good thing, but it doesn't change the fact that they've got an unstable meniscal tear.

Steven:

Since we've got you on full screen, perhaps I can put a couple of other questions to you in Darren said would the loss of the meniscus increase the risk of micro-fractures

Ian McDermott:

Not quite sure what that question really means. What do you mean by micro-fractures? Cause in orthopaedics

Steven:

Micro fractures in the in a tibia presumably because there is, I think, I believe from one of our previous speakers, there's a little bit of controversy about whether the meniscus actually has a shock absorber, as well as

Ian McDermott:

Yeah, but right. Strictly everybody calls it shock absorber. Alright. Unfortunately, there was a fantastic paper in the Journal of Biomechanics that I was asked to review. And in this paper they quoted one of the papers they quoted was one of my papers. And my conclusion from a revering, the paper was, it was a fantastic study. They did where they modelled the meniscus and they proved reasonably conclusively that the meniscus is not actually a shock absorber. It's just a load sharer the main function is a load share. The reason that we all refer to it as a shock absorber is that in the past there was a paper from somebody called Voloshyn and, and they, they showed what appeared to be evidence that it was a shock absorber, but there's this recent paper in the Journal of Biomechanics from about, I don't know, four or five years ago now

Ian McDermott:

Said otherwise, I, I, myself still, when I'm talking to patients, refer to it as a shock absorber, simply because I say it's like a little rubber washer inside the knee that acts as a load sharer and a shock absorber and people go, Oh yeah, that makes sense. Right. But strictly speaking biomechanically

they're dead right. It, isn't not a shock absorber in terms of micro-fractures what you're really talking about is pressure overload. So what you get is his subchondral edema, bone bruising from pressure overload. And then as you start getting thinning and damage to the articular cartilage, you do get tiny little micro-fractures in the cartilage, or those extended to tiny little microfractures in the subchondral bone plate, which is why you then develop subchondral bone cysts. And that's all part of the degenerative process. The reason I looked a bit confused is because when we talk about microfracture, normally that's a surgical procedure where you puncture holes on the surface to make it bleed.

Steven:

I see what you mean. And yeah, so I've just had it confirmed that what we've just been describing is, is what the question was asking about. John's pointed out that in the picture of the MRI, the patient was not weight bearing. Does that make a difference in terms of the diagnostic capabilities of the imaging?

Ian McDermott:

It does have an influence and that's a really good point. You can get weight-bearing upright. Well, they call it open MRIs. And the problem is that that's really designed for people who've got severe claustrophobia. And instead of having one big tunnel, one big donut that you go into, which is claustrophobic, but you can go to feet first and your head's not in it for a knee. You've got two magnets side to side and you go in the middle. Now, the problem is that the magnetic field or the intensity of the magnetic field in between two separate separated magnets is much lower. It's about 0.5 Tesla. So you get a very, very low resolution, low quality picture. So for me, I'm happy to sacrifice the weight-bearing aspect for the resolution. And I'll always go for a high res scan where you can see more.

Steven:

Right. I see. And Elspeth was asked about the, what do you think about the need for STIR sequences in MRIs.

Ian McDermott:

Yeah. I want all the sequences. I want STIR yeah, I want the lot. So there's a there's for me, the STIR sequences, I normally have one, one, two, three, four, five, five main views or five main views on an MRI scan. So fat suppressed. So if people just to simplify it, people could a T one T two, right. But it's a lot more complicated than that. So I want T one T two, coronal sagittal, and on the axial views, I'm happy just to have the T 2 views. Okay. Getting a bit too technical.

Steven:

No, no. I mean, people are interested in this. We've done quite a bit on MRIs recently, which I suspect is why, what people's curiosity is peak about which of the best views for diagnosing these problems.

Ian McDermott:

Yeah.

Steven:

I'll let you, I'll let you carry on. You were in the middle of telling us about MRI, sensitivity and specificity, I think.

Ian McDermott:

Okay. So is my screen back up? It is

Steven:

Right back at meniscal cartilages again. I think.

Ian McDermott:

So MRI, here we go. So everybody thinks that MRI is fantastic, but it is again, just to make everybody really, really paranoid and confused. It's infallible. So it is not, it is not infallible It is fallible so sensitivity for picking up meniscal tears about 83% specificity nearly 90% for the lateral, nearly 70% of the medial. That's actually, that's not great. I mean, that's not everybody assumes that MRI is gospel. It's not necessarily. So just, just be aware again, that a normal, especially a reported normal MRI scan may miss things. If your MRI says, there's nothing wrong, but your patient says there is something wrong. And if you, as a condition, have you have your gut feeling, which is your sixth sense, which is your subconscious brain amalgamating, all of your years of experience, with knowledge of reading everything into a gut feeling. If your gut feeling says there's something wrong and the patient tells you there's something wrong with the, patient's not a Nutter, then, then don't believe the MRI. In which case you might potentially on a rare instances, have to go ahead with an arthroscopy, even despite the MRI scan, not showing anything. Right?

Steven:

So just to be clear, that's the MRI is, is not infallible, not the radiologist. Does the MRI is the MRI itself, which doesn't show you the information need.

Ian McDermott:

Absolutely. Both. Yeah. I'm not sure which one you want to blame first. It depends whether there's any radiologists,

Steven:

I'm not looking for blame at all, but I mean, you did say earlier on that some, you know, you, 50% of the scans you see, you find fault with that, but actually all of those 50% that you do see that the, that are correct. The scan, I could still miss things.

Ian McDermott:

Yeah. And when I say that, I disagree with, I'm talking about very, very fine detail. Okay. I'm not, not necessarily they've missed something massive. Okay. So then leading on to when to leave alone, this is really straightforward. It's, it's not, it's not rocket science. If somebody has a degenerate tear, then they're less likely to be symptomatic, right? It's got a greater probability of setting down, settling down on its own, compared to a traumatic tear. So degenerate tears, you're more likely to leave alone than traumatic. In older people, again, it goes with degenerate older people who've got lower functional demand. All right. Then again, you're less likely to operate on them. If somebody has got

advanced degenerative changes, you know, fully blown arthritis in your knee, then you know, there's been a lot published in the BMJ recently over the last few years about arthroscopy doesn't work, which is absolute rubbish.

Ian McDermott:

What they're basically saying is that an Arthroscopic wash out, we simply means washing out the fluid and debris from a knee in an arthritic knee. In other words, grade three or four for arthritis doesn't work. Well, guess what? We knew that, right. Any surgeon who has been doing arthroscopic washouts of arthritic knees is either stupid or a criminal. And since that research was published, confirming that, then it then it's now absolutely crystal clear. However, anybody with half an ounce of sense, doesn't do an arthroscopy and a washout on somebody with an arthritic knee. If you've got somebody with some degenerative changes and they've got rough, unstable articular cartilage, or loose articular cartilage, and they've got a unstable or particularly symptomatic meniscal tear. And if their symptoms feel bad enough, and if it's not settling down, then yes, if you do an arthroscopy, you can make a significant improvement to their symptoms and keep them going for longer but then extra time, you will not reverse the degenerative changes.

Ian McDermott:

You will just improve, maybe not cure, but improve their symptoms and buy them additional time, delaying the time when they might need that knee replacement, which is a worthwhile thing to do. And again, really obvious somebody's got minor symptoms then no. Do you really want to go through the pain, the hassle, the risk of surgery, if you've just got a niggle, of course not. If they don't have any mechanical symptoms, then you'll probably, you'll probably err more towards conservative management and the mechanical symptoms, meaning giving way locking. And also if they're low demand, and if you've got somebody who's a little old person sitting in a nursing home who only sits in a chair and is mobile, you know, is moved from a chair to a bed and that's it. Well, no, you would probably almost certainly not operate on them. And then also, if they're not medically fit, if they've got other more co morbidities and co-morbidities right now, you can absolutely include the Covid crisis in that.

Ian McDermott:

And then, you know, patient is not fussed at the end of the day. We don't operate. One of my favourite questions is when do you reconstruct a torn ACL? And that's very, very easy A) when you know, it's torn. So A) if it is torn B) if the patient needs it and then see if the patient wants it, it may be torn. They may need it if they don't want it, but you do it. It's called assault that's GBH. So our job is to educate people about what their diagnosis is and educate them about the options, the pros, the cons, the positives, the negatives, the risks of the different options, and then help guide the patients. If they, if they seek guidance, they may not. But if they require it, guide the patient and help them make the right decision for them. If a patient's not fussed about their knee, then we all know there are surgeons out there who will go, Oh yeah, look at that.

Ian McDermott:

Great big look, can you see this on the screen? See that line there. See that line. There is a massive meniscal tear. Yeah. If you don't do this, your whole leg is going to drop off and the other leg drop off, drop off in sympathy. And there are people out there who are like that. They're called criminals. Okay. And I think if you're not a surgeon, but you're a healthcare professional, then part of your

duty is to identify who the goodies and who the baddies are locally and protect your patients from the baddies. I think I'm getting a bit political and I don't know that would be good with that. Can you give me a, can give me a list of good solicitors?

Ian McDermott:

So when to operate, well, this is really easy now because it's just the opposite of what we've gone through. So if somebody has a traumatic meniscal tear, you're more likely to operate rather than degenerate. The younger, they are. The more important it is to operate, because the more important it is to try and repair the meniscus, if possible, because the consequences of meniscal loss are greater in younger people, because younger people A more active and B live longer. Again, obviously if the symptoms are major rather than minor, if they've got distinct mechanical symptoms of giving way or locking, if they're high functional demands like an athlete or if they got a locked knee. So here's that locked knee that I keep banging on about. Here's an arthroscopy, here's the medial femoral condyle. Here's the displaced locked fragment with some blood on it. We've washed out the knee.

Ian McDermott:

This is a, this is a left knee. And we're looking at the medial meniscus. So that's the medial femoral condyle. And here's that displaced fragment or in this patient, you've managed to push it back in place. We've had to pie cross the MCL, partially released the MCL to open up the medial compartment so we can get this nicely back in place. And then multiple stitches, one, two, three, four, and then on the under surface, there'll be four as well too, to stitch that meniscus back in place. And that's a meniscus that's being repaired and therefore salvaged.

Steven:

This is going to be a silly question. How on earth do you stitch in micro...

Ian McDermott:

I am going to show you a lovely little picture in a second?

New Speaker:

The laminate animation that I showed you earlier, Steven. So if you want to know some guidelines, right? The definitive, and yet I'll be bold enough to say absolutely definitive in capital letters, the definitive guidelines on when to operate on a meniscal tear are by Basque, the British Association of Surgery of the Knee, and this was published in the Bone and Joint Journal in 2019.

Ian McDermott:

And it's very, very sensible evidence based guidelines. It's not complicated.

Steven:

And then you're happy for us to share your presentation with the audience.

Ian McDermott:

Absolutely. Yes. A hundred percent. Thank you. Yup. So then moving on to repair. So how do you repair? Well, here's the little animation, here's a vertical tear in a meniscus and let's pretend I drawn it a little bit better and it's a little bit more in the red zone. Okay. But it's just, this is just to show the

point. So there's a variety of meniscal repair devices available, and these are all inside devices. And the one that I use is called the Stryker. That's the company, the Stryker Air, A I R, Stryker Air meniscal repair device. So this is all arthroscopic. So it's all through keyhole surgery through two little five millimetre incisions. You put a needle into the knee, and this is a slotted needle that contains two little anchors.

Ian McDermott:

You push that needle through the meniscus, through the capsule pull back, and the first anchor locks on the capsule attached to that anchor is a suture, a non-absorbable suture. You then load up the second anchor, reposition your needle, push your needle through the meniscus. The other side of the tear go through the capsule, pull back. It deploys the second anchor that locks in the capsule. And again, there's a non-absorbable suture attached to that anchor. So those two sutures are tied to each other with a Slipknot. You then put in a knot pusher and you pull on the suture whilst pushing on the knot. And as you do that, it tightens up the Slipknot, which tightens up that tear, squeezing it together. You then cut that suture and that's your meniscal repair. So that's an All-inside meniscal repair. And the kit that I use is the Stryker Air.

Ian McDermott:

Now, when you look at the meniscal repair, first thing is, well, how many, how many tears are repairable? And it's a very difficult question to answer from the literature is not very clear, but broadly speaking, the literature suggests that possibly as many as 15% of tears might be repairable. In my practice, I do a lot of meniscal repairs. I've done a lot of research into meniscal repair. I've done a lot of them and the more of it you do, and the more competent you become than the lower your threshold becomes. In other words, the more likely you are to attempt a difficult repair. So you end up doing more. So in my practice, I repair about 30% about a third, just under a third of the tears that I see again, slightly unfair comparison because I'm based normally in the city and in the city, we've got a younger patient cohort, the younger your patients, the more likely it is to be repairable.

Ian McDermott:

And the more you're going to try and repair it, if you possibly can. So I repair about 30%. In terms of success rate, it varies on which papers you read and the best papers suggest a success rate in the region of about 90%. So 90% at best of the repairs that you do will heal successfully. That means that at least 10% of the repairs that you do will fail and the patient will have ongoing symptoms, or they may be okay initially. But then the meniscus will re-tear and they'll have further problems. And that's bad news because in those people, that means they might need number one, an arthroscopy with a repair, and then very slow and restricted rehab to protect it whilst it's healing. And then they find out it hasn't healed and then they need a second operation. So that's the second anaesthetic, a second operation where you go in and just trim it to anyway.

Ian McDermott:

So that's why it's terribly important to pick and choose your repairs carefully. If you try and repair everything, you'll have a higher failure rate and a lot more people unhappy needing two ops, instead of one, however, if you don't repair a repairable tear and you just chop out the meniscus, then you're unnecessarily condemning that person to a massively increased risk of arthritis in the future.

Steven:

What actually constitutes success when you say 90% success, right? I mean, you're not full return to normal function with no symptoms at all.

Ian McDermott:

If you can define it, however you wish. So different papers have different definitions and success is, is the patient happy in terms of, of the state of their knee, just generally, are you happy? That's one form of success, or you could say what's their KOOS score. Or you could say what, you know, what's your IDKC score or what's your technical score, or you could say, have you had to have further surgery?

Ian McDermott:

No. With a second arthroscopy. So it completely depends on your definition of failure personally. I think the correct definition is, is there anything negative on any of those, if a patient's unhappy, if they've got ongoing symptoms if they haven't got back to full function and if they've needed a repeat surgery, if it's any one of those four, not just one either or, but any one of those four it's a failure.

Steven:

And how long would you expect those repairs to last?

Ian McDermott:

Or if it feels that it's testable. Yeah. Then if then hopefully forever. But you have to be, you have to be aware that when meniscal tissue heals, just like every other tissue in the entire body, apart from bone, I mean, bone is the only tissue to heal without scar tissue. It remodels every other tissue heals with like skin, you get a scar, if there's a scar present, it means that there's a potential point of weakness. Right. Okay. Yeah.

Steven:

I'm kind of, since I've got you on full screen at the moment, can I ask a few more questions from the audience? Mirez wants to go back to the business of the shock absorber and obviously you're the perfect person to ask about this being the author of the original paper there. He says if the meniscus is

Ian McDermott:

So no, no, no, no, no, no, no. On the original paper was McMurrian and I hate him. So I published a paper about the consequences of meniscectomy a few years ago, but yeah, definitely not the original paper. Sorry.

Steven:

Meriaz is saying the meniscus, isn't a shock absorber is the shock of jumping, et cetera, taken up by muscles rather than the joints itself.

Ian McDermott:

It's taken up by everything, right? It's taken up by your heel pad, by your ankle, by your Achilles tendon by your calf by the muscles around the knee it's taken up by the articular cartilage it's taken up by the bone, right? Bone is slightly compressible. It's, it's multiple things,

Steven:

Right. And Elsbeth has asked about the, the, the contribution that weight plays to damaging the cartilage and to your decision making in whether you're going to repair or replace.

Ian McDermott:

Yeah, really, really good one really good question, because it's so awkward and difficult to answer diplomatically and politically correctly. I don't see many meniscal tears that are repairable in obese patients. I think when somebody who's obese has a meniscal tear then more often than not, it tends to be a fairly ragged complex or degenerate tear, which are rarely ever repairable. I would be inherently instantly reluctant to attempt a meniscal repair in an, in an obese patient because of the risk of failure and also the difficulty, the enormous difficulty of them complying fully with postoperative rehab. So for me, I would keep somebody minimal toe touch, partial weight bearing with two crutches where their knee in a hinged brace, locked at 0 to 90 degrees flexion for six weeks, and then get them going with physical therapy over a gentle cautious second six week period before then even contemplating any kind of impact or twisting from three months, post onwards, sorry, three months post op onwards. Now, if you've got somebody who's obese they won't be able to non-weight bear very easy and you won't find a brace that fits them. They won't be able to comply. And even if they are compliant, then when they do start loading, obviously the force is going to be bigger. Off the top of my head, I can't actually remember the last time I did a meniscal repair in somebody who was obese and that's quite telling,

Steven:

So what is the, what's the prognosis for someone with a meniscal tear who is obese then?

Ian McDermott:

Oh,

Steven:

What are you going to do with them? And what were the outcome for them? Are they destined for OA? Whether they like it or not?

Ian McDermott:

No, not necessarily. I mean, the good news for them is that they've got a high risk of dying from a heart attack before they get OA of their knee. So I'm sorry for being facetious. They, there's a funny, that's a funny anomaly with patients with obesity and that's that yes, they're going to load their knees more, or I know you've got to feel, you're going to feel very, very sorry for their knees. And there's a high complication rate if they do end up needing surgery, however obese people tend to do less. So generally speaking, they load their knees less cause they're less active. So I think that almost balances out, but you know, is obesity good? Of course it's not good. You know

Steven:

It seems that most of my audience today have decided to change their names to vegetables because of a potato viewer where I mentioned earlier on the celeriac surveyor, apparently Robin says, do you have an opinion on the use of braces for rehab after operations? Often used by extreme sports, like waterboarding skiing, snowboarding, et cetera.

Ian McDermott:

Yep. I use braces loads. If I want to restrict a patient, a patient postoperatively and for meniscal repair, the reason putting the brace on is to prevent them from flexing past 90. So you don't squeeze that meniscus. So 0 to 90, you're relatively safe. Par the further you go past 90, the more you squeeze the meniscus and you squeeze that repair and you don't want to pop those stitches. So I use a range of motion brace to restrict their range of motion. If, if they've had a meniscal repair if I've done articular cartilage grafting, I may put somebody in a, in a hinged brace, locked in full extension for the first two weeks and then gradually increase their range of motion and slowly unlock it over the course of the first six week period. If I do a meniscal just in a giveaway, the last slides.

Ian McDermott:

Now, if I do a meniscal transplant or an articular cartilage graft, and it's on a medial or lateral compartment, then I'll put the patients into a medial or, or lateral offloading brace, right? If somebody has a very wobbly and unstable knee, but they don't have, if somebody is suffering from functional instability, but they don't want surgery, then an alternative option is to put them into an ACL brace for example when people have braces and they buy from boots where they're not really braces, they're just leg warmers, you know, a decent, proper functional ACL brace costs five or 600 pounds. And it needs to be sized and fitted in which case they are robust and they are quite effective. I cringe just like inwardly cringe. It's like fingernails down a Blackboard to me when I hear about people, who've got a wobbly knee and therefore they put a brace on so they can play football or go skiing to me the analogy there it's like those people you see sitting outside hospitals in a wheelchair and they've got, they've got fag in one hand, right? And then they've got their amputated leg sticking, poking up the end of the wheelchair from their peripheral vascular disease from the baloney amputation they've just had. And they're on their hands. They've got the mask and the oxygen cylinder when it's oxygen, fag peripheral vascular disease. And it's, it's just difficult to reconcile that. So when I see somebody wearing a knee brace and doing sports, it's, it's just uncomfortable viewing for me. It's not, you know, you know, they've got a damaged knee and you know, they're just damaging it further.

Steven:

Well, I have to say I'd pay good money to watch somebody smoking a fag, while also using oxygen that could be entertaining.

Ian McDermott:

Yeah. Just drive through London. Look at some of the hospitals.

Steven:

Sally says, can any tears repair themselves, particularly if they're in the red zone, for example?

Ian McDermott:

I can't say no, because if they do, then we won't probably won't know about it. My gut feeling is probably not. And if they do, then it's a very, very, very small percentage. I think when people have got a meniscal tear and the symptoms settled down, it's probably more that the nerves have shrivelled back a bit. And the tissues scarred up a bit and the symptoms have eased off. But it doesn't necessarily mean that the meniscus has repaired or regenerated itself back to normal. There's a huge difference between an asymptomatic knee, with a damaged meniscus versus saying the meniscus has healed. So my gut feeling on that is, is very unlikely to heal on its own, but possible.

Steven:

I've got a follow up from Robin about the, the braces. Apparently he was talking about active braces, like the CTI and DonJoy Armor braces.

Ian McDermott:

Yeah. That, that great braces for people you've got instability like ACL PCL, instability. There's , there's an argument. The argument is if your knee is so bad, you need a brace. Then either a, you need a reconstruction or B you should just stop playing sport. That's what I'm saying. It makes me, it makes me, it makes me nervous. Okay.

Steven:

Deb's has asked whether meniscal tears can be rehabbed like re graded muscle strengthening and loading. And I'm guessing she means without surgery, not after surgery?

Ian McDermott:

Um if you've got, if you've got a meniscal tear, that's not bad enough to rush in with any kind of urgent surgery, then especially if it's a spontaneous degenerative tear and it's not in a young person there hasn't been trauma. Then the, the recommended advice, according to the Basque guidelines, which I was completely agree with is that usually the patient should go through a trial of conservative management. Now, do I think that strengthening somebody's muscles makes a meniscal tear better? Well, no, not at all. I think the more you offload that meniscus, then the better, the chances that you'll be giving it a better chance to heal and settle down heal. You'll be giving a better chance to settle down the more you offload it. So, so really by strengthening your muscles, what are you going to do is, is put into potentially increase the load, going across the joint and increase the load going through the meniscus.

Ian McDermott:

I think when I send people for rehab with a meniscal tear that doesn't need to be rushed, then really it's a form of what I would call supervised neglect. And I don't mean that's being insulting, right? It's just, you're giving somebody's support, psychological support, physical support, hands on care, reassurance, education, whilst time and nature do their thing. I think, I think that's what we're really doing. We're waiting, we're watching, observing to see whether things get better or don't on their own. But do I believe that strengthening your muscles will, it will make a meniscus heal? No, not a chance, but is rehab good? Absolutely. Yes.

Steven:

Right. Thank you. I'll let you get back to your presentation.

Ian McDermott:

Okay. Virtually done.

Steven:

Yeah, we're coming to the very interesting bit aren't we.,

Ian McDermott:

So yeah, I'm going to put too much into this. Really if, really, if you've lost your meniscus.

Ian McDermott:

And if you are beginning to develop progressive symptoms and signs of degenerative changes in your knee, then the simple thing is, well, replace the meniscus. So this is a meniscal allograft from a donor. Now these meniscal allografts, the, the donors are screened and tested very carefully. Any high risk categories that don't, that don't have tissues, not used any history of an infection tissue is not used. The donor is tested for HIV, hepatitis all the different bacteria, viruses and fungi, any positives, the tissues not used the tissue itself is tested for, again, all the different bacteria and viruses. Any positives is not used. If it gets through all of that screening and testing, then it's still sterilized chemically, sterilized and deep frozen. So the risk of you getting a contaminated meniscus with anything that may cause an infection is estimated to be less than one in 1.6 million.

Ian McDermott:

So they're fairly safe. The Americans say one in 3 million. Also the cells that within that meniscus are locked within it within a dense scaffold of cartilage within they call it, sorry, a dense matrix within a dense matrix of cartilage and therefore you're immune and they're dead. Their cells are dead because obviously it's processed and it's deep frozen. So your immune system can't get to those cells. So it's, what's called immunoprivileged tissue. In other words, it doesn't elicit an immune response. So anybody can have anybody else's meniscus, as long as you match left knee or right knee medial or lateral and size, you got to match the size of the donor to the size of the recipient. So that's a meniscus prepared. Here's a knee with a medial femoral condyle with no meniscus and the articular cartilage here beginning to become rough and thin and worn. And this is that knee with a new meniscus stitched in place.

Ian McDermott:

And we stitch it to the bone at the front and the back where the insertional ligaments are. So through bone tunnels in the tibia, and then we stitch it around the periphery. So it heals to the capsule. So that's meniscal transplantation. Well, biomechanically, does it work well? Here's our pressure maps again, left-hand ones. These are just 2D. These are the same pictures, but in 3d. So intact meniscus a broader contact surface area. You can see just about the shape of the meniscus here in the lateral compartment with low contact pressures, take the meniscus out, small contact surface area, high peak pressures. If you put in a meniscal allograft, and this is just a Cadbury biomechanical study, then you decrease the peak contact pressures towards not perfectly too, but

towards normal. So it's much better to have a meniscal allograft in your knee, then no meniscus, but a new meniscus is never as good as your own original meniscus.

Ian McDermott:

And what it doesn't do is it doesn't reverse whatever articular cartilage wear and tear you might already have developed. If you want to know about more meniscal about, if you want to know more about meniscal transplantation, then this is a great website meniscaltransplantation.com. I know it's great. I wrote it. And there's a load of information about meniscal transplantation on this, on this site. That's just dedicated to it. Most people who lose a meniscus do not end up needing meniscal transplant and a majority, I would say 80% of the people who come to see me and say, can I have a meniscal transplant? I ended up disappointing them because they're not appropriate. And the broadly speaking the cutoff in terms of age, and this is not an ageism thing, it's just being sensible in terms of probability of healing. And also the likelihood that you're more suitable for a artificial joint replacement. So broadly speaking, most people agree that the cut off is, is 50. Some people say 55, but most, most meniscal transplant surgeons say 50. And the worst, the damage in the knee by the time you transplant, then the lower, the probability of a good outcome. And broadly speaking, the success rate for meniscal transplantation is about 85% at five year follow up. So is it a good operation? Yes. Is a brilliant operation. No. Does it give you a perfectly normal knee? No, it's a salvage surgery, not restorative.

Ian McDermott:

So that was the talk about the menisci. I'm happy if anybody's got more questions, more than happy to chat.

Steven:

Yeah. We've got a few coming in. I'm going to read this one off the cuff. I haven't read it through yet, but I'm somebody who's a late joiner. I apologize if it's already been asked, he says he's had a very painful locked knee playing squash just before lockdown, posterior lateral pain, giving way as well. It's calmed down over the past few weeks and generally feels good at the moment. You can cycle hard without any problem, his thoughts for meniscus, but as it's improved, he's questioning that. And he says, do you have any thoughts on how often tears repair, which I think we covered fairly recently, but so what would you be telling this guy on the basis of his case history?

Ian McDermott:

Was that from mr. Cucumber? I heard possibly which no. Right. Okay. whoever you are my friend, please, please, please, please, please go and get yourself an MRI scan ASAP. The private scanner centres are still open. You can get yourself an MRI. Obviously I don't know where you are in the country. In London, if you go to a private hospital in London and try and get a private MRI scan, then it's going to cost you could be easily six, seven, 800 pounds. If you go to a private MRI unit like Vista diagnostics or a Ryan medical or like a health, you can get them much, much cheaper. I think Vista for example, do MRIs for about 250 pounds and that's within most people's budget. So from that very, very, very worrying short history. Please, please, please go and get yourself an MRI scan please.

Ian McDermott:

Consider that you do have a meniscal tear until proven otherwise the fact that your knee is locked means that it's an unstable to, and it might lock again. So please, if you're going to cycle, cycle very, very carefully, don't stand up on your pedals, right? Like they do in the spin classes, don't do any running, jumping, whatever you do, don't do any twisting. And if you kneel on the floor, do not to try and sit back on your heels, right? You've got a badly damaged knee until you've proved it. Otherwise, please go and get an MRI scan and get it looked at by somebody who could interpret it properly with you.

Steven:

If that being the case, what should he ask for he or she asks for, in terms of the MRI? I mean, you mentioned five views that you

Ian McDermott:

That's standard that standard MRI, knee, MRI scan left, or right knee, preferably three Tesla. If you've got one nearby, no clinical indications, ? Meniscal tear, that's all you need.

Steven:

The potato viewer has asked a question, which I'm sure is, is bothering a number of people is why aren't we using synthetic replacement menisci?

Ian McDermott:

Okay. So we have done in the past and over the last few years, there's two main types of synthetic meniscal replacement. One is called, have I still, it still got my screen-share on? Good. so one is called the Meniflex. And that is a that's an artificial meniscus made from pressure moulded pressure and heat moulded bovine, Achilles tendon. So it's made from collagen and the other type of scaffold is called the active fit. And that's made from poly urethane. They're only designed for meniscal tears where there's a segmental partial defect. You can't replace the whole meniscus and the peripheral rim has to be intact cause you have to stitch it to the peripheral rim. So the indications there are very narrow, straight away. Well, the studies looking at these scaffolds have shown that only about 74% of the missing tissue grows back.

Ian McDermott:

But most importantly, the tissue that grows back is not meniscal tissue. It's just scar tissue. And there's some studies that showed that if you can reduce people's pain, if you put, if you stitch a scaffold in place, but those of us who've used these scaffolds we're very, very aware of the very, very high failure rate. They re-tear, they're weak, they're soft they're friable that they tear, they fail, you end up having to do repeat surgery and just taking them out. So most of the guys that I know who do meniscal replacement surgery, and there's only a handful of us, like half a dozen of us in the country who do meniscal replacement in any kind of number. And there's only three of us who've done in the country, who've done over a hundred. Most of us who've tried meniscal scaffolds have stopped pretty quickly because we were very, very disappointed with the results. I think the long-term future of meniscal replacement is in tissue engineering with, you know, three D printed bio scaffold seeded with cells, with growth factors. And that's the long-term future, but we are absolutely years and years away from that.

Steven:

Okay. The onion ring has asked what you think of the Oxford partial knee replacement? Is that successful?

Ian McDermott:

Its alright. I wouldn't have one, if I'm, I think partial knee replacements are very, very good when they're done in the right patient at the right time with the right indications. Okay. If I needed a partial knee replacement, I would definitely have a Conformis ie knee custom made prosthesis that I could guarantee matched my knee perfectly. So I think the results of partial and total knee replacement surgery are much better with custom made prosthesis.

Steven:

Okay. I don't know who asked this question, but they ask, why would someone's knee lock straight that is extended difficult to flex beyond 100 degrees, 90 degrees, very painful, no traumatic onset. Would that be a bucket handle? Meniscal tear that's caught limiting flexion.

Ian McDermott:

No. So when we talk about locked knees, what we're really talking about is knees that don't extend fully. Okay. So really everything I've said about a locked knee, if somebody can't flex their knee fully, I wouldn't call that a locked knee. I'd just say they've got reduced flexion. And if they can't flex past 90, 90, or a hundred degrees, and it's a new thing, it's not just somebody who's got an arthritic knee. If it's something has happened, something has changed. They could flex their knee fully and now they can't then. Yeah, my, my, the top item on my list of suspicions would be a meniscal tear.

Steven:

Okay.

Steven:

Valerie says that you, you mentioned a missed tear on MRI, but asks whether a bucket handle tear could be missed?

Ian McDermott:

If it's displaced, then no, not a chance if it's if it's a bucket handle tear of the medial meniscus, then you're, and even if it's flipped back in place, then you're almost certainly going to see it. The only exception is if you've got an unstable posterior horn of the lateral meniscus, where you get peripheral detachment around what we call the peripheral, the popliteal hiatus, and the meniscus tibial ligament becomes stretched out and thin. And the, and the posterior horn of the lateral meniscus is flicking forward intermittently. And that, unless you catch it whilst it's load, then you know, you will not see that on an MRI. That's something that's diagnosed intraoperatively at the time of an arthroscopy. Okay.

Steven:

I might need Mariah's to clarify this question a little bit, unless I'm missing something very obvious. He says, is there a limit of time after the loss of a meniscus? That means it can't be replaced. You

said, if you've lost your meniscus, then you can't actually replace it because you've got to stitch the replacement to the

Ian McDermott:

No, no, you can. If you've lost the whole meniscus, you can replace it with a miniscule allograft and you stitch into the capsule. If you've, if you've lost the peripheral rim. So if you've even a segmental loss, then you can't use the scaffold. Okay. But the scaffolds are rubbish. Anyway, I wouldn't, I wouldn't, I wouldn't have a scaffold in my knee. So why would I do it in someone else's?

Steven:

So, in which case, Meriaz is saying, if you've lost your meniscus, how long before you couldn't put in a replacement?

Ian McDermott:

There's no didactic cut off really, except to say that most people agree that 50 in terms of age is a bit of a cut off. If I get somebody who's a very young, 50 year old whose knees in pretty good condition and they're, and they're an ideal candidate then yeah, I might, I might not, would, might consider a meniscal transplant. You're going to have to have a very careful discussion with the patient. I think if you've got grade three damage, great, I'd say grade one, two bordering on three, then that's fairly comfortable justification for a meniscal transplant. If you've got no damage and no symptoms, then you cannot, you absolutely cannot justify major complex fiddly surgery, like a meniscal transplant. It's, it's a minimum two and a half hour operation with nine months rehab with an 85% success rates, which means a 15% failure rate is a big deal, right?

Ian McDermott:

So you couldn't possibly justify doing that. Somebody with no symptoms, just for purely prophylactic reasons. And you couldn't really justify doing it in somebody with minimal symptoms. So the difficulty with meniscal transplantation, the reason our numbers for meniscal transplants are relatively low is if you can't do it in somebody, who's got no damage and no symptoms, but you can't do it in somebody whose knees completely arthritic. Cause it's just going to fail. Right? So you've got to find those people in the middle who have got some symptoms and some damage, but it's not too bad. It's bad enough to justify the surgery, but it's not so bad that the surgery is likely to fail. And that's actually a very small cohort of people.

Steven:

There's a question, I guess, which has been an issue, which has been floating around many circles for many years. That's glucosamine supplementation. And I think we talked last time about hyaluronic acid. Could you just go over your opinions on what benefits they may have for knees generally, but for menisci in particular? Okay. We were asked that by the Aubergine in this occasion.

Ian McDermott:

I like aubergines. The especially fried. The glucosamine and chondroitin, glucosamine and chondroitin are of definite benefit to the supplement industry. And they've made that bloke from there, from Dragon's den. Come and bless his name, the one who sits next to Peter Jones, they've made him a multi multimillionaire through Vita Biolitics. Personally, I think it's bordering on criminal. I think it's just immoral. I think the whole supplement industry is a multibillion-pound con

and there are plenty of studies. And the BMJ published a big Meta-analysis five years ago, but it showed really, quite clearly that glucosamine chondroitin they're just placebo or they do. They do nothing. The only supplement that had a very, very small, positive benefit. And it was very small, was Omega three oils. So cod liver oil, well guess what? Just eat oily fish once a week. Okay. so unless you're a vegan, in which case you've got to be so much more careful with your diet because it's so difficult to get a vegan diet, right?

Ian McDermott:

If you're not a vegan, then the likelihood of you needing any kind of supplements is absolutely minimal with one exception. And that's vitamin D because about 40% of the UK population are Vitamin D deficient, and you can get these little vitamin D sprays, put it next to your toothpaste. So every day when you brush your teeth, you wash your mouth out and then you just spray it under your tongue. And it gives you a really good dose of vitamin D. And then you're never going to be vitamin D deficiency. Hyaluronic acid, another absolute con. It came into the UK in two forms. One of the companies said that it was a, it had a mechanical effect. Like what, like oiling your knee, sorry, it's getting dark. How long have I been talking? So one company said it had a mechanical effect, like oiling the knee and they sold it as a mechanical device.

Ian McDermott:

So a medical device, the other company said it had a chemical effect, like a painkiller, right? And they sold it as a drug. The reality is they probably had no effect at all. And the American Academy of Orthopaedic Surgeons, which is the biggest orthopaedic organization in the world, they published a meta-analysis a couple of years ago on the use of hyaluronic acid. And their conclusion was, again, it's no better than placebo. And the reason it became so popular is when it first came out and it came out something called Synvisc, which was a two mil injection and it costs a few hundred quid. So a couple of hundred quid and it had to be injected once a week for five weeks in a row. So a whole bunch of people said, well, fantastic. That's five appointments, five injections, and five sets of a few hundred quids worth of Synvisc.

Ian McDermott:

So surprise, surprise. It became very, very popular with certain people in the in the medical fraternity. And I would call them crooks or at best, at best they were naive. Well, all of the evidence now shows that it is no better than placebo. And so that puts us in a very difficult position. If somebody comes in and they say, I've had, I have, I've had a hyaluronic acid injection once a year for the last few years. And it's brilliant. It works brilliant for me. Then it's a little bit like somebody, if you meet somebody over dinner and they say, I'm feeling great today, because I believe in God now I don't want to get too philosophical or theological, but I can guarantee you that the one thing you should never do is try and argue against their belief in God, because then you'll end up with two very unhappy people with no resolution, the same applies to hydronic acid.

Ian McDermott:

You could argue that if somebody is absolutely convinced that hyaluronic acid works for them. Then the likelihood of the placebo effect working for them and having a bigger effect is much higher. And therefore you could argue, it's not worth trying to argue with them against it, in which case there's an argument for giving it, but that's a very, very tenuous argument. So I would always, if somebody asks me about hyaluronic acid, I'll give them the science and I'll try and put them off. If

somebody goes on, the patient goes on and on and on, then I might be bullied on rare occasions into giving an ha injection. But I can't remember the last time I did. But we don't ever proactively recommend it. Absolutely not.

Steven:

It doesn't sound unreasonable though. If I'm, if you think there's a high chance that the patient will respond well through whatever mechanism placebo or otherwise, then it's reasonable thing to give them something which will give them health benefit.

Ian McDermott:

No, no,

Steven:

You should promote yourself if they say they had worked before.

Ian McDermott:

Yes and no, right? Yes. If you've got some non-invasive with zero risk and minimal cost, but absolutely no, if you've got something that can cause a problem. And if you do an injection, you could cause a septic arthritis, about 5% of people develop an allergic reaction to hyaluronic acid and you can, you can actually have about 1% of people may get an anaphylactic reaction and that can be life threatening and it costs hundreds of quid. So it's causing financial harm. So I think it's really difficult to just to provide really, really difficult to justify it. And I think other treatments, non-invasive treatments, I definitely prefer to recommend them

Steven:

Nigel raised the issue of money because several people have asked questions about the cost of the operations that you've described so far this evening, I'm at somebody's, Hannah's said, how much should it be for meniscus repair for those without health insurance?

Ian McDermott:

Right? So if you have, if you don't have insurance yourself funding patient, and you have an arthroscopy depending on where you have it and who does it, it'll probably cost you somewhere between about three and a half thousand pounds to maybe four and a half, or even could be 5,000 pounds. If you then have a meniscal repair, then I personally don't charge any different for a repair or a trim. I think it would be uncomfortable if you did cause then you'd be creating a financial incentive to do one or the other. And also you don't really know for certain what you're going to do until you get in there. And it's not nice to give people an open ended bill. It's nice to be a bit more specific. So I charge the same for whether it's repair or a trim, even though a repair is much more fiddly and takes longer.

Ian McDermott:

Problem is the hospital. If somebody has a repair and you end up losing, using lots of meniscal stitches, those stitches can be expensive. And this stryker air that I showed you, that little animation of each one of those stitches costs about 300 quid and the most I've ever used in one patient's knee for repairing a really big bucket handle tear was 15. Now that's 15 times 300 and the hospital would

charge the patient, the cost of those, what they call disposables on top of the cost of the procedure. So that, that could increase the cost by another couple, you know, couple of hundred, couple of thousand pounds potentially. Yeah.

Steven:

Okay. So its not cheap. If I may, I'll give you one more question. We have four minutes left and I suspect it may take a while. I don't know who asked it, but they've said if someone is diagnosed with moderate to severe arthritis, secondary to trauma, say at the age of 25, when would you typically expect the knee to require being replaced rough age based on your experience and given that it probably needs to last a lifetime. Is there a percentage of people who have to have more than one knee replacement in a lifetime.

Ian McDermott:

Yeah, right. Very artificial bigger again, we don't like doing people's knee replacements under the age of 15, unless we really have to. And that's a very arbitrary figure, right? The youngest knee replacement I've ever done was on a guy who was 37 and his knee was smashed to pieces and he knew all of the negatives and he was begging for it. And after making sure he was fully, fully consented and fully aware, then we agreed to go ahead. He's doing absolutely fine. But yes, a knee replacement at a young age is storing up trouble for the future. If you have a knee replacement and you're in your seventies, then there's only a 10% chance for it failing and you needing revision within your lifetime. If you have a knee replacement within your fifties, there's a 50% chance of you ending up needing a revision because younger people a do more.

Ian McDermott:

And the more you do the faster rate of wear and tear the quicker it's going to wear out. And also younger people live longer. It's a double whammy. A revision knee replacement is twice as big, twice as difficult double the complication rate and half the outcomes in half as good outcomes as a primary, if you can possibly avoid a revision, you should, the best way to avoid revision is twofold. Number one, don't have it too young. And number two, when you do have it don't abuse, it don't do impact. Just treat it gently, stick to light non-impact cardio exercise only.

Steven:

I am beginning to feel quite depressed. U

Steven:

Having had mine in my fifties.

Ian McDermott:

Yeah. But at least you didn't have it in your forties.

Steven:

Yeah. Well, we'll see what happens. And I'm Robin, the last question and Robin is taking us back to his high and high impact sports and asks whether after you've had meniscal repair, can you expect to returns a high impact sport

Ian McDermott:

After meniscal repair? Yes. After meniscal replacement? No. and Steven, last question to me is I'm really worried about that colleague who sent in that story about his or her knee with the locking, et cetera, et cetera. That's really disturbing. Just to emphasize again to that person, please, please, please get it scanned. If it turns out to be somebody who is a friend or colleague of yours, Steven, and they are perfectly at liberty via you to get their imaging to me. And I will have a look at it and I will let them know exactly what it really shows and what it really means.

Steven:

Well, I'm sure we can find out who it is. I, the name hasn't been given to me on the list, but I'm sure we can find out. And again, thank you for giving up your time this evening for the second appearance on our show here. And I know it's been appreciated by lots of our audience in particular. They'll appreciate your frankness over the number of people that you describe as crooks out there. I think

Ian McDermott:

I promise you I was biting my tongue and trying not to use bad language. That's why I talk slowly.

Ian McDermott:

Thank you. That's very kind. Thank you. And good night.