

Hip Dysplasia - Ref 109SM - Draft Transcript

with Simon Mellor

8th October 2020

TRANSCRIPT

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Steven Bruce

Today I am joined by Simon Miller for Simon, is this the third or the fourth time we've had you on? I can't remember now?

Simon Mellor

I think Yeah, a couple of times.

Steven Bruce

Simon is one of the orthopaedic consultants at total orthopaedics in London. He's been on to talk about the hip on a couple of occasions before today, Simon, we're going to talk about PR phase and hip dysplasia. First of all, what did you discover from your research in your dictionary? Should there be an apostrophe in PR phase or not?

Simon Mellor

Yes, so I discovered that, yeah, per phase was a German with an S on the end of his name. So you're quite right that the apostrophe should be after the s. And in fact, the full name, leg calvey per phase disease, named after Dr. leg and American, Dr. Cal, their French surgeon, and Dr. Perth as who was in Germany in 1910.

Steven Bruce

And for the benefit of the audience, this is because when I first created the slides, I put an apostrophe at the end, I think, Simon, you stopped when in the middle when I looked it up on Wikipedia, because I don't have a medical dictionary in the studio. There was no apostrophe at all. So we had a little bit of a discussion about that before we went live Anyway, I'm glad we've satisfied ourselves on that one. We're so where would you like to start on this? So I'm,

Simon Mellor

well, I thought that it would be nice to just run through a few slides, I prepared just as a framework, maybe just as a mild aid memoir for your viewers to just run through some information about first perthes disease, and then to talk a little bit about developmental dysplasia if that's okay.

Steven Bruce

Yeah, pretty soon.

Simon Mellor

So if perthes disease is a childhood condition, which is rare, the first thing to say it's very unusual, but is significant. Nonetheless, it's best described as in a vascular necrosis process within the femoral head of a

child. And it is most commonly seen in males is about a four to one ratio boys to girls. And the most common age diagnosis is about six, although a lot of children will have had symptoms, sometimes for a considerable period of time before they get diagnosed. So there are a number of possible reasons why it happens. There's obviously an interruption of the vascular flow, and some, okay, some people think that there's microvascular problems with clotting abnormalities, obviously, in some children, therefore, if they have an underlying clotting abnormality, they may be more at risk of it from happening. But what's very interesting is that we see it more frequently, the further north you go, certainly in this country, the incidence in the south of England is much lower than it is up in the north of England and Scotland. And that may be related to socio economic factors, because it is identified that it's more common in lower socio economic groupings. It may be something to do with the way that babies are looked after and children are treated, and there's a possibly a link to passive smoking. And some people have wondered whether a repetitive micro trauma is to blame as well. That's because it's been noted that it's more common in hyperactive children.

Steven Bruce

So does this does perfuse actually occur after birth? Or is it present at birth?

Simon Mellor

No, no, it's something that starts for most children after the age of four or five, although it's usually about the age of six that it's diagnosed. But there's a spectrum of ages. It's very rare below the age of at the age of about three or four. And it's quite unusual if that your child gets beyond the age of about seven or eight.

Steven Bruce

And is it always unilateral?

Simon Mellor

No, you can get bilateral birthday disease, but it is more common to be unilateral.

Steven Bruce

Okay. Um, you put you put up some prognostic factors here, I think, yeah,

Simon Mellor

so the main factor to be aware of that, the younger the child is when the symptoms start or when the diagnosis is made, the better and how much of the femoral head is involved. These are probably the most important prognostic factors. There are a number of classification systems based on radiological findings which are helpful for some people to identify which are the children more at risk of a poor outcome. But really, the most significant ones are the age and the severity of head involvement. And if you're very young, then often children only have to be monitored with infrequent clinical assessment and avoidance of sports activities. And that's all that needs to be done. Because they have more time, more growth ahead of them to allow for good remodelling to occur.

Steven Bruce

So it's a long time since my children were of this age. And my wife would probably said that I didn't pay much attention to this sort of thing either. But our children routinely screened for this? Or would you wear some sort of symptom or so, in fact,

Simon Mellor

that's why sometimes there's a bit of a time delay between the onset of symptoms and for diagnosis, because there'll be a lot of children who will just complain of a bit of a sore knee, and somebody maybe lotuses that they have a slight limp, and then it's ignored or, or maybe somebody just looks at the knee, which is not actually the source of the problem, but is the site of the symptoms for some children. And that's why there's a bit of a quandary for diagnosis, when it's when it's obvious. It's very simple to diagnose. But in those early phases, it can be difficult the disease goes.

Steven Bruce

Oh, sorry, I was I was just wondering, I mean, obviously, you've said that the earlier the diagnosis, the better. So

Simon Mellor

how long before symptoms signs become apparent? Do you think the problems starts? Is it a very short time? Or could it be years? No, no, it's usually about six months on average. And it can be very difficult to pick up those very early cases. If you have a high index of suspicion, then then that's fine. But, of course, the most common scenario, the most important message to get across the limping child is not to be considered lightly. It's an important process, a diagnostic process to run through and consider the possibility in a child of the right age that this could be perthes disease. And knee pain often is referred pain from the hip joint. And that should trigger appropriate clinical assessment and if necessary, radiological analysis,

Steven Bruce

and you've put up most of your your slides here, I think our X ray slides, I take it that that is the best way to diagnosis even in its earliest stages.

Simon Mellor

Why the age of by six months after the onset of symptoms, if it is perthes disease, you will see radiological changes. If you're lucky, and you have a high index of suspicion, sometimes these kids will get an MRI scan because the X rays look normal in the very early phases. If somebody has that high of an index of suspicion, you'll see some of the pre radiological pre pre X ray changes will be visible on an MRI scan. But getting MRI scans for children is not that easy.

Steven Bruce

Right. Okay. Shall we move on to one of your first pictures?

Simon Mellor

Yeah, I just thought it'd be nice to just remind your viewers about the typical appearances of a child with perthes disease, this child is about six years old, presents with a right knee pain. And on clinical assessment, the important findings are that the the knee actually looks fine. There's no effusion on the knee and examined in isolation, the range of movement in the knee is normal. But it quickly becomes apparent that there is difficulty at the hip joint, clinically, the child has a stiff hip joint. And typically there's a limitation to rotation and a limitation to abduction on clinical assessment. In the more advanced cases, when there's a significant degree of collapse of the femoral head, then you may notice a little leg length inequality as well. But in the earlier phases that may be difficult.

Steven Bruce

So to me, this looks really severe. But is that a very advanced case,

Simon Mellor

it's not that it's advanced. So classification is performed usually at a particular phase in the disease. So the disease process, there's a necrosis process, followed by fragmentation. Then there is a remodelling phase, and then also vacation of the remodelled tissue. So there are well described phases through the disease process. And you classify the prognostic indicators, indicators, that's done usually, between the Croesus and the fragmentation stage. And that's probably where this x ray is being taken. So this child, there is clear signs if you compare the two sides, there's collapse to the femoral head and, and this particular child has some worrying features. If you look at the height of the femoral head on the normal side, on the left hand on our right hand side that the patient's left it and measure how high the lateral one third of that femoral head is held, how tall it is. And you can see on the effective right hip, how much shorter that is. And there's a classification system called the herring lateral column classification system, which specifically looks at the amount of collapse on that lateral bit of the femoral head, the more flattens that lateral bit is, the more worrying it is in terms of risk of, of poor outcome. So this child has quite a flat femoral head at this stage. And also you can see how the, the whole femoral head seems to have maybe slid out of the acetabulum and slightly as well. And that predisposes to another worrying feature called hinge abduction when this child tries to abduct the leg, moving the leg laterally, rather than the femoral head swivelling inside the acetabulum the femoral head will be hinged on the edge of the acetabulum socket. And that's a poor prognostic factor. Because it predisposes to secondary changes within the acetabulum. Although this is a disease of the femoral head. Clearly as the child grows, if the femoral head is an abnormal shape, the acetabulum may be at risk of becoming abnormally shaped as well.

Steven Bruce

Okay, I've had a question. A couple of questions come in actually, already. Simon, you did say earlier on that it was difficult to get MRIs of children and someone's actually said, Why is it difficult? Is it difficult because they're difficult to get anyway? Or is it just because kids are difficult to MRI because they wiggle?

Simon Mellor

Yeah, kids are difficult to MRI because they wiggle. And so you're not necessarily going to get great quality pictures. So having to organise a sedation for a child in order to get an MRI scan is challenging. But as I

said, in the majority of cases, the clinical signs result in referral to an appropriate specialist who will pick up the potential for perthes disease. By that stage, you'll see X ray changes like we have on these x rays here. So it's not necessary for most of the children to go through having an MRI scan.

Steven Bruce

Mick has asked the question about leg traction during or after the birthing process. And does that contribute to femoral head pathology?

Simon Mellor

For perthes disease, I'm not aware of that association with leg traction. Obviously, people are concerned about that. Anything that puts the hip joints are at risk of vascular compromise, potentially could result in this. But I'm not aware that at the time of birth, that it has a direct relationship with what she what is going to happen maybe several years later. And we'll come on to talk about femoral head blood flow and and the potential risks when we talk about DDH actually, okay.

Steven Bruce

Right, you always move on to your next picture.

Simon Mellor

Yeah, I just sort of be nice to see to show your viewers what potentially can happen over time. If the if no treatment is instigated, as I said earlier on foot for a lot of the younger children, where the the outlook is very good. Quite often, you can reliably inform the parents that all that needs to be done is to have occasional clinical assessments. And in fact, just making sure that the femoral head remains fairly well located within the asset tab then allows the remodelling and then the re ossification process to provide a fairly well formed femoral head in the long run. But in this case, you can see that over time, this disease has progressed and we're seeing some of the typical radiological features of more advanced per phase with a poor outcome. You can see the femoral head is much wider now. And that puts the child at risk of developing in the long run something called Cox Magna, which is literally big femoral head and the neck is shorter as well. A lot of these children with more severe perthes disease, the growth plate will fuse early. And as a result, as they grow the femoral neck will not grow to appropriate length and so they'll be at risk of a short femoral neck which is called coxen forever. And you can also make out if you compare the acid tabulation between the two sides on this x ray how they're your Stein is to get changes, equivalent changes to the shape and contour of the asset tabulate them as a result of the misshapen femoral head and the misshapen femoral head. In this case, you can see that the fragmentation of the femoral head which is one of the worrying features, this is a a child with perthes disease where there is extensive involvement of the femoral femoral head rather than just one localised area with a vascular changes. Do you know how old this chap is? This child has about six and a half, seven years old.

Steven Bruce

Okay, so what happens next to this poor little fella.

Simon Mellor

So in children where there are worrying prognostic indicators, we try to avoid this sort of picture appearing, we try to pick up children who are at risk and then instigating appropriate surgical measures. And the aim of surgery and perthes disease is to try and position the femoral head correctly into the normal acetabulum because at the end of the day, the tablet is normal in this condition, and as long as the femoral head is mainly sitting within the normal acetabulum, then it will remodel and then grow into a more normal spherical shape in the long run, and so forth. For the younger kids. Sometimes we historically used to use bracing so the children we put into an A frame so Plaster of Paris on both legs with a broomstick between the two legs, to keep the legs in an abducted position, which would rotate the femoral heads and put the femoral head into the tablet appropriately. But then, later on in the older age group, where We will probably be looking at the option of osteotomy of the femoral neck or the femoral proximal femur to change the angle of the top of the femur so that it is aiming more directly into the acetabulum so that that natural remodelling process will progress correctly.

Steven Bruce

I've had a couple of questions asking what point replacement of the hip would be indicated?

Simon Mellor

So that's a great question. And we will come on to that in a little while because I've got a couple of nice x rays following on just to show you what the long term prognosis can be. And, and the good news is that I don't want to spoil the later message. But the good news is that people with birthdays, Crohn's disease can even where there are significant radiological changes in the long run, they can continue to have a very functional, long, long functional use of their of their own hip joints. If for the potential need for hip replacement surgery.

Steven Bruce

One of the questions actually talks about a person, a man who's 30 years old, who's developed low back pain and given up work as a result of having had birthdays, but presumably not having had the hip replacement. In fact, consultants who said he's too young for a hip replacement, but he's got no quality of life at the moment and no work prospects. And they're asking for your comments on that.

Simon Mellor

Well, yeah, the worry about hip replacement surgery at the back of everyone's mind, obviously, is the longevity of the hip replacement. And so traditionally, a lot of surgeons have worried about replacement surgery in the younger population, the potential that they will be facing revision surgery later on in life, I think most people nowadays would look upon it in this way, if you have significant intrusive symptoms, because of secondary degenerative change, if you're getting can problems with the sacroiliac joint or the back because of the stiffness in the hip. And if the quality of life is poor, most people, most of most of our patients, we want to have quality of life now, and be able to have a functional life when they're young, and worry about the after effects when they're 50 or 70, or 80. They'll think about that later on. So I must say, I've never really ascribed to the possibility of saying, well, you're too young for this surgery, if if the right

plan of action is to go ahead with hip replacement surgery. And, you know, I don't think that the age necessarily comes into it. I've certainly replaced hips on people, you know, in their late 20s, and 30s. Because it's the right thing to do for that person,

Steven Bruce

remind us how long the average hip replacement hip lasts.

Simon Mellor

So if you look at our national joint registry data, it tells us that the vast majority of routine hip replacements, 95% of them will last for at least 10 years, over 95% will last for at least 10 years and over 90% will last for at least 15 years. And obviously, that's historical data. And we hopefully are doing better now than we did 10 or 15 years ago. And the other thing to comment about that data is, it does make a difference how old you are, we know that if you replace the hip of an 18 year old, who's going to live to 100, their hip will probably last for 20 years without any difficulty. If you replace the hip of a 40 year old, who has an active lifestyle, maybe has an expectation to return to sports activities, squash, golf, tennis, football, cycling, etc, then, because they're more active, they are probably going to be at risk of their hip replacement wearing out or loosening at an earlier age. So the younger you are when you have a hip replacement, it's more difficult to given a clear prediction of how long that hip will last for.

Steven Bruce

Is there any reliable data on how many times you could have it revised?

Simon Mellor

Well, it depends on the complexity of revision. I've revised the HIPAA the person who who had already had five hip replacements done. And that was feasible because in fact, several of those operations have been sort of minor changes of implants rather than a major reshaping of the whole hip joint. So so there's variability. There are usually solutions out there, even if you've had a hip replacement, and it's been revised on several occasions, there are usually options if it needs to be revised again.

Steven Bruce

Right. So that's good news for the patient that we were talking about. I think I think the name I've been given us hinges so I was looking puzzled, because it hinges sounds as though it's actually an orthopaedic procedure. But yeah, Gail has said, she's committed this is a poor kid. She wonders if his parents noticed a change in function, or was it just the pain that sent them to the doctors in this project?

Simon Mellor

It's, I think, by the state by stage that of the X ray that you see here, I think most people would, would say that the symptoms would be very clear cut because you'd be expecting the child We'll probably be aware of significant discomfort when they do anything more than just day to day activities. The parents at this stage parents would probably notice that they have a limp when they walk. And then a clinician would clearly see

a reduction in range of movement, reduce flexion, or specifically reduced internal rotation and reduced abduction. So I think by this stage, it's usually quite clear cut.

Steven Bruce

Franco sent in an interesting question he's asked in particular, whether you are likely to see any long term damage particularly calcification of the so us, but I guess you could say that about any other compromised muscles.

Simon Mellor

It's a possibility. In fact, with this condition, one of the bigger issues sometimes is the adductors. So you get spasm and you get shortening of the adductors. And so some of the children will be well served with a minor surgical procedure, not major reshaping or positioning of the femoral head, but a simple procedure called an adductor tenotomy, which is through a small incision on the inside of the groyne to cut the adductor tendons to allow for more natural abduction movement. That's occasionally something that's done for kids with intrusive adduction contracture.

Steven Bruce

When you say cut them, do you mean completely sever them.

Simon Mellor

So you settle what you need to to allow for the limb to move to a more natural abductive position, and they heal up.

Steven Bruce

I think people are making up names now with these questions. Somebody called Spanx or said Spanx. I don't believe that's the name. I treat three siblings one her Sherman's co foetus. Another has cardiac issues, and the third has perfect. Is there any evidence to show a genetic component in the

Simon Mellor

disease? So yeah, just perthes disease Yeah, there is a minor possibility of genetic and obviously there are underlying conditions which predispose as well. As orthopaedic trainees were taught to see if you see a child with in inverted commas bilateral perthes disease, then you have to think maybe this isn't actually perthes disease, this could be an a different condition, like spondylitis, epiphyseal dysplasia, that's a good name to put in the bank for storage purposes. Some of the storage diseases like Hunter's disease, and the these are diseases of metabolic products, which are stored abnormally in tissue. And some of these children will have radiological signs and clinical signs that looked like bilateral perthes disease, and they've got underlying medical conditions. I'm not, I'm not aware of a direct correlation between Sherman's disease and birthdays, but maybe there's some unrecognised syndrome as of yet.

Steven Bruce

Would you like to move on to another picture? So,

Simon Mellor

yeah, the next picture, I mean, we're just going through a progression here. And obviously, we're looking at a skeletally mature person now. And you can see that in this in this x ray, that the the this is an adult who has previously had perthes disease and has been left with as you can see that the large femoral head abnormally shaped with a very flattened upper surface, and you can see the compensator II flattening of the acetabulum as well. So as this child has come through to adulthood, the shape of the femoral head has impacted on the shape of the acetabulum. And you might think, well, that's terrible. But in fact, these are the sort of people that you'll be surprised to discover, are often coping and functional in day to day life. You know, they may not be the best athletes, but they can cope with they say life sometimes for for years and decades with this malformed femoral head, because at the end of the day, if the shape of the femoral head has affected the shape of the acetabulum so that the two mirror each other, then that will actually work relatively well. The worst outlook is if you have a very flattened femoral head, in a spherical socket. So a mismatch between the contour of the acetabulum and the contour of the femoral head is worse than having what you see here, which is two mated surfaces, which are sort of the same shape, this person will probably have a an acceptable range of flexion and extension in the in the hip, but probably very little rotation. And that may well throw stresses us where they may complain of as we've discussed before, sacroiliac and back pain, knee symptoms, the end of the day, you need rotational movement, through the gait cycle somewhere, and usually that's provided by the hip joint. If the hip is not able to rotate appropriately, then you start asking, subconsciously, you start asking the knee to introduce more rotation than it really wants to do. And you start to develop knee symptoms secondarily. But you can then see how this sort of a condition which radiographically looks quite significant, but from a functional point of view, this is the sort of person who may well cope very well with, you know, decades of life with this malformed hip, and maybe just appropriate physical therapy regimes to try and maintain muscle tone. Obviously, during the active process these children lose muscle bulk, quads, glutes, you can regain that muscle function and try and maximise the potential for what is at the end of the day a malformed joint, but a joint that can function to an acceptable degree.

Steven Bruce

Yeah. Why? Why would you get a mismatch between the acetabulum and the femoral head,

Simon Mellor

so that the real problem is when you start to get changes in the femoral head late. This is why the older you are, the worse your prognosis if you are eight or nine years old with active perthes disease, then you probably haven't got enough time ahead of you for the femoral heads to remodel and also fight and then encourage the acetabulum to change its shape to match the femoral head, as you see here. And you end up with a an malformed femoral head sitting in what looks more like a normal socket. And that's a worse prognostically that's worse because you then get point loading areas where where you can't really take the strain of normal gait cycle. Okay. I think we look we've moved to the next X ray, I think then, yeah, that's the this time it's the left hip. This is really a towards an end stage appearance. You're starting to get more degenerative appearances within this malformed hip again, there seems to be a fairly good Mirror

Mirror between the shape of the femoral head and the acetabulum. But you're starting to see signs of new bone formation around the floor of the acetabulum, around the bottom of the femoral head. So this person who again an adult with some degenerative changes starting to appear,

Steven Bruce

is this a symmetry in the pelvis? Is that just a function of the way they're standing in the X ray, or is that secondary,

Simon Mellor

you can see that shortly, if you look at where the tip of the greater trochanter is on that left hip, and, and the tip of the greater trochanter on the right hip aligned between those two and the line of the pelvis, you can judge just on this plain X ray that this patient is, is having to cope with a shortened left leg. And in fact, indeed, you can see even looking at the letter C, there's a big difference in height between where the LeSage center sits in relationship to the pelvis. So this is the sort of person who may well be starting to get difficulties with this hip joint, despite maybe wearing a shoe raise or or an insert inside the shoe to try and balance that length inequality.

Steven Bruce

Simon Lucy's asked us if there's any connection with what's been called irritable hips she's dealt with a number of young lads who've been diagnosed with this is that something which could be connected.

Simon Mellor

So irritable hip is a diagnosis of exclusion. And once we've ruled out more serious pathologies, in my NHS practice, as a trauma consultant, as part of the rule three, we get a constant stream of children coming in with with irritability of the hip joint, limping, sometimes with or without a temperature. And these are the children where you run through a diagnostic sieve to come up with a potential serious diagnosis like Ewing's, a disease or a hip infection. And for a lot of those children, it's a transient sign of itis. So maybe they've had a viral illness, usually a week or two beforehand. They've recovered from that viral illness, all those symptoms have gone and then they start to develop hip pain and a bit of a limp. And clinically, the hip is irritable. And the good news is that's a self limiting condition.

Steven Bruce

Well, that's encouraging. Adam was asked how early in the development of perfect as the trendelenburg test become positive. Is it positive due to pain or is it due to only after movement, he says.

Simon Mellor

So trendelenburg test is an assessment of the overall function in the hip and also specifically the abductor muscles that are attached to the side of the hip, the side of the femur, and actually within an early phase of the disease, especially if there is irritability in the hip, then the pain will result in it near the abductor muscles switch off. So there is a tendency to have an abductor mismatch and they're alert which is the typical

appearance of the trendelenburg gait. In the long run, they will retain a trendelenburg test because they have wasting muscle wasting with the abductor muscles. So it is a sign

Steven Bruce

we're spending an awful lot of time on perfect when we were going to go into hip dysplasia, but I still got more questions.

Simon Mellor

I didn't mind

Steven Bruce

my the viewer who's calling themselves hinges I'm not sure if that's a name or one of the nicknames that comes out of one of our groups says would you build up this patient's shoe because of that leg length difference?

Simon Mellor

So what you'll see often is there's a mark shortening at the site of the hip joint in the femoral neck As the child grows, they may have a compensator II, increasing growth lower down the leg. So although on the pelvic actually looks like a huge difference, in real terms, there may be a minor difference. My preference would be to say, you know if the difference, the apparent leg length difference on examination is in the order of a centimetre or so even though, looking at the essential you think there's going to be three centimetres difference, if, in fact, there's only a centimetre difference. A lot of patients don't want to have a shoe raise because that's visible externally. And they'll accept a smaller insole, even though it's not completely resolving their leg length difference, even if it helps to adjust their leg lift their legs difference, they'll happily take maybe half a centimetre of an insole, which is invisible to the rest of the world, rather than having their one and a half centimetres built up onto the the underside of the shoe. But it's it's up to a discussion evolves. With all these things, you have to have a sensible discussion with your patient as to what their expectations are.

Steven Bruce

Okay, would you like us to move on?

Simon Mellor

Yeah, we'll just flick through the rest of these and then we can move on to DDH. This is a just a series of X rays showing up the the long term outlook. This is a patient who's in her 50s, who has had birthdays, and has developed secondary degenerative arthritis, there's no joint space, lot of pain, and this patient is at the stage where hip replacement surgery is appropriate. Technically speaking, it's more challenging to do a hip replacement for somebody with this abnormal anatomy, but it's not impossible. If we flick through the series of X rays. In turn, we've got a close up the next X ray shows a close up of the hip joint. And then the next slide shows the CT scan showing the amount of cyst formation within the femoral head, which is a side effect of the degenerative arthritic process. And then the X ray showing the post op appearance having had

a successful hip replacement, you'll notice that we haven't brought the femoral shaft down as much as you would have thought maybe we try to do the the distance from the tip of the counter to the edge of the acetabulum hasn't changed that much. This hip has been short for decades. If you try and correct completely correct the leg length inequality by jacking out the hip with a hip replacement in what would be called termed in inverted commas in the right place, you are much greater risk of causing nerve injury particularly signout cytec nerve palsy, so we will elect to put in the hip replacement to some extent where the hip joint requires it to be rather than aiming for a full correction of leg length.

Steven Bruce

Okay. Which leads us on to hip dysplasia.

Simon Mellor

Yeah, so what I learned as a medical student CDH congenital dislocation of the hip, which has now changed its name to developmental dysplasia of the hip. This is a much more common condition in the community, about one in 1000 children are born with a dislocated hip. And something like eight to 10 per thousand of the population are born with unstable hips or a clicky hip at risk of dislocation. So this is a much more prevalent condition, and much more common in young girls than boys and the etiological factors. This is often a packaging disorder problems. So this is the sort of condition that's associated with a firstborn breech presentations where the baby is in the wrong position in utero. These are the children are also at risk of other conditions like torticollis of the neck. And there is a family history. For some of these. There's a genetic disposition for some, I'm not talking here about the severe bilateral hip dislocations that you get in some of the children with teratogenic problems. These are, you know, multifactorial problems. These are the the straightforward just developmental displays yours and all children are screened at birth by the paediatrician to check for signs of a clicky hip or a dislocated hip. There are some features which will pre suggest to the clinician like skin crease asymmetry. And clearly not to be the case if you have bilateral dislocated hips. You won't see an asymmetry because both sides have skin creases are abnormal, but they're equally abnormal. A lot of children a lot of babies newborns which have clicky hips will spontaneously stabilise and don't have any problem and don't require further intervention. Yeah, this is just part and parcel of the normal clinical examination. The tests that we use at birth are flag abduction and add flexion examinations. The Barlow test is commonly performed to try and see if a hip is unstable and dislocate a ball from From a from a located position, and the reverse of that test is called the waterline test. That's the test where you clunk a dislocated hip back into joint sounds gruesome, but the babies, they don't really seem to be that adversely concerned about it at the time. Obviously, you don't want to repeat the test again and again, and again, if you identify a clicky hip, then the next stage is to consider appropriate treatments to try and make sure that hip stays stable. And those children will usually put it be put into a Pavlik harness will be coming onto a picture that in a second and will often have up to the age of about four months. ultrasound scans are useful both as a diagnostic tool to identify hip instability and also as a as a screening to check that the hip is correctly reduced. Once the child has been put into a into a Pavlik harness,

Steven Bruce

you know, I've never actually considered that it must be quite difficult to diagnose a dislocated hip in a baby when you're in an adult, a dislocated joint would either be obvious because of what they tell you because how the joint looks, and you're missing at least one of those factors with a baby on you.

Simon Mellor

Well, bilateral hip dislocation in a baby is a difficult one. Well, we've got a great slide to show you in a minute, which will maybe surprise a few of us. If you move on, these are some of the typical features that you'll see that bottom left, you can see what a Pavlik harness looks like designed to hold the hips in an appropriate position so that they remain well located. The overall aim of treatment of children with developmental dysplasia, the hip is to have the femoral head sitting in the acetabulum through whichever method possible so that the acetabulum in their head grows normally, whether that can be achieved just with the use of a harness, if treatment with a harness fails, then the next stage would be to consider having an open reduction. So surgery where the hip is opened and reduced into joint and then held in joint. And then later on if that still hasn't been successful, and some of these children will end up with bone surgery. As you can see on the picture on the right, this is a child who's had both a femoral and a pelvic osteotomy to try and maintain the position of the femoral head within the acetabulum.

Steven Bruce

These these white lines, the diagonal white lines are

Simon Mellor

a picture on the right hand picture those are wires skewered through the broken bone to hold the socket in the correct alignment, so that the femoral head won't drift out. If you look at the picture on the left hand side, those are superimposed lines on the X ray, which are just showing you that on that picture the child's right hip is dislocated. And but you can also see that the socket on that right hand side the the slope of the socket is wrong. And so this is a multifactorial problem for children with dislocated hips. They don't only have an abnormality of rotation and alignment of the femoral head and neck. But often the the socket itself, the acetabulum is shallow and malformed and predisposes to allowing the femoral head to subluxate or dislocate out. Okay. We're going to move on if we move on to the next slide. Yeah, well, we'll be able to get through all the appropriate slides. This is what I see more frequently. So and I have a problem and I have an adult and predominantly adult hip practice. And what I will see is adults This is a lady in her early 30s, who has a bit of hypermobility, and has always for as long as she can remember, always had a bit of a funny gait, she wobbles a bit, and she's not the sport just I mean, she's not overweight, but she's not been able to achieve sports, you know, the level of sport activity she would hope to achieve, and her hips have become painful and radiologically she has DDH but in her case she has the hip joints are well located but I think your viewers will probably see that her sockets both sides but left worse than right. The socket is very shallow, with a quite a vertical roof. Rather than the usual coverage that you get to the femoral head there's a degree of uncovering of the femoral head which predisposes to overload of the cartilage within the hip joint in an abnormal fashion. But also, she has femoral changes, typical femoral changes. People with DDH they tend to have very vertical femoral neck what we call a valgus femoral neck, a long femoral neck and the rotational profile of the femoral neck is wrong as well a lot of these people have

what we call femoral neck anti version. So the femoral head and the femoral neck are pointing forwards. And in order to keep the hip located correctly, the the leg has to be internally rotated in a compensator II fashion to keep the femoral head in place. A lot of these children when they're when they're youngsters, they may will have an in toed gait. as they grow up, they'll develop external tibial torsion rotation of the tibia to compensate. So an adulthood, their feet will point forwards, but their femoral necks will still be pointing the wrong way. And for the sort of people, sometimes when they're in their 20s, they may find that it's appropriate to consider having osteotomy surgery at that stage to try and maintain their own hip joints and give it longevity. When they're in their 40s or 50s, and start to develop degenerative arthritic change, then these are the sort of people who end up with hip replacement surgery, maybe the younger age than the average population

Steven Bruce

is osteotomy, a relatively innocuous form of surgery.

Simon Mellor

Oh, not at all. I mean, you're breaking the bone, correcting alignment and then fixing it, you need to get the alignment correct. So accuracy is important. You know what we want to achieve the correct outcome, then you have the issue of making sure the bone heals up. If, if the bone doesn't heal correctly, some some people have ongoing symptoms because of delayed union. And unfortunately, some people end up with Mally non union, and a non union is a severe problem. Thankfully rare, but you wouldn't want to necessarily start considering this sort of osteotomy surgery on someone who's a heavy smoker, we know that smoking has a very direct correlation with poor union of bone. And that needs to be taken into account. Okay. We bow if it goes to the next page. So this is just a model of a pelvis to give some idea of a hairy acid tabula osteotomy. This is a surgery that can be done in a young adult to try and re correct the slope and shape of the acetabulum. So that the young adults, biomechanics are more corrected. And this isn't the surgery that I routinely perform. But I have a colleague who does, and quite typically, athletic people in their 20s who are getting hip pain or groyne pain because of a degree of dysplasia may consider may be considered appropriate for having this sort of a Peri acid tabula osteotomy, where the alignment of their socket has changed. This is called a dance osteotomy. I named after the surgeon who developed it. And the next slide I think shows the outcome after successful dance osteotomy for somebody with developmental dysplasia, and I don't have the property of X ray, unfortunately, but the post operative X ray, you'll just have to take my word for it that the coverage of that femoral head is now much better, you have a more correct alignment of the acetabulum now, so that hopefully, this young adult will be able to have a long lifespan to their native hip joint. And then the next slide, this is a case that came to see me a lady aged about 40. She had a dislocated hip as a baby, she tells me that at the age of about one, she had an operation to try and put the ball back into the socket, which was an operation done through a groyne incision. Unfortunately, she had ongoing problems. And so at the age of about seven, she had a what we call a D rotation femoral osteotomy to try and correct the alignment and rotation of the femoral neck so that again, the femoral head would sit inside the socket correctly. By the age of 10, she'd had that metal work removed and you can just about see the after effects of that metal work on the proximal femur. There are some sclerotic lines across the upper part of the femur where the screws for the plates and she had a plate and screws put in. That's all been

removed, but now she's 40 years old, and she's getting severe symptoms from her arthritic hip unfortunately, and she is going to be having a hip replacement in the very near future. Because unfortunately in her case, the treatments for her developmental dysplasia has not given her more than 40 years worth of successful outcome for her hip.

Steven Bruce

If you're standing upright and this X ray suggests that she's gotten even worse leg length difference than the previous slide we look up.

Simon Mellor

Interestingly enough, if you examine her in recumbency on the on the examination couch the actual leg length difference is only in the order of about half a centimetre to a centimetre quite interesting because she as I said before, she's grown up and she's had a compensator II lengthening access growth within the lower part of the knee joint and the tibia, which has allowed her to have a degree of compensation. Yeah. Good. I'm not sure if there any slide any further slides worth showing. Oh, that's just a close up. And then I think we have, the next picture is just showing her the side view of that same hip joint. And I think we've got a CT scan that shows up quite nicely the anti version problem that she still has. So that's on her on our left hand side, her right hip, you can see how forwards pointing the femoral neck is on her symptomatic arthritic right hip, compared to the normal alignment that she has in the left hip. And that's something we have to correct. When we do her hip replacement, we have to put in the femoral stem, the board has to be in their correct rotational profile for her leg, so that she has a stable hip joint.

Steven Bruce

Simon, you've taken us right up to the last second of our scheduled time, which is very clever Have you given given all the information you're imparting, they're very kind of you give up your time

Simon Mellor

of nature.

Steven Bruce

In terms of the after care of people like this, I mean, you talked a bit about hip replacements in the past, but in terms of young children, should we be concerned about how we might manage their physical care for children with developmental dysplasia.

Simon Mellor

So the good news is that as long as their early treatment is successful, then we'd like to encourage them to have a full and active life. And if if they need to have appropriate physical therapy input, to maintain muscle strength to improve mobility and flexibility, if they need it, then that's fine, you're not going to be putting their hip joints at risk, you're not going to be causing further damage to their hip joint. Sadly, if they've got their starts of degenerative change, you know, predictably, due to them in the future because of their condition. I don't think that, you know, as I don't think that the sort of management that you will instigate is

going to change that process at all. So hopefully, you will be doing them a good service by maintaining their quality of life when they can do and in the long run, if they end up with a degenerative hip joint, and they need to see somebody like me for a hip replacement. So be it.

Steven Bruce

Right? Well, from everything you've told us, I hope when they do their hip replacement, it is you they see because you've talked a lot about your approach to hips, and I think you've given people a lot of confidence in the operation. But you've imparted a lot more information to so they thank you very much for your time. And I hope we'll be seeing you on the show again soon sometime.

Simon Mellor

My pleasure. Always nice to speak to you. Thanks very much.

Steven Bruce

It's our pleasure. Thank you.