

**PRIMARY KNEE REPLACEMENT SURGERY USING THE DePUY ORTHOPEDICS  
LSC COMPLETE MOBILE BEARING KNEE SYSTEM  
UNIVERSITY OF PITTSBURGH MEDICAL CENTER SHADYSIDE HOSPITAL  
PITTSBURGH, PENNSYLVANIA**

00:00:16

ANNOUNCER: Welcome to the University of Pittsburgh Medical Center Shadyside Hospital in Pittsburgh, Pennsylvania. Over the next hour, you'll see Lawrence S. Crossett, MD perform a primary knee replacement surgery using the DePuy Orthopedics LCS Complete Mobile Bearing Knee System. Today's program will be moderated by Brian D. Haas, MD, Clinical Director, Rocky Mountain Muculoskeletal Research Laboratory, Denver, Colorado, and Clinical Director, Colorado Joint Replacement in Denver, Colorado. Viewers of today's program can send email questions to the program presenters by using the MDirectAccess button on your webcast screen. And now, your host, Dr. Brian D. Haas.

00:01:01

BRIAN HAAS, MD: Good evening. I'm here today with my associate, Dr. James Dowd. He's from Virginia Beach, Virginia, at the Jordan-Young Institute. Our surgeon today is Larry Crossett, who's in the operating room live with you tonight for a surgery in which we're going to implant a posterior-stabilized rotating-platform total knee. So, without further ado, we're going to turn it over to Larry and he can begin the procedure for us. Larry, can you describe the patient you have for us today?

00:01:30

LAWRENCE S. CROSSETT, MD: Yeah, we kind of have an ideal patient here, Brian. He's mid-60s, he's very healthy, he's lightweight. How we managed to find him for this is beyond me, but again he's a healthy man. He's got about a probably eight-degree varus or a ten-degree varus and about a ten-degree flexion contracture. So, it's not a real big deformed knee, but it will be, I think a good case for doing something live here on the Internet. So we're going to go ahead and get started. We'll make a skin incision. The incision is about 13, 14 centimeters. I don't know what your feelings are on making these small incisions, but I'm not too excited about it.

00:02:11

BRIAN HAAS, MD: I've seen a number of complications in my area that have been referred to me for complications from trying to do surgery through to small of an incision, so my basic tenet is the skin will heal side-to-side, not end-to-end, and what I want to do is have adequate exposure. We're trying for a 20- year result, not a two-week result and not a cosmetic result. So I've never had a patient come into my office and complain that their incision was too long if their knee was functioning well.

00:02:41

LAWRENCE S. CROSSETT, MD: Yeah, the other thing is. I'm back to a medial parapatellar incision. I sort of putz around with the other ones, but sort of came back to this. I really didn't see any difference. This is certainly the most versatile.

00:02:56

JAMES DOWD, MD: Yeah, I would agree with that. I danced around with a subvastus and a midvastus for a while and I'll still do the occasional midvastus, but by and large, I've been happy. It's a little smaller and a little maybe kinder and gentler than it was four or five years ago, but visualization and correcting the deformity and all the principles I think still apply. You can't lose track of that.

00:03:17

LAWRENCE S. CROSSETT, MD: Yeah, I think all our incisions are a whole lot smaller than they used to be but – so, I'm going to take down the MCL here a little bit. That's something that's changed in my practice. I used to be sort of a very much of an advocate of sort of the John Insall approach, big, big wide exposures. Take down the MCL. But I really try and take this down minimal now. I'll do, for exposure purposes, but I'd rather control. I'd rather cut it than rip it. Once I get past the midpoint here, I'm going to be worried more about just approximately the deep layer, rather than the superficial.

00:03:52

BRIAN HAAS, MD: I think, how much I take down is really dependant on, when I'm opening up the patient, I try to get a sense of, there are tight varus knees and there are loose varus knees and I think every patient, there's a difference in degree of how fixed their deformity is.

00:04:09

JAMES DOWD, MD: Yeah, that's a great point. The flexible deformity knee requires a lot less work medially than the fixed biplanar varus flexion contracture knee.

00:04:19

LAWRENCE S. CROSSETT, MD: We're not going to navigate this knee. If we want to sort of make some point on some instruments, we'll make some points on sort of the type of knee we're doing here. We're going to do a posterior-stabilized rotating-platform knee. But certainly, I think with all this soft tissue discussion we have now. It's all sort of predicated on what we're learning from the computer. The computer's been a wonderful tool. I wish we were using it today, but again this is a perfect patient to do this.

00:04:45

JAMES DOWD, MD: Yeah Larry, so if you're not working around the medial side nearly as much with the medial collateral ligament, or moving away from doing the Key elevator or the Cobb, halfway down the tibia, where are you going to get your correction of his varus deformity from?

00:04:56

LAWRENCE S. CROSSETT, MD: You know, I aggressively take down the deep layer all the way posterior. I take posterior osteophytes. We go and it depends on – I might even do it in this case, where we go to the back of the femur early on, the posterior femur, get those posterior osteophytes out. When you're tracking this with the computer you can sort of see.

00:05:19

JAMES DOWD, MD: Yeah, it really does a nice job by showing you what works and what doesn't work when the computer's giving you feedback immediately of correction. We've talked about this before, but I've moved a lot more to an interest in the posterior medial corner and the capsule off the back of the femur and the osteophytes back there as being the cause of the contracture, not the medial collateral ligament.

00:05:38

LAWRENCE S. CROSSETT, MD: Yes, everybody who does the computer a lot over the last couple of years were all saying the same thing. We all learned the same things early on. How many people are cutting a patella early now.

00:05:48

BRIAN HAAS, MD: I cut my patella right at the time you're doing it. Now, I just don't use a guide. I just go ahead and freehand this cut, trying to use the inferior surface of the patellar and quad tendon as a guide.

00:06:05

LAWRENCE S. CROSSETT, MD: Check this out and make sure it's not too thick. I'm sorry.

00:06:08

JAMES DOWD, MD: I do a little bit of both. I'm going back and forth, schizophrenic.

00:06:12

BRIAN HAAS, MD: I think the key here is that overstuffing the patella is bad, but I'm not sure. I think in every total knee we're actually adjusting the depth of the trochlear flange, as well, so I'm not sure that measuring the thickness of the patella only really tells you what you're doing to the patella-femoral mechanism.

00:06:34

LAWRENCE S. CROSSETT, MD: I'm sorry, this thing just felt a tad thick so I'm just going to double-check it right now.

00:06:40

BRIAN HAAS, MD: But the key thing is, I think, with this is what – Are you going to evert your patella during your procedure or are you going to keep it subluxed along the lateral guide.

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LAWRENCE S. CROSSETT, MD: I'm just going to sublux. There's no reason. We'll do it right here.

00:06:53

BRIAN HAAS, MD: Right. That's exactly what I do. I think I was trained early on in my career to evert the patella and I don't really see the need to do that. So if you debulk, it lays along the lateral side without difficulty.

00:07:06

LAWRENCE S. CROSSETT, MD: Could I drop the table about two inches please? Very aggressive about osteophyte removal. Drop it please. Drop it please, [Matty]. Thanks.

00:07:17

BRIAN HAAS, MD: I think the key here is though is that you out to remove your osteophytes and any impingement underneath that medial collateral prior to releasing more of the MCL, because many times, especially in this patient, with those profound medial osteophytes, just by doing what you're doing now will substantially release some of the tension there immediately.

00:07:35

LAWRENCE S. CROSSETT, MD: I feel that way about the posterior ones. He doesn't have real big ones but we may just go back just for kicks because I think it's a good lesson, but you know, and what you do for flexion is going to affect varus and what you do for varus will affect flexion. As I said, it's just a continuum. So, getting the deformities corrected is going to be first primarily. Can we adjust that light a little bit.

00:08:03

JAMES DOWD, MD: So, do you try to make an attempt at this point to try to peel back the PCL, since we're going to sacrifice and substitute for it today?

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LAWRENCE S. CROSSETT, MD: I'm going to get rid of it right now, sure. Let's get rid of it, again, because it distorts the deformity. I'll take a hemostat, Art. He has it in his hand. I don't have to ask him for anything.

00:08:33

BRIAN HAAS, MD: So Larry, the sequence of instrumentation and cutting today, you're going to cut the tibia first. Am I correct?

00:08:42

LAWRENCE S. CROSSETT, MD: Yes I am. I'm a big believer. I think this whole concept of low-contact, stress arthroplasty mobile bearing knee, what we're going to talk about here, there's a lot of history about it and I think it helps the people know that – In this country, we're going to be facing a lot of new different designs of things coming out and we're not as familiar with the history of mobile bearing knees as perhaps the Europeans who have been a lot more familiar with it.

00:09:10

JAMES DOWD, MD: Yeah, they've been on board much longer haven't they?

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LAWRENCE S. CROSSETT, MD: So, I mean the purpose of this thing is really to get everybody sort of educated as much you can about the concepts of mobile bearing and the unidirection, where we're throwing in posterior stabilization and this is rotating-platform posterior-stabilized knee that's been designed from a pure [unclear]. We're talking about earlier, Jim. I'll take down a superficial layer here.

00:09:38

JAMES DOWD, MD: Yeah, I love that maneuver.

00:09:40

LAWRENCE S. CROSSETT, MD: But again, the deep layer is pretty much untouched from the midpoint on, but back here, that's easy. That's good.

00:09:47

JAMES DOWD, MD: Yeah, as long as you can see sort of the 360 rim there around the corner and into the back of the knee and I think the more profound the flexion contracture is, the more I think I get relief of the flexion contracture by addressing that soft tissue sleeve and then going back to the back of the femur and taking it off the back of the condyle as well.

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LAWRENCE S. CROSSETT, MD: I agree.

00:10:06

BRIAN HAAS, MD: So Larry, we're going to cut the tibia first and in the 20 years I've been doing this now, one of the big objections to utilizing the Insall technique is cutting the tibia first. Do you really feel that cutting the tibia first has been significantly more difficult than doing the femur first techniques?

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LAWRENCE S. CROSSETT, MD: Loaded question, Brian. Do I think – If I could reliably find a posterior or a femoral landmark that I thought was truly reliable and I could set my rotation on it reliably, would I do it? Sure. Do I think that cutting tibia first is difficult to do? No, I don't. But the fact – We've been chasing this issue rotation now for years and years and years. We've done hundreds of CT scans. Mark Clatworthy and a bunch of people have looked at the computer and recording all the measured variables and I still lay claim to – I just don't see any evidence that a given femoral landmark's going to provide you with your rotational alignment. I just don't, so I'm going to stick with this.

00:11:11

BRIAN HAAS, MD: So, we're going to cut the tibia. What goals do you have for your alignment? For varus valgus obviously we want to be down the mechanical axis of the tibia at a 90 degree angle, but how much slope are you anticipating?

00:11:27

LAWRENCE S. CROSSETT, MD: I want seven degrees, you know it's designed for seven. There's seven built into this, so if I get this parallel up and down here, we're going to be fine. Are we okay with lights, everybody? He's thin, so this is really going

to be pretty slick. I think he's a little bit of valgus, so I just move this whole thing over the maximum I can for varus and then – Heavy people, I never bring it back. Thin people, I do. Let me just check one more time.

00:11:56

BRIAN HAAS, MD: What's your thickness goals? There are some of us, I'm one of them, that tries to go two millimeters underneath the low side, which is almost always the medial side.

00:12:09

LAWRENCE S. CROSSETT, MD: See, I don't like that.

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BRIAN HAAS, MD: Then, are you one of those that like to take away ten millimeters from the lateral side?

00:12:15

LAWRENCE S. CROSSETT, MD: Now this is a male, so yeah, I'm going to do ten millimeters from the outside. You know, Brian, the thing about two millimeters. My thoughts on the medial side, I just don't know where I am and it all has to do with your habits anyway, but I'm going to go to ten. Now for the female, I'll probably go – Move that forward a little bit, [Greg]. Just a tight hole. I may have this just relax a little bit here for a minute. Let's just release the femoral ligament here. That little piece here, okay. What were we talking about? Oh, if it's a female, I go eight. Let's say a female with a valgus knee, I might go six. That looks good there. That's ten. Again, I've learned so much by putting this on from navigation. I have really not much hesitation any more about that.

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BRIAN HAAS, MD: I think those of us that have used the computer quite a bit that the heartening thing that I've learned from that experience is that my conventional instruments are very accurate.

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LAWRENCE S. CROSSETT, MD: What you learned was your instruments aren't too bad. We're pretty bad using the saw.

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JAMES DOWD, MD: Saw, yeah. Exactly.

00:13:33

BRIAN HAAS, MD: Well the saw always deflects and you always get less posterior slopes than what you think you think because it deflects up from the posterior edge.

00:13:41

LAWRENCE S. CROSSETT, MD: How many times have you put the computer on, gotten zero, zero, zero for all three planes, made a cut and it'll be like three and four degrees off. That's just your saw blade.

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JAMES DOWD, MD: Hey, Lar?

00:13:50

LAWRENCE S. CROSSETT, MD: Yeah.

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JAMES DOWD, MD: A bunch of questions keep coming in about the posterior cruciate ligament and the violent resection that you did there taking the whole thing out. Your basic knee, the knee you've done for years and years and years, you never saved the posterior cruciate ligament.

00:14:06

LAWRENCE S. CROSSETT, MD: In 21 years I save the posterior cruciate ligament twice and once it got infected.

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JAMES DOWD, MD: So the take-home message is "50 percent of the time, the PCL causes infection"?

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LAWRENCE S. CROSSETT, MD: You know, another from my source of reference, the Journal of Anecdotal Medicine, my mentor always said a good point for it. He said you can fly a one string kite, you can fly a two string kite, but nobody flies a kite with three string because you can't balance three strings. That's sort of my belief with the PCL. It's hard to balance three of them.

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JAMES DOWD, MD: So, you've always done some sort of posterior cruciate sacrificing knee?

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LAWRENCE S. CROSSETT, MD: Correct.

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BRIAN HAAS, MD: My experience, while you're working there is, I trained with George [Galante] as a resident and [Jerry Yang] as a fellow and I was trying to always retain the cruciate ligament, but it really was the work the Doug Dennis and Rick [unclear] did at our laboratory that really changed my philosophy about cruciate retention because our data clearly showed, and it won the Coventry Knee Society article about three or four years ago that kinematically, our best knees were those that had posterior stabilization, especially in flexion.

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LAWRENCE S. CROSSETT, MD: I think that's going to be a lot of what we're going to talk about later on today. I'm going to show you something that I think is - I've come up with - He does not have a bad flexion contracture, but we know the more deform that we can correct early - This is called preliminary posterior knee release and I want to cut just a few millimeters of bone here. It gives me much better access to the back of this knee. Let's have one inch curved. Just taking that out. Okay I'm out of here, Greg. Hopefully the camera can get in here, but I could look back here and see this real nice now. Now I'm just going to take off every big osteophyte I have.

00:16:02

JAMES DOWD, MD: So you're able to do that because, as we're about to see, you're going to - you're not using posterior condylar referencing for your femoral rotation right? You certainly would never want to do that?

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LAWRENCE S. CROSSETT, MD: No, I wouldn't want to do that. I'm doing this. Again, we know the more the deform that you correct early on - If you have a computer and you haven't corrected your flexion deformity, you're going to end up taking a whole bunch of distal femur. The computers reinforce all the stuff that we've been told for years and years, so the more deform that you can correct right now, the easier this thing is going to be. I probably didn't need to do this little maneuver there, but what the heck, we've got some people here looking and it's a very handy maneuver to use when you do have a bad one. Let me see if I can get this all out of here.

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BRIAN HAAS, MD: I think the other key point there when I'm teaching our fellows is if you have a severe flexion deformity and preoperatively you see a lot of posterior osteophytes, don't keep resecting bone trying to get your spacer blocks in until you get the back of the knee cleaned out and that may not be until later on in the case after you've made some of your cuts.

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LAWRENCE S. CROSSETT, MD: The problem is, Brian, you set rotation, so if you've set rotation, then you take out the posterior osteophytes, your flexion gap's getting looser and your rotation's off, so I think it's imperative to get to it earlier. Okay, let's double-check the sides, Art. Okay, so I templated him for a standard but he's a male – This is where I like to size.

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JAMES DOWD, MD: So you're sizing that from a medial-lateral perspective?

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LAWRENCE S. CROSSETT, MD: Yeah. I'm going to go standard plus. I'm going to go as wide a knee as I can without overhang because this will give me most control in the flexion gap. The bigger the knee, I think, the better. I'm going to find out early on whether or not the – I'm too big. As soon as I set rotation and put my femoral positioner in, if I'm too big, I'm going to know because I won't be able to get a ten-millimeter spacer in. For any people who are familiar with low contact stress arthroplasty issues, these instruments are a little different. These are not the old Milestone instruments. Tried to take all the little foibles – go ahead Greg.

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BRIAN HAAS, MD: So, essentially what you're doing there Larry is instead of relying on a long IM to get your flexion and extension of your femoral implant, that yoke that you just placed along the anterior femur actually is setting your flexion and extension of your femoral component?

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LAWRENCE S. CROSSETT, MD: Yeah, this component. You talk about anterior reference and posterior reference, but we are really, truly intramedullary referencing. So that little instrument's a little better, I think, at positioning. I'm going to check my alignment right now. This little device is five degrees, so I'm set for five-degree valgus and insert that in there. Now, with the knee in extension, just a little tad loose lateral. See this?

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BRIAN HAAS, MD: Yeah, we see this. I think this is a critically important step. The criticism of previous low contact stress instrumentation is that people had to balance their flexion gap before they balanced their extension gap and what this five-degree distal IM jig is allowing you to do is actually get your collateral balanced in extension before your cutting your flexion gap.

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LAWRENCE S. CROSSETT, MD: Yeah, yeah. I think it's okay. It might be just a little bit – I might just take a little bit more. Our alignment's right down the pike. I think we see that.

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JAMES DOWD, MD: Yeah, it looks good. You're definitely in valgus, it looks like.

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LAWRENCE S. CROSSETT, MD: Yeah, we're in five degrees. I'm just going to take – Can I have that Hohmann back? Just subjectively, just a tad bit more so I'm going to just, again, nothing with superficial, I'm just going to take a little more of this deep layer. Now I'll push that forward and come all the way back here. Okay.

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JAMES DOWD, MD: So you're doing a little bit more of a medial release to match up medial with lateral.

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LAWRENCE S. CROSSETT, MD: We don't need to check it again, Art. These posterior tibial osteophytes are always big and you'll never see them if you don't take down the deep layer. All right, so again, what I'm going to do now is – Art, I just put that in a little too far. Where's my little gold – My soft tissue alignment and balance in

extension, I like, okay. I'm just trying to get this a little looser, and the osteotome. That will work, Art. So now I'm using that. I want to match that soft tissue balance now in extension. So, we'll take the standard plus. Now, again, the old Milestone instrumentation, we set intramedullary, now we know we're not that accurate with it. Flex and extension bad. We learned that from the computer. Even the anterior-posterior position. You 'd cut it, and a lot of times you'd have to take them out, lower the pins, and recut. So, the newer instrumentation sort of get away from that. Hopefully just do a better job at it. I'm going to set this.

00:21:28

BRIAN HAAS, MD: So you're going to set that as far posterior as you can without notching the anterior cortex.

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LAWRENCE S. CROSSETT, MD: Right. This little device here is sitting right on that cortex. All right, so tighten this up.

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BRIAN HAAS, MD: For those unfamiliar with this particular device, the cuts are parallel. They're not diverging. This is critically important step so that you don't notch the femur as this cut is parallel to the implant.

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LAWRENCE S. CROSSETT, MD: So, okay, I've tightened this down significantly. Now this still rotates within the canal because of the intramedullary bushing. I'm going to put a ten-millimeter spacer in here. Okay. All right. Now if we can look in here, can we raise it up a little bit? That's actually fairly snug. I thought I took ten millimeters. That's actually snug, so we may come back and revisit this.

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JAMES DOWD, MD: So you've referenced off the anterior cortex that you're parallel to?

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LAWRENCE S. CROSSETT, MD: Again, we're still intramedullary referencing because if I switch this to a standard, standard plus, it changes a little bit anterior, mostly posterior, but a little bit anterior. So it truly is anterior referencing, but we're going to try to get a better starting point with this instrumentation.

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BRIAN HAAS, MD: Larry, while you're cutting there, some international audience has emailed in. They want to know how old the patient is and, "Was there any possibility in your practice of this patient receiving a medial unicompartamental replacement?"

00:23:07

LAWRENCE S. CROSSETT, MD: No. Not really. 65 years old, I do uni's and I do mobile bearing uni's and I have not done a fixed bearing knee, primary vision, or a uni in years, but he's got, on his lateral x-ray, which we'll show, he's got a posterior wear pattern. So to me it's indicative of a non-functional cruciate ligament and I don't think that patient should have a uni.

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BRIAN HAAS, MD: I also thought I saw some significant trochlear arthritis when you opened him up as well.

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LAWRENCE S. CROSSETT, MD: Yeah. We can show these x-rays and maybe we should. We're going to head over and show them x-rays right now. Can we show the AP x-ray? You can do it by hand. We should – No, no, not that, please. Could we show the x-rays on the board, please? Excuse me. Okay, we're getting there, yeah.

00:24:14

BRIAN HAAS, MD: So you've done your anterior-posterior cuts, Larry, so what's your next step going to be? Are you going to take off your block and check your flexion gap?

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LAWRENCE S. CROSSETT, MD: I haven't cut posterior. Now, do we have those x-rays ready yet?

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BRIAN HAAS, MD: That's okay.

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LAWRENCE S. CROSSETT, MD: All right, that's the AP. You can see we're doing a left knee. So again, not a bad deformity. The lateral side's a little bit – Can we show them the lateral, please? Okay, and again, to me that's a posterior wear pattern and I don't think that works for a uni, especially a mobile bearing uni. I don't think any uni should have that.

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BRIAN HAAS, MD: Okay. That's a good explanation. Okay. All right.

00:25:22

JAMES DOWD, MD: Hey Larry, so for those not as familiar with this system, that horseshoe or spacer thing that you put in that set your femoral rotation, that basically sures up your flexion gap? That's what ends up giving you the square flexion space?

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LAWRENCE S. CROSSETT, MD: Right. Again, I already like my alignment. I like my soft tissue. We know that. I want a rectangle. This whole issue, we talked earlier and we did the revision about spinout. If you're just doing a rotating platform, then spinout's a possibility that's very, very rare. It's not the issue that everybody thinks it is. If you stabilize it, it becomes more of a non-issue. But, if you want your soft tissue balanced, that's the advantage here.

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BRIAN HAAS, MD: So, but the other thing with that horseshoe, if that horseshoe fit in then you're able to use the ten millimeter spacer and rotating bearing as well.

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LAWRENCE S. CROSSETT, MD: I made a comment that five was a little tight, but right now this is fine.

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BRIAN HAAS, MD: Now, how tight should that be, Larry? That's always a question to ask.

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LAWRENCE S. CROSSETT, MD: If I have a heavy leg, I'm going to get a bone hook, sort of just take the weight of the leg off and then move it back and forth. I could pull this out without any trouble.

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BRIAN HAAS, MD: But the key is, you probably have one to two millimeters of play with extremes of rotation there at most, is that correct?

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LAWRENCE S. CROSSETT, MD: You're talking about here?

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BRIAN HAAS, MD: Yeah.

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LAWRENCE S. CROSSETT, MD: I can't get this to open up at all. Generally, my knees don't. They don't open up this direction at all. I can torque that as hard as you want. That doesn't open up at all.

00:27:02

BRIAN HAAS, MD: And I think I would agree with that. Some of our kinematic work, looking at flexion kinematics, tight knees – I put my knees tighter now than I did ten years ago, in just looking at that data.

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JAMES DOWD, MD: I would echo that one, as well. I've evolved towards snug or tighter.

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LAWRENCE S. CROSSETT, MD: I'll go further. I think that if it's balanced, you have a whole lot more leeway for making it a little tighter than it should be or a little looser than it should be, if you're balanced correctly.

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JAMES DOWD, MD: I think the key that you showed there is the symmetry between the medial and lateral side. As you push and pull that, you don't see that the spacer block wants to pivot on one side or the other.

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LAWRENCE S. CROSSETT, MD: Jim, that's the exact point, so the fact that it's balanced – If it's tight once I loosen it, that's where I think you get the spinout. It's the asymmetry in the pivot point that gets you into trouble, not whether it's loose or tight when it's squared up.

00:28:00

BRIAN HAAS, MD: So now, Larry, it's hard to point out from this view. This distal femoral cut is a little bit unusual compared to most other implants that are available.

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LAWRENCE S. CROSSETT, MD: Yeah, Brian, let me finish up here. I've got this saw in my ear. You know, the LCS started, the low contact stress mobile bearing started at ten degrees of posterior slope and we've gone about seven. There's a whole lot of reasons for that.

00:28:29

BRIAN HAAS, MD: That's on the tibia.

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LAWRENCE S. CROSSETT, MD: Right. So, in extension, again if we're going to do blocks like this, I want my cuts parallel and if I have a seven degree cut in flexion on my tibia and a 90 degree cut on my femur, this thing doesn't truly fit. So, you're getting a very inaccurate balance, so this cut on the distal femur is about seven to ten degrees in extension. So it is a funny cut and one of the reasons we cannot cut the distal second is because we have slope built into it and because there's slope built into it, it will affect rotation. So no matter how you really cut this, if you really want to stick with the whole concept of low contact stress, balanced gaps, and rotating platforms, it really makes sense to get the alignment squared away and go into flexion. Now here again, this is in here. If we look from the side, I don't know if we can see it. Here we go. Can you...?

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BRIAN HAAS, MD: Actually, we can see very well.

00:29:32

LAWRENCE S. CROSSETT, MD: Yeah, so he looks a little hyperextended to me, which is perfect. So, again, everybody says, "Yeah, it's an easy knee." Well, you know, my mother didn't raise too many fools. This is live.

00:29:43

JAMES DOWD, MD: You've got to have something working in your favor, right?

00:29:45

LAWRENCE S. CROSSETT, MD: Yeah right.

00:29:46

BRIAN HAAS, MD: So Larry, the essential thing is what I always tell people at this point. The soft tissue portion of this is pretty much completed and now the rest of this is carpentry.

00:29:56

LAWRENCE S. CROSSETT, MD: You know, that's exactly right, Brian. In the real picture of things, I always think once the soft tissue balances – I think moving forward, especially when computers become routine, our role is going to become very limited. We're going to come in here and check soft tissues. Okay. We're going to come in and do soft tissue balancing, we're going to check the surgical plan in the computer, and then somebody else is going to do it because we're going to be off doing something else. Now, in the typical traditional rotating platform knee, we're going to be done here, and we have 30 years of results with a rotating platform. So, the question everybody's going to ask is, "Why are we now changing anything or doing anything different and going to posterior-stabilized, a rotating platform?" You guys want to answer that?

00:31:19

BRIAN HAAS, MD: Well, Larry, you and I have – This has been a long-standing project of both of ours and I think our desire for this and my desire for this really started with the laboratory data that we were collecting at Rick Komistek's lab, looking at kinematics of the knee. Basically what we saw is that the rotating platform device had the most conformity in gait and we were very happy with the kinematic pattern that we were getting in gait, and in fact, the LCS had the least variability in gait of any implant that we looked at. However, in flexion, the longstanding rotating platform device lost its conformity after 35 degrees, so it behaved more closely to a cruciate retaining, rather than a cruciate substituting device, and that we lost some of the conformity, and we saw some midstance anterior translation of the femur on the tibia. Because of that, there are some instances when that can cause posterior impingement, decreasing active flexion, and it also can cause some subtle flexion instability. So, in looking at our data, when we were looking at posterior substitution and using a spine cam mechanism, those patients had much better and much more predictable, more importantly, flexion kinematics. So based on that, we felt that we could maintain the gait kinematics of this device, but improve upon the predictability of the flexion kinematics of this bias by adding a spine and post.

00:32:56

LAWRENCE S. CROSSETT, MD: Just again, I want to get back to this, but just so everybody knows, the whole box volume issue is so big. These are proportionate sizes. As you get bigger in your sizing, the box gets a little bigger, so your small sizes aren't notoriously large. It's a reasonably small volume.

00:33:19

BRIAN HAAS, MD: Maybe when you get done cutting that you can show us actually the size of that piece that you take. I think the other thing you notice on this cut as Larry is going ahead and cutting this is this device has lugs. Larry and I have had many conversations about that.

00:33:39

LAWRENCE S. CROSSETT, MD: I'm sorry Brian. I had the saw in my ear.

00:33:41

BRIAN HAAS, MD: I was just noticing that you're going to drill for some lugs with this jig and I think it's important that any posterior, any PS femur has lugs, because I do think these femurs are going to see more force because of spine cam engagement, than a non-posted implant.

00:33:59

LAWRENCE S. CROSSETT, MD: Yeah.

00:34:00

BRIAN HAAS, MD: So, it think it's important that you have lugs.

00:34:01

LAWRENCE S. CROSSETT, MD: You know, Brian and Jim, both of you, we're going to be done soon. We're going to have a lot of time to discuss things. But we need to really start talking about how you define a rotating platform and unidirectional wear and multidirectional wear. The reason – I've used a rotating platform with mobile bearings on it for a long, long time. I'm very happy with it. All this stuff about motion and everything else is ridiculous. I'm very comfortable with it. We just completed the meta-analysis review, where what we did was we took the oldest rotating platform literature and we took it for 30 years, took every published data and we broke them into intervals similar to the Swedish Knee Registry and the Norwegian Knee Registry, and this is not published yet, but we are submitting it and we're going to present it in meetings, and what we showed – Two things. One, functional results, everybody seems to be saying it's very, very difficult to show improvement of functional result, and it might be how we define it. But for longevity, we showed, I think, pretty clearly that a mobile bearing knee does perform, longevity-wise, better. Now that's always been something that everybody says is not in the literature, and I think it will be soon. But functionally, we didn't show anything, so while we're – One size more.

00:35:42

BRIAN HAAS, MD: So you're going to size your tibia independent of your femur?

00:35:46

LAWRENCE S. CROSSETT, MD: Oh yeah. That's one of the beauties of this. Actually, I am surprised. I think I want to go to a four. Just put that a little bit forward. What do you think, Greg?

00:35:57

JAMES DOWD, MD: Then you get to rotate it while your paying attention to the tibial tubercle, or are you just covering bone?

00:36:03

LAWRENCE S. CROSSETT, MD: Jim, I'm just sort of looking at the front of this. It just sort of sits in there real good, and coincidentally by the way, it's right at the medial third of the tubercle.

00:36:12

JAMES DOWD, MD: You're not going to lose any sleep going back and forth with trials and trying to match up rotation, flexion, and extension, because it rotates?

00:36:19

LAWRENCE S. CROSSETT, MD: Yeah. Getting back to the meta-analysis, I'm happy that the science of mobile bearings and unidirectional wear and decreased wear is now coming through, but I'm not real happy that I can't put a knee in that maybe functionally has an advantage and again, I think for all the reasons that Brian said, I think stabilizing this does make a difference. Now, there's a lot of similar products out, but I think what we're talking about here is a product that was designed from mobile bearings. This is not a fixed bearing design – Sorry. Red. This is not a fixed bearing design that now somebody's going to –

00:37:06

JAMES DOWD, MD: Retrofit for a mobile bearing concept.

00:37:07

LAWRENCE S. CROSSETT, MD: Right.

00:37:10

BRIAN HAAS, MD: And I think that's one of the clear advantages of this particular concept design is what we've taken care to in engineeringness is we've tried to preserve everything we could that was advantageous, and the only thing we're trying to change is things we found through other clinical studies that may have been an issue.

00:37:31

LAWRENCE S. CROSSETT, MD: When you have 30 years of history, it's a hard change. Other than internal combustion engine, what's lasted 30 years? Don't consider this thing a knee. Being around 30 years is just phenomenal. It's difficult to try and change things but I think we're doing it for the right reasons. So here we go. We're going to try and reduce this. This is going to be a little snug in here. There we go.

00:38:05

BRIAN HAAS, MD: So the way that rotates in is generally, you just have to snap it under the medial condyle.

00:38:11

LAWRENCE S. CROSSETT, MD: Yeah, and when everybody puts it in the first time. First thing is cement, you get a little cement frenzy. It's really, if you take a regular rotating platform that's not stabilized and you try and do that that way, it's going to be very difficult. So this is how we put them in. Now again, if we can go from the side, I think everybody agrees, full extension. That's not budging. Flexion, calf to thigh. As far as stable – Brian, you made this comment in Dublin. I'm pushing that as hard as I can.

00:38:48

BRIAN HAAS, MD: I think the concept is there are many posterior-stabilized designs that don't have the posterior lip conformity that this design has and the issue becomes, if you clinically evaluate those patients, they have a significant anterior drawer if they lose the posterior conformity. Although that may not be a clinical issue, I think those patients can have some subtle flexion instabilities and it may lead to some anterior knee pain if your quadriceps really have to try to contract to prevent that anterior translation, so it's been one of the things that I really have liked about this particular implant in my experience. Now you put in a patella. What are the patella options, Larry? You did that so fast that we all couldn't see what you put in.

00:39:38

LAWRENCE S. CROSSETT, MD: I'm big on the rotating platform, but on the patella I'm putting in an all-poly patella. It's interesting because, on the lateral side, which is where all the stresses are, we have fully congruent AP lateral. I could put this patella at 90 degrees wrong, and it still has maximum conformity. On the medial side it's a dome, so I think it's a very forgiving – I did this for cost issues. A lot of places, the RP's a little more expensive, so I did it for cost issues. But of course the standard is a – Can I have a trowel, Art, for the mobile bearing patella? We don't have them, okay. Is a metal back rotating platform patella, which have been around forever. Let me make a point here. Now if we bend this up. I am not perfect. I don't know if we can get in here. I'm not perfectly seated here. Cathy, can you put the tourniquet down for a minute? See, I've got a little lift off there, okay? I can try and play with it and pretend that it's not, but indeed, there's a little lift off. If anybody's thinking about doing a lateral release, which is done about never, and now that I said that in front of all these people – Let the tourniquet down. Stay right there, Cathy. Is it down? Okay. Look at it now please. Go right back. Can we come in here? Can we come in here? There we go. That's sitting perfectly. My head is in the way. Tourniquet back up.

00:41:02

BRIAN HAAS, MD: That is just an unbelievably great point that you just pointed out is that if...

00:41:12

LAWRENCE S. CROSSETT, MD: The tourniquet just came up and lifted back up. Don't do lateral releases. Put the tourniquet down and you'll be fine. We're going to go ahead and start cementing here. Thank you, Art.

00:41:21

JAMES DOWD, MD: So you're not a fan of the metal-backed patella?

00:41:24

LAWRENCE S. CROSSETT, MD: You know, I am. I'm putting these in every single patient. 80 year olds or whatever. An 80 is still going to live 20 years if she's healthy. This should be her last operation too. Put them in everybody. You try and be fair. They're going along with it. They're going to support me, so let's knock off a couple hundred dollars by doing all-poly. I think maybe for a PS, it's not a bad thing. I don't want anything catching in here. I don't know if it will or not but...

00:41:59

BRIAN HAAS, MD: Well, the other issue, Larry, that we've been criticized for in introducing the spine and cam into this particular design is, "Are we going to start to introduce subpatellar crepitation, which has been seen in every PS design that's really been put out there. What are your thoughts and concerns about that?"

00:42:17

LAWRENCE S. CROSSETT, MD: I think that's the advantage of having an anatomic patella. Most of that crepitation, -- crepitus is different from clunk. Most of the clunk is that superior dome area. Your patella sort of leads you right up to its fibrous nodule. An anatomic patella, you've maintained the clearance. I'm not seeing it. You guys see the same thing. You're looking at them too. We're not seeing a significant crepitus issue. This patella, again mobile, rotating platform, patella has been -- There's never been a question. Metal-backed patellas -- We'd better get going. Mix Art. Metal-backed patellas took a huge hit but if there's rotating, it's a rotating platform, it's fine.

00:43:11

JAMES DOWD, MD: We looked that up down at the Jordan-Young Institute, doing metal-backed pretty much exclusively since '84 and the first thing I did when I got there was 250 or 60 patellas and 0.2 percent complication rate. You know, it's clear that all metal-backed patellas aren't the same and the rotating platform and the conformity part has certainly done well.

00:43:33

BRIAN HAAS, MD: Now, having said that Larry, you and I travel overseas where patella resurfacing has not met with much enthusiasm. What are your thoughts about leaving an unresurfaced patella in this particular design?

00:43:48

LAWRENCE S. CROSSETT, MD: Well, I think in this design, you do not have to resurface the patella at all. You really don't. We're in Dublin. There's 600 surgeons. Ten of us were Americans. They talked about the patella. 10 resurface and 590 didn't.

00:44:00

JAMES DOWD, MD: 84 percent never resurface the patella.

00:44:02

LAWRENCE S. CROSSETT, MD: Yeah, it's kind of ridiculous. But again, it's our culture, right? It's our culture that we resurface. I don't think we're doing anything bad. I don't think you need to, but in this country, whatever.

00:44:17

JAMES DOWD, MD: But certainly a nice friendly anatomic, well-designed groove. You have a track record to go either direction and pretty good confidence either way.

00:44:24

LAWRENCE S. CROSSETT, MD: Exactly. Now the cement we're using is a high-viscosity cement, which I've gotten recently very enamored with it. You mix it up and in about a minute it's ready to go. Let's see if we can seal this off real well.

00:44:38

BRIAN HAAS, MD: When you're cementing your tibia, you cement the whole thing? You're not trying to prevent cement from going down the post?

00:44:44

LAWRENCE S. CROSSETT, MD: No. I think we've got to cement the post. See, what I'm trying to do here is really seal off the tibia wall, because when I pressurize this, I'm tired of seeing all this fat come squirting up underneath where I'm going to put the cement. So I think all these lines we see are fat that comes squirting up. So, I really try and seal off the proximal tibia before I pressurize it. We'll go ahead and put this tibia in. I don't put cement on the tibia because it's a rotating platform and it's a nice shiny piece of metal. Again, if you travel a little bit, you learn real quick that most of what we do is purely our culture, our opinion, and what was taught to us 40 years ago.

00:45:27

JAMES DOWD, MD: Now have you been doing some of these? Have you had any experience doing these uncemented?

00:45:35

LAWRENCE S. CROSSETT, MD: Now again, just so everybody's clear, uncemented rotating platform knees are very available. It's FDA approved. I have, Jim, and as you know, since you're the person who's probably going to do it, but my left knee is in bad shape and I've always said that I wanted to have an uncemented knee. Now you've looked at yours pretty much. Again, in Europe, most of them are going to be uncemented. They've got mixed feelings about it. I have them in real young people.

00:46:10

BRIAN HAAS, MD: You're real young, Larry.

00:46:13

LAWRENCE S. CROSSETT, MD: I was going to say I have them in my high performance athletes. I guess that leaves me out.

00:46:18

JAMES DOWD, MD: Yeah, I feel kind of schizophrenic about it in that I cement them all but I'm in a place where I'm looking at 25 years of history with them, all pretty much uncemented and I look at them by the hundreds each week or each month and they look remarkably and have done extremely well for us with a very good published survivorship.

00:46:41

LAWRENCE S. CROSSETT, MD: I think that you're, we talked earlier, your forces. We've got to eventually talk about this directional, unidirectional motion. These rotating platforms are simple designs. They function in a unidirectional manner. So, you're coupling your forces at your articular surface, and getting motion rotation below it, so your wear rates are fractional. Again, we talked about that. That is not opinion. That's polyethylene science.

00:47:12

JAMES DOWD, MD: Right, and I think as they pay more and more attention to the science of cross-shear and the polymer chains, you know, not being a friendly environment to be multidirectional, and especially as other designs hit the market that aren't unidirectional, that's going to become a bigger and bigger issue.

00:47:29

LAWRENCE S. CROSSETT, MD: I think it's going to be immense and I think you can look at literature from the same lab that says mobile bearings decrease wear and mobile bearing increase wear and it was done purely for that. Unidirectional,

multidirectional. If you have a knee, and they're going to be all over the place, that has a multidirectional design on it's articulation, you're doing yourself any favor.

00:47:52

JAMES DOWD, MD: Right. It's not the same.

00:47:53

LAWRENCE S. CROSSETT, MD: No. It is not. It is not what we've known for 30 years, so it is not the same.

00:47:58

BRIAN HAAS, MD: Larry, a question from the audience, "Are you using antibiotic impregnated cement on this primary?"

00:48:04

LAWRENCE S. CROSSETT, MD: Yeah, thanks guys. No, I'm not. He's perfectly healthy. I'm not going to do it.

00:48:11

BRIAN HAAS, MD: Don't feel bad about that, Larry. I don't as a practice either. I only use it in high-risk patients.

00:48:16

LAWRENCE S. CROSSETT, MD: And I do too, but again, if you go to Europe, they would think we're absolutely insane not throwing in antibody. Jim looked at his. His infection rate's dropped way down.

00:48:27

JAMES DOWD, MD: Yeah, I use it a little bit more prolifically, I suppose, than you guys do, and it's been very good to us at our hospital.

00:48:34

LAWRENCE S. CROSSETT, MD: I can say working here that they've been very, very fair to me. [sound cuts out]

00:48:55

BRIAN HAAS, MD: So, Larry, you've – There's been quite a number of questions coming in about using mobile bearings on every case. Do you have any indications where you'd ever use the fixed bearing knee in a primary?

00:49:08

LAWRENCE S. CROSSETT, MD: Again, our costs here are good.

00:49:11

BRIAN HAAS, MD: Exclusive of cost. Is there any medical reason for not using a mobile bearing device?

00:49:18

LAWRENCE S. CROSSETT, MD: Well, I think in a revision, if you have an extensive mechanism failure, or a polio patient, and you're trying to put a hinge in them, that might be the rare case when I'd put a fixed bearing hinge in because with extensive mechanism, they'll dislocate. It was probably a trick question you're asking here, Brian.

00:49:38

JAMES DOWD, MD: You're not making some sort of algorithm to decide a high demand or low demand...?

00:49:44

LAWRENCE S. CROSSETT, MD: No, I'm not. I think my algorithm should be, this should be a patient's last operation. Now if you're 80, people say, "They don't need a mobile bearing. Save 300 dollars." But, if they're 80 and healthy, if they both life insurance, they're going to buy for 20 years. A 20 year success story is still something that is really sought after. If it's 80 years old, it absolutely should be her last operation, so why not put a rotating platform in that, her or him?

00:50:12

JAMES DOWD, MD: I feel sort of the same way and use it across the board. It's been a long time since I've done a fixed bearing, but I would also – the technique is sound, the principles that we're looking to achieve with the soft tissue balance and the flexion space squaring up and getting your alignment through the soft tissue releases. All those things are – they sort of just come with the territory of doing that knee.

00:50:40

BRIAN HAAS, MD: Well Larry, here's a loaded question that came in. "When the PS rotating bearing is available, do you ever see an indication for using a non-posted rotating platform?"

00:50:54

LAWRENCE S. CROSSETT, MD: You know, I think early on – We've been putting them in and I think moving forward, I probably would like to do a pure randomized study and half get PS and half get RPs to really see. I think, if you ask me, I think the flexion is coming much sooner, sooner, quicker. I didn't say it's going to be more. I'd like to think so. Then we'd have to do kinematic data and make sure that, again functionally, these people use it. That's the whole idea, getting more functional motion, just get more functional activity.

00:51:33

BRIAN HAAS, MD: Well, we're going to have some kinematic data coming here fairly soon, so that will be very interesting. But you're right, the only way to really – I'd love to get through the IRB a bilateral study, one side with and one side without and really put them under the gun and see which one kinematically is going to behave more predictably.

00:51:58

LAWRENCE S. CROSSETT, MD: We have 30 years experience with this knee. You know the predictable result would be crazy, absolutely crazy, to forget simple rotating platforms for many, many years. A lot of people are excited about a posterior-stabilized version, as we are. But again, we've been involve in it now, Brian, for what, six, seven years? Yeah, so we've got a little bit of personal thoughts on it, and I do think it's going to be better, but there's a whole lot of proof that's going to go into this.

00:52:30

JAMES DOWD, MD: I think, for me a lot will come down to the kinematics, and is it really doing what it was designed to do in a way that produces more reproducible kinematics. One of the problems I think we have and we've talked about is that I don't think we have sensitive enough measurements at this point for the kind of success and the kind of advantage and function that we're looking for. We have a sense that we know it when we see it in the office but we can't score it or we can't test for it.

00:52:57

LAWRENCE S. CROSSETT, MD: We know that. We know that our scoring systems aren't the most sensitive, and that was a given. I think you're exactly right, Jim.

00:53:08

JAMES DOWD, MD: There's a couple questions that have come in related to the uncemented fixation of porous ingrowth and one of the things that I'm completely convinced of with the favorable result [sound cuts out] both cemented and uncemented and I don't think you can argue, really, one's better than the other but they're both equally successful and I think my own personal opinion is converting the out-of-plane sheer forces on the tibia to pure compression forces at the bone implant interface, just creates a much happier, much more biologically favorable ingrowth environment for the tibia, and you look at other designs of knees that have tried to

go uncemented over the long term and they haven't been nearly as favorable on the tibial side as they are on the femoral side.

00:53:56

LAWRENCE S. CROSSETT, MD: So, Jim and Brian, now if you're going to do a PS, are you going to uncement them or are you worried about rollback? You haven't spoken about our rollback.

00:54:07

BRIAN HAAS, MD: Well, the rollback issue, Larry, as you know, with this device, the rollback on this has only been three to four millimeters from the dwell point and we were very clear that we did not want to get into a situation with other high flex knee designs that we had excessive posterior rollback. This device has been engineered to accommodate a greater degree of flexion, but certainly, as you and I know, with all the buzz in the media about high flex designs, some of those designs are now coming into question and I think some of the literature and some of the presentations at this year's upcoming academy are going to question some of these designs as to whether or not excessive rollback is actually clinically going to become a problem and an issue.

00:54:59

LAWRENCE S. CROSSETT, MD: Yeah Brian, I think when you start coming out with a change in some product designs, you get a little nervous. But I remain very comfortable with the fact that we have 30 years of design heritage and not a single design feature of the original rotating platform knee did we change. In extension, we are still maximally conforming, 100 percent conforming, which is the whole low contact stress option. When you go into flexion, you lose it and you talk about, with stabilization, we can't have a lot of rollback because we'll be rolling uphill. If we'd taken off that posterior incline, we would have lost our conforming extension. So, I think we've really maintained 30 years of design and we've added very carefully the things we think might give us a functional edge.

00:56:00

BRIAN HAAS, MD: Absolutely.

00:56:01

LAWRENCE S. CROSSETT, MD: So, we're going to see.

00:56:07

BRIAN HAAS, MD: So Larry, you're letting the cement harden up?

00:56:09

LAWRENCE S. CROSSETT, MD: Yeah, I just wanted to show the motion issue here before we go. I wish I could send a question out to the audience because I keep harping on this now, all day, but I'd like to know in the audience, what percent of people, when I talk about a single radius design, or a multi radius design, or a unidirectional motion, or multidirectional motion, how many people really know what I'm saying, because in this country we've had one option for rotating platforms, and the next year we're going to have ten. We really understand these concepts. People are going to recreate history. We don't need to do this.

00:56:44

BRIAN HAAS, MD: I think Fisher's work from Leeds has really gone into that and anybody in the audience, any surgeon really should work at some of his, look at some of his work. The easy summation of that is if you have a central rotating post, that's going to create unidirectional wear patterns, where if you have any pin-on disk, or anything that can translate anterior-posterior, and rotate, you are then introducing multidirectional wear factors and your wear is going to go up. I'm not sure that's a debatable topic. I think if you're going to have a multidirectional device, I don't know how you can get around the comment the you're going to create multidirectional wear and then I think you are going to have some issues.

00:57:33

LAWRENCE S. CROSSETT, MD: You know darn well. Can we get the side picture here? I'm just going to pick this femur up and we can get an idea of how far this knee is going to want to bend.

00:57:43

JAMES DOWD, MD: You didn't have to make any additional posterior condylar cuts or do anything fancy?

00:57:47

LAWRENCE S. CROSSETT, MD: No. Again, we did not make any different cuts. The only thing we've done is we think we've controlled our flexion kinematics a little bit better. I'll tell you what, I'm going to come join you guys for the last two or three minutes.

00:58:00

BRIAN HAAS, MD: Larry, the one question before you stop there is about hyperextension in a posted implant. Can you comment on how much hyperextension this device will accommodate and what are thoughts were when we designed that post? If you could kind of show us how it looks with the knee in extension there?

00:58:16

LAWRENCE S. CROSSETT, MD: Well, if we can, yeah. Can we come right in here? Yeah, we have over five degrees, five to seven degrees of – Can we come in here?

00:58:24

BRIAN HAAS, MD: So the combined hyperextension that this knee will accommodate is twelve.

00:58:29

LAWRENCE S. CROSSETT, MD: But that depends on where you position your components, Brian.

00:58:33

BRIAN HAAS, MD: Well, but essentially it's – but the bottom line is that not only have we engineered that this will accommodate some hyperextension, but if hyperextension occurs in this particular design, there are no sharp corners and we're really hoping that we don't see any catastrophic fractures or really destructive wear of that anterior portion of the spine on the poly because of the designer.

00:59:03

LAWRENCE S. CROSSETT, MD: Yeah, the other thing that causes a posterior-stabilized knee, we need to pay a little bit of attention to, especially when we navigate. We can add more flexion in, but if you stay within the boundaries, keep the slope at seven degrees. But if you change anything, you rob Peter to pay Paul. You can change your engagement time, your engagement arc, you can change your hyperextension arc. So I'm trying to keep it – I want to keep at least five degrees hyperextension.

00:59:34

BRIAN HAAS, MD: Well, the other bottom line, too, is at the end when you have your trials in, if you see you actually have impingement of that spine against the post in its design, your extension space is probably a little loose and you probably want to go up to the next thickness.

00:59:47

LAWRENCE S. CROSSETT, MD: To a little thicker poly. I agree. Well, we're closing down here. I hope people have got a few questions. I hope they have more questions now than they had before. Before we go – this is non-sterile. I am not sterile at this point, but if we can just come in here. We talked about a rotating platform patella. Have we got it here? There we go.

01:00:13

JAMES DOWD, MD: There you go.

01:00:14

LAWRENCE S. CROSSETT, MD: That's the rotating platform. You can see from the side it is metal-backed, and again this lateral side is fully congruent. No matter which way I put this, it's 100 percent conforming. By losing the metal backing, I've just made this a dome. I feel very comfortable with it. You have to make some concessions. This is not sterile so I'm going to set this over here.

01:00:42

JAMES DOWD, MD: That was great, Larry.

01:00:43

LAWRENCE S. CROSSETT, MD: Well, gentlemen, again I hope we answered some questions. I hope we got people asking some questions. I think our websites are available. Our emails are available. If people have questions they don't want to ask in an open forum, let us know. Everybody have a nice evening. Enjoy themselves.

01:01:03

JAMES DOWD, MD: That's great. Thanks for having us, Larry.

01:01:04

BRIAN HAAS, MD: Well, Larry, thank you very much. We'd like to thank the people here at the University of Pittsburgh Medical Center for their hospitality and we look forward to your questions and comments through the email site. Have a pleasant evening.

01:01:14

JAMES DOWD, MD: It's great. Thank you.

01:01:19

ANNOUNCER: Thank you for watching today's broadcast demonstration of the DePuy Orthopedics LCS Complete Mobile Bearing Knee System, from the University of Pittsburgh Medical Center Shadyside Hospital. OR-Live makes it easy for you to learn more. Just click on the "Request Information" button on your webcast screen, and open the door to informed medical care.

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