Academy of PHYSICAL MEDICINE

COVID-19 and the Knee

With Mr Ian McDermott FRCS

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TRANSCRIPT

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Steven:

Good afternoon. Welcome back to the Academy for the second of our CPD sessions. Today this lunchtime, we've got an hour of CPD learning with others, with orthopaedic consultant. Mr Ian McDermott Ian's been an orthopaedic consultant for a hell of a long time. Now he's the youngest ever surgeon to be appointed to the board, I think of the Royal college of surgeons Ian. And he specializes purely in knees because his greatest claim to fame is that as a junior doctor, he actually lived in my home village of Higham Ferrers up here in Northamptonshire. But anyway, welcome to the Academy. Thank you very much for giving up your time to come and join us today. I suppose everybody's burning question is, how is the coronavirus crisis affecting you as a, as an orthopaedic consultant?

Ian:

Well I'm based in central London and I think London has been hit hardest by considerable measure. So, I'm also full time private. So what we saw a few weeks ago was that the private sector was taken over by the NHS on a block contract. That's a 13 week contract that started towards the end of March. So almost with immediate effect and effectively until further notice the private sector has been shut down. So we for example, were given about an hour and a half notice to clear out of our clinic, which was a bit of a shock. So like many people, we've moved over to

video consults, but obviously video consults are not the same as face to face. And as a surgeon, currently we're unable to do elective operating. So it's had an enormous impact. Yes.

Steven:

Yeah. I think you, you were saying to me earlier on about the Nightingale hospital there, which has got something like 5,000 beds and 40 patients.

Ian:

Yeah, no, I think that the figures four thousand potential beds I don't know how many are fully equipped so far believe it's in the region of maybe about 500 and the last information that we heard, and it's very difficult to get information out the Nightingale and we've heard that apparently staff who are working, are being forced to sign NDAs, which is, yeah, a bit of a worry. But the, the, the information we have heard is that the latest count though were less than 40 patients in the entire facility.

Steven:

But if it ever did top up with 4,000 patients, then you still said that they probably wouldn't be looking for orthopaedic surgeons to come and help them out because your expertise is completely different and general medicine is not no longer your forte.

Ian:

Yeah. I haven't done general medicine for 20 years. So to expect somebody who sub specializes in one particular area to suddenly be competent in a different medical specialty with just in a 10 minute top-up training is unfeasible. And frankly not wishing to demean any of my esteemed orthopaedic colleagues. But by the time that this country is, relying on orthopaedic surgeons to look after patients in ITU. I think the country's done for

Steven:

So how long ago did you form did you found London Sports Orthopaedics

Ian:

Back in 2008, 12 years ago. So we're a group practice based in central London.

Steven:

Yeah. And have you, you've specialized in knees all that time or have you developed your specialization since then?

Ian:

I've been a consultant for about 15 years and does nothing but knees for about 10 years now. Yep. Okay.

Ian:

So I think the most important thing to start this talk with is just to reiterate the message that's being relayed many, many times over far and wide, which is if you don't need to go out, don't go out, stay at home. This is not just about protecting the individual. This is about flattening the peak of the curve. It's not, it's not even about reducing the total numbers. It's ensuring that when the peak hits, the NHS has the best possible ability to, to cope in terms of capacity within ITU, like for as long as this advice remains out there, that it's beholden upon everybody to take it extremely seriously. Uso talking about myself. Yes, I'm part of the group practice. I set up London sports orthopedics 12 years ago. There's 15 of us in the practice and we cover all the different surgical subspecialties within orthopedics. And we've also got sports physicians, pain specialists and also rheumatologists. So we cover the whole of MSK apart from physical therapies, which we, we don't cover because we don't need to cover because we're surrounded by a very large number of excellent colleagues who we work with very closely.

Ian:

So the first real question is, well, at a time like this in extreme circumstances and extreme stress, who really cares about knees and it's, it's quite difficult for any CPD session talking about anything other than covid to come across as particularly crass at a time like this. But the answer to that question is who, who still cares as well? It's the people who've got knee pain. So Covid doesn't stop people from hurting themselves. In fact, with the massive increase of people doing home exercise, and if, if we all look out as well windows every single day, now we're seeing people out jogging who without wishing to be impolite, look as if they don't normally jog, who are out jogging now and trying to get fit and using this lockdown period. Uas a way to start exercising or to get fitter. Ualso it's a period where people have decided they're going to do all the DIY projects that they have, stacked up and left. And so it's slightly worrying boarding on terrifying for us as orthopaedic surgeons, if people are actually doing things that increase the probability of them injuring themselves at a time like this.

Steven:

Well since you used to live up in, higham Ferris you'll remember this area. Well and it came as a real shock to rushton when they heard that they had to do an hour's phys everyday. They thought it was compulsory and it was a real shock to the system there.

Ian:

Yeah. And but on top of that as well, there's also a very large cohort of people out there with, with problems, more degenerative problems, not rather than traumatic problems. And at a time like this, their problems don't go away. Little bit about statistics, and this is alot of supposition here and every time you see a statistic, it seems to change. But if we suppose that there might be as many as 24,000 deaths

by the end of this crisis, and that's, and that's an absolute guesstimate. Well we got to put that in context. So when people on the television present, Oh, there's been 500 deaths, 600 deaths, you have to put it in context of well how many deaths are there normally per day per year? And in the UK we normally see about 600,000 deaths a year. Shocked me. How big a number that is. So if we see as many as 24,000 Covid deaths, well that's only going to represent 4% of all deaths for all causes in this particular year, which is actually a very, very small minority. So what we're actually saying is the 96% of the deaths are actually not going to be due to Covid. And we've also got to be extremely careful about the stats that we're being fed in terms of people dying with Covid. Dying with Covid does not mean necessarily dying from covid.

Ian:

So then the real question that's on everybody's lips at the moment is how long will this lockdown period last? Would it just be six weeks total, three months, six months could it go on forever. Uand there is genuine concern growing, with very good reason about the potential consequences of lockdown itself. So

Steven:

I just think that for a second, because I was reading something by one of your medical colleagues, Malcolm Kendrick, and he said there's actually a, there's a third category of deaths, isn't there? There's dying of Covid. There's dying with Covid, but there's also dying because of it, which is dying. Something else that went untreated because of the NHS concentrating all its efforts now on Covid and disregarding virtually every other problems.

Ian:

Yeah, absolutely. So this is why we're all looking at Sweden and I'll come back to that point. And because Sweden is going to be a very interesting, it's epidemiological experiment and it's only with hindsight that we'll be able work out which approach was actually the best in terms of minimizing deaths. And it sounds terribly callous to say that any number of deaths are acceptable, but there's a very simple equation, which is death is a death. So if somebody dies because of a lack of medical services, because of the lockdown that's as tragic as somebody dying because of a viral disease due to covid, a death is still a death. So we're only going to know which approach is actually most appropriate retrospectively. The one thing that I think is, is difficult at the moment is seeing how many armchair experts there are out there, of which I am not one on this subject.

Ian:

I'm not an epidemiologist and I'm not a public health consultant. And how much criticism, quite vitriolic criticism there is, which at the moment I think everybody should just pull together and then see what happens afterwards. And what we're actually seeing certainly in central London is an eerie silence. So for those of us who

still have to go into London on rare occasions for specific reasons, Mmm. We've never seen anything like it. It's an eerie, eerie ghost town. But I think this, this, this slide really depicts the point that you are, you are alluding to Steven, which is we're all sailing towards an enormous iceberg. We're all looking at the covid problem , pandemic as, as the main problem. And initially it certainly is, but if you estimate the covid will only account for roughly 4% of deaths or causes for this year, which means that 96% of test will be for other causes.

Ian:

But if you stop all access to routine medical care, so you're stopping screening, there are people who've, who've got part way through cancer treatments, who kind of the chemotherapy stopped diabetes, all, people with lots of different medical problems who've all effectively lost access to routine medical care. Well, if you increase the mortality as well as, the morbidity rates as well. But if you increase just the mortality rates of deaths for all causes by as little as 10%, which is perfectly feasible, then you're going to see an overall increase of 9.6% in deaths. And that's compared to just 4% of deaths being due to Covid. So at some point in this equation, there will be a point where lockdown causes potentially could cause far more deaths than covid itself. So the real skill is, is the tipping point and working out where that tipping point is and balancing out the benefits of lockdown versus the actual harm that it's causing.

Ian:

But what this means at the moment is the knees are on hold. And and that's why I wanted to focus on this particular talk to try and give some kind of guidance in terms of well what is still urgent and what isn't. Urgent and what we're being told at the moment is that all elective surgery has stopped all elective outpatients has stopped within the NHS and the private sector. And if you have a patient who needs to be seen within a private facility that's currently under NHS controlled, or if you have a, a surgical case that needs doing and they have to be deemed either emergency or time critical, in other words, life or limb threatening. And that definition is an NHS definition. So I, for example, would have to ask my local private hospital for permission and the local private hospital manager would have to ask the head of the NHS hub for that area for permission for the patient to be seen or treated.

Ian:

So what I wanted to do is just highlight those conditions that even at a time like this, we would still consider emergencies, which makes this talk relatively easy. Because from an a perspective of knees, that's actually a relatively few. So there's just four things that I really want to concentrate on. The locked knee, the septic knee, acute knee injury, and the severely, painful, painful arthritic knee. And that's all that we're going to go through. So first of all, the locked knee, first thing is to understand the definition of what or what does a locked knee really mean. A locked knee is a knee that used to straighten fully. Normally in a young person there is an occurrence, an

event, an active trauma or something sudden happens and then all of a sudden there is pain and the knee will no longer straighten. It sounds like I'm going to teach some people to suck eggs, but interesting the, from our perspective as orthopaedic surgeons, the time when we genuinely know for certain that a locked knee is truly a locked knee is if you give the patient an anaesthetic, if you give the patient an anaesthetic, and I'm not suggesting that as a diagnostic tool for seeing whether somebody has a lock knee.

Ian:

If the need stays Bent then it means that there's a mechanical block if the knee straightens out and flattens and extends fully once the patient has had an anaesthetic, then it means that actually if that's a pseudo locked knee, the reason the knee is not extending is simply pain inhibition. For example.

Steven:

Sorry, is that local anaesthetic or general anaesthetic?

Ian:

Yeah, general anaesthetic. So for example, if we have somebody who's got an acute knee injury and we, we know they've torn their ACL and we think that they've got locked knee, then you give them the anaesthetic, the knee straightens out. Well, no, it wasn't locked. It was pseudo locked. Okay. Now, this is probably very artificial because the reality is that I would never ever put a patient on a theater table under an anaesthetic without first having an MRI scan to see what's actually going on. All right, so this is just a concept. You'll please don't think we give people anaesthetics to see whether their knees locked or pseudo looked. Okay. And then the other thing to be careful, of is the difference between a locked knee and a knee with a fixed flexion? So a fixed flexion is normally a degenerative thing and that's in an older patient with an arthritic knee, that's swollen.

Ian:

And one of the first things that one of the first signs of an arthritic knee is that you begin to lose extension. So initially if the patient hyperextends , they will lose the hyperextension and then they gradually developed an increasing fixed flexion. So there hasn't been a specific event. It's an older patient. This is a degenerative thing, not kind of gradual thing, not a sudden thing. So that's not a locked knee. It's a fixed flexion. So this is this is not my picture. I found this off Google and it's a, it takes us all back years and years and years to when it was acceptable to make patients strip off in what looks like not the world's most private secluded setting and then take photos of them. But it does demonstrate the point. There's an arthritic right knee with a fixed varus and a slight fixation, slightly swollen, absolutely typical. So if that's not what we're talking about, what we're talking about is somebody who's not a young active, they either twist their knee playing sport or they may be sitting with

their legs crossed and getting up from seated or they may be doing yoga, but some there's a sudden pain and then the knee suddenly locks up.

Ian:

This is very, very simple. A locked knee is a displaced locked bucket handle meniscal tear until proven otherwise. It might not be that. You'd have to prove that it's not. It might be that there is a loose body inside the knee, but if you have a loose body that's like having a little stone in your shoe and a locked, locking from a loose body normally tends to be intermittent. If the person wiggles their knee around a little bit, then the little loose body pops out the way at the front of the knee and it allows them to extend, so it tends to be a lot more intermittent and a lot more frequent. If you have a knee and it's locked and it remains locked, then it is a displaced, locked bucket handle meniscal tear until proven otherwise. This is an arthroscopic view of the medial compartment of a 19 year old girl's knee and that horizontal shape, you can see my cursor. That horizontal bit there is actually the medial meniscus flipped forward sitting in front of the medial femoral condyle.

Ian:

That's after things being washed out with a probe here and I'm probing and there's the bucket handle fragment. That's the bucket handle fragment pushed back in place. Okay, and then that's the meniscus stitched with multiple stitches around its periphery with stitches on the undersurface that you can't see as well. I've made this little area here. This discoloured bit is where there was also a little radial tear in the inner free margin of the body of the meniscus that just had a little trim and then it was Smoothed off and welded out with something called a radio frequency probe. So that meniscus has been reduced, repaired, and salvaged. Well, why is this important? Well, ever since the 19 the mid 1970s people began to realize that the meniscus wasn't just a vestigial, remnant of a Muscle inside the knee as was previously thought and gradually we developed increasing evidence that actually very important and we know now that they are predominantly a load sharer within the knee. They're still referred to as shock absorbers by most people, including me on a regular basis. Biomechanically, that's not actually accurate and there was a very good paper in the journal of biomechanics showing that actually it's just a load sharer and not actually a shock absorber when describing it to patients. It's easier to just to call it a shock absorber, like a little rubber washer. But meniscal cartilage also has a potential role in joint new joint lubrication and even in nutrition of the articular cartilage for that. These pictures are from one of the studies we did at Imperial college. That was some work that I did with professor Andrew Amos and this is a pressure sensitive paddle put into the lateral compartment of the knee with the meniscus intact.

Ian:

And here's the lateral compartment at semicircle. This is just the paddle a handle for putting the pressure sensitive sensor in. We see low peak contact pressures here. The picture below, that's what a lateral compartment looks like with no lateral

meniscus. So this is a Cadaveric study done in a lab with a, an *[install materials?]* testing machine. You take out the meniscus, you load the lateral compartment, you have very high peak pressures in a small surface area. If you think that the the peak pressure to failure of articular cartilage is about two megapascals, you can see from the Scale here straight away, the prolonged exposure to these pressures will inevitably cause arthritis in that lateral compartment at some stage. So what we're trying to avoid is post-traumatic secondary osteoarthritis in younger people. And if you want a number that will help you just quantify that, that would probably be the best papers from the journal of rheumatology from 1998.

Ian:

And that's from Eva Rioux and her then husband also Dr. Rioux. So Rioux and Rioux journal of rheumatology. And what about figures showed that if you have a total meniscectomy, then the relative risk of arthritis, a 21 year followup is 14. Now, let's put that into easier terminology. What they're saying is roughly 20 years after meniscectomy, and that's total meniscectomy. The risk of arthritis goes up roughly 15 times. And if you're trying to explain that to a patient and they look unimpressed or not bothered, then you simply say, well actually the risk goes up. 1500% if you lose your meniscus and all of a sudden that sounds a little bit more serious.

Ian:

So if you have a locked knee, it's a displaced locked. Bucket handle meniscal tear until proven otherwise. It needs an MRI scan within days, not weeks. This is one of the few, knee entities that we would consider. Urgent emergency. It means that you could admit the patient then and there and operate that day. Urgent means you've got to sort them out within the next few days, not the next few weeks. So this is an orthopaedic urgent. If you confirm that as a displaced, locked bucket handle meniscal tear, then that patient needs surgery again within days, not weeks, not hours, but within days. Why the urgency? Because if you, if you leave the bucket handle fragments, so you've got a meniscus, it'd be very hard to show on camera. You've got a meniscus there's the compartments there's your meniscus, it flips over so that the bucket handle fragment is stuck in the middle of the knee.

Ian:

What happens is the longer it's stuck there, the more the femoral condyle macerates it. Every time you move your knee and also that Fragment will start to scar up. In other words, it will, it will shorten. So the longer that fragment is left there, the more damaged it will become and the lower the probability that even if you can reduce it back in place, that it's actually fully reduceable and therefore repairable. If you can only get it to here because it's shrunken, then you won't be able to get it back in place and then stitch it around its edge. So the sooner you catch that, the more likely it is to be reduceable and repairable and therefore salvageable. The longer you leave it, the more likely it is it'll be irreducible and or irreparable, in which case you end up having to take the bucket handle fragment out. And those bucket handle fragments more often than not involve virtually the whole volume of the

meniscus. Most of these tears go almost to the complete periphery for the meniscus. So if you leave this, if this ends up being neglected, then effectively your condemning somebody to ending up having surgery with a total meniscectomy.

Ian:

So look out for the locked knee.

Steven:

When you described the locked knee you only mentioned extension. I mean, in my mind locked means it doesn't flex on either.

Ian:

No we don't. We don't really talk about that in terms of a locked knee because for me, the reference is really to whether or not they've lost their extension. The reality is if you can't extend your knee fully, it's pretty much always painful. And if you got a painful knee and yet you won't be able to flex it, but an inability to fully flex a knee is, is almost ubiquitous. It's almost universal in somebody with any kind of knee problem. So when somebody says, I can't bend it fully, that tells me almost nothing apart from, yes, your knee hurts, but it's completely nonspecific.

Steven:

Right.

Ian:

And I wouldn't consider the inability to flex your knee as an urgent red flag. It's, it's certainly an orange or maybe a yellow flag, but it's not the same as a locked knee.

Steven:

So your locked knees, as you've described them here, are they regarded currently by the NHS as sufficiently urgent to take up surgery time?

Ian:

Very good question. Very good. Very difficult to answer. Okay. So I think every knee surgeon out there at the moment is dreading the moment when somebody comes in with a lock, because then we know that we're going to have to find them an MRI slot, get them an MRI, review that MRI, talk through a very difficult and complicated situation with them and find them a theatre slot or try and find them a theatre slot. And then that very much depends on how persuasive your argument is with your local private and or NHS managers and what their perception or interpretation of urgent might mean. So, yes, it is still technically possible to operate on somebody with a locked knee. But no, it's not easy and you're going to need a surgeon who's very articulate, at arguing that the patient's point for them and the reason this is not the NHS just being nasty to people, right or purely paranoid. The reason is that if you go into hospital now with any condition, there's a very, very greatly, increased risk of

you acquiring covid and if you have surgery and if you catch covid, then the mortality rate from having covid is significantly increased. And some of the figures that we've heard, which are difficult to validate are 20% mortality, if you pick up Covid post operatively. justified reason to try to avoid surgery, you possibly can.

Steven:

I have got some followup questions on this from a members of the audience as well. Alex has asked whether you can give an age on which a at which bucket handle meniscal tears do better being stitched back. Is there an upper age range?

Ian:

No, there's, there's no specific cutoff because you've got very, very fit and active sixty year olds who are running marathons. Whereas you've got in a 20 year old slobs. UI think the, the critical thing is that the younger the patient, the more important it is. Number one, young people are more active and therefore the consequences of meniscectomy are worse because they're more active. If they have a higher functional demand on their knees. Number two, younger people live longer and so they're going to be more active on those needs for a longer period. But also at the same time, younger people are more likely to have a non degenerate meniscus with a better blood supply and better healing potential. So the young people,are the people who've got the best chance of being reduced to prepared and having the meniscus salvage and at the same time they're the people you've got the most to lose in terms of the biggest consequences.

Ian:

And we could have a big, big argument about young versus old. I would say the youngest is 51, and under next year it'll be 52 and under!

It's a very, it's a very a subjective thing.

Steven:

Yeah. Usomebody who's anonymous has asked why MRIs used to, to look into these rather than, camera.

Ian:

Right. MRIs, noninvasive, it's zero risk. MRI certainly should be freely available. It's a little bit like saying if you've got a fractured bone, why don't you just pull the arm straight and stick it in a cast? Why do you need an X Ray? Well, the analogy for me is if you're going to cross a road, well, if I said to you right across the road, I'm going to, I'm going to blindfold you and just listen really carefully. If you can't hear anything coming, you're probably fine.

Ian:

Walk across the road or you're fine until somebody comes in or in a Prius or a Tesla and then splat. If you've got eyes as what as he is, then why on earth would you not

use your eyes is what as your ears to look before crossing the road is exactly the same. The surgery if you've got access to MRI and everybody has , even within the NHS, if you argue your case, you can get an urgent slot for an MRI in the private sector. We're lucky we can get an MRI immediately. So you've got access to an MRI. Why would you not do an MRI to find out what you're going to find inside somebody's knee? An MRI is a stepping stone towards you. Potentially going ahead with surgery. And also if you don't know what you're going to find, then you don't know what you're going to do with which case.

Ian:

How can you consent a patient appropriately unless you say to the patient, I'll tell you what, go under an anaesthetic or look inside. You need, I'll do anything I feel like doing because I'm like, I don't really know what I'm going to find. And then on top of that, how do you know you're going to have the right equipment? Because every now and again, MRI is not just a diagnostic tool. It is a really important screening tool. I've had a patient couple of years ago who was a young guy in his thirties, who had absolutely classic history and signs for a meniscal tear. MRI scan showed that he had locally destructive benign but locally destructive tumor. And that being a cortical fracture in his knee, you'd never pick that up without imaging. Likewise, if you have something called OCD osteochondritis dissecans, you have a chunk of cartilage and bone breaking away inside the knees that can mimic a meniscal tear and it can cause a locked knee.

Ian:

Well, if you go in there and you find you've got a big detached, fresh OCD lesion, then you're going to want to put it back in place and pin it back in place and you're going to need bioabsorbable pins for that. If you're not forewarned about what you may find, you may not have the right equipment, the specialist equipment available to fix it. So to do a diagnostic arthroscopy is real anathema. [inaudible], You know, if it sends shivers down my spine, the concept of diagnostic arthroscopy, a diagnostic arthroscopy, arthroscopy means either you look inside somebody's knee and you find there's nothing wrong, in which case, well, that's nice. Whoops, what the hell are you doing in there? And you've just given somebody an anaesthetic and an operation with risks, pain, hassle, time off work, et cetera, for no good reason otherwise, other than to say, do you know what? My diagnostic skills are rubbish. There was nothing wrong with your knee. That's a diagnostic Arthroscopy or diagnostic means you find something that you can't actually deal with then and there. Well, that means that you'll no good at your job because you shouldn't be the person going in there in the first place. So it's all about information. The role of MRI is absolutely invaluable. It does not give you every answer as false negative rates, false positive rates, and there are coincidental things and you treat the patient, not the picture. But would I ever operate on somebody's knee and a young person, we're not talking about arthritis and joint replacements. Would I ever, ever operate on somebody's knee without appropriate imaging and including an MRI scan? No, not a chance.

Steven:

Moving back to the, the locked knee here Roberts asked whether an intermittently locked knee, a loose body, would that constitute an emergency as well?

Ian:

No, that's much less worry. Sorry, I beg your pardon. No, that's much, much less worrying. I think the best analogy with an intermittently locking knee is it's like having a stone in your shoe. Okay? It's raining. You're outside, you're walking, you've got an umbrella and a bag, and all of a sudden somehow the stone gets in your shoe. But if it's a little stone and it's not very bothersome, well, you're not going to take your shoe off and get a wet foot. You're going to carry on walking. If it's a big stone, if it's agonizing to walk, if you can't take a single step because of the pain, well guess what? You're going to have to go through the pain, the hassle, taking your shoe off, shaking the stone out, hopping around, trying to get your shoe back on, and then carrying on.

Ian:

So it was a little bit like that with loose bodies inside the knee, depends on how much they're bothering you, but the fact that it's intermittent is somewhat reassuring, but you would still want to get the appropriate imaging. If you do an X Ray and you find that it's a severely arthritic knee with multiple loose bodies, well then you don't really need an MRI scan. You've got, you've got your answer. If it's a younger patient who doesn't have an arthritic knee, then yeah, you want to know what's causing that intermittent and locking. So you would have an MRI scan. But the intermittent temporary nature of the locking, detracts somewhat from the sense of urgency.

Steven:

Can the bucket handle tears? Can they cause intermittent locking as well in a sense that they spontaneously unlock?

Ian:

Yes they can, but they're far less, less likely to, and they're nearly always associated with, with much more significant pain then a loose body and nearly always associated with swelling as well. So normally clinically you can see the difference quite clearly.

Steven:

Mark's asked whether if you immobilize the knee, you get, you buy some time in terms of getting around to surgery with a bucket handle tears.

Ian:

Sorry. Mark, not really. I think it's a sensible thing to do. The worst thing you could do and I have heard so that is a good question because I have come across patients a

number of times, unfortunately. Who, for some bizarre reason, have had a locked knee, they've gone and they've seen an orthopaedic surgeon and bizarrely they've been told, well we can operate once you've got your knee moving. And they've sent them off , for example, physiotherapy. And that's just stupidity. That's just utter stupidity on behalf of the orthopaedic surgeon who just didn't have a clue.

Steven:

There is a, there is a school of thought though, isn't it, that before surgery you get the, the, the surrounding musculature as strong as you possibly can because it will get you fitter quicker afterwards. But I guess we're not talking about lock knees in this,

Ian:

Absolutely not with, locked knees with, with a locked knee. The last thing you want to do is encourage somebody to exercise on that knee and shred that displaced meniscus or make it irreparable.

Steven:

Neil's asked about what orthopaedic tests you recommend, cause obviously from our perspective in clinic we don't have the luxury of immediate MRIs, but we're looking to try and form some sort of preliminary diagnosis on these things. I guess if you've got a locked knee, you've got a lock knee, but other orthopaedic tests that you think are valuable in, in knees.

Ian:

No, no. God, no. I do like mcmurray test and I like functional tests for meniscal tears even more than I like, mcmurrays test. But neither of those are even vaguely appropriate to attempt in a locked knee. So no, the only two things you need are your eyes. Well, your eyes, your ears, your mouth. Take a good history. Listen to what the patient's saying to how they're describing what's happened. Have a look at their knee . If you need your hands at all, it's simply to put your hands underneath the back of the knee to feel the fact that it's locked as opposed to straight. But should you try and bend their knee up as far as you can and should you try and twist it and load it in a stress test that meniscus? No,

Steven:

I suspect Neil's question was a more general one about orthopaedic tests in general for the knee. But maybe we can come back to those a bit later on.

Ian:

Okay. No.

Steven:

Final question. Jane has asked, what are the, what are the outcomes if these are not operated on as an urgent case?

Ian:

The outcomes are… that's the picture and that's the stats. Okay. If you don't operate, if you lose your meniscus, there's a massively increased risk of premature secondary post-traumatic osteoarthritis. So that's the risk.

So the next thing is the septic knee. And I put a question mark there because the *possibly* septic knee, and this is relatively easy. If somebody comes into your clinic and their knee is swollen, diffusely swollen, it's red, it's hot and it's very, very painful and they've got a very restricted range of motion. They're finding it very difficult to weightbear and they look ill. The hot sweaty pallid find it difficult to engage with you. They're distracted because they're in so much pain. Well that is an infected knee until proven otherwise.

Ian:

Okay. And so we consider that as a septic arthritis until proven otherwise. There are other possible causes. So it could be an acute attack of gout. It could be pseudo gout, which is instead of urate crystals, that's calcium pyrophosphate crystals. And that tends to occur in older people. It could be a sudden inflammatory arthropathy. So it may be psoriatic arthritis, it may be rheumatoid, it may be part of ankylosing spondylitis, might be reiters or it could be bursitis. And the reason I put bursitis again in question marks is bursitis, is normally more obvious. Cause the pain and the swelling is more focal. It's, it's the front of the knee, either in front of the patellar or in front of the patellar tendon. So it's more, it's more of an isolated location. If the whole knee is big, painful, swollen, it's a, it's septic arthritis until proven otherwise.

Ian:

And again, this is an orthopaedic an emergency, not just an urgent. This is an orthopaedic emergency. This is a picture off Google, I'm afraid. And it's a neat, it's a useful picture because there's so much wrong with it. So if you think you've got somebody with a septic knee, you absolutely have to aspirate the knee. You have to get the synovial fluid sample. It will look pussy and cloudy and you need to send that sample off to the lab. Number one, for microscopy to look for crystals and number two to look for organisms but also for culture to see whether you can grow any bacteria. And also if there are bacteria, then is it a mixed culture, which is probably contaminants or is it one particular bug? And if so, what antibiotic is that bug sensitive to? Problems with this picture while this patient is lying on the couch with no paper, no nothing, no kind of protection at all.

Ian:

That's not very hygienic. Number two, whoever that is, well, they haven't even rolled their sleeves up. You know, their sleeve is virtually brushing against the patient's leg. Number three, they've only put a small amount of betadine on that patient's knee. I

would say you need to absolutely smother the area in antiseptic. So that's an uncomfortable picture to look at. And that's not a recommendation. That's just the kind of the best picture I could find showing a needle in a knee.

Steven:

I take it, the, the, the urgency of this, the fact that it's an emergency is it could lead to just general sepsis and, be potentially fatal.

Ian:

Yeah, I mean that's, that's very unlikely. It certainly could do. I've never, I've never known it to, I've never seen somebody with a septic knee end up getting septicaemia and dying. The, the main reason we consider it as an urgent is that these patients look and feel desperately ill and they're in severe pain. That's the immediate reason for treatment. The longer term treatment is that the longer you leave an infected knee, then the more articular cartilage damage you develop. And there's a massively increased risk of, of what may be quite delayed but, but still, secondary osteoarthritis as a result.

Ian:

So I'm very important to aspirate the knee before you give antibiotics. If you start treating this patient with antibiotics and you may aspirate and your aspirate may give you a false negative because the antibiotics may stop the bugs from showing up on culture. So this is the, what somebody's knee looked like, who came in with a query septic knee recently. And we aspirated the knee, we took bloods, the patient was in severe pain, they ended up going to theater and they had an arthroscopy for an arthroscopy and washout, which is the treatment of choice, arthroscopy washout and then intravenous antibiotics. And when you put an arthroscope into a knee, this is what you see, which, which is almost nothing. It's just red and it's cloudy.

Ian:

So what you do is you have to wash the knee through copiously with litres and litres of of saline. And there's an old surgical saying, which is the solution to pollution is dilution. And that's very, very true. The best way to eliminate an infection is to get let the puss out, let the bugs out and to wash copiously. So the more we wash out this knee, the clearer the picture we get. And this is what it looks like after about 15 minutes of washing, we're now beginning to see the anatomical structures, but we're also seeing this chalky material. And as I'm stroking the chalky material, you can see little bits of like chalk flaking off.

So we took some samples of that material and we took samples of the synovial fluid before we'd washed out the knee and we sent them all off to the lab. Immediately we washed out this patient's knee. Patient felt massively better. We started intravenous antibiotics prophylactically. The sample came back and showing no bugs. And this was a guy in his thirties with his first ever attack of acute gout. And those crystals are, that's actually gouty tophi. So that's uric acid crystals I'm

collecting on the joint surface. So this was actually not a septic arthritis. This was somebody with a severe attack of acute gout. If you look at it and you think you've got a septic knee, treat it as a septic knee.

Steven:

From our perspective at the moment where most clinics are still limited to telehealth consultations, both of the things that you've described so far, particularly if you've got a video, would sound as though you could triage those over the phone or over a video link without too much difficulty. Is that, is that what you'd say?

Ian:

I, I think we've all been doing zoom or Skype consultations recently and that's, there's a surprisingly large amount that you can actually do remotely. You can actually do remote consultation coin, not fully, of course, not fully, you're not laying on hands, but you can get the patient to stand, turn sideways, lift their leg. And then I point to the bit that hurts you can see whether it's swollen than you can get a lot of information. It's definitely suboptimal, but you can get a lot of information. So if I saw somebody who looked like they had a septic knee, normally if you've seen a septic knee, you'll never forget a septic knee. Right? Once you've seen one patient with a septic knee, that's all you ever have to see from that point onwards. It's really, really obvious. And if you think it might be a septic knee and tell the patient this is an emergency, they need to be seen in a clinic where they can be seen face to face. Luckily in our practice, we've still got access to face to face consultations. Those people who need it send somebody up as an emergency, not as an urgent in a few days. This is an emergency. Alternatively, if they don't have access to private health care, then send them to a and, E even in a time like this, that's not the kind of patient that can be just treated conservatively in an in and outpatient setting.

Ian:

Okay. Yup. Right. Two more to go. Are we okay for time to Steven?

Steven:

Yeah, we've got a quarter of an hour left, so there are more questions but I'll save them for a little while.

Ian:

Okay. So the acute knee injury. So here this is really quite worrying because we're seeing a lot of people getting out, jogging. A lot of people doing silly tiktok videos, encouraging their kids to jump up and down on trampolines I'm thinking that a little bit of netting around the edge is going to stop them breaking their poor little arms. People riding horses - terribly dangerous. So we're actually seeing, you know, we're still seeing acute trauma and when somebody says, I've hurt my knee, I've injured my knee, it means almost nothing to me. And my first thought, well, well what in the knee have you injured? There's rather a lot of bits inside the knee, so what's actually

damaged now traditionally if you injure your knee playing football, so there's, there's no football at the moment, obviously, but if you injure your knee playing football, then you'll have a painful swollen knee.

Ian:

And what would you do? You'll go to A&E. Well that's an a traditional A&E queue. You know, the only difference now is the A&E queue has bigger gaps. But the queue's a lot longer. The good news, you know, without any humor, the, the good news at moment is the A&E departments across the country are working at roughly 50% of their normal capacity. Cause people are keeping away, In A&E what are they going to do? You've hurt your knee, they're going to take an X. Right. And what are they going to tell you? There's no fracture. Well that's good. I mean, I'd like to know that there's no fracture, but I'd like a proper diagnosis. But what's the diagnosis you're given? Soft tissue injury.

Well, if I was a neurosurgeon for example, then somebody bangs their head very hard and they were knocked out and they were not reacting properly.

Ian:

And if I just got an X rays and somebody said, well don't worry, there's no fracture. It's just a soft tissue injury. It really doesn't tell you a great deal. So then they're told go and see your GP. What do you GP, ah, you know, how much time did you, does your average GP spend in their training, you know, focused on MSK well the answer is most medical students, six weeks and a portion of that six weeks is rheumatology, not just orthopaedics. So if you're lucky, the GP will say, well actually go and take some anti-inflammatories rest it and see how things go. So not ideal even at the most ideal of times. So if we talk about ACL is just as one example. If somebody has ruptured their ACL, well the ACL stops your tibia from wobbling forwards just as a very simplistically, well, how many people do you know who've torn their ACL by their tibia being pulled forward?

Ian:

That's extremely rare. Oh yeah, absolutely. Extremely rare. The normal injury is a valgus and external rotation injury. So your, for example, you take a rugby tackle or football tackle on the, on the lateral side of the knee whilst your knee is bent and twisted into valgus and external rotation. And what tends to happen is that there's, in my mind there's this pretty no, there's almost no such thing as an isolated Acl injury. Cause what tends to happen is the MCL goes first with a partial tear, normally, normally just a partial tear, then the ACL tears, then you have a lateral impaction injury, And develop a meniscal tear. And if he keeps on going, then you end up with damage to the posterolateral corner. And if he keeps on going one step further than the PCL will Tear as well, and you've got dislocated knee and a dislocated knee, we don't see them in our clinics because that, those are major, major injuries with a 40% incidence of major neurovascular damage.

Ian:

So a dislocated knee will go to A&E. All right? That's a multi-ligament injury. So fortunately very few of us in a private clinic setting would actually see that kind of injury. But the vast majority of ACL injuries, there's more damage than just the ACL. So then the question is, well, at times like this, somebody has injured their knee, they, they first question is, what have they done? And the only way you're going to answer that is with an MRI scan. Okay. Again, MRI, critically important. And the next question is, well, is that if they've torn their ACL with an MCL sprain, a bit of bone bruising in the lateral compartment, or is that an urgent does it need surgery? Well, years ago, and we're talking 20/30 years ago as part of our medical training, we were told about the rule of thirds, which is of people who tear their ACL.

Ian:

Maybe a third will need a reconstruction, a third won't and a third will be maybe just maybe, maybe. And it's very interesting how true that's turned out to be. So now a little bit of science This is a really, really good paper. Anybody treating people with ACL injuries should, should have this paper and be able to reference it. And this is from a Scandinavian Scandinavian team, including Eva Rioux again. So this is Froebel's paper. And what they did is they took a hundred and roughly 120 patients, 60 patients in one group, 60 patients, another randomized first group, P with ACL test. The first group that had an early ACL reconstruction. Second group, they went and did rehab in the second group. If people did well enough and ended up with happy enough with their knee, then they didn't have surgery. They avoided surgery. If they didn't manage to do well enough, then they ended up having a delayed ACL reconstruction.

Ian:

First conclusion was 50% of the people who were managed conservatively ended up not needing to go ahead with an ACL reconstruction. And that's obviously quite a big number. The next thing they did is they looked at the five year outcomes of those people who had had the delayed ACL reconstruction. In other words, attempted rehab, failed rehab, delayed ACL, look at the outcome compared to the people who'd have the early ACL reconstruction. And what they showed was no difference in any of their outcome measures in terms of clinical outcome. So two conclusions. Number one, according to the Froebel study, about 50% of people with an ACL tear. This is this is an an ACL tear without meniscal Tears, without multiple ligament injuries. So this is where the main thing isn't like an isolated ACL tab. 50% of people did not need surgery. And if you do end up needing surgery, then the delay caused by the attempted rehab does not adversely affect outcome.

Ian:

So if you follow this paper, then it's black and white. Everybody who injures ACL, unless there's something else significant going on, should go for rehab. Alright. Attempted rehab before going for surgery. Well, no, it's not. Life is not that simple

because this is a cohort study and a cohort is a subsection of a population and not one of us is a population or a cohort. We're individuals. So you cannot apply blanket rules like this. To individuals who've got their own opinions, their own aspirations, you know, are they 18, are they 80, are they a couch potato? Are they professional athletes? Yeah. Are they terrified of surgery or they're gung ho about it. Multiple, multiple factors. This is to guide us not to dictate to us. And for every paper that says, x you could find a paper that says Y. And this is one of the most important ones.

Ian:

And this one Pinchevsky who is one of the biggest ACL surgeons in the world, and he's in Sydney. So the last study looked at 60 and one group 60 in another in this study. So Pinchevsky looked to over 5,000 ACL reconstructions, so much bigger numbers. And what he found is that if you delay ACL reconstruction by as little as five months, then the risk of you ending up with a medial meniscal tear and needing surgery increases by 200% - doubles. If you delay the ACL reconstruction by as many as 12 months, and the risk of you developing a meniscal tear that needs surgery increases times six 600% another really, really good paper. This is by Everhart and what they did then, this is 600 patients. So again, a big, big study and what they showed that if you delay ACL surgery by as little as eight weeks, and the risk of you developing a medial meniscal tear needing surgery goes up 230% but the probability of that meniscal tear being repairable decreases by 50% yeah.

Ian:

Also if you, if you delay the ACL surgery more than five months, then the risk of you developing a grade three or four articular cartilage lesion in the joint goes up more than 300% so all of these papers are very interesting and all of them have got value and all of them guide our decision making, but none of them should dictate to us. So very interesting. The rule of thirds. A third, yes. The third no, a third maybe. Well in the maybe group if you say, well maybe half of them, yes, maybe half of them no. Well actually that means you can split this straight down the middle, which fits in very nicely with froebel's paper, which says half of people do. Half of people don't. So very, very interesting that the old fashioned rule of thumb has been proved to be accurate by more modern research.

Steven:

And the trick of course is knowing which half need it and which often exactly, which has multiple multi directional sports and women were those who particularly were at risk if they didn't have repairs. Am I right in thinking that?

Ian:

Yeah, absolutely. If I'm just to grossly simplify, if you've got a front row rugby player who's short, very stocky and pushes in a straight line and they're less likely to need an ACL reconstruction. If you've got a catwalk model who's tall, skinny with a big Q

angle with poor muscular control, a very, very poor muscle power to lever arm ratio, and if she plays netball and she's female, then she's much more likely to need an ACL reconstruction. If, if you've got an ACL tear in a kid, so that's a child or a teenager or a very young adult, then you are much, much more likely to recommend surgery because the results of conservative management of ACL injuries in younger people yields much poorer results.

Steven:

Does the grade of tear matter?

Ian:

Yeah,don't believe the people who say there's no such thing as a partial tear absolutely hundred percent is. And even if you've got a complete tear, you may have somebody who's got a complete ACL tear with a really wobbly knee or somebody else who's got a complete ACL tear with actually a knee that doesn't feel very wobbly. It's not very lax and it's, and it's functionally stable. So there's huge variation between individuals. And another big, big caveat is with all these discussions about ACL, there's always exceptions to the rule. So there's always this time right now, sorry, let me take that back. At this time right now, during the Covid crisis, right? Is there such thing as you need an ACL reconstruction right now? Well, no, no. No. Okay. Unless, and the big caveat is locked knee. Now this is where it gets difficult.

Ian:

If somebody has a fresh knee injury and they present and then not extended their knee fully because the knee is painful and swollen, or is it a locked knee or is it a, pseudo a locked knee. Is there a stump of torn ACL? It was painful. It's preventing you from straightening your knee. Well if it's a locked knee, because you've also got a displace lock. Bucket, handle meniscal tear. And guess what? You do need surgery and you do need it urgently. And the only way you're going to see that was with an MRI scan, right? Clinically you're not going to be able to pick it up. You need an MRI. So this is a 19 year old girl. Here's her ACL tear, where the ACL has avulsed off its femoral attachment, right? But also here is her displaced bucket handle fragment of a medial meniscus.

Ian:

Which tissue from here has flipped over and is sitting locked in the intercondylar notch. So that's not somebody who you should leave. Let the knee settle down, let them do some rehab, see whether they, you know, get the movement back and get their strength back, let the acute inflammatory phase pass and see whether they can do well with rehab. That person needs to have that meniscus sorted. And if you're going to do a big meniscal repair, then you should reconstruct the ACL, not just to stabilize the knee per se, but also to protect the meniscus. So that's the

exception to the rule currently that you need to be aware of and you're only going to see that if you do an MRI scan.

Steven:

We might not get onto the arthritic knee cause I've got a few questions again, is it okay if I go run through a few of those now? First of all, there's been a number of people asking about whether your approach to the knee is mirrored in the NHS itself or is this something that is peculiar to the private medical practice industry?

Ian:

Difficult question to answer diplomatically. If I thought that the service that I was giving to my knee patients was the same as your average knee patients got in the NHs I'd be distraught. Well, I've considered the last 20 years. I mean working as hard as I possibly can to be as good as I possibly can as an abject failure. And I'm really sorry for anybody who takes within the NHS. He takes that as an insult. I would like to think that the level of care that we offer our patients is significantly higher then a system that's free and has open access to anybody who walks in the door. Best analogy I can give you is, I mean the NHS is fantastic. It's fantastic for what it is, but you know, be aware of what it is in, in terms of restaurant analogies, and I'm sorry to say this, I apologize, but the NHS is more of a soup kitchen.

Ian:

Anybody can go in, you've got free food whenever you like it free at the point of delivery. Fantastic. Well, if you take your wife for an anniversary dinner to a soup kitchen, well the evenings, not the end as you might have wished. If you want, if you want to take, your other half out for a romantic meal and you're probably going to take them to a nice restaurant. And if you go to a nice restaurant and it's, for example, lets say its got a Michelin star, well guess what? They're going to charge for it, but you're not going to get the same level of service and the same product. So slightly inarticulate and slightly undiplomatic way of me trying to answer that question in directly. Do I think you'll get the same level of care? No, I'm afraid not, I don't think you will

Steven:

Would the policies be the same if somebody sees a locked knee, will that be surgery within a few days?

Ian:

It will be if they've got somebody who's sensible, who knows what they're looking at, and that's the key. Privately you're going to go to a named consultant and be seen by that consultant and have consultant-delivered care. In the NHS, you'll go to a&e and you'd be seen probably by a junior doctor or an emergency nurse. And if you manage to get through to a consultant orthopaedic surgeon who specializes in

knees with a specialist interest in meniscal repair, I would consider myself extremely lucky. Right. Okay.

Steven:

Josephine has asked you to say something about prosthetic Menisci that apparently you do.

Ian:

Right. If you've, if you've lost your meniscus and you're starting to develop progressive symptoms and signs of, of premature degenerative changes and your, your young in particular, then is possible to replace a missing meniscus. And the, the best way to replace the missing meniscus is with a meniscus. In other words, a donor meniscus, and that's called meniscal allograft transplantation. Sounds easy. It's not quickest. Meniscal transplant I've ever done was about two and a quarter hours. Normally it takes over two and a half easily, sometimes three, depending on what else you're doing is a really complicated fit in operation, very slow restrictive post op rehab. It takes about nine months to fully get over it, but the success rate in the region about 80 to 85%, our five year followup. So it's certainly not something to rush into or take lightly.

Ian:

And it's not something you're do in somebody for just prophylactic reasons in somebody who's lost a meniscus but has no symptoms and that's very, very specialist. There's only a tiny number of us in the UK are actually into meniscal transplantation in terms of artificial meniscal prostheses, so meniscal scaffolds. Yeah. Various of us have tried those, and generally speaking they're not very good. Then they, they tend to be fryable. They tend to tear, they tend to have higher failure rates, so there's nothing better for replacing meniscus then other than a meniscus. In other words, a donor meniscus, which is meniscal transplantation.

Steven:

Josephine also asked about the rate of septic knee occurrence after surgery, particularly knee replacement. Is that, is that a problem?

Ian:

Yeah, it's one of our greatest fears. So the, the risk of an infection in a knee after keyhole surgery and arthroscopy is less than one in a thousand the risk of infection from a knee replacement is less than 1% so it's still quite low, but less than 1% is an order of magnitude higher and less than one in a thousand if you end up with an infection in an artificial joint, and it can be an absolute disaster because the bugs stick to the prosthesis, so you can't just treat it with antibiotics.

Ian:

There's a very high risk of the patient needing to have a revision, which is where everything's taken out. They're treated with antibiotics. Normally you would wait six weeks for to be absolutely certain the infection is cleared. You just put a spacer in the knee and treat the patient with intravenous, intravenous antibiotics and then you can try and do a revision. But the revision has, has a significantly higher risk of further infection.

Steven:

Okay. And I'm going to ask just a couple more questions cause we've run out of time. Katie, right early on after about hyaluronic acid injections, are they of any value because hydraulic here, but I think we,

Ian:

We should call it hydraulic that'd be much better. Hydraulic fluid injections. Simple answer is no. If you look at the Americana American Academy of orthopaedic surgeons, which is the biggest orthopaedic orthopaedic organization in the world, they did a meta analysis a few years ago, all the published studies looking at hyaluronic acid and that their conclusion is that it gave no greater benefit than placebo.

Ian:

So you might as well just inject a little bit of saline rather than something that costs two, three, 400 pounds. Now the caveat to that is the placebo has an effect. If you inject saline into somebody knee, 40% of people will say, Oh, that feels better. So the difficulty is if you've got somebody who believes in hyaluronic acid and they've had a previous injection and it gave them a fantastic result, then if you inject them, it will probably give them a P a it will have a reasonably good chance of giving them some degree of short term symptomatic relief. But just be aware it's purely placebo. So as an awful lot of companies touting it, recommending it personally, would I ever proactively recommend it for, for one of my patients? No. Would I bother having a great big argument with somebody who's absolutely convinced that it works for them? Probably not.

Steven:

The final thing I wanted to say is that you're big into glue. Could you tell us something about glue?

Ian:

Right. So what you're referring to is something called vivostat PRF, platelet rich fibrin. And this is not PRP, which is platelet rich plasma. Plater rich fibrin is an autologous biological bioabsorbable bioactive glue that we use in some surgical procedures. For example, for sticking articular cartilage, grafts in place for augmenting meniscal repairs for augmenting meniscal transplants. And also I use it as a fibrin sealant.

Ian:

At the end of the knee replacement to reduce postoperative bleeding, pain and swelling. And then, so that's, that's vivostat P R F

Steven:

And it's really good because it's from the patient's own blood and

Ian:

Yes. Yeah. We take, we take 120 mils of the patient's blood in the anaesthetic room just before the operation starts, 30 minutes later. We've got five or six mils of biological glue available, which we tend to use at the end of the procedure. And I've been doing that for about four, four or five years now. And I've done over 300 cases using vivostat. It's not, it's not a treatment, it's an adjunct. It's a tool that we use within various different treatments,

Steven:

But it's improving outcomes. I take it.

Ian:

Yeah. We've, we've did an audit of our knee replacement patients and it showed that there was earlier time to mobilizing on stairs, better range of motion at three days post op and that was maintained with a better range of motion at three months post op, a study from Italy showed reduced blood loss, reduced loss in HB and also reduced transfusion rates as well.

Steven:

Thank you very much. You know, I'm sorry, we've come to the end of our time before we covered that last topic, but we can leave that tantalizingly on the table and hopefully you'll agree to come back and talk some more and maybe once this is all over, maybe we can get you into the clinic and into the, into the studio itself and do some, some more practical stuff.

Ian:

Yeah, I'd be delighted to. Thank you.